

**ANNEX I**

**SUMMARY OF PRODUCT CHARACTERISTICS**

## 1. NAME OF THE MEDICINAL PRODUCT

Inhixa 2,000 IU (20 mg)/0.2 mL solution for injection in pre-filled syringe

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

10,000 IU/mL (100 mg/mL) solution for injection

Each pre-filled syringe contains enoxaparin sodium 2,000 IU anti-Xa activity (equivalent to 20 mg) in 0.2 mL water for injections.

For the full list of excipients, see section 6.1.

Enoxaparin sodium is a biological substance obtained by alkaline depolymerisation of heparin benzyl ester derived from porcine intestinal mucosa.

## 3. PHARMACEUTICAL FORM

Solution for injection in pre-filled syringe (injection).

Clear, colourless to pale yellow solution.

## 4. CLINICAL PARTICULARS

### 4.1 Therapeutic indications

Inhixa is indicated in adults for:

Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients, in particular those undergoing orthopaedic or general surgery including cancer surgery.

Prophylaxis of venous thromboembolic disease in medical patients with an acute illness (such as acute heart failure, respiratory insufficiency, severe infections or rheumatic diseases) and reduced mobility at increased risk of venous thromboembolism.

Treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE), excluding PE likely to require thrombolytic therapy or surgery.

Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer.

Prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Acute coronary syndrome:

- Treatment of unstable angina and Non ST-segment elevation myocardial infarction (NSTEMI), in combination with oral acetylsalicylic acid.
- Treatment of acute ST-segment elevation myocardial infarction (STEMI) including patients to be managed medically or with subsequent percutaneous coronary intervention (PCI).

### 4.2 Posology and method of administration

#### Posology

#### Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients

Individual thromboembolic risk for patients can be estimated using validated risk stratification model.

In patients at moderate risk of thromboembolism, the recommended dose of enoxaparin sodium is 2,000 IU (20 mg) once daily by subcutaneous (SC) injection. Preoperative initiation (2 hours before surgery) of enoxaparin sodium 2,000 IU (20 mg) was proven effective and safe in moderate risk surgery.

In moderate risk patients, enoxaparin sodium treatment should be maintained for a minimal period of 7-10 days whatever the recovery status (e.g. mobility). Prophylaxis should be continued until the patient no longer has significantly reduced mobility.

In patients at high risk of thromboembolism, the recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily given by SC injection preferably started 12 hours before surgery. If there is a need for earlier than 12 hours enoxaparin sodium preoperative prophylactic initiation (e.g. high risk patient waiting for a deferred orthopaedic surgery), the last injection should be administered no later than 12 hours prior to surgery and resumed 12 hours after surgery.

- For patients who undergo major orthopaedic surgery an extended thromboprophylaxis up to 5 weeks is recommended.
- For patients with a high venous thromboembolism (VTE) risk who undergo abdominal or pelvic surgery for cancer an extended thromboprophylaxis up to 4 weeks is recommended.

#### Prophylaxis of venous thromboembolism in medical patients

The recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily by SC injection.

Treatment with enoxaparin sodium is prescribed for at least 6 to 14 days whatever the recovery status (e.g. mobility). The benefit is not established for a treatment longer than 14 days.

#### Treatment of DVT and PE

Enoxaparin sodium can be administered SC either as a once daily injection of 150 IU/kg (1.5 mg/kg) or as twice daily injections of 100 IU/kg (1 mg/kg).

The regimen should be selected by the physician based on an individual assessment including evaluation of the thromboembolic risk and of the risk of bleeding. The dose regimen of 150 IU/kg (1.5 mg/kg) administered once daily should be used in uncomplicated patients with low risk of VTE recurrence. The dose regimen of 100 IU/kg (1 mg/kg) administered twice daily should be used in all other patients such as those with obesity, with symptomatic PE, cancer, recurrent VTE or proximal (*vena iliaca*) thrombosis.

Enoxaparin sodium treatment is prescribed for an average period of 10 days. Oral anticoagulant therapy should be initiated when appropriate (see “Switch between enoxaparin sodium and oral anticoagulants” at the end of section 4.2).

In the extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer, physicians should carefully assess the individual thromboembolic and bleeding risks of the patient.

The recommended dose is 100 IU/kg (1 mg/kg) administered twice daily by SC injections for 5 to 10 days, followed by a 150 IU/kg (1.5 mg/kg) once daily SC injection up to 6 months. The benefit of continuous anticoagulant therapy should be reassessed after 6 months of treatment.

#### Prevention of thrombus formation during haemodialysis

The recommended dose is 100 IU/kg (1 mg/kg) of enoxaparin sodium.

For patients with a high risk of haemorrhage, the dose should be reduced to 50 IU/kg (0.5 mg/kg) for double vascular access or 75 IU/kg (0.75 mg/kg) for single vascular access.

During haemodialysis, enoxaparin sodium should be introduced into the arterial line of the circuit at the beginning of the dialysis session. The effect of this dose is usually sufficient for a 4-hour session; however, if fibrin rings are found, for example after a longer than normal session, a further dose of 50 IU to 100 IU/kg (0.5 to 1 mg/kg) may be given.

No data are available in patients using enoxaparin sodium for prophylaxis or treatment and during haemodialysis sessions.

#### Acute coronary syndrome: treatment of unstable angina and NSTEMI and treatment of acute STEMI

For treatment of unstable angina and NSTEMI, the recommended dose of enoxaparin sodium is 100 IU/kg (1 mg/kg) every 12 hours by SC injection administered in combination with antiplatelet therapy. Treatment

should be maintained for a minimum of 2 days and continued until clinical stabilization. The usual duration of treatment is 2 to 8 days.

Acetylsalicylic acid is recommended for all patients without contraindications at an initial oral loading dose of 150–300 mg (in acetylsalicylic acid-naïve patients) and a maintenance dose of 75–325 mg/day long-term regardless of treatment strategy.

For treatment of acute STEMI, the recommended dose of enoxaparin sodium is a single intravenous (IV) bolus of 3,000 IU (30 mg) plus a 100 IU/kg (1 mg/kg) SC dose followed by 100 IU/kg (1 mg/kg) administered SC every 12 hours (maximum 10,000 IU (100 mg) for each of the first two SC doses).

Appropriate antiplatelet therapy such as oral acetylsalicylic acid (75 mg to 325 mg once daily) should be administered concomitantly unless contraindicated. The recommended duration of treatment is 8 days or until hospital discharge, whichever comes first. When administered in conjunction with a thrombolytic (fibrin specific or non-fibrin specific), enoxaparin sodium should be given between 15 minutes before and 30 minutes after the start of fibrinolytic therapy.

- For dose in patients  $\geq 75$  years of age, see paragraph “Elderly”.
- For patients managed with PCI, if the last dose of enoxaparin sodium SC was given less than 8 hours before balloon inflation, no additional dosing is needed. If the last SC administration was given more than 8 hours before balloon inflation, an IV bolus of 30 IU/kg (0.3 mg/kg) enoxaparin sodium should be administered.

### Special populations

#### Paediatric population

The safety and efficacy of enoxaparin sodium in paediatric population have not been established.

#### Elderly

For all indications except STEMI, no dose reduction is necessary in the elderly patients, unless kidney function is impaired (see below “renal impairment” and section 4.4).

For treatment of acute STEMI in elderly patients  $\geq 75$  years of age, an initial IV bolus must not be used. Initiate dosing with 75 IU/kg (0.75 mg/kg) SC every 12 hours (maximum 7,500 IU (75 mg) for each of the first two SC doses only, followed by 75 IU/kg (0.75 mg/kg) SC dosing for the remaining doses). For dose in elderly patients with impaired kidney function, see below “renal impairment” and section 4.4.

#### Hepatic impairment

Limited data are available in patients with hepatic impairment (see sections 5.1 and 5.2) and caution should be used in these patients (see section 4.4).

#### Renal impairment (see sections 4.4 and 5.2)

##### Severe renal impairment

Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance  $<15$  mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Dose table for patients with severe renal impairment (creatinine clearance [15-30] mL/min):

<u>Indication</u>	<u>Dosing regimen</u>
Prophylaxis of venous thromboembolic disease	2,000 IU (20 mg) SC once daily
Treatment of DVT and PE	100 IU/kg (1 mg/kg) body weight SC once daily
Extended treatment of DVT and PE in patients with active cancer	100 IU/kg (1 mg/kg) body weight SC once daily
Treatment of unstable angina and NSTEMI	100 IU/kg (1 mg/kg) body weight SC once daily

Treatment of acute STEMI (patients under 75)	1 x 3,000 IU (30 mg) IV bolus plus 100 IU/kg (1 mg/kg) body weight SC and then 100 IU/kg (1 mg/kg) body weight SC every 24 hours
Treatment of acute STEMI (patients over 75)	No IV initial bolus, 100 IU/kg (1 mg/kg) body weight SC and then 100 IU/kg (1 mg/kg) body weight SC every 24 hours

The recommended dose adjustments do not apply to the haemodialysis indication.

#### *Moderate and mild renal impairment*

Although no dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment, careful clinical monitoring is advised.

#### Method of administration

Inhixa is not indicated for intramuscular use and should not be administered by this route.

For the prophylaxis of venous thrombo-embolic disease following surgery, treatment of DVT and PE, extended treatment of DVT and PE in patients with active cancer, treatment of unstable angina and NSTEMI, enoxaparin sodium should be administered by SC injection.

For acute STEMI, treatment is to be initiated with a single IV bolus injection immediately followed by a SC injection.

For the prevention of thrombus formation in the extra corporeal circulation during haemodialysis, it is administered through the arterial line of a dialysis circuit.

The disposable pre-filled syringe is ready for immediate use.

The use of a tuberculin syringe or equivalent is recommended when using ampoules or multidose vials to assure withdrawal of the appropriate volume of the medicinal product.

#### SC injection technique

Injection should be made preferably when the patient is lying down. Enoxaparin sodium is administered by deep SC injection.

When using pre-filled syringes, the air bubble should not be expelled from the syringe before the injection in order to avoid the loss of the medicinal product. When the quantity of the medicinal product to be injected requires to be adjusted based on the patient's body weight, use the graduated pre-filled syringes to reach the required volume by discarding the excess before injection. Please be aware that in some cases it is not possible to achieve an exact dose due to the graduations on the syringe, and in such case the volume shall be rounded up to the nearest graduation.

The administration should be alternated between the left and right anterolateral or posterolateral abdominal wall.

The whole length of the needle should be introduced vertically into a skin fold gently held between the thumb and index finger. The skin fold should not be released until the injection is complete. After administration, the injection site should not be rubbed.

Note for the pre-filled syringes fitted with an automatic safety system: The safety system is triggered at the end of the injection (see instructions in section 6.6).

In case of self-administration, patient should be advised to follow instructions provided in the patient information leaflet included in the pack of this medicinal product.

#### IV (bolus) injection (for acute STEMI indication only)

For acute STEMI, treatment is to be initiated with a single IV bolus injection immediately followed by a SC injection.

For IV injection, either the multidose vial or pre-filled syringe can be used.

Enoxaparin sodium should be administered through an IV line. It should not be mixed or co-administered with other medicinal products. To avoid the possible mixture of enoxaparin sodium with other medicinal products, the IV access chosen should be flushed with a sufficient amount of sodium chloride 9 mg/ml (0.9%) or 5% glucose in water for injections prior to and following the IV bolus administration of enoxaparin sodium to clear the port of the medicinal product. Enoxaparin sodium may be safely administered with normal sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections.

#### *Initial 3,000 IU (30 mg) bolus*

For the initial 3,000 IU (30 mg) bolus, using an enoxaparin sodium graduated pre-filled syringe, the excessive volume has to be expelled to retain only 3,000 IU (30 mg) in the syringe. The 3,000 IU (30 mg) dose can then be directly injected into the IV line.

#### *Additional bolus for PCI when last SC administration was given more than 8 hours before balloon inflation*

For patients being managed with PCI, an additional IV bolus of 30 IU/kg (0.3 mg/kg) is to be administered if last SC administration was given more than 8 hours before balloon inflation.

In order to assure the accuracy of the small volume to be injected, it is recommended to dilute the medicinal product to 300 IU/mL (3 mg/mL).

To obtain a 300 IU/mL (3 mg/mL) solution, using a 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe, it is recommended to use a 50 mL infusion bag (i.e. using either sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections) as follows:

Withdraw 30 mL from the infusion bag with a syringe and discard the liquid. Inject the complete contents of the 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe into the 20 mL remaining in the bag. Gently mix the contents of the bag. Withdraw the required volume of diluted solution with a syringe for administration into the IV line.

After dilution is completed, the volume to be injected can be calculated using the following formula [volume of diluted solution (mL) = patient weight (kg) x 0.1] or using the table below. It is recommended to prepare the dilution immediately before use.

Volume to be injected through IV line after dilution is completed at a concentration of 300 IU (3 mg) /mL.

Weight [kg]	Required dose 30 IU/kg (0.3 mg/kg)		Volume to inject when diluted to a final concentration of 300 IU (3 mg)/mL [mL]
	IU	[mg]	
45	1,350	13.5	4.5
50	1,500	15	5
55	1,650	16.5	5.5
60	1,800	18	6
65	1,950	19.5	6.5
70	2,100	21	7
75	2,250	22.5	7.5
80	2,400	24	8
85	2,550	25.5	8.5
90	2,700	27	9
95	2,850	28.5	9.5
100	3,000	30	10
105	3,150	31.5	10.5
110	3,300	33	11
115	3,450	34.5	11.5
120	3,600	36	12

125	3,750	37.5	12.5
130	3,900	39	13
135	4,050	40.5	13.5
140	4,200	42	14
145	4,350	43.5	14.5
150	4,500	45	15

#### Arterial line injection

It is administered through the arterial line of a dialysis circuit for the prevention of thrombus formation in the extra corporeal circulation during haemodialysis.

#### Switch between enoxaparin sodium and oral anticoagulants

##### *Switch between enoxaparin sodium and vitamin K antagonists (VKA)*

Clinical monitoring and laboratory tests [prothrombin time expressed as the International Normalised Ratio (INR)] must be intensified to monitor the effect of VKA.

As there is an interval before the VKA reaches its maximum effect, enoxaparin sodium therapy should be continued at a constant dose for as long as necessary in order to maintain the INR within the desired therapeutic range for the indication in two successive tests.

For patients currently receiving a VKA, the VKA should be discontinued and the first dose of enoxaparin sodium should be given when the INR has dropped below the therapeutic range.

##### *Switch between enoxaparin sodium and direct oral anticoagulants (DOAC)*

For patients currently receiving enoxaparin sodium, discontinue enoxaparin sodium and start the DOAC 0 to 2 hours before the time that the next scheduled administration of enoxaparin sodium would be due as per DOAC label.

For patients currently receiving a DOAC, the first dose of enoxaparin sodium should be given at the time the next DOAC dose would be taken.

#### Administration in spinal/epidural anaesthesia or lumbar puncture

Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, careful neurological monitoring is recommended due to the risk of neuraxial haematomas (see section 4.4).

- *At doses used for prophylaxis*

A puncture-free interval of at least 12 hours shall be kept between the last injection of enoxaparin sodium at prophylactic doses and the needle or catheter placement.

For continuous techniques, a similar delay of at least 12 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 24 hours.

The 2 hours preoperative initiation of enoxaparin sodium 2,000 IU (20 mg) is not compatible with neuraxial anaesthesia.

- *At doses used for treatment*

A puncture-free interval of at least 24 hours shall be kept between the last injection of enoxaparin sodium at curative doses and the needle or catheter placement (see also section 4.3).

For continuous techniques, a similar delay of 24 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 48 hours.

Patients receiving the twice daily doses (i.e. 75 IU/kg (0.75 mg/kg) twice daily or 100 IU/kg (1 mg/kg) twice-daily) should omit the second enoxaparin sodium dose to allow a sufficient delay before catheter placement or removal.

Anti-Xa levels are still detectable at these time points, and these delays are not a guarantee that neuraxial hematoma will be avoided.

Likewise, consider not using enoxaparin sodium until at least 4 hours after the spinal/epidural puncture or after the catheter has been removed. The delay must be based on a benefit-risk assessment considering both the risk for thrombosis and the risk for bleeding in the context of the procedure and patient risk factors.

### 4.3 Contraindications

Enoxaparin sodium is contraindicated in patients with:

- Hypersensitivity to enoxaparin sodium, heparin or its derivatives, including other low molecular weight heparins (LMWH) or to any of the excipients listed in section 6.1;
- History of immune mediated heparin-induced thrombocytopenia (HIT) within the past 100 days or in the presence of circulating antibodies (see also section 4.4 );
- Active clinically significant bleeding and conditions with a high risk of haemorrhage, including recent haemorrhagic stroke, gastrointestinal ulcer, presence of malignant neoplasm at high risk of bleeding, recent brain, spinal or ophthalmic surgery, known or suspected oesophageal varices, arteriovenous malformations, vascular aneurysms or major intraspinal or intracerebral vascular abnormalities;
- Spinal or epidural anaesthesia or loco-regional anaesthesia when enoxaparin sodium is used for treatment in the previous 24 hours (see section 4.4).

### 4.4 Special warnings and precautions for use

#### Traceability

LMWHs are biological medicinal products. In order to improve the traceability of biological medicinal products, the name and the batch number of the administered product should be clearly recorded.

#### General

Enoxaparin sodium cannot be used interchangeably (unit for unit) with other LMWHs. These medicinal products differ in their manufacturing process, molecular weights, specific anti-Xa and anti-IIa activities, units, dose and clinical efficacy and safety. This results in differences in pharmacokinetics and associated biological activities (e.g. anti-thrombin activity, and platelet interactions). Special attention and compliance with the instructions for use specific to each proprietary medicinal product are therefore required.

#### History of HIT (>100 days)

Use of enoxaparin sodium in patients with a history of immune mediated HIT within the past 100 days or in the presence of circulating antibodies is contraindicated (see section 4.3). Circulating antibodies may persist several years.

Enoxaparin sodium is to be used with extreme caution in patients with a history (>100 days) of heparin-induced thrombocytopenia without circulating antibodies. The decision to use enoxaparin sodium in such a case must be made only after a careful benefit risk assessment and after non-heparin alternative treatments are considered (e.g. danaparoid sodium or lepirudin).

#### Monitoring of platelet counts

In patients with cancer with a platelet count below 80 G/L, anticoagulation treatment can only be considered on a case-by-case basis and careful monitoring is recommended.

The risk of antibody-mediated HIT also exists with LMWHs. Should thrombocytopenia occur, it usually appears between the 5<sup>th</sup> and the 21<sup>st</sup> day following the beginning of enoxaparin sodium treatment.

The risk of HIT is higher in postoperative patients and mainly after cardiac surgery and in patients with cancer. Therefore, it is recommended that the platelet counts be measured before the initiation of therapy with enoxaparin sodium and then regularly thereafter during the treatment.

If there are clinical symptoms suggestive of HIT (any new episode of arterial and/or venous thromboembolism, any painful skin lesion at the injection site, any allergic or anaphylactoid reactions on treatment), platelet count



should be measured. Patients must be aware that these symptoms may occur and if so, that they should inform their primary care physician.

In practice, if a confirmed significant decrease of the platelet count is observed (30 to 50 % of the initial value), enoxaparin sodium treatment must be immediately discontinued and the patient switched to another non-heparin anticoagulant alternative treatment.

### Haemorrhage

As with other anticoagulants, bleeding may occur at any site. If bleeding occurs, the origin of the haemorrhage should be investigated and appropriate treatment instituted.

Enoxaparin sodium, as with any other anticoagulant therapy, should be used with caution in conditions with increased potential for bleeding, such as:

- impaired haemostasis,
- history of peptic ulcer,
- recent ischemic stroke,
- severe arterial hypertension,
- recent diabetic retinopathy,
- neuro- or ophthalmologic surgery,
- concomitant use of medicinal products affecting haemostasis (see section 4.5).

### Laboratory tests

At doses used for prophylaxis of venous thromboembolism, enoxaparin sodium does not influence bleeding time and global blood coagulation tests significantly, nor does it affect platelet aggregation or binding of fibrinogen to platelets.

At higher doses, increases in activated partial thromboplastin time (aPTT), and activated clotting time (ACT) may occur. Increases in aPTT and ACT are not linearly correlated with increasing enoxaparin sodium antithrombotic activity and therefore are unsuitable and unreliable for monitoring enoxaparin sodium activity.

### Spinal/Epidural anaesthesia or lumbar puncture

Spinal/epidural anaesthesia or lumbar puncture must not be performed within 24 hours of administration of enoxaparin sodium at therapeutic doses (see also section 4.3).

There have been cases of neuraxial haematomas reported with the concurrent use of enoxaparin sodium and spinal/epidural anaesthesia or spinal puncture procedures resulting in long term or permanent paralysis.

These events are rare with enoxaparin sodium dose regimens 4,000 IU (40 mg) once daily or lower. The risk of these events is higher with the use of post-operative indwelling epidural catheters, with the concomitant use of additional medicinal products affecting haemostasis such as Non-Steroidal Anti-Inflammatory Drugs (NSAIDs), with traumatic or repeated epidural or spinal puncture, or in patients with a history of spinal surgery or spinal deformity.

To reduce the potential risk of bleeding associated with the concurrent use of enoxaparin sodium and epidural or spinal anaesthesia/analgesia or spinal puncture, consider the pharmacokinetic profile of enoxaparin sodium (see section 5.2). Placement or removal of an epidural catheter or lumbar puncture is best performed when the anticoagulant effect of enoxaparin sodium is low; however, the exact timing to reach a sufficiently low anticoagulant effect in each patient is not known. For patients with creatinine clearance [15-30 mL/minute], additional considerations are necessary because elimination of enoxaparin sodium is more prolonged (see section 4.2).

Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, frequent monitoring must be exercised to detect any signs and symptoms of neurological impairment such as midline back pain, sensory and motor deficits (numbness or weakness in lower limbs), bowel and/or bladder dysfunction. Instruct patients to report immediately if they experience any of the above signs or symptoms. If signs or symptoms of spinal hematoma are suspected, initiate urgent diagnosis and treatment including consideration for spinal cord decompression even though such treatment may not prevent or reverse neurological sequelae.

### Skin necrosis/cutaneous vasculitis

Skin necrosis and cutaneous vasculitis have been reported with LMWHs and should lead to prompt treatment discontinuation.

### Percutaneous coronary revascularization procedures

To minimise the risk of bleeding following the vascular instrumentation during the treatment of unstable angina, NSTEMI and acute STEMI, adhere precisely to the intervals recommended between enoxaparin sodium injection doses. It is important to achieve haemostasis at the puncture site after PCI. In case a closure device is used, the sheath can be removed immediately. If a manual compression method is used, sheath should be removed 6 hours after the last IV/SC enoxaparin sodium injection. If the treatment with enoxaparin sodium is to be continued, the next scheduled dose should be given no sooner than 6 to 8 hours after sheath removal. The site of the procedure should be observed for signs of bleeding or hematoma formation.

### Acute infective endocarditis

Use of heparin is usually not recommended in patients with acute infective endocarditis due to the risk of cerebral haemorrhage. If such use is considered absolutely necessary, the decision must be made only after a careful individual benefit risk assessment.

### Mechanical prosthetic heart valves

The use of enoxaparin sodium has not been adequately studied for thromboprophylaxis in patients with mechanical prosthetic heart valves. Isolated cases of prosthetic heart valve thrombosis have been reported in patients with mechanical prosthetic heart valves who have received enoxaparin sodium for thromboprophylaxis. Confounding factors, including underlying disease and insufficient clinical data, limit the evaluation of these cases. Some of these cases were pregnant women in whom thrombosis led to maternal and foetal death.

### *Pregnant women with mechanical prosthetic heart valves*

The use of enoxaparin sodium for thromboprophylaxis in pregnant women with mechanical prosthetic heart valves has not been adequately studied. In a clinical study of pregnant women with mechanical prosthetic heart valves given enoxaparin sodium (100 IU/kg (1 mg/kg) twice daily) to reduce the risk of thromboembolism, 2 of 8 women developed clots resulting in blockage of the valve and leading to maternal and foetal death. There have been isolated post-marketing reports of valve thrombosis in pregnant women with mechanical prosthetic heart valves while receiving enoxaparin sodium for thromboprophylaxis. Pregnant women with mechanical prosthetic heart valves may be at higher risk for thromboembolism.

### Elderly

No increased bleeding tendency is observed in the elderly with the prophylactic dose ranges. Elderly patients (especially patients eighty years of age and older) may be at an increased risk for bleeding complications with the therapeutic dose ranges. Careful clinical monitoring is advised and dose reduction might be considered in patients older than 75 years treated for STEMI (see sections 4.2 and 5.2).

### Renal impairment

In patients with renal impairment, there is an increase in exposure of enoxaparin sodium which increases the risk of bleeding. In these patients, careful clinical monitoring is advised, and biological monitoring by anti-Xa activity measurement might be considered (see sections 4.2 and 5.2). Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance <15 mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

In patients with severe renal impairment (creatinine clearance 15-30 mL/min), since exposure of enoxaparin sodium is significantly increased, a dose adjustment is recommended for therapeutic and prophylactic dose ranges (see section 4.2).

No dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment.

#### Hepatic impairment

Enoxaparin sodium should be used with caution in patients with hepatic impairment due to an increased potential for bleeding. Dose adjustment based on monitoring of anti-Xa levels is unreliable in patients with liver cirrhosis and not recommended (see section 5.2).

#### Low weight

An increase in exposure of enoxaparin sodium with prophylactic doses (non-weight adjusted) has been observed in low-weight women (<45 kg) and low-weight men (<57 kg), which may lead to a higher risk of bleeding. Therefore, careful clinical monitoring is advised in these patients (see section 5.2).

#### Obese patients

Obese patients are at higher risk for thromboembolism. The safety and efficacy of prophylactic doses in obese patients (BMI >30 kg/m<sup>2</sup>) has not been fully determined and there is no consensus for dose adjustment. These patients should be observed carefully for signs and symptoms of thromboembolism.

#### Hyperkalaemia

Heparins can suppress adrenal secretion of aldosterone leading to hyperkalaemia (see section 4.8), particularly in patients such as those with diabetes mellitus, chronic renal failure, pre-existing metabolic acidosis, taking medicinal products known to increase potassium (see section 4.5). Plasma potassium should be monitored regularly especially in patients at risk.

#### Sodium content

This medicinal product contains less than 1 mmol sodium (23 mg) per dose, that is to say essentially 'sodium-free'.

#### Acute generalized exanthematous pustulosis

Acute generalized exanthematous pustulosis (AGEP) has been reported with frequency not known in association with enoxaparin treatment. At the time of prescription patients should be advised of the signs and symptoms and monitored closely for skin reactions. If signs and symptoms suggestive of these reactions appear, enoxaparin should be withdrawn immediately and an alternative treatment considered (as appropriate).

### **4.5 Interaction with other medicinal products and other forms of interaction**

#### Concomitant use not recommended

##### Medicinal products affecting haemostasis (see section 4.4)

It is recommended that some agents which affect haemostasis should be discontinued prior to enoxaparin sodium therapy unless strictly indicated. If the combination is indicated, enoxaparin sodium should be used with careful clinical and laboratory monitoring when appropriate. These agents include medicinal products such as:

- Systemic salicylates, acetylsalicylic acid at anti-inflammatory doses, and NSAIDs including ketorolac,

- Other thrombolytics (e.g. alteplase, reteplase, streptokinase, tenecteplase, urokinase) and anticoagulants (see section 4.2).

#### Concomitant use with caution

The following medicinal products may be administered with caution concomitantly with enoxaparin sodium:

- *Other medicinal products affecting haemostasis such as:*
  - Platelet aggregation inhibitors including acetylsalicylic acid used at antiaggregant dose (cardioprotection), clopidogrel, ticlopidine, and glycoprotein IIb/IIIa antagonists indicated in acute coronary syndrome due to the risk of bleeding,
  - Dextran 40,
  - Systemic glucocorticoids.
- *Medicinal products increasing potassium levels:*

Medicinal products that increase serum potassium levels may be administered concurrently with enoxaparin sodium under careful clinical and laboratory monitoring (see sections 4.4 and 4.8).

## **4.6 Fertility, pregnancy and lactation**

### Pregnancy

In humans, there is no evidence that enoxaparin crosses the placental barrier during the second and third trimester of pregnancy. There is no information available concerning the first trimester.

Animal studies have not shown any evidence of foetotoxicity or teratogenicity (see section 5.3). Animal data have shown that enoxaparin passage through the placenta is minimal.

Enoxaparin sodium should be used during pregnancy only if the physician has established a clear need.

Pregnant women receiving enoxaparin sodium should be carefully monitored for evidence of bleeding or excessive anticoagulation and should be warned of the haemorrhagic risk. Overall, the data suggest that there is no evidence for an increased risk of haemorrhage, thrombocytopenia or osteoporosis with respect to the risk observed in non-pregnant women, other than that observed in pregnant women with prosthetic heart valves (see section 4.4).

If an epidural anaesthesia is planned, it is recommended to withdraw enoxaparin sodium treatment before (see section 4.4).

### Breast-feeding

It is not known whether unchanged enoxaparin is excreted in human breast milk. In lactating rats, the passage of enoxaparin or its metabolites in milk is very low. The oral absorption of enoxaparin sodium is unlikely. Inhixa can be used during breastfeeding.

### Fertility

There are no clinical data for enoxaparin sodium in fertility. Animal studies did not show any effect on fertility (see section 5.3).

## **4.7 Effects on ability to drive and use machines**

Enoxaparin sodium has no or negligible influence on the ability to drive and use machines.

## **4.8 Undesirable effects**

### Summary of the safety profile

Enoxaparin sodium has been evaluated in more than 15,000 patients who received enoxaparin sodium in clinical trials. These included 1,776 for prophylaxis of DVT following orthopaedic or abdominal surgery in

patients at risk for thromboembolic complications, 1,169 for prophylaxis of DVT in acutely ill medical patients with severely restricted mobility, 559 for treatment of DVT with or without PE, 1,578 for treatment of unstable angina and non-Q-wave myocardial infarction and 10,176 for treatment of acute STEMI.

Enoxaparin sodium regimen administered during these clinical trials varies depending on indications. The enoxaparin sodium dose was 4,000 IU (40 mg) SC once daily for prophylaxis of DVT following surgery or in acutely ill medical patients with severely restricted mobility. In treatment of DVT with or without PE, patients receiving enoxaparin sodium were treated with either a 100 IU/kg (1 mg/kg) SC dose every 12 hours or a 150 IU/kg (1.5 mg/kg) SC dose once a day. In the clinical trials for treatment of unstable angina and non-Q-wave myocardial infarction, doses were 100 IU/kg (1 mg/kg) SC every 12 hours, and in the clinical study for treatment of acute STEMI enoxaparin sodium regimen was a 3,000 IU (30 mg) IV bolus followed by 100 IU/kg (1 mg/kg) SC every 12 hours.

In clinical trials, haemorrhages, thrombocytopenia and thrombocytosis were the most commonly reported reactions (see section 4.4 and 'Description of selected adverse reactions' below).

The safety profile of enoxaparin for extended treatment of DVT and PE in patients with active cancer is similar to its safety profile for the treatment of DVT and PE.

Acute generalized exanthematous pustulosis (AGEP) has been reported in association with enoxaparin treatment (see section 4.4).

#### Tabulated list of adverse reactions

Other adverse reactions observed in clinical trials and reported in post-marketing experience (\* indicates reactions from post-marketing experience) are detailed below.

Frequencies are defined as follows: very common ( $\geq 1/10$ ); common ( $\geq 1/100$  to  $< 1/10$ ); uncommon ( $\geq 1/1000$  to  $< 1/100$ ); rare ( $\geq 1/10,000$  to  $< 1/1,000$ ); and very rare ( $< 1/10,000$ ) or not known (cannot be estimated from available data). Within each system organ class, adverse reactions are presented in order of decreasing seriousness.

#### *Blood and the lymphatic system disorders*

Common: Haemorrhage, haemorrhagic anaemia\*, thrombocytopenia, thrombocytosis

Rare: Eosinophilia\*

Rare: Cases of immuno-allergic thrombocytopenia with thrombosis; in some of them thrombosis was complicated by organ infarction or limb ischaemia (see section 4.4).

#### *Immune system disorders*

Common: Allergic reaction

Rare: Anaphylactic/Anaphylactoid reactions including shock\*

#### *Nervous system disorders*

Common: Headache\*

#### *Vascular disorders*

Rare: Spinal haematoma\* (or neuraxial haematoma). These reactions have resulted in varying degrees of neurologic injuries including long-term or permanent paralysis (see section 4.4).

#### *Hepatobiliary disorders*

Very common: Hepatic enzyme increases (mainly transaminases  $> 3$  times the upper limit of normality)

Uncommon: Hepatocellular liver injury \*

Rare: Cholestatic liver injury\*

#### *Skin and subcutaneous tissue disorders*

Common: Urticaria, pruritus, erythema

Uncommon: Bullous dermatitis

Rare: Alopecia\*

Rare: Cutaneous vasculitis\*, skin necrosis\* usually occurring at the injection site (these phenomena have been usually preceded by purpura or erythematous plaques, infiltrated and painful).  
Injection site nodules\* (inflammatory nodules, which were not cystic enclosure of enoxaparin). They resolve after a few days and should not cause treatment discontinuation.  
Not known: Acute generalized exanthematous pustulosis (AGEP)

#### *Musculoskeletal and connective tissue disorders*

Rare: Osteoporosis\* following long term therapy (greater than 3 months)

#### *General disorders and administration site conditions*

Common: Injection site haematoma, injection site pain, other injection site reaction (such as oedema, haemorrhage, hypersensitivity, inflammation, mass, pain, or reaction)

Uncommon: Local irritation, skin necrosis at injection site

#### *Investigations*

Rare: Hyperkalaemia\* (see sections 4.4 and 4.5).

#### Description of selected adverse reactions

##### *Haemorrhages*

These included major haemorrhages, reported at most in 4.2 % of the patients (surgical patients). Some of these cases have been fatal. In surgical patients, haemorrhage complications were considered major: (1) if the haemorrhage caused a significant clinical event, or (2) if accompanied by haemoglobin decrease  $\geq 2$  g/dL or transfusion of 2 or more units of blood products. Retroperitoneal and intracranial haemorrhages were always considered major.

As with other anticoagulants, haemorrhage may occur in the presence of associated risk factors such as: organic lesions liable to bleed, invasive procedures or the concomitant use of medicinal products affecting haemostasis (see sections 4.4 and 4.5).

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
<i>Blood and lymphatic system disorders</i>	<i>Very common:</i> <b>Haemorrhage<sup>a</sup></b>  <i>Rare:</i> <b>Retroperitoneal haemorrhage</b>	<i>Common:</i> <b>Haemorrhage<sup>a</sup></b>	<i>Very common:</i> <b>Haemorrhage<sup>a</sup></b>  <i>Uncommon:</i> <b>Intracranial haemorrhage, Retroperitoneal haemorrhage</b>	<i>Common<sup>b</sup>:</i> <b>Haemorrhage</b>	<i>Common:</i> <b>Haemorrhage<sup>a</sup></b> <i>Rare:</i> <b>Retroperitoneal haemorrhage</b>	<i>Common:</i> <b>Haemorrhage<sup>a</sup></b>  <i>Uncommon:</i> <b>Intracranial haemorrhage, Retroperitoneal haemorrhage</b>

<sup>a</sup>: such as haematoma, ecchymosis other than at injection site, wound haematoma, haematuria, epistaxis and gastro-intestinal haemorrhage.

<sup>b</sup>: frequency based on a retrospective study on a registry including 3526 patients (see section 5.1)

*Thrombocytopenia and thrombocytosis (see section 4.4 monitoring of platelet counts)*

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
<i>Blood and lymphatic system disorders</i>	<i>Very common:</i> <b>Thrombocytosis<sup>‡</sup></b>  <i>Common:</i> <b>Thrombocytopenia</b>	<i>Uncommon:</i> <b>Thrombocytopenia</b>	<i>Very common:</i> <b>Thrombocytosis<sup>‡</sup></b>  <i>Common:</i> <b>Thrombocytopenia</b>	<i>Unknown:</i> <b>Thrombocytopenia</b>	<i>Uncommon:</i> <b>Thrombocytopenia</b>	<i>Common:</i> <b>Thrombocytosis<sup>‡</sup></b> <b>Thrombocytopenia</b> <i>Very rare:</i> <b>Immuno-allergic thrombocytopenia</b>

<sup>‡</sup>: Platelet increased >400 G/L

### Paediatric population

The safety and efficacy of enoxaparin sodium in children have not been established (see section 4.2).

### Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the national reporting system listed in Appendix V.

## 4.9 Overdose

### Signs and symptoms

Accidental overdose with enoxaparin sodium after IV, extracorporeal or SC administration may lead to haemorrhagic complications. Following oral administration of even large doses, it is unlikely that enoxaparin sodium will be absorbed.

### Management

The anticoagulant effects can be largely neutralised by the slow IV injection of protamine. The dose of protamine depends on the dose of enoxaparin sodium injected; 1 mg protamine neutralises the anticoagulant effect of 100 IU (1 mg) of enoxaparin sodium, if enoxaparin sodium was administered in the previous 8 hours. An infusion of 0.5 mg protamine per 100 IU (1 mg) of enoxaparin sodium may be administered if enoxaparin sodium was administered greater than 8 hours previous to the protamine administration, or if it has been determined that a second dose of protamine is required. After 12 hours of the enoxaparin sodium injection, protamine administration may not be required. However, even with high doses of protamine, the anti-Xa activity of enoxaparin sodium is never completely neutralised (maximum about 60%) (see the prescribing information for protamine salts).

## 5. PHARMACOLOGICAL PROPERTIES

### 5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Antithrombotic agents, heparin group. ATC code: B01A B05

Inhixa is a biosimilar medicinal product. Detailed information is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.

### Pharmacodynamic effects

Enoxaparin is a LMWH with a mean molecular weight of approximately 4,500 daltons, in which the antithrombotic and anticoagulant activities of standard heparin have been dissociated. The active substance is the sodium salt.

In the *in vitro* purified system, enoxaparin sodium has a high anti-Xa activity (approximately 100 IU/mg) and low anti-IIa or anti thrombin activity (approximately 28 IU/mg), with a ratio of 3.6. These anticoagulant activities are mediated through anti-thrombin III (ATIII) resulting in anti-thrombotic activities in humans.

Beyond its anti-Xa/IIa activity, further antithrombotic and anti-inflammatory properties of enoxaparin have been identified in healthy subjects and patients as well as in non-clinical models. These include ATIII-dependent inhibition of other coagulation factors like factor VIIa, induction of endogenous Tissue Factor Pathway Inhibitor (TFPI) release as well as a reduced release of von Willebrand factor (vWF) from the vascular endothelium into the blood circulation. These factors are known to contribute to the overall antithrombotic effect of enoxaparin sodium.

When used as prophylactic treatment, enoxaparin sodium does not significantly affect the aPTT. When used as curative treatment, aPTT can be prolonged by 1.5-2.2 times the control time at peak activity.

### Clinical efficacy and safety

#### Prevention of venous thromboembolic disease associated with surgery

##### *Extended prophylaxis of VTE following orthopaedic surgery*

In a double blind study of extended prophylaxis for patients undergoing hip replacement surgery, 179 patients with no venous thromboembolic disease initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) SC, were randomised to a post-discharge regimen of either enoxaparin sodium 4,000 IU (40 mg) (n=90) once a day SC or to placebo (n=89) for 3 weeks. The incidence of DVT during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo, no PE was reported. No major bleeding occurred.

The efficacy data are provided in the table below.

	<b>Enoxaparin sodium 4,000 IU (40 mg) once a day SC n (%)</b>	<b>Placebo once a day SC n (%)</b>
<b>All treated extended prophylaxis patients</b>	90 (100)	89 (100)
<b>Total VTE</b>	6 (6.6)	18 (20.2)
Total DVT (%)	6 (6.6)*	18 (20.2)
Proximal DVT (%)	5 (5.6) <sup>#</sup>	7 (8.8)
*p value versus placebo =0.008		
<sup>#</sup> p value versus placebo =0.537		

In a second double-blind study, 262 patients without VTE disease and undergoing hip replacement surgery initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) SC were randomised to a post-discharge regimen of either enoxaparin sodium 4,000 IU (40 mg) (n=131) once a day SC or to placebo (n=131) for 3 weeks. Similar to the first study the incidence of VTE during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo for both total VTE (enoxaparin sodium 21 [16%] versus placebo 45 [34.4%]; p=0.001) and proximal DVT (enoxaparin sodium 8 [6.1%] versus placebo 28 [21.4%]; p=<0.001). No difference in major bleeding was found between the enoxaparin sodium and the placebo group.



### *Extended prophylaxis of DVT following cancer surgery*

A double-blind, multicenter trial, compared a four-week and a one-week regimen of enoxaparin sodium prophylaxis in terms of safety and efficacy in 332 patients undergoing elective surgery for abdominal or pelvic cancer. Patients received enoxaparin sodium (4,000 IU (40 mg) SC) daily for 6 to 10 days and were then randomly assigned to receive either enoxaparin sodium or placebo for another 21 days. Bilateral venography was performed between days 25 and 31, or sooner if symptoms of venous thromboembolism occurred. The patients were followed for three months. Enoxaparin sodium prophylaxis for four weeks after surgery for abdominal or pelvic cancer significantly reduced the incidence of venographically demonstrated thrombosis, as compared with enoxaparin sodium prophylaxis for one week. The rates of venous thromboembolism at the end of the double-blind phase were 12.0 % (n=20) in the placebo group and 4.8% (n=8) in the enoxaparin sodium group; p=0.02. This difference persisted at three months [13.8% vs. 5.5% (n=23 vs 9), p=0.01]. There were no differences in the rates of bleeding or other complications during the double-blind or follow-up periods.

### *Prophylaxis of venous thromboembolic disease in medical patients with an acute illness expected to induce limitation of mobility*

In a double blind multicenter, parallel group study, enoxaparin sodium 2,000 IU (20 mg) or 4,000 IU (40 mg) once a day SC was compared to placebo in the prophylaxis of DVT in medical patients with severely restricted mobility during acute illness (defined as walking distance of <10 meters for ≤3 days). This study included patients with heart failure (NYHA Class III or IV); acute respiratory failure or complicated chronic respiratory insufficiency, and acute infection or acute rheumatic; if associated with at least one VTE risk factor (age ≥75 years, cancer, previous VTE, obesity, varicose veins, hormone therapy, and chronic heart or respiratory failure).

A total of 1,102 patients were enrolled in the study, and 1,073 patients were treated. Treatment continued for 6 to 14 days (median duration 7 days). When given at a dose of 4,000 IU (40 mg) once a day SC, enoxaparin sodium significantly reduced the incidence of VTE as compared to placebo. The efficacy data are provided in the table below.

	<b>Enoxaparin sodium 2,000 IU (20 mg) once a day SC n (%)</b>	<b>Enoxaparin sodium 4,000 IU (40 mg) once a day SC n (%)</b>	<b>Placebo n (%)</b>
<b>All treated medical patients during acute illness</b>	287 (100)	291(100)	288 (100)
<b>Total VTE (%)</b>	43 (15.0)	16 (5.5)*	43 (14.9)
Total DVT (%)	43 (15.0)	16 (5.5)	40 (13.9)
Proximal DVT (%)	13 (4.5)	5 (1.7)	14 (4.9)
VTE = Venous thromboembolic events which included DVT, PE, and death considered to be thromboembolic in origin * p value versus placebo =0.0002			

At approximately 3 months following enrolment, the incidence of VTE remained significantly lower in the enoxaparin sodium 4,000 IU (40 mg) treatment group versus the placebo treatment group.

The occurrence of total and major bleeding were respectively 8.6% and 1.1% in the placebo group, 11.7% and 0.3% in the enoxaparin sodium 2,000 IU (20 mg) group and 12.6% and 1.7% in the enoxaparin sodium 4,000 IU (40 mg) group.

### *Treatment of DVT with or without PE*

In a multicenter, parallel group study, 900 patients with acute lower extremity DVT with or without PE were randomised to an inpatient (hospital) treatment of either (i) enoxaparin sodium 150 IU/kg (1.5 mg/kg) once

a day SC, (ii) enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours SC, or (iii) heparin IV bolus (5,000 IU) followed by a continuous infusion (administered to achieve an aPTT of 55 to 85 seconds). A total of 900 patients were randomised in the study and all patients were treated. All patients also received warfarin sodium (dose adjusted according to prothrombin time to achieve an INR of 2.0 to 3.0), commencing within 72 hours of initiation of enoxaparin sodium or standard heparin therapy, and continuing for 90 days. Enoxaparin sodium or standard heparin therapy was administered for a minimum of 5 days and until the targeted warfarin sodium INR was achieved. Both enoxaparin sodium regimens were equivalent to standard heparin therapy in reducing the risk of recurrent venous thromboembolism (DVT and/or PE). The efficacy data are provided in the table below.

	<b>Enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day SC n (%)</b>	<b>Enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day SC n (%)</b>	<b>Heparin aPTT adjusted IV therapy n (%)</b>
<b>All treated DVT patients with or without PE</b>	298 (100)	312 (100)	290 (100)
<b>Total VTE (%)</b>	13 (4.4)*	9 (2.9)*	12 (4.1)
DVT only (%)	11 (3.7)	7 (2.2)	8 (2.8)
Proximal DVT (%)	9 (3.0)	6 (1.9)	7 (2.4)
PE (%)	2 (0.7)	2 (0.6)	4 (1.4)
VTE = venous thromboembolic event (DVT and/or PE) *The 95% confidence intervals for the treatment differences for total VTE were: - enoxaparin sodium once a day versus heparin (-3.0 to 3.5) - enoxaparin sodium every 12 hours versus heparin (-4.2 to 1.7).			

Major bleeding were respectively 1.7% in the enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day group, 1.3% in the enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day group and 2.1% in the heparin group.

*Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer*

In clinical trials with limited number of patients, reported rates of recurrent VTE in patients treated with enoxaparin given once or twice daily for 3 to 6 months appear comparable to those with warfarin.

Effectiveness in real-life setting was assessed in a cohort of 4,451 patients with symptomatic VTE and active cancer from the multinational registry RIETE of patients with VTE and other thrombotic conditions. 3,526 patients received SC enoxaparin up to 6 months and 925 patients received tinzaparin or dalteparin SC. Among the 3,526 patients receiving enoxaparin treatment, 891 patients were treated with 1.5 mg/kg once daily as initial therapy and extended treatment up to 6 months (once daily alone), 1,854 patients received initial 1.0 mg/kg twice daily regimen and extended treatment up to 6 months (twice daily alone), and 687 patients received 1.0 mg/kg twice daily as initial treatment followed by 1.5 mg/kg once daily (twice daily-once daily) as the extended treatment up to 6 months. The mean and median duration of treatment until regimen change was 17 days and 8 days, respectively. There was no significant difference for VTE recurrence rate between the two treatments groups (see table), with enoxaparin meeting the prespecified criterion for non inferiority of 1.5 (HR adjusted by relevant covariates 0.817, 95% CI: 0.499-1.336). There was no statistically significant difference between the two treatment groups with regards to the relative risks of major (fatal or non-fatal) bleeding and all-cause death (see table).

**Table. Efficacy and safety outcomes in the RIETECAT study**

Outcome	Enoxaparin n=3526	Other LMWH n=925	Adjusted hazard ratios enoxaparin / other LMWH [95% confidence interval]
VTE recurrence	70 (2.0%)	23 (2.5%)	0.817, [ 0.499-1.336]
Major bleeding	111 (3.1%)	18 (1.9%)	1.522, [ 0.899-2.577]
Non-major bleeding	87 (2.5%)	24 (2.6%)	0.881, [0.550-1.410]
Overall death	666 (18.9%)	157 (17.0%)	0.974, [ 0.813-1.165]

An overview of outcomes per treatment regimen used in the RIETECAT study among 6-month completers is provided below:

**Table. 6-month outcomes in patients completing 6-month treatment, by different regimens**

Outcome N (%) (95% CI)	Enoxapa rin all regimens	Enoxaparin all regimens					EU- authorized LMWHs
		Enoxapa rin OD	Enoxapa rin BID	Enoxapa rin BID to OD	Enoxapar in OD to BID	Enoxapar in More than one switch	
	N=1432	N=444	N=529	N=406	N=14	N=39	N=428
Recurrence of VTE	70 (4.9%) (3.8%- 6.0%)	33 (7.4%) (5.0%- 9.9%)	22 (4.2%) (2.5%- 5.9%)	10 (2.5%) (0.9%- 4.0%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	23 (5.4%) (3.2%- 7.5%)
Major bleeding (fatal and non-fatal)	111 (7.8%) (6.4%- 9.1%)	31 (7.0%) (4.6%- 9.4%)	52 (9.8%) (7.3%- 12.4%)	21 (5.2%) (3.0%- 7.3%)	1 (7.1%) (0%- 22.6%)	6 (15.4%) (3.5%- 27.2%)	18 (4.2%) (2.3%- 6.1%)
Non-major bleedings of clinical significance	87 (6.1%) (4.8%- 7.3%)	26 (5.9%) (3.7%- 8.0%)	33 (6.2%) (4.2%- 8.3%)	23 (5.7%) (3.4%- 7.9%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	24 (5.6%) (3.4%- 7.8%)
All-cause death	666 (46.5%) (43.9%- 49.1%)	175 (39.4%) (34.9%- 44.0%)	323 (61.1%) (56.9%- 65.2%)	146 (36.0%) (31.3%- 40.6%)	6 (42.9%) (13.2%- 72.5%)	16 (41.0%) (24.9%- 57.2%)	157 (36.7%) (32.1%- 41.3%)
Fatal PE or fatal bleeding related death	48 (3.4%) (2.4%- 4.3%)	7 (1.6%) (0.4%- 2.7%)	35 (6.6%) (4.5%- 8.7%)	5 (1.2%) (0.2%- 2.3%)	0 (0%) -	1 (2.6%) (0%- 7.8%)	11 (2.6%) (1.1%- 4.1%)
*All data with 95% CI							

#### Treatment of unstable angina and non ST elevation myocardial infarction

In a large multicenter study, 3,171 patients enrolled at the acute phase of unstable angina or non-Q-wave myocardial infarction were randomised to receive in association with acetylsalicylic acid (100 to 325 mg once daily), either SC enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours or IV unfractionated heparin adjusted based on aPTT. Patients had to be treated in hospital for a minimum of 2 days and a maximum of 8 days, until clinical stabilization, revascularization procedures or hospital discharge. The patients had to be followed up to 30 days. In comparison with heparin, enoxaparin sodium significantly reduced the combined incidence of angina pectoris, myocardial infarction and death, with a decrease of 19.8 to 16.6% (relative risk reduction of 16.2%) on day 14. This reduction in the combined incidence was maintained after 30 days (from 23.3 to 19.8%; relative risk reduction of 15%).

There were no significant differences in major haemorrhages, although a haemorrhage at the site of the SC injection was more frequent.

#### Treatment of acute ST-segment elevation myocardial infarction

In a large multicenter study, 20,479 patients with STEMI eligible to receive fibrinolytic therapy were randomised to receive either enoxaparin sodium in a single 3,000 IU (30 mg) IV bolus plus a 100 IU/kg (1 mg/kg) SC dose followed by an SC injection of 100 IU/kg (1 mg/kg) every 12 hours or IV unfractionated heparin adjusted based on aPTT for 48 hours. All patients were also treated with acetylsalicylic acid for a minimum of 30 days. The enoxaparin sodium dosing strategy was adjusted for severe renally impaired patients and for the elderly of at least 75 years of age. The SC injections of enoxaparin sodium were given until hospital discharge or for a maximum of eight days (whichever came first).

4,716 patients underwent percutaneous coronary intervention receiving antithrombotic support with blinded investigational medicinal product. Therefore, for patients on enoxaparin sodium, the PCI was to be performed on enoxaparin sodium (no switch) using the regimen established in previous studies i.e. no additional dosing, if last SC administration given less than 8 hours before balloon inflation, IV bolus of 30 IU/kg (0.3 mg/kg) enoxaparin sodium, if the last SC administration given more than 8 hours before balloon inflation.

Enoxaparin sodium compared to unfractionated heparin significantly decreased the incidence of the primary end point, a composite of death from any cause or myocardial re-infarction in the first 30 days after randomization [9.9 percent in the enoxaparin sodium group, as compared with 12.0 percent in the unfractionated heparin group] with a 17 percent relative risk reduction ( $p < 0.001$ ).

The treatment benefits of enoxaparin sodium, evident for a number of efficacy outcomes, emerged at 48 hours, at which time there was a 35 percent reduction in the relative risk of myocardial re-infarction, as compared with treatment with unfractionated heparin ( $p < 0.001$ ).

The beneficial effect of enoxaparin sodium on the primary end point was consistent across key subgroups including age, gender, infarct location, history of diabetes, history of prior myocardial infarction, type of fibrinolytic administered, and time to treatment with the investigational medicinal product.

There was a significant treatment benefit of enoxaparin sodium, as compared with unfractionated heparin, in patients who underwent percutaneous coronary intervention within 30 days after randomization (23 percent reduction in relative risk) or who were treated medically (15 percent reduction in relative risk,  $p = 0.27$  for interaction).

The rate of the 30 day composite endpoint of death, myocardial re-infarction or intracranial haemorrhage (a measure of net clinical benefit) was significantly lower ( $p < 0.0001$ ) in the enoxaparin sodium group (10.1%) as compared to the heparin group (12.2%), representing a 17% relative risk reduction in favour of treatment with enoxaparin sodium.

The incidence of major bleeding at 30 days was significantly higher ( $p < 0.0001$ ) in the enoxaparin sodium group (2.1%) versus the heparin group (1.4%). There was a higher incidence of gastrointestinal bleeding in the enoxaparin sodium group (0.5%) versus the heparin group (0.1%), while the incidence of intracranial haemorrhage was similar in both groups (0.8% with enoxaparin sodium versus 0.7% with heparin).

The beneficial effect of enoxaparin sodium on the primary end point observed during the first 30 days was maintained over a 12 month follow-up period.

#### Hepatic impairment

Based on literature data the use of enoxaparin sodium 4,000 IU (40 mg) in cirrhotic patients (Child-Pugh class B-C) appears to be safe and effective in preventing portal vein thrombosis. It should be noted that the literature studies may have limitations. Caution should be used in patients with hepatic impairment as these patients have an increased potential for bleeding (see section 4.4) and no formal dose finding studies have been performed in cirrhotic patients (Child Pugh class A, B nor C).

## **5.2 Pharmacokinetic properties**

### General characteristics

The pharmacokinetic parameters of enoxaparin sodium have been studied primarily in terms of the time course of plasma anti-Xa activity and also by anti-IIa activity, at the recommended dose ranges after single

and repeated SC administration and after single IV administration. The quantitative determination of anti-Xa and anti-IIa pharmacokinetic activities was conducted by validated amidolytic methods.

### Absorption

The absolute bioavailability of enoxaparin sodium after SC injection, based on anti-Xa activity, is close to 100%.

Different doses and formulations and dosing regimens can be used.

The mean maximum plasma anti-Xa activity level is observed 3 to 5 hours after SC injection and achieves approximately 0.2, 0.4, 1.0 and 1.3 anti-Xa IU/mL following single SC administration of 2,000 IU, 4,000 IU, 100 IU/kg and 150 IU/kg (20 mg, 40 mg, 1 mg/kg and 1.5 mg/kg) doses, respectively.

A 3,000 IU (30 mg) IV bolus immediately followed by a 100 IU/kg (1 mg/kg) SC every 12 hours provided initial maximum anti-Xa activity level of 1.16 IU/mL (n=16) and average exposure corresponding to 88% of steady-state levels. Steady-state is achieved on the second day of treatment.

After repeated SC administration of 4,000 IU (40 mg) once daily and 150 IU/kg (1.5 mg/kg) once daily regimens in healthy volunteers, the steady-state is reached on day 2 with an average exposure ratio about 15% higher than after a single dose. After repeated SC administration of the 100 IU/kg (1 mg/kg) twice daily regimen, the steady-state is reached from day 3 to 4 with mean exposure about 65% higher than after a single dose and mean maximum and trough anti-Xa activity levels of about 1.2 and 0.52 IU/mL, respectively.

Injection volume and dose concentration over the range 100-200 mg/mL does not affect pharmacokinetic parameters in healthy volunteers.

Enoxaparin sodium pharmacokinetics appears to be linear over the recommended dose ranges.

Intra-patient and inter-patient variability is low. Following repeated SC administration no accumulation takes place.

Plasma anti-IIa activity after SC administration is approximately ten-fold lower than anti-Xa activity. The mean maximum anti-IIa activity level is observed approximately 3 to 4 hours following SC injection and reaches 0.13 IU/mL and 0.19 IU/mL following repeated administration of 100 IU/kg (1 mg/kg) twice daily and 150 IU/kg (1.5 mg/kg) once daily, respectively.

### Distribution

The volume of distribution of enoxaparin sodium anti-Xa activity is about 4.3 litres and is close to the blood volume.

### Biotransformation

Enoxaparin sodium is primarily metabolised in the liver by desulfation and/or depolymerization to lower molecular weight species with much reduced biological potency.

### Elimination

Enoxaparin sodium is a low clearance substance with a mean anti-Xa plasma clearance of 0.74 L/h after a 150 IU/kg (1.5 mg/kg) 6-hour IV infusion.

Elimination appears monophasic with a half-life of about 5 hours after a single SC dose to about 7 hours after repeated dosing.

Renal clearance of active fragments represents about 10% of the administered dose and total renal excretion of active and non-active fragments 40% of the dose.

## Special populations

### *Elderly*

Based on the results of a population pharmacokinetic analysis, the enoxaparin sodium kinetic profile is not different in elderly subjects compared to younger subjects when renal function is normal. However, since renal function is known to decline with age, elderly patients may show reduced elimination of enoxaparin sodium (see sections 4.2 and 4.4).

### *Hepatic impairment*

In a study conducted in patients with advanced cirrhosis treated with enoxaparin sodium 4,000 IU (40 mg) once daily, a decrease in maximum anti-Xa activity was associated with an increase in the severity of hepatic impairment (assessed by Child-Pugh categories). This decrease was mainly attributed to a decrease in ATIII level secondary to a reduced synthesis of ATIII in patients with hepatic impairment.

### *Renal impairment*

A linear relationship between anti-Xa plasma clearance and creatinine clearance at steady-state has been observed, which indicates decreased clearance of enoxaparin sodium in patients with reduced renal function. Anti-Xa exposure represented by AUC, at steady-state, is marginally increased in mild (creatinine clearance 50-80 mL/min) and moderate (creatinine clearance 30-50 mL/min) renal impairment after repeated SC 4,000 IU (40 mg) once daily doses. In patients with severe renal impairment (creatinine clearance <30 mL/min), the AUC at steady state is significantly increased on average by 65% after repeated SC 4,000 IU (40 mg) once daily doses (see sections 4.2 and 4.4).

### *Haemodialysis*

Enoxaparin sodium pharmacokinetics appeared similar than control population, after a single 25 IU, 50 IU or 100 IU/kg (0.25, 0.50 or 1.0 mg/kg) IV dose however, AUC was two-fold higher than control.

### *Weight*

After repeated SC 150 IU/kg (1.5 mg/kg) once daily dosing, mean AUC of anti-Xa activity is marginally higher at steady state in obese healthy volunteers (BMI 30-48 kg/m<sup>2</sup>) compared to non-obese control subjects, while maximum plasma anti-Xa activity level is not increased. There is a lower weight-adjusted clearance in obese subjects with SC dosing.

When non-weight adjusted dosing was administered, it was found after a single-SC 4,000 IU (40 mg) dose, that anti-Xa exposure is 52% higher in low-weight women (<45 kg) and 27% higher in low-weight men (<57 kg) when compared to normal weight control subjects (see section 4.4).

## Pharmacokinetic interactions

No pharmacokinetic interactions were observed between enoxaparin sodium and thrombolytics when administered concomitantly.

## **5.3 Preclinical safety data**

Besides the anticoagulant effects of enoxaparin sodium, there was no evidence of adverse reactions at 15 mg/kg/day in the 13-week SC toxicity studies both in rats and dogs and at 10 mg/kg/day in the 26-week SC and IV toxicity studies both in rats, and monkeys.

Enoxaparin sodium has shown no mutagenic activity based on *in vitro* tests, including the Ames test, mouse lymphoma cell forward mutation test, and *no clastogenic* activity based on an *in vitro* human lymphocyte chromosomal aberration test, and the *in vivo* rat bone marrow chromosomal aberration test.

Studies conducted in pregnant rats and rabbits at SC doses of enoxaparin sodium up to 30 mg/kg/day did not reveal any evidence of teratogenic effects or foetotoxicity. Enoxaparin sodium was found to have no effect on fertility or reproductive performance of male and female rats at SC doses up to 20 mg/kg/day.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Water for injections

### **6.2 Incompatibilities**

#### SC injection

Do not mix with other medicinal products.

#### IV (bolus) injection (for acute STEMI indication only)

Enoxaparin sodium may be safely administered with sodium chloride 9mg/ml (0.9%) solution for injection or 5% glucose in water for injections (see section 4.2).

### **6.3 Shelf life**

#### Pre-filled syringe

3 years

Diluted medicinal product with sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections.

8 hours

### **6.4 Special precautions for storage**

Store below 25 °C. Do not freeze.

### **6.5 Nature and contents of container**

0.2 mL of solution in:

- a clear, colourless type I neutral glass syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a blue polypropylene plunger rod. The syringe can be additionally equipped with needle guard or manual needle guard; or
- a clear, colourless type I neutral glass syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a white polycarbonate plunger rod equipped with UltraSafe Passive needle guard.

Packs of:

- 1, 2, 6, 10, 20 and 50 pre-filled syringe(s)
- 2, 6, 10, 20, 50 and 90 pre-filled syringes with needle guard
- 6, 10 and 20 pre-filled syringes with manual needle guard
- 2 and 6 pre-filled syringes with UltraSafe Passive needle guard

Not all pack sizes may be marketed.

### **6.6 Special precautions for disposal and other handling**

## **INSTRUCTIONS FOR USE: PRE-FILLED SYRINGE**

## How to give yourself an injection of Inhixa with a pre-filled syringe without needle guard

If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

### ***Before injecting yourself with Inhixa***

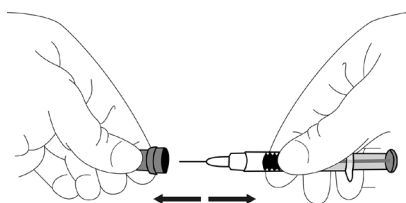
- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.



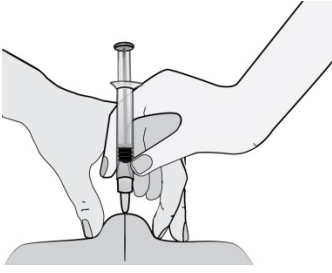
**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin

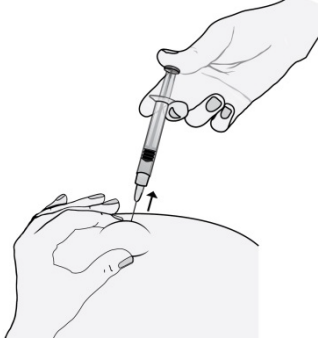
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold





- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection
- 9) Remove the needle by pulling it straight out.



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

#### How to give yourself an injection of Inhixa with a pre-filled syringe with needle guard

Your pre-filled syringe has a needle guard attached to it in order to protect you from needle stick injury. If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately. Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

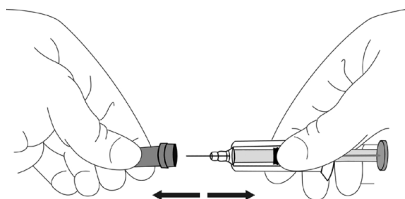
#### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.

- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

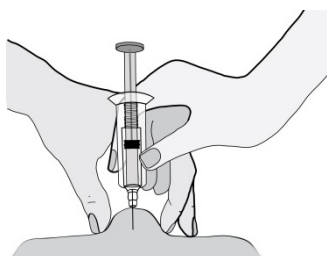


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin

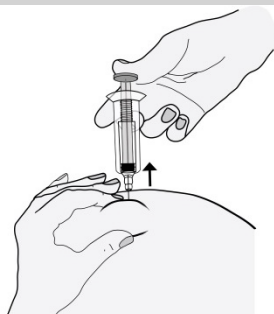
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold



- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection

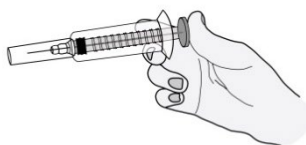
- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Push hard the plunger. The needle guard, which is in the form of a plastic cylinder, will be activated automatically and it will completely cover the needle.

"CLICK"



- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

#### How to give yourself an injection of Inhixa with a pre-filled syringe with UltraSafe Passive needle guard

Your pre-filled syringe has UltraSafe Passive needle guard attached to it in order to protect you from needle stick injury.

If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

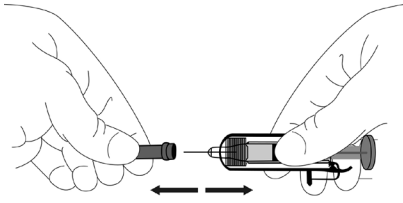
- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your stomach, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

#### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

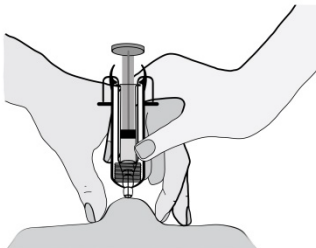


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin

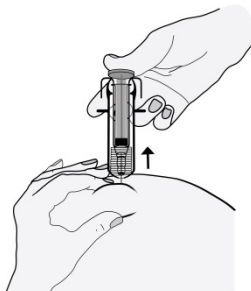
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold



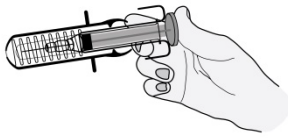
- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection

- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Let go of the plunger and allow the syringe to move up until the entire needle is guarded and locks into place.



- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

#### How to give yourself an injection of Inhixa with a pre-filled syringe with manually activated needle guard

Your pre-filled syringe has a manually activated needle guard attached to it in order to protect you from needle stick injury.

If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

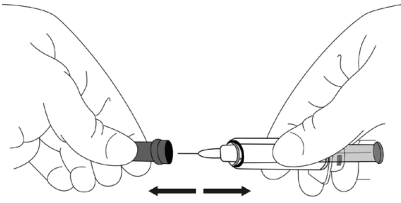
- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

#### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

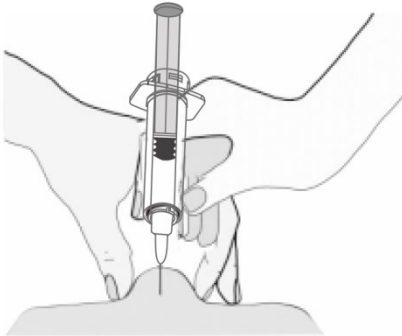


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin.

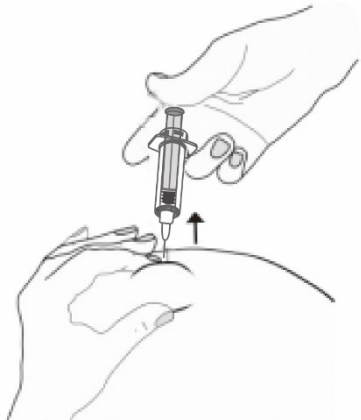
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold.



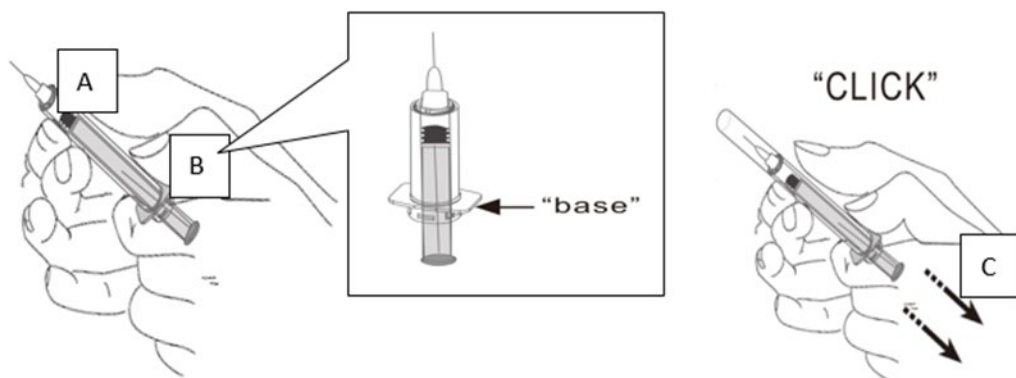
- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection.

- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Firmly hold the syringe tube with one hand (A). With the other hand hold the base, “wings” of the syringe (B), and pull the base until you hear a clicking sound (C). Now the used needle is completely protected.



- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

## 7. MARKETING AUTHORISATION HOLDER

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

## 8. MARKETING AUTHORISATION NUMBER(S)

EU/1/16/1132/001  
EU/1/16/1132/002  
EU/1/16/1132/011  
EU/1/16/1132/012  
EU/1/16/1132/021  
EU/1/16/1132/023  
EU/1/16/1132/033  
EU/1/16/1132/034  
EU/1/16/1132/051  
EU/1/16/1132/053  
EU/1/16/1132/054  
EU/1/16/1132/064  
EU/1/16/1132/065  
EU/1/16/1132/085  
EU/1/16/1132/090  
EU/1/16/1132/095  
EU/1/16/1132/117

## 9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION

Date of first authorisation: 15/09/2016  
Date of latest renewal: 26/08/2021

## **10. DATE OF REVISION OF THE TEXT**

Detailed information on this medicinal product is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.



## 1. NAME OF THE MEDICINAL PRODUCT

Inhixa 4,000 IU (40 mg)/0.4 mL solution for injection in pre-filled syringe

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

10,000 IU/mL (100 mg/mL) solution for injection

Each pre-filled syringe contains enoxaparin sodium 4,000 IU anti-Xa activity (equivalent to 40 mg) in 0.4 mL water for injections.

For the full list of excipients, see section 6.1.

Enoxaparin sodium is a biological substance obtained by alkaline depolymerisation of heparin benzyl ester derived from porcine intestinal mucosa.

## 3. PHARMACEUTICAL FORM

Solution for injection in pre-filled syringe (injection).

Clear, colourless to pale yellow solution.

## 4. CLINICAL PARTICULARS

### 4.1 Therapeutic indications

Inhixa is indicated in adults for:

Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients, in particular those undergoing orthopaedic or general surgery including cancer surgery.

Prophylaxis of venous thromboembolic disease in medical patients with an acute illness (such as acute heart failure, respiratory insufficiency, severe infections or rheumatic diseases) and reduced mobility at increased risk of venous thromboembolism.

Treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE), excluding PE likely to require thrombolytic therapy or surgery.

Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer.

Prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Acute coronary syndrome:

- Treatment of unstable angina and Non ST-segment elevation myocardial infarction (NSTEMI), in combination with oral acetylsalicylic acid.
- Treatment of acute ST-segment elevation myocardial infarction (STEMI) including patients to be managed medically or with subsequent percutaneous coronary intervention (PCI).

### 4.2 Posology and method of administration

#### Posology

#### *Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients*

Individual thromboembolic risk for patients can be estimated using validated risk stratification model.

In patients at moderate risk of thromboembolism, the recommended dose of enoxaparin sodium is 2,000 IU (20 mg) once daily by subcutaneous (SC) injection. Preoperative initiation (2 hours before surgery) of enoxaparin sodium 2,000 IU (20 mg) was proven effective and safe in moderate risk surgery.

In moderate risk patients, enoxaparin sodium treatment should be maintained for a minimal period of 7-10 days whatever the recovery status (e.g. mobility). Prophylaxis should be continued until the patient no longer has significantly reduced mobility.

In patients at high risk of thromboembolism, the recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily given by SC injection preferably started 12 hours before surgery. If there is a need for earlier than 12 hours enoxaparin sodium preoperative prophylactic initiation (e.g. high risk patient waiting for a deferred orthopaedic surgery), the last injection should be administered no later than 12 hours prior to surgery and resumed 12 hours after surgery.

- For patients who undergo major orthopaedic surgery an extended thromboprophylaxis up to 5 weeks is recommended.
- For patients with a high venous thromboembolism (VTE) risk who undergo abdominal or pelvic surgery for cancer an extended thromboprophylaxis up to 4 weeks is recommended.

#### Prophylaxis of venous thromboembolism in medical patients

The recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily by SC injection.

Treatment with enoxaparin sodium is prescribed for at least 6 to 14 days whatever the recovery status (e.g. mobility). The benefit is not established for a treatment longer than 14 days.

#### Treatment of DVT and PE

Enoxaparin sodium can be administered SC either as a once daily injection of 150 IU/kg (1.5 mg/kg) or as twice daily injections of 100 IU/kg (1 mg/kg).

The regimen should be selected by the physician based on an individual assessment including evaluation of the thromboembolic risk and of the risk of bleeding. The dose regimen of 150 IU/kg (1.5 mg/kg) administered once daily should be used in uncomplicated patients with low risk of VTE recurrence. The dose regimen of 100 IU/kg (1 mg/kg) administered twice daily should be used in all other patients such as those with obesity, with symptomatic PE, cancer, recurrent VTE or proximal (*vena iliaca*) thrombosis.

Enoxaparin sodium treatment is prescribed for an average period of 10 days. Oral anticoagulant therapy should be initiated when appropriate (see “Switch between enoxaparin sodium and oral anticoagulants” at the end of section 4.2).

In the extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer, physicians should carefully assess the individual thromboembolic and bleeding risks of the patient.

The recommended dose is 100 IU/kg (1 mg/kg) administered twice daily by SC injections for 5 to 10 days, followed by a 150 IU/kg (1.5 mg/kg) once daily SC injection up to 6 months. The benefit of continuous anticoagulant therapy should be reassessed after 6 months of treatment.

#### Prevention of thrombus formation during haemodialysis

The recommended dose is 100 IU/kg (1 mg/kg) of enoxaparin sodium.

For patients with a high risk of haemorrhage, the dose should be reduced to 50 IU/kg (0.5 mg/kg) for double vascular access or 75 IU/kg (0.75 mg/kg) for single vascular access.

During haemodialysis, enoxaparin sodium should be introduced into the arterial line of the circuit at the beginning of the dialysis session. The effect of this dose is usually sufficient for a 4-hour session; however, if fibrin rings are found, for example after a longer than normal session, a further dose of 50 IU to 100 IU/kg (0.5 to 1 mg/kg) may be given.

No data are available in patients using enoxaparin sodium for prophylaxis or treatment and during haemodialysis sessions.

#### Acute coronary syndrome: treatment of unstable angina and NSTEMI and treatment of acute STEMI

For treatment of unstable angina and NSTEMI, the recommended dose of enoxaparin sodium is 100 IU/kg (1 mg/kg) every 12 hours by SC injection administered in combination with antiplatelet therapy. Treatment

should be maintained for a minimum of 2 days and continued until clinical stabilization. The usual duration of treatment is 2 to 8 days.

Acetylsalicylic acid is recommended for all patients without contraindications at an initial oral loading dose of 150–300 mg (in acetylsalicylic acid-naïve patients) and a maintenance dose of 75–325 mg/day long-term regardless of treatment strategy.

For treatment of acute STEMI, the recommended dose of enoxaparin sodium is a single intravenous (IV) bolus of 3,000 IU (30 mg) plus a 100 IU/kg (1 mg/kg) SC dose followed by 100 IU/kg (1 mg/kg) administered SC every 12 hours (maximum 10,000 IU (100 mg) for each of the first two SC doses).

Appropriate antiplatelet therapy such as oral acetylsalicylic acid (75 mg to 325 mg once daily) should be administered concomitantly unless contraindicated. The recommended duration of treatment is 8 days or until hospital discharge, whichever comes first. When administered in conjunction with a thrombolytic (fibrin specific or non-fibrin specific), enoxaparin sodium should be given between 15 minutes before and 30 minutes after the start of fibrinolytic therapy.

- For dose in patients  $\geq 75$  years of age, see paragraph “Elderly”.
- For patients managed with PCI, if the last dose of enoxaparin sodium SC was given less than 8 hours before balloon inflation, no additional dosing is needed. If the last SC administration was given more than 8 hours before balloon inflation, an IV bolus of 30 IU/kg (0.3 mg/kg) enoxaparin sodium should be administered.

### Special populations

#### Paediatric population

The safety and efficacy of enoxaparin sodium in paediatric population have not been established.

#### Elderly

For all indications except STEMI, no dose reduction is necessary in the elderly patients, unless kidney function is impaired (see below “renal impairment” and section 4.4).

For treatment of acute STEMI in elderly patients  $\geq 75$  years of age, an initial IV bolus must not be used. Initiate dosing with 75 IU/kg (0.75 mg/kg) SC every 12 hours (maximum 7,500 IU (75 mg) for each of the first two SC doses only, followed by 75 IU/kg (0.75 mg/kg) SC dosing for the remaining doses). For dose in elderly patients with impaired kidney function, see below “renal impairment” and section 4.4.

#### Hepatic impairment

Limited data are available in patients with hepatic impairment (see sections 5.1 and 5.2) and caution should be used in these patients (see section 4.4).

#### Renal impairment (see sections 4.4 and 5.2)

##### Severe renal impairment

Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance  $<15$  mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Dose table for patients with severe renal impairment (creatinine clearance [15-30] mL/min):

<u>Indication</u>	<u>Dosing regimen</u>
Prophylaxis of venous thromboembolic disease	2,000 IU (20 mg) SC once daily
Treatment of DVT and PE	100 IU/kg (1 mg/kg) body weight SC once daily
Extended treatment of DVT and PE in patients with active cancer	100 IU/kg (1 mg/kg) body weight SC once daily
Treatment of unstable angina and NSTEMI	100 IU/kg (1 mg/kg) body weight SC once daily

Treatment of acute STEMI (patients under 75)	1 x 3,000 IU (30 mg) IV bolus plus 100 IU/kg (1 mg/kg) body weight SC and then 100 IU/kg (1 mg/kg) body weight SC every 24 hours
Treatment of acute STEMI (patients over 75)	No IV initial bolus, 100 IU/kg (1 mg/kg) body weight SC and then 100 IU/kg (1 mg/kg) body weight SC every 24 hours

The recommended dose adjustments do not apply to the haemodialysis indication.

#### *Moderate and mild renal impairment*

Although no dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment, careful clinical monitoring is advised.

#### Method of administration

Inhixa is not indicated for intramuscular use and should not be administered by this route.

For the prophylaxis of venous thrombo-embolic disease following surgery, treatment of DVT and PE, extended treatment of DVT and PE in patients with active cancer, treatment of unstable angina and NSTEMI, enoxaparin sodium should be administered by SC injection.

For acute STEMI, treatment is to be initiated with a single IV bolus injection immediately followed by a SC injection.

For the prevention of thrombus formation in the extra corporeal circulation during haemodialysis, it is administered through the arterial line of a dialysis circuit.

The disposable pre-filled syringe is ready for immediate use.

The use of a tuberculin syringe or equivalent is recommended when using ampoules or multidose vials to assure withdrawal of the appropriate volume of the medicinal product.

#### SC injection technique

Injection should be made preferably when the patient is lying down. Enoxaparin sodium is administered by deep SC injection.

When using pre-filled syringes, the air bubble should not be expelled from the syringe before the injection in order to avoid the loss of the medicinal product. When the quantity of the medicinal product to be injected requires to be adjusted based on the patient's body weight, use the graduated pre-filled syringes to reach the required volume by discarding the excess before injection. Please be aware that in some cases it is not possible to achieve an exact dose due to the graduations on the syringe, and in such case the volume shall be rounded up to the nearest graduation.

The administration should be alternated between the left and right anterolateral or posterolateral abdominal wall.

The whole length of the needle should be introduced vertically into a skin fold gently held between the thumb and index finger. The skin fold should not be released until the injection is complete. After administration, the injection site should not be rubbed.

Note for the pre-filled syringes fitted with an automatic safety system: The safety system is triggered at the end of the injection (see instructions in section 6.6).

In case of self-administration, patient should be advised to follow instructions provided in the patient information leaflet included in the pack of this medicinal product.

#### IV (bolus) injection (for acute STEMI indication only)

For acute STEMI, treatment is to be initiated with a single IV bolus injection immediately followed by a SC injection.

For IV injection, either the multidose vial or pre-filled syringe can be used.

Enoxaparin sodium should be administered through an IV line. It should not be mixed or co-administered with other medicinal products. To avoid the possible mixture of enoxaparin sodium with other medicinal products, the IV access chosen should be flushed with a sufficient amount of sodium chloride 9 mg/ml (0.9%) or glucose in water for injections prior to and following the IV bolus administration of enoxaparin sodium to clear the port of the medicinal product. Enoxaparin sodium may be safely administered with normal sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections.

#### *Initial 3,000 IU (30 mg) bolus*

For the initial 3,000 IU (30 mg) bolus, using an enoxaparin sodium graduated pre-filled syringe, the excessive volume has to be expelled to retain only 3,000 IU (30 mg) in the syringe. The 3,000 IU (30 mg) dose can then be directly injected into the IV line.

#### *Additional bolus for PCI when last SC administration was given more than 8 hours before balloon inflation*

For patients being managed with PCI, an additional IV bolus of 30 IU/kg (0.3 mg/kg) is to be administered if last SC administration was given more than 8 hours before balloon inflation.

In order to assure the accuracy of the small volume to be injected, it is recommended to dilute the medicinal product to 300 IU/mL (3 mg/mL).

To obtain a 300 IU/mL (3 mg/mL) solution, using a 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe, it is recommended to use a 50 mL infusion bag (i.e. using either sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections) as follows:

Withdraw 30 mL from the infusion bag with a syringe and discard the liquid. Inject the complete contents of the 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe into the 20 mL remaining in the bag. Gently mix the contents of the bag. Withdraw the required volume of diluted solution with a syringe for administration into the IV line.

After dilution is completed, the volume to be injected can be calculated using the following formula [volume of diluted solution (mL) = patient weight (kg) x 0.1] or using the table below. It is recommended to prepare the dilution immediately before use.

Volume to be injected through IV line after dilution is completed at a concentration of 300 IU (3 mg) /mL.

Weight [kg]	Required dose 30 IU/kg (0.3 mg/kg)		Volume to inject when diluted to a final concentration of 300 IU (3 mg)/mL [mL]
	IU	[mg]	
45	1,350	13.5	4.5
50	1,500	15	5
55	1,650	16.5	5.5
60	1,800	18	6
65	1,950	19.5	6.5
70	2,100	21	7
75	2,250	22.5	7.5
80	2,400	24	8
85	2,550	25.5	8.5
90	2,700	27	9
95	2,850	28.5	9.5
100	3,000	30	10
105	3,150	31.5	10.5
110	3,300	33	11
115	3,450	34.5	11.5
120	3,600	36	12

125	3,750	37.5	12.5
130	3,900	39	13
135	4,050	40.5	13.5
140	4,200	42	14
145	4,350	43.5	14.5
150	4,500	45	15

### Arterial line injection

It is administered through the arterial line of a dialysis circuit for the prevention of thrombus formation in the extra corporeal circulation during haemodialysis.

### Switch between enoxaparin sodium and oral anticoagulants

#### *Switch between enoxaparin sodium and vitamin K antagonists (VKA)*

Clinical monitoring and laboratory tests [prothrombin time expressed as the International Normalised Ratio (INR)] must be intensified to monitor the effect of VKA.

As there is an interval before the VKA reaches its maximum effect, enoxaparin sodium therapy should be continued at a constant dose for as long as necessary in order to maintain the INR within the desired therapeutic range for the indication in two successive tests.

For patients currently receiving a VKA, the VKA should be discontinued and the first dose of enoxaparin sodium should be given when the INR has dropped below the therapeutic range.

#### *Switch between enoxaparin sodium and direct oral anticoagulants (DOAC)*

For patients currently receiving enoxaparin sodium, discontinue enoxaparin sodium and start the DOAC 0 to 2 hours before the time that the next scheduled administration of enoxaparin sodium would be due as per DOAC label.

For patients currently receiving a DOAC, the first dose of enoxaparin sodium should be given at the time the next DOAC dose would be taken.

### Administration in spinal/epidural anaesthesia or lumbar puncture

Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, careful neurological monitoring is recommended due to the risk of neuraxial haematomas (see section 4.4).

- *At doses used for prophylaxis*

A puncture-free interval of at least 12 hours shall be kept between the last injection of enoxaparin sodium at prophylactic doses and the needle or catheter placement.

For continuous techniques, a similar delay of at least 12 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 24 hours.

The 2 hours preoperative initiation of enoxaparin sodium 2,000 IU (20 mg) is not compatible with neuraxial anaesthesia.

- *At doses used for treatment*

A puncture-free interval of at least 24 hours shall be kept between the last injection of enoxaparin sodium at curative doses and the needle or catheter placement (see also section 4.3).

For continuous techniques, a similar delay of 24 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 48 hours.

Patients receiving the twice daily doses (i.e. 75 IU/kg (0.75 mg/kg) twice daily or 100 IU/kg (1 mg/kg) twice-daily) should omit the second enoxaparin sodium dose to allow a sufficient delay before catheter placement or removal.

Anti-Xa levels are still detectable at these time points, and these delays are not a guarantee that neuraxial hematoma will be avoided.

Likewise, consider not using enoxaparin sodium until at least 4 hours after the spinal/epidural puncture or after the catheter has been removed. The delay must be based on a benefit-risk assessment considering both the risk for thrombosis and the risk for bleeding in the context of the procedure and patient risk factors.

### 4.3 Contraindications

Enoxaparin sodium is contraindicated in patients with:

- Hypersensitivity to enoxaparin sodium, heparin or its derivatives, including other low molecular weight heparins (LMWH) or to any of the excipients listed in section 6.1;
- History of immune mediated heparin-induced thrombocytopenia (HIT) within the past 100 days or in the presence of circulating antibodies (see also section 4.4 );
- Active clinically significant bleeding and conditions with a high risk of haemorrhage, including recent haemorrhagic stroke, gastrointestinal ulcer, presence of malignant neoplasm at high risk of bleeding, recent brain, spinal or ophthalmic surgery, known or suspected oesophageal varices, arteriovenous malformations, vascular aneurysms or major intraspinal or intracerebral vascular abnormalities;
- Spinal or epidural anaesthesia or loco-regional anaesthesia when enoxaparin sodium is used for treatment in the previous 24 hours (see section 4.4).

### 4.4 Special warnings and precautions for use

#### Traceability

LMWHs are biological medicinal products. In order to improve the traceability of biological medicinal products, the name and the batch number of the administered product should be clearly recorded.

#### General

Enoxaparin sodium cannot be used interchangeably (unit for unit) with other LMWHs. These medicinal products differ in their manufacturing process, molecular weights, specific anti-Xa and anti-IIa activities, units, dose and clinical efficacy and safety. This results in differences in pharmacokinetics and associated biological activities (e.g. anti-thrombin activity, and platelet interactions). Special attention and compliance with the instructions for use specific to each proprietary medicinal product are therefore required.

#### History of HIT (>100 days)

Use of enoxaparin sodium in patients with a history of immune mediated HIT within the past 100 days or in the presence of circulating antibodies is contraindicated (see section 4.3). Circulating antibodies may persist several years.

Enoxaparin sodium is to be used with extreme caution in patients with a history (>100 days) of heparin-induced thrombocytopenia without circulating antibodies. The decision to use enoxaparin sodium in such a case must be made only after a careful benefit risk assessment and after non-heparin alternative treatments are considered (e.g. danaparoid sodium or lepirudin).

#### Monitoring of platelet counts

In patients with cancer with a platelet count below 80 G/L, anticoagulation treatment can only be considered on a case-by-case basis and careful monitoring is recommended.

The risk of antibody-mediated HIT also exists with LMWHs. Should thrombocytopenia occur, it usually appears between the 5<sup>th</sup> and the 21<sup>st</sup> day following the beginning of enoxaparin sodium treatment.

The risk of HIT is higher in postoperative patients and mainly after cardiac surgery and in patients with cancer. Therefore, it is recommended that the platelet counts be measured before the initiation of therapy with enoxaparin sodium and then regularly thereafter during the treatment.

If there are clinical symptoms suggestive of HIT (any new episode of arterial and/or venous thromboembolism, any painful skin lesion at the injection site, any allergic or anaphylactoid reactions on treatment), platelet count

should be measured. Patients must be aware that these symptoms may occur and if so, that they should inform their primary care physician.

In practice, if a confirmed significant decrease of the platelet count is observed (30 to 50 % of the initial value), enoxaparin sodium treatment must be immediately discontinued and the patient switched to another non-heparin anticoagulant alternative treatment.

### Haemorrhage

As with other anticoagulants, bleeding may occur at any site. If bleeding occurs, the origin of the haemorrhage should be investigated and appropriate treatment instituted.

Enoxaparin sodium, as with any other anticoagulant therapy, should be used with caution in conditions with increased potential for bleeding, such as:

- impaired haemostasis,
- history of peptic ulcer,
- recent ischemic stroke,
- severe arterial hypertension,
- recent diabetic retinopathy,
- neuro- or ophthalmologic surgery,
- concomitant use of medicinal products affecting haemostasis (see section 4.5).

### Laboratory tests

At doses used for prophylaxis of venous thromboembolism, enoxaparin sodium does not influence bleeding time and global blood coagulation tests significantly, nor does it affect platelet aggregation or binding of fibrinogen to platelets.

At higher doses, increases in activated partial thromboplastin time (aPTT), and activated clotting time (ACT) may occur. Increases in aPTT and ACT are not linearly correlated with increasing enoxaparin sodium antithrombotic activity and therefore are unsuitable and unreliable for monitoring enoxaparin sodium activity.

### Spinal/Epidural anaesthesia or lumbar puncture

Spinal/epidural anaesthesia or lumbar puncture must not be performed within 24 hours of administration of enoxaparin sodium at therapeutic doses (see also section 4.3).

There have been cases of neuraxial haematomas reported with the concurrent use of enoxaparin sodium and spinal/epidural anaesthesia or spinal puncture procedures resulting in long term or permanent paralysis.

These events are rare with enoxaparin sodium dose regimens 4,000 IU (40 mg) once daily or lower. The risk of these events is higher with the use of post-operative indwelling epidural catheters, with the concomitant use of additional medicinal products affecting haemostasis such as Non-Steroidal Anti-Inflammatory Drugs (NSAIDs), with traumatic or repeated epidural or spinal puncture, or in patients with a history of spinal surgery or spinal deformity.

To reduce the potential risk of bleeding associated with the concurrent use of enoxaparin sodium and epidural or spinal anaesthesia/analgesia or spinal puncture, consider the pharmacokinetic profile of enoxaparin sodium (see section 5.2). Placement or removal of an epidural catheter or lumbar puncture is best performed when the anticoagulant effect of enoxaparin sodium is low; however, the exact timing to reach a sufficiently low anticoagulant effect in each patient is not known. For patients with creatinine clearance [15-30 mL/minute], additional considerations are necessary because elimination of enoxaparin sodium is more prolonged (see section 4.2).

Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, frequent monitoring must be exercised to detect any signs and symptoms of neurological impairment such as midline back pain, sensory and motor deficits (numbness or weakness in lower limbs), bowel and/or bladder dysfunction. Instruct patients to report immediately if they experience any of the above signs or symptoms. If signs or symptoms of spinal hematoma are suspected,



initiate urgent diagnosis and treatment including consideration for spinal cord decompression even though such treatment may not prevent or reverse neurological sequelae.

#### Skin necrosis/cutaneous vasculitis

Skin necrosis and cutaneous vasculitis have been reported with LMWHs and should lead to prompt treatment discontinuation.

#### Percutaneous coronary revascularization procedures

To minimise the risk of bleeding following the vascular instrumentation during the treatment of unstable angina, NSTEMI and acute STEMI, adhere precisely to the intervals recommended between enoxaparin sodium injection doses. It is important to achieve haemostasis at the puncture site after PCI. In case a closure device is used, the sheath can be removed immediately. If a manual compression method is used, sheath should be removed 6 hours after the last IV/SC enoxaparin sodium injection. If the treatment with enoxaparin sodium is to be continued, the next scheduled dose should be given no sooner than 6 to 8 hours after sheath removal. The site of the procedure should be observed for signs of bleeding or hematoma formation.

#### Acute infective endocarditis

Use of heparin is usually not recommended in patients with acute infective endocarditis due to the risk of cerebral haemorrhage. If such use is considered absolutely necessary, the decision must be made only after a careful individual benefit risk assessment.

#### Mechanical prosthetic heart valves

The use of enoxaparin sodium has not been adequately studied for thromboprophylaxis in patients with mechanical prosthetic heart valves. Isolated cases of prosthetic heart valve thrombosis have been reported in patients with mechanical prosthetic heart valves who have received enoxaparin sodium for thromboprophylaxis. Confounding factors, including underlying disease and insufficient clinical data, limit the evaluation of these cases. Some of these cases were pregnant women in whom thrombosis led to maternal and foetal death.

#### *Pregnant women with mechanical prosthetic heart valves*

The use of enoxaparin sodium for thromboprophylaxis in pregnant women with mechanical prosthetic heart valves has not been adequately studied. In a clinical study of pregnant women with mechanical prosthetic heart valves given enoxaparin sodium (100 IU/kg (1 mg/kg) twice daily) to reduce the risk of thromboembolism, 2 of 8 women developed clots resulting in blockage of the valve and leading to maternal and foetal death. There have been isolated post-marketing reports of valve thrombosis in pregnant women with mechanical prosthetic heart valves while receiving enoxaparin sodium for thromboprophylaxis. Pregnant women with mechanical prosthetic heart valves may be at higher risk for thromboembolism.

#### Elderly

No increased bleeding tendency is observed in the elderly with the prophylactic dose ranges. Elderly patients (especially patients eighty years of age and older) may be at an increased risk for bleeding complications with the therapeutic dose ranges. Careful clinical monitoring is advised and dose reduction might be considered in patients older than 75 years treated for STEMI (see sections 4.2 and 5.2).

#### Renal impairment

In patients with renal impairment, there is an increase in exposure of enoxaparin sodium which increases the risk of bleeding. In these patients, careful clinical monitoring is advised, and biological monitoring by anti-Xa activity measurement might be considered (see sections 4.2 and 5.2).

Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance <15 mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

In patients with severe renal impairment (creatinine clearance 15-30 mL/min), since exposure of enoxaparin sodium is significantly increased, a dose adjustment is recommended for therapeutic and prophylactic dose ranges (see section 4.2).

No dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment.

#### Hepatic impairment

Enoxaparin sodium should be used with caution in patients with hepatic impairment due to an increased potential for bleeding. Dose adjustment based on monitoring of anti-Xa levels is unreliable in patients with liver cirrhosis and not recommended (see section 5.2).

#### Low weight

An increase in exposure of enoxaparin sodium with prophylactic doses (non-weight adjusted) has been observed in low-weight women (<45 kg) and low-weight men (<57 kg), which may lead to a higher risk of bleeding. Therefore, careful clinical monitoring is advised in these patients (see section 5.2).

#### Obese patients

Obese patients are at higher risk for thromboembolism. The safety and efficacy of prophylactic doses in obese patients (BMI >30 kg/m<sup>2</sup>) has not been fully determined and there is no consensus for dose adjustment. These patients should be observed carefully for signs and symptoms of thromboembolism.

#### Hyperkalaemia

Heparins can suppress adrenal secretion of aldosterone leading to hyperkalaemia (see section 4.8), particularly in patients such as those with diabetes mellitus, chronic renal failure, pre-existing metabolic acidosis, taking medicinal products known to increase potassium (see section 4.5). Plasma potassium should be monitored regularly especially in patients at risk.

#### Sodium content

This medicinal product contains less than 1 mmol sodium (23 mg) per dose, that is to say essentially 'sodium-free'.

#### Acute generalized exanthematous pustulosis

Acute generalized exanthematous pustulosis (AGEP) has been reported with frequency not known in association with enoxaparin treatment. At the time of prescription patients should be advised of the signs and symptoms and monitored closely for skin reactions. If signs and symptoms suggestive of these reactions appear, enoxaparin should be withdrawn immediately and an alternative treatment considered (as appropriate).

### **4.5 Interaction with other medicinal products and other forms of interaction**

#### Concomitant use not recommended

#### Medicinal products affecting haemostasis (see section 4.4)

It is recommended that some agents which affect haemostasis should be discontinued prior to enoxaparin sodium therapy unless strictly indicated. If the combination is indicated, enoxaparin sodium should be used with careful clinical and laboratory monitoring when appropriate. These agents include medicinal products such as:

- Systemic salicylates, acetylsalicylic acid at anti-inflammatory doses, and NSAIDs including ketorolac,
- Other thrombolytics (e.g. alteplase, reteplase, streptokinase, tenecteplase, urokinase) and anticoagulants (see section 4.2).

#### Concomitant use with caution

The following medicinal products may be administered with caution concomitantly with enoxaparin sodium:

- *Other medicinal products affecting haemostasis such as:*
  - Platelet aggregation inhibitors including acetylsalicylic acid used at antiaggregant dose (cardioprotection), clopidogrel, ticlopidine, and glycoprotein IIb/IIIa antagonists indicated in acute coronary syndrome due to the risk of bleeding,
  - Dextran 40,
  - Systemic glucocorticoids.
- *Medicinal products increasing potassium levels:*

Medicinal products that increase serum potassium levels may be administered concurrently with enoxaparin sodium under careful clinical and laboratory monitoring (see sections 4.4 and 4.8).

## **4.6 Fertility, pregnancy and lactation**

### Pregnancy

In humans, there is no evidence that enoxaparin crosses the placental barrier during the second and third trimester of pregnancy. There is no information available concerning the first trimester.

Animal studies have not shown any evidence of foetotoxicity or teratogenicity (see section 5.3). Animal data have shown that enoxaparin passage through the placenta is minimal.

Enoxaparin sodium should be used during pregnancy only if the physician has established a clear need.

Pregnant women receiving enoxaparin sodium should be carefully monitored for evidence of bleeding or excessive anticoagulation and should be warned of the haemorrhagic risk. Overall, the data suggest that there is no evidence for an increased risk of haemorrhage, thrombocytopenia or osteoporosis with respect to the risk observed in non-pregnant women, other than that observed in pregnant women with prosthetic heart valves (see section 4.4).

If an epidural anaesthesia is planned, it is recommended to withdraw enoxaparin sodium treatment before (see section 4.4).

### Breast-feeding

It is not known whether unchanged enoxaparin is excreted in human breast milk. In lactating rats, the passage of enoxaparin or its metabolites in milk is very low. The oral absorption of enoxaparin sodium is unlikely. Inhixa can be used during breastfeeding.

### Fertility

There are no clinical data for enoxaparin sodium in fertility. Animal studies did not show any effect on fertility (see section 5.3).

## **4.7 Effects on ability to drive and use machines**

Enoxaparin sodium has no or negligible influence on the ability to drive and use machines.

## **4.8 Undesirable effects**

### Summary of the safety profile

Enoxaparin sodium has been evaluated in more than 15,000 patients who received enoxaparin sodium in clinical trials. These included 1,776 for prophylaxis of DVT following orthopaedic or abdominal surgery in patients at risk for thromboembolic complications, 1,169 for prophylaxis of DVT in acutely ill medical patients with severely restricted mobility, 559 for treatment of DVT with or without PE, 1,578 for treatment of unstable angina and non-Q-wave myocardial infarction and 10,176 for treatment of acute STEMI.

Enoxaparin sodium regimen administered during these clinical trials varies depending on indications. The enoxaparin sodium dose was 4,000 IU (40 mg) SC once daily for prophylaxis of DVT following surgery or in acutely ill medical patients with severely restricted mobility. In treatment of DVT with or without PE, patients receiving enoxaparin sodium were treated with either a 100 IU/kg (1 mg/kg) SC dose every 12 hours or a 150 IU/kg (1.5 mg/kg) SC dose once a day. In the clinical trials for treatment of unstable angina and non-Q-wave myocardial infarction, doses were 100 IU/kg (1 mg/kg) SC every 12 hours, and in the clinical study for treatment of acute STEMI enoxaparin sodium regimen was a 3,000 IU (30 mg) IV bolus followed by 100 IU/kg (1 mg/kg) SC every 12 hours.

In clinical trials, haemorrhages, thrombocytopenia and thrombocytosis were the most commonly reported reactions (see section 4.4 and 'Description of selected adverse reactions' below).

The safety profile of enoxaparin for extended treatment of DVT and PE in patients with active cancer is similar to its safety profile for the treatment of DVT and PE.

Acute generalized exanthematous pustulosis (AGEP) has been reported in association with enoxaparin treatment (see section 4.4).

#### Tabulated list of adverse reactions

Other adverse reactions observed in clinical trials and reported in post-marketing experience (\* indicates reactions from post-marketing experience) are detailed below.

Frequencies are defined as follows: very common ( $\geq 1/10$ ); common ( $\geq 1/100$  to  $< 1/10$ ); uncommon ( $\geq 1/1000$  to  $< 1/100$ ); rare ( $\geq 1/10,000$  to  $< 1/1,000$ ); and very rare ( $< 1/10,000$ ) or not known (cannot be estimated from available data). Within each system organ class, adverse reactions are presented in order of decreasing seriousness.

#### *Blood and the lymphatic system disorders*

Common: Haemorrhage, haemorrhagic anaemia\*, thrombocytopenia, thrombocytosis

Rare: Eosinophilia\*

Rare: Cases of immuno-allergic thrombocytopenia with thrombosis; in some of them thrombosis was complicated by organ infarction or limb ischaemia (see section 4.4).

#### *Immune system disorders*

Common: Allergic reaction

Rare: Anaphylactic/Anaphylactoid reactions including shock\*

#### *Nervous system disorders*

Common: Headache\*

#### *Vascular disorders*

Rare: Spinal haematoma\* (or neuraxial haematoma). These reactions have resulted in varying degrees of neurologic injuries including long-term or permanent paralysis (see section 4.4).

#### *Hepatobiliary disorders*

Very common: Hepatic enzyme increases (mainly transaminases  $> 3$  times the upper limit of normality)

Uncommon: Hepatocellular liver injury \*

Rare: Cholestatic liver injury\*

#### *Skin and subcutaneous tissue disorders*

Common: Urticaria, pruritus, erythema

Uncommon: Bullous dermatitis

Rare: Alopecia\*

Rare: Cutaneous vasculitis\*, skin necrosis\* usually occurring at the injection site (these phenomena have been usually preceded by purpura or erythematous plaques, infiltrated and painful).

Injection site nodules\* (inflammatory nodules, which were not cystic enclosure of enoxaparin). They resolve after a few days and should not cause treatment discontinuation.

Not known: Acute generalized exanthematous pustulosis (AGEP)

#### *Musculoskeletal and connective tissue disorders*

Rare: Osteoporosis\* following long term therapy (greater than 3 months)

#### *General disorders and administration site conditions*

Common: Injection site haematoma, injection site pain, other injection site reaction (such as oedema, haemorrhage, hypersensitivity, inflammation, mass, pain, or reaction)

Uncommon: Local irritation, skin necrosis at injection site

#### *Investigations*

Rare: Hyperkalaemia\* (see sections 4.4 and 4.5).

#### Description of selected adverse reactions

##### *Haemorrhages*

These included major haemorrhages, reported at most in 4.2 % of the patients (surgical patients). Some of these cases have been fatal. In surgical patients, haemorrhage complications were considered major: (1) if the haemorrhage caused a significant clinical event, or (2) if accompanied by haemoglobin decrease  $\geq 2$  g/dL or transfusion of 2 or more units of blood products. Retroperitoneal and intracranial haemorrhages were always considered major.

As with other anticoagulants, haemorrhage may occur in the presence of associated risk factors such as: organic lesions liable to bleed, invasive procedures or the concomitant use of medicinal products affecting haemostasis (see sections 4.4 and 4.5).

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
Blood and lymphatic system disorders	<i>Very common:</i> <b>Haemorrhage<sup>a</sup></b>  <i>Rare:</i> <b>Retroperitoneal haemorrhage</b>	<i>Common:</i> <b>Haemorrhage<sup>a</sup></b>	<i>Very common:</i> <b>Haemorrhage<sup>a</sup></b>  <i>Uncommon:</i> <b>Intracranial haemorrhage, Retroperitoneal haemorrhage</b>	<i>Common<sup>b</sup>:</i> <b>Haemorrhage</b>	<i>Common:</i> <b>Haemorrhage<sup>a</sup></b> <i>Rare:</i> <b>Retroperitoneal haemorrhage</b>	<i>Common:</i> <b>Haemorrhage<sup>a</sup></b>  <i>Uncommon:</i> <b>Intracranial haemorrhage, Retroperitoneal haemorrhage</b>

<sup>a</sup>: such as haematoma, ecchymosis other than at injection site, wound haematoma, haematuria, epistaxis and gastro-intestinal haemorrhage.

<sup>b</sup>: frequency based on a retrospective study on a registry including 3526 patients (see section 5.1)

*Thrombocytopenia and thrombocytosis (see section 4.4 monitoring of platelet counts)*

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
<i>Blood and lymphatic system disorders</i>	<i>Very common:</i> <b>Thrombocytosis<sup>‡</sup></b>  <i>Common:</i> <b>Thrombocytopenia</b>	<i>Uncommon:</i> <b>Thrombocytopenia</b>	<i>Very common:</i> <b>Thrombocytosis<sup>‡</sup></b>  <i>Common:</i> <b>Thrombocytopenia</b>	<i>Unknown:</i> <b>Thrombocytopenia</b>	<i>Uncommon:</i> <b>Thrombocytopenia</b>	<i>Common:</i> <b>Thrombocytosis<sup>‡</sup></b> <b>Thrombocytopenia</b> <i>Very rare:</i> <b>Immuno-allergic thrombocytopenia</b>

<sup>‡</sup>: Platelet increased >400 G/L

### Paediatric population

The safety and efficacy of enoxaparin sodium in children have not been established (see section 4.2).

### Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the national reporting system listed in Appendix V.

## 4.9 Overdose

### Signs and symptoms

Accidental overdose with enoxaparin sodium after IV, extracorporeal or SC administration may lead to haemorrhagic complications. Following oral administration of even large doses, it is unlikely that enoxaparin sodium will be absorbed.

### Management

The anticoagulant effects can be largely neutralised by the slow IV injection of protamine. The dose of protamine depends on the dose of enoxaparin sodium injected; 1 mg protamine neutralises the anticoagulant effect of 100 IU (1 mg) of enoxaparin sodium, if enoxaparin sodium was administered in the previous 8 hours. An infusion of 0.5 mg protamine per 100 IU (1 mg) of enoxaparin sodium may be administered if enoxaparin sodium was administered greater than 8 hours previous to the protamine administration, or if it has been determined that a second dose of protamine is required. After 12 hours of the enoxaparin sodium injection, protamine administration may not be required. However, even with high doses of protamine, the anti-Xa activity of enoxaparin sodium is never completely neutralised (maximum about 60%) (see the prescribing information for protamine salts).

## 5. PHARMACOLOGICAL PROPERTIES

### 5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Antithrombotic agents, heparin group. ATC code: B01A B05

Inhixa is a biosimilar medicinal product. Detailed information is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.

### Pharmacodynamic effects

Enoxaparin is a LMWH with a mean molecular weight of approximately 4,500 daltons, in which the antithrombotic and anticoagulant activities of standard heparin have been dissociated. The active substance is the sodium salt.

In the *in vitro* purified system, enoxaparin sodium has a high anti-Xa activity (approximately 100 IU/mg) and low anti-IIa or anti thrombin activity (approximately 28 IU/mg), with a ratio of 3.6. These anticoagulant activities are mediated through anti-thrombin III (ATIII) resulting in anti-thrombotic activities in humans.

Beyond its anti-Xa/IIa activity, further antithrombotic and anti-inflammatory properties of enoxaparin have been identified in healthy subjects and patients as well as in non-clinical models. These include ATIII-dependent inhibition of other coagulation factors like factor VIIa, induction of endogenous Tissue Factor Pathway Inhibitor (TFPI) release as well as a reduced release of von Willebrand factor (vWF) from the vascular endothelium into the blood circulation. These factors are known to contribute to the overall antithrombotic effect of enoxaparin sodium.

When used as prophylactic treatment, enoxaparin sodium does not significantly affect the aPTT. When used as curative treatment, aPTT can be prolonged by 1.5-2.2 times the control time at peak activity.

### Clinical efficacy and safety

#### Prevention of venous thromboembolic disease associated with surgery

##### *Extended prophylaxis of VTE following orthopaedic surgery*

In a double blind study of extended prophylaxis for patients undergoing hip replacement surgery, 179 patients with no venous thromboembolic disease initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) SC, were randomised to a post-discharge regimen of either enoxaparin sodium 4,000 IU (40 mg) (n=90) once a day SC or to placebo (n=89) for 3 weeks. The incidence of DVT during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo, no PE was reported. No major bleeding occurred.

The efficacy data are provided in the table below.

	<b>Enoxaparin sodium 4,000 IU (40 mg) once a day SC n (%)</b>	<b>Placebo once a day SC n (%)</b>
<b>All treated extended prophylaxis patients</b>	90 (100)	89 (100)
<b>Total VTE</b>	6 (6.6)	18 (20.2)
Total DVT (%)	6 (6.6)*	18 (20.2)
Proximal DVT (%)	5 (5.6) <sup>#</sup>	7 (8.8)
*p value versus placebo =0.008		
<sup>#</sup> p value versus placebo =0.537		

In a second double-blind study, 262 patients without VTE disease and undergoing hip replacement surgery initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) SC were randomised to a post-discharge regimen of either enoxaparin sodium 4,000 IU (40 mg) (n=131) once a day SC or to placebo (n=131) for 3 weeks. Similar to the first study the incidence of VTE during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo for both total VTE (enoxaparin sodium 21 [16%] versus placebo 45 [34.4%]; p=0.001) and proximal DVT (enoxaparin sodium 8 [6.1%] versus placebo 28 [21.4%]; p<0.001). No difference in major bleeding was found between the enoxaparin sodium and the placebo group.

### *Extended prophylaxis of DVT following cancer surgery*

A double-blind, multicenter trial, compared a four-week and a one-week regimen of enoxaparin sodium prophylaxis in terms of safety and efficacy in 332 patients undergoing elective surgery for abdominal or pelvic cancer. Patients received enoxaparin sodium (4,000 IU (40 mg) SC) daily for 6 to 10 days and were then randomly assigned to receive either enoxaparin sodium or placebo for another 21 days. Bilateral venography was performed between days 25 and 31, or sooner if symptoms of venous thromboembolism occurred. The patients were followed for three months. Enoxaparin sodium prophylaxis for four weeks after surgery for abdominal or pelvic cancer significantly reduced the incidence of venographically demonstrated thrombosis, as compared with enoxaparin sodium prophylaxis for one week. The rates of venous thromboembolism at the end of the double-blind phase were 12.0 % (n=20) in the placebo group and 4.8% (n=8) in the enoxaparin sodium group; p=0.02. This difference persisted at three months [13.8% vs. 5.5% (n=23 vs 9), p=0.01]. There were no differences in the rates of bleeding or other complications during the double-blind or follow-up periods.

### *Prophylaxis of venous thromboembolic disease in medical patients with an acute illness expected to induce limitation of mobility*

In a double blind multicenter, parallel group study, enoxaparin sodium 2,000 IU (20 mg) or 4,000 IU (40 mg) once a day SC was compared to placebo in the prophylaxis of DVT in medical patients with severely restricted mobility during acute illness (defined as walking distance of <10 meters for  $\leq 3$  days). This study included patients with heart failure (NYHA Class III or IV); acute respiratory failure or complicated chronic respiratory insufficiency, and acute infection or acute rheumatic; if associated with at least one VTE risk factor (age  $\geq 75$  years, cancer, previous VTE, obesity, varicose veins, hormone therapy, and chronic heart or respiratory failure).

A total of 1,102 patients were enrolled in the study, and 1,073 patients were treated. Treatment continued for 6 to 14 days (median duration 7 days). When given at a dose of 4,000 IU (40 mg) once a day SC, enoxaparin sodium significantly reduced the incidence of VTE as compared to placebo. The efficacy data are provided in the table below.

	<b>Enoxaparin sodium 2,000 IU (20 mg) once a day SC n (%)</b>	<b>Enoxaparin sodium 4,000 IU (40 mg) once a day SC n (%)</b>	<b>Placebo n (%)</b>
<b>All treated medical patients during acute illness</b>	287 (100)	291(100)	288 (100)
<b>Total VTE (%)</b>	43 (15.0)	16 (5.5)*	43 (14.9)
Total DVT (%)	43 (15.0)	16 (5.5)	40 (13.9)
Proximal DVT (%)	13 (4.5)	5 (1.7)	14 (4.9)
VTE = Venous thromboembolic events which included DVT, PE, and death considered to be thromboembolic in origin * p value versus placebo =0.0002			

At approximately 3 months following enrolment, the incidence of VTE remained significantly lower in the enoxaparin sodium 4,000 IU (40 mg) treatment group versus the placebo treatment group.

The occurrence of total and major bleeding were respectively 8.6% and 1.1% in the placebo group, 11.7% and 0.3% in the enoxaparin sodium 2,000 IU (20 mg) group and 12.6% and 1.7% in the enoxaparin sodium 4,000 IU (40 mg) group.

### *Treatment of DVT with or without PE*



In a multicenter, parallel group study, 900 patients with acute lower extremity DVT with or without PE were randomised to an inpatient (hospital) treatment of either (i) enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day SC, (ii) enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours SC, or (iii) heparin IV bolus (5,000 IU) followed by a continuous infusion (administered to achieve an aPTT of 55 to 85 seconds). A total of 900 patients were randomised in the study and all patients were treated. All patients also received warfarin sodium (dose adjusted according to prothrombin time to achieve an INR of 2.0 to 3.0), commencing within 72 hours of initiation of enoxaparin sodium or standard heparin therapy, and continuing for 90 days. Enoxaparin sodium or standard heparin therapy was administered for a minimum of 5 days and until the targeted warfarin sodium INR was achieved. Both enoxaparin sodium regimens were equivalent to standard heparin therapy in reducing the risk of recurrent venous thromboembolism (DVT and/or PE). The efficacy data are provided in the table below.

	<b>Enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day SC n (%)</b>	<b>Enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day SC n (%)</b>	<b>Heparin aPTT adjusted IV therapy n (%)</b>
<b>All treated DVT patients with or without PE</b>	298 (100)	312 (100)	290 (100)
<b>Total VTE (%)</b>	13 (4.4)*	9 (2.9)*	12 (4.1)
DVT only (%)	11 (3.7)	7 (2.2)	8 (2.8)
Proximal DVT (%)	9 (3.0)	6 (1.9)	7 (2.4)
PE (%)	2 (0.7)	2 (0.6)	4 (1.4)
VTE = venous thromboembolic event (DVT and/or PE) *The 95% confidence intervals for the treatment differences for total VTE were: - enoxaparin sodium once a day versus heparin (-3.0 to 3.5) - enoxaparin sodium every 12 hours versus heparin (-4.2 to 1.7).			

Major bleeding were respectively 1.7% in the enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day group, 1.3% in the enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day group and 2.1% in the heparin group.

*Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer*

In clinical trials with limited number of patients, reported rates of recurrent VTE in patients treated with enoxaparin given once or twice daily for 3 to 6 months appear comparable to those with warfarin.

Effectiveness in real-life setting was assessed in a cohort of 4,451 patients with symptomatic VTE and active cancer from the multinational registry RIETE of patients with VTE and other thrombotic conditions. 3,526 patients received SC enoxaparin up to 6 months and 925 patients received tinzaparin or dalteparin SC. Among the 3,526 patients receiving enoxaparin treatment, 891 patients were treated with 1.5 mg/kg once daily as initial therapy and extended treatment up to 6 months (once daily alone), 1,854 patients received initial 1.0 mg/kg twice daily regimen and extended treatment up to 6 months (twice daily alone), and 687 patients received 1.0 mg/kg twice daily as initial treatment followed by 1.5 mg/kg once daily (twice daily-once daily) as the extended treatment up to 6 months. The mean and median duration of treatment until regimen change was 17 days and 8 days, respectively. There was no significant difference for VTE recurrence rate between the two treatments groups (see table), with enoxaparin meeting the prespecified criterion for non inferiority of 1.5 (HR adjusted by relevant covariates 0.817, 95% CI: 0.499-1.336). There was no statistically significant difference between the two treatment groups with regards to the relative risks of major (fatal or non-fatal) bleeding and all-cause death (see table).

**Table. Efficacy and safety outcomes in the RIETECAT study**

Outcome	Enoxaparin n=3526	Other LMWH n=925	Adjusted hazard ratios enoxaparin / other LMWH [95% confidence interval]
VTE recurrence	70 (2.0%)	23 (2.5%)	0.817, [ 0.499-1.336]
Major bleeding	111 (3.1%)	18 (1.9%)	1.522, [ 0.899-2.577]
Non-major bleeding	87 (2.5%)	24 (2.6%)	0.881, [0.550-1.410]
Overall death	666 (18.9%)	157 (17.0%)	0.974, [ 0.813-1.165]

An overview of outcomes per treatment regimen used in the RIETECAT study among 6-month completers is provided below:

**Table. 6-month outcomes in patients completing 6-month treatment, by different regimens**

Outcome N (%) (95% CI)	Enoxapa rin all regimens	Enoxaparin all regimens					EU- authorized LMWHs
		Enoxapa rin OD	Enoxapa rin BID	Enoxapa rin BID to OD	Enoxapar in OD to BID	Enoxapar in More than one switch	
	N=1432	N=444	N=529	N=406	N=14	N=39	N=428
Recurrence of VTE	70 (4.9%) (3.8%- 6.0%)	33 (7.4%) (5.0%- 9.9%)	22 (4.2%) (2.5%- 5.9%)	10 (2.5%) (0.9%- 4.0%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	23 (5.4%) (3.2%- 7.5%)
Major bleeding (fatal and non-fatal)	111 (7.8%) (6.4%- 9.1%)	31 (7.0%) (4.6%- 9.4%)	52 (9.8%) (7.3%- 12.4%)	21 (5.2%) (3.0%- 7.3%)	1 (7.1%) (0%- 22.6%)	6 (15.4%) (3.5%- 27.2%)	18 (4.2%) (2.3%- 6.1%)
Non-major bleedings of clinical significance	87 (6.1%) (4.8%- 7.3%)	26 (5.9%) (3.7%- 8.0%)	33 (6.2%) (4.2%- 8.3%)	23 (5.7%) (3.4%- 7.9%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	24 (5.6%) (3.4%- 7.8%)
All-cause death	666 (46.5%) (43.9%- 49.1%)	175 (39.4%) (34.9%- 44.0%)	323 (61.1%) (56.9%- 65.2%)	146 (36.0%) (31.3%- 40.6%)	6 (42.9%) (13.2%- 72.5%)	16 (41.0%) (24.9%- 57.2%)	157 (36.7%) (32.1%- 41.3%)
Fatal PE or fatal bleeding related death	48 (3.4%) (2.4%- 4.3%)	7 (1.6%) (0.4%- 2.7%)	35 (6.6%) (4.5%- 8.7%)	5 (1.2%) (0.2%- 2.3%)	0 (0%) -	1 (2.6%) (0%- 7.8%)	11 (2.6%) (1.1%- 4.1%)
*All data with 95% CI							

#### Treatment of unstable angina and non ST elevation myocardial infarction

In a large multicenter study, 3,171 patients enrolled at the acute phase of unstable angina or non-Q-wave myocardial infarction were randomised to receive in association with acetylsalicylic acid (100 to 325 mg once daily), either SC enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours or IV unfractionated heparin adjusted based on aPTT. Patients had to be treated in hospital for a minimum of 2 days and a maximum of 8 days, until clinical stabilization, revascularization procedures or hospital discharge. The patients had to be followed up to 30 days. In comparison with heparin, enoxaparin sodium significantly reduced the combined incidence of angina pectoris, myocardial infarction and death, with a decrease of 19.8 to 16.6% (relative risk reduction of 16.2%) on day 14. This reduction in the combined incidence was maintained after 30 days (from 23.3 to 19.8%; relative risk reduction of 15%).

There were no significant differences in major haemorrhages, although a haemorrhage at the site of the SC injection was more frequent.

#### Treatment of acute ST-segment elevation myocardial infarction

In a large multicenter study, 20,479 patients with STEMI eligible to receive fibrinolytic therapy were randomised to receive either enoxaparin sodium in a single 3,000 IU (30 mg) IV bolus plus a 100 IU/kg (1 mg/kg) SC dose followed by an SC injection of 100 IU/kg (1 mg/kg) every 12 hours or IV unfractionated heparin adjusted based on aPTT for 48 hours. All patients were also treated with acetylsalicylic acid for a minimum of 30 days. The enoxaparin sodium dosing strategy was adjusted for severe renally impaired patients and for the elderly of at least 75 years of age. The SC injections of enoxaparin sodium were given until hospital discharge or for a maximum of eight days (whichever came first).

4,716 patients underwent percutaneous coronary intervention receiving antithrombotic support with blinded investigational medicinal product. Therefore, for patients on enoxaparin sodium, the PCI was to be performed on enoxaparin sodium (no switch) using the regimen established in previous studies i.e. no additional dosing, if last SC administration given less than 8 hours before balloon inflation, IV bolus of 30 IU/kg (0.3 mg/kg) enoxaparin sodium, if the last SC administration given more than 8 hours before balloon inflation.

Enoxaparin sodium compared to unfractionated heparin significantly decreased the incidence of the primary end point, a composite of death from any cause or myocardial re-infarction in the first 30 days after randomization [9.9 percent in the enoxaparin sodium group, as compared with 12.0 percent in the unfractionated heparin group] with a 17 percent relative risk reduction ( $p < 0.001$ ).

The treatment benefits of enoxaparin sodium, evident for a number of efficacy outcomes, emerged at 48 hours, at which time there was a 35 percent reduction in the relative risk of myocardial re-infarction, as compared with treatment with unfractionated heparin ( $p < 0.001$ ).

The beneficial effect of enoxaparin sodium on the primary end point was consistent across key subgroups including age, gender, infarct location, history of diabetes, history of prior myocardial infarction, type of fibrinolytic administered, and time to treatment with the investigational medicinal product.

There was a significant treatment benefit of enoxaparin sodium, as compared with unfractionated heparin, in patients who underwent percutaneous coronary intervention within 30 days after randomization (23 percent reduction in relative risk) or who were treated medically (15 percent reduction in relative risk,  $p = 0.27$  for interaction).

The rate of the 30 day composite endpoint of death, myocardial re-infarction or intracranial haemorrhage (a measure of net clinical benefit) was significantly lower ( $p < 0.0001$ ) in the enoxaparin sodium group (10.1%) as compared to the heparin group (12.2%), representing a 17% relative risk reduction in favour of treatment with enoxaparin sodium.

The incidence of major bleeding at 30 days was significantly higher ( $p < 0.0001$ ) in the enoxaparin sodium group (2.1%) versus the heparin group (1.4%). There was a higher incidence of gastrointestinal bleeding in the enoxaparin sodium group (0.5%) versus the heparin group (0.1%), while the incidence of intracranial haemorrhage was similar in both groups (0.8% with enoxaparin sodium versus 0.7% with heparin).

The beneficial effect of enoxaparin sodium on the primary end point observed during the first 30 days was maintained over a 12 month follow-up period.

#### Hepatic impairment

Based on literature data the use of enoxaparin sodium 4,000 IU (40 mg) in cirrhotic patients (Child-Pugh class B-C) appears to be safe and effective in preventing portal vein thrombosis. It should be noted that the literature studies may have limitations. Caution should be used in patients with hepatic impairment as these patients have an increased potential for bleeding (see section 4.4) and no formal dose finding studies have been performed in cirrhotic patients (Child Pugh class A, B nor C).

## 5.2 Pharmacokinetic properties

### General characteristics

The pharmacokinetic parameters of enoxaparin sodium have been studied primarily in terms of the time course of plasma anti-Xa activity and also by anti-IIa activity, at the recommended dose ranges after single and repeated SC administration and after single IV administration. The quantitative determination of anti-Xa and anti-IIa pharmacokinetic activities was conducted by validated amidolytic methods.

### Absorption

The absolute bioavailability of enoxaparin sodium after SC injection, based on anti-Xa activity, is close to 100%.

Different doses and formulations and dosing regimens can be used.

The mean maximum plasma anti-Xa activity level is observed 3 to 5 hours after SC injection and achieves approximately 0.2, 0.4, 1.0 and 1.3 anti-Xa IU/mL following single SC administration of 2,000 IU, 4,000 IU, 100 IU/kg and 150 IU/kg (20 mg, 40 mg, 1 mg/kg and 1.5 mg/kg) doses, respectively.

A 3,000 IU (30 mg) IV bolus immediately followed by a 100 IU/kg (1 mg/kg) SC every 12 hours provided initial maximum anti-Xa activity level of 1.16 IU/mL (n=16) and average exposure corresponding to 88% of steady-state levels. Steady-state is achieved on the second day of treatment.

After repeated SC administration of 4,000 IU (40 mg) once daily and 150 IU/kg (1.5 mg/kg) once daily regimens in healthy volunteers, the steady-state is reached on day 2 with an average exposure ratio about 15% higher than after a single dose. After repeated SC administration of the 100 IU/kg (1 mg/kg) twice daily regimen, the steady-state is reached from day 3 to 4 with mean exposure about 65% higher than after a single dose and mean maximum and trough anti-Xa activity levels of about 1.2 and 0.52 IU/mL, respectively.

Injection volume and dose concentration over the range 100-200 mg/mL does not affect pharmacokinetic parameters in healthy volunteers.

Enoxaparin sodium pharmacokinetics appears to be linear over the recommended dose ranges.

Intra-patient and inter-patient variability is low. Following repeated SC administration no accumulation takes place.

Plasma anti-IIa activity after SC administration is approximately ten-fold lower than anti-Xa activity. The mean maximum anti-IIa activity level is observed approximately 3 to 4 hours following SC injection and reaches 0.13 IU/mL and 0.19 IU/mL following repeated administration of 100 IU/kg (1 mg/kg) twice daily and 150 IU/kg (1.5 mg/kg) once daily, respectively.

### Distribution

The volume of distribution of enoxaparin sodium anti-Xa activity is about 4.3 litres and is close to the blood volume.

### Biotransformation

Enoxaparin sodium is primarily metabolised in the liver by desulfation and/or depolymerization to lower molecular weight species with much reduced biological potency.

### Elimination

Enoxaparin sodium is a low clearance substance with a mean anti-Xa plasma clearance of 0.74 L/h after a 150 IU/kg (1.5 mg/kg) 6-hour IV infusion.

Elimination appears monophasic with a half-life of about 5 hours after a single SC dose to about 7 hours after repeated dosing.

Renal clearance of active fragments represents about 10% of the administered dose and total renal excretion of active and non-active fragments 40% of the dose.

### Special populations

#### *Elderly*

Based on the results of a population pharmacokinetic analysis, the enoxaparin sodium kinetic profile is not different in elderly subjects compared to younger subjects when renal function is normal. However, since renal function is known to decline with age, elderly patients may show reduced elimination of enoxaparin sodium (see sections 4.2 and 4.4).

#### *Hepatic impairment*

In a study conducted in patients with advanced cirrhosis treated with enoxaparin sodium 4,000 IU (40 mg) once daily, a decrease in maximum anti-Xa activity was associated with an increase in the severity of hepatic impairment (assessed by Child-Pugh categories). This decrease was mainly attributed to a decrease in ATIII level secondary to a reduced synthesis of ATIII in patients with hepatic impairment.

#### *Renal impairment*

A linear relationship between anti-Xa plasma clearance and creatinine clearance at steady-state has been observed, which indicates decreased clearance of enoxaparin sodium in patients with reduced renal function. Anti-Xa exposure represented by AUC, at steady-state, is marginally increased in mild (creatinine clearance 50-80 mL/min) and moderate (creatinine clearance 30-50 mL/min) renal impairment after repeated SC 4,000 IU (40 mg) once daily doses. In patients with severe renal impairment (creatinine clearance <30 mL/min), the AUC at steady state is significantly increased on average by 65% after repeated SC 4,000 IU (40 mg) once daily doses (see sections 4.2 and 4.4).

#### *Haemodialysis*

Enoxaparin sodium pharmacokinetics appeared similar than control population, after a single 25 IU, 50 IU or 100 IU/kg (0.25, 0.50 or 1.0 mg/kg) IV dose however, AUC was two-fold higher than control.

#### *Weight*

After repeated SC 150 IU/kg (1.5 mg/kg) once daily dosing, mean AUC of anti-Xa activity is marginally higher at steady state in obese healthy volunteers (BMI 30-48 kg/m<sup>2</sup>) compared to non-obese control subjects, while maximum plasma anti-Xa activity level is not increased. There is a lower weight-adjusted clearance in obese subjects with SC dosing.

When non-weight adjusted dosing was administered, it was found after a single-SC 4,000 IU (40 mg) dose, that anti-Xa exposure is 52% higher in low-weight women (<45 kg) and 27% higher in low-weight men (<57 kg) when compared to normal weight control subjects (see section 4.4).

### Pharmacokinetic interactions

No pharmacokinetic interactions were observed between enoxaparin sodium and thrombolytics when administered concomitantly.

## **5.3 Preclinical safety data**

Besides the anticoagulant effects of enoxaparin sodium, there was no evidence of adverse reactions at 15 mg/kg/day in the 13-week SC toxicity studies both in rats and dogs and at 10 mg/kg/day in the 26-week SC and IV toxicity studies both in rats, and monkeys.

Enoxaparin sodium has shown no mutagenic activity based on *in vitro* tests, including the Ames test, mouse lymphoma cell forward mutation test, and *no clastogenic* activity based on an *in vitro* human lymphocyte chromosomal aberration test, and the *in vivo* rat bone marrow chromosomal aberration test.

Studies conducted in pregnant rats and rabbits at SC doses of enoxaparin sodium up to 30 mg/kg/day did not reveal any evidence of teratogenic effects or foetotoxicity. Enoxaparin sodium was found to have no effect on fertility or reproductive performance of male and female rats at SC doses up to 20 mg/kg/day.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Water for injections

### **6.2 Incompatibilities**

#### SC injection

Do not mix with other medicinal products.

#### IV (bolus) injection (for acute STEMI indication only)

Enoxaparin sodium may be safely administered with sodium chloride 9mg/ml (0.9%) solution for injection or 5% glucose in water for injections (see section 4.2).

### **6.3 Shelf life**

#### Pre-filled syringe

3 years

#### Diluted medicinal product with sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections.

8 hours

### **6.4 Special precautions for storage**

Store below 25 °C. Do not freeze.

### **6.5 Nature and contents of container**

0.4 mL of solution in:

- a clear, colourless type I neutral glass syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a yellow polypropylene plunger rod. The syringe can be additionally equipped with needle guard or manual needle guard; or
- a clear, colourless type I neutral glass syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a white polycarbonate plunger rod equipped with UltraSafe Passive needle guard.

Packs of:

- 2, 5, 6, 10, 20, 30 and 50 pre-filled syringes
- 2, 5, 6, 10, 20, 30, 50 and 90 pre-filled syringes with needle guard
- 2, 6, 10, 20 and 50 pre-filled syringes with manual needle guard
- 2 and 6 pre-filled syringes with UltraSafe Passive needle guard

Not all pack sizes may be marketed.

## 6.6 Special precautions for disposal and other handling

### INSTRUCTIONS FOR USE: PRE-FILLED SYRINGE

#### How to give yourself an injection of Inhixa with a pre-filled syringe without needle guard

If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

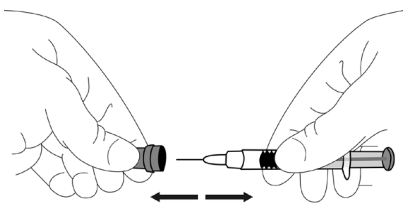
- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

#### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

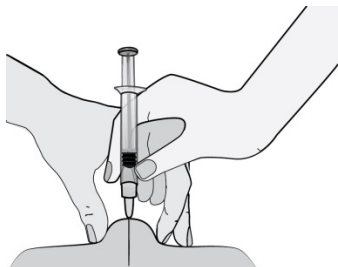


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin

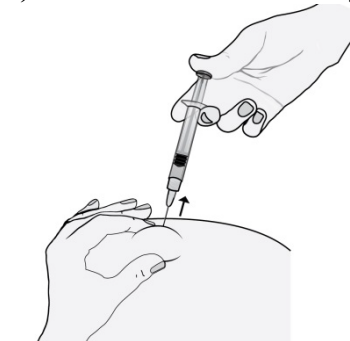
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold



- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection

- 9) Remove the needle by pulling it straight out.



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

#### How to give yourself an injection of Inhixa with a pre-filled syringe with needle guard

Your pre-filled syringe has a needle guard attached to it in order to protect you from needle stick injury. If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be



injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).

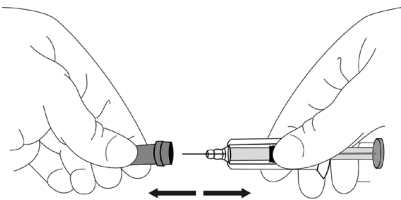
- The pre-filled syringe is intended for single use only.

### **Instructions on injecting yourself with Inhixa**

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

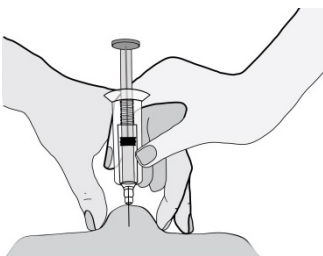


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin

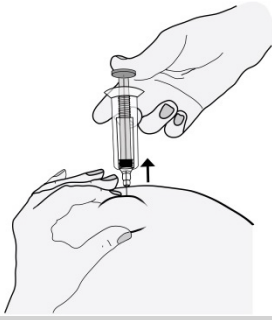
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold



- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection

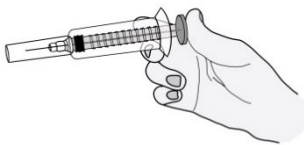
- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Push hard the plunger. The needle guard, which is in the form of a plastic cylinder, will be activated automatically and it will completely cover the needle.

"CLICK"



- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

#### How to give yourself an injection of Inhixa with a pre-filled syringe with UltraSafe Passive needle guard

Your pre-filled syringe has UltraSafe Passive needle guard attached to it in order to protect you from needle stick injury.

If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called "subcutaneous injection") will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your stomach, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

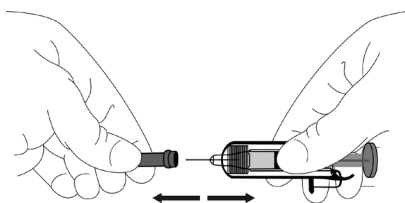
#### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.

- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

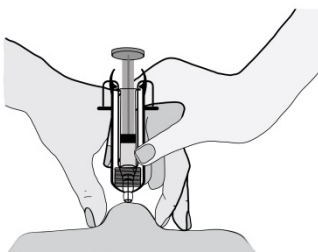


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin

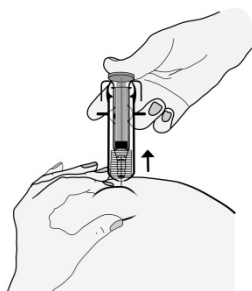
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold



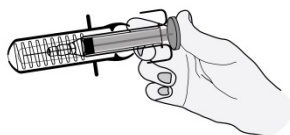
- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection

- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Let go of the plunger and allow the syringe to move up until the entire needle is guarded and locks into place.



- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

How to give yourself an injection of Inhixa with a pre-filled syringe with manually activated needle guard

Your pre-filled syringe has a manually activated needle guard attached to it in order to protect you from needle stick injury.

If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

***Before injecting yourself with Inhixa***

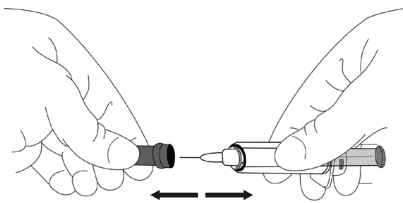
- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

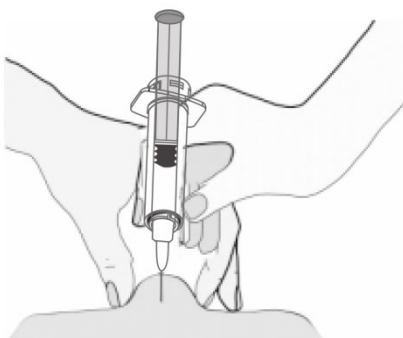


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

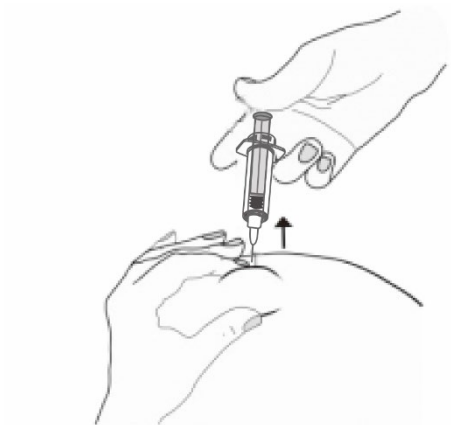
- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin.

Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold.

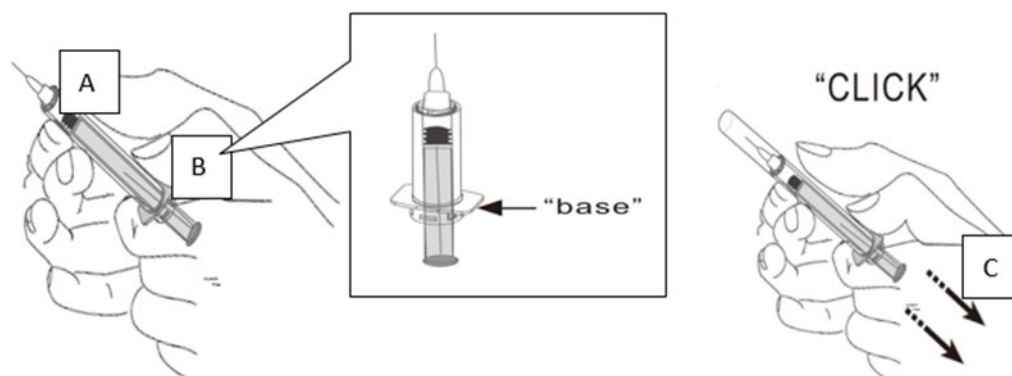


- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection.
- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Firmly hold the syringe tube with one hand (A). With the other hand hold the base, “wings” of the syringe (B), and pull the base until you hear a clicking sound (C). Now the used needle is completely protected.



- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

## 7. MARKETING AUTHORISATION HOLDER

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

## 8. MARKETING AUTHORISATION NUMBER(S)

EU/1/16/1132/003  
EU/1/16/1132/004  
EU/1/16/1132/013  
EU/1/16/1132/014  
EU/1/16/1132/024  
EU/1/16/1132/025  
EU/1/16/1132/035  
EU/1/16/1132/036  
EU/1/16/1132/043  
EU/1/16/1132/044  
EU/1/16/1132/052  
EU/1/16/1132/055  
EU/1/16/1132/056  
EU/1/16/1132/066  
EU/1/16/1132/067  
EU/1/16/1132/068  
EU/1/16/1132/086  
EU/1/16/1132/091  
EU/1/16/1132/096

EU/1/16/1132/097  
EU/1/16/1132/098  
EU/1/16/1132/116

## **9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION**

Date of first authorisation: 15/09/2016

Date of latest renewal: 26/08/2021

## **10. DATE OF REVISION OF THE TEXT**

Detailed information on this medicinal product is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.

## 1. NAME OF THE MEDICINAL PRODUCT

Inhixa 6,000 IU (60 mg)/0.6 mL solution for injection in pre-filled syringe

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

10,000 IU/mL (100 mg/mL) solution for injection

Each pre-filled syringe contains enoxaparin sodium 6,000 IU anti-Xa activity (equivalent to 60 mg) in 0.6 mL water for injections.

For the full list of excipients, see section 6.1.

Enoxaparin sodium is a biological substance obtained by alkaline depolymerisation of heparin benzyl ester derived from porcine intestinal mucosa.

## 3. PHARMACEUTICAL FORM

Solution for injection in pre-filled syringe (injection).

Clear, colourless to pale yellow solution.

## 4. CLINICAL PARTICULARS

### 4.1 Therapeutic indications

Inhixa is indicated in adults for:

Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients, in particular those undergoing orthopaedic or general surgery including cancer surgery.

Prophylaxis of venous thromboembolic disease in medical patients with an acute illness (such as acute heart failure, respiratory insufficiency, severe infections or rheumatic diseases) and reduced mobility at increased risk of venous thromboembolism.

Treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE), excluding PE likely to require thrombolytic therapy or surgery.

Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer.

Prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Acute coronary syndrome:

- Treatment of unstable angina and Non ST-segment elevation myocardial infarction (NSTEMI), in combination with oral acetylsalicylic acid.
- Treatment of acute ST-segment elevation myocardial infarction (STEMI) including patients to be managed medically or with subsequent percutaneous coronary intervention (PCI).

### 4.2 Posology and method of administration

#### Posology

#### Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients

Individual thromboembolic risk for patients can be estimated using validated risk stratification model.

In patients at moderate risk of thromboembolism, the recommended dose of enoxaparin sodium is 2,000 IU (20 mg) once daily by subcutaneous (SC) injection. Preoperative initiation (2 hours before surgery) of enoxaparin sodium 2,000 IU (20 mg) was proven effective and safe in moderate risk surgery.



In moderate risk patients, enoxaparin sodium treatment should be maintained for a minimal period of 7-10 days whatever the recovery status (e.g. mobility). Prophylaxis should be continued until the patient no longer has significantly reduced mobility.

In patients at high risk of thromboembolism, the recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily given by SC injection preferably started 12 hours before surgery. If there is a need for earlier than 12 hours enoxaparin sodium preoperative prophylactic initiation (e.g. high risk patient waiting for a deferred orthopaedic surgery), the last injection should be administered no later than 12 hours prior to surgery and resumed 12 hours after surgery.

- For patients who undergo major orthopaedic surgery an extended thromboprophylaxis up to 5 weeks is recommended.
- For patients with a high venous thromboembolism (VTE) risk who undergo abdominal or pelvic surgery for cancer an extended thromboprophylaxis up to 4 weeks is recommended.

#### Prophylaxis of venous thromboembolism in medical patients

The recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily by SC injection.

Treatment with enoxaparin sodium is prescribed for at least 6 to 14 days whatever the recovery status (e.g. mobility). The benefit is not established for a treatment longer than 14 days.

#### Treatment of DVT and PE

Enoxaparin sodium can be administered SC either as a once daily injection of 150 IU/kg (1.5 mg/kg) or as twice daily injections of 100 IU/kg (1 mg/kg).

The regimen should be selected by the physician based on an individual assessment including evaluation of the thromboembolic risk and of the risk of bleeding. The dose regimen of 150 IU/kg (1.5 mg/kg) administered once daily should be used in uncomplicated patients with low risk of VTE recurrence. The dose regimen of 100 IU/kg (1 mg/kg) administered twice daily should be used in all other patients such as those with obesity, with symptomatic PE, cancer, recurrent VTE or proximal (*vena iliaca*) thrombosis.

Enoxaparin sodium treatment is prescribed for an average period of 10 days. Oral anticoagulant therapy should be initiated when appropriate (see “Switch between enoxaparin sodium and oral anticoagulants” at the end of section 4.2).

In the extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer, physicians should carefully assess the individual thromboembolic and bleeding risks of the patient.

The recommended dose is 100 IU/kg (1 mg/kg) administered twice daily by SC injections for 5 to 10 days, followed by a 150 IU/kg (1.5 mg/kg) once daily SC injection up to 6 months. The benefit of continuous anticoagulant therapy should be reassessed after 6 months of treatment.

#### Prevention of thrombus formation during haemodialysis

The recommended dose is 100 IU/kg (1 mg/kg) of enoxaparin sodium.

For patients with a high risk of haemorrhage, the dose should be reduced to 50 IU/kg (0.5 mg/kg) for double vascular access or 75 IU/kg (0.75 mg/kg) for single vascular access.

During haemodialysis, enoxaparin sodium should be introduced into the arterial line of the circuit at the beginning of the dialysis session. The effect of this dose is usually sufficient for a 4-hour session; however, if fibrin rings are found, for example after a longer than normal session, a further dose of 50 IU to 100 IU/kg (0.5 to 1 mg/kg) may be given.

No data are available in patients using enoxaparin sodium for prophylaxis or treatment and during haemodialysis sessions.

#### Acute coronary syndrome: treatment of unstable angina and NSTEMI and treatment of acute STEMI

For treatment of unstable angina and NSTEMI, the recommended dose of enoxaparin sodium is 100 IU/kg (1 mg/kg) every 12 hours by SC injection administered in combination with antiplatelet therapy. Treatment

should be maintained for a minimum of 2 days and continued until clinical stabilization. The usual duration of treatment is 2 to 8 days.

Acetylsalicylic acid is recommended for all patients without contraindications at an initial oral loading dose of 150–300 mg (in acetylsalicylic acid-naïve patients) and a maintenance dose of 75–325 mg/day long-term regardless of treatment strategy.

For treatment of acute STEMI, the recommended dose of enoxaparin sodium is a single intravenous (IV) bolus of 3,000 IU (30 mg) plus a 100 IU/kg (1 mg/kg) SC dose followed by 100 IU/kg (1 mg/kg) administered SC every 12 hours (maximum 10,000 IU (100 mg) for each of the first two SC doses).

Appropriate antiplatelet therapy such as oral acetylsalicylic acid (75 mg to 325 mg once daily) should be administered concomitantly unless contraindicated. The recommended duration of treatment is 8 days or until hospital discharge, whichever comes first. When administered in conjunction with a thrombolytic (fibrin specific or non-fibrin specific), enoxaparin sodium should be given between 15 minutes before and 30 minutes after the start of fibrinolytic therapy.

- For dose in patients  $\geq 75$  years of age, see paragraph “Elderly”.
- For patients managed with PCI, if the last dose of enoxaparin sodium SC was given less than 8 hours before balloon inflation, no additional dosing is needed. If the last SC administration was given more than 8 hours before balloon inflation, an IV bolus of 30 IU/kg (0.3 mg/kg) enoxaparin sodium should be administered.

### Special populations

#### Paediatric population

The safety and efficacy of enoxaparin sodium in paediatric population have not been established.

#### Elderly

For all indications except STEMI, no dose reduction is necessary in the elderly patients, unless kidney function is impaired (see below “renal impairment” and section 4.4).

For treatment of acute STEMI in elderly patients  $\geq 75$  years of age, an initial IV bolus must not be used. Initiate dosing with 75 IU/kg (0.75 mg/kg) SC every 12 hours (maximum 7,500 IU (75 mg) for each of the first two SC doses only, followed by 75 IU/kg (0.75 mg/kg) SC dosing for the remaining doses). For dose in elderly patients with impaired kidney function, see below “renal impairment” and section 4.4.

#### Hepatic impairment

Limited data are available in patients with hepatic impairment (see sections 5.1 and 5.2) and caution should be used in these patients (see section 4.4).

#### Renal impairment (see sections 4.4 and 5.2)

##### Severe renal impairment

Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance  $<15$  mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Dose table for patients with severe renal impairment (creatinine clearance [15-30] mL/min):

<u>Indication</u>	<u>Dosing regimen</u>
Prophylaxis of venous thromboembolic disease	2,000 IU (20 mg) SC once daily
Treatment of DVT and PE	100 IU/kg (1 mg/kg) body weight SC once daily
Extended treatment of DVT and PE in patients with active cancer	100 IU/kg (1 mg/kg) body weight SC once daily
Treatment of unstable angina and NSTEMI	100 IU/kg (1 mg/kg) body weight SC once daily

Treatment of acute STEMI (patients under 75)	1 x 3,000 IU (30 mg) IV bolus plus 100 IU/kg (1 mg/kg) body weight SC and then 100 IU/kg (1 mg/kg) body weight SC every 24 hours
Treatment of acute STEMI (patients over 75)	No IV initial bolus, 100 IU/kg (1 mg/kg) body weight SC and then 100 IU/kg (1 mg/kg) body weight SC every 24 hours

The recommended dose adjustments do not apply to the haemodialysis indication.

#### *Moderate and mild renal impairment*

Although no dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment, careful clinical monitoring is advised.

#### Method of administration

Inhixa is not indicated for intramuscular use and should not be administered by this route.

For the prophylaxis of venous thrombo-embolic disease following surgery, treatment of DVT and PE, extended treatment of DVT and PE in patients with active cancer, treatment of unstable angina and NSTEMI, enoxaparin sodium should be administered by SC injection.

For acute STEMI, treatment is to be initiated with a single IV bolus injection immediately followed by a SC injection.

For the prevention of thrombus formation in the extra corporeal circulation during haemodialysis, it is administered through the arterial line of a dialysis circuit.

The disposable pre-filled syringe is ready for immediate use.

The use of a tuberculin syringe or equivalent is recommended when using ampoules or multidose vials to assure withdrawal of the appropriate volume of the medicinal product.

#### SC injection technique

Injection should be made preferably when the patient is lying down. Enoxaparin sodium is administered by deep SC injection.

When using pre-filled syringes, the air bubble should not be expelled from the syringe before the injection in order to avoid the loss of the medicinal product. When the quantity of the medicinal product to be injected requires to be adjusted based on the patient's body weight, use the graduated pre-filled syringes to reach the required volume by discarding the excess before injection. Please be aware that in some cases it is not possible to achieve an exact dose due to the graduations on the syringe, and in such case the volume shall be rounded up to the nearest graduation.

The administration should be alternated between the left and right anterolateral or posterolateral abdominal wall.

The whole length of the needle should be introduced vertically into a skin fold gently held between the thumb and index finger. The skin fold should not be released until the injection is complete. After administration, the injection site should not be rubbed.

Note for the pre-filled syringes fitted with an automatic safety system: The safety system is triggered at the end of the injection (see instructions in section 6.6).

In case of self-administration, patient should be advised to follow instructions provided in the patient information leaflet included in the pack of this medicinal product.

#### IV (bolus) injection (for acute STEMI indication only)

For acute STEMI, treatment is to be initiated with a single IV bolus injection immediately followed by a SC injection.

For IV injection, either the multidose vial or pre-filled syringe can be used.

Enoxaparin sodium should be administered through an IV line. It should not be mixed or co-administered with other medicinal products. To avoid the possible mixture of enoxaparin sodium with other medicinal products, the IV access chosen should be flushed with a sufficient amount of sodium chloride 9 mg/ml (0.9%) or 5% glucose in water for injections prior to and following the IV bolus administration of enoxaparin sodium to clear the port of the medicinal product. Enoxaparin sodium may be safely administered with normal sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections.

#### *Initial 3,000 IU (30 mg) bolus*

For the initial 3,000 IU (30 mg) bolus, using an enoxaparin sodium graduated pre-filled syringe, the excessive volume has to be expelled to retain only 3,000 IU (30 mg) in the syringe. The 3,000 IU (30 mg) dose can then be directly injected into the IV line.

#### *Additional bolus for PCI when last SC administration was given more than 8 hours before balloon inflation*

For patients being managed with PCI, an additional IV bolus of 30 IU/kg (0.3 mg/kg) is to be administered if last SC administration was given more than 8 hours before balloon inflation.

In order to assure the accuracy of the small volume to be injected, it is recommended to dilute the medicinal product to 300 IU/mL (3 mg/mL).

To obtain a 300 IU/mL (3 mg/mL) solution, using a 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe, it is recommended to use a 50 mL infusion bag (i.e. using either sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections) as follows:

Withdraw 30 mL from the infusion bag with a syringe and discard the liquid. Inject the complete contents of the 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe into the 20 mL remaining in the bag. Gently mix the contents of the bag. Withdraw the required volume of diluted solution with a syringe for administration into the IV line.

After dilution is completed, the volume to be injected can be calculated using the following formula [volume of diluted solution (mL) = patient weight (kg) x 0.1] or using the table below. It is recommended to prepare the dilution immediately before use.

Volume to be injected through IV line after dilution is completed at a concentration of 300 IU (3 mg) /mL.

Weight [kg]	Required dose 30 IU/kg (0.3 mg/kg)		Volume to inject when diluted to a final concentration of 300 IU (3 mg)/mL [mL]
	IU	[mg]	
45	1,350	13.5	4.5
50	1,500	15	5
55	1,650	16.5	5.5
60	1,800	18	6
65	1,950	19.5	6.5
70	2,100	21	7
75	2,250	22.5	7.5
80	2,400	24	8
85	2,550	25.5	8.5
90	2,700	27	9
95	2,850	28.5	9.5
100	3,000	30	10
105	3,150	31.5	10.5
110	3,300	33	11
115	3,450	34.5	11.5
120	3,600	36	12

125	3,750	37.5	12.5
130	3,900	39	13
135	4,050	40.5	13.5
140	4,200	42	14
145	4,350	43.5	14.5
150	4,500	45	15

#### Arterial line injection

It is administered through the arterial line of a dialysis circuit for the prevention of thrombus formation in the extra corporeal circulation during haemodialysis.

#### Switch between enoxaparin sodium and oral anticoagulants

##### *Switch between enoxaparin sodium and vitamin K antagonists (VKA)*

Clinical monitoring and laboratory tests [prothrombin time expressed as the International Normalised Ratio (INR)] must be intensified to monitor the effect of VKA.

As there is an interval before the VKA reaches its maximum effect, enoxaparin sodium therapy should be continued at a constant dose for as long as necessary in order to maintain the INR within the desired therapeutic range for the indication in two successive tests.

For patients currently receiving a VKA, the VKA should be discontinued and the first dose of enoxaparin sodium should be given when the INR has dropped below the therapeutic range.

##### *Switch between enoxaparin sodium and direct oral anticoagulants (DOAC)*

For patients currently receiving enoxaparin sodium, discontinue enoxaparin sodium and start the DOAC 0 to 2 hours before the time that the next scheduled administration of enoxaparin sodium would be due as per DOAC label.

For patients currently receiving a DOAC, the first dose of enoxaparin sodium should be given at the time the next DOAC dose would be taken.

#### Administration in spinal/epidural anaesthesia or lumbar puncture

Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, careful neurological monitoring is recommended due to the risk of neuraxial haematomas (see section 4.4).

- *At doses used for prophylaxis*

A puncture-free interval of at least 12 hours shall be kept between the last injection of enoxaparin sodium at prophylactic doses and the needle or catheter placement.

For continuous techniques, a similar delay of at least 12 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 24 hours.

The 2 hours preoperative initiation of enoxaparin sodium 2,000 IU (20 mg) is not compatible with neuraxial anaesthesia.

- *At doses used for treatment*

A puncture-free interval of at least 24 hours shall be kept between the last injection of enoxaparin sodium at curative doses and the needle or catheter placement (see also section 4.3).

For continuous techniques, a similar delay of 24 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 48 hours.

Patients receiving the twice daily doses (i.e. 75 IU/kg (0.75 mg/kg) twice daily or 100 IU/kg (1 mg/kg) twice-daily) should omit the second enoxaparin sodium dose to allow a sufficient delay before catheter placement or removal.

Anti-Xa levels are still detectable at these time points, and these delays are not a guarantee that neuraxial hematoma will be avoided.

Likewise, consider not using enoxaparin sodium until at least 4 hours after the spinal/epidural puncture or after the catheter has been removed. The delay must be based on a benefit-risk assessment considering both the risk for thrombosis and the risk for bleeding in the context of the procedure and patient risk factors.

### 4.3 Contraindications

Enoxaparin sodium is contraindicated in patients with:

- Hypersensitivity to enoxaparin sodium, heparin or its derivatives, including other low molecular weight heparins (LMWH) or to any of the excipients listed in section 6.1;
- History of immune mediated heparin-induced thrombocytopenia (HIT) within the past 100 days or in the presence of circulating antibodies (see also section 4.4 );
- Active clinically significant bleeding and conditions with a high risk of haemorrhage, including recent haemorrhagic stroke, gastrointestinal ulcer, presence of malignant neoplasm at high risk of bleeding, recent brain, spinal or ophthalmic surgery, known or suspected oesophageal varices, arteriovenous malformations, vascular aneurysms or major intraspinal or intracerebral vascular abnormalities;
- Spinal or epidural anaesthesia or loco-regional anaesthesia when enoxaparin sodium is used for treatment in the previous 24 hours (see section 4.4).

### 4.4 Special warnings and precautions for use

#### Traceability

LMWHs are biological medicinal products. In order to improve the traceability of biological medicinal products, the name and the batch number of the administered product should be clearly recorded.

#### General

Enoxaparin sodium cannot be used interchangeably (unit for unit) with other LMWHs. These medicinal products differ in their manufacturing process, molecular weights, specific anti-Xa and anti-IIa activities, units, dose and clinical efficacy and safety. This results in differences in pharmacokinetics and associated biological activities (e.g. anti-thrombin activity, and platelet interactions). Special attention and compliance with the instructions for use specific to each proprietary medicinal product are therefore required.

#### History of HIT (>100 days)

Use of enoxaparin sodium in patients with a history of immune mediated HIT within the past 100 days or in the presence of circulating antibodies is contraindicated (see section 4.3). Circulating antibodies may persist several years.

Enoxaparin sodium is to be used with extreme caution in patients with a history (>100 days) of heparin-induced thrombocytopenia without circulating antibodies. The decision to use enoxaparin sodium in such a case must be made only after a careful benefit risk assessment and after non-heparin alternative treatments are considered (e.g. danaparoid sodium or lepirudin).

#### Monitoring of platelet counts

In patients with cancer with a platelet count below 80 G/L, anticoagulation treatment can only be considered on a case-by-case basis and careful monitoring is recommended.

The risk of antibody-mediated HIT also exists with LMWHs. Should thrombocytopenia occur, it usually appears between the 5<sup>th</sup> and the 21<sup>st</sup> day following the beginning of enoxaparin sodium treatment.

The risk of HIT is higher in postoperative patients and mainly after cardiac surgery and in patients with cancer. Therefore, it is recommended that the platelet counts be measured before the initiation of therapy with enoxaparin sodium and then regularly thereafter during the treatment.

If there are clinical symptoms suggestive of HIT (any new episode of arterial and/or venous thromboembolism, any painful skin lesion at the injection site, any allergic or anaphylactoid reactions on treatment), platelet count

should be measured. Patients must be aware that these symptoms may occur and if so, that they should inform their primary care physician.

In practice, if a confirmed significant decrease of the platelet count is observed (30 to 50 % of the initial value), enoxaparin sodium treatment must be immediately discontinued and the patient switched to another non-heparin anticoagulant alternative treatment.

### Haemorrhage

As with other anticoagulants, bleeding may occur at any site. If bleeding occurs, the origin of the haemorrhage should be investigated and appropriate treatment instituted.

Enoxaparin sodium, as with any other anticoagulant therapy, should be used with caution in conditions with increased potential for bleeding, such as:

- impaired haemostasis,
- history of peptic ulcer,
- recent ischemic stroke,
- severe arterial hypertension,
- recent diabetic retinopathy,
- neuro- or ophthalmologic surgery,
- concomitant use of medicinal products affecting haemostasis (see section 4.5).

### Laboratory tests

At doses used for prophylaxis of venous thromboembolism, enoxaparin sodium does not influence bleeding time and global blood coagulation tests significantly, nor does it affect platelet aggregation or binding of fibrinogen to platelets.

At higher doses, increases in activated partial thromboplastin time (aPTT), and activated clotting time (ACT) may occur. Increases in aPTT and ACT are not linearly correlated with increasing enoxaparin sodium antithrombotic activity and therefore are unsuitable and unreliable for monitoring enoxaparin sodium activity.

### Spinal/Epidural anaesthesia or lumbar puncture

Spinal/epidural anaesthesia or lumbar puncture must not be performed within 24 hours of administration of enoxaparin sodium at therapeutic doses (see also section 4.3).

There have been cases of neuraxial haematomas reported with the concurrent use of enoxaparin sodium and spinal/epidural anaesthesia or spinal puncture procedures resulting in long term or permanent paralysis.

These events are rare with enoxaparin sodium dose regimens 4,000 IU (40 mg) once daily or lower. The risk of these events is higher with the use of post-operative indwelling epidural catheters, with the concomitant use of additional medicinal products affecting haemostasis such as Non-Steroidal Anti-Inflammatory Drugs (NSAIDs), with traumatic or repeated epidural or spinal puncture, or in patients with a history of spinal surgery or spinal deformity.

To reduce the potential risk of bleeding associated with the concurrent use of enoxaparin sodium and epidural or spinal anaesthesia/analgesia or spinal puncture, consider the pharmacokinetic profile of enoxaparin sodium (see section 5.2). Placement or removal of an epidural catheter or lumbar puncture is best performed when the anticoagulant effect of enoxaparin sodium is low; however, the exact timing to reach a sufficiently low anticoagulant effect in each patient is not known. For patients with creatinine clearance [15-30 mL/minute], additional considerations are necessary because elimination of enoxaparin sodium is more prolonged (see section 4.2).

Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, frequent monitoring must be exercised to detect any signs and symptoms of neurological impairment such as midline back pain, sensory and motor deficits (numbness or weakness in lower limbs), bowel and/or bladder dysfunction. Instruct patients to report immediately if they experience any of the above signs or symptoms. If signs or symptoms of spinal hematoma are suspected,

initiate urgent diagnosis and treatment including consideration for spinal cord decompression even though such treatment may not prevent or reverse neurological sequelae.

#### Skin necrosis/cutaneous vasculitis

Skin necrosis and cutaneous vasculitis have been reported with LMWHs and should lead to prompt treatment discontinuation.

#### Percutaneous coronary revascularization procedures

To minimise the risk of bleeding following the vascular instrumentation during the treatment of unstable angina, NSTEMI and acute STEMI, adhere precisely to the intervals recommended between enoxaparin sodium injection doses. It is important to achieve haemostasis at the puncture site after PCI. In case a closure device is used, the sheath can be removed immediately. If a manual compression method is used, sheath should be removed 6 hours after the last IV/SC enoxaparin sodium injection. If the treatment with enoxaparin sodium is to be continued, the next scheduled dose should be given no sooner than 6 to 8 hours after sheath removal. The site of the procedure should be observed for signs of bleeding or hematoma formation.

#### Acute infective endocarditis

Use of heparin is usually not recommended in patients with acute infective endocarditis due to the risk of cerebral haemorrhage. If such use is considered absolutely necessary, the decision must be made only after a careful individual benefit risk assessment.

#### Mechanical prosthetic heart valves

The use of enoxaparin sodium has not been adequately studied for thromboprophylaxis in patients with mechanical prosthetic heart valves. Isolated cases of prosthetic heart valve thrombosis have been reported in patients with mechanical prosthetic heart valves who have received enoxaparin sodium for thromboprophylaxis. Confounding factors, including underlying disease and insufficient clinical data, limit the evaluation of these cases. Some of these cases were pregnant women in whom thrombosis led to maternal and foetal death.

#### *Pregnant women with mechanical prosthetic heart valves*

The use of enoxaparin sodium for thromboprophylaxis in pregnant women with mechanical prosthetic heart valves has not been adequately studied. In a clinical study of pregnant women with mechanical prosthetic heart valves given enoxaparin sodium (100 IU/kg (1 mg/kg) twice daily) to reduce the risk of thromboembolism, 2 of 8 women developed clots resulting in blockage of the valve and leading to maternal and foetal death. There have been isolated post-marketing reports of valve thrombosis in pregnant women with mechanical prosthetic heart valves while receiving enoxaparin sodium for thromboprophylaxis. Pregnant women with mechanical prosthetic heart valves may be at higher risk for thromboembolism.

#### Elderly

No increased bleeding tendency is observed in the elderly with the prophylactic dose ranges. Elderly patients (especially patients eighty years of age and older) may be at an increased risk for bleeding complications with the therapeutic dose ranges. Careful clinical monitoring is advised and dose reduction might be considered in patients older than 75 years treated for STEMI (see sections 4.2 and 5.2).

#### Renal impairment

In patients with renal impairment, there is an increase in exposure of enoxaparin sodium which increases the risk of bleeding. In these patients, careful clinical monitoring is advised, and biological monitoring by anti-Xa activity measurement might be considered (see sections 4.2 and 5.2).



Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance <15 mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

In patients with severe renal impairment (creatinine clearance 15-30 mL/min), since exposure of enoxaparin sodium is significantly increased, a dose adjustment is recommended for therapeutic and prophylactic dose ranges (see section 4.2).

No dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment.

#### Hepatic impairment

Enoxaparin sodium should be used with caution in patients with hepatic impairment due to an increased potential for bleeding. Dose adjustment based on monitoring of anti-Xa levels is unreliable in patients with liver cirrhosis and not recommended (see section 5.2).

#### Low weight

An increase in exposure of enoxaparin sodium with prophylactic doses (non-weight adjusted) has been observed in low-weight women (<45 kg) and low-weight men (<57 kg), which may lead to a higher risk of bleeding. Therefore, careful clinical monitoring is advised in these patients (see section 5.2).

#### Obese patients

Obese patients are at higher risk for thromboembolism. The safety and efficacy of prophylactic doses in obese patients (BMI >30 kg/m<sup>2</sup>) has not been fully determined and there is no consensus for dose adjustment. These patients should be observed carefully for signs and symptoms of thromboembolism.

#### Hyperkalaemia

Heparins can suppress adrenal secretion of aldosterone leading to hyperkalaemia (see section 4.8), particularly in patients such as those with diabetes mellitus, chronic renal failure, pre-existing metabolic acidosis, taking medicinal products known to increase potassium (see section 4.5). Plasma potassium should be monitored regularly especially in patients at risk.

#### Sodium content

This medicinal product contains less than 1 mmol sodium (23 mg) per dose, that is to say essentially 'sodium-free'.

#### Acute generalized exanthematous pustulosis

Acute generalized exanthematous pustulosis (AGEP) has been reported with frequency not known in association with enoxaparin treatment. At the time of prescription patients should be advised of the signs and symptoms and monitored closely for skin reactions. If signs and symptoms suggestive of these reactions appear, enoxaparin should be withdrawn immediately and an alternative treatment considered (as appropriate).

### **4.5 Interaction with other medicinal products and other forms of interaction**

#### Concomitant use not recommended

#### Medicinal products affecting haemostasis (see section 4.4)

It is recommended that some agents which affect haemostasis should be discontinued prior to enoxaparin sodium therapy unless strictly indicated. If the combination is indicated, enoxaparin sodium should be used with careful clinical and laboratory monitoring when appropriate. These agents include medicinal products such as:

- Systemic salicylates, acetylsalicylic acid at anti-inflammatory doses, and NSAIDs including ketorolac,
- Other thrombolytics (e.g. alteplase, reteplase, streptokinase, tenecteplase, urokinase) and anticoagulants (see section 4.2).

#### Concomitant use with caution

The following medicinal products may be administered with caution concomitantly with enoxaparin sodium:

- *Other medicinal products affecting haemostasis such as:*
  - Platelet aggregation inhibitors including acetylsalicylic acid used at antiaggregant dose (cardioprotection), clopidogrel, ticlopidine, and glycoprotein IIb/IIIa antagonists indicated in acute coronary syndrome due to the risk of bleeding,
  - Dextran 40,
  - Systemic glucocorticoids.
- *Medicinal products increasing potassium levels:*

Medicinal products that increase serum potassium levels may be administered concurrently with enoxaparin sodium under careful clinical and laboratory monitoring (see sections 4.4 and 4.8).

## **4.6 Fertility, pregnancy and lactation**

### Pregnancy

In humans, there is no evidence that enoxaparin crosses the placental barrier during the second and third trimester of pregnancy. There is no information available concerning the first trimester.

Animal studies have not shown any evidence of foetotoxicity or teratogenicity (see section 5.3). Animal data have shown that enoxaparin passage through the placenta is minimal.

Enoxaparin sodium should be used during pregnancy only if the physician has established a clear need.

Pregnant women receiving enoxaparin sodium should be carefully monitored for evidence of bleeding or excessive anticoagulation and should be warned of the haemorrhagic risk. Overall, the data suggest that there is no evidence for an increased risk of haemorrhage, thrombocytopenia or osteoporosis with respect to the risk observed in non-pregnant women, other than that observed in pregnant women with prosthetic heart valves (see section 4.4).

If an epidural anaesthesia is planned, it is recommended to withdraw enoxaparin sodium treatment before (see section 4.4).

### Breast-feeding

It is not known whether unchanged enoxaparin is excreted in human breast milk. In lactating rats, the passage of enoxaparin or its metabolites in milk is very low. The oral absorption of enoxaparin sodium is unlikely. Inhixa can be used during breastfeeding.

### Fertility

There are no clinical data for enoxaparin sodium in fertility. Animal studies did not show any effect on fertility (see section 5.3).

## **4.7 Effects on ability to drive and use machines**

Enoxaparin sodium has no or negligible influence on the ability to drive and use machines.

## **4.8 Undesirable effects**

### Summary of the safety profile

Enoxaparin sodium has been evaluated in more than 15,000 patients who received enoxaparin sodium in clinical trials. These included 1,776 for prophylaxis of DVT following orthopaedic or abdominal surgery in patients at risk for thromboembolic complications, 1,169 for prophylaxis of DVT in acutely ill medical patients with severely restricted mobility, 559 for treatment of DVT with or without PE, 1,578 for treatment of unstable angina and non-Q-wave myocardial infarction and 10,176 for treatment of acute STEMI.

Enoxaparin sodium regimen administered during these clinical trials varies depending on indications. The enoxaparin sodium dose was 4,000 IU (40 mg) SC once daily for prophylaxis of DVT following surgery or in acutely ill medical patients with severely restricted mobility. In treatment of DVT with or without PE, patients receiving enoxaparin sodium were treated with either a 100 IU/kg (1 mg/kg) SC dose every 12 hours or a 150 IU/kg (1.5 mg/kg) SC dose once a day. In the clinical trials for treatment of unstable angina and non-Q-wave myocardial infarction, doses were 100 IU/kg (1 mg/kg) SC every 12 hours, and in the clinical study for treatment of acute STEMI enoxaparin sodium regimen was a 3,000 IU (30 mg) IV bolus followed by 100 IU/kg (1 mg/kg) SC every 12 hours.

In clinical trials, haemorrhages, thrombocytopenia and thrombocytosis were the most commonly reported reactions (see section 4.4 and 'Description of selected adverse reactions' below).

The safety profile of enoxaparin for extended treatment of DVT and PE in patients with active cancer is similar to its safety profile for the treatment of DVT and PE.

Acute generalized exanthematous pustulosis (AGEP) has been reported in association with enoxaparin treatment (see section 4.4).

#### Tabulated list of adverse reactions

Other adverse reactions observed in clinical trials and reported in post-marketing experience (\* indicates reactions from post-marketing experience) are detailed below.

Frequencies are defined as follows: very common ( $\geq 1/10$ ); common ( $\geq 1/100$  to  $< 1/10$ ); uncommon ( $\geq 1/1000$  to  $< 1/100$ ); rare ( $\geq 1/10,000$  to  $< 1/1,000$ ); and very rare ( $< 1/10,000$ ) or not known (cannot be estimated from available data). Within each system organ class, adverse reactions are presented in order of decreasing seriousness.

#### *Blood and the lymphatic system disorders*

Common: Haemorrhage, haemorrhagic anaemia\*, thrombocytopenia, thrombocytosis

Rare: Eosinophilia\*

Rare: Cases of immuno-allergic thrombocytopenia with thrombosis; in some of them thrombosis was complicated by organ infarction or limb ischaemia (see section 4.4).

#### *Immune system disorders*

Common: Allergic reaction

Rare: Anaphylactic/Anaphylactoid reactions including shock\*

#### *Nervous system disorders*

Common: Headache\*

#### *Vascular disorders*

Rare: Spinal haematoma\* (or neuraxial haematoma). These reactions have resulted in varying degrees of neurologic injuries including long-term or permanent paralysis (see section 4.4).

#### *Hepatobiliary disorders*

Very common: Hepatic enzyme increases (mainly transaminases  $> 3$  times the upper limit of normality)

Uncommon: Hepatocellular liver injury \*

Rare: Cholestatic liver injury\*

#### *Skin and subcutaneous tissue disorders*

Common: Urticaria, pruritus, erythema

Uncommon: Bullous dermatitis

Rare: Alopecia\*

Rare: Cutaneous vasculitis\*, skin necrosis\* usually occurring at the injection site (these phenomena have been usually preceded by purpura or erythematous plaques, infiltrated and painful).

Injection site nodules\* (inflammatory nodules, which were not cystic enclosure of enoxaparin). They resolve after a few days and should not cause treatment discontinuation.

Not known: Acute generalized exanthematous pustulosis (AGEP)

#### *Musculoskeletal and connective tissue disorders*

Rare: Osteoporosis\* following long term therapy (greater than 3 months)

#### *General disorders and administration site conditions*

Common: Injection site haematoma, injection site pain, other injection site reaction (such as oedema, haemorrhage, hypersensitivity, inflammation, mass, pain, or reaction)

Uncommon: Local irritation, skin necrosis at injection site

#### *Investigations*

Rare: Hyperkalaemia\* (see sections 4.4 and 4.5).

#### Description of selected adverse reactions

##### *Haemorrhages*

These included major haemorrhages, reported at most in 4.2 % of the patients (surgical patients). Some of these cases have been fatal. In surgical patients, haemorrhage complications were considered major: (1) if the haemorrhage caused a significant clinical event, or (2) if accompanied by haemoglobin decrease  $\geq 2$  g/dL or transfusion of 2 or more units of blood products. Retroperitoneal and intracranial haemorrhages were always considered major.

As with other anticoagulants, haemorrhage may occur in the presence of associated risk factors such as: organic lesions liable to bleed, invasive procedures or the concomitant use of medicinal products affecting haemostasis (see sections 4.4 and 4.5).

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
Blood and lymphatic system disorders	<i>Very common:</i> <b>Haemorrhage<sup>a</sup></b>  <i>Rare:</i> <b>Retroperitoneal haemorrhage</b>	<i>Common:</i> <b>Haemorrhage<sup>a</sup></b>	<i>Very common:</i> <b>Haemorrhage<sup>a</sup></b>  <i>Uncommon:</i> <b>Intracranial haemorrhage, Retroperitoneal haemorrhage</b>	<i>Common<sup>b</sup>:</i> <b>Haemorrhage</b>	<i>Common:</i> <b>Haemorrhage<sup>a</sup></b> <i>Rare:</i> <b>Retroperitoneal haemorrhage</b>	<i>Common:</i> <b>Haemorrhage<sup>a</sup></b>  <i>Uncommon:</i> <b>Intracranial haemorrhage, Retroperitoneal haemorrhage</b>

<sup>a</sup>: such as haematoma, ecchymosis other than at injection site, wound haematoma, haematuria, epistaxis and gastro-intestinal haemorrhage.

<sup>b</sup>: frequency based on a retrospective study on a registry including 3526 patients (see section 5.1)

*Thrombocytopenia and thrombocytosis (see section 4.4 monitoring of platelet counts)*

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
<i>Blood and lymphatic system disorders</i>	<i>Very common:</i> <b>Thrombocytosis<sup>‡</sup></b>  <i>Common:</i> <b>Thrombocytopenia</b>	<i>Uncommon:</i> <b>Thrombocytopenia</b>	<i>Very common:</i> <b>Thrombocytosis<sup>‡</sup></b>  <i>Common:</i> <b>Thrombocytopenia</b>	<i>Unknown:</i> <b>Thrombocytopenia</b>	<i>Uncommon:</i> <b>Thrombocytopenia</b>	<i>Common:</i> <b>Thrombocytosis<sup>‡</sup></b> <b>Thrombocytopenia</b> <i>Very rare:</i> <b>Immuno-allergic thrombocytopenia</b>

<sup>‡</sup>: Platelet increased >400 G/L

### Paediatric population

The safety and efficacy of enoxaparin sodium in children have not been established (see section 4.2).

### Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the national reporting system listed in Appendix V.

## 4.9 Overdose

### Signs and symptoms

Accidental overdose with enoxaparin sodium after IV, extracorporeal or SC administration may lead to haemorrhagic complications. Following oral administration of even large doses, it is unlikely that enoxaparin sodium will be absorbed.

### Management

The anticoagulant effects can be largely neutralised by the slow IV injection of protamine. The dose of protamine depends on the dose of enoxaparin sodium injected; 1 mg protamine neutralises the anticoagulant effect of 100 IU (1 mg) of enoxaparin sodium, if enoxaparin sodium was administered in the previous 8 hours. An infusion of 0.5 mg protamine per 100 IU (1 mg) of enoxaparin sodium may be administered if enoxaparin sodium was administered greater than 8 hours previous to the protamine administration, or if it has been determined that a second dose of protamine is required. After 12 hours of the enoxaparin sodium injection, protamine administration may not be required. However, even with high doses of protamine, the anti-Xa activity of enoxaparin sodium is never completely neutralised (maximum about 60%) (see the prescribing information for protamine salts).

## 5. PHARMACOLOGICAL PROPERTIES

### 5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Antithrombotic agents, heparin group. ATC code: B01A B05

Inhixa is a biosimilar medicinal product. Detailed information is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.

### Pharmacodynamic effects

Enoxaparin is a LMWH with a mean molecular weight of approximately 4,500 daltons, in which the antithrombotic and anticoagulant activities of standard heparin have been dissociated. The active substance is the sodium salt.

In the *in vitro* purified system, enoxaparin sodium has a high anti-Xa activity (approximately 100 IU/mg) and low anti-IIa or anti thrombin activity (approximately 28 IU/mg), with a ratio of 3.6. These anticoagulant activities are mediated through anti-thrombin III (ATIII) resulting in anti-thrombotic activities in humans.

Beyond its anti-Xa/IIa activity, further antithrombotic and anti-inflammatory properties of enoxaparin have been identified in healthy subjects and patients as well as in non-clinical models. These include ATIII-dependent inhibition of other coagulation factors like factor VIIa, induction of endogenous Tissue Factor Pathway Inhibitor (TFPI) release as well as a reduced release of von Willebrand factor (vWF) from the vascular endothelium into the blood circulation. These factors are known to contribute to the overall antithrombotic effect of enoxaparin sodium.

When used as prophylactic treatment, enoxaparin sodium does not significantly affect the aPTT. When used as curative treatment, aPTT can be prolonged by 1.5-2.2 times the control time at peak activity.

### Clinical efficacy and safety

#### Prevention of venous thromboembolic disease associated with surgery

##### *Extended prophylaxis of VTE following orthopaedic surgery*

In a double blind study of extended prophylaxis for patients undergoing hip replacement surgery, 179 patients with no venous thromboembolic disease initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) SC, were randomised to a post-discharge regimen of either enoxaparin sodium 4,000 IU (40 mg) (n=90) once a day SC or to placebo (n=89) for 3 weeks. The incidence of DVT during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo, no PE was reported. No major bleeding occurred.

The efficacy data are provided in the table below.

	<b>Enoxaparin sodium 4,000 IU (40 mg) once a day SC n (%)</b>	<b>Placebo once a day SC n (%)</b>
<b>All treated extended prophylaxis patients</b>	90 (100)	89 (100)
<b>Total VTE</b>	6 (6.6)	18 (20.2)
Total DVT (%)	6 (6.6)*	18 (20.2)
Proximal DVT (%)	5 (5.6) <sup>#</sup>	7 (8.8)
*p value versus placebo =0.008		
<sup>#</sup> p value versus placebo =0.537		

In a second double-blind study, 262 patients without VTE disease and undergoing hip replacement surgery initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) SC were randomised to a post-discharge regimen of either enoxaparin sodium 4,000 IU (40 mg) (n=131) once a day SC or to placebo (n=131) for 3 weeks. Similar to the first study the incidence of VTE during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo for both total VTE (enoxaparin sodium 21 [16%] versus placebo 45 [34.4%]; p=0.001) and proximal DVT (enoxaparin sodium 8 [6.1%] versus placebo 28 [21.4%]; p=<0.001). No difference in major bleeding was found between the enoxaparin sodium and the placebo group.

### *Extended prophylaxis of DVT following cancer surgery*

A double-blind, multicenter trial, compared a four-week and a one-week regimen of enoxaparin sodium prophylaxis in terms of safety and efficacy in 332 patients undergoing elective surgery for abdominal or pelvic cancer. Patients received enoxaparin sodium (4,000 IU (40 mg) SC) daily for 6 to 10 days and were then randomly assigned to receive either enoxaparin sodium or placebo for another 21 days. Bilateral venography was performed between days 25 and 31, or sooner if symptoms of venous thromboembolism occurred. The patients were followed for three months. Enoxaparin sodium prophylaxis for four weeks after surgery for abdominal or pelvic cancer significantly reduced the incidence of venographically demonstrated thrombosis, as compared with enoxaparin sodium prophylaxis for one week. The rates of venous thromboembolism at the end of the double-blind phase were 12.0 % (n=20) in the placebo group and 4.8% (n=8) in the enoxaparin sodium group; p=0.02. This difference persisted at three months [13.8% vs. 5.5% (n=23 vs 9), p=0.01]. There were no differences in the rates of bleeding or other complications during the double-blind or follow-up periods.

### *Prophylaxis of venous thromboembolic disease in medical patients with an acute illness expected to induce limitation of mobility*

In a double blind multicenter, parallel group study, enoxaparin sodium 2,000 IU (20 mg) or 4,000 IU (40 mg) once a day SC was compared to placebo in the prophylaxis of DVT in medical patients with severely restricted mobility during acute illness (defined as walking distance of <10 meters for ≤3 days). This study included patients with heart failure (NYHA Class III or IV); acute respiratory failure or complicated chronic respiratory insufficiency, and acute infection or acute rheumatic; if associated with at least one VTE risk factor (age ≥75 years, cancer, previous VTE, obesity, varicose veins, hormone therapy, and chronic heart or respiratory failure).

A total of 1,102 patients were enrolled in the study, and 1,073 patients were treated. Treatment continued for 6 to 14 days (median duration 7 days). When given at a dose of 4,000 IU (40 mg) once a day SC, enoxaparin sodium significantly reduced the incidence of VTE as compared to placebo. The efficacy data are provided in the table below.

	<b>Enoxaparin sodium 2,000 IU (20 mg) once a day SC n (%)</b>	<b>Enoxaparin sodium 4,000 IU (40 mg) once a day SC n (%)</b>	<b>Placebo n (%)</b>
<b>All treated medical patients during acute illness</b>	287 (100)	291(100)	288 (100)
<b>Total VTE (%)</b>	43 (15.0)	16 (5.5)*	43 (14.9)
Total DVT (%)	43 (15.0)	16 (5.5)	40 (13.9)
Proximal DVT (%)	13 (4.5)	5 (1.7)	14 (4.9)
VTE = Venous thromboembolic events which included DVT, PE, and death considered to be thromboembolic in origin * p value versus placebo =0.0002			

At approximately 3 months following enrolment, the incidence of VTE remained significantly lower in the enoxaparin sodium 4,000 IU (40 mg) treatment group versus the placebo treatment group.

The occurrence of total and major bleeding were respectively 8.6% and 1.1% in the placebo group, 11.7% and 0.3% in the enoxaparin sodium 2,000 IU (20 mg) group and 12.6% and 1.7% in the enoxaparin sodium 4,000 IU (40 mg) group.

### *Treatment of DVT with or without PE*

In a multicenter, parallel group study, 900 patients with acute lower extremity DVT with or without PE were randomised to an inpatient (hospital) treatment of either (i) enoxaparin sodium 150 IU/kg (1.5 mg/kg) once

a day SC, (ii) enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours SC, or (iii) heparin IV bolus (5,000 IU) followed by a continuous infusion (administered to achieve an aPTT of 55 to 85 seconds). A total of 900 patients were randomised in the study and all patients were treated. All patients also received warfarin sodium (dose adjusted according to prothrombin time to achieve an INR of 2.0 to 3.0), commencing within 72 hours of initiation of enoxaparin sodium or standard heparin therapy, and continuing for 90 days. Enoxaparin sodium or standard heparin therapy was administered for a minimum of 5 days and until the targeted warfarin sodium INR was achieved. Both enoxaparin sodium regimens were equivalent to standard heparin therapy in reducing the risk of recurrent venous thromboembolism (DVT and/or PE). The efficacy data are provided in the table below.

	<b>Enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day SC n (%)</b>	<b>Enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day SC n (%)</b>	<b>Heparin aPTT adjusted IV therapy n (%)</b>
<b>All treated DVT patients with or without PE</b>	298 (100)	312 (100)	290 (100)
<b>Total VTE (%)</b>	13 (4.4)*	9 (2.9)*	12 (4.1)
DVT only (%)	11 (3.7)	7 (2.2)	8 (2.8)
Proximal DVT (%)	9 (3.0)	6 (1.9)	7 (2.4)
PE (%)	2 (0.7)	2 (0.6)	4 (1.4)
VTE = venous thromboembolic event (DVT and/or PE) *The 95% confidence intervals for the treatment differences for total VTE were: - enoxaparin sodium once a day versus heparin (-3.0 to 3.5) - enoxaparin sodium every 12 hours versus heparin (-4.2 to 1.7).			

Major bleeding were respectively 1.7% in the enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day group, 1.3% in the enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day group and 2.1% in the heparin group.

*Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer*

In clinical trials with limited number of patients, reported rates of recurrent VTE in patients treated with enoxaparin given once or twice daily for 3 to 6 months appear comparable to those with warfarin.

Effectiveness in real-life setting was assessed in a cohort of 4,451 patients with symptomatic VTE and active cancer from the multinational registry RIETE of patients with VTE and other thrombotic conditions. 3,526 patients received SC enoxaparin up to 6 months and 925 patients received tinzaparin or dalteparin SC. Among the 3,526 patients receiving enoxaparin treatment, 891 patients were treated with 1.5 mg/kg once daily as initial therapy and extended treatment up to 6 months (once daily alone), 1,854 patients received initial 1.0 mg/kg twice daily regimen and extended treatment up to 6 months (twice daily alone), and 687 patients received 1.0 mg/kg twice daily as initial treatment followed by 1.5 mg/kg once daily (twice daily-once daily) as the extended treatment up to 6 months. The mean and median duration of treatment until regimen change was 17 days and 8 days, respectively. There was no significant difference for VTE recurrence rate between the two treatments groups (see table), with enoxaparin meeting the prespecified criterion for non inferiority of 1.5 (HR adjusted by relevant covariates 0.817, 95% CI: 0.499-1.336). There was no statistically significant difference between the two treatment groups with regards to the relative risks of major (fatal or non-fatal) bleeding and all-cause death (see table).



**Table. Efficacy and safety outcomes in the RIETECAT study**

Outcome	Enoxaparin n=3526	Other LMWH n=925	Adjusted hazard ratios enoxaparin / other LMWH [95% confidence interval]
VTE recurrence	70 (2.0%)	23 (2.5%)	0.817, [ 0.499-1.336]
Major bleeding	111 (3.1%)	18 (1.9%)	1.522, [ 0.899-2.577]
Non-major bleeding	87 (2.5%)	24 (2.6%)	0.881, [0.550-1.410]
Overall death	666 (18.9%)	157 (17.0%)	0.974, [ 0.813-1.165]

An overview of outcomes per treatment regimen used in the RIETECAT study among 6-month completers is provided below:

**Table. 6-month outcomes in patients completing 6-month treatment, by different regimens**

Outcome N (%) (95% CI)	Enoxapa rin all regimens	Enoxaparin all regimens					EU- authorized LMWHs
		Enoxapa rin OD	Enoxapa rin BID	Enoxapa rin BID to OD	Enoxapar in OD to BID	Enoxapar in More than one switch	
	N=1432	N=444	N=529	N=406	N=14	N=39	N=428
Recurrence of VTE	70 (4.9%) (3.8%- 6.0%)	33 (7.4%) (5.0%- 9.9%)	22 (4.2%) (2.5%- 5.9%)	10 (2.5%) (0.9%- 4.0%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	23 (5.4%) (3.2%- 7.5%)
Major bleeding (fatal and non-fatal)	111 (7.8%) (6.4%- 9.1%)	31 (7.0%) (4.6%- 9.4%)	52 (9.8%) (7.3%- 12.4%)	21 (5.2%) (3.0%- 7.3%)	1 (7.1%) (0%- 22.6%)	6 (15.4%) (3.5%- 27.2%)	18 (4.2%) (2.3%- 6.1%)
Non-major bleedings of clinical significance	87 (6.1%) (4.8%- 7.3%)	26 (5.9%) (3.7%- 8.0%)	33 (6.2%) (4.2%- 8.3%)	23 (5.7%) (3.4%- 7.9%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	24 (5.6%) (3.4%- 7.8%)
All-cause death	666 (46.5%) (43.9%- 49.1%)	175 (39.4%) (34.9%- 44.0%)	323 (61.1%) (56.9%- 65.2%)	146 (36.0%) (31.3%- 40.6%)	6 (42.9%) (13.2%- 72.5%)	16 (41.0%) (24.9%- 57.2%)	157 (36.7%) (32.1%- 41.3%)
Fatal PE or fatal bleeding related death	48 (3.4%) (2.4%- 4.3%)	7 (1.6%) (0.4%- 2.7%)	35 (6.6%) (4.5%- 8.7%)	5 (1.2%) (0.2%- 2.3%)	0 (0%) -	1 (2.6%) (0%- 7.8%)	11 (2.6%) (1.1%- 4.1%)
*All data with 95% CI							

#### Treatment of unstable angina and non ST elevation myocardial infarction

In a large multicenter study, 3,171 patients enrolled at the acute phase of unstable angina or non-Q-wave myocardial infarction were randomised to receive in association with acetylsalicylic acid (100 to 325 mg once daily), either SC enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours or IV unfractionated heparin adjusted based on aPTT. Patients had to be treated in hospital for a minimum of 2 days and a maximum of 8 days, until clinical stabilization, revascularization procedures or hospital discharge. The patients had to be followed up to 30 days. In comparison with heparin, enoxaparin sodium significantly reduced the combined incidence of angina pectoris, myocardial infarction and death, with a decrease of 19.8 to 16.6% (relative risk reduction of 16.2%) on day 14. This reduction in the combined incidence was maintained after 30 days (from 23.3 to 19.8%; relative risk reduction of 15%).

There were no significant differences in major haemorrhages, although a haemorrhage at the site of the SC injection was more frequent.

#### Treatment of acute ST-segment elevation myocardial infarction

In a large multicenter study, 20,479 patients with STEMI eligible to receive fibrinolytic therapy were randomised to receive either enoxaparin sodium in a single 3,000 IU (30 mg) IV bolus plus a 100 IU/kg (1 mg/kg) SC dose followed by an SC injection of 100 IU/kg (1 mg/kg) every 12 hours or IV unfractionated heparin adjusted based on aPTT for 48 hours. All patients were also treated with acetylsalicylic acid for a minimum of 30 days. The enoxaparin sodium dosing strategy was adjusted for severe renally impaired patients and for the elderly of at least 75 years of age. The SC injections of enoxaparin sodium were given until hospital discharge or for a maximum of eight days (whichever came first).

4,716 patients underwent percutaneous coronary intervention receiving antithrombotic support with blinded investigational medicinal product. Therefore, for patients on enoxaparin sodium, the PCI was to be performed on enoxaparin sodium (no switch) using the regimen established in previous studies i.e. no additional dosing, if last SC administration given less than 8 hours before balloon inflation, IV bolus of 30 IU/kg (0.3 mg/kg) enoxaparin sodium, if the last SC administration given more than 8 hours before balloon inflation.

Enoxaparin sodium compared to unfractionated heparin significantly decreased the incidence of the primary end point, a composite of death from any cause or myocardial re-infarction in the first 30 days after randomization [9.9 percent in the enoxaparin sodium group, as compared with 12.0 percent in the unfractionated heparin group] with a 17 percent relative risk reduction ( $p < 0.001$ ).

The treatment benefits of enoxaparin sodium, evident for a number of efficacy outcomes, emerged at 48 hours, at which time there was a 35 percent reduction in the relative risk of myocardial re-infarction, as compared with treatment with unfractionated heparin ( $p < 0.001$ ).

The beneficial effect of enoxaparin sodium on the primary end point was consistent across key subgroups including age, gender, infarct location, history of diabetes, history of prior myocardial infarction, type of fibrinolytic administered, and time to treatment with the investigational medicinal product.

There was a significant treatment benefit of enoxaparin sodium, as compared with unfractionated heparin, in patients who underwent percutaneous coronary intervention within 30 days after randomization (23 percent reduction in relative risk) or who were treated medically (15 percent reduction in relative risk,  $p = 0.27$  for interaction).

The rate of the 30 day composite endpoint of death, myocardial re-infarction or intracranial haemorrhage (a measure of net clinical benefit) was significantly lower ( $p < 0.0001$ ) in the enoxaparin sodium group (10.1%) as compared to the heparin group (12.2%), representing a 17% relative risk reduction in favour of treatment with enoxaparin sodium.

The incidence of major bleeding at 30 days was significantly higher ( $p < 0.0001$ ) in the enoxaparin sodium group (2.1%) versus the heparin group (1.4%). There was a higher incidence of gastrointestinal bleeding in the enoxaparin sodium group (0.5%) versus the heparin group (0.1%), while the incidence of intracranial haemorrhage was similar in both groups (0.8% with enoxaparin sodium versus 0.7% with heparin).

The beneficial effect of enoxaparin sodium on the primary end point observed during the first 30 days was maintained over a 12 month follow-up period.

#### Hepatic impairment

Based on literature data the use of enoxaparin sodium 4,000 IU (40 mg) in cirrhotic patients (Child-Pugh class B-C) appears to be safe and effective in preventing portal vein thrombosis. It should be noted that the literature studies may have limitations. Caution should be used in patients with hepatic impairment as these patients have an increased potential for bleeding (see section 4.4) and no formal dose finding studies have been performed in cirrhotic patients (Child Pugh class A, B nor C).

## **5.2 Pharmacokinetic properties**

### General characteristics

The pharmacokinetic parameters of enoxaparin sodium have been studied primarily in terms of the time course of plasma anti-Xa activity and also by anti-IIa activity, at the recommended dose ranges after single

and repeated SC administration and after single IV administration. The quantitative determination of anti-Xa and anti-IIa pharmacokinetic activities was conducted by validated amidolytic methods.

### Absorption

The absolute bioavailability of enoxaparin sodium after SC injection, based on anti-Xa activity, is close to 100%.

Different doses and formulations and dosing regimens can be used.

The mean maximum plasma anti-Xa activity level is observed 3 to 5 hours after SC injection and achieves approximately 0.2, 0.4, 1.0 and 1.3 anti-Xa IU/mL following single SC administration of 2,000 IU, 4,000 IU, 100 IU/kg and 150 IU/kg (20 mg, 40 mg, 1 mg/kg and 1.5 mg/kg) doses, respectively.

A 3,000 IU (30 mg) IV bolus immediately followed by a 100 IU/kg (1 mg/kg) SC every 12 hours provided initial maximum anti-Xa activity level of 1.16 IU/mL (n=16) and average exposure corresponding to 88% of steady-state levels. Steady-state is achieved on the second day of treatment.

After repeated SC administration of 4,000 IU (40 mg) once daily and 150 IU/kg (1.5 mg/kg) once daily regimens in healthy volunteers, the steady-state is reached on day 2 with an average exposure ratio about 15% higher than after a single dose. After repeated SC administration of the 100 IU/kg (1 mg/kg) twice daily regimen, the steady-state is reached from day 3 to 4 with mean exposure about 65% higher than after a single dose and mean maximum and trough anti-Xa activity levels of about 1.2 and 0.52 IU/mL, respectively.

Injection volume and dose concentration over the range 100-200 mg/mL does not affect pharmacokinetic parameters in healthy volunteers.

Enoxaparin sodium pharmacokinetics appears to be linear over the recommended dose ranges.

Intra-patient and inter-patient variability is low. Following repeated SC administration no accumulation takes place.

Plasma anti-IIa activity after SC administration is approximately ten-fold lower than anti-Xa activity. The mean maximum anti-IIa activity level is observed approximately 3 to 4 hours following SC injection and reaches 0.13 IU/mL and 0.19 IU/mL following repeated administration of 100 IU/kg (1 mg/kg) twice daily and 150 IU/kg (1.5 mg/kg) once daily, respectively.

### Distribution

The volume of distribution of enoxaparin sodium anti-Xa activity is about 4.3 litres and is close to the blood volume.

### Biotransformation

Enoxaparin sodium is primarily metabolised in the liver by desulfation and/or depolymerization to lower molecular weight species with much reduced biological potency.

### Elimination

Enoxaparin sodium is a low clearance substance with a mean anti-Xa plasma clearance of 0.74 L/h after a 150 IU/kg (1.5 mg/kg) 6-hour IV infusion.

Elimination appears monophasic with a half-life of about 5 hours after a single SC dose to about 7 hours after repeated dosing.

Renal clearance of active fragments represents about 10% of the administered dose and total renal excretion of active and non-active fragments 40% of the dose.

## Special populations

### *Elderly*

Based on the results of a population pharmacokinetic analysis, the enoxaparin sodium kinetic profile is not different in elderly subjects compared to younger subjects when renal function is normal. However, since renal function is known to decline with age, elderly patients may show reduced elimination of enoxaparin sodium (see sections 4.2 and 4.4).

### *Hepatic impairment*

In a study conducted in patients with advanced cirrhosis treated with enoxaparin sodium 4,000 IU (40 mg) once daily, a decrease in maximum anti-Xa activity was associated with an increase in the severity of hepatic impairment (assessed by Child-Pugh categories). This decrease was mainly attributed to a decrease in ATIII level secondary to a reduced synthesis of ATIII in patients with hepatic impairment.

### *Renal impairment*

A linear relationship between anti-Xa plasma clearance and creatinine clearance at steady-state has been observed, which indicates decreased clearance of enoxaparin sodium in patients with reduced renal function. Anti-Xa exposure represented by AUC, at steady-state, is marginally increased in mild (creatinine clearance 50-80 mL/min) and moderate (creatinine clearance 30-50 mL/min) renal impairment after repeated SC 4,000 IU (40 mg) once daily doses. In patients with severe renal impairment (creatinine clearance <30 mL/min), the AUC at steady state is significantly increased on average by 65% after repeated SC 4,000 IU (40 mg) once daily doses (see sections 4.2 and 4.4).

### *Haemodialysis*

Enoxaparin sodium pharmacokinetics appeared similar than control population, after a single 25 IU, 50 IU or 100 IU/kg (0.25, 0.50 or 1.0 mg/kg) IV dose however, AUC was two-fold higher than control.

### *Weight*

After repeated SC 150 IU/kg (1.5 mg/kg) once daily dosing, mean AUC of anti-Xa activity is marginally higher at steady state in obese healthy volunteers (BMI 30-48 kg/m<sup>2</sup>) compared to non-obese control subjects, while maximum plasma anti-Xa activity level is not increased. There is a lower weight-adjusted clearance in obese subjects with SC dosing.

When non-weight adjusted dosing was administered, it was found after a single-SC 4,000 IU (40 mg) dose, that anti-Xa exposure is 52% higher in low-weight women (<45 kg) and 27% higher in low-weight men (<57 kg) when compared to normal weight control subjects (see section 4.4).

## Pharmacokinetic interactions

No pharmacokinetic interactions were observed between enoxaparin sodium and thrombolytics when administered concomitantly.

## **5.3 Preclinical safety data**

Besides the anticoagulant effects of enoxaparin sodium, there was no evidence of adverse reactions at 15 mg/kg/day in the 13-week SC toxicity studies both in rats and dogs and at 10 mg/kg/day in the 26-week SC and IV toxicity studies both in rats, and monkeys.

Enoxaparin sodium has shown no mutagenic activity based on *in vitro* tests, including the Ames test, mouse lymphoma cell forward mutation test, and *no clastogenic* activity based on an *in vitro* human lymphocyte chromosomal aberration test, and the *in vivo* rat bone marrow chromosomal aberration test.

Studies conducted in pregnant rats and rabbits at SC doses of enoxaparin sodium up to 30 mg/kg/day did not reveal any evidence of teratogenic effects or foetotoxicity. Enoxaparin sodium was found to have no effect on fertility or reproductive performance of male and female rats at SC doses up to 20 mg/kg/day.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Water for injections

### **6.2 Incompatibilities**

#### SC injection

Do not mix with other medicinal products.

#### IV (bolus) injection (for acute STEMI indication only)

Enoxaparin sodium may be safely administered with sodium chloride 9mg/ml (0.9%) solution for injection or 5% glucose in water for injections (see section 4.2).

### **6.3 Shelf life**

#### Pre-filled syringe

3 years

Diluted medicinal product with sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections.

8 hours

### **6.4 Special precautions for storage**

Store below 25 °C. Do not freeze.

### **6.5 Nature and contents of container**

0.6 mL of solution in:

- a clear, colourless type I neutral glass graduated syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and an orange polypropylene plunger rod. The syringe can be additionally equipped with needle guard or manual needle guard; or
- a clear, colourless type I neutral glass graduated syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a white polycarbonate plunger rod equipped with UltraSafe Passive needle guard.

Packs of:

- 2, 6, 10, 12, 20, 24, 30 and 50 pre-filled syringes
- 2, 6, 10, 12, 20, 24, 30 and 50 pre-filled syringes with needle guard
- 6, 10, 12, 20, 24 and 50 pre-filled syringes with manual needle guard
- 2 and 10 pre-filled syringes with UltraSafe Passive needle guard

Not all pack sizes may be marketed.

### **6.6 Special precautions for disposal and other handling**

## **INSTRUCTIONS FOR USE: PRE-FILLED SYRINGE**

## How to give yourself an injection of Inhixa with a pre-filled syringe without needle guard

If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

### ***Before injecting yourself with Inhixa***

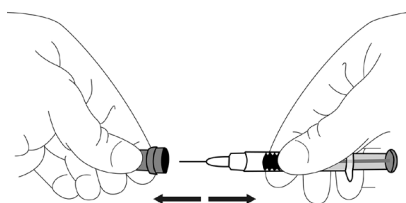
- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

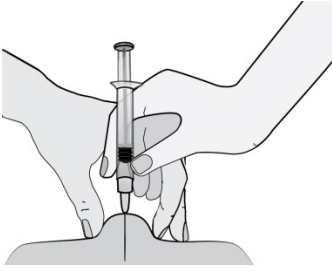


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

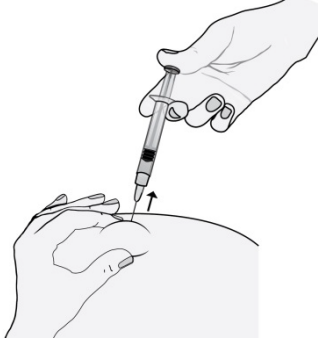
- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin

Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold



- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection
- 9) Remove the needle by pulling it straight out.



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

#### How to give yourself an injection of Inhixa with a pre-filled syringe with needle guard

Your pre-filled syringe has a needle guard attached to it in order to protect you from needle stick injury. If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately. Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

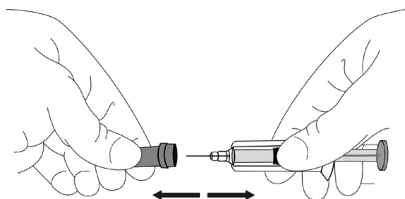
#### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.

- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

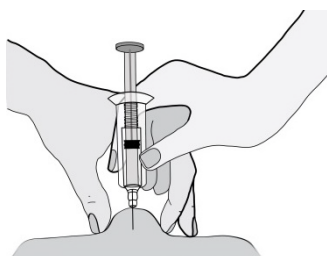


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin

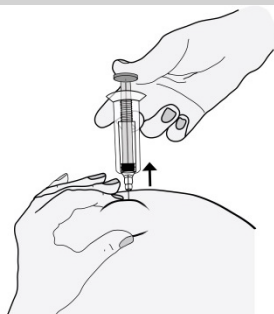
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold



- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection

- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!

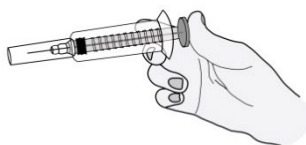


**To avoid bruising, do not rub the injection site after you have injected yourself.**



- 10) Push hard the plunger. The needle guard, which is in the form of a plastic cylinder, will be activated automatically and it will completely cover the needle.

"CLICK"



- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

#### How to give yourself an injection of Inhixa with a pre-filled syringe with UltraSafe Passive needle guard

Your pre-filled syringe has UltraSafe Passive needle guard attached to it in order to protect you from needle stick injury.

If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

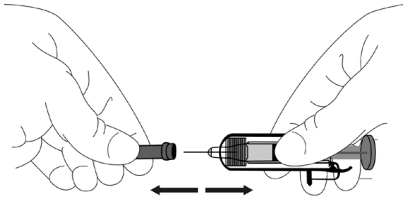
- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your stomach, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

#### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

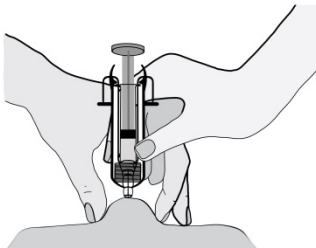


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin

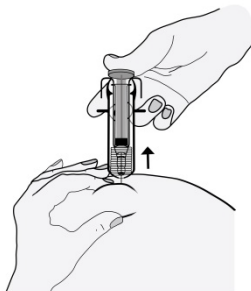
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold



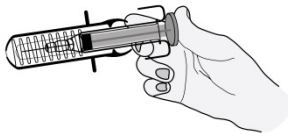
- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection

- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Let go of the plunger and allow the syringe to move up until the entire needle is guarded and locks into place.



- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

How to give yourself an injection of Inhixa with a pre-filled syringe with manually activated needle guard

Your pre-filled syringe has a manually activated needle guard attached to it in order to protect you from needle stick injury.

If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

***Before injecting yourself with Inhixa***

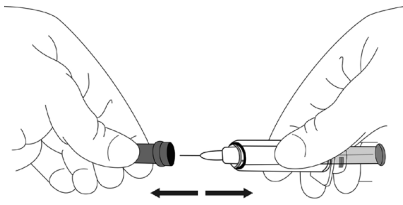
- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

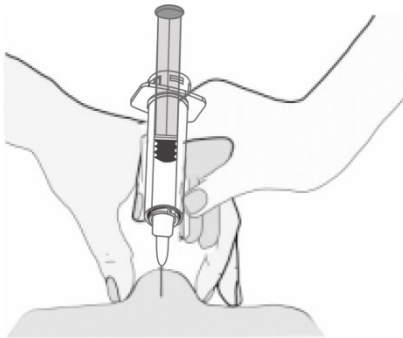


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin.

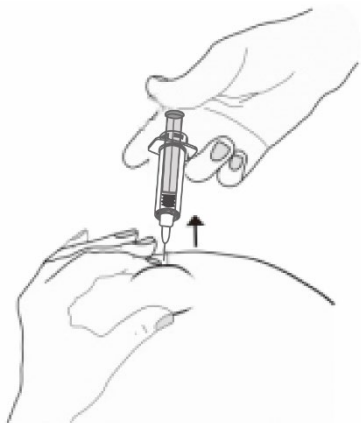
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold.



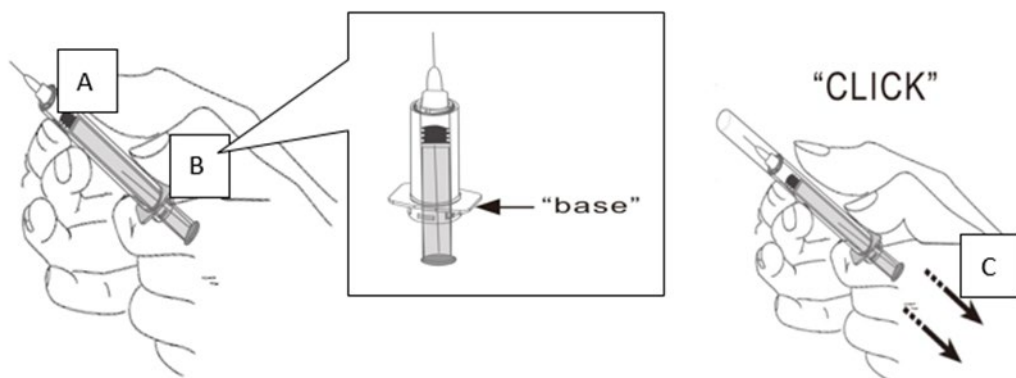
- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection.

- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Firmly hold the syringe tube with one hand (A). With the other hand hold the base, “wings” of the syringe (B), and pull the base until you hear a clicking sound (C). Now the used needle is completely protected.



- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

## 7. MARKETING AUTHORISATION HOLDER

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

## 8. MARKETING AUTHORISATION NUMBER(S)

EU/1/16/1132/005  
EU/1/16/1132/006  
EU/1/16/1132/015  
EU/1/16/1132/016  
EU/1/16/1132/026  
EU/1/16/1132/027  
EU/1/16/1132/028  
EU/1/16/1132/037  
EU/1/16/1132/038  
EU/1/16/1132/045  
EU/1/16/1132/046  
EU/1/16/1132/057  
EU/1/16/1132/058  
EU/1/16/1132/083  
EU/1/16/1132/087  
EU/1/16/1132/092  
EU/1/16/1132/099  
EU/1/16/1132/100  
EU/1/16/1132/101  
EU/1/16/1132/102  
EU/1/16/1132/111  
EU/1/16/1132/118  
EU/1/16/1132/119

EU/1/16/1132/120

**9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION**

Date of first authorisation: 15/09/2016

Date of latest renewal: 26/08/2021

**10. DATE OF REVISION OF THE TEXT**

Detailed information on this medicinal product is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.

## 1. NAME OF THE MEDICINAL PRODUCT

Inhixa 8,000 IU (80 mg)/0.8 mL solution for injection in pre-filled syringe

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

10,000 IU/mL (100 mg/mL) solution for injection

Each pre-filled syringe contains enoxaparin sodium 8,000 IU anti-Xa activity (equivalent to 80 mg) in 0.8 mL water for injections.

For the full list of excipients, see section 6.1.

Enoxaparin sodium is a biological substance obtained by alkaline depolymerisation of heparin benzyl ester derived from porcine intestinal mucosa.

## 3. PHARMACEUTICAL FORM

Solution for injection in pre-filled syringe (injection).

Clear, colourless to pale yellow solution.

## 4. CLINICAL PARTICULARS

### 4.1 Therapeutic indications

Inhixa is indicated in adults for:

Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients, in particular those undergoing orthopaedic or general surgery including cancer surgery.

Prophylaxis of venous thromboembolic disease in medical patients with an acute illness (such as acute heart failure, respiratory insufficiency, severe infections or rheumatic diseases) and reduced mobility at increased risk of venous thromboembolism.

Treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE), excluding PE likely to require thrombolytic therapy or surgery.

Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer.

Prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Acute coronary syndrome:

- Treatment of unstable angina and Non ST-segment elevation myocardial infarction (NSTEMI), in combination with oral acetylsalicylic acid.
- Treatment of acute ST-segment elevation myocardial infarction (STEMI) including patients to be managed medically or with subsequent percutaneous coronary intervention (PCI).

### 4.2 Posology and method of administration

#### Posology

#### Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients

Individual thromboembolic risk for patients can be estimated using validated risk stratification model.

In patients at moderate risk of thromboembolism, the recommended dose of enoxaparin sodium is 2,000 IU (20 mg) once daily by subcutaneous (SC) injection. Preoperative initiation (2 hours before surgery) of enoxaparin sodium 2,000 IU (20 mg) was proven effective and safe in moderate risk surgery.

In moderate risk patients, enoxaparin sodium treatment should be maintained for a minimal period of 7-10 days whatever the recovery status (e.g. mobility). Prophylaxis should be continued until the patient no longer has significantly reduced mobility.

In patients at high risk of thromboembolism, the recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily given by SC injection preferably started 12 hours before surgery. If there is a need for earlier than 12 hours enoxaparin sodium preoperative prophylactic initiation (e.g. high risk patient waiting for a deferred orthopaedic surgery), the last injection should be administered no later than 12 hours prior to surgery and resumed 12 hours after surgery.

- For patients who undergo major orthopaedic surgery an extended thromboprophylaxis up to 5 weeks is recommended.
- For patients with a high venous thromboembolism (VTE) risk who undergo abdominal or pelvic surgery for cancer an extended thromboprophylaxis up to 4 weeks is recommended.

#### Prophylaxis of venous thromboembolism in medical patients

The recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily by SC injection.

Treatment with enoxaparin sodium is prescribed for at least 6 to 14 days whatever the recovery status (e.g. mobility). The benefit is not established for a treatment longer than 14 days.

#### Treatment of DVT and PE

Enoxaparin sodium can be administered SC either as a once daily injection of 150 IU/kg (1.5 mg/kg) or as twice daily injections of 100 IU/kg (1 mg/kg).

The regimen should be selected by the physician based on an individual assessment including evaluation of the thromboembolic risk and of the risk of bleeding. The dose regimen of 150 IU/kg (1.5 mg/kg) administered once daily should be used in uncomplicated patients with low risk of VTE recurrence. The dose regimen of 100 IU/kg (1 mg/kg) administered twice daily should be used in all other patients such as those with obesity, with symptomatic PE, cancer, recurrent VTE or proximal (*vena iliaca*) thrombosis.

Enoxaparin sodium treatment is prescribed for an average period of 10 days. Oral anticoagulant therapy should be initiated when appropriate (see “Switch between enoxaparin sodium and oral anticoagulants” at the end of section 4.2).

In the extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer, physicians should carefully assess the individual thromboembolic and bleeding risks of the patient.

The recommended dose is 100 IU/kg (1 mg/kg) administered twice daily by SC injections for 5 to 10 days, followed by a 150 IU/kg (1.5 mg/kg) once daily SC injection up to 6 months. The benefit of continuous anticoagulant therapy should be reassessed after 6 months of treatment.

#### Prevention of thrombus formation during haemodialysis

The recommended dose is 100 IU/kg (1 mg/kg) of enoxaparin sodium.

For patients with a high risk of haemorrhage, the dose should be reduced to 50 IU/kg (0.5 mg/kg) for double vascular access or 75 IU/kg (0.75 mg/kg) for single vascular access.

During haemodialysis, enoxaparin sodium should be introduced into the arterial line of the circuit at the beginning of the dialysis session. The effect of this dose is usually sufficient for a 4-hour session; however, if fibrin rings are found, for example after a longer than normal session, a further dose of 50 IU to 100 IU/kg (0.5 to 1 mg/kg) may be given.

No data are available in patients using enoxaparin sodium for prophylaxis or treatment and during haemodialysis sessions.

#### Acute coronary syndrome: treatment of unstable angina and NSTEMI and treatment of acute STEMI

For treatment of unstable angina and NSTEMI, the recommended dose of enoxaparin sodium is 100 IU/kg (1 mg/kg) every 12 hours by SC injection administered in combination with antiplatelet therapy. Treatment



should be maintained for a minimum of 2 days and continued until clinical stabilization. The usual duration of treatment is 2 to 8 days.

Acetylsalicylic acid is recommended for all patients without contraindications at an initial oral loading dose of 150–300 mg (in acetylsalicylic acid-naïve patients) and a maintenance dose of 75–325 mg/day long-term regardless of treatment strategy.

For treatment of acute STEMI, the recommended dose of enoxaparin sodium is a single intravenous (IV) bolus of 3,000 IU (30 mg) plus a 100 IU/kg (1 mg/kg) SC dose followed by 100 IU/kg (1 mg/kg) administered SC every 12 hours (maximum 10,000 IU (100 mg) for each of the first two SC doses).

Appropriate antiplatelet therapy such as oral acetylsalicylic acid (75 mg to 325 mg once daily) should be administered concomitantly unless contraindicated. The recommended duration of treatment is 8 days or until hospital discharge, whichever comes first. When administered in conjunction with a thrombolytic (fibrin specific or non-fibrin specific), enoxaparin sodium should be given between 15 minutes before and 30 minutes after the start of fibrinolytic therapy.

- For dose in patients  $\geq 75$  years of age, see paragraph “Elderly”.
- For patients managed with PCI, if the last dose of enoxaparin sodium SC was given less than 8 hours before balloon inflation, no additional dosing is needed. If the last SC administration was given more than 8 hours before balloon inflation, an IV bolus of 30 IU/kg (0.3 mg/kg) enoxaparin sodium should be administered.

### Special populations

#### Paediatric population

The safety and efficacy of enoxaparin sodium in paediatric population have not been established.

#### Elderly

For all indications except STEMI, no dose reduction is necessary in the elderly patients, unless kidney function is impaired (see below “renal impairment” and section 4.4).

For treatment of acute STEMI in elderly patients  $\geq 75$  years of age, an initial IV bolus must not be used. Initiate dosing with 75 IU/kg (0.75 mg/kg) SC every 12 hours (maximum 7,500 IU (75 mg) for each of the first two SC doses only, followed by 75 IU/kg (0.75 mg/kg) SC dosing for the remaining doses). For dose in elderly patients with impaired kidney function, see below “renal impairment” and section 4.4.

#### Hepatic impairment

Limited data are available in patients with hepatic impairment (see sections 5.1 and 5.2) and caution should be used in these patients (see section 4.4).

#### Renal impairment (see sections 4.4 and 5.2)

##### Severe renal impairment

Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance  $<15$  mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Dose table for patients with severe renal impairment (creatinine clearance [15-30] mL/min):

<u>Indication</u>	<u>Dosing regimen</u>
Prophylaxis of venous thromboembolic disease	2,000 IU (20 mg) SC once daily
Treatment of DVT and PE	100 IU/kg (1 mg/kg) body weight SC once daily
Extended treatment of DVT and PE in patients with active cancer	100 IU/kg (1 mg/kg) body weight SC once daily
Treatment of unstable angina and NSTEMI	100 IU/kg (1 mg/kg) body weight SC once daily

Treatment of acute STEMI (patients under 75)	1 x 3,000 IU (30 mg) IV bolus plus 100 IU/kg (1 mg/kg) body weight SC and then 100 IU/kg (1 mg/kg) body weight SC every 24 hours
Treatment of acute STEMI (patients over 75)	No IV initial bolus, 100 IU/kg (1 mg/kg) body weight SC and then 100 IU/kg (1 mg/kg) body weight SC every 24 hours

The recommended dose adjustments do not apply to the haemodialysis indication.

#### *Moderate and mild renal impairment*

Although no dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment, careful clinical monitoring is advised.

#### Method of administration

Inhixa is not indicated for intramuscular use and should not be administered by this route.

For the prophylaxis of venous thrombo-embolic disease following surgery, treatment of DVT and PE, extended treatment of DVT and PE in patients with active cancer, treatment of unstable angina and NSTEMI, enoxaparin sodium should be administered by SC injection.

For acute STEMI, treatment is to be initiated with a single IV bolus injection immediately followed by a SC injection.

For the prevention of thrombus formation in the extra corporeal circulation during haemodialysis, it is administered through the arterial line of a dialysis circuit.

The disposable pre-filled syringe is ready for immediate use.

The use of a tuberculin syringe or equivalent is recommended when using ampoules or multidose vials to assure withdrawal of the appropriate volume of the medicinal product.

#### SC injection technique

Injection should be made preferably when the patient is lying down. Enoxaparin sodium is administered by deep SC injection.

When using pre-filled syringes, the air bubble should not be expelled from the syringe before the injection in order to avoid the loss of the medicinal product. When the quantity of the medicinal product to be injected requires to be adjusted based on the patient's body weight, use the graduated pre-filled syringes to reach the required volume by discarding the excess before injection. Please be aware that in some cases it is not possible to achieve an exact dose due to the graduations on the syringe, and in such case the volume shall be rounded up to the nearest graduation.

The administration should be alternated between the left and right anterolateral or posterolateral abdominal wall.

The whole length of the needle should be introduced vertically into a skin fold gently held between the thumb and index finger. The skin fold should not be released until the injection is complete. After administration, the injection site should not be rubbed.

Note for the pre-filled syringes fitted with an automatic safety system: The safety system is triggered at the end of the injection (see instructions in section 6.6).

In case of self-administration, patient should be advised to follow instructions provided in the patient information leaflet included in the pack of this medicinal product.

#### IV (bolus) injection (for acute STEMI indication only)

For acute STEMI, treatment is to be initiated with a single IV bolus injection immediately followed by a SC injection.

For IV injection, either the multidose vial or pre-filled syringe can be used.

Enoxaparin sodium should be administered through an IV line. It should not be mixed or co-administered with other medicinal products. To avoid the possible mixture of enoxaparin sodium with other medicinal products, the IV access chosen should be flushed with a sufficient amount of sodium chloride 9 mg/ml (0.9%) or 5% glucose in water for injections prior to and following the IV bolus administration of enoxaparin sodium to clear the port of the medicinal product. Enoxaparin sodium may be safely administered with normal sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections.

#### *Initial 3,000 IU (30 mg) bolus*

For the initial 3,000 IU (30 mg) bolus, using an enoxaparin sodium graduated pre-filled syringe, the excessive volume has to be expelled to retain only 3,000 IU (30 mg) in the syringe. The 3,000 IU (30 mg) dose can then be directly injected into the IV line.

#### *Additional bolus for PCI when last SC administration was given more than 8 hours before balloon inflation*

For patients being managed with PCI, an additional IV bolus of 30 IU/kg (0.3 mg/kg) is to be administered if last SC administration was given more than 8 hours before balloon inflation.

In order to assure the accuracy of the small volume to be injected, it is recommended to dilute the medicinal product to 300 IU/mL (3 mg/mL).

To obtain a 300 IU/mL (3 mg/mL) solution, using a 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe, it is recommended to use a 50 mL infusion bag (i.e. using either sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections) as follows:

Withdraw 30 mL from the infusion bag with a syringe and discard the liquid. Inject the complete contents of the 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe into the 20 mL remaining in the bag. Gently mix the contents of the bag. Withdraw the required volume of diluted solution with a syringe for administration into the IV line.

After dilution is completed, the volume to be injected can be calculated using the following formula [volume of diluted solution (mL) = patient weight (kg) x 0.1] or using the table below. It is recommended to prepare the dilution immediately before use.

Volume to be injected through IV line after dilution is completed at a concentration of 300 IU (3 mg) /mL.

Weight [kg]	Required dose 30 IU/kg (0.3 mg/kg)		Volume to inject when diluted to a final concentration of 300 IU (3 mg)/mL [mL]
	IU	[mg]	
45	1,350	13.5	4.5
50	1,500	15	5
55	1,650	16.5	5.5
60	1,800	18	6
65	1,950	19.5	6.5
70	2,100	21	7
75	2,250	22.5	7.5
80	2,400	24	8
85	2,550	25.5	8.5
90	2,700	27	9
95	2,850	28.5	9.5
100	3,000	30	10
105	3,150	31.5	10.5
110	3,300	33	11
115	3,450	34.5	11.5
120	3,600	36	12

125	3,750	37.5	12.5
130	3,900	39	13
135	4,050	40.5	13.5
140	4,200	42	14
145	4,350	43.5	14.5
150	4,500	45	15

#### Arterial line injection

It is administered through the arterial line of a dialysis circuit for the prevention of thrombus formation in the extra corporeal circulation during haemodialysis.

#### Switch between enoxaparin sodium and oral anticoagulants

##### *Switch between enoxaparin sodium and vitamin K antagonists (VKA)*

Clinical monitoring and laboratory tests [prothrombin time expressed as the International Normalised Ratio (INR)] must be intensified to monitor the effect of VKA.

As there is an interval before the VKA reaches its maximum effect, enoxaparin sodium therapy should be continued at a constant dose for as long as necessary in order to maintain the INR within the desired therapeutic range for the indication in two successive tests.

For patients currently receiving a VKA, the VKA should be discontinued and the first dose of enoxaparin sodium should be given when the INR has dropped below the therapeutic range.

##### *Switch between enoxaparin sodium and direct oral anticoagulants (DOAC)*

For patients currently receiving enoxaparin sodium, discontinue enoxaparin sodium and start the DOAC 0 to 2 hours before the time that the next scheduled administration of enoxaparin sodium would be due as per DOAC label.

For patients currently receiving a DOAC, the first dose of enoxaparin sodium should be given at the time the next DOAC dose would be taken.

#### Administration in spinal/epidural anaesthesia or lumbar puncture

Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, careful neurological monitoring is recommended due to the risk of neuraxial haematomas (see section 4.4).

- *At doses used for prophylaxis*

A puncture-free interval of at least 12 hours shall be kept between the last injection of enoxaparin sodium at prophylactic doses and the needle or catheter placement.

For continuous techniques, a similar delay of at least 12 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 24 hours.

The 2 hours preoperative initiation of enoxaparin sodium 2,000 IU (20 mg) is not compatible with neuraxial anaesthesia.

- *At doses used for treatment*

A puncture-free interval of at least 24 hours shall be kept between the last injection of enoxaparin sodium at curative doses and the needle or catheter placement (see also section 4.3).

For continuous techniques, a similar delay of 24 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 48 hours.

Patients receiving the twice daily doses (i.e. 75 IU/kg (0.75 mg/kg) twice daily or 100 IU/kg (1 mg/kg) twice-daily) should omit the second enoxaparin sodium dose to allow a sufficient delay before catheter placement or removal.

Anti-Xa levels are still detectable at these time points, and these delays are not a guarantee that neuraxial hematoma will be avoided.

Likewise, consider not using enoxaparin sodium until at least 4 hours after the spinal/epidural puncture or after the catheter has been removed. The delay must be based on a benefit-risk assessment considering both the risk for thrombosis and the risk for bleeding in the context of the procedure and patient risk factors.

### 4.3 Contraindications

Enoxaparin sodium is contraindicated in patients with:

- Hypersensitivity to enoxaparin sodium, heparin or its derivatives, including other low molecular weight heparins (LMWH) or to any of the excipients listed in section 6.1;
- History of immune mediated heparin-induced thrombocytopenia (HIT) within the past 100 days or in the presence of circulating antibodies (see also section 4.4 );
- Active clinically significant bleeding and conditions with a high risk of haemorrhage, including recent haemorrhagic stroke, gastrointestinal ulcer, presence of malignant neoplasm at high risk of bleeding, recent brain, spinal or ophthalmic surgery, known or suspected oesophageal varices, arteriovenous malformations, vascular aneurysms or major intraspinal or intracerebral vascular abnormalities;
- Spinal or epidural anaesthesia or loco-regional anaesthesia when enoxaparin sodium is used for treatment in the previous 24 hours (see section 4.4).

### 4.4 Special warnings and precautions for use

#### Traceability

LMWHs are biological medicinal products. In order to improve the traceability of biological medicinal products, the name and the batch number of the administered product should be clearly recorded.

#### General

Enoxaparin sodium cannot be used interchangeably (unit for unit) with other LMWHs. These medicinal products differ in their manufacturing process, molecular weights, specific anti-Xa and anti-IIa activities, units, dose and clinical efficacy and safety. This results in differences in pharmacokinetics and associated biological activities (e.g. anti-thrombin activity, and platelet interactions). Special attention and compliance with the instructions for use specific to each proprietary medicinal product are therefore required.

#### History of HIT (>100 days)

Use of enoxaparin sodium in patients with a history of immune mediated HIT within the past 100 days or in the presence of circulating antibodies is contraindicated (see section 4.3). Circulating antibodies may persist several years.

Enoxaparin sodium is to be used with extreme caution in patients with a history (>100 days) of heparin-induced thrombocytopenia without circulating antibodies. The decision to use enoxaparin sodium in such a case must be made only after a careful benefit risk assessment and after non-heparin alternative treatments are considered (e.g. danaparoid sodium or lepirudin).

#### Monitoring of platelet counts

In patients with cancer with a platelet count below 80 G/L, anticoagulation treatment can only be considered on a case-by-case basis and careful monitoring is recommended.

The risk of antibody-mediated HIT also exists with LMWHs. Should thrombocytopenia occur, it usually appears between the 5<sup>th</sup> and the 21<sup>st</sup> day following the beginning of enoxaparin sodium treatment.

The risk of HIT is higher in postoperative patients and mainly after cardiac surgery and in patients with cancer. Therefore, it is recommended that the platelet counts be measured before the initiation of therapy with enoxaparin sodium and then regularly thereafter during the treatment.

If there are clinical symptoms suggestive of HIT (any new episode of arterial and/or venous thromboembolism, any painful skin lesion at the injection site, any allergic or anaphylactoid reactions on treatment), platelet count

should be measured. Patients must be aware that these symptoms may occur and if so, that they should inform their primary care physician.

In practice, if a confirmed significant decrease of the platelet count is observed (30 to 50 % of the initial value), enoxaparin sodium treatment must be immediately discontinued and the patient switched to another non-heparin anticoagulant alternative treatment.

### Haemorrhage

As with other anticoagulants, bleeding may occur at any site. If bleeding occurs, the origin of the haemorrhage should be investigated and appropriate treatment instituted.

Enoxaparin sodium, as with any other anticoagulant therapy, should be used with caution in conditions with increased potential for bleeding, such as:

- impaired haemostasis,
- history of peptic ulcer,
- recent ischemic stroke,
- severe arterial hypertension,
- recent diabetic retinopathy,
- neuro- or ophthalmologic surgery,
- concomitant use of medicinal products affecting haemostasis (see section 4.5).

### Laboratory tests

At doses used for prophylaxis of venous thromboembolism, enoxaparin sodium does not influence bleeding time and global blood coagulation tests significantly, nor does it affect platelet aggregation or binding of fibrinogen to platelets.

At higher doses, increases in activated partial thromboplastin time (aPTT), and activated clotting time (ACT) may occur. Increases in aPTT and ACT are not linearly correlated with increasing enoxaparin sodium antithrombotic activity and therefore are unsuitable and unreliable for monitoring enoxaparin sodium activity.

### Spinal/Epidural anaesthesia or lumbar puncture

Spinal/epidural anaesthesia or lumbar puncture must not be performed within 24 hours of administration of enoxaparin sodium at therapeutic doses (see also section 4.3).

There have been cases of neuraxial haematomas reported with the concurrent use of enoxaparin sodium and spinal/epidural anaesthesia or spinal puncture procedures resulting in long term or permanent paralysis.

These events are rare with enoxaparin sodium dose regimens 4,000 IU (40 mg) once daily or lower. The risk of these events is higher with the use of post-operative indwelling epidural catheters, with the concomitant use of additional medicinal products affecting haemostasis such as Non-Steroidal Anti-Inflammatory Drugs (NSAIDs), with traumatic or repeated epidural or spinal puncture, or in patients with a history of spinal surgery or spinal deformity.

To reduce the potential risk of bleeding associated with the concurrent use of enoxaparin sodium and epidural or spinal anaesthesia/analgesia or spinal puncture, consider the pharmacokinetic profile of enoxaparin sodium (see section 5.2). Placement or removal of an epidural catheter or lumbar puncture is best performed when the anticoagulant effect of enoxaparin sodium is low; however, the exact timing to reach a sufficiently low anticoagulant effect in each patient is not known. For patients with creatinine clearance [15-30 mL/minute], additional considerations are necessary because elimination of enoxaparin sodium is more prolonged (see section 4.2).

Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, frequent monitoring must be exercised to detect any signs and symptoms of neurological impairment such as midline back pain, sensory and motor deficits (numbness or weakness in lower limbs), bowel and/or bladder dysfunction. Instruct patients to report immediately if they experience any of the above signs or symptoms. If signs or symptoms of spinal hematoma are suspected,

initiate urgent diagnosis and treatment including consideration for spinal cord decompression even though such treatment may not prevent or reverse neurological sequelae.

#### Skin necrosis/cutaneous vasculitis

Skin necrosis and cutaneous vasculitis have been reported with LMWHs and should lead to prompt treatment discontinuation.

#### Percutaneous coronary revascularization procedures

To minimise the risk of bleeding following the vascular instrumentation during the treatment of unstable angina, NSTEMI and acute STEMI, adhere precisely to the intervals recommended between enoxaparin sodium injection doses. It is important to achieve haemostasis at the puncture site after PCI. In case a closure device is used, the sheath can be removed immediately. If a manual compression method is used, sheath should be removed 6 hours after the last IV/SC enoxaparin sodium injection. If the treatment with enoxaparin sodium is to be continued, the next scheduled dose should be given no sooner than 6 to 8 hours after sheath removal. The site of the procedure should be observed for signs of bleeding or hematoma formation.

#### Acute infective endocarditis

Use of heparin is usually not recommended in patients with acute infective endocarditis due to the risk of cerebral haemorrhage. If such use is considered absolutely necessary, the decision must be made only after a careful individual benefit risk assessment.

#### Mechanical prosthetic heart valves

The use of enoxaparin sodium has not been adequately studied for thromboprophylaxis in patients with mechanical prosthetic heart valves. Isolated cases of prosthetic heart valve thrombosis have been reported in patients with mechanical prosthetic heart valves who have received enoxaparin sodium for thromboprophylaxis. Confounding factors, including underlying disease and insufficient clinical data, limit the evaluation of these cases. Some of these cases were pregnant women in whom thrombosis led to maternal and foetal death.

#### *Pregnant women with mechanical prosthetic heart valves*

The use of enoxaparin sodium for thromboprophylaxis in pregnant women with mechanical prosthetic heart valves has not been adequately studied. In a clinical study of pregnant women with mechanical prosthetic heart valves given enoxaparin sodium (100 IU/kg (1 mg/kg) twice daily) to reduce the risk of thromboembolism, 2 of 8 women developed clots resulting in blockage of the valve and leading to maternal and foetal death. There have been isolated post-marketing reports of valve thrombosis in pregnant women with mechanical prosthetic heart valves while receiving enoxaparin sodium for thromboprophylaxis. Pregnant women with mechanical prosthetic heart valves may be at higher risk for thromboembolism.

#### Elderly

No increased bleeding tendency is observed in the elderly with the prophylactic dose ranges. Elderly patients (especially patients eighty years of age and older) may be at an increased risk for bleeding complications with the therapeutic dose ranges. Careful clinical monitoring is advised and dose reduction might be considered in patients older than 75 years treated for STEMI (see sections 4.2 and 5.2).

#### Renal impairment

In patients with renal impairment, there is an increase in exposure of enoxaparin sodium which increases the risk of bleeding. In these patients, careful clinical monitoring is advised, and biological monitoring by anti-Xa activity measurement might be considered (see sections 4.2 and 5.2).

Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance <15 mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

In patients with severe renal impairment (creatinine clearance 15-30 mL/min), since exposure of enoxaparin sodium is significantly increased, a dose adjustment is recommended for therapeutic and prophylactic dose ranges (see section 4.2).

No dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment.

#### Hepatic impairment

Enoxaparin sodium should be used with caution in patients with hepatic impairment due to an increased potential for bleeding. Dose adjustment based on monitoring of anti-Xa levels is unreliable in patients with liver cirrhosis and not recommended (see section 5.2).

#### Low weight

An increase in exposure of enoxaparin sodium with prophylactic doses (non-weight adjusted) has been observed in low-weight women (<45 kg) and low-weight men (<57 kg), which may lead to a higher risk of bleeding. Therefore, careful clinical monitoring is advised in these patients (see section 5.2).

#### Obese patients

Obese patients are at higher risk for thromboembolism. The safety and efficacy of prophylactic doses in obese patients (BMI >30 kg/m<sup>2</sup>) has not been fully determined and there is no consensus for dose adjustment. These patients should be observed carefully for signs and symptoms of thromboembolism.

#### Hyperkalaemia

Heparins can suppress adrenal secretion of aldosterone leading to hyperkalaemia (see section 4.8), particularly in patients such as those with diabetes mellitus, chronic renal failure, pre-existing metabolic acidosis, taking medicinal products known to increase potassium (see section 4.5). Plasma potassium should be monitored regularly especially in patients at risk.

#### Sodium content

This medicinal product contains less than 1 mmol sodium (23 mg) per dose, that is to say essentially 'sodium-free'.

#### Acute generalized exanthematous pustulosis

Acute generalized exanthematous pustulosis (AGEP) has been reported with frequency not known in association with enoxaparin treatment. At the time of prescription patients should be advised of the signs and symptoms and monitored closely for skin reactions. If signs and symptoms suggestive of these reactions appear, enoxaparin should be withdrawn immediately and an alternative treatment considered (as appropriate).

### **4.5 Interaction with other medicinal products and other forms of interaction**

#### Concomitant use not recommended

#### Medicinal products affecting haemostasis (see section 4.4)

It is recommended that some agents which affect haemostasis should be discontinued prior to enoxaparin sodium therapy unless strictly indicated. If the combination is indicated, enoxaparin sodium should be used with careful clinical and laboratory monitoring when appropriate. These agents include medicinal products such as:



- Systemic salicylates, acetylsalicylic acid at anti-inflammatory doses, and NSAIDs including ketorolac,
- Other thrombolytics (e.g. alteplase, reteplase, streptokinase, tenecteplase, urokinase) and anticoagulants (see section 4.2).

#### Concomitant use with caution

The following medicinal products may be administered with caution concomitantly with enoxaparin sodium:

- *Other medicinal products affecting haemostasis such as:*
  - Platelet aggregation inhibitors including acetylsalicylic acid used at antiaggregant dose (cardioprotection), clopidogrel, ticlopidine, and glycoprotein IIb/IIIa antagonists indicated in acute coronary syndrome due to the risk of bleeding,
  - Dextran 40,
  - Systemic glucocorticoids.
- *Medicinal products increasing potassium levels:*

Medicinal products that increase serum potassium levels may be administered concurrently with enoxaparin sodium under careful clinical and laboratory monitoring (see sections 4.4 and 4.8).

## **4.6 Fertility, pregnancy and lactation**

### Pregnancy

In humans, there is no evidence that enoxaparin crosses the placental barrier during the second and third trimester of pregnancy. There is no information available concerning the first trimester.

Animal studies have not shown any evidence of foetotoxicity or teratogenicity (see section 5.3). Animal data have shown that enoxaparin passage through the placenta is minimal.

Enoxaparin sodium should be used during pregnancy only if the physician has established a clear need.

Pregnant women receiving enoxaparin sodium should be carefully monitored for evidence of bleeding or excessive anticoagulation and should be warned of the haemorrhagic risk. Overall, the data suggest that there is no evidence for an increased risk of haemorrhage, thrombocytopenia or osteoporosis with respect to the risk observed in non-pregnant women, other than that observed in pregnant women with prosthetic heart valves (see section 4.4).

If an epidural anaesthesia is planned, it is recommended to withdraw enoxaparin sodium treatment before (see section 4.4).

### Breast-feeding

It is not known whether unchanged enoxaparin is excreted in human breast milk. In lactating rats, the passage of enoxaparin or its metabolites in milk is very low. The oral absorption of enoxaparin sodium is unlikely. Inhixa can be used during breastfeeding.

### Fertility

There are no clinical data for enoxaparin sodium in fertility. Animal studies did not show any effect on fertility (see section 5.3).

## **4.7 Effects on ability to drive and use machines**

Enoxaparin sodium has no or negligible influence on the ability to drive and use machines.

## **4.8 Undesirable effects**

### Summary of the safety profile

Enoxaparin sodium has been evaluated in more than 15,000 patients who received enoxaparin sodium in clinical trials. These included 1,776 for prophylaxis of DVT following orthopaedic or abdominal surgery in patients at risk for thromboembolic complications, 1,169 for prophylaxis of DVT in acutely ill medical patients with severely restricted mobility, 559 for treatment of DVT with or without PE, 1,578 for treatment of unstable angina and non-Q-wave myocardial infarction and 10,176 for treatment of acute STEMI.

Enoxaparin sodium regimen administered during these clinical trials varies depending on indications. The enoxaparin sodium dose was 4,000 IU (40 mg) SC once daily for prophylaxis of DVT following surgery or in acutely ill medical patients with severely restricted mobility. In treatment of DVT with or without PE, patients receiving enoxaparin sodium were treated with either a 100 IU/kg (1 mg/kg) SC dose every 12 hours or a 150 IU/kg (1.5 mg/kg) SC dose once a day. In the clinical trials for treatment of unstable angina and non-Q-wave myocardial infarction, doses were 100 IU/kg (1 mg/kg) SC every 12 hours, and in the clinical study for treatment of acute STEMI enoxaparin sodium regimen was a 3,000 IU (30 mg) IV bolus followed by 100 IU/kg (1 mg/kg) SC every 12 hours.

In clinical trials, haemorrhages, thrombocytopenia and thrombocytosis were the most commonly reported reactions (see section 4.4 and 'Description of selected adverse reactions' below).

The safety profile of enoxaparin for extended treatment of DVT and PE in patients with active cancer is similar to its safety profile for the treatment of DVT and PE.

Acute generalized exanthematous pustulosis (AGEP) has been reported in association with enoxaparin treatment (see section 4.4).

#### Tabulated list of adverse reactions

Other adverse reactions observed in clinical trials and reported in post-marketing experience (\* indicates reactions from post-marketing experience) are detailed below.

Frequencies are defined as follows: very common ( $\geq 1/10$ ); common ( $\geq 1/100$  to  $< 1/10$ ); uncommon ( $\geq 1/1000$  to  $< 1/100$ ); rare ( $\geq 1/10,000$  to  $< 1/1,000$ ); and very rare ( $< 1/10,000$ ) or not known (cannot be estimated from available data). Within each system organ class, adverse reactions are presented in order of decreasing seriousness.

#### *Blood and the lymphatic system disorders*

Common: Haemorrhage, haemorrhagic anaemia\*, thrombocytopenia, thrombocytosis

Rare: Eosinophilia\*

Rare: Cases of immuno-allergic thrombocytopenia with thrombosis; in some of them thrombosis was complicated by organ infarction or limb ischaemia (see section 4.4).

#### *Immune system disorders*

Common: Allergic reaction

Rare: Anaphylactic/Anaphylactoid reactions including shock\*

#### *Nervous system disorders*

Common: Headache\*

#### *Vascular disorders*

Rare: Spinal haematoma\* (or neuraxial haematoma). These reactions have resulted in varying degrees of neurologic injuries including long-term or permanent paralysis (see section 4.4).

#### *Hepatobiliary disorders*

Very common: Hepatic enzyme increases (mainly transaminases  $> 3$  times the upper limit of normality)

Uncommon: Hepatocellular liver injury \*

Rare: Cholestatic liver injury\*

#### *Skin and subcutaneous tissue disorders*

Common: Urticaria, pruritus, erythema

Uncommon: Bullous dermatitis

Rare: Alopecia\*

Rare: Cutaneous vasculitis\*, skin necrosis\* usually occurring at the injection site (these phenomena have been usually preceded by purpura or erythematous plaques, infiltrated and painful).

Injection site nodules\* (inflammatory nodules, which were not cystic enclosure of enoxaparin). They resolve after a few days and should not cause treatment discontinuation.

Not known: Acute generalized exanthematous pustulosis (AGEP)

#### *Musculoskeletal and connective tissue disorders*

Rare: Osteoporosis\* following long term therapy (greater than 3 months)

#### *General disorders and administration site conditions*

Common: Injection site haematoma, injection site pain, other injection site reaction (such as oedema, haemorrhage, hypersensitivity, inflammation, mass, pain, or reaction)

Uncommon: Local irritation, skin necrosis at injection site

#### *Investigations*

Rare: Hyperkalaemia\* (see sections 4.4 and 4.5).

#### Description of selected adverse reactions

##### *Haemorrhages*

These included major haemorrhages, reported at most in 4.2 % of the patients (surgical patients). Some of these cases have been fatal. In surgical patients, haemorrhage complications were considered major: (1) if the haemorrhage caused a significant clinical event, or (2) if accompanied by haemoglobin decrease  $\geq 2$  g/dL or transfusion of 2 or more units of blood products. Retroperitoneal and intracranial haemorrhages were always considered major.

As with other anticoagulants, haemorrhage may occur in the presence of associated risk factors such as: organic lesions liable to bleed, invasive procedures or the concomitant use of medicinal products affecting haemostasis (see sections 4.4 and 4.5).

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
Blood and lymphatic system disorders	<i>Very common:</i> <b>Haemorrhage<sup>a</sup></b>  <i>Rare:</i> <b>Retroperitoneal haemorrhage</b>	<i>Common:</i> <b>Haemorrhage<sup>a</sup></b>	<i>Very common:</i> <b>Haemorrhage<sup>a</sup></b>  <i>Uncommon:</i> <b>Intracranial haemorrhage, Retroperitoneal haemorrhage</b>	<i>Common<sup>b</sup>:</i> <b>Haemorrhage</b>	<i>Common:</i> <b>Haemorrhage<sup>a</sup></b> <i>Rare:</i> <b>Retroperitoneal haemorrhage</b>	<i>Common:</i> <b>Haemorrhage<sup>a</sup></b>  <i>Uncommon:</i> <b>Intracranial haemorrhage, Retroperitoneal haemorrhage</b>

<sup>a</sup>: such as haematoma, ecchymosis other than at injection site, wound haematoma, haematuria, epistaxis and gastro-intestinal haemorrhage.

<sup>b</sup>: frequency based on a retrospective study on a registry including 3526 patients (see section 5.1)

*Thrombocytopenia and thrombocytosis (see section 4.4 monitoring of platelet counts)*

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
<i>Blood and lymphatic system disorders</i>	<i>Very common: Thrombocytosis<sup>‡</sup></i>  <i>Common: Thrombocytopenia</i>	<i>Uncommon: Thrombocytopenia</i>	<i>Very common: Thrombocytosis<sup>‡</sup></i>  <i>Common: Thrombocytopenia</i>	<i>Unknown: Thrombocytopenia</i>	<i>Uncommon: Thrombocytopenia</i>	<i>Common: Thrombocytosis<sup>‡</sup></i> <i>Thrombocytopenia</i> <i>Very rare: Immunoallergic thrombocytopenia</i>

<sup>‡</sup>: Platelet increased >400 G/L

### Paediatric population

The safety and efficacy of enoxaparin sodium in children have not been established (see section 4.2).

### Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the national reporting system listed in Appendix V.

## **4.9 Overdose**

### Signs and symptoms

Accidental overdose with enoxaparin sodium after IV, extracorporeal or SC administration may lead to haemorrhagic complications. Following oral administration of even large doses, it is unlikely that enoxaparin sodium will be absorbed.

### Management

The anticoagulant effects can be largely neutralised by the slow IV injection of protamine. The dose of protamine depends on the dose of enoxaparin sodium injected; 1 mg protamine neutralises the anticoagulant effect of 100 IU (1 mg) of enoxaparin sodium, if enoxaparin sodium was administered in the previous 8 hours. An infusion of 0.5 mg protamine per 100 IU (1 mg) of enoxaparin sodium may be administered if enoxaparin sodium was administered greater than 8 hours previous to the protamine administration, or if it has been determined that a second dose of protamine is required. After 12 hours of the enoxaparin sodium injection, protamine administration may not be required. However, even with high doses of protamine, the anti-Xa activity of enoxaparin sodium is never completely neutralised (maximum about 60%) (see the prescribing information for protamine salts).

## **5. PHARMACOLOGICAL PROPERTIES**

### **5.1 Pharmacodynamic properties**

Pharmacotherapeutic group: Antithrombotic agents, heparin group. ATC code: B01A B05

Inhixa is a biosimilar medicinal product. Detailed information is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.

### Pharmacodynamic effects

Enoxaparin is a LMWH with a mean molecular weight of approximately 4,500 daltons, in which the antithrombotic and anticoagulant activities of standard heparin have been dissociated. The active substance is the sodium salt.

In the *in vitro* purified system, enoxaparin sodium has a high anti-Xa activity (approximately 100 IU/mg) and low anti-IIa or anti thrombin activity (approximately 28 IU/mg), with a ratio of 3.6. These anticoagulant activities are mediated through anti-thrombin III (ATIII) resulting in anti-thrombotic activities in humans.

Beyond its anti-Xa/IIa activity, further antithrombotic and anti-inflammatory properties of enoxaparin have been identified in healthy subjects and patients as well as in non-clinical models. These include ATIII-dependent inhibition of other coagulation factors like factor VIIa, induction of endogenous Tissue Factor Pathway Inhibitor (TFPI) release as well as a reduced release of von Willebrand factor (vWF) from the vascular endothelium into the blood circulation. These factors are known to contribute to the overall antithrombotic effect of enoxaparin sodium.

When used as prophylactic treatment, enoxaparin sodium does not significantly affect the aPTT. When used as curative treatment, aPTT can be prolonged by 1.5-2.2 times the control time at peak activity.

### Clinical efficacy and safety

#### Prevention of venous thromboembolic disease associated with surgery

##### *Extended prophylaxis of VTE following orthopaedic surgery*

In a double blind study of extended prophylaxis for patients undergoing hip replacement surgery, 179 patients with no venous thromboembolic disease initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) SC, were randomised to a post-discharge regimen of either enoxaparin sodium 4,000 IU (40 mg) (n=90) once a day SC or to placebo (n=89) for 3 weeks. The incidence of DVT during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo, no PE was reported. No major bleeding occurred.

The efficacy data are provided in the table below.

	<b>Enoxaparin sodium 4,000 IU (40 mg) once a day SC n (%)</b>	<b>Placebo once a day SC n (%)</b>
<b>All treated extended prophylaxis patients</b>	90 (100)	89 (100)
<b>Total VTE</b>	6 (6.6)	18 (20.2)
Total DVT (%)	6 (6.6)*	18 (20.2)
Proximal DVT (%)	5 (5.6) <sup>#</sup>	7 (8.8)
*p value versus placebo =0.008		
<sup>#</sup> p value versus placebo =0.537		

In a second double-blind study, 262 patients without VTE disease and undergoing hip replacement surgery initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) SC were randomised to a post-discharge regimen of either enoxaparin sodium 4,000 IU (40 mg) (n=131) once a day SC or to placebo (n=131) for 3 weeks. Similar to the first study the incidence of VTE during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo for both total VTE (enoxaparin sodium 21 [16%] versus placebo 45 [34.4%]; p=0.001) and proximal DVT (enoxaparin sodium 8 [6.1%] versus placebo 28 [21.4%]; p<0.001). No difference in major bleeding was found between the enoxaparin sodium and the placebo group.

#### *Extended prophylaxis of DVT following cancer surgery*

A double-blind, multicenter trial, compared a four-week and a one-week regimen of enoxaparin sodium prophylaxis in terms of safety and efficacy in 332 patients undergoing elective surgery for abdominal or pelvic cancer. Patients received enoxaparin sodium (4,000 IU (40 mg) SC) daily for 6 to 10 days and were then randomly assigned to receive either enoxaparin sodium or placebo for another 21 days. Bilateral venography was performed between days 25 and 31, or sooner if symptoms of venous thromboembolism occurred. The patients were followed for three months. Enoxaparin sodium prophylaxis for four weeks after surgery for abdominal or pelvic cancer significantly reduced the incidence of venographically demonstrated thrombosis, as compared with enoxaparin sodium prophylaxis for one week. The rates of venous thromboembolism at the end of the double-blind phase were 12.0 % (n=20) in the placebo group and 4.8% (n=8) in the enoxaparin sodium group; p=0.02. This difference persisted at three months [13.8% vs. 5.5% (n=23 vs 9), p=0.01]. There were no differences in the rates of bleeding or other complications during the double-blind or follow-up periods.

#### *Prophylaxis of venous thromboembolic disease in medical patients with an acute illness expected to induce limitation of mobility*

In a double blind multicenter, parallel group study, enoxaparin sodium 2,000 IU (20 mg) or 4,000 IU (40 mg) once a day SC was compared to placebo in the prophylaxis of DVT in medical patients with severely restricted mobility during acute illness (defined as walking distance of <10 meters for  $\leq 3$  days). This study included patients with heart failure (NYHA Class III or IV); acute respiratory failure or complicated chronic respiratory insufficiency, and acute infection or acute rheumatic; if associated with at least one VTE risk factor (age  $\geq 75$  years, cancer, previous VTE, obesity, varicose veins, hormone therapy, and chronic heart or respiratory failure).

A total of 1,102 patients were enrolled in the study, and 1,073 patients were treated. Treatment continued for 6 to 14 days (median duration 7 days). When given at a dose of 4,000 IU (40 mg) once a day SC, enoxaparin sodium significantly reduced the incidence of VTE as compared to placebo. The efficacy data are provided in the table below.

	<b>Enoxaparin sodium 2,000 IU (20 mg) once a day SC n (%)</b>	<b>Enoxaparin sodium 4,000 IU (40 mg) once a day SC n (%)</b>	<b>Placebo n (%)</b>
<b>All treated medical patients during acute illness</b>	287 (100)	291(100)	288 (100)
<b>Total VTE (%)</b>	43 (15.0)	16 (5.5)*	43 (14.9)
Total DVT (%)	43 (15.0)	16 (5.5)	40 (13.9)
Proximal DVT (%)	13 (4.5)	5 (1.7)	14 (4.9)
VTE = Venous thromboembolic events which included DVT, PE, and death considered to be thromboembolic in origin * p value versus placebo =0.0002			

At approximately 3 months following enrolment, the incidence of VTE remained significantly lower in the enoxaparin sodium 4,000 IU (40 mg) treatment group versus the placebo treatment group.

The occurrence of total and major bleeding were respectively 8.6% and 1.1% in the placebo group, 11.7% and 0.3% in the enoxaparin sodium 2,000 IU (20 mg) group and 12.6% and 1.7% in the enoxaparin sodium 4,000 IU (40 mg) group.

#### *Treatment of DVT with or without PE*

In a multicenter, parallel group study, 900 patients with acute lower extremity DVT with or without PE were randomised to an inpatient (hospital) treatment of either (i) enoxaparin sodium 150 IU/kg (1.5 mg/kg) once

a day SC, (ii) enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours SC, or (iii) heparin IV bolus (5,000 IU) followed by a continuous infusion (administered to achieve an aPTT of 55 to 85 seconds). A total of 900 patients were randomised in the study and all patients were treated. All patients also received warfarin sodium (dose adjusted according to prothrombin time to achieve an INR of 2.0 to 3.0), commencing within 72 hours of initiation of enoxaparin sodium or standard heparin therapy, and continuing for 90 days. Enoxaparin sodium or standard heparin therapy was administered for a minimum of 5 days and until the targeted warfarin sodium INR was achieved. Both enoxaparin sodium regimens were equivalent to standard heparin therapy in reducing the risk of recurrent venous thromboembolism (DVT and/or PE). The efficacy data are provided in the table below.

	<b>Enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day SC n (%)</b>	<b>Enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day SC n (%)</b>	<b>Heparin aPTT adjusted IV therapy n (%)</b>
<b>All treated DVT patients with or without PE</b>	298 (100)	312 (100)	290 (100)
<b>Total VTE (%)</b>	13 (4.4)*	9 (2.9)*	12 (4.1)
DVT only (%)	11 (3.7)	7 (2.2)	8 (2.8)
Proximal DVT (%)	9 (3.0)	6 (1.9)	7 (2.4)
PE (%)	2 (0.7)	2 (0.6)	4 (1.4)
VTE = venous thromboembolic event (DVT and/or PE) *The 95% confidence intervals for the treatment differences for total VTE were: - enoxaparin sodium once a day versus heparin (-3.0 to 3.5) - enoxaparin sodium every 12 hours versus heparin (-4.2 to 1.7).			

Major bleeding were respectively 1.7% in the enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day group, 1.3% in the enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day group and 2.1% in the heparin group.

*Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer*

In clinical trials with limited number of patients, reported rates of recurrent VTE in patients treated with enoxaparin given once or twice daily for 3 to 6 months appear comparable to those with warfarin.

Effectiveness in real-life setting was assessed in a cohort of 4,451 patients with symptomatic VTE and active cancer from the multinational registry RIETE of patients with VTE and other thrombotic conditions. 3,526 patients received SC enoxaparin up to 6 months and 925 patients received tinzaparin or dalteparin SC. Among the 3,526 patients receiving enoxaparin treatment, 891 patients were treated with 1.5 mg/kg once daily as initial therapy and extended treatment up to 6 months (once daily alone), 1,854 patients received initial 1.0 mg/kg twice daily regimen and extended treatment up to 6 months (twice daily alone), and 687 patients received 1.0 mg/kg twice daily as initial treatment followed by 1.5 mg/kg once daily (twice daily-once daily) as the extended treatment up to 6 months. The mean and median duration of treatment until regimen change was 17 days and 8 days, respectively. There was no significant difference for VTE recurrence rate between the two treatments groups (see table), with enoxaparin meeting the prespecified criterion for non inferiority of 1.5 (HR adjusted by relevant covariates 0.817, 95% CI: 0.499-1.336). There was no statistically significant difference between the two treatment groups with regards to the relative risks of major (fatal or non-fatal) bleeding and all-cause death (see table).

**Table. Efficacy and safety outcomes in the RIETECAT study**

Outcome	Enoxaparin n=3526	Other LMWH n=925	Adjusted hazard ratios enoxaparin / other LMWH [95% confidence interval]
VTE recurrence	70 (2.0%)	23 (2.5%)	0.817, [ 0.499-1.336]
Major bleeding	111 (3.1%)	18 (1.9%)	1.522, [ 0.899-2.577]
Non-major bleeding	87 (2.5%)	24 (2.6%)	0.881, [0.550-1.410]
Overall death	666 (18.9%)	157 (17.0%)	0.974, [ 0.813-1.165]

An overview of outcomes per treatment regimen used in the RIETECAT study among 6-month completers is provided below:

**Table. 6-month outcomes in patients completing 6-month treatment, by different regimens**

Outcome N (%) (95% CI)	Enoxapa rin all regimens	Enoxaparin all regimens					EU- authorized LMWHs
		Enoxapa rin OD	Enoxapa rin BID	Enoxapa rin BID to OD	Enoxapar in OD to BID	Enoxapar in More than one switch	
	N=1432	N=444	N=529	N=406	N=14	N=39	N=428
Recurrence of VTE	70 (4.9%) (3.8%- 6.0%)	33 (7.4%) (5.0%- 9.9%)	22 (4.2%) (2.5%- 5.9%)	10 (2.5%) (0.9%- 4.0%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	23 (5.4%) (3.2%- 7.5%)
Major bleeding (fatal and non-fatal)	111 (7.8%) (6.4%- 9.1%)	31 (7.0%) (4.6%- 9.4%)	52 (9.8%) (7.3%- 12.4%)	21 (5.2%) (3.0%- 7.3%)	1 (7.1%) (0%- 22.6%)	6 (15.4%) (3.5%- 27.2%)	18 (4.2%) (2.3%- 6.1%)
Non-major bleedings of clinical significance	87 (6.1%) (4.8%- 7.3%)	26 (5.9%) (3.7%- 8.0%)	33 (6.2%) (4.2%- 8.3%)	23 (5.7%) (3.4%- 7.9%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	24 (5.6%) (3.4%- 7.8%)
All-cause death	666 (46.5%) (43.9%- 49.1%)	175 (39.4%) (34.9%- 44.0%)	323 (61.1%) (56.9%- 65.2%)	146 (36.0%) (31.3%- 40.6%)	6 (42.9%) (13.2%- 72.5%)	16 (41.0%) (24.9%- 57.2%)	157 (36.7%) (32.1%- 41.3%)
Fatal PE or fatal bleeding related death	48 (3.4%) (2.4%- 4.3%)	7 (1.6%) (0.4%- 2.7%)	35 (6.6%) (4.5%- 8.7%)	5 (1.2%) (0.2%- 2.3%)	0 (0%) -	1 (2.6%) (0%- 7.8%)	11 (2.6%) (1.1%- 4.1%)
*All data with 95% CI							

#### Treatment of unstable angina and non ST elevation myocardial infarction

In a large multicenter study, 3,171 patients enrolled at the acute phase of unstable angina or non-Q-wave myocardial infarction were randomised to receive in association with acetylsalicylic acid (100 to 325 mg once daily), either SC enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours or IV unfractionated heparin adjusted based on aPTT. Patients had to be treated in hospital for a minimum of 2 days and a maximum of 8 days, until clinical stabilization, revascularization procedures or hospital discharge. The patients had to be followed up to 30 days. In comparison with heparin, enoxaparin sodium significantly reduced the combined incidence of angina pectoris, myocardial infarction and death, with a decrease of 19.8 to 16.6% (relative risk reduction of 16.2%) on day 14. This reduction in the combined incidence was maintained after 30 days (from 23.3 to 19.8%; relative risk reduction of 15%).



There were no significant differences in major haemorrhages, although a haemorrhage at the site of the SC injection was more frequent.

#### Treatment of acute ST-segment elevation myocardial infarction

In a large multicenter study, 20,479 patients with STEMI eligible to receive fibrinolytic therapy were randomised to receive either enoxaparin sodium in a single 3,000 IU (30 mg) IV bolus plus a 100 IU/kg (1 mg/kg) SC dose followed by an SC injection of 100 IU/kg (1 mg/kg) every 12 hours or IV unfractionated heparin adjusted based on aPTT for 48 hours. All patients were also treated with acetylsalicylic acid for a minimum of 30 days. The enoxaparin sodium dosing strategy was adjusted for severe renally impaired patients and for the elderly of at least 75 years of age. The SC injections of enoxaparin sodium were given until hospital discharge or for a maximum of eight days (whichever came first).

4,716 patients underwent percutaneous coronary intervention receiving antithrombotic support with blinded investigational medicinal product. Therefore, for patients on enoxaparin sodium, the PCI was to be performed on enoxaparin sodium (no switch) using the regimen established in previous studies i.e. no additional dosing, if last SC administration given less than 8 hours before balloon inflation, IV bolus of 30 IU/kg (0.3 mg/kg) enoxaparin sodium, if the last SC administration given more than 8 hours before balloon inflation.

Enoxaparin sodium compared to unfractionated heparin significantly decreased the incidence of the primary end point, a composite of death from any cause or myocardial re-infarction in the first 30 days after randomization [9.9 percent in the enoxaparin sodium group, as compared with 12.0 percent in the unfractionated heparin group] with a 17 percent relative risk reduction ( $p < 0.001$ ).

The treatment benefits of enoxaparin sodium, evident for a number of efficacy outcomes, emerged at 48 hours, at which time there was a 35 percent reduction in the relative risk of myocardial re-infarction, as compared with treatment with unfractionated heparin ( $p < 0.001$ ).

The beneficial effect of enoxaparin sodium on the primary end point was consistent across key subgroups including age, gender, infarct location, history of diabetes, history of prior myocardial infarction, type of fibrinolytic administered, and time to treatment with the investigational medicinal product.

There was a significant treatment benefit of enoxaparin sodium, as compared with unfractionated heparin, in patients who underwent percutaneous coronary intervention within 30 days after randomization (23 percent reduction in relative risk) or who were treated medically (15 percent reduction in relative risk,  $p = 0.27$  for interaction).

The rate of the 30 day composite endpoint of death, myocardial re-infarction or intracranial haemorrhage (a measure of net clinical benefit) was significantly lower ( $p < 0.0001$ ) in the enoxaparin sodium group (10.1%) as compared to the heparin group (12.2%), representing a 17% relative risk reduction in favour of treatment with enoxaparin sodium.

The incidence of major bleeding at 30 days was significantly higher ( $p < 0.0001$ ) in the enoxaparin sodium group (2.1%) versus the heparin group (1.4%). There was a higher incidence of gastrointestinal bleeding in the enoxaparin sodium group (0.5%) versus the heparin group (0.1%), while the incidence of intracranial haemorrhage was similar in both groups (0.8% with enoxaparin sodium versus 0.7% with heparin).

The beneficial effect of enoxaparin sodium on the primary end point observed during the first 30 days was maintained over a 12 month follow-up period.

#### Hepatic impairment

Based on literature data the use of enoxaparin sodium 4,000 IU (40 mg) in cirrhotic patients (Child-Pugh class B-C) appears to be safe and effective in preventing portal vein thrombosis. It should be noted that the literature studies may have limitations. Caution should be used in patients with hepatic impairment as these patients have an increased potential for bleeding (see section 4.4) and no formal dose finding studies have been performed in cirrhotic patients (Child Pugh class A, B nor C).

## **5.2 Pharmacokinetic properties**

### General characteristics

The pharmacokinetic parameters of enoxaparin sodium have been studied primarily in terms of the time course of plasma anti-Xa activity and also by anti-IIa activity, at the recommended dose ranges after single

and repeated SC administration and after single IV administration. The quantitative determination of anti-Xa and anti-IIa pharmacokinetic activities was conducted by validated amidolytic methods.

### Absorption

The absolute bioavailability of enoxaparin sodium after SC injection, based on anti-Xa activity, is close to 100%.

Different doses and formulations and dosing regimens can be used.

The mean maximum plasma anti-Xa activity level is observed 3 to 5 hours after SC injection and achieves approximately 0.2, 0.4, 1.0 and 1.3 anti-Xa IU/mL following single SC administration of 2,000 IU, 4,000 IU, 100 IU/kg and 150 IU/kg (20 mg, 40 mg, 1 mg/kg and 1.5 mg/kg) doses, respectively.

A 3,000 IU (30 mg) IV bolus immediately followed by a 100 IU/kg (1 mg/kg) SC every 12 hours provided initial maximum anti-Xa activity level of 1.16 IU/mL (n=16) and average exposure corresponding to 88% of steady-state levels. Steady-state is achieved on the second day of treatment.

After repeated SC administration of 4,000 IU (40 mg) once daily and 150 IU/kg (1.5 mg/kg) once daily regimens in healthy volunteers, the steady-state is reached on day 2 with an average exposure ratio about 15% higher than after a single dose. After repeated SC administration of the 100 IU/kg (1 mg/kg) twice daily regimen, the steady-state is reached from day 3 to 4 with mean exposure about 65% higher than after a single dose and mean maximum and trough anti-Xa activity levels of about 1.2 and 0.52 IU/mL, respectively.

Injection volume and dose concentration over the range 100-200 mg/mL does not affect pharmacokinetic parameters in healthy volunteers.

Enoxaparin sodium pharmacokinetics appears to be linear over the recommended dose ranges.

Intra-patient and inter-patient variability is low. Following repeated SC administration no accumulation takes place.

Plasma anti-IIa activity after SC administration is approximately ten-fold lower than anti-Xa activity. The mean maximum anti-IIa activity level is observed approximately 3 to 4 hours following SC injection and reaches 0.13 IU/mL and 0.19 IU/mL following repeated administration of 100 IU/kg (1 mg/kg) twice daily and 150 IU/kg (1.5 mg/kg) once daily, respectively.

### Distribution

The volume of distribution of enoxaparin sodium anti-Xa activity is about 4.3 litres and is close to the blood volume.

### Biotransformation

Enoxaparin sodium is primarily metabolised in the liver by desulfation and/or depolymerization to lower molecular weight species with much reduced biological potency.

### Elimination

Enoxaparin sodium is a low clearance substance with a mean anti-Xa plasma clearance of 0.74 L/h after a 150 IU /kg (1.5 mg/kg) 6-hour IV infusion.

Elimination appears monophasic with a half-life of about 5 hours after a single SC dose to about 7 hours after repeated dosing.

Renal clearance of active fragments represents about 10% of the administered dose and total renal excretion of active and non-active fragments 40% of the dose.

## Special populations

### *Elderly*

Based on the results of a population pharmacokinetic analysis, the enoxaparin sodium kinetic profile is not different in elderly subjects compared to younger subjects when renal function is normal. However, since renal function is known to decline with age, elderly patients may show reduced elimination of enoxaparin sodium (see sections 4.2 and 4.4).

### *Hepatic impairment*

In a study conducted in patients with advanced cirrhosis treated with enoxaparin sodium 4,000 IU (40 mg) once daily, a decrease in maximum anti-Xa activity was associated with an increase in the severity of hepatic impairment (assessed by Child-Pugh categories). This decrease was mainly attributed to a decrease in ATIII level secondary to a reduced synthesis of ATIII in patients with hepatic impairment.

### *Renal impairment*

A linear relationship between anti-Xa plasma clearance and creatinine clearance at steady-state has been observed, which indicates decreased clearance of enoxaparin sodium in patients with reduced renal function. Anti-Xa exposure represented by AUC, at steady-state, is marginally increased in mild (creatinine clearance 50-80 mL/min) and moderate (creatinine clearance 30-50 mL/min) renal impairment after repeated SC 4,000 IU (40 mg) once daily doses. In patients with severe renal impairment (creatinine clearance <30 mL/min), the AUC at steady state is significantly increased on average by 65% after repeated SC 4,000 IU (40 mg) once daily doses (see sections 4.2 and 4.4).

### *Haemodialysis*

Enoxaparin sodium pharmacokinetics appeared similar than control population, after a single 25 IU, 50 IU or 100 IU/kg (0.25, 0.50 or 1.0 mg/kg) IV dose however, AUC was two-fold higher than control.

### *Weight*

After repeated SC 150 IU/kg (1.5 mg/kg) once daily dosing, mean AUC of anti-Xa activity is marginally higher at steady state in obese healthy volunteers (BMI 30-48 kg/m<sup>2</sup>) compared to non-obese control subjects, while maximum plasma anti-Xa activity level is not increased. There is a lower weight-adjusted clearance in obese subjects with SC dosing.

When non-weight adjusted dosing was administered, it was found after a single-SC 4,000 IU (40 mg) dose, that anti-Xa exposure is 52% higher in low-weight women (<45 kg) and 27% higher in low-weight men (<57 kg) when compared to normal weight control subjects (see section 4.4).

## Pharmacokinetic interactions

No pharmacokinetic interactions were observed between enoxaparin sodium and thrombolytics when administered concomitantly.

## **5.3 Preclinical safety data**

Besides the anticoagulant effects of enoxaparin sodium, there was no evidence of adverse reactions at 15 mg/kg/day in the 13-week SC toxicity studies both in rats and dogs and at 10 mg/kg/day in the 26-week SC and IV toxicity studies both in rats, and monkeys.

Enoxaparin sodium has shown no mutagenic activity based on *in vitro* tests, including the Ames test, mouse lymphoma cell forward mutation test, and *no clastogenic* activity based on an *in vitro* human lymphocyte chromosomal aberration test, and the *in vivo* rat bone marrow chromosomal aberration test.

Studies conducted in pregnant rats and rabbits at SC doses of enoxaparin sodium up to 30 mg/kg/day did not reveal any evidence of teratogenic effects or foetotoxicity. Enoxaparin sodium was found to have no effect on fertility or reproductive performance of male and female rats at SC doses up to 20 mg/kg/day.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Water for injections

### **6.2 Incompatibilities**

#### SC injection

Do not mix with other medicinal products.

#### IV (bolus) injection (for acute STEMI indication only)

Enoxaparin sodium may be safely administered with sodium chloride 9mg/ml (0.9%) solution for injection or 5% glucose in water for injections (see section 4.2).

### **6.3 Shelf life**

#### Pre-filled syringe

3 years

Diluted medicinal product with sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections.

8 hours

### **6.4 Special precautions for storage**

Store below 25 °C. Do not freeze.

### **6.5 Nature and contents of container**

0.8 mL of solution in:

- a clear, colourless type I neutral glass graduated syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a red polypropylene plunger rod. The syringe can be additionally equipped with needle guard or manual needle guard; or
- a clear, colourless type I neutral glass graduated syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a white polycarbonate plunger rod equipped with UltraSafe Passive needle guard.

.

Packs of:

- 2, 6, 10, 12, 20, 24, 30 and 50 pre-filled syringes
- 2, 6, 10, 12, 20, 24, 30 and 50 pre-filled syringes with needle guard
- 6, 10, 12, 20, 24 and 50 pre-filled syringes with manual needle guard
- 2 and 10 pre-filled syringes with UltraSafe Passive needle guard

Not all pack sizes may be marketed.

### **6.6 Special precautions for disposal and other handling**

## **INSTRUCTIONS FOR USE: PRE-FILLED SYRINGE**

## How to give yourself an injection of Inhixa with a pre-filled syringe without needle guard

If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

### ***Before injecting yourself with Inhixa***

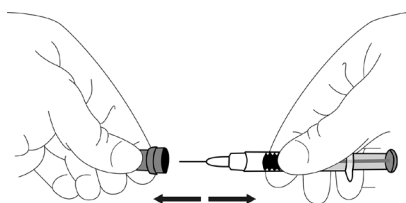
- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

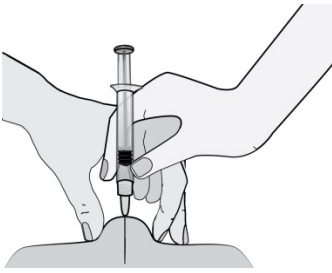


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

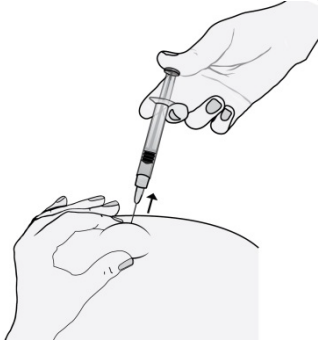
- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin

Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold



- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection
- 9) Remove the needle by pulling it straight out.



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

#### How to give yourself an injection of Inhixa with a pre-filled syringe with needle guard

Your pre-filled syringe has a needle guard attached to it in order to protect you from needle stick injury. If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately. Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

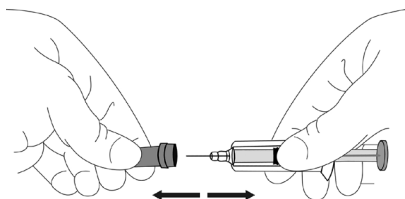
#### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.

- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

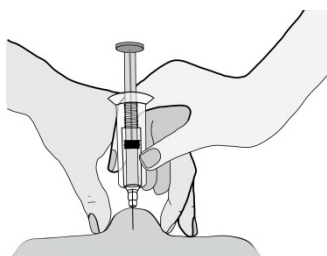


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin

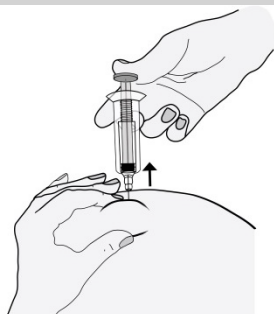
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold



- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection

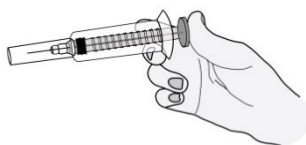
- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Push hard the plunger. The needle guard, which is in the form of a plastic cylinder, will be activated automatically and it will completely cover the needle.

"CLICK"



- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

#### How to give yourself an injection of Inhixa with a pre-filled syringe with UltraSafe Passive needle guard

Your pre-filled syringe has UltraSafe Passive needle guard attached to it in order to protect you from needle stick injury.

If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your stomach, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

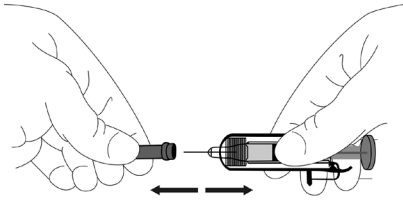
#### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.



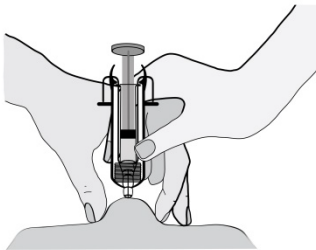


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin

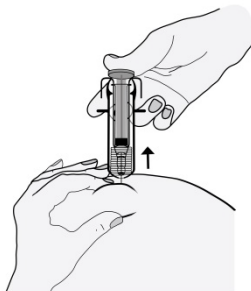
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold



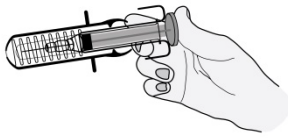
- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection

- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Let go of the plunger and allow the syringe to move up until the entire needle is guarded and locks into place.



- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

How to give yourself an injection of Inhixa with a pre-filled syringe with manually activated needle guard

Your pre-filled syringe has a manually activated needle guard attached to it in order to protect you from needle stick injury.

If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

***Before injecting yourself with Inhixa***

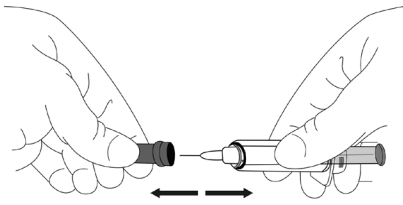
- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

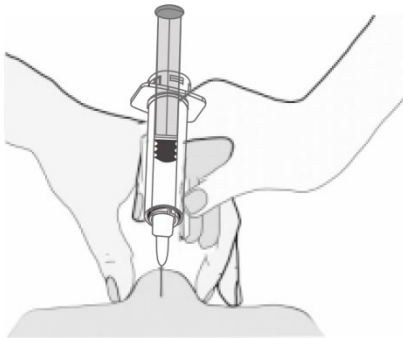


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin.

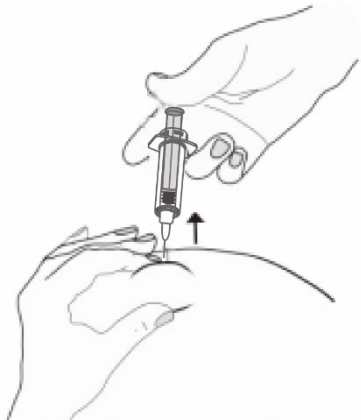
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold.



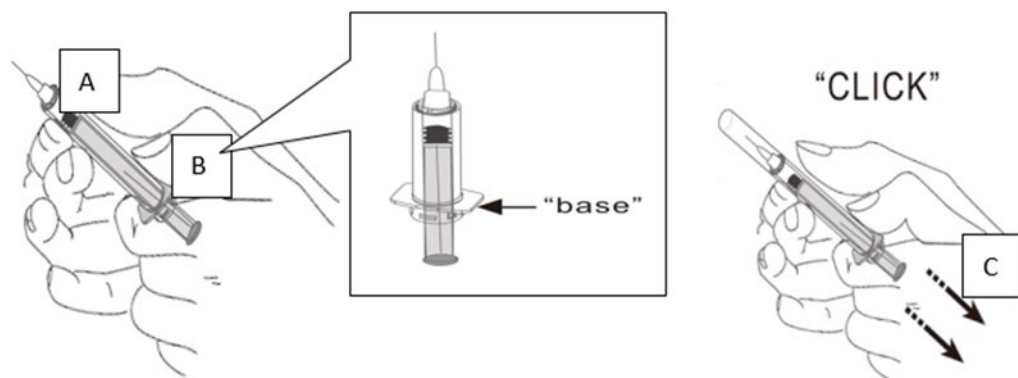
- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection.

- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Firmly hold the syringe tube with one hand (A). With the other hand hold the base, “wings” of the syringe (B), and pull the base until you hear a clicking sound (C). Now the used needle is completely protected.



- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

## 7. MARKETING AUTHORISATION HOLDER

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

## 8. MARKETING AUTHORISATION NUMBER(S)

EU/1/16/1132/007  
EU/1/16/1132/008  
EU/1/16/1132/017  
EU/1/16/1132/018  
EU/1/16/1132/029  
EU/1/16/1132/030  
EU/1/16/1132/039  
EU/1/16/1132/040  
EU/1/16/1132/047  
EU/1/16/1132/048  
EU/1/16/1132/059  
EU/1/16/1132/060  
EU/1/16/1132/084  
EU/1/16/1132/088  
EU/1/16/1132/093  
EU/1/16/1132/103  
EU/1/16/1132/104  
EU/1/16/1132/105  
EU/1/16/1132/106  
EU/1/16/1132/112  
EU/1/16/1132/113  
EU/1/16/1132/121  
EU/1/16/1132/122

EU/1/16/1132/123

**9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION**

Date of first authorisation: 15/09/2016

Date of latest renewal: 26/08/2021

**10. DATE OF REVISION OF THE TEXT**

Detailed information on this medicinal product is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.

## 1. NAME OF THE MEDICINAL PRODUCT

Inhixa 10,000 IU (100 mg)/1 mL solution for injection in pre-filled syringe

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

10,000 IU/mL (100 mg/mL) solution for injection

Each pre-filled syringe contains enoxaparin sodium 10,000 IU anti-Xa activity (equivalent to 100 mg) in 1 mL water for injections.

For the full list of excipients, see section 6.1.

Enoxaparin sodium is a biological substance obtained by alkaline depolymerisation of heparin benzyl ester derived from porcine intestinal mucosa.

## 3. PHARMACEUTICAL FORM

Solution for injection in pre-filled syringe (injection).

Clear, colourless to pale yellow solution.

## 4. CLINICAL PARTICULARS

### 4.1 Therapeutic indications

Inhixa is indicated in adults for:

Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients, in particular those undergoing orthopaedic or general surgery including cancer surgery.

Prophylaxis of venous thromboembolic disease in medical patients with an acute illness (such as acute heart failure, respiratory insufficiency, severe infections or rheumatic diseases) and reduced mobility at increased risk of venous thromboembolism.

Treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE), excluding PE likely to require thrombolytic therapy or surgery.

Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer.

Prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Acute coronary syndrome:

- Treatment of unstable angina and Non ST-segment elevation myocardial infarction (NSTEMI), in combination with oral acetylsalicylic acid.
- Treatment of acute ST-segment elevation myocardial infarction (STEMI) including patients to be managed medically or with subsequent percutaneous coronary intervention (PCI).

### 4.2 Posology and method of administration

#### Posology

#### *Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients*

Individual thromboembolic risk for patients can be estimated using validated risk stratification model.

In patients at moderate risk of thromboembolism, the recommended dose of enoxaparin sodium is 2,000 IU (20 mg) once daily by subcutaneous (SC) injection. Preoperative initiation (2 hours before surgery) of enoxaparin sodium 2,000 IU (20 mg) was proven effective and safe in moderate risk surgery.

In moderate risk patients, enoxaparin sodium treatment should be maintained for a minimal period of 7-10 days whatever the recovery status (e.g. mobility). Prophylaxis should be continued until the patient no longer has significantly reduced mobility.

In patients at high risk of thromboembolism, the recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily given by SC injection preferably started 12 hours before surgery. If there is a need for earlier than 12 hours enoxaparin sodium preoperative prophylactic initiation (e.g. high risk patient waiting for a deferred orthopaedic surgery), the last injection should be administered no later than 12 hours prior to surgery and resumed 12 hours after surgery.

- For patients who undergo major orthopaedic surgery an extended thromboprophylaxis up to 5 weeks is recommended.
- For patients with a high venous thromboembolism (VTE) risk who undergo abdominal or pelvic surgery for cancer an extended thromboprophylaxis up to 4 weeks is recommended.

#### Prophylaxis of venous thromboembolism in medical patients

The recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily by SC injection.

Treatment with enoxaparin sodium is prescribed for at least 6 to 14 days whatever the recovery status (e.g. mobility). The benefit is not established for a treatment longer than 14 days.

#### Treatment of DVT and PE

Enoxaparin sodium can be administered SC either as a once daily injection of 150 IU/kg (1.5 mg/kg) or as twice daily injections of 100 IU/kg (1 mg/kg).

The regimen should be selected by the physician based on an individual assessment including evaluation of the thromboembolic risk and of the risk of bleeding. The dose regimen of 150 IU/kg (1.5 mg/kg) administered once daily should be used in uncomplicated patients with low risk of VTE recurrence. The dose regimen of 100 IU/kg (1 mg/kg) administered twice daily should be used in all other patients such as those with obesity, with symptomatic PE, cancer, recurrent VTE or proximal (*vena iliaca*) thrombosis.

Enoxaparin sodium treatment is prescribed for an average period of 10 days. Oral anticoagulant therapy should be initiated when appropriate (see “Switch between enoxaparin sodium and oral anticoagulants” at the end of section 4.2).

In the extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer, physicians should carefully assess the individual thromboembolic and bleeding risks of the patient.

The recommended dose is 100 IU/kg (1 mg/kg) administered twice daily by SC injections for 5 to 10 days, followed by a 150 IU/kg (1.5 mg/kg) once daily SC injection up to 6 months. The benefit of continuous anticoagulant therapy should be reassessed after 6 months of treatment.

#### Prevention of thrombus formation during haemodialysis

The recommended dose is 100 IU/kg (1 mg/kg) of enoxaparin sodium.

For patients with a high risk of haemorrhage, the dose should be reduced to 50 IU/kg (0.5 mg/kg) for double vascular access or 75 IU/kg (0.75 mg/kg) for single vascular access.

During haemodialysis, enoxaparin sodium should be introduced into the arterial line of the circuit at the beginning of the dialysis session. The effect of this dose is usually sufficient for a 4-hour session; however, if fibrin rings are found, for example after a longer than normal session, a further dose of 50 IU to 100 IU/kg (0.5 to 1 mg/kg) may be given.

No data are available in patients using enoxaparin sodium for prophylaxis or treatment and during haemodialysis sessions.

#### Acute coronary syndrome: treatment of unstable angina and NSTEMI and treatment of acute STEMI

For treatment of unstable angina and NSTEMI, the recommended dose of enoxaparin sodium is 100 IU/kg (1 mg/kg) every 12 hours by SC injection administered in combination with antiplatelet therapy. Treatment

should be maintained for a minimum of 2 days and continued until clinical stabilization. The usual duration of treatment is 2 to 8 days.

Acetylsalicylic acid is recommended for all patients without contraindications at an initial oral loading dose of 150–300 mg (in acetylsalicylic acid-naïve patients) and a maintenance dose of 75–325 mg/day long-term regardless of treatment strategy.

For treatment of acute STEMI, the recommended dose of enoxaparin sodium is a single intravenous (IV) bolus of 3,000 IU (30 mg) plus a 100 IU/kg (1 mg/kg) SC dose followed by 100 IU/kg (1 mg/kg) administered SC every 12 hours (maximum 10,000 IU (100 mg) for each of the first two SC doses).

Appropriate antiplatelet therapy such as oral acetylsalicylic acid (75 mg to 325 mg once daily) should be administered concomitantly unless contraindicated. The recommended duration of treatment is 8 days or until hospital discharge, whichever comes first. When administered in conjunction with a thrombolytic (fibrin specific or non-fibrin specific), enoxaparin sodium should be given between 15 minutes before and 30 minutes after the start of fibrinolytic therapy.

- For dose in patients  $\geq 75$  years of age, see paragraph “Elderly”.
- For patients managed with PCI, if the last dose of enoxaparin sodium SC was given less than 8 hours before balloon inflation, no additional dosing is needed. If the last SC administration was given more than 8 hours before balloon inflation, an IV bolus of 30 IU/kg (0.3 mg/kg) enoxaparin sodium should be administered.

### Special populations

#### Paediatric population

The safety and efficacy of enoxaparin sodium in paediatric population have not been established.

#### Elderly

For all indications except STEMI, no dose reduction is necessary in the elderly patients, unless kidney function is impaired (see below “renal impairment” and section 4.4).

For treatment of acute STEMI in elderly patients  $\geq 75$  years of age, an initial IV bolus must not be used. Initiate dosing with 75 IU/kg (0.75 mg/kg) SC every 12 hours (maximum 7,500 IU (75 mg) for each of the first two SC doses only, followed by 75 IU/kg (0.75 mg/kg) SC dosing for the remaining doses). For dose in elderly patients with impaired kidney function, see below “renal impairment” and section 4.4.

#### Hepatic impairment

Limited data are available in patients with hepatic impairment (see sections 5.1 and 5.2) and caution should be used in these patients (see section 4.4).

#### Renal impairment (see sections 4.4 and 5.2)

##### Severe renal impairment

Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance  $<15$  mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Dose table for patients with severe renal impairment (creatinine clearance [15-30] mL/min):

<u>Indication</u>	<u>Dosing regimen</u>
Prophylaxis of venous thromboembolic disease	2,000 IU (20 mg) SC once daily
Treatment of DVT and PE	100 IU/kg (1 mg/kg) body weight SC once daily
Extended treatment of DVT and PE in patients with active cancer	100 IU/kg (1 mg/kg) body weight SC once daily
Treatment of unstable angina and NSTEMI	100 IU/kg (1 mg/kg) body weight SC once daily



Treatment of acute STEMI (patients under 75)	1 x 3,000 IU (30 mg) IV bolus plus 100 IU/kg (1 mg/kg) body weight SC and then 100 IU/kg (1 mg/kg) body weight SC every 24 hours
Treatment of acute STEMI (patients over 75)	No IV initial bolus, 100 IU/kg (1 mg/kg) body weight SC and then 100 IU/kg (1 mg/kg) body weight SC every 24 hours

The recommended dose adjustments do not apply to the haemodialysis indication.

#### *Moderate and mild renal impairment*

Although no dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment, careful clinical monitoring is advised.

#### Method of administration

Inhixa is not indicated for intramuscular use and should not be administered by this route.

For the prophylaxis of venous thrombo-embolic disease following surgery, treatment of DVT and PE, extended treatment of DVT and PE in patients with active cancer, treatment of unstable angina and NSTEMI, enoxaparin sodium should be administered by SC injection.

For acute STEMI, treatment is to be initiated with a single IV bolus injection immediately followed by a SC injection.

For the prevention of thrombus formation in the extra corporeal circulation during haemodialysis, it is administered through the arterial line of a dialysis circuit.

The disposable pre-filled syringe is ready for immediate use.

The use of a tuberculin syringe or equivalent is recommended when using ampoules or multidose vials to assure withdrawal of the appropriate volume of the medicinal product.

#### SC injection technique

Injection should be made preferably when the patient is lying down. Enoxaparin sodium is administered by deep SC injection.

When using pre-filled syringes, the air bubble should not be expelled from the syringe before the injection in order to avoid the loss of the medicinal product. When the quantity of the medicinal product to be injected requires to be adjusted based on the patient's body weight, use the graduated pre-filled syringes to reach the required volume by discarding the excess before injection. Please be aware that in some cases it is not possible to achieve an exact dose due to the graduations on the syringe, and in such case the volume shall be rounded up to the nearest graduation.

The administration should be alternated between the left and right anterolateral or posterolateral abdominal wall.

The whole length of the needle should be introduced vertically into a skin fold gently held between the thumb and index finger. The skin fold should not be released until the injection is complete. After administration, the injection site should not be rubbed.

Note for the pre-filled syringes fitted with an automatic safety system: The safety system is triggered at the end of the injection (see instructions in section 6.6).

In case of self-administration, patient should be advised to follow instructions provided in the patient information leaflet included in the pack of this medicinal product.

#### IV (bolus) injection (for acute STEMI indication only)

For acute STEMI, treatment is to be initiated with a single IV bolus injection immediately followed by a SC injection.

For IV injection, either the multidose vial or pre-filled syringe can be used.

Enoxaparin sodium should be administered through an IV line. It should not be mixed or co-administered with other medicinal products. To avoid the possible mixture of enoxaparin sodium with other medicinal products, the IV access chosen should be flushed with a sufficient amount of sodium chloride 9 mg/ml (0.9%) or 5% glucose in water for injections prior to and following the IV bolus administration of enoxaparin sodium to clear the port of the medicinal product. Enoxaparin sodium may be safely administered with normal sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections.

#### *Initial 3,000 IU (30 mg) bolus*

For the initial 3,000 IU (30 mg) bolus, using an enoxaparin sodium graduated pre-filled syringe, the excessive volume has to be expelled to retain only 3,000 IU (30 mg) in the syringe. The 3,000 IU (30 mg) dose can then be directly injected into the IV line.

#### *Additional bolus for PCI when last SC administration was given more than 8 hours before balloon inflation*

For patients being managed with PCI, an additional IV bolus of 30 IU/kg (0.3 mg/kg) is to be administered if last SC administration was given more than 8 hours before balloon inflation.

In order to assure the accuracy of the small volume to be injected, it is recommended to dilute the medicinal product to 300 IU/mL (3 mg/mL).

To obtain a 300 IU/mL (3 mg/mL) solution, using a 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe, it is recommended to use a 50 mL infusion bag (i.e. using either sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections) as follows:

Withdraw 30 mL from the infusion bag with a syringe and discard the liquid. Inject the complete contents of the 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe into the 20 mL remaining in the bag. Gently mix the contents of the bag. Withdraw the required volume of diluted solution with a syringe for administration into the IV line.

After dilution is completed, the volume to be injected can be calculated using the following formula [volume of diluted solution (mL) = patient weight (kg) x 0.1] or using the table below. It is recommended to prepare the dilution immediately before use.

Volume to be injected through IV line after dilution is completed at a concentration of 300 IU (3 mg) /mL.

Weight [kg]	Required dose 30 IU/kg (0.3 mg/kg)		Volume to inject when diluted to a final concentration of 300 IU (3 mg)/mL [mL]
	IU	[mg]	
45	1,350	13.5	4.5
50	1,500	15	5
55	1,650	16.5	5.5
60	1,800	18	6
65	1,950	19.5	6.5
70	2,100	21	7
75	2,250	22.5	7.5
80	2,400	24	8
85	2,550	25.5	8.5
90	2,700	27	9
95	2,850	28.5	9.5
100	3,000	30	10
105	3,150	31.5	10.5
110	3,300	33	11
115	3,450	34.5	11.5
120	3,600	36	12

125	3,750	37.5	12.5
130	3,900	39	13
135	4,050	40.5	13.5
140	4,200	42	14
145	4,350	43.5	14.5
150	4,500	45	15

#### Arterial line injection

It is administered through the arterial line of a dialysis circuit for the prevention of thrombus formation in the extra corporeal circulation during haemodialysis.

#### Switch between enoxaparin sodium and oral anticoagulants

##### *Switch between enoxaparin sodium and vitamin K antagonists (VKA)*

Clinical monitoring and laboratory tests [prothrombin time expressed as the International Normalised Ratio (INR)] must be intensified to monitor the effect of VKA.

As there is an interval before the VKA reaches its maximum effect, enoxaparin sodium therapy should be continued at a constant dose for as long as necessary in order to maintain the INR within the desired therapeutic range for the indication in two successive tests.

For patients currently receiving a VKA, the VKA should be discontinued and the first dose of enoxaparin sodium should be given when the INR has dropped below the therapeutic range.

##### *Switch between enoxaparin sodium and direct oral anticoagulants (DOAC)*

For patients currently receiving enoxaparin sodium, discontinue enoxaparin sodium and start the DOAC 0 to 2 hours before the time that the next scheduled administration of enoxaparin sodium would be due as per DOAC label.

For patients currently receiving a DOAC, the first dose of enoxaparin sodium should be given at the time the next DOAC dose would be taken.

#### Administration in spinal/epidural anaesthesia or lumbar puncture

Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, careful neurological monitoring is recommended due to the risk of neuraxial haematomas (see section 4.4).

- *At doses used for prophylaxis*

A puncture-free interval of at least 12 hours shall be kept between the last injection of enoxaparin sodium at prophylactic doses and the needle or catheter placement.

For continuous techniques, a similar delay of at least 12 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 24 hours.

The 2 hours preoperative initiation of enoxaparin sodium 2,000 IU (20 mg) is not compatible with neuraxial anaesthesia.

- *At doses used for treatment*

A puncture-free interval of at least 24 hours shall be kept between the last injection of enoxaparin sodium at curative doses and the needle or catheter placement (see also section 4.3).

For continuous techniques, a similar delay of 24 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 48 hours.

Patients receiving the twice daily doses (i.e. 75 IU/kg (0.75 mg/kg) twice daily or 100 IU/kg (1 mg/kg) twice-daily) should omit the second enoxaparin sodium dose to allow a sufficient delay before catheter placement or removal.

Anti-Xa levels are still detectable at these time points, and these delays are not a guarantee that neuraxial hematoma will be avoided.

Likewise, consider not using enoxaparin sodium until at least 4 hours after the spinal/epidural puncture or after the catheter has been removed. The delay must be based on a benefit-risk assessment considering both the risk for thrombosis and the risk for bleeding in the context of the procedure and patient risk factors.

### 4.3 Contraindications

Enoxaparin sodium is contraindicated in patients with:

- Hypersensitivity to enoxaparin sodium, heparin or its derivatives, including other low molecular weight heparins (LMWH) or to any of the excipients listed in section 6.1;
- History of immune mediated heparin-induced thrombocytopenia (HIT) within the past 100 days or in the presence of circulating antibodies (see also section 4.4 );
- Active clinically significant bleeding and conditions with a high risk of haemorrhage, including recent haemorrhagic stroke, gastrointestinal ulcer, presence of malignant neoplasm at high risk of bleeding, recent brain, spinal or ophthalmic surgery, known or suspected oesophageal varices, arteriovenous malformations, vascular aneurysms or major intraspinal or intracerebral vascular abnormalities;
- Spinal or epidural anaesthesia or loco-regional anaesthesia when enoxaparin sodium is used for treatment in the previous 24 hours (see section 4.4).

### 4.4 Special warnings and precautions for use

#### Traceability

LMWHs are biological medicinal products. In order to improve the traceability of biological medicinal products, the name and the batch number of the administered product should be clearly recorded.

#### General

Enoxaparin sodium cannot be used interchangeably (unit for unit) with other LMWHs. These medicinal products differ in their manufacturing process, molecular weights, specific anti-Xa and anti-IIa activities, units, dose and clinical efficacy and safety. This results in differences in pharmacokinetics and associated biological activities (e.g. anti-thrombin activity, and platelet interactions). Special attention and compliance with the instructions for use specific to each proprietary medicinal product are therefore required.

#### History of HIT (>100 days)

Use of enoxaparin sodium in patients with a history of immune mediated HIT within the past 100 days or in the presence of circulating antibodies is contraindicated (see section 4.3). Circulating antibodies may persist several years.

Enoxaparin sodium is to be used with extreme caution in patients with a history (>100 days) of heparin-induced thrombocytopenia without circulating antibodies. The decision to use enoxaparin sodium in such a case must be made only after a careful benefit risk assessment and after non-heparin alternative treatments are considered (e.g. danaparoid sodium or lepirudin).

#### Monitoring of platelet counts

In patients with cancer with a platelet count below 80 G/L, anticoagulation treatment can only be considered on a case-by-case basis and careful monitoring is recommended.

The risk of antibody-mediated HIT also exists with LMWHs. Should thrombocytopenia occur, it usually appears between the 5<sup>th</sup> and the 21<sup>st</sup> day following the beginning of enoxaparin sodium treatment.

The risk of HIT is higher in postoperative patients and mainly after cardiac surgery and in patients with cancer. Therefore, it is recommended that the platelet counts be measured before the initiation of therapy with enoxaparin sodium and then regularly thereafter during the treatment.

If there are clinical symptoms suggestive of HIT (any new episode of arterial and/or venous thromboembolism, any painful skin lesion at the injection site, any allergic or anaphylactoid reactions on treatment), platelet count

should be measured. Patients must be aware that these symptoms may occur and if so, that they should inform their primary care physician.

In practice, if a confirmed significant decrease of the platelet count is observed (30 to 50 % of the initial value), enoxaparin sodium treatment must be immediately discontinued and the patient switched to another non-heparin anticoagulant alternative treatment.

### Haemorrhage

As with other anticoagulants, bleeding may occur at any site. If bleeding occurs, the origin of the haemorrhage should be investigated and appropriate treatment instituted.

Enoxaparin sodium, as with any other anticoagulant therapy, should be used with caution in conditions with increased potential for bleeding, such as:

- impaired haemostasis,
- history of peptic ulcer,
- recent ischemic stroke,
- severe arterial hypertension,
- recent diabetic retinopathy,
- neuro- or ophthalmologic surgery,
- concomitant use of medicinal products affecting haemostasis (see section 4.5).

### Laboratory tests

At doses used for prophylaxis of venous thromboembolism, enoxaparin sodium does not influence bleeding time and global blood coagulation tests significantly, nor does it affect platelet aggregation or binding of fibrinogen to platelets.

At higher doses, increases in activated partial thromboplastin time (aPTT), and activated clotting time (ACT) may occur. Increases in aPTT and ACT are not linearly correlated with increasing enoxaparin sodium antithrombotic activity and therefore are unsuitable and unreliable for monitoring enoxaparin sodium activity.

### Spinal/Epidural anaesthesia or lumbar puncture

Spinal/epidural anaesthesia or lumbar puncture must not be performed within 24 hours of administration of enoxaparin sodium at therapeutic doses (see also section 4.3).

There have been cases of neuraxial haematomas reported with the concurrent use of enoxaparin sodium and spinal/epidural anaesthesia or spinal puncture procedures resulting in long term or permanent paralysis.

These events are rare with enoxaparin sodium dose regimens 4,000 IU (40 mg) once daily or lower. The risk of these events is higher with the use of post-operative indwelling epidural catheters, with the concomitant use of additional medicinal products affecting haemostasis such as Non-Steroidal Anti-Inflammatory Drugs (NSAIDs), with traumatic or repeated epidural or spinal puncture, or in patients with a history of spinal surgery or spinal deformity.

To reduce the potential risk of bleeding associated with the concurrent use of enoxaparin sodium and epidural or spinal anaesthesia/analgesia or spinal puncture, consider the pharmacokinetic profile of enoxaparin sodium (see section 5.2). Placement or removal of an epidural catheter or lumbar puncture is best performed when the anticoagulant effect of enoxaparin sodium is low; however, the exact timing to reach a sufficiently low anticoagulant effect in each patient is not known. For patients with creatinine clearance [15-30 mL/minute], additional considerations are necessary because elimination of enoxaparin sodium is more prolonged (see section 4.2).

Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, frequent monitoring must be exercised to detect any signs and symptoms of neurological impairment such as midline back pain, sensory and motor deficits (numbness or weakness in lower limbs), bowel and/or bladder dysfunction. Instruct patients to report immediately if they experience any of the above signs or symptoms. If signs or symptoms of spinal hematoma are suspected, initiate urgent diagnosis and treatment including consideration for spinal cord decompression even though such treatment may not prevent or reverse neurological sequelae.

### Skin necrosis/cutaneous vasculitis

Skin necrosis and cutaneous vasculitis have been reported with LMWHs and should lead to prompt treatment discontinuation.

### Percutaneous coronary revascularization procedures

To minimise the risk of bleeding following the vascular instrumentation during the treatment of unstable angina, NSTEMI and acute STEMI, adhere precisely to the intervals recommended between enoxaparin sodium injection doses. It is important to achieve haemostasis at the puncture site after PCI. In case a closure device is used, the sheath can be removed immediately. If a manual compression method is used, sheath should be removed 6 hours after the last IV/SC enoxaparin sodium injection. If the treatment with enoxaparin sodium is to be continued, the next scheduled dose should be given no sooner than 6 to 8 hours after sheath removal. The site of the procedure should be observed for signs of bleeding or hematoma formation.

### Acute infective endocarditis

Use of heparin is usually not recommended in patients with acute infective endocarditis due to the risk of cerebral haemorrhage. If such use is considered absolutely necessary, the decision must be made only after a careful individual benefit risk assessment.

### Mechanical prosthetic heart valves

The use of enoxaparin sodium has not been adequately studied for thromboprophylaxis in patients with mechanical prosthetic heart valves. Isolated cases of prosthetic heart valve thrombosis have been reported in patients with mechanical prosthetic heart valves who have received enoxaparin sodium for thromboprophylaxis. Confounding factors, including underlying disease and insufficient clinical data, limit the evaluation of these cases. Some of these cases were pregnant women in whom thrombosis led to maternal and foetal death.

### *Pregnant women with mechanical prosthetic heart valves*

The use of enoxaparin sodium for thromboprophylaxis in pregnant women with mechanical prosthetic heart valves has not been adequately studied. In a clinical study of pregnant women with mechanical prosthetic heart valves given enoxaparin sodium (100 IU/kg (1 mg/kg) twice daily) to reduce the risk of thromboembolism, 2 of 8 women developed clots resulting in blockage of the valve and leading to maternal and foetal death. There have been isolated post-marketing reports of valve thrombosis in pregnant women with mechanical prosthetic heart valves while receiving enoxaparin sodium for thromboprophylaxis. Pregnant women with mechanical prosthetic heart valves may be at higher risk for thromboembolism.

### Elderly

No increased bleeding tendency is observed in the elderly with the prophylactic dose ranges. Elderly patients (especially patients eighty years of age and older) may be at an increased risk for bleeding complications with the therapeutic dose ranges. Careful clinical monitoring is advised and dose reduction might be considered in patients older than 75 years treated for STEMI (see sections 4.2 and 5.2).

### Renal impairment

In patients with renal impairment, there is an increase in exposure of enoxaparin sodium which increases the risk of bleeding. In these patients, careful clinical monitoring is advised, and biological monitoring by anti-Xa activity measurement might be considered (see sections 4.2 and 5.2). Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance <15 mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

In patients with severe renal impairment (creatinine clearance 15-30 mL/min), since exposure of enoxaparin sodium is significantly increased, a dose adjustment is recommended for therapeutic and prophylactic dose ranges (see section 4.2).

No dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment.

#### Hepatic impairment

Enoxaparin sodium should be used with caution in patients with hepatic impairment due to an increased potential for bleeding. Dose adjustment based on monitoring of anti-Xa levels is unreliable in patients with liver cirrhosis and not recommended (see section 5.2).

#### Low weight

An increase in exposure of enoxaparin sodium with prophylactic doses (non-weight adjusted) has been observed in low-weight women (<45 kg) and low-weight men (<57 kg), which may lead to a higher risk of bleeding. Therefore, careful clinical monitoring is advised in these patients (see section 5.2).

#### Obese patients

Obese patients are at higher risk for thromboembolism. The safety and efficacy of prophylactic doses in obese patients (BMI >30 kg/m<sup>2</sup>) has not been fully determined and there is no consensus for dose adjustment. These patients should be observed carefully for signs and symptoms of thromboembolism.

#### Hyperkalaemia

Heparins can suppress adrenal secretion of aldosterone leading to hyperkalaemia (see section 4.8), particularly in patients such as those with diabetes mellitus, chronic renal failure, pre-existing metabolic acidosis, taking medicinal products known to increase potassium (see section 4.5). Plasma potassium should be monitored regularly especially in patients at risk.

#### Sodium content

This medicinal product contains less than 1 mmol sodium (23 mg) per dose, that is to say essentially 'sodium-free'.

#### Acute generalized exanthematous pustulosis

Acute generalized exanthematous pustulosis (AGEP) has been reported with frequency not known in association with enoxaparin treatment. At the time of prescription patients should be advised of the signs and symptoms and monitored closely for skin reactions. If signs and symptoms suggestive of these reactions appear, enoxaparin should be withdrawn immediately and an alternative treatment considered (as appropriate).

### **4.5 Interaction with other medicinal products and other forms of interaction**

#### Concomitant use not recommended

##### Medicinal products affecting haemostasis (see section 4.4)

It is recommended that some agents which affect haemostasis should be discontinued prior to enoxaparin sodium therapy unless strictly indicated. If the combination is indicated, enoxaparin sodium should be used with careful clinical and laboratory monitoring when appropriate. These agents include medicinal products such as:

- Systemic salicylates, acetylsalicylic acid at anti-inflammatory doses, and NSAIDs including ketorolac,

- Other thrombolytics (e.g. alteplase, reteplase, streptokinase, tenecteplase, urokinase) and anticoagulants (see section 4.2).

#### Concomitant use with caution

The following medicinal products may be administered with caution concomitantly with enoxaparin sodium:

- *Other medicinal products affecting haemostasis such as:*
  - Platelet aggregation inhibitors including acetylsalicylic acid used at antiaggregant dose (cardioprotection), clopidogrel, ticlopidine, and glycoprotein IIb/IIIa antagonists indicated in acute coronary syndrome due to the risk of bleeding,
  - Dextran 40,
  - Systemic glucocorticoids.
- *Medicinal products increasing potassium levels:*

Medicinal products that increase serum potassium levels may be administered concurrently with enoxaparin sodium under careful clinical and laboratory monitoring (see sections 4.4 and 4.8).

## **4.6 Fertility, pregnancy and lactation**

### Pregnancy

In humans, there is no evidence that enoxaparin crosses the placental barrier during the second and third trimester of pregnancy. There is no information available concerning the first trimester.

Animal studies have not shown any evidence of foetotoxicity or teratogenicity (see section 5.3). Animal data have shown that enoxaparin passage through the placenta is minimal.

Enoxaparin sodium should be used during pregnancy only if the physician has established a clear need.

Pregnant women receiving enoxaparin sodium should be carefully monitored for evidence of bleeding or excessive anticoagulation and should be warned of the haemorrhagic risk. Overall, the data suggest that there is no evidence for an increased risk of haemorrhage, thrombocytopenia or osteoporosis with respect to the risk observed in non-pregnant women, other than that observed in pregnant women with prosthetic heart valves (see section 4.4).

If an epidural anaesthesia is planned, it is recommended to withdraw enoxaparin sodium treatment before (see section 4.4).

### Breast-feeding

It is not known whether unchanged enoxaparin is excreted in human breast milk. In lactating rats, the passage of enoxaparin or its metabolites in milk is very low. The oral absorption of enoxaparin sodium is unlikely. Inhixa can be used during breastfeeding.

### Fertility

There are no clinical data for enoxaparin sodium in fertility. Animal studies did not show any effect on fertility (see section 5.3).

## **4.7 Effects on ability to drive and use machines**

Enoxaparin sodium has no or negligible influence on the ability to drive and use machines.

## **4.8 Undesirable effects**

### Summary of the safety profile

Enoxaparin sodium has been evaluated in more than 15,000 patients who received enoxaparin sodium in clinical trials. These included 1,776 for prophylaxis of DVT following orthopaedic or abdominal surgery in



patients at risk for thromboembolic complications, 1,169 for prophylaxis of DVT in acutely ill medical patients with severely restricted mobility, 559 for treatment of DVT with or without PE, 1,578 for treatment of unstable angina and non-Q-wave myocardial infarction and 10,176 for treatment of acute STEMI.

Enoxaparin sodium regimen administered during these clinical trials varies depending on indications. The enoxaparin sodium dose was 4,000 IU (40 mg) SC once daily for prophylaxis of DVT following surgery or in acutely ill medical patients with severely restricted mobility. In treatment of DVT with or without PE, patients receiving enoxaparin sodium were treated with either a 100 IU/kg (1 mg/kg) SC dose every 12 hours or a 150 IU/kg (1.5 mg/kg) SC dose once a day. In the clinical trials for treatment of unstable angina and non-Q-wave myocardial infarction, doses were 100 IU/kg (1 mg/kg) SC every 12 hours, and in the clinical study for treatment of acute STEMI enoxaparin sodium regimen was a 3,000 IU (30 mg) IV bolus followed by 100 IU/kg (1 mg/kg) SC every 12 hours.

In clinical trials, haemorrhages, thrombocytopenia and thrombocytosis were the most commonly reported reactions (see section 4.4 and 'Description of selected adverse reactions' below).

The safety profile of enoxaparin for extended treatment of DVT and PE in patients with active cancer is similar to its safety profile for the treatment of DVT and PE.

Acute generalized exanthematous pustulosis (AGEP) has been reported in association with enoxaparin treatment (see section 4.4).

#### Tabulated list of adverse reactions

Other adverse reactions observed in clinical trials and reported in post-marketing experience (\* indicates reactions from post-marketing experience) are detailed below.

Frequencies are defined as follows: very common ( $\geq 1/10$ ); common ( $\geq 1/100$  to  $< 1/10$ ); uncommon ( $\geq 1/1000$  to  $< 1/100$ ); rare ( $\geq 1/10,000$  to  $< 1/1,000$ ); and very rare ( $< 1/10,000$ ) or not known (cannot be estimated from available data). Within each system organ class, adverse reactions are presented in order of decreasing seriousness.

#### *Blood and the lymphatic system disorders*

Common: Haemorrhage, haemorrhagic anaemia\*, thrombocytopenia, thrombocytosis

Rare: Eosinophilia\*

Rare: Cases of immuno-allergic thrombocytopenia with thrombosis; in some of them thrombosis was complicated by organ infarction or limb ischaemia (see section 4.4).

#### *Immune system disorders*

Common: Allergic reaction

Rare: Anaphylactic/Anaphylactoid reactions including shock\*

#### *Nervous system disorders*

Common: Headache\*

#### *Vascular disorders*

Rare: Spinal haematoma\* (or neuraxial haematoma). These reactions have resulted in varying degrees of neurologic injuries including long-term or permanent paralysis (see section 4.4).

#### *Hepatobiliary disorders*

Very common: Hepatic enzyme increases (mainly transaminases  $> 3$  times the upper limit of normality)

Uncommon: Hepatocellular liver injury \*

Rare: Cholestatic liver injury\*

#### *Skin and subcutaneous tissue disorders*

Common: Urticaria, pruritus, erythema

Uncommon: Bullous dermatitis

Rare: Alopecia\*

Rare: Cutaneous vasculitis\*, skin necrosis\* usually occurring at the injection site (these phenomena have been usually preceded by purpura or erythematous plaques, infiltrated and painful).  
Injection site nodules\* (inflammatory nodules, which were not cystic enclosure of enoxaparin). They resolve after a few days and should not cause treatment discontinuation.  
Not known: Acute generalized exanthematous pustulosis (AGEP)

#### *Musculoskeletal and connective tissue disorders*

Rare: Osteoporosis\* following long term therapy (greater than 3 months)

#### *General disorders and administration site conditions*

Common: Injection site haematoma, injection site pain, other injection site reaction (such as oedema, haemorrhage, hypersensitivity, inflammation, mass, pain, or reaction)

Uncommon: Local irritation, skin necrosis at injection site

#### *Investigations*

Rare: Hyperkalaemia\* (see sections 4.4 and 4.5).

#### Description of selected adverse reactions

##### *Haemorrhages*

These included major haemorrhages, reported at most in 4.2 % of the patients (surgical patients). Some of these cases have been fatal. In surgical patients, haemorrhage complications were considered major: (1) if the haemorrhage caused a significant clinical event, or (2) if accompanied by haemoglobin decrease  $\geq 2$  g/dL or transfusion of 2 or more units of blood products. Retroperitoneal and intracranial haemorrhages were always considered major.

As with other anticoagulants, haemorrhage may occur in the presence of associated risk factors such as: organic lesions liable to bleed, invasive procedures or the concomitant use of medicinal products affecting haemostasis (see sections 4.4 and 4.5).

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
<i>Blood and lymphatic system disorders</i>	<i>Very common:</i> <b>Haemorrhage<sup>a</sup></b>  <i>Rare:</i> <b>Retroperitoneal haemorrhage</b>	<i>Common:</i> <b>Haemorrhage<sup>a</sup></b>	<i>Very common:</i> <b>Haemorrhage<sup>a</sup></b>  <i>Uncommon:</i> <b>Intracranial haemorrhage, Retroperitoneal haemorrhage</b>	<i>Common<sup>b</sup>:</i> <b>Haemorrhage</b>	<i>Common:</i> <b>Haemorrhage<sup>a</sup></b> <i>Rare:</i> <b>Retroperitoneal haemorrhage</b>	<i>Common:</i> <b>Haemorrhage<sup>a</sup></b>  <i>Uncommon:</i> <b>Intracranial haemorrhage, Retroperitoneal haemorrhage</b>

<sup>a</sup>: such as haematoma, ecchymosis other than at injection site, wound haematoma, haematuria, epistaxis and gastro-intestinal haemorrhage.

<sup>b</sup>: frequency based on a retrospective study on a registry including 3526 patients (see section 5.1)

*Thrombocytopenia and thrombocytosis (see section 4.4 monitoring of platelet counts)*

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
<i>Blood and lymphatic system disorders</i>	<i>Very common:</i> <b>Thrombocytosis<sup>‡</sup></b>  <i>Common:</i> <b>Thrombocytopenia</b>	<i>Uncommon:</i> <b>Thrombocytopenia</b>	<i>Very common:</i> <b>Thrombocytosis<sup>‡</sup></b>  <i>Common:</i> <b>Thrombocytopenia</b>	<i>Unknown:</i> <b>Thrombocytopenia</b>	<i>Uncommon:</i> <b>Thrombocytopenia</b>	<i>Common:</i> <b>Thrombocytosis<sup>‡</sup></b> <b>Thrombocytopenia</b> <i>Very rare:</i> <b>Immunoallergic thrombocytopenia</b>

<sup>‡</sup>: Platelet increased >400 G/L

### Paediatric population

The safety and efficacy of enoxaparin sodium in children have not been established (see section 4.2).

### Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the national reporting system listed in Appendix V.

## 4.9 Overdose

### Signs and symptoms

Accidental overdose with enoxaparin sodium after IV, extracorporeal or SC administration may lead to haemorrhagic complications. Following oral administration of even large doses, it is unlikely that enoxaparin sodium will be absorbed.

### Management

The anticoagulant effects can be largely neutralised by the slow IV injection of protamine. The dose of protamine depends on the dose of enoxaparin sodium injected; 1 mg protamine neutralises the anticoagulant effect of 100 IU (1 mg) of enoxaparin sodium, if enoxaparin sodium was administered in the previous 8 hours. An infusion of 0.5 mg protamine per 100 IU (1 mg) of enoxaparin sodium may be administered if enoxaparin sodium was administered greater than 8 hours previous to the protamine administration, or if it has been determined that a second dose of protamine is required. After 12 hours of the enoxaparin sodium injection, protamine administration may not be required. However, even with high doses of protamine, the anti-Xa activity of enoxaparin sodium is never completely neutralised (maximum about 60%) (see the prescribing information for protamine salts).

## 5. PHARMACOLOGICAL PROPERTIES

### 5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Antithrombotic agents, heparin group. ATC code: B01A B05

Inhixa is a biosimilar medicinal product. Detailed information is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.

#### Pharmacodynamic effects

Enoxaparin is a LMWH with a mean molecular weight of approximately 4,500 daltons, in which the antithrombotic and anticoagulant activities of standard heparin have been dissociated. The active substance is the sodium salt.

In the *in vitro* purified system, enoxaparin sodium has a high anti-Xa activity (approximately 100 IU/mg) and low anti-IIa or anti thrombin activity (approximately 28 IU/mg), with a ratio of 3.6. These anticoagulant activities are mediated through anti-thrombin III (ATIII) resulting in anti-thrombotic activities in humans.

Beyond its anti-Xa/IIa activity, further antithrombotic and anti-inflammatory properties of enoxaparin have been identified in healthy subjects and patients as well as in non-clinical models. These include ATIII-dependent inhibition of other coagulation factors like factor VIIa, induction of endogenous Tissue Factor Pathway Inhibitor (TFPI) release as well as a reduced release of von Willebrand factor (vWF) from the vascular endothelium into the blood circulation. These factors are known to contribute to the overall antithrombotic effect of enoxaparin sodium.

When used as prophylactic treatment, enoxaparin sodium does not significantly affect the aPTT. When used as curative treatment, aPTT can be prolonged by 1.5-2.2 times the control time at peak activity.

#### Clinical efficacy and safety

##### Prevention of venous thromboembolic disease associated with surgery

###### *Extended prophylaxis of VTE following orthopaedic surgery*

In a double blind study of extended prophylaxis for patients undergoing hip replacement surgery, 179 patients with no venous thromboembolic disease initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) SC, were randomised to a post-discharge regimen of either enoxaparin sodium 4,000 IU (40 mg) (n=90) once a day SC or to placebo (n=89) for 3 weeks. The incidence of DVT during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo, no PE was reported. No major bleeding occurred.

The efficacy data are provided in the table below.

	<b>Enoxaparin sodium 4,000 IU (40 mg) once a day SC n (%)</b>	<b>Placebo once a day SC n (%)</b>
<b>All treated extended prophylaxis patients</b>	90 (100)	89 (100)
<b>Total VTE</b>	6 (6.6)	18 (20.2)
Total DVT (%)	6 (6.6)*	18 (20.2)
Proximal DVT (%)	5 (5.6) <sup>#</sup>	7 (8.8)
*p value versus placebo =0.008		
<sup>#</sup> p value versus placebo =0.537		

In a second double-blind study, 262 patients without VTE disease and undergoing hip replacement surgery initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) SC were randomised to a post-discharge regimen of either enoxaparin sodium 4,000 IU (40 mg) (n=131) once a day SC or to placebo (n=131) for 3 weeks. Similar to the first study the incidence of VTE during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo for both total VTE (enoxaparin sodium 21 [16%] versus placebo 45 [34.4%]; p=0.001) and proximal DVT (enoxaparin sodium 8 [6.1%] versus placebo 28 [21.4%]; p<0.001). No difference in major bleeding was found between the enoxaparin sodium and the placebo group.

###### *Extended prophylaxis of DVT following cancer surgery*

A double-blind, multicenter trial, compared a four-week and a one-week regimen of enoxaparin sodium prophylaxis in terms of safety and efficacy in 332 patients undergoing elective surgery for abdominal or pelvic cancer. Patients received enoxaparin sodium (4,000 IU (40 mg) SC) daily for 6 to 10 days and were then randomly assigned to receive either enoxaparin sodium or placebo for another 21 days. Bilateral venography was performed between days 25 and 31, or sooner if symptoms of venous thromboembolism occurred. The patients were followed for three months. Enoxaparin sodium prophylaxis for four weeks after surgery for abdominal or pelvic cancer significantly reduced the incidence of venographically demonstrated thrombosis, as compared with enoxaparin sodium prophylaxis for one week. The rates of venous thromboembolism at the end of the double-blind phase were 12.0 % (n=20) in the placebo group and 4.8% (n=8) in the enoxaparin sodium group; p=0.02. This difference persisted at three months [13.8% vs. 5.5% (n=23 vs 9), p=0.01]. There were no differences in the rates of bleeding or other complications during the double-blind or follow-up periods.

*Prophylaxis of venous thromboembolic disease in medical patients with an acute illness expected to induce limitation of mobility*

In a double blind multicenter, parallel group study, enoxaparin sodium 2,000 IU (20 mg) or 4,000 IU (40 mg) once a day SC was compared to placebo in the prophylaxis of DVT in medical patients with severely restricted mobility during acute illness (defined as walking distance of <10 meters for ≤3 days). This study included patients with heart failure (NYHA Class III or IV); acute respiratory failure or complicated chronic respiratory insufficiency, and acute infection or acute rheumatic; if associated with at least one VTE risk factor (age ≥75 years, cancer, previous VTE, obesity, varicose veins, hormone therapy, and chronic heart or respiratory failure).

A total of 1,102 patients were enrolled in the study, and 1,073 patients were treated. Treatment continued for 6 to 14 days (median duration 7 days). When given at a dose of 4,000 IU (40 mg) once a day SC, enoxaparin sodium significantly reduced the incidence of VTE as compared to placebo. The efficacy data are provided in the table below.

	<b>Enoxaparin sodium 2,000 IU (20 mg) once a day SC n (%)</b>	<b>Enoxaparin sodium 4,000 IU (40 mg) once a day SC n (%)</b>	<b>Placebo n (%)</b>
<b>All treated medical patients during acute illness</b>	287 (100)	291(100)	288 (100)
<b>Total VTE (%)</b>	43 (15.0)	16 (5.5)*	43 (14.9)
Total DVT (%)	43 (15.0)	16 (5.5)	40 (13.9)
Proximal DVT (%)	13 (4.5)	5 (1.7)	14 (4.9)
VTE = Venous thromboembolic events which included DVT, PE, and death considered to be thromboembolic in origin * p value versus placebo =0.0002			

At approximately 3 months following enrolment, the incidence of VTE remained significantly lower in the enoxaparin sodium 4,000 IU (40 mg) treatment group versus the placebo treatment group.

The occurrence of total and major bleeding were respectively 8.6% and 1.1% in the placebo group, 11.7% and 0.3% in the enoxaparin sodium 2,000 IU (20 mg) group and 12.6% and 1.7% in the enoxaparin sodium 4,000 IU (40 mg) group.

*Treatment of DVT with or without PE*

In a multicenter, parallel group study, 900 patients with acute lower extremity DVT with or without PE were randomised to an inpatient (hospital) treatment of either (i) enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day SC, (ii) enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours SC, or (iii) heparin IV bolus

(5,000 IU) followed by a continuous infusion (administered to achieve an aPTT of 55 to 85 seconds). A total of 900 patients were randomised in the study and all patients were treated. All patients also received warfarin sodium (dose adjusted according to prothrombin time to achieve an INR of 2.0 to 3.0), commencing within 72 hours of initiation of enoxaparin sodium or standard heparin therapy, and continuing for 90 days. Enoxaparin sodium or standard heparin therapy was administered for a minimum of 5 days and until the targeted warfarin sodium INR was achieved. Both enoxaparin sodium regimens were equivalent to standard heparin therapy in reducing the risk of recurrent venous thromboembolism (DVT and/or PE). The efficacy data are provided in the table below.

	<b>Enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day SC n (%)</b>	<b>Enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day SC n (%)</b>	<b>Heparin aPTT adjusted IV therapy n (%)</b>
<b>All treated DVT patients with or without PE</b>	298 (100)	312 (100)	290 (100)
<b>Total VTE (%)</b>	13 (4.4)*	9 (2.9)*	12 (4.1)
DVT only (%)	11 (3.7)	7 (2.2)	8 (2.8)
Proximal DVT (%)	9 (3.0)	6 (1.9)	7 (2.4)
PE (%)	2 (0.7)	2 (0.6)	4 (1.4)
VTE = venous thromboembolic event (DVT and/or PE) *The 95% confidence intervals for the treatment differences for total VTE were: - enoxaparin sodium once a day versus heparin (-3.0 to 3.5) - enoxaparin sodium every 12 hours versus heparin (-4.2 to 1.7).			

Major bleeding were respectively 1.7% in the enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day group, 1.3% in the enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day group and 2.1% in the heparin group.

*Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer*

In clinical trials with limited number of patients, reported rates of recurrent VTE in patients treated with enoxaparin given once or twice daily for 3 to 6 months appear comparable to those with warfarin.

Effectiveness in real-life setting was assessed in a cohort of 4,451 patients with symptomatic VTE and active cancer from the multinational registry RIETE of patients with VTE and other thrombotic conditions. 3,526 patients received SC enoxaparin up to 6 months and 925 patients received tinzaparin or dalteparin SC. Among the 3,526 patients receiving enoxaparin treatment, 891 patients were treated with 1.5 mg/kg once daily as initial therapy and extended treatment up to 6 months (once daily alone), 1,854 patients received initial 1.0 mg/kg twice daily regimen and extended treatment up to 6 months (twice daily alone), and 687 patients received 1.0 mg/kg twice daily as initial treatment followed by 1.5 mg/kg once daily (twice daily-once daily) as the extended treatment up to 6 months. The mean and median duration of treatment until regimen change was 17 days and 8 days, respectively. There was no significant difference for VTE recurrence rate between the two treatments groups (see table), with enoxaparin meeting the prespecified criterion for non inferiority of 1.5 (HR adjusted by relevant covariates 0.817, 95% CI: 0.499-1.336). There was no statistically significant difference between the two treatment groups with regards to the relative risks of major (fatal or non-fatal) bleeding and all-cause death (see table).

**Table. Efficacy and safety outcomes in the RIETECAT study**

Outcome	Enoxaparin n=3526	Other LMWH n=925	Adjusted hazard ratios enoxaparin / other LMWH [95% confidence interval]
VTE recurrence	70 (2.0%)	23 (2.5%)	0.817, [ 0.499-1.336]
Major bleeding	111 (3.1%)	18 (1.9%)	1.522, [ 0.899-2.577]
Non-major bleeding	87 (2.5%)	24 (2.6%)	0.881, [0.550-1.410]
Overall death	666 (18.9%)	157 (17.0%)	0.974, [ 0.813-1.165]

An overview of outcomes per treatment regimen used in the RIETECAT study among 6-month completers is provided below:

**Table. 6-month outcomes in patients completing 6-month treatment, by different regimens**

Outcome N (%) (95% CI)	Enoxapa rin all regimens	Enoxaparin all regimens					EU- authorized LMWHs
		Enoxapa rin OD	Enoxapa rin BID	Enoxapa rin BID to OD	Enoxapar in OD to BID	Enoxapar in More than one switch	
	N=1432	N=444	N=529	N=406	N=14	N=39	N=428
Recurrence of VTE	70 (4.9%) (3.8%- 6.0%)	33 (7.4%) (5.0%- 9.9%)	22 (4.2%) (2.5%- 5.9%)	10 (2.5%) (0.9%- 4.0%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	23 (5.4%) (3.2%- 7.5%)
Major bleeding (fatal and non-fatal)	111 (7.8%) (6.4%- 9.1%)	31 (7.0%) (4.6%- 9.4%)	52 (9.8%) (7.3%- 12.4%)	21 (5.2%) (3.0%- 7.3%)	1 (7.1%) (0%- 22.6%)	6 (15.4%) (3.5%- 27.2%)	18 (4.2%) (2.3%- 6.1%)
Non-major bleedings of clinical significance	87 (6.1%) (4.8%- 7.3%)	26 (5.9%) (3.7%- 8.0%)	33 (6.2%) (4.2%- 8.3%)	23 (5.7%) (3.4%- 7.9%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	24 (5.6%) (3.4%- 7.8%)
All-cause death	666 (46.5%) (43.9%- 49.1%)	175 (39.4%) (34.9%- 44.0%)	323 (61.1%) (56.9%- 65.2%)	146 (36.0%) (31.3%- 40.6%)	6 (42.9%) (13.2%- 72.5%)	16 (41.0%) (24.9%- 57.2%)	157 (36.7%) (32.1%- 41.3%)
Fatal PE or fatal bleeding related death	48 (3.4%) (2.4%- 4.3%)	7 (1.6%) (0.4%- 2.7%)	35 (6.6%) (4.5%- 8.7%)	5 (1.2%) (0.2%- 2.3%)	0 (0%) -	1 (2.6%) (0%- 7.8%)	11 (2.6%) (1.1%- 4.1%)
*All data with 95% CI							

#### Treatment of unstable angina and non ST elevation myocardial infarction

In a large multicenter study, 3,171 patients enrolled at the acute phase of unstable angina or non-Q-wave myocardial infarction were randomised to receive in association with acetylsalicylic acid (100 to 325 mg once daily), either SC enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours or IV unfractionated heparin adjusted based on aPTT. Patients had to be treated in hospital for a minimum of 2 days and a maximum of 8 days, until clinical stabilization, revascularization procedures or hospital discharge. The patients had to be followed up to 30 days. In comparison with heparin, enoxaparin sodium significantly reduced the combined incidence of angina pectoris, myocardial infarction and death, with a decrease of 19.8 to 16.6% (relative risk reduction of 16.2%) on day 14. This reduction in the combined incidence was maintained after 30 days (from 23.3 to 19.8%; relative risk reduction of 15%).

There were no significant differences in major haemorrhages, although a haemorrhage at the site of the SC injection was more frequent.

#### Treatment of acute ST-segment elevation myocardial infarction

In a large multicenter study, 20,479 patients with STEMI eligible to receive fibrinolytic therapy were randomised to receive either enoxaparin sodium in a single 3,000 IU (30 mg) IV bolus plus a 100 IU/kg (1 mg/kg) SC dose followed by an SC injection of 100 IU/kg (1 mg/kg) every 12 hours or IV unfractionated heparin adjusted based on aPTT for 48 hours. All patients were also treated with acetylsalicylic acid for a minimum of 30 days. The enoxaparin sodium dosing strategy was adjusted for severe renally impaired patients and for the elderly of at least 75 years of age. The SC injections of enoxaparin sodium were given until hospital discharge or for a maximum of eight days (whichever came first).

4,716 patients underwent percutaneous coronary intervention receiving antithrombotic support with blinded investigational medicinal product. Therefore, for patients on enoxaparin sodium, the PCI was to be performed on enoxaparin sodium (no switch) using the regimen established in previous studies i.e. no additional dosing, if last SC administration given less than 8 hours before balloon inflation, IV bolus of 30 IU/kg (0.3 mg/kg) enoxaparin sodium, if the last SC administration given more than 8 hours before balloon inflation.

Enoxaparin sodium compared to unfractionated heparin significantly decreased the incidence of the primary end point, a composite of death from any cause or myocardial re-infarction in the first 30 days after randomization [9.9 percent in the enoxaparin sodium group, as compared with 12.0 percent in the unfractionated heparin group] with a 17 percent relative risk reduction ( $p < 0.001$ ).

The treatment benefits of enoxaparin sodium, evident for a number of efficacy outcomes, emerged at 48 hours, at which time there was a 35 percent reduction in the relative risk of myocardial re-infarction, as compared with treatment with unfractionated heparin ( $p < 0.001$ ).

The beneficial effect of enoxaparin sodium on the primary end point was consistent across key subgroups including age, gender, infarct location, history of diabetes, history of prior myocardial infarction, type of fibrinolytic administered, and time to treatment with the investigational medicinal product.

There was a significant treatment benefit of enoxaparin sodium, as compared with unfractionated heparin, in patients who underwent percutaneous coronary intervention within 30 days after randomization (23 percent reduction in relative risk) or who were treated medically (15 percent reduction in relative risk,  $p = 0.27$  for interaction).

The rate of the 30 day composite endpoint of death, myocardial re-infarction or intracranial haemorrhage (a measure of net clinical benefit) was significantly lower ( $p < 0.0001$ ) in the enoxaparin sodium group (10.1%) as compared to the heparin group (12.2%), representing a 17% relative risk reduction in favour of treatment with enoxaparin sodium.

The incidence of major bleeding at 30 days was significantly higher ( $p < 0.0001$ ) in the enoxaparin sodium group (2.1%) versus the heparin group (1.4%). There was a higher incidence of gastrointestinal bleeding in the enoxaparin sodium group (0.5%) versus the heparin group (0.1%), while the incidence of intracranial haemorrhage was similar in both groups (0.8% with enoxaparin sodium versus 0.7% with heparin).

The beneficial effect of enoxaparin sodium on the primary end point observed during the first 30 days was maintained over a 12 month follow-up period.

#### Hepatic impairment

Based on literature data the use of enoxaparin sodium 4,000 IU (40 mg) in cirrhotic patients (Child-Pugh class B-C) appears to be safe and effective in preventing portal vein thrombosis. It should be noted that the literature studies may have limitations. Caution should be used in patients with hepatic impairment as these patients have an increased potential for bleeding (see section 4.4) and no formal dose finding studies have been performed in cirrhotic patients (Child Pugh class A, B nor C).

## **5.2 Pharmacokinetic properties**

### General characteristics

The pharmacokinetic parameters of enoxaparin sodium have been studied primarily in terms of the time course of plasma anti-Xa activity and also by anti-IIa activity, at the recommended dose ranges after single



and repeated SC administration and after single IV administration. The quantitative determination of anti-Xa and anti-IIa pharmacokinetic activities was conducted by validated amidolytic methods.

### Absorption

The absolute bioavailability of enoxaparin sodium after SC injection, based on anti-Xa activity, is close to 100%.

Different doses and formulations and dosing regimens can be used.

The mean maximum plasma anti-Xa activity level is observed 3 to 5 hours after SC injection and achieves approximately 0.2, 0.4, 1.0 and 1.3 anti-Xa IU/mL following single SC administration of 2,000 IU, 4,000 IU, 100 IU/kg and 150 IU/kg (20 mg, 40 mg, 1 mg/kg and 1.5 mg/kg) doses, respectively.

A 3,000 IU (30 mg) IV bolus immediately followed by a 100 IU/kg (1 mg/kg) SC every 12 hours provided initial maximum anti-Xa activity level of 1.16 IU/mL (n=16) and average exposure corresponding to 88% of steady-state levels. Steady-state is achieved on the second day of treatment.

After repeated SC administration of 4,000 IU (40 mg) once daily and 150 IU/kg (1.5 mg/kg) once daily regimens in healthy volunteers, the steady-state is reached on day 2 with an average exposure ratio about 15% higher than after a single dose. After repeated SC administration of the 100 IU/kg (1 mg/kg) twice daily regimen, the steady-state is reached from day 3 to 4 with mean exposure about 65% higher than after a single dose and mean maximum and trough anti-Xa activity levels of about 1.2 and 0.52 IU/mL, respectively.

Injection volume and dose concentration over the range 100-200 mg/mL does not affect pharmacokinetic parameters in healthy volunteers.

Enoxaparin sodium pharmacokinetics appears to be linear over the recommended dose ranges.

Intra-patient and inter-patient variability is low. Following repeated SC administration no accumulation takes place.

Plasma anti-IIa activity after SC administration is approximately ten-fold lower than anti-Xa activity. The mean maximum anti-IIa activity level is observed approximately 3 to 4 hours following SC injection and reaches 0.13 IU/mL and 0.19 IU/mL following repeated administration of 100 IU/kg (1 mg/kg) twice daily and 150 IU/kg (1.5 mg/kg) once daily, respectively.

### Distribution

The volume of distribution of enoxaparin sodium anti-Xa activity is about 4.3 litres and is close to the blood volume.

### Biotransformation

Enoxaparin sodium is primarily metabolised in the liver by desulfation and/or depolymerization to lower molecular weight species with much reduced biological potency.

### Elimination

Enoxaparin sodium is a low clearance substance with a mean anti-Xa plasma clearance of 0.74 L/h after a 150 IU/kg (1.5 mg/kg) 6-hour IV infusion.

Elimination appears monophasic with a half-life of about 5 hours after a single SC dose to about 7 hours after repeated dosing.

Renal clearance of active fragments represents about 10% of the administered dose and total renal excretion of active and non-active fragments 40% of the dose.

## Special populations

### *Elderly*

Based on the results of a population pharmacokinetic analysis, the enoxaparin sodium kinetic profile is not different in elderly subjects compared to younger subjects when renal function is normal. However, since renal function is known to decline with age, elderly patients may show reduced elimination of enoxaparin sodium (see sections 4.2 and 4.4).

### *Hepatic impairment*

In a study conducted in patients with advanced cirrhosis treated with enoxaparin sodium 4,000 IU (40 mg) once daily, a decrease in maximum anti-Xa activity was associated with an increase in the severity of hepatic impairment (assessed by Child-Pugh categories). This decrease was mainly attributed to a decrease in ATIII level secondary to a reduced synthesis of ATIII in patients with hepatic impairment.

### *Renal impairment*

A linear relationship between anti-Xa plasma clearance and creatinine clearance at steady-state has been observed, which indicates decreased clearance of enoxaparin sodium in patients with reduced renal function. Anti-Xa exposure represented by AUC, at steady-state, is marginally increased in mild (creatinine clearance 50-80 mL/min) and moderate (creatinine clearance 30-50 mL/min) renal impairment after repeated SC 4,000 IU (40 mg) once daily doses. In patients with severe renal impairment (creatinine clearance <30 mL/min), the AUC at steady state is significantly increased on average by 65% after repeated SC 4,000 IU (40 mg) once daily doses (see sections 4.2 and 4.4).

### *Haemodialysis*

Enoxaparin sodium pharmacokinetics appeared similar than control population, after a single 25 IU, 50 IU or 100 IU/kg (0.25, 0.50 or 1.0 mg/kg) IV dose however, AUC was two-fold higher than control.

### *Weight*

After repeated SC 150 IU/kg (1.5 mg/kg) once daily dosing, mean AUC of anti-Xa activity is marginally higher at steady state in obese healthy volunteers (BMI 30-48 kg/m<sup>2</sup>) compared to non-obese control subjects, while maximum plasma anti-Xa activity level is not increased. There is a lower weight-adjusted clearance in obese subjects with SC dosing.

When non-weight adjusted dosing was administered, it was found after a single-SC 4,000 IU (40 mg) dose, that anti-Xa exposure is 52% higher in low-weight women (<45 kg) and 27% higher in low-weight men (<57 kg) when compared to normal weight control subjects (see section 4.4).

## Pharmacokinetic interactions

No pharmacokinetic interactions were observed between enoxaparin sodium and thrombolytics when administered concomitantly.

## **5.3 Preclinical safety data**

Besides the anticoagulant effects of enoxaparin sodium, there was no evidence of adverse reactions at 15 mg/kg/day in the 13-week SC toxicity studies both in rats and dogs and at 10 mg/kg/day in the 26-week SC and IV toxicity studies both in rats, and monkeys.

Enoxaparin sodium has shown no mutagenic activity based on *in vitro* tests, including the Ames test, mouse lymphoma cell forward mutation test, and *no clastogenic* activity based on an *in vitro* human lymphocyte chromosomal aberration test, and the *in vivo* rat bone marrow chromosomal aberration test.

Studies conducted in pregnant rats and rabbits at SC doses of enoxaparin sodium up to 30 mg/kg/day did not reveal any evidence of teratogenic effects or foetotoxicity. Enoxaparin sodium was found to have no effect on fertility or reproductive performance of male and female rats at SC doses up to 20 mg/kg/day.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Water for injections

### **6.2 Incompatibilities**

#### SC injection

Do not mix with other medicinal products.

#### IV (bolus) injection (for acute STEMI indication only)

Enoxaparin sodium may be safely administered with sodium chloride 9mg/ml (0.9%) solution for injection or 5% glucose in water for injections (see section 4.2).

### **6.3 Shelf life**

#### Pre-filled syringe

3 years

Diluted medicinal product with sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections.

8 hours

### **6.4 Special precautions for storage**

Store below 25 °C. Do not freeze.

### **6.5 Nature and contents of container**

1 mL of solution in:

- a clear, colourless type I neutral glass graduated syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a black polypropylene plunger rod. The syringe can be additionally equipped with needle guard or manual needle guard; or
- a clear, colourless type I neutral glass graduated syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a white polycarbonate plunger rod equipped with UltraSafe Passive needle guard.

Packs of:

- 2, 6, 10, 12, 20, 24, 30, 50 and 90 pre-filled syringes
- 2, 6, 10, 12, 20, 24, 30 and 50 pre-filled syringes with needle guard
- 6, 10, 12, 20, 24 and 50 pre-filled syringes with manual needle guard
- 2 and 10 pre-filled syringes with UltraSafe Passive needle guard

Not all pack sizes may be marketed.

### **6.6 Special precautions for disposal and other handling**

## **INSTRUCTIONS FOR USE: PRE-FILLED SYRINGE**

## How to give yourself an injection of Inhixa with a pre-filled syringe without needle guard

If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

### ***Before injecting yourself with Inhixa***

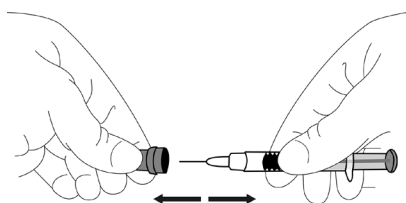
- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

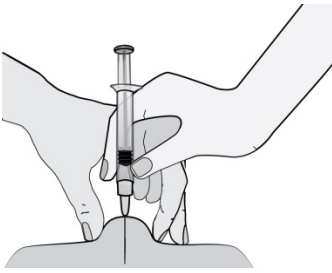


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin

Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold



- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection
- 9) Remove the needle by pulling it straight out.



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

#### How to give yourself an injection of Inhixa with a pre-filled syringe with needle guard

Your pre-filled syringe has a needle guard attached to it in order to protect you from needle stick injury. If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately. Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

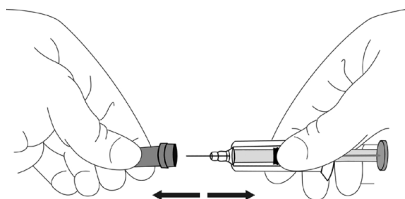
#### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.

- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

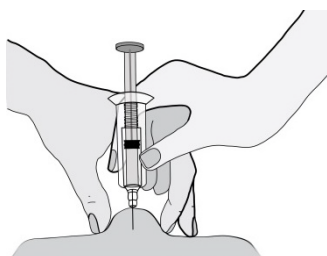


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin

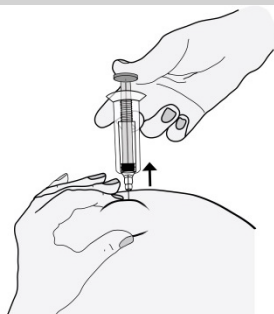
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold



- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection

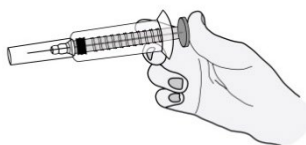
- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Push hard the plunger. The needle guard, which is in the form of a plastic cylinder, will be activated automatically and it will completely cover the needle.

"CLICK"



- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

#### How to give yourself an injection of Inhixa with a pre-filled syringe with UltraSafe Passive needle guard

Your pre-filled syringe has UltraSafe Passive needle guard attached to it in order to protect you from needle stick injury.

If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called "subcutaneous injection") will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

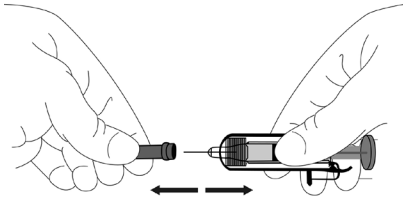
- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your stomach, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

#### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

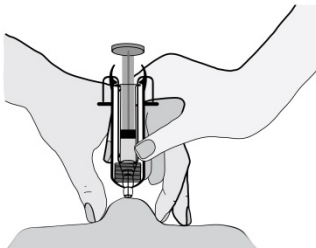


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin

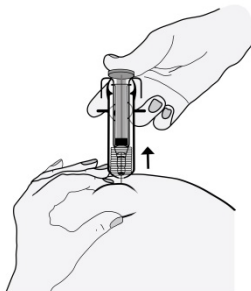
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold



- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection

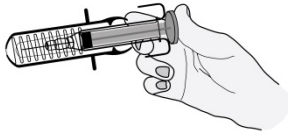
- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Let go of the plunger and allow the syringe to move up until the entire needle is guarded and locks into place.





- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

How to give yourself an injection of Inhixa with a pre-filled syringe with manually activated needle guard

Your pre-filled syringe has a manually activated needle guard attached to it in order to protect you from needle stick injury.

If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

***Before injecting yourself with Inhixa***

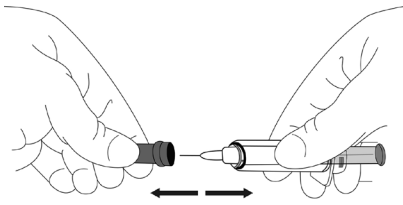
- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

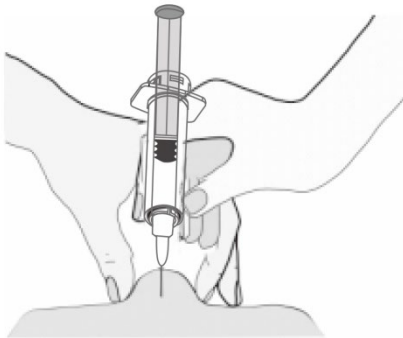


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin.

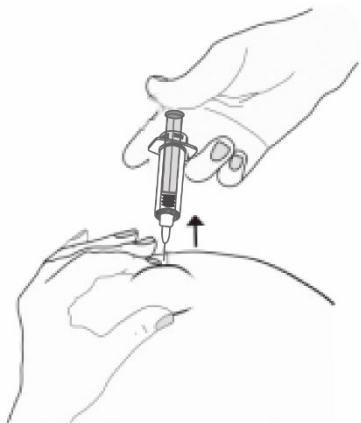
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold.



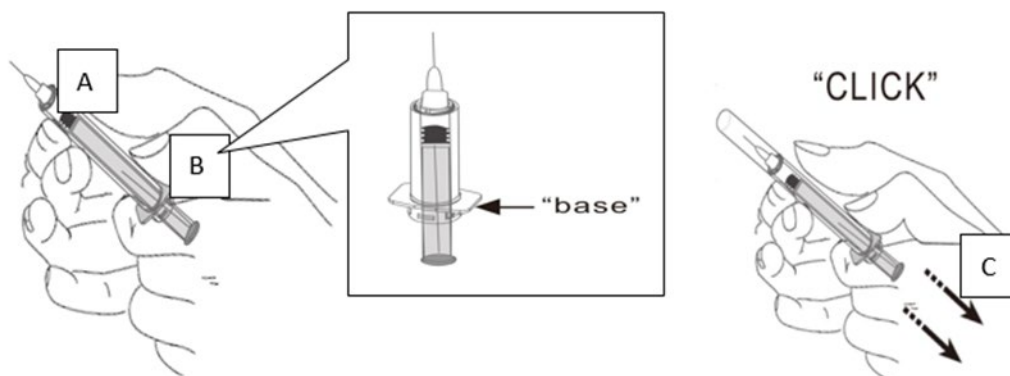
- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection.

- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Firmly hold the syringe tube with one hand (A). With the other hand hold the base, “wings” of the syringe (B), and pull the base until you hear a clicking sound (C). Now the used needle is completely protected.



- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

## 7. MARKETING AUTHORISATION HOLDER

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

## 8. MARKETING AUTHORISATION NUMBER(S)

EU/1/16/1132/009  
EU/1/16/1132/010  
EU/1/16/1132/019  
EU/1/16/1132/020  
EU/1/16/1132/022  
EU/1/16/1132/031  
EU/1/16/1132/032  
EU/1/16/1132/041  
EU/1/16/1132/042  
EU/1/16/1132/049  
EU/1/16/1132/050  
EU/1/16/1132/061  
EU/1/16/1132/062  
EU/1/16/1132/063  
EU/1/16/1132/089  
EU/1/16/1132/094  
EU/1/16/1132/107  
EU/1/16/1132/108  
EU/1/16/1132/109  
EU/1/16/1132/110  
EU/1/16/1132/114  
EU/1/16/1132/115  
EU/1/16/1132/124  
EU/1/16/1132/125

**9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION**

Date of first authorisation: 15/09/2016

Date of latest renewal: 26/08/2021

**10. DATE OF REVISION OF THE TEXT**

Detailed information on this medicinal product is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.

## 1. NAME OF THE MEDICINAL PRODUCT

Inhixa 12,000 IU (120 mg)/0.8 mL solution for injection in pre-filled syringe

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each pre-filled syringe contains enoxaparin sodium 12,000 IU anti-Xa activity (equivalent to 120 mg) in 0.8 mL water for injections.

Enoxaparin sodium is a biological substance obtained by alkaline depolymerisation of heparin benzyl ester derived from porcine intestinal mucosa.

For the full list of excipients, see section 6.1.

## 3. PHARMACEUTICAL FORM

Solution for injection in pre-filled syringe (injection).

Clear, colourless to pale yellow solution.

## 4. CLINICAL PARTICULARS

### 4.1 Therapeutic indications

Inhixa is indicated in adults for:

Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients, in particular those undergoing orthopaedic or general surgery including cancer surgery.

Prophylaxis of venous thromboembolic disease in medical patients with an acute illness (such as acute heart failure, respiratory insufficiency, severe infections or rheumatic diseases) and reduced mobility at increased risk of venous thromboembolism.

Treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE), excluding PE likely to require thrombolytic therapy or surgery.

Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer.

Prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Acute coronary syndrome:

- Treatment of unstable angina and Non ST-segment elevation myocardial infarction (NSTEMI), in combination with oral acetylsalicylic acid.
- Treatment of acute ST-segment elevation myocardial infarction (STEMI) including patients to be managed medically or with subsequent percutaneous coronary intervention (PCI).

### 4.2 Posology and method of administration

#### Posology

#### Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients

Individual thromboembolic risk for patients can be estimated using validated risk stratification model.

- In patients at moderate risk of thromboembolism, the recommended dose of enoxaparin sodium is 2,000 IU (20 mg) once daily by subcutaneous injection. Preoperative initiation (2 hours before surgery) of enoxaparin sodium 2,000 IU (20 mg) was proven effective and safe in moderate risk surgery. In moderate risk patients, enoxaparin sodium treatment should be maintained for a minimal period of 7-10 days whatever the recovery status (e.g. mobility). Prophylaxis should be continued until the patient no longer has significantly reduced mobility.

- In patients at high risk of thromboembolism, the recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily given by subcutaneous injection preferably started 12 hours before surgery. If there is a need for earlier than 12 hours enoxaparin sodium preoperative prophylactic initiation (e.g. high risk patient waiting for a deferred orthopaedic surgery), the last injection should be administered no later than 12 hours prior to surgery and resumed 12 hours after surgery.
  - For patients who undergo major orthopaedic surgery an extended thromboprophylaxis up to 5 weeks is recommended.
  - For patients with a high venous thromboembolism (VTE) risk who undergo abdominal or pelvic surgery for cancer an extended thromboprophylaxis up to 4 weeks is recommended.

#### Prophylaxis of venous thromboembolism in medical patients

The recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily by subcutaneous injection. Treatment with enoxaparin sodium is prescribed for at least 6 to 14 days whatever the recovery status (e.g. mobility). The benefit is not established for a treatment longer than 14 days.

#### Treatment of DVT and PE

Enoxaparin sodium can be administered subcutaneously either as a once daily injection of 150 IU/kg (1.5 mg/kg) or as twice daily injections of 100 IU/kg (1 mg/kg).

The regimen should be selected by the physician based on an individual assessment including evaluation of the thromboembolic risk and of the risk of bleeding. The dose regimen of 150 IU/kg (1.5 mg/kg) administered once daily should be used in uncomplicated patients with low risk of VTE recurrence. The dose regimen of 100 IU/kg (1 mg/kg) administered twice daily should be used in all other patients such as those with obesity, with symptomatic PE, cancer, recurrent VTE or proximal (*vena iliaca*) thrombosis.

Enoxaparin sodium treatment is prescribed for an average period of 10 days. Oral anticoagulant therapy should be initiated when appropriate (see “Switch between enoxaparin sodium and oral anticoagulants” at the end of section 4.2).

In the extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer, physicians should carefully assess the individual thromboembolic and bleeding risks of the patient.

The recommended dose is 100 IU/kg (1 mg/kg) administered twice daily by SC injections for 5 to 10 days, followed by a 150 IU/kg (1.5 mg/kg) once daily SC injection up to 6 months. The benefit of continuous anticoagulant therapy should be reassessed after 6 months of treatment.

#### Prevention of thrombus formation during haemodialysis

The recommended dose is 100 IU/kg (1 mg/kg) of enoxaparin sodium.

For patients with a high risk of haemorrhage, the dose should be reduced to 50 IU/kg (0.5 mg/kg) for double vascular access or 75 IU/kg (0.75 mg/kg) for single vascular access.

During haemodialysis, enoxaparin sodium should be introduced into the arterial line of the circuit at the beginning of the dialysis session. The effect of this dose is usually sufficient for a 4-hour session; however, if fibrin rings are found, for example after a longer than normal session, a further dose of 50 IU to 100 IU/kg (0.5 to 1 mg/kg) may be given.

No data are available in patients using enoxaparin sodium for prophylaxis or treatment and during haemodialysis sessions.

#### Acute coronary syndrome: treatment of unstable angina and NSTEMI and treatment of acute STEMI

- For treatment of unstable angina and NSTEMI, the recommended dose of enoxaparin sodium is 100 IU/kg (1 mg/kg) every 12 hours by subcutaneous injection administered in combination with antiplatelet therapy. Treatment should be maintained for a minimum of 2 days and continued until clinical stabilization. The usual duration of treatment is 2 to 8 days.  
Acetylsalicylic acid is recommended for all patients without contraindications at an initial oral loading dose of 150–300 mg (in acetylsalicylic acid-naïve patients) and a maintenance dose of 75–325 mg/day long-term regardless of treatment strategy.

- For treatment of acute STEMI, the recommended dose of enoxaparin sodium is a single intravenous bolus of 3,000 IU (30 mg) plus a 100 IU/kg (1 mg/kg) subcutaneous dose followed by 100 IU/kg (1 mg/kg) administered subcutaneously every 12 hours (maximum 10,000 IU (100 mg) for each of the first two subcutaneous doses). Appropriate antiplatelet therapy such as oral acetylsalicylic acid (75 mg to 325 mg once daily) should be administered concomitantly unless contraindicated. The recommended duration of treatment is 8 days or until hospital discharge, whichever comes first. When administered in conjunction with a thrombolytic (fibrin specific or non-fibrin specific), enoxaparin sodium should be given between 15 minutes before and 30 minutes after the start of fibrinolytic therapy.
  - For dose in patients  $\geq 75$  years of age, see paragraph “Elderly”.
  - For patients managed with PCI, if the last dose of enoxaparin sodium was given less than 8 hours before balloon inflation, no additional dosing is needed. If the last subcutaneous administration was given more than 8 hours before balloon inflation, an intravenous bolus of 30 IU/kg (0.3 mg/kg) enoxaparin sodium should be administered.

### Special populations

#### Paediatric population

The safety and efficacy of enoxaparin sodium in paediatric population have not been established. No data are available.

#### Elderly

For all indications except STEMI, no dose reduction is necessary in the elderly patients, unless kidney function is impaired (see below “renal impairment” and section 4.4).

For treatment of acute STEMI in elderly patients  $\geq 75$  years of age, an initial intravenous bolus must not be used. Initiate dosing with 75 IU/kg (0.75 mg/kg) subcutaneous injection every 12 hours (maximum 7,500 IU (75 mg) for each of the first two subcutaneous doses only, followed by 75 IU/kg (0.75 mg/kg) subcutaneous dosing for the remaining doses). For dose in elderly patients with impaired kidney function, see below “renal impairment” and section 4.4.

#### Hepatic impairment

Limited data are available in patients with hepatic impairment (see sections 5.1 and 5.2) and caution should be used in these patients (see section 4.4).

#### Renal impairment (see sections 4.4 and 5.2)

##### Severe renal impairment

Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance  $< 15$  mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Dose table for patients with severe renal impairment (creatinine clearance [15-30] mL/min):

Indication	Dosing regimen
Prophylaxis of venous thromboembolic disease	2,000 IU (20 mg) subcutaneously once daily
Treatment of DVT and PE	100 IU/kg (1 mg/kg) body weight subcutaneously once daily
Extended treatment of DVT and PE in patients with active cancer	100 IU/kg (1 mg/kg) body weight SC once daily
Treatment of unstable angina and NSTEMI	100 IU/kg (1 mg/kg) body weight subcutaneously once daily
Treatment of acute STEMI (patients under 75)	1 x 3,000 IU (30 mg) intravenous bolus plus 100 IU/kg (1 mg/kg) body weight subcutaneously and then 100 IU/kg (1 mg/kg) body weight subcutaneously every 24 hours
Treatment of acute STEMI (patients over 75)	No intravenous initial bolus, 100 IU/kg (1 mg/kg) body weight subcutaneously and then 100 IU/kg (1 mg/kg) body weight subcutaneously every 24 hours

The recommended dose adjustments do not apply to the haemodialysis indication.

#### *Moderate and mild renal impairment*

Although no dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment, careful clinical monitoring is advised.

#### Method of administration

Inhixa is not indicated for intramuscular use and should not be administered by this route.

For the prophylaxis of venous thrombo-embolic disease following surgery, treatment of DVT and PE, extended treatment of DVT and PE in patients with active cancer, treatment of unstable angina and NSTEMI, enoxaparin sodium should be administered by subcutaneous injection.

- For acute STEMI, treatment is to be initiated with a single intravenous bolus injection immediately followed by a subcutaneous injection.
- For the prevention of thrombus formation in the extra corporeal circulation during haemodialysis, it is administered through the arterial line of a dialysis circuit.

The disposable pre-filled syringe is ready for immediate use.

The use of a tuberculin syringe or equivalent is recommended when using ampoules or multidose vials to assure withdrawal of the appropriate volume of the medicinal product.

#### SC injection technique

Injection should be made preferably when the patient is lying down. Enoxaparin sodium is administered by deep SC injection.

When using pre-filled syringes, the air bubble should not be expelled from the syringe before the injection in order to avoid the loss of the medicinal product. When the quantity of the medicinal product to be injected requires to be adjusted based on the patient's body weight, the graduated pre-filled syringes should be used to reach the required volume by discarding the excess before injection. In some cases it is not possible to achieve an exact dose due to the graduations on the syringe, and in such case the volume shall be rounded up to the nearest graduation.

The administration should be alternated between the left and right anterolateral or posterolateral abdominal wall.

The whole length of the needle should be introduced vertically into a skin fold gently held between the thumb and index finger. The skin fold should not be released until the injection is complete. The injection site should not be rubbed after administration.

Note for the pre-filled syringes fitted with an automatic safety system: The safety system is triggered at the end of the injection (see instructions in section 6.6).

In case of self-administration, patient should be advised to follow instructions provided in the patient information leaflet included in the pack of this medicinal product.

#### IV (bolus) injection (for acute STEMI indication only)

For acute STEMI, treatment is to be initiated with a single intravenous bolus injection immediately followed by a subcutaneous injection.

For intravenous injection, either the multidose vial or pre-filled syringe can be used.

Enoxaparin sodium should be administered through an intravenous line. It should not be mixed or co-administered with other medicinal products. To avoid the possible mixture of enoxaparin sodium with



other medicinal products, the intravenous access chosen should be flushed with a sufficient amount of sodium chloride 9 mg/ml (0.9%) or 5% glucose in water for injections prior to and following the intravenous bolus administration of enoxaparin sodium to clear the port of the medicinal product. Enoxaparin sodium may be safely administered with sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections.

#### *Initial 3,000 IU (30 mg) bolus*

For the initial 3,000 IU (30 mg) bolus, using an enoxaparin sodium graduated pre-filled syringe, the excessive volume has to be expelled to retain only 3,000 IU (30 mg) in the syringe. The 3,000 IU (30 mg) dose can then be directly injected into the intravenous line.

#### *Additional bolus for PCI when last subcutaneous administration was given more than 8 hours before balloon inflation*

For patients being managed with PCI, an additional intravenous bolus of 30 IU/kg (0.3 mg/kg) is to be administered if last subcutaneous administration was given more than 8 hours before balloon inflation.

In order to assure the accuracy of the small volume to be injected, it is recommended to dilute the medicinal product to 300 IU/mL (3 mg/mL).

To obtain a 300 IU/mL (3 mg/mL) solution, using a 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe, it is recommended to use a 50 mL infusion bag (i.e. using either sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections) as follows:

30 mL of solution should be withdrawn from the infusion bag with a syringe and discarded. The complete contents of the 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe should be injected into the 20 mL remaining in the bag. The contents of the bag should be gently mixed. Then, the required volume of diluted solution should be withdrawn with a syringe for administration into the intravenous line.

After dilution is completed, the volume to be injected can be calculated using the following formula [volume of diluted solution (mL) = patient weight (kg) x 0.1] or using the table below. It is recommended to prepare the dilution immediately before use.

Volume to be injected through intravenous line after dilution is completed at a concentration of 300 IU (3 mg)/mL.

Weight	Required dose 30 IU/kg (0.3 mg/kg)		Volume to inject when diluted to a final concentration of 300 IU (3 mg)/mL
[kg]	IU	[mg]	[mL]
45	1,350	13.5	4.5
50	1,500	15	5
55	1,650	16.5	5.5
60	1,800	18	6
65	1,950	19.5	6.5
70	2,100	21	7
75	2,250	22.5	7.5
80	2,400	24	8
85	2,550	25.5	8.5
90	2,700	27	9
95	2,850	28.5	9.5
100	3,000	30	10
105	3,150	31.5	10.5
110	3,300	33	11
115	3,450	34.5	11.5
120	3,600	36	12
125	3,750	37.5	12.5
130	3,900	39	13
135	4,050	40.5	13.5
140	4,200	42	14

145	4,350	43.5	14.5
150	4,500	45	15

### Arterial line injection

It is administered through the arterial line of a dialysis circuit for the prevention of thrombus formation in the extra corporeal circulation during haemodialysis.

### Switch between enoxaparin sodium and oral anticoagulants

#### *Switch between enoxaparin sodium and vitamin K antagonists (VKA)*

Clinical monitoring and laboratory tests [prothrombin time expressed as the International Normalised Ratio (INR)] must be intensified to monitor the effect of VKA.

As there is an interval before the VKA reaches its maximum effect, enoxaparin sodium therapy should be continued at a constant dose for as long as necessary in order to maintain the INR within the desired therapeutic range for the indication in two successive tests.

For patients currently receiving a VKA, the VKA should be discontinued and the first dose of enoxaparin sodium should be given when the INR has dropped below the therapeutic range.

#### *Switch between enoxaparin sodium and direct oral anticoagulants (DOAC)*

For patients currently receiving enoxaparin sodium, discontinue enoxaparin sodium and start the DOAC 0 to 2 hours before the time that the next scheduled administration of enoxaparin sodium would be due as per DOAC label.

For patients currently receiving a DOAC, the first dose of enoxaparin sodium should be given at the time the next DOAC dose would be taken.

### Administration in spinal/epidural anaesthesia or lumbar puncture

Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, careful neurological monitoring is recommended due to the risk of neuraxial haematomas (see section 4.4).

- *At doses used for prophylaxis*

A puncture-free interval of at least 12 hours shall be kept between the last injection of enoxaparin sodium at prophylactic doses and the needle or catheter placement.

For continuous techniques, a similar delay of at least 12 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 24 hours.

The 2 hours preoperative initiation of enoxaparin sodium 2,000 IU (20 mg) is not compatible with neuraxial anaesthesia.

- *At doses used for treatment*

A puncture-free interval of at least 24 hours shall be kept between the last injection of enoxaparin sodium at curative doses and the needle or catheter placement (see also section 4.3).

For continuous techniques, a similar delay of 24 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 48 hours.

Patients receiving the twice daily doses (i.e. 75 IU/kg (0.75 mg/kg) twice daily or 100 IU/kg (1 mg/kg) twice-daily) should omit the second enoxaparin sodium dose to allow a sufficient delay before catheter placement or removal.

Anti-Xa levels are still detectable at these time points, and these delays are not a guarantee that neuraxial hematoma will be avoided.

Likewise, consider not using enoxaparin sodium until at least 4 hours after the spinal/epidural puncture or after the catheter has been removed. The delay must be based on a benefit-risk assessment considering both the risk for thrombosis and the risk for bleeding in the context of the procedure and patient risk factors.

### 4.3 Contraindications

Enoxaparin sodium is contraindicated in patients with:

- Hypersensitivity to enoxaparin sodium, heparin or its derivatives, including other low molecular weight heparins (LMWH) or to any of the excipients listed in section 6.1;
- History of immune mediated heparin-induced thrombocytopenia (HIT) within the past 100 days or in the presence of circulating antibodies (see also section 4.4 );
- Active clinically significant bleeding and conditions with a high risk of haemorrhage, including recent haemorrhagic stroke, gastrointestinal ulcer, presence of malignant neoplasm at high risk of bleeding, recent brain, spinal or ophthalmic surgery, known or suspected oesophageal varices, arteriovenous malformations, vascular aneurysms or major intraspinal or intracerebral vascular abnormalities;
- Spinal or epidural anaesthesia or loco-regional anaesthesia when enoxaparin sodium is used for treatment in the previous 24 hours (see section 4.4).

### 4.4 Special warnings and precautions for use

#### Traceability

LMWHs are biological medicinal products. In order to improve the traceability of biological medicinal products, the name and the batch number of the administered product should be clearly recorded.

#### General

Enoxaparin sodium cannot be used interchangeably (unit for unit) with other LMWHs. These medicinal products differ in their manufacturing process, molecular weights, specific anti-Xa and anti-IIa activities, units, dose and clinical efficacy and safety. This results in differences in pharmacokinetics and associated biological activities (e.g. anti-thrombin activity, and platelet interactions). Special attention and compliance with the instructions for use specific to each proprietary medicinal product are therefore required.

#### History of HIT (> 100 days)

Use of enoxaparin sodium in patients with a history of immune mediated HIT within the past 100 days or in the presence of circulating antibodies is contraindicated (see section 4.3). Circulating antibodies may persist several years.

Enoxaparin sodium is to be used with extreme caution in patients with a history (> 100 days) of heparin-induced thrombocytopenia without circulating antibodies. The decision to use enoxaparin sodium in such a case must be made only after a careful benefit risk assessment and after non-heparin alternative treatments are considered (e.g. danaparoid sodium or lepirudin).

#### Monitoring of platelet counts

In patients with cancer with a platelet count below 80 G/L, anticoagulation treatment can only be considered on a case-by-case basis and careful monitoring is recommended.

The risk of antibody-mediated HIT also exists with LMWHs. Should thrombocytopenia occur, it usually appears between the 5<sup>th</sup> and the 21<sup>st</sup> day following the beginning of enoxaparin sodium treatment.

The risk of HIT is higher in postoperative patients and mainly after cardiac surgery and in patients with cancer. Therefore, it is recommended that the platelet counts be measured before the initiation of therapy with enoxaparin sodium and then regularly thereafter during the treatment.

If there are clinical symptoms suggestive of HIT (any new episode of arterial and/or venous thromboembolism, any painful skin lesion at the injection site, any allergic or anaphylactoid reactions on treatment), platelet count should be measured. Patients must be aware that these symptoms may occur and if so, that they should inform their primary care physician.

In practice, if a confirmed significant decrease of the platelet count is observed (30 to 50 % of the initial value), enoxaparin sodium treatment must be immediately discontinued and the patient switched to another non-heparin anticoagulant alternative treatment.

## Haemorrhage

As with other anticoagulants, bleeding may occur at any site. If bleeding occurs, the origin of the haemorrhage should be investigated and appropriate treatment instituted.

Enoxaparin sodium, as with any other anticoagulant therapy, should be used with caution in conditions with increased potential for bleeding, such as:

- impaired haemostasis,
- history of peptic ulcer,
- recent ischemic stroke,
- severe arterial hypertension,
- recent diabetic retinopathy,
- neuro- or ophthalmologic surgery,
- concomitant use of medicinal products affecting haemostasis (see section 4.5).

## Laboratory tests

At doses used for prophylaxis of venous thromboembolism, enoxaparin sodium does not influence bleeding time and global blood coagulation tests significantly, nor does it affect platelet aggregation or binding of fibrinogen to platelets.

At higher doses, increases in activated partial thromboplastin time (aPTT), and activated clotting time (ACT) may occur. Increases in aPTT and ACT are not linearly correlated with increasing enoxaparin sodium antithrombotic activity and therefore are unsuitable and unreliable for monitoring enoxaparin sodium activity.

## Spinal/Epidural anaesthesia or lumbar puncture

Spinal/epidural anaesthesia or lumbar puncture must not be performed within 24 hours of administration of enoxaparin sodium at therapeutic doses (see also section 4.3).

There have been cases of neuraxial haematomas reported with the concurrent use of enoxaparin sodium and spinal/epidural anaesthesia or spinal puncture procedures resulting in long term or permanent paralysis. These events are rare with enoxaparin sodium dose regimens 4,000 IU (40 mg) once daily or lower. The risk of these events is higher with the use of post-operative indwelling epidural catheters, with the concomitant use of additional medicinal products affecting haemostasis such as Non-Steroidal Anti-Inflammatory Drugs (NSAIDs), with traumatic or repeated epidural or spinal puncture, or in patients with a history of spinal surgery or spinal deformity.

To reduce the potential risk of bleeding associated with the concurrent use of enoxaparin sodium and epidural or spinal anaesthesia/analgesia or spinal puncture, consider the pharmacokinetic profile of enoxaparin sodium (see section 5.2). Placement or removal of an epidural catheter or lumbar puncture is best performed when the anticoagulant effect of enoxaparin sodium is low; however, the exact timing to reach a sufficiently low anticoagulant effect in each patient is not known. For patients with creatinine clearance [15-30 mL/minute], additional considerations are necessary because elimination of enoxaparin sodium is more prolonged (see section 4.2).

Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, frequent monitoring must be exercised to detect any signs and symptoms of neurological impairment such as midline back pain, sensory and motor deficits (numbness or weakness in lower limbs), bowel and/or bladder dysfunction. Instruct patients to report immediately if they experience any of the above signs or symptoms. If signs or symptoms of spinal hematoma are suspected, initiate urgent diagnosis and treatment including consideration for spinal cord decompression even though such treatment may not prevent or reverse neurological sequelae.

### Skin necrosis/cutaneous vasculitis

Skin necrosis and cutaneous vasculitis have been reported with LMWHs and should lead to prompt treatment discontinuation.

### Percutaneous coronary revascularization procedures

To minimise the risk of bleeding following the vascular instrumentation during the treatment of unstable angina, NSTEMI and acute STEMI, adhere precisely to the intervals recommended between enoxaparin sodium injection doses. It is important to achieve haemostasis at the puncture site after PCI. In case a closure device is used, the sheath can be removed immediately. If a manual compression method is used, sheath should be removed 6 hours after the last intravenous/subcutaneous enoxaparin sodium injection. If the treatment with enoxaparin sodium is to be continued, the next scheduled dose should be given no sooner than 6 to 8 hours after sheath removal. The site of the procedure should be observed for signs of bleeding or hematoma formation.

### Acute infective endocarditis

Use of heparin is usually not recommended in patients with acute infective endocarditis due to the risk of cerebral haemorrhage. If such use is considered absolutely necessary, the decision must be made only after a careful individual benefit risk assessment.

### Mechanical prosthetic heart valves

The use of enoxaparin sodium has not been adequately studied for thromboprophylaxis in patients with mechanical prosthetic heart valves. Isolated cases of prosthetic heart valve thrombosis have been reported in patients with mechanical prosthetic heart valves who have received enoxaparin sodium for thromboprophylaxis. Confounding factors, including underlying disease and insufficient clinical data, limit the evaluation of these cases. Some of these cases were pregnant women in whom thrombosis led to maternal and foetal death.

### *Pregnant women with mechanical prosthetic heart valves*

The use of enoxaparin sodium for thromboprophylaxis in pregnant women with mechanical prosthetic heart valves has not been adequately studied. In a clinical study of pregnant women with mechanical prosthetic heart valves given enoxaparin sodium (100 IU/kg (1 mg/kg) twice daily) to reduce the risk of thromboembolism, 2 of 8 women developed clots resulting in blockage of the valve and leading to maternal and foetal death. There have been isolated post-marketing reports of valve thrombosis in pregnant women with mechanical prosthetic heart valves while receiving enoxaparin sodium for thromboprophylaxis. Pregnant women with mechanical prosthetic heart valves may be at higher risk for thromboembolism.

### Elderly

No increased bleeding tendency is observed in the elderly with the prophylactic dose ranges. Elderly patients (especially patients eighty years of age and older) may be at an increased risk for bleeding complications with the therapeutic dose ranges. Careful clinical monitoring is advised and dose reduction might be considered in patients older than 75 years treated for STEMI (see sections 4.2 and 5.2).

### Renal impairment

In patients with renal impairment, there is an increase in exposure of enoxaparin sodium which increases the risk of bleeding. In these patients, careful clinical monitoring is advised, and biological monitoring by anti-Xa activity measurement might be considered (see sections 4.2 and 5.2).

Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance < 15 mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

In patients with severe renal impairment (creatinine clearance 15-30 mL/min), since exposure of enoxaparin sodium is significantly increased, a dose adjustment is recommended for therapeutic and prophylactic dose ranges (see section 4.2).

No dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment.

#### Hepatic impairment

Enoxaparin sodium should be used with caution in patients with hepatic impairment due to an increased potential for bleeding. Dose adjustment based on monitoring of anti-Xa levels is unreliable in patients with liver cirrhosis and not recommended (see section 5.2).

#### Low weight

An increase in exposure of enoxaparin sodium with prophylactic doses (non-weight adjusted) has been observed in low-weight women (< 45 kg) and low-weight men (< 57 kg), which may lead to a higher risk of bleeding. Therefore, careful clinical monitoring is advised in these patients (see section 5.2).

#### Obese patients

Obese patients are at higher risk for thromboembolism. The safety and efficacy of prophylactic doses in obese patients (BMI > 30 kg/m<sup>2</sup>) has not been fully determined and there is no consensus for dose adjustment. These patients should be observed carefully for signs and symptoms of thromboembolism.

#### Hyperkalaemia

Heparins can suppress adrenal secretion of aldosterone leading to hyperkalaemia (see section 4.8), particularly in patients such as those with diabetes mellitus, chronic renal failure, pre-existing metabolic acidosis, taking medicinal products known to increase potassium (see section 4.5). Plasma potassium should be monitored regularly especially in patients at risk.

#### Sodium content

This medicinal product contains less than 1 mmol sodium (23 mg) per dose, that is to say essentially 'sodium-free'.

#### Acute generalized exanthematous pustulosis

Acute generalized exanthematous pustulosis (AGEP) has been reported with frequency not known in association with enoxaparin treatment. At the time of prescription patients should be advised of the signs and symptoms and monitored closely for skin reactions. If signs and symptoms suggestive of these reactions appear, enoxaparin should be withdrawn immediately and an alternative treatment considered (as appropriate).

### **4.5 Interaction with other medicinal products and other forms of interaction**

#### Concomitant use not recommended

##### Medicinal products affecting haemostasis (see section 4.4)

It is recommended that some agents which affect haemostasis should be discontinued prior to enoxaparin sodium therapy unless strictly indicated. If the combination is indicated, enoxaparin sodium should be used with careful clinical and laboratory monitoring when appropriate. These agents include medicinal products such as:

- Systemic salicylates, acetylsalicylic acid at anti-inflammatory doses, and NSAIDs including ketorolac,

- Other thrombolytics (e.g. alteplase, reteplase, streptokinase, tenecteplase, urokinase) and anticoagulants (see section 4.2).

#### Concomitant use with caution

The following medicinal products may be administered with caution concomitantly with enoxaparin sodium:

*Other medicinal products affecting haemostasis such as:*

- Platelet aggregation inhibitors including acetylsalicylic acid used at antiaggregant dose (cardioprotection), clopidogrel, ticlopidine, and glycoprotein IIb/IIIa antagonists indicated in acute coronary syndrome due to the risk of bleeding,
- Dextran 40,
- Systemic glucocorticoids.

#### *Medicinal products increasing potassium levels*

Medicinal products that increase serum potassium levels may be administered concurrently with enoxaparin sodium under careful clinical and laboratory monitoring (see sections 4.4 and 4.8).

### **4.6 Fertility, pregnancy and lactation**

#### Pregnancy

In humans, there is no evidence that enoxaparin crosses the placental barrier during the second and third trimester of pregnancy. There is no information available concerning the first trimester.

Animal studies have not shown any evidence of foetotoxicity or teratogenicity (see section 5.3). Animal data have shown that enoxaparin passage through the placenta is minimal.

Enoxaparin sodium should be used during pregnancy only if the physician has established a clear need.

Pregnant women receiving enoxaparin sodium should be carefully monitored for evidence of bleeding or excessive anticoagulation and should be warned of the haemorrhagic risk. Overall, the data suggest that there is no evidence for an increased risk of haemorrhage, thrombocytopenia or osteoporosis with respect to the risk observed in non-pregnant women, other than that observed in pregnant women with prosthetic heart valves (see section 4.4).

If an epidural anaesthesia is planned, it is recommended to withdraw enoxaparin sodium treatment before (see section 4.4).

#### Breast-feeding

It is not known whether unchanged enoxaparin is excreted in human breast milk. In lactating rats, the passage of enoxaparin or its metabolites in milk is very low. The oral absorption of enoxaparin sodium is unlikely. Inhixa can be used during breastfeeding.

#### Fertility

There are no clinical data for enoxaparin sodium in fertility. Animal studies did not show any effect on fertility (see section 5.3).

### **4.7 Effects on ability to drive and use machines**

Enoxaparin sodium has no or negligible influence on the ability to drive and use machines.

### **4.8 Undesirable effects**

#### Summary of the safety profile

Enoxaparin sodium has been evaluated in more than 15,000 patients who received enoxaparin sodium in clinical trials. These included 1,776 for prophylaxis of DVT following orthopaedic or abdominal surgery in patients at risk for thromboembolic complications, 1,169 for prophylaxis of DVT in acutely ill medical

patients with severely restricted mobility, 559 for treatment of DVT with or without PE, 1,578 for treatment of unstable angina and non-Q-wave myocardial infarction and 10,176 for treatment of acute STEMI.

Enoxaparin sodium regimen administered during these clinical trials varies depending on indications. The enoxaparin sodium dose was 4,000 IU (40 mg) subcutaneously once daily for prophylaxis of DVT following surgery or in acutely ill medical patients with severely restricted mobility. In treatment of DVT with or without PE, patients receiving enoxaparin sodium were treated with either a 100 IU/kg (1 mg/kg) subcutaneous dose every 12 hours or a 150 IU/kg (1.5 mg/kg) subcutaneous dose once a day. In the clinical trials for treatment of unstable angina and non-Q-wave myocardial infarction, doses were 100 IU/kg (1 mg/kg) subcutaneously every 12 hours, and in the clinical study for treatment of acute STEMI enoxaparin sodium regimen was a 3,000 IU (30 mg) intravenous bolus followed by 100 IU/kg (1 mg/kg) subcutaneously every 12 hours.

In clinical trials, haemorrhages, thrombocytopenia and thrombocytosis were the most commonly reported reactions (see section 4.4 and 'Description of selected adverse reactions' below).

The safety profile of enoxaparin for extended treatment of DVT and PE in patients with active cancer is similar to its safety profile for the treatment of DVT and PE.

Acute generalized exanthematous pustulosis (AGEP) has been reported in association with enoxaparin treatment (see section 4.4).

#### Tabulated list of adverse reactions

Other adverse reactions observed in clinical trials and reported in post-marketing experience (\* indicates reactions from post-marketing experience) are detailed below.

Frequencies are defined as follows: very common ( $\geq 1/10$ ); common ( $\geq 1/100$  to  $< 1/10$ ); uncommon ( $\geq 1/1,000$  to  $< 1/100$ ); rare ( $\geq 1/10,000$  to  $< 1/1,000$ ); and very rare ( $< 1/10,000$ ) or not known (cannot be estimated from available data). Within each system organ class, adverse reactions are presented in order of decreasing seriousness.

#### *Blood and the lymphatic system disorders*

Common: Haemorrhage, haemorrhagic anaemia\*, thrombocytopenia, thrombocytosis

Rare: Eosinophilia\*

Rare: Cases of immuno-allergic thrombocytopenia with thrombosis; in some of them thrombosis was complicated by organ infarction or limb ischaemia (see section 4.4).

#### *Immune system disorders*

Common: Allergic reaction

Rare: Anaphylactic/Anaphylactoid reactions including shock\*

#### *Nervous system disorders*

Common: Headache\*

#### *Vascular disorders*

Rare: Spinal haematoma\* (or neuraxial haematoma). These reactions have resulted in varying degrees of neurologic injuries including long-term or permanent paralysis (see section 4.4).

#### *Hepatobiliary disorders*

Very common: Hepatic enzyme increases (mainly transaminases  $> 3$  times the upper limit of normality)

Uncommon: Hepatocellular liver injury\*

Rare: Cholestatic liver injury\*

#### *Skin and subcutaneous tissue disorders*

Common: Urticaria, pruritus, erythema

Uncommon: Bullous dermatitis

Rare: Alopecia\*



Rare: Cutaneous vasculitis\*, skin necrosis\* usually occurring at the injection site (these phenomena have been usually preceded by purpura or erythematous plaques, infiltrated and painful).  
Injection site nodules\* (inflammatory nodules, which were not cystic enclosure of enoxaparin). They resolve after a few days and should not cause treatment discontinuation.  
Not known: Acute generalized exanthematous pustulosis (AGEP)

#### *Musculoskeletal and connective tissue disorders*

Rare: Osteoporosis\* following long term therapy (greater than 3 months)

#### *General disorders and administration site conditions*

Common: Injection site haematoma, injection site pain, other injection site reaction (such as oedema, haemorrhage, hypersensitivity, inflammation, mass, pain, or reaction)

Uncommon: Local irritation, skin necrosis at injection site

#### *Investigations*

Rare: Hyperkalaemia\* (see sections 4.4 and 4.5).

#### Description of selected adverse reactions

##### *Haemorrhages*

These included major haemorrhages, reported at most in 4.2 % of the patients (surgical patients). Some of these cases have been fatal. In surgical patients, haemorrhage complications were considered major: (1) if the haemorrhage caused a significant clinical event, or (2) if accompanied by haemoglobin decrease  $\geq 2$  g/dL or transfusion of 2 or more units of blood products. Retroperitoneal and intracranial haemorrhages were always considered major.

As with other anticoagulants, haemorrhage may occur in the presence of associated risk factors such as: organic lesions liable to bleed, invasive procedures or the concomitant use of medicinal products affecting haemostasis (see sections 4.4 and 4.5).

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
<i>Blood and lymphatic system disorders</i>	<i>Very common:</i> Haemorrhage <sup>a</sup>  <i>Rare:</i> Retroperitoneal haemorrhage	<i>Common:</i> Haemorrhage <sup>a</sup>	<i>Very common:</i> Haemorrhage <sup>a</sup>  <i>Uncommon:</i> Intracranial haemorrhage, Retroperitoneal haemorrhage	<i>Common</i> <sup>b</sup> : Haemorrhage	<i>Common:</i> Haemorrhage <sup>a</sup>  <i>Rare:</i> Retroperitoneal haemorrhage	<i>Common:</i> Haemorrhage <sup>a</sup>  <i>Uncommon:</i> Intracranial haemorrhage, Retroperitoneal haemorrhage

<sup>a</sup>: such as haematoma, ecchymosis other than at injection site, wound haematoma, haematuria, epistaxis and gastro-intestinal haemorrhage.

<sup>b</sup>: frequency based on a retrospective study on a registry including 3526 patients (see section 5.1)

*Thrombocytopenia and thrombocytosis (see section 4.4 monitoring of platelet counts)*

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
<i>Blood and lymphatic system disorders</i>	<i>Very common:</i> Thrombocytosis <sup>β</sup>  <i>Common:</i> Thrombocytopenia	<i>Uncommon:</i> Thrombocytopenia	<i>Very common:</i> Thrombocytosis <sup>β</sup>  <i>Common:</i> Thrombocytopenia	<i>Unknown:</i> Thrombocytopenia	<i>Uncommon:</i> Thrombocytopenia	<i>Common:</i> Thrombocytosis <sup>β</sup> Thrombocytopenia <i>Very rare:</i> Immuno-allergic thrombocytopenia

<sup>β</sup>: Platelet increased > 400 G/L

### Paediatric population

The safety and efficacy of enoxaparin sodium in children have not been established (see section 4.2).

### Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the national reporting system listed in Appendix V.

## **4.9 Overdose**

### Signs and symptoms

Accidental overdose with enoxaparin sodium after intravenous, extracorporeal or subcutaneous administration may lead to haemorrhagic complications. Following oral administration of even large doses, it is unlikely that enoxaparin sodium will be absorbed.

### Management

The anticoagulant effects can be largely neutralised by the slow intravenous injection of protamine. The dose of protamine depends on the dose of enoxaparin sodium injected; 1 mg protamine neutralises the anticoagulant effect of 100 IU (1 mg) of enoxaparin sodium, if enoxaparin sodium was administered in the previous 8 hours. An infusion of 0.5 mg protamine per 100 IU (1 mg) of enoxaparin sodium may be administered if enoxaparin sodium was administered greater than 8 hours previous to the protamine administration, or if it has been determined that a second dose of protamine is required. After 12 hours of the enoxaparin sodium injection, protamine administration may not be required. However, even with high doses of protamine, the anti-Xa activity of enoxaparin sodium is never completely neutralised (maximum about 60%) (see the prescribing information for protamine salts).

## **5. PHARMACOLOGICAL PROPERTIES**

### **5.1 Pharmacodynamic properties**

Pharmacotherapeutic group: Antithrombotic agents, heparin group. ATC code: B01A B05

Inhixa is a biosimilar medicinal product. Detailed information is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.

## Pharmacodynamic effects

Enoxaparin is a LMWH with a mean molecular weight of approximately 4,500 daltons, in which the antithrombotic and anticoagulant activities of standard heparin have been dissociated. The active substance is the sodium salt.

In the *in vitro* purified system, enoxaparin sodium has a high anti-Xa activity (approximately 100 IU/mg) and low anti-IIa or anti thrombin activity (approximately 28 IU/mg), with a ratio of 3.6. These anticoagulant activities are mediated through anti-thrombin III (ATIII) resulting in anti-thrombotic activities in humans.

Beyond its anti-Xa/IIa activity, further antithrombotic and anti-inflammatory properties of enoxaparin have been identified in healthy subjects and patients as well as in non-clinical models. These include ATIII-dependent inhibition of other coagulation factors like factor VIIa, induction of endogenous Tissue Factor Pathway Inhibitor (TFPI) release as well as a reduced release of von Willebrand factor (vWF) from the vascular endothelium into the blood circulation. These factors are known to contribute to the overall antithrombotic effect of enoxaparin sodium.

When used as prophylactic treatment, enoxaparin sodium does not significantly affect the aPTT. When used as curative treatment, aPTT can be prolonged by 1.5-2.2 times the control time at peak activity.

## Clinical efficacy and safety

### Prevention of venous thromboembolic disease associated with surgery

#### *Extended prophylaxis of VTE following orthopaedic surgery*

In a double blind study of extended prophylaxis for patients undergoing hip replacement surgery, 179 patients with no venous thromboembolic disease initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) subcutaneously, were randomised to a post-discharge regimen of either enoxaparin sodium 4,000 IU (40 mg) (n = 90) once a day subcutaneously or to placebo (n = 89) for 3 weeks. The incidence of DVT during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo, no PE was reported. No major bleeding occurred. The efficacy data are provided in the table below.

	Enoxaparin sodium 4,000 IU (40 mg) once a day subcutaneously n (%)	Placebo once a day subcutaneously n (%)
All treated extended prophylaxis patients	90 (100)	89 (100)
Total VTE	6 (6.6)	18 (20.2)
Total DVT (%)	6 (6.6)*	18 (20.2)
Proximal DVT (%)	5 (5.6) <sup>#</sup>	7 (8.8)

\*p value versus placebo = 0.008

<sup>#</sup>p value versus placebo = 0.537

In a second double-blind study, 262 patients without VTE disease and undergoing hip replacement surgery initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) subcutaneously were randomised to a post-discharge regimen of either enoxaparin sodium 4,000 IU (40 mg) (n = 131) once a day subcutaneously or to placebo (n = 131) for 3 weeks. Similar to the first study the incidence of VTE during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo for both total VTE (enoxaparin sodium 21 [16%] versus placebo 45 [34.4%]; p = 0.001) and proximal DVT (enoxaparin sodium 8 [6.1%] versus placebo 28 [21.4%]; p = < 0.001). No difference in major bleeding was found between the enoxaparin sodium and the placebo group.

#### *Extended prophylaxis of DVT following cancer surgery*

A double-blind, multicentre trial, compared a four-week and a one-week regimen of enoxaparin sodium prophylaxis in terms of safety and efficacy in 332 patients undergoing elective surgery for abdominal or

pelvic cancer. Patients received enoxaparin sodium (4,000 IU (40 mg) subcutaneously) daily for 6 to 10 days and were then randomly assigned to receive either enoxaparin sodium or placebo for another 21 days. Bilateral venography was performed between days 25 and 31, or sooner if symptoms of venous thromboembolism occurred. The patients were followed for three months. Enoxaparin sodium prophylaxis for four weeks after surgery for abdominal or pelvic cancer significantly reduced the incidence of venographically demonstrated thrombosis, as compared with enoxaparin sodium prophylaxis for one week. The rates of venous thromboembolism at the end of the double-blind phase were 12.0 % (n = 20) in the placebo group and 4.8% (n = 8) in the enoxaparin sodium group; p = 0.02. This difference persisted at three months [13.8% vs. 5.5% (n = 23 vs 9), p = 0.01]. There were no differences in the rates of bleeding or other complications during the double-blind or follow-up periods.

*Prophylaxis of venous thromboembolic disease in medical patients with an acute illness expected to induce limitation of mobility*

In a double blind multicentre, parallel group study, enoxaparin sodium 2,000 IU (20 mg) or 4,000 IU (40 mg) once a day subcutaneously was compared to placebo in the prophylaxis of DVT in medical patients with severely restricted mobility during acute illness (defined as walking distance of < 10 meters for ≤ 3 days). This study included patients with heart failure (NYHA Class III or IV); acute respiratory failure or complicated chronic respiratory insufficiency, and acute infection or acute rheumatic; if associated with at least one VTE risk factor (age ≥ 75 years, cancer, previous VTE, obesity, varicose veins, hormone therapy, and chronic heart or respiratory failure).

A total of 1,102 patients were enrolled in the study, and 1,073 patients were treated. Treatment continued for 6 to 14 days (median duration 7 days). When given at a dose of 4,000 IU (40 mg) once a day subcutaneously, enoxaparin sodium significantly reduced the incidence of VTE as compared to placebo. The efficacy data are provided in the table below.

	Enoxaparin sodium 2,000 IU (20 mg) once a day subcutaneously n (%)	Enoxaparin sodium 4,000 IU (40 mg) once a day subcutaneously n (%)	Placebo  n (%)
All treated medical patients during acute illness	287 (100)	291 (100)	288 (100)
Total VTE (%)	43 (15.0)	16 (5.5)*	43 (14.9)
Total DVT (%)	43 (15.0)	16 (5.5)	40 (13.9)
Proximal DVT (%)	13 (4.5)	5 (1.7)	14 (4.9)

VTE = Venous thromboembolic events which included DVT, PE, and death considered to be thromboembolic in origin

\* p value versus placebo = 0.0002

At approximately 3 months following enrolment, the incidence of VTE remained significantly lower in the enoxaparin sodium 4,000 IU (40 mg) treatment group versus the placebo treatment group.

The occurrence of total and major bleeding were respectively 8.6% and 1.1% in the placebo group, 11.7% and 0.3% in the enoxaparin sodium 2,000 IU (20 mg) group and 12.6% and 1.7% in the enoxaparin sodium 4,000 IU (40 mg) group.

*Treatment of DVT with or without PE*

In a multicentre, parallel group study, 900 patients with acute lower extremity DVT with or without PE were randomised to an inpatient (hospital) treatment of either (i) enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day subcutaneously, (ii) enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours subcutaneously, or (iii) heparin intravenous bolus (5,000 IU) followed by a continuous infusion (administered to achieve an aPTT of 55 to 85 seconds). A total of 900 patients were randomised in the study and all patients were treated. All patients also received warfarin sodium (dose adjusted according to prothrombin time to achieve an INR of 2.0 to 3.0), commencing within 72 hours of initiation of enoxaparin sodium or standard heparin therapy, and continuing for 90 days. Enoxaparin sodium or standard heparin therapy was administered for a minimum of 5 days and until the targeted warfarin sodium INR was achieved. Both enoxaparin sodium regimens were

equivalent to standard heparin therapy in reducing the risk of recurrent venous thromboembolism (DVT and/or PE). The efficacy data are provided in the table below.

	Enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day subcutaneously n (%)	Enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day subcutaneously n (%)	Heparin aPTT adjusted Intravenous Therapy n (%)
All treated DVT patients with or without PE	298 (100)	312 (100)	290 (100)
Total VTE (%)	13 (4.4)*	9 (2.9)*	12 (4.1)
DVT only (%)	11 (3.7)	7 (2.2)	8 (2.8)
Proximal DVT (%)	9 (3.0)	6 (1.9)	7 (2.4)
PE (%)	2 (0.7)	2 (0.6)	4 (1.4)

VTE = venous thromboembolic event (DVT and/or PE)

\*The 95% confidence intervals for the treatment differences for total VTE were:

- enoxaparin sodium once a day versus heparin (-3.0 to 3.5)
- enoxaparin sodium every 12 hours versus heparin (-4.2 to 1.7).

Major bleeding were respectively 1.7% in the enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day group, 1.3% in the enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day group and 2.1% in the heparin group.

*Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer*

In clinical trials with limited number of patients, reported rates of recurrent VTE in patients treated with enoxaparin given once or twice daily for 3 to 6 months appear comparable to those with warfarin.

Effectiveness in real-life setting was assessed in a cohort of 4,451 patients with symptomatic VTE and active cancer from the multinational registry RIETE of patients with VTE and other thrombotic conditions. 3,526 patients received SC enoxaparin up to 6 months and 925 patients received tinzaparin or dalteparin SC. Among the 3,526 patients receiving enoxaparin treatment, 891 patients were treated with 1.5 mg/kg once daily as initial therapy and extended treatment up to 6 months (once daily alone), 1,854 patients received initial 1.0 mg/kg twice daily regimen and extended treatment up to 6 months (twice daily alone), and 687 patients received 1.0 mg/kg twice daily as initial treatment followed by 1.5 mg/kg once daily (twice daily-once daily) as the extended treatment up to 6 months. The mean and median duration of treatment until regimen change was 17 days and 8 days, respectively. There was no significant difference for VTE recurrence rate between the two treatments groups (see table), with enoxaparin meeting the prespecified criterion for non inferiority of 1.5 (HR adjusted by relevant covariates 0.817, 95% CI: 0.499-1.336). There was no statistically significant difference between the two treatment groups with regards to the relative risks of major (fatal or non-fatal) bleeding and all-cause death (see table).

**Table. Efficacy and safety outcomes in the RIETECAT study**

Outcome	Enoxaparin n=3526	Other LMWH n=925	Adjusted hazard ratios enoxaparin / other LMWH [95% confidence interval]
VTE recurrence	70 (2.0%)	23 (2.5%)	0.817, [ 0.499-1.336]
Major bleeding	111 (3.1%)	18 (1.9%)	1.522, [ 0.899-2.577]
Non-major bleeding	87 (2.5%)	24 (2.6%)	0.881, [0.550-1.410]
Overall death	666 (18.9%)	157 (17.0%)	0.974, [ 0.813-1.165]

An overview of outcomes per treatment regimen used in the RIETECAT study among 6-month completers is provided below:

**Table. 6-month outcomes in patients completing 6-month treatment, by different regimens**

Outcome N (%) (95% CI)	Enoxapa rin all regimens	Enoxaparin all regimens					EU- authorized LMWHs
		Enoxapa rin OD	Enoxapa rin BID	Enoxapa rin BID to OD	Enoxapar in OD to BID	Enoxapar in More than one switch	
	N=1432	N=444	N=529	N=406	N=14	N=39	N=428
Recurrence of VTE	70 (4.9%) (3.8%- 6.0%)	33 (7.4%) (5.0%- 9.9%)	22 (4.2%) (2.5%- 5.9%)	10 (2.5%) (0.9%- 4.0%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	23 (5.4%) (3.2%- 7.5%)
Major bleeding (fatal and non-fatal)	111 (7.8%) (6.4%- 9.1%)	31 (7.0%) (4.6%- 9.4%)	52 (9.8%) (7.3%- 12.4%)	21 (5.2%) (3.0%- 7.3%)	1 (7.1%) (0%- 22.6%)	6 (15.4%) (3.5%- 27.2%)	18 (4.2%) (2.3%- 6.1%)
Non-major bleedings of clinical significance	87 (6.1%) (4.8%- 7.3%)	26 (5.9%) (3.7%- 8.0%)	33 (6.2%) (4.2%- 8.3%)	23 (5.7%) (3.4%- 7.9%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	24 (5.6%) (3.4%- 7.8%)
All-cause death	666 (46.5%) (43.9%- 49.1%)	175 (39.4%) (34.9%- 44.0%)	323 (61.1%) (56.9%- 65.2%)	146 (36.0%) (31.3%- 40.6%)	6 (42.9%) (13.2%- 72.5%)	16 (41.0%) (24.9%- 57.2%)	157 (36.7%) (32.1%- 41.3%)
Fatal PE or fatal bleeding related death	48 (3.4%) (2.4%- 4.3%)	7 (1.6%) (0.4%- 2.7%)	35 (6.6%) (4.5%- 8.7%)	5 (1.2%) (0.2%- 2.3%)	0 (0%) -	1 (2.6%) (0%- 7.8%)	11 (2.6%) (1.1%- 4.1%)
*All data with 95% CI							

#### Treatment of unstable angina and non ST elevation myocardial infarction

In a large multicentre study, 3,171 patients enrolled at the acute phase of unstable angina or non-Q-wave myocardial infarction were randomised to receive in association with acetylsalicylic acid (100 to 325 mg once daily), either subcutaneous enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours or intravenous unfractionated heparin adjusted based on aPTT. Patients had to be treated in hospital for a minimum of 2 days and a maximum of 8 days, until clinical stabilization, revascularization procedures or hospital discharge. The patients had to be followed up to 30 days. In comparison with heparin, enoxaparin sodium significantly reduced the combined incidence of angina pectoris, myocardial infarction and death, with a decrease of 19.8 to 16.6% (relative risk reduction of 16.2%) on day 14. This reduction in the combined incidence was maintained after 30 days (from 23.3 to 19.8%; relative risk reduction of 15%).

There were no significant differences in major haemorrhages, although a haemorrhage at the site of the subcutaneous injection was more frequent.

#### Treatment of acute ST-segment elevation myocardial infarction

In a large multicentre study, 20,479 patients with STEMI eligible to receive fibrinolytic therapy were randomised to receive either enoxaparin sodium in a single 3,000 IU (30 mg) intravenous bolus plus a 100 IU/kg (1 mg/kg) subcutaneous dose followed by an subcutaneous injection of 100 IU/kg (1 mg/kg) every 12 hours or intravenous unfractionated heparin adjusted based on aPTT for 48 hours. All patients were also treated with acetylsalicylic acid for a minimum of 30 days. The enoxaparin sodium dosing strategy was adjusted for severe renally impaired patients and for the elderly of at least 75 years of age. The subcutaneous injections of enoxaparin sodium were given until hospital discharge or for a maximum of eight days (whichever came first).

4,716 patients underwent percutaneous coronary intervention receiving antithrombotic support with blinded investigational medicinal product. Therefore, for patients on enoxaparin sodium, the PCI was to be performed on enoxaparin sodium (no switch) using the regimen established in previous studies i.e. no

additional dosing, if last subcutaneous administration given less than 8 hours before balloon inflation, intravenous bolus of 30 IU/ kg (0.3 mg/kg) enoxaparin sodium, if the last subcutaneous administration given more than 8 hours before balloon inflation.

Enoxaparin sodium compared to unfractionated heparin significantly decreased the incidence of the primary end point, a composite of death from any cause or myocardial re-infarction in the first 30 days after randomization [9.9 percent in the enoxaparin sodium group, as compared with 12.0 percent in the unfractionated heparin group] with a 17 percent relative risk reduction ( $p < 0.001$ ).

The treatment benefits of enoxaparin sodium, evident for a number of efficacy outcomes, emerged at 48 hours, at which time there was a 35 percent reduction in the relative risk of myocardial re-infarction, as compared with treatment with unfractionated heparin ( $p < 0.001$ ).

The beneficial effect of enoxaparin sodium on the primary end point was consistent across key subgroups including age, gender, infarct location, history of diabetes, history of prior myocardial infarction, type of fibrinolytic administered, and time to treatment with the investigational medicinal product.

There was a significant treatment benefit of enoxaparin sodium, as compared with unfractionated heparin, in patients who underwent percutaneous coronary intervention within 30 days after randomization (23 percent reduction in relative risk) or who were treated medically (15 percent reduction in relative risk,  $p = 0.27$  for interaction).

The rate of the 30 day composite endpoint of death, myocardial re-infarction or intracranial haemorrhage (a measure of net clinical benefit) was significantly lower ( $p < 0.0001$ ) in the enoxaparin sodium group (10.1%) as compared to the heparin group (12.2%), representing a 17% relative risk reduction in favour of treatment with enoxaparin sodium.

The incidence of major bleeding at 30 days was significantly higher ( $p < 0.0001$ ) in the enoxaparin sodium group (2.1%) versus the heparin group (1.4%). There was a higher incidence of gastrointestinal bleeding in the enoxaparin sodium group (0.5%) versus the heparin group (0.1%), while the incidence of intracranial haemorrhage was similar in both groups (0.8% with enoxaparin sodium versus 0.7% with heparin).

The beneficial effect of enoxaparin sodium on the primary end point observed during the first 30 days was maintained over a 12 month follow-up period.

### Hepatic impairment

Based on literature data the use of enoxaparin sodium 4,000 IU (40 mg) in cirrhotic patients (Child-Pugh class B-C) appears to be safe and effective in preventing portal vein thrombosis. It should be noted that the literature studies may have limitations. Caution should be used in patients with hepatic impairment as these patients have an increased potential for bleeding (see section 4.4) and no formal dose finding studies have been performed in cirrhotic patients (Child Pugh class A, B nor C).

## **5.2 Pharmacokinetic properties**

### General characteristics

The pharmacokinetic parameters of enoxaparin sodium have been studied primarily in terms of the time course of plasma anti-Xa activity and also by anti-IIa activity, at the recommended dose ranges after single and repeated subcutaneous administration and after single intravenous administration. The quantitative determination of anti-Xa and anti-IIa pharmacokinetic activities was conducted by validated amidolytic methods.

### Absorption

The absolute bioavailability of enoxaparin sodium after subcutaneous injection, based on anti-Xa activity, is close to 100%.

Different doses and formulations and dosing regimens can be used.

The mean maximum plasma anti-Xa activity level is observed 3 to 5 hours after subcutaneous injection and achieves approximately 0.2, 0.4, 1.0 and 1.3 anti-Xa IU/mL following single subcutaneous administration of 2,000 IU, 4,000 IU, 100 IU/kg and 150 IU/kg (20 mg, 40 mg, 1 mg/kg and 1.5 mg/kg) doses, respectively.

A 3,000 IU (30 mg) intravenous bolus immediately followed by a 100 IU/kg (1 mg/kg) subcutaneous every 12 hours provided initial maximum anti-Xa activity level of 1.16 IU/mL (n = 16) and average exposure corresponding to 88% of steady-state levels. Steady-state is achieved on the second day of treatment.

After repeated subcutaneous administration of 4,000 IU (40 mg) once daily and 150 IU/kg (1.5 mg/kg) once daily regimens in healthy volunteers, the steady-state is reached on day 2 with an average exposure ratio about 15% higher than after a single dose. After repeated subcutaneous administration of the 100 IU/kg (1 mg/kg) twice daily regimen, the steady-state is reached from day 3 to 4 with mean exposure about 65% higher than after a single dose and mean maximum and trough anti-Xa activity levels of about 1.2 and 0.52 IU/mL, respectively.

Injection volume and dose concentration over the range 100-200 mg/mL does not affect pharmacokinetic parameters in healthy volunteers.

Enoxaparin sodium pharmacokinetics appears to be linear over the recommended dose ranges.

Intra-patient and inter-patient variability is low. Following repeated subcutaneous administration no accumulation takes place.

Plasma anti-IIa activity after subcutaneous administration is approximately ten-fold lower than anti-Xa activity. The mean maximum anti-IIa activity level is observed approximately 3 to 4 hours following subcutaneous injection and reaches 0.13 IU/mL and 0.19 IU/mL following repeated administration of 100 IU/kg (1 mg/kg) twice daily and 150 IU/kg (1.5 mg/kg) once daily, respectively.

### Distribution

The volume of distribution of enoxaparin sodium anti-Xa activity is about 4.3 litres and is close to the blood volume.

### Biotransformation

Enoxaparin sodium is primarily metabolised in the liver by desulfation and/or depolymerisation to lower molecular weight species with much reduced biological potency.

### Elimination

Enoxaparin sodium is a low clearance substance with a mean anti-Xa plasma clearance of 0.74 L/h after a 150 IU /kg (1.5 mg/kg) 6-hour intravenous infusion.

Elimination appears monophasic with a half-life of about 5 hours after a single subcutaneous dose to about 7 hours after repeated dosing.

Renal clearance of active fragments represents about 10% of the administered dose and total renal excretion of active and non-active fragments 40% of the dose.

### Special populations

#### *Elderly*

Based on the results of a population pharmacokinetic analysis, the enoxaparin sodium kinetic profile is not different in elderly subjects compared to younger subjects when renal function is normal. However, since renal function is known to decline with age, elderly patients may show reduced elimination of enoxaparin sodium (see sections 4.2 and 4.4).

#### *Hepatic impairment*

In a study conducted in patients with advanced cirrhosis treated with enoxaparin sodium 4,000 IU (40 mg) once daily, a decrease in maximum anti-Xa activity was associated with an increase in the severity of hepatic impairment (assessed by Child-Pugh categories). This decrease was mainly attributed to a decrease in ATIII level secondary to a reduced synthesis of ATIII in patients with hepatic impairment.

#### *Renal impairment*



A linear relationship between anti-Xa plasma clearance and creatinine clearance at steady-state has been observed, which indicates decreased clearance of enoxaparin sodium in patients with reduced renal function. Anti-Xa exposure represented by AUC, at steady-state, is marginally increased in mild (creatinine clearance 50-80 mL/min) and moderate (creatinine clearance 30-50 mL/min) renal impairment after repeated subcutaneous 4,000 IU (40 mg) once daily doses. In patients with severe renal impairment (creatinine clearance < 30 mL/min), the AUC at steady state is significantly increased on average by 65% after repeated subcutaneous 4,000 IU (40 mg) once daily doses (see sections 4.2 and 4.4).

#### *Haemodialysis*

Enoxaparin sodium pharmacokinetics appeared similar than control population, after a single 25 IU, 50 IU or 100 IU/kg (0.25, 0.50 or 1.0 mg/kg) intravenous dose however, AUC was two-fold higher than control.

#### *Weight*

After repeated subcutaneous 150 IU/kg (1.5 mg/kg) once daily dosing, mean AUC of anti-Xa activity is marginally higher at steady state in obese healthy volunteers (BMI 30-48 kg/m<sup>2</sup>) compared to non-obese control subjects, while maximum plasma anti-Xa activity level is not increased. There is a lower weight-adjusted clearance in obese subjects with subcutaneous dosing.

When non-weight adjusted dosing was administered, it was found after a single-subcutaneous 4,000 IU (40 mg) dose, that anti-Xa exposure is 52% higher in low-weight women (< 45 kg) and 27% higher in low-weight men (< 57 kg) when compared to normal weight control subjects (see section 4.4).

#### Pharmacokinetic interactions

No pharmacokinetic interactions were observed between enoxaparin sodium and thrombolytics when administered concomitantly.

### **5.3 Preclinical safety data**

Besides the anticoagulant effects of enoxaparin sodium, there was no evidence of adverse reactions at 15 mg/kg/day in the 13-week subcutaneous toxicity studies both in rats and dogs and at 10 mg/kg/day in the 26-week subcutaneous and intravenous toxicity studies both in rats, and monkeys.

Enoxaparin sodium has shown no mutagenic activity based on *in vitro* tests, including the Ames test, mouse lymphoma cell forward mutation test, and *no clastogenic* activity based on an *in vitro* human lymphocyte chromosomal aberration test, and the *in vivo* rat bone marrow chromosomal aberration test.

Studies conducted in pregnant rats and rabbits at subcutaneous doses of enoxaparin sodium up to 30 mg/kg/day did not reveal any evidence of teratogenic effects or foetotoxicity. Enoxaparin sodium was found to have no effect on fertility or reproductive performance of male and female rats at subcutaneous doses up to 20 mg/kg/day.

## **6. PHARMACEUTICAL PARTICULARS**

### **6.1 List of excipients**

Water for injections

### **6.2 Incompatibilities**

#### SC injection

Do not mix with other medicinal products.

#### IV (bolus) injection (for acute STEMI indication only)

Enoxaparin sodium may be safely administered with sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections (see section 4.2).

### 6.3 Shelf life

#### Pre-filled syringe

3 years

Diluted medicinal product with sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections.

8 hours

### 6.4 Special precautions for storage

Store below 25 °C. Do not freeze.

### 6.5 Nature and contents of container

0.8 mL of solution in a clear, colourless type I neutral glass syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a purple polypropylene plunger rod. The syringe can be additionally equipped with needle guard.

Packs of:

- 2, 10 and 30 pre-filled syringes,
- 10 and 30 pre-filled syringes with needle guard.

Not all pack sizes may be marketed.

### 6.6 Special precautions for disposal and other handling

#### **INSTRUCTIONS FOR USE: PRE-FILLED SYRINGE**

##### How to give yourself an injection of Inhixa with a pre-filled syringe without needle guard

If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

##### ***Before injecting yourself with Inhixa***

- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

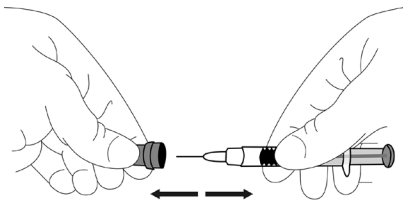
##### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.

- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

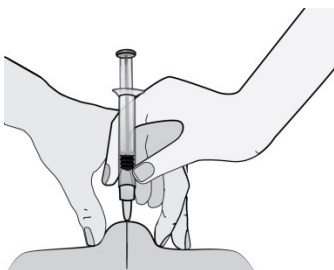


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin

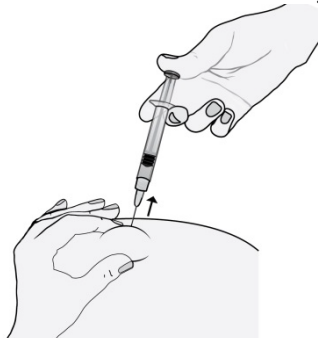
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold



- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection

- 9) Remove the needle by pulling it straight out.



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

#### How to give yourself an injection of Inhixa with a pre-filled syringe with needle guard

Your pre-filled syringe has a needle guard attached to it in order to protect you from needle stick injury. If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

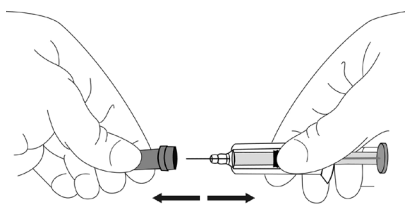
- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

#### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

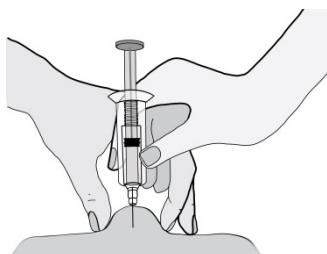


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin

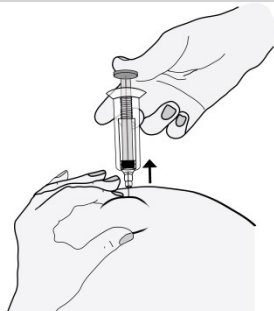
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold



- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection

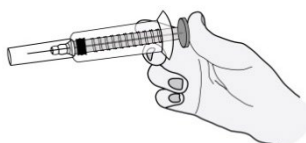
- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Push hard the plunger. The needle guard, which is in the form of a plastic cylinder, will be activated automatically and it will completely cover the needle.

"CLICK"



- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

## 7. MARKETING AUTHORISATION HOLDER

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

**8. MARKETING AUTHORISATION NUMBER(S)**

EU/1/16/1132/069  
EU/1/16/1132/073  
EU/1/16/1132/075  
EU/1/16/1132/076  
EU/1/16/1132/077

**9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION**

Date of first authorisation: 15/09/2016  
Date of latest renewal: 26/08/2021

**10. DATE OF REVISION OF THE TEXT**

Detailed information on this medicinal product is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.

## 1. NAME OF THE MEDICINAL PRODUCT

Inhixa 15,000 IU (150 mg)/1 mL solution for injection in pre-filled syringe

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each pre-filled syringe contains enoxaparin sodium 15,000 IU anti-Xa activity (equivalent to 150 mg) in 1 mL water for injections.

Enoxaparin sodium is a biological substance obtained by alkaline depolymerisation of heparin benzyl ester derived from porcine intestinal mucosa.

For the full list of excipients, see section 6.1.

## 3. PHARMACEUTICAL FORM

Solution for injection in pre-filled syringe (injection).

Clear, colourless to pale yellow solution.

## 4. CLINICAL PARTICULARS

### 4.1 Therapeutic indications

Inhixa is indicated in adults for:

Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients, in particular those undergoing orthopaedic or general surgery including cancer surgery.

Prophylaxis of venous thromboembolic disease in medical patients with an acute illness (such as acute heart failure, respiratory insufficiency, severe infections or rheumatic diseases) and reduced mobility at increased risk of venous thromboembolism.

Treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE), excluding PE likely to require thrombolytic therapy or surgery.

Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer.

Prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Acute coronary syndrome:

- Treatment of unstable angina and Non ST-segment elevation myocardial infarction (NSTEMI), in combination with oral acetylsalicylic acid.
- Treatment of acute ST-segment elevation myocardial infarction (STEMI) including patients to be managed medically or with subsequent percutaneous coronary intervention (PCI).

### 4.2 Posology and method of administration

#### Posology

#### Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients

Individual thromboembolic risk for patients can be estimated using validated risk stratification model.

- In patients at moderate risk of thromboembolism, the recommended dose of enoxaparin sodium is 2,000 IU (20 mg) once daily by subcutaneous injection. Preoperative initiation (2 hours before surgery) of enoxaparin sodium 2,000 IU (20 mg) was proven effective and safe in moderate risk surgery.

In moderate risk patients, enoxaparin sodium treatment should be maintained for a minimal period of 7-10 days whatever the recovery status (e.g. mobility). Prophylaxis should be continued until the patient no longer has significantly reduced mobility.

- In patients at high risk of thromboembolism, the recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily given by subcutaneous injection preferably started 12 hours before surgery. If there is a need for earlier than 12 hours enoxaparin sodium preoperative prophylactic initiation (e.g. high risk patient waiting for a deferred orthopaedic surgery), the last injection should be administered no later than 12 hours prior to surgery and resumed 12 hours after surgery.
  - For patients who undergo major orthopaedic surgery an extended thromboprophylaxis up to 5 weeks is recommended.
  - For patients with a high venous thromboembolism (VTE) risk who undergo abdominal or pelvic surgery for cancer an extended thromboprophylaxis up to 4 weeks is recommended.

#### Prophylaxis of venous thromboembolism in medical patients

The recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily by subcutaneous injection. Treatment with enoxaparin sodium is prescribed for at least 6 to 14 days whatever the recovery status (e.g. mobility). The benefit is not established for a treatment longer than 14 days.

#### Treatment of DVT and PE

Enoxaparin sodium can be administered subcutaneously either as a once daily injection of 150 IU/kg (1.5 mg/kg) or as twice daily injections of 100 IU/kg (1 mg/kg).

The regimen should be selected by the physician based on an individual assessment including evaluation of the thromboembolic risk and of the risk of bleeding. The dose regimen of 150 IU/kg (1.5 mg/kg) administered once daily should be used in uncomplicated patients with low risk of VTE recurrence. The dose regimen of 100 IU/kg (1 mg/kg) administered twice daily should be used in all other patients such as those with obesity, with symptomatic PE, cancer, recurrent VTE or proximal (*vena iliaca*) thrombosis.

Enoxaparin sodium treatment is prescribed for an average period of 10 days. Oral anticoagulant therapy should be initiated when appropriate (see “Switch between enoxaparin sodium and oral anticoagulants” at the end of section 4.2).

In the extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer, physicians should carefully assess the individual thromboembolic and bleeding risks of the patient.

The recommended dose is 100 IU/kg (1 mg/kg) administered twice daily by SC injections for 5 to 10 days, followed by a 150 IU/kg (1.5 mg/kg) once daily SC injection up to 6 months. The benefit of continuous anticoagulant therapy should be reassessed after 6 months of treatment.

#### Prevention of thrombus formation during haemodialysis

The recommended dose is 100 IU/kg (1 mg/kg) of enoxaparin sodium.

For patients with a high risk of haemorrhage, the dose should be reduced to 50 IU/kg (0.5 mg/kg) for double vascular access or 75 IU/kg (0.75 mg/kg) for single vascular access.

During haemodialysis, enoxaparin sodium should be introduced into the arterial line of the circuit at the beginning of the dialysis session. The effect of this dose is usually sufficient for a 4-hour session; however, if fibrin rings are found, for example after a longer than normal session, a further dose of 50 IU to 100 IU/kg (0.5 to 1 mg/kg) may be given.

No data are available in patients using enoxaparin sodium for prophylaxis or treatment and during haemodialysis sessions.

#### Acute coronary syndrome: treatment of unstable angina and NSTEMI and treatment of acute STEMI

- For treatment of unstable angina and NSTEMI, the recommended dose of enoxaparin sodium is 100 IU/kg (1 mg/kg) every 12 hours by subcutaneous injection administered in combination with



antiplatelet therapy. Treatment should be maintained for a minimum of 2 days and continued until clinical stabilization. The usual duration of treatment is 2 to 8 days.

Acetylsalicylic acid is recommended for all patients without contraindications at an initial oral loading dose of 150–300 mg (in acetylsalicylic acid-naïve patients) and a maintenance dose of 75–325 mg/day long-term regardless of treatment strategy.

- For treatment of acute STEMI, the recommended dose of enoxaparin sodium is a single intravenous bolus of 3,000 IU (30 mg) plus a 100 IU/kg (1 mg/kg) subcutaneous dose followed by 100 IU/kg (1 mg/kg) administered subcutaneously every 12 hours (maximum 10,000 IU (100 mg) for each of the first two subcutaneous doses). Appropriate antiplatelet therapy such as oral acetylsalicylic acid (75 mg to 325 mg once daily) should be administered concomitantly unless contraindicated. The recommended duration of treatment is 8 days or until hospital discharge, whichever comes first. When administered in conjunction with a thrombolytic (fibrin specific or non-fibrin specific), enoxaparin sodium should be given between 15 minutes before and 30 minutes after the start of fibrinolytic therapy.
  - For dose in patients  $\geq 75$  years of age, see paragraph “Elderly”.
  - For patients managed with PCI, if the last dose of enoxaparin sodium was given less than 8 hours before balloon inflation, no additional dosing is needed. If the last subcutaneous administration was given more than 8 hours before balloon inflation, an intravenous bolus of 30 IU/kg (0.3 mg/kg) enoxaparin sodium should be administered.

### Special populations

#### Paediatric population

The safety and efficacy of enoxaparin sodium in paediatric population have not been established. No data are available.

#### Elderly

For all indications except STEMI, no dose reduction is necessary in the elderly patients, unless kidney function is impaired (see below “renal impairment” and section 4.4).

For treatment of acute STEMI in elderly patients  $\geq 75$  years of age, an initial intravenous bolus must not be used. Initiate dosing with 75 IU/kg (0.75 mg/kg) subcutaneous injection every 12 hours (maximum 7,500 IU (75 mg) for each of the first two subcutaneous doses only, followed by 75 IU/kg (0.75 mg/kg) subcutaneous dosing for the remaining doses). For dose in elderly patients with impaired kidney function, see below “renal impairment” and section 4.4.

#### Hepatic impairment

Limited data are available in patients with hepatic impairment (see sections 5.1 and 5.2) and caution should be used in these patients (see section 4.4).

#### Renal impairment (see sections 4.4 and 5.2)

##### Severe renal impairment

Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance  $< 15$  mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Dose table for patients with severe renal impairment (creatinine clearance [15–30] mL/min):

Indication	Dosing regimen
Prophylaxis of venous thromboembolic disease	2,000 IU (20 mg) subcutaneously once daily
Treatment of DVT and PE	100 IU/kg (1 mg/kg) body weight subcutaneously once daily
Extended treatment of DVT and PE in patients with active cancer	100 IU/kg (1 mg/kg) body weight SC once daily
Treatment of unstable angina and NSTEMI	100 IU/kg (1 mg/kg) body weight subcutaneously once daily

Treatment of acute STEMI (patients under 75)	1 x 3,000 IU (30 mg) intravenous bolus plus 100 IU/kg (1 mg/kg) body weight subcutaneously and then 100 IU/kg (1 mg/kg) body weight subcutaneously every 24 hours
Treatment of acute STEMI (patients over 75)	No intravenous initial bolus, 100 IU/kg (1 mg/kg) body weight subcutaneously and then 100 IU/kg (1 mg/kg) body weight subcutaneously every 24 hours

The recommended dose adjustments do not apply to the haemodialysis indication.

#### *Moderate and mild renal impairment*

Although no dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment, careful clinical monitoring is advised.

#### Method of administration

Inhixa is not indicated for intramuscular use and should not be administered by this route.

For the prophylaxis of venous thrombo-embolic disease following surgery, treatment of DVT and PE, extended treatment of DVT and PE in patients with active cancer, treatment of unstable angina and NSTEMI, enoxaparin sodium should be administered by subcutaneous injection.

- For acute STEMI, treatment is to be initiated with a single intravenous bolus injection immediately followed by a subcutaneous injection.
- For the prevention of thrombus formation in the extra corporeal circulation during haemodialysis, it is administered through the arterial line of a dialysis circuit.

The disposable pre-filled syringe is ready for immediate use.

The use of a tuberculin syringe or equivalent is recommended when using ampoules or multidose vials to assure withdrawal of the appropriate volume of the medicinal product.

#### SC injection technique

Injection should be made preferably when the patient is lying down. Enoxaparin sodium is administered by deep SC injection.

When using pre-filled syringes, the air bubble should not be expelled from the syringe before the injection in order to avoid the loss of the medicinal product. When the quantity of the medicinal product to be injected requires to be adjusted based on the patient's body weight, the graduated pre-filled syringes should be used to reach the required volume by discarding the excess before injection. In some cases it is not possible to achieve an exact dose due to the graduations on the syringe, and in such case the volume shall be rounded up to the nearest graduation.

The administration should be alternated between the left and right anterolateral or posterolateral abdominal wall.

The whole length of the needle should be introduced vertically into a skin fold gently held between the thumb and index finger. The skin fold should not be released until the injection is complete. The injection site should not be rubbed after administration.

Note for the pre-filled syringes fitted with an automatic safety system: The safety system is triggered at the end of the injection (see instructions in section 6.6).

In case of self-administration, patient should be advised to follow instructions provided in the patient information leaflet included in the pack of this medicinal product.

#### IV (bolus) injection (for acute STEMI indication only)

For acute STEMI, treatment is to be initiated with a single intravenous bolus injection immediately followed by a subcutaneous injection.

For intravenous injection, either the multidose vial or pre-filled syringe can be used.

Enoxaparin sodium should be administered through an intravenous line. It should not be mixed or co-administered with other medicinal products. To avoid the possible mixture of enoxaparin sodium with other medicinal products, the intravenous access chosen should be flushed with a sufficient amount of sodium chloride 9 mg/ml (0.9%) or 5% glucose in water for injections prior to and following the intravenous bolus administration of enoxaparin sodium to clear the port of the medicinal product. Enoxaparin sodium may be safely administered with sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections.

#### *Initial 3,000 IU (30 mg) bolus*

For the initial 3,000 IU (30 mg) bolus, using an enoxaparin sodium graduated pre-filled syringe, the excessive volume has to be expelled to retain only 3,000 IU (30 mg) in the syringe. The 3,000 IU (30 mg) dose can then be directly injected into the intravenous line.

#### *Additional bolus for PCI when last subcutaneous administration was given more than 8 hours before balloon inflation*

For patients being managed with PCI, an additional intravenous bolus of 30 IU/kg (0.3 mg/kg) is to be administered if last subcutaneous administration was given more than 8 hours before balloon inflation.

In order to assure the accuracy of the small volume to be injected, it is recommended to dilute the medicinal product to 300 IU/mL (3 mg/mL).

To obtain a 300 IU/mL (3 mg/mL) solution, using a 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe, it is recommended to use a 50 mL infusion bag (i.e. using either sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections) as follows:

30 mL of solution should be withdrawn from the infusion bag with a syringe and discarded. The complete contents of the 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe should be injected into the 20 mL remaining in the bag. The contents of the bag should be gently mixed. Then, the required volume of diluted solution should be withdrawn with a syringe for administration into the intravenous line.

After dilution is completed, the volume to be injected can be calculated using the following formula [volume of diluted solution (mL) = patient weight (kg) x 0.1] or using the table below. It is recommended to prepare the dilution immediately before use.

Volume to be injected through intravenous line after dilution is completed at a concentration of 300 IU (3 mg)/mL.

Weight	Required dose		Volume to inject when diluted
	30 IU/kg (0.3 mg/kg)		to a final concentration of
			300 IU (3 mg)/mL
[kg]	IU	[mg]	[mL]
45	1,350	13.5	4.5
50	1,500	15	5
55	1,650	16.5	5.5
60	1,800	18	6
65	1,950	19.5	6.5
70	2,100	21	7
75	2,250	22.5	7.5
80	2,400	24	8
85	2,550	25.5	8.5
90	2,700	27	9
95	2,850	28.5	9.5
100	3,000	30	10
105	3,150	31.5	10.5

110	3,300	33	11
115	3,450	34.5	11.5
120	3,600	36	12
125	3,750	37.5	12.5
130	3,900	39	13
135	4,050	40.5	13.5
140	4,200	42	14
145	4,350	43.5	14.5
150	4,500	45	15

### Arterial line injection

It is administered through the arterial line of a dialysis circuit for the prevention of thrombus formation in the extra corporeal circulation during haemodialysis.

### Switch between enoxaparin sodium and oral anticoagulants

#### *Switch between enoxaparin sodium and vitamin K antagonists (VKA)*

Clinical monitoring and laboratory tests [prothrombin time expressed as the International Normalised Ratio (INR)] must be intensified to monitor the effect of VKA.

As there is an interval before the VKA reaches its maximum effect, enoxaparin sodium therapy should be continued at a constant dose for as long as necessary in order to maintain the INR within the desired therapeutic range for the indication in two successive tests.

For patients currently receiving a VKA, the VKA should be discontinued and the first dose of enoxaparin sodium should be given when the INR has dropped below the therapeutic range.

#### *Switch between enoxaparin sodium and direct oral anticoagulants (DOAC)*

For patients currently receiving enoxaparin sodium, discontinue enoxaparin sodium and start the DOAC 0 to 2 hours before the time that the next scheduled administration of enoxaparin sodium would be due as per DOAC label.

For patients currently receiving a DOAC, the first dose of enoxaparin sodium should be given at the time the next DOAC dose would be taken.

### Administration in spinal/epidural anaesthesia or lumbar puncture

Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, careful neurological monitoring is recommended due to the risk of neuraxial haematomas (see section 4.4).

- *At doses used for prophylaxis*

A puncture-free interval of at least 12 hours shall be kept between the last injection of enoxaparin sodium at prophylactic doses and the needle or catheter placement.

For continuous techniques, a similar delay of at least 12 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 24 hours.

The 2 hours preoperative initiation of enoxaparin sodium 2,000 IU (20 mg) is not compatible with neuraxial anaesthesia.

- *At doses used for treatment*

A puncture-free interval of at least 24 hours shall be kept between the last injection of enoxaparin sodium at curative doses and the needle or catheter placement (see also section 4.3).

For continuous techniques, a similar delay of 24 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 48 hours.

Patients receiving the twice daily doses (i.e. 75 IU/kg (0.75 mg/kg) twice daily or 100 IU/kg (1 mg/kg) twice-daily) should omit the second enoxaparin sodium dose to allow a sufficient delay before catheter placement or removal.

Anti-Xa levels are still detectable at these time points, and these delays are not a guarantee that neuraxial hematoma will be avoided.

Likewise, consider not using enoxaparin sodium until at least 4 hours after the spinal/epidural puncture or after the catheter has been removed. The delay must be based on a benefit-risk assessment considering both the risk for thrombosis and the risk for bleeding in the context of the procedure and patient risk factors.

### 4.3 Contraindications

Enoxaparin sodium is contraindicated in patients with:

- Hypersensitivity to enoxaparin sodium, heparin or its derivatives, including other low molecular weight heparins (LMWH) or to any of the excipients listed in section 6.1;
- History of immune mediated heparin-induced thrombocytopenia (HIT) within the past 100 days or in the presence of circulating antibodies (see also section 4.4 );
- Active clinically significant bleeding and conditions with a high risk of haemorrhage, including recent haemorrhagic stroke, gastrointestinal ulcer, presence of malignant neoplasm at high risk of bleeding, recent brain, spinal or ophthalmic surgery, known or suspected oesophageal varices, arteriovenous malformations, vascular aneurysms or major intraspinal or intracerebral vascular abnormalities;
- Spinal or epidural anaesthesia or loco-regional anaesthesia when enoxaparin sodium is used for treatment in the previous 24 hours (see section 4.4).

### 4.4 Special warnings and precautions for use

#### Traceability

LMWHs are biological medicinal products. In order to improve the traceability of biological medicinal products, the name and the batch number of the administered product should be clearly recorded.

#### General

Enoxaparin sodium cannot be used interchangeably (unit for unit) with other LMWHs. These medicinal products differ in their manufacturing process, molecular weights, specific anti-Xa and anti-IIa activities, units, dose and clinical efficacy and safety. This results in differences in pharmacokinetics and associated biological activities (e.g. anti-thrombin activity, and platelet interactions). Special attention and compliance with the instructions for use specific to each proprietary medicinal product are therefore required.

#### History of HIT (> 100 days)

Use of enoxaparin sodium in patients with a history of immune mediated HIT within the past 100 days or in the presence of circulating antibodies is contraindicated (see section 4.3). Circulating antibodies may persist several years.

Enoxaparin sodium is to be used with extreme caution in patients with a history (> 100 days) of heparin-induced thrombocytopenia without circulating antibodies. The decision to use enoxaparin sodium in such a case must be made only after a careful benefit risk assessment and after non-heparin alternative treatments are considered (e.g. danaparoid sodium or lepirudin).

#### Monitoring of platelet counts

In patients with cancer with a platelet count below 80 G/L, anticoagulation treatment can only be considered on a case-by-case basis and careful monitoring is recommended.

The risk of antibody-mediated HIT also exists with LMWHs. Should thrombocytopenia occur, it usually appears between the 5<sup>th</sup> and the 21<sup>st</sup> day following the beginning of enoxaparin sodium treatment.

The risk of HIT is higher in postoperative patients and mainly after cardiac surgery and in patients with cancer.

Therefore, it is recommended that the platelet counts be measured before the initiation of therapy with enoxaparin sodium and then regularly thereafter during the treatment.

If there are clinical symptoms suggestive of HIT (any new episode of arterial and/or venous thromboembolism, any painful skin lesion at the injection site, any allergic or anaphylactoid reactions on treatment), platelet count should be measured. Patients must be aware that these symptoms may occur and if so, that they should inform their primary care physician.

In practice, if a confirmed significant decrease of the platelet count is observed (30 to 50 % of the initial value), enoxaparin sodium treatment must be immediately discontinued and the patient switched to another non-heparin anticoagulant alternative treatment.

### Haemorrhage

As with other anticoagulants, bleeding may occur at any site. If bleeding occurs, the origin of the haemorrhage should be investigated and appropriate treatment instituted.

Enoxaparin sodium, as with any other anticoagulant therapy, should be used with caution in conditions with increased potential for bleeding, such as:

- impaired haemostasis,
- history of peptic ulcer,
- recent ischemic stroke,
- severe arterial hypertension,
- recent diabetic retinopathy,
- neuro- or ophthalmologic surgery,
- concomitant use of medicinal products affecting haemostasis (see section 4.5).

### Laboratory tests

At doses used for prophylaxis of venous thromboembolism, enoxaparin sodium does not influence bleeding time and global blood coagulation tests significantly, nor does it affect platelet aggregation or binding of fibrinogen to platelets.

At higher doses, increases in activated partial thromboplastin time (aPTT), and activated clotting time (ACT) may occur. Increases in aPTT and ACT are not linearly correlated with increasing enoxaparin sodium antithrombotic activity and therefore are unsuitable and unreliable for monitoring enoxaparin sodium activity.

### Spinal/Epidural anaesthesia or lumbar puncture

Spinal/epidural anaesthesia or lumbar puncture must not be performed within 24 hours of administration of enoxaparin sodium at therapeutic doses (see also section 4.3).

There have been cases of neuraxial haematomas reported with the concurrent use of enoxaparin sodium and spinal/epidural anaesthesia or spinal puncture procedures resulting in long term or permanent paralysis.

These events are rare with enoxaparin sodium dose regimens 4,000 IU (40 mg) once daily or lower. The risk of these events is higher with the use of post-operative indwelling epidural catheters, with the concomitant use of additional medicinal products affecting haemostasis such as Non-Steroidal Anti-Inflammatory Drugs (NSAIDs), with traumatic or repeated epidural or spinal puncture, or in patients with a history of spinal surgery or spinal deformity.

To reduce the potential risk of bleeding associated with the concurrent use of enoxaparin sodium and epidural or spinal anaesthesia/analgesia or spinal puncture, consider the pharmacokinetic profile of enoxaparin sodium (see section 5.2). Placement or removal of an epidural catheter or lumbar puncture is best performed when the anticoagulant effect of enoxaparin sodium is low; however, the exact timing to reach a sufficiently low anticoagulant effect in each patient is not known. For patients with creatinine clearance [15-30 mL/minute], additional considerations are necessary because elimination of enoxaparin sodium is more prolonged (see section 4.2).

Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, frequent monitoring must be exercised to detect any signs and symptoms of neurological impairment such as midline back pain, sensory and motor deficits (numbness or weakness in lower limbs), bowel and/or bladder dysfunction. Instruct patients to report immediately if they experience any of the above signs or symptoms. If signs or symptoms of spinal hematoma are suspected, initiate urgent diagnosis and treatment including consideration for spinal cord decompression even though such treatment may not prevent or reverse neurological sequelae.

#### Skin necrosis/cutaneous vasculitis

Skin necrosis and cutaneous vasculitis have been reported with LMWHs and should lead to prompt treatment discontinuation.

#### Percutaneous coronary revascularization procedures

To minimise the risk of bleeding following the vascular instrumentation during the treatment of unstable angina, NSTEMI and acute STEMI, adhere precisely to the intervals recommended between enoxaparin sodium injection doses. It is important to achieve haemostasis at the puncture site after PCI. In case a closure device is used, the sheath can be removed immediately. If a manual compression method is used, sheath should be removed 6 hours after the last intravenous/subcutaneous enoxaparin sodium injection. If the treatment with enoxaparin sodium is to be continued, the next scheduled dose should be given no sooner than 6 to 8 hours after sheath removal. The site of the procedure should be observed for signs of bleeding or hematoma formation.

#### Acute infective endocarditis

Use of heparin is usually not recommended in patients with acute infective endocarditis due to the risk of cerebral haemorrhage. If such use is considered absolutely necessary, the decision must be made only after a careful individual benefit risk assessment.

#### Mechanical prosthetic heart valves

The use of enoxaparin sodium has not been adequately studied for thromboprophylaxis in patients with mechanical prosthetic heart valves. Isolated cases of prosthetic heart valve thrombosis have been reported in patients with mechanical prosthetic heart valves who have received enoxaparin sodium for thromboprophylaxis. Confounding factors, including underlying disease and insufficient clinical data, limit the evaluation of these cases. Some of these cases were pregnant women in whom thrombosis led to maternal and foetal death.

#### *Pregnant women with mechanical prosthetic heart valves*

The use of enoxaparin sodium for thromboprophylaxis in pregnant women with mechanical prosthetic heart valves has not been adequately studied. In a clinical study of pregnant women with mechanical prosthetic heart valves given enoxaparin sodium (100 IU/kg (1 mg/kg) twice daily) to reduce the risk of thromboembolism, 2 of 8 women developed clots resulting in blockage of the valve and leading to maternal and foetal death. There have been isolated post-marketing reports of valve thrombosis in pregnant women with mechanical prosthetic heart valves while receiving enoxaparin sodium for thromboprophylaxis. Pregnant women with mechanical prosthetic heart valves may be at higher risk for thromboembolism.

#### Elderly

No increased bleeding tendency is observed in the elderly with the prophylactic dose ranges. Elderly patients (especially patients eighty years of age and older) may be at an increased risk for bleeding complications with the therapeutic dose ranges. Careful clinical monitoring is advised and dose reduction might be considered in patients older than 75 years treated for STEMI (see sections 4.2 and 5.2).

### Renal impairment

In patients with renal impairment, there is an increase in exposure of enoxaparin sodium which increases the risk of bleeding. In these patients, careful clinical monitoring is advised, and biological monitoring by anti-Xa activity measurement might be considered (see sections 4.2 and 5.2).

Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance < 15 mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

In patients with severe renal impairment (creatinine clearance 15-30 mL/min), since exposure of enoxaparin sodium is significantly increased, a dose adjustment is recommended for therapeutic and prophylactic dose ranges (see section 4.2).

No dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment.

### Hepatic impairment

Enoxaparin sodium should be used with caution in patients with hepatic impairment due to an increased potential for bleeding. Dose adjustment based on monitoring of anti-Xa levels is unreliable in patients with liver cirrhosis and not recommended (see section 5.2).

### Low weight

An increase in exposure of enoxaparin sodium with prophylactic doses (non-weight adjusted) has been observed in low-weight women (< 45 kg) and low-weight men (< 57 kg), which may lead to a higher risk of bleeding. Therefore, careful clinical monitoring is advised in these patients (see section 5.2).

### Obese patients

Obese patients are at higher risk for thromboembolism. The safety and efficacy of prophylactic doses in obese patients (BMI > 30 kg/m<sup>2</sup>) has not been fully determined and there is no consensus for dose adjustment. These patients should be observed carefully for signs and symptoms of thromboembolism.

### Hyperkalaemia

Heparins can suppress adrenal secretion of aldosterone leading to hyperkalaemia (see section 4.8), particularly in patients such as those with diabetes mellitus, chronic renal failure, pre-existing metabolic acidosis, taking medicinal products known to increase potassium (see section 4.5). Plasma potassium should be monitored regularly especially in patients at risk.

### Sodium content

This medicinal product contains less than 1 mmol sodium (23 mg) per dose, that is to say essentially 'sodium-free'.

### Acute generalized exanthematous pustulosis

Acute generalized exanthematous pustulosis (AGEP) has been reported with frequency not known in association with enoxaparin treatment. At the time of prescription patients should be advised of the signs and symptoms and monitored closely for skin reactions. If signs and symptoms suggestive of these reactions appear, enoxaparin should be withdrawn immediately and an alternative treatment considered (as appropriate).



## 4.5 Interaction with other medicinal products and other forms of interaction

### Concomitant use not recommended

#### Medicinal products affecting haemostasis (see section 4.4)

It is recommended that some agents which affect haemostasis should be discontinued prior to enoxaparin sodium therapy unless strictly indicated. If the combination is indicated, enoxaparin sodium should be used with careful clinical and laboratory monitoring when appropriate. These agents include medicinal products such as:

- Systemic salicylates, acetylsalicylic acid at anti-inflammatory doses, and NSAIDs including ketorolac,
- Other thrombolytics (e.g. alteplase, reteplase, streptokinase, tenecteplase, urokinase) and anticoagulants (see section 4.2).

### Concomitant use with caution

The following medicinal products may be administered with caution concomitantly with enoxaparin sodium:

#### *Other medicinal products affecting haemostasis such as:*

- Platelet aggregation inhibitors including acetylsalicylic acid used at antiaggregant dose (cardioprotection), clopidogrel, ticlopidine, and glycoprotein IIb/IIIa antagonists indicated in acute coronary syndrome due to the risk of bleeding,
- Dextran 40,
- Systemic glucocorticoids.

#### *Medicinal products increasing potassium levels*

Medicinal products that increase serum potassium levels may be administered concurrently with enoxaparin sodium under careful clinical and laboratory monitoring (see sections 4.4 and 4.8).

## 4.6 Fertility, pregnancy and lactation

### Pregnancy

In humans, there is no evidence that enoxaparin crosses the placental barrier during the second and third trimester of pregnancy. There is no information available concerning the first trimester.

Animal studies have not shown any evidence of foetotoxicity or teratogenicity (see section 5.3). Animal data have shown that enoxaparin passage through the placenta is minimal.

Enoxaparin sodium should be used during pregnancy only if the physician has established a clear need.

Pregnant women receiving enoxaparin sodium should be carefully monitored for evidence of bleeding or excessive anticoagulation and should be warned of the haemorrhagic risk. Overall, the data suggest that there is no evidence for an increased risk of haemorrhage, thrombocytopenia or osteoporosis with respect to the risk observed in non-pregnant women, other than that observed in pregnant women with prosthetic heart valves (see section 4.4).

If an epidural anaesthesia is planned, it is recommended to withdraw enoxaparin sodium treatment before (see section 4.4).

### Breast-feeding

It is not known whether unchanged enoxaparin is excreted in human breast milk. In lactating rats, the passage of enoxaparin or its metabolites in milk is very low. The oral absorption of enoxaparin sodium is unlikely. Inhixa can be used during breastfeeding.

### Fertility

There are no clinical data for enoxaparin sodium in fertility. Animal studies did not show any effect on fertility (see section 5.3).

#### 4.7 Effects on ability to drive and use machines

Enoxaparin sodium has no or negligible influence on the ability to drive and use machines.

#### 4.8 Undesirable effects

##### Summary of the safety profile

Enoxaparin sodium has been evaluated in more than 15,000 patients who received enoxaparin sodium in clinical trials. These included 1,776 for prophylaxis of DVT following orthopaedic or abdominal surgery in patients at risk for thromboembolic complications, 1,169 for prophylaxis of DVT in acutely ill medical patients with severely restricted mobility, 559 for treatment of DVT with or without PE, 1,578 for treatment of unstable angina and non-Q-wave myocardial infarction and 10,176 for treatment of acute STEMI.

Enoxaparin sodium regimen administered during these clinical trials varies depending on indications. The enoxaparin sodium dose was 4,000 IU (40 mg) subcutaneously once daily for prophylaxis of DVT following surgery or in acutely ill medical patients with severely restricted mobility. In treatment of DVT with or without PE, patients receiving enoxaparin sodium were treated with either a 100 IU/kg (1 mg/kg) subcutaneous dose every 12 hours or a 150 IU/kg (1.5 mg/kg) subcutaneous dose once a day. In the clinical trials for treatment of unstable angina and non-Q-wave myocardial infarction, doses were 100 IU/kg (1 mg/kg) subcutaneously every 12 hours, and in the clinical study for treatment of acute STEMI enoxaparin sodium regimen was a 3,000 IU (30 mg) intravenous bolus followed by 100 IU/kg (1 mg/kg) subcutaneously every 12 hours.

In clinical trials, haemorrhages, thrombocytopenia and thrombocytosis were the most commonly reported reactions (see section 4.4 and 'Description of selected adverse reactions' below).

The safety profile of enoxaparin for extended treatment of DVT and PE in patients with active cancer is similar to its safety profile for the treatment of DVT and PE.

Acute generalized exanthematous pustulosis (AGEP) has been reported in association with enoxaparin treatment (see section 4.4).

##### Tabulated list of adverse reactions

Other adverse reactions observed in clinical trials and reported in post-marketing experience (\* indicates reactions from post-marketing experience) are detailed below.

Frequencies are defined as follows: very common ( $\geq 1/10$ ); common ( $\geq 1/100$  to  $< 1/10$ ); uncommon ( $\geq 1/1,000$  to  $< 1/100$ ); rare ( $\geq 1/10,000$  to  $< 1/1,000$ ); and very rare ( $< 1/10,000$ ) or not known (cannot be estimated from available data). Within each system organ class, adverse reactions are presented in order of decreasing seriousness.

##### *Blood and the lymphatic system disorders*

Common: Haemorrhage, haemorrhagic anaemia\*, thrombocytopenia, thrombocytosis

Rare: Eosinophilia\*

Rare: Cases of immuno-allergic thrombocytopenia with thrombosis; in some of them thrombosis was complicated by organ infarction or limb ischaemia (see section 4.4).

##### *Immune system disorders*

Common: Allergic reaction

Rare: Anaphylactic/Anaphylactoid reactions including shock\*

##### *Nervous system disorders*

Common: Headache\*

##### *Vascular disorders*

Rare: Spinal haematoma\* (or neuraxial haematoma). These reactions have resulted in varying degrees of neurologic injuries including long-term or permanent paralysis (see section 4.4).

#### *Hepatobiliary disorders*

Very common: Hepatic enzyme increases (mainly transaminases > 3 times the upper limit of normality)

Uncommon: Hepatocellular liver injury\*

Rare: Cholestatic liver injury\*

#### *Skin and subcutaneous tissue disorders*

Common: Urticaria, pruritus, erythema

Uncommon: Bullous dermatitis

Rare: Alopecia\*

Rare: Cutaneous vasculitis\*, skin necrosis\* usually occurring at the injection site (these phenomena have been usually preceded by purpura or erythematous plaques, infiltrated and painful).

Injection site nodules\* (inflammatory nodules, which were not cystic enclosure of enoxaparin). They resolve after a few days and should not cause treatment discontinuation.

Not known: Acute generalized exanthematous pustulosis (AGEP)

#### *Musculoskeletal and connective tissue disorders*

Rare: Osteoporosis\* following long term therapy (greater than 3 months)

#### *General disorders and administration site conditions*

Common: Injection site haematoma, injection site pain, other injection site reaction (such as oedema, haemorrhage, hypersensitivity, inflammation, mass, pain, or reaction)

Uncommon: Local irritation, skin necrosis at injection site

#### *Investigations*

Rare: Hyperkalaemia\* (see sections 4.4 and 4.5).

### Description of selected adverse reactions

#### *Haemorrhages*

These included major haemorrhages, reported at most in 4.2 % of the patients (surgical patients). Some of these cases have been fatal. In surgical patients, haemorrhage complications were considered major: (1) if the haemorrhage caused a significant clinical event, or (2) if accompanied by haemoglobin decrease  $\geq 2$  g/dL or transfusion of 2 or more units of blood products. Retroperitoneal and intracranial haemorrhages were always considered major.

As with other anticoagulants, haemorrhage may occur in the presence of associated risk factors such as: organic lesions liable to bleed, invasive procedures or the concomitant use of medicinal products affecting haemostasis (see sections 4.4 and 4.5).

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
<i>Blood and lymphatic system disorders</i>	<i>Very common:</i> Haemorrhage <sup>a</sup>  <i>Rare:</i> Retroperitoneal haemorrhage	<i>Common:</i> Haemorrhage <sup>a</sup>	<i>Very common:</i> Haemorrhage <sup>a</sup>  <i>Uncommon:</i> Intracranial haemorrhage, Retroperitoneal haemorrhage	<i>Common<sup>b</sup>:</i> Haemorrhage	<i>Common:</i> Haemorrhage <sup>a</sup>  <i>Rare:</i> Retroperitoneal haemorrhage	<i>Common:</i> Haemorrhage <sup>a</sup>  <i>Uncommon:</i> Intracranial haemorrhage, Retroperitoneal haemorrhage

<sup>a</sup>: such as haematoma, ecchymosis other than at injection site, wound haematoma, haematuria, epistaxis and gastro-intestinal haemorrhage.

<sup>b</sup>: frequency based on a retrospective study on a registry including 3526 patients (see section 5.1)

*Thrombocytopenia and thrombocytosis (see section 4.4 monitoring of platelet counts)*

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
<i>Blood and lymphatic system disorders</i>	<i>Very common:</i> Thrombocytosis <sup>β</sup>  <i>Common:</i> Thrombocytopenia	<i>Uncommon:</i> Thrombocytopenia	<i>Very common:</i> Thrombocytosis <sup>β</sup>  <i>Common:</i> Thrombocytopenia	<i>Unknown:</i> Thrombocytopenia	<i>Uncommon:</i> Thrombocytopenia	<i>Common:</i> Thrombocytosis <sup>β</sup> Thrombocytopenia <i>Very rare:</i> Immuno-allergic thrombocytopenia

<sup>β</sup>: Platelet increased > 400 G/L

Paediatric population

The safety and efficacy of enoxaparin sodium in children have not been established (see section 4.2).

Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the national reporting system listed in [Appendix V](#).

## 4.9 Overdose

### Signs and symptoms

Accidental overdose with enoxaparin sodium after intravenous, extracorporeal or subcutaneous administration may lead to haemorrhagic complications. Following oral administration of even large doses, it is unlikely that enoxaparin sodium will be absorbed.

### Management

The anticoagulant effects can be largely neutralised by the slow intravenous injection of protamine. The dose of protamine depends on the dose of enoxaparin sodium injected; 1 mg protamine neutralises the anticoagulant effect of 100 IU (1 mg) of enoxaparin sodium, if enoxaparin sodium was administered in the previous 8 hours. An infusion of 0.5 mg protamine per 100 IU (1 mg) of enoxaparin sodium may be administered if enoxaparin sodium was administered greater than 8 hours previous to the protamine administration, or if it has been determined that a second dose of protamine is required. After 12 hours of the enoxaparin sodium injection, protamine administration may not be required. However, even with high doses of protamine, the anti-Xa activity of enoxaparin sodium is never completely neutralised (maximum about 60%) (see the prescribing information for protamine salts).

## 5. PHARMACOLOGICAL PROPERTIES

### 5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Antithrombotic agents, heparin group. ATC code: B01A B05

Inhixa is a biosimilar medicinal product. Detailed information is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.

### Pharmacodynamic effects

Enoxaparin is a LMWH with a mean molecular weight of approximately 4,500 daltons, in which the antithrombotic and anticoagulant activities of standard heparin have been dissociated. The active substance is the sodium salt.

In the *in vitro* purified system, enoxaparin sodium has a high anti-Xa activity (approximately 100 IU/mg) and low anti-IIa or anti thrombin activity (approximately 28 IU/mg), with a ratio of 3.6. These anticoagulant activities are mediated through anti-thrombin III (ATIII) resulting in anti-thrombotic activities in humans.

Beyond its anti-Xa/IIa activity, further antithrombotic and anti-inflammatory properties of enoxaparin have been identified in healthy subjects and patients as well as in non-clinical models. These include ATIII-dependent inhibition of other coagulation factors like factor VIIa, induction of endogenous Tissue Factor Pathway Inhibitor (TFPI) release as well as a reduced release of von Willebrand factor (vWF) from the vascular endothelium into the blood circulation. These factors are known to contribute to the overall antithrombotic effect of enoxaparin sodium.

When used as prophylactic treatment, enoxaparin sodium does not significantly affect the aPTT. When used as curative treatment, aPTT can be prolonged by 1.5-2.2 times the control time at peak activity.

### Clinical efficacy and safety

#### *Prevention of venous thromboembolic disease associated with surgery*

##### *Extended prophylaxis of VTE following orthopaedic surgery*

In a double blind study of extended prophylaxis for patients undergoing hip replacement surgery, 179 patients with no venous thromboembolic disease initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) subcutaneously, were randomised to a post-discharge regimen of either enoxaparin

sodium 4,000 IU (40 mg) (n = 90) once a day subcutaneously or to placebo (n = 89) for 3 weeks. The incidence of DVT during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo, no PE was reported. No major bleeding occurred. The efficacy data are provided in the table below.

	Enoxaparin sodium 4,000 IU (40 mg) once a day subcutaneously n (%)	Placebo once a day subcutaneously n (%)
All treated extended prophylaxis patients	90 (100)	89 (100)
Total VTE	6 (6.6)	18 (20.2)
Total DVT (%)	6 (6.6)*	18 (20.2)
Proximal DVT (%)	5 (5.6) <sup>#</sup>	7 (8.8)

\*p value versus placebo = 0.008

<sup>#</sup>p value versus placebo = 0.537

In a second double-blind study, 262 patients without VTE disease and undergoing hip replacement surgery initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) subcutaneously were randomised to a post-discharge regimen of either enoxaparin sodium 4,000 IU (40 mg) (n = 131) once a day subcutaneously or to placebo (n = 131) for 3 weeks. Similar to the first study the incidence of VTE during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo for both total VTE (enoxaparin sodium 21 [16%] versus placebo 45 [34.4%]; p = 0.001) and proximal DVT (enoxaparin sodium 8 [6.1%] versus placebo 28 [21.4%]; p = < 0.001). No difference in major bleeding was found between the enoxaparin sodium and the placebo group.

#### *Extended prophylaxis of DVT following cancer surgery*

A double-blind, multicentre trial, compared a four-week and a one-week regimen of enoxaparin sodium prophylaxis in terms of safety and efficacy in 332 patients undergoing elective surgery for abdominal or pelvic cancer. Patients received enoxaparin sodium (4,000 IU (40 mg) subcutaneously) daily for 6 to 10 days and were then randomly assigned to receive either enoxaparin sodium or placebo for another 21 days. Bilateral venography was performed between days 25 and 31, or sooner if symptoms of venous thromboembolism occurred. The patients were followed for three months. Enoxaparin sodium prophylaxis for four weeks after surgery for abdominal or pelvic cancer significantly reduced the incidence of venographically demonstrated thrombosis, as compared with enoxaparin sodium prophylaxis for one week. The rates of venous thromboembolism at the end of the double-blind phase were 12.0 % (n = 20) in the placebo group and 4.8% (n = 8) in the enoxaparin sodium group; p = 0.02. This difference persisted at three months [13.8% vs. 5.5% (n = 23 vs 9), p = 0.01]. There were no differences in the rates of bleeding or other complications during the double-blind or follow-up periods.

#### *Prophylaxis of venous thromboembolic disease in medical patients with an acute illness expected to induce limitation of mobility*

In a double blind multicentre, parallel group study, enoxaparin sodium 2,000 IU (20 mg) or 4,000 IU (40 mg) once a day subcutaneously was compared to placebo in the prophylaxis of DVT in medical patients with severely restricted mobility during acute illness (defined as walking distance of < 10 meters for ≤ 3 days). This study included patients with heart failure (NYHA Class III or IV); acute respiratory failure or complicated chronic respiratory insufficiency, and acute infection or acute rheumatic; if associated with at least one VTE risk factor (age ≥ 75 years, cancer, previous VTE, obesity, varicose veins, hormone therapy, and chronic heart or respiratory failure).

A total of 1,102 patients were enrolled in the study, and 1,073 patients were treated. Treatment continued for 6 to 14 days (median duration 7 days). When given at a dose of 4,000 IU (40 mg) once a day subcutaneously, enoxaparin sodium significantly reduced the incidence of VTE as compared to placebo. The efficacy data are provided in the table below.

	Enoxaparin sodium 2,000 IU (20 mg) once a day subcutaneously n (%)	Enoxaparin sodium 4,000 IU (40 mg) once a day subcutaneously n (%)	Placebo  n (%)
All treated medical patients during acute illness	287 (100)	291 (100)	288 (100)
Total VTE (%)	43 (15.0)	16 (5.5)*	43 (14.9)
Total DVT (%)	43 (15.0)	16 (5.5)	40 (13.9)
Proximal DVT (%)	13 (4.5)	5 (1.7)	14 (4.9)

VTE = Venous thromboembolic events which included DVT, PE, and death considered to be thromboembolic in origin

\* p value versus placebo = 0.0002

At approximately 3 months following enrolment, the incidence of VTE remained significantly lower in the enoxaparin sodium 4,000 IU (40 mg) treatment group versus the placebo treatment group.

The occurrence of total and major bleeding were respectively 8.6% and 1.1% in the placebo group, 11.7% and 0.3% in the enoxaparin sodium 2,000 IU (20 mg) group and 12.6% and 1.7% in the enoxaparin sodium 4,000 IU (40 mg) group.

#### Treatment of DVT with or without PE

In a multicentre, parallel group study, 900 patients with acute lower extremity DVT with or without PE were randomised to an inpatient (hospital) treatment of either (i) enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day subcutaneously, (ii) enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours subcutaneously, or (iii) heparin intravenous bolus (5,000 IU) followed by a continuous infusion (administered to achieve an aPTT of 55 to 85 seconds). A total of 900 patients were randomised in the study and all patients were treated. All patients also received warfarin sodium (dose adjusted according to prothrombin time to achieve an INR of 2.0 to 3.0), commencing within 72 hours of initiation of enoxaparin sodium or standard heparin therapy, and continuing for 90 days. Enoxaparin sodium or standard heparin therapy was administered for a minimum of 5 days and until the targeted warfarin sodium INR was achieved. Both enoxaparin sodium regimens were equivalent to standard heparin therapy in reducing the risk of recurrent venous thromboembolism (DVT and/or PE). The efficacy data are provided in the table below.

	Enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day subcutaneously n (%)	Enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day subcutaneously n (%)	Heparin aPTT adjusted Intravenous Therapy n (%)
All treated DVT patients with or without PE	298 (100)	312 (100)	290 (100)
Total VTE (%)	13 (4.4)*	9 (2.9)*	12 (4.1)
DVT only (%)	11 (3.7)	7 (2.2)	8 (2.8)
Proximal DVT (%)	9 (3.0)	6 (1.9)	7 (2.4)
PE (%)	2 (0.7)	2 (0.6)	4 (1.4)

VTE = venous thromboembolic event (DVT and/or PE)

\*The 95% confidence intervals for the treatment differences for total VTE were:

- enoxaparin sodium once a day versus heparin (-3.0 to 3.5)
- enoxaparin sodium every 12 hours versus heparin (-4.2 to 1.7).

Major bleeding were respectively 1.7% in the enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day group, 1.3% in the enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day group and 2.1% in the heparin group.

#### Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer

In clinical trials with limited number of patients, reported rates of recurrent VTE in patients treated with enoxaparin given once or twice daily for 3 to 6 months appear comparable to those with warfarin.

Effectiveness in real-life setting was assessed in a cohort of 4,451 patients with symptomatic VTE and active cancer from the multinational registry RIETE of patients with VTE and other thrombotic conditions. 3,526 patients received SC enoxaparin up to 6 months and 925 patients received tinzaparin or dalteparin SC. Among the 3,526 patients receiving enoxaparin treatment, 891 patients were treated with 1.5 mg/kg once daily as initial therapy and extended treatment up to 6 months (once daily alone), 1,854 patients received initial 1.0 mg/kg twice daily regimen and extended treatment up to 6 months (twice daily alone), and 687 patients received 1.0 mg/kg twice daily as initial treatment followed by 1.5 mg/kg once daily (twice daily-once daily) as the extended treatment up to 6 months. The mean and median duration of treatment until regimen change was 17 days and 8 days, respectively. There was no significant difference for VTE recurrence rate between the two treatments groups (see table), with enoxaparin meeting the prespecified criterion for non inferiority of 1.5 (HR adjusted by relevant covariates 0.817, 95% CI: 0.499-1.336). There was no statistically significant difference between the two treatment groups with regards to the relative risks of major (fatal or non-fatal) bleeding and all-cause death (see table).

**Table. Efficacy and safety outcomes in the RIETECAT study**

Outcome	Enoxaparin n=3526	Other LMWH n=925	Adjusted hazard ratios enoxaparin / other LMWH [95% confidence interval]
VTE recurrence	70 (2.0%)	23 (2.5%)	0.817, [ 0.499-1.336]
Major bleeding	111 (3.1%)	18 (1.9%)	1.522, [ 0.899-2.577]
Non-major bleeding	87 (2.5%)	24 (2.6%)	0.881, [0.550-1.410]
Overall death	666 (18.9%)	157 (17.0%)	0.974, [ 0.813-1.165]

An overview of outcomes per treatment regimen used in the RIETECAT study among 6-month completers is provided below:

**Table. 6-month outcomes in patients completing 6-month treatment, by different regimens**

Outcome N (%) (95% CI)	Enoxapa rin all regimens	Enoxaparin all regimens					EU- authorized LMWHs
		Enoxapa rin OD	Enoxapa rin BID	Enoxapa rin BID to OD	Enoxapar in OD to BID	Enoxapar in More than one switch	
	N=1432	N=444	N=529	N=406	N=14	N=39	N=428
Recurrence of VTE	70 (4.9%) (3.8%- 6.0%)	33 (7.4%) (5.0%- 9.9%)	22 (4.2%) (2.5%- 5.9%)	10 (2.5%) (0.9%- 4.0%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	23 (5.4%) (3.2%- 7.5%)
Major bleeding (fatal and non-fatal)	111 (7.8%) (6.4%- 9.1%)	31 (7.0%) (4.6%- 9.4%)	52 (9.8%) (7.3%- 12.4%)	21 (5.2%) (3.0%- 7.3%)	1 (7.1%) (0%- 22.6%)	6 (15.4%) (3.5%- 27.2%)	18 (4.2%) (2.3%- 6.1%)
Non-major bleedings of clinical significance	87 (6.1%) (4.8%- 7.3%)	26 (5.9%) (3.7%- 8.0%)	33 (6.2%) (4.2%- 8.3%)	23 (5.7%) (3.4%- 7.9%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	24 (5.6%) (3.4%- 7.8%)
All-cause death	666 (46.5%) (43.9%- 49.1%)	175 (39.4%) (34.9%- 44.0%)	323 (61.1%) (56.9%- 65.2%)	146 (36.0%) (31.3%- 40.6%)	6 (42.9%) (13.2%- 72.5%)	16 (41.0%) (24.9%- 57.2%)	157 (36.7%) (32.1%- 41.3%)
Fatal PE or fatal bleeding related death	48 (3.4%) (2.4%- 4.3%)	7 (1.6%) (0.4%- 2.7%)	35 (6.6%) (4.5%- 8.7%)	5 (1.2%) (0.2%- 2.3%)	0 (0%) -	1 (2.6%) (0%- 7.8%)	11 (2.6%) (1.1%- 4.1%)



### Treatment of unstable angina and non ST elevation myocardial infarction

In a large multicentre study, 3,171 patients enrolled at the acute phase of unstable angina or non-Q-wave myocardial infarction were randomised to receive in association with acetylsalicylic acid (100 to 325 mg once daily), either subcutaneous enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours or intravenous unfractionated heparin adjusted based on aPTT. Patients had to be treated in hospital for a minimum of 2 days and a maximum of 8 days, until clinical stabilization, revascularization procedures or hospital discharge. The patients had to be followed up to 30 days. In comparison with heparin, enoxaparin sodium significantly reduced the combined incidence of angina pectoris, myocardial infarction and death, with a decrease of 19.8 to 16.6% (relative risk reduction of 16.2%) on day 14. This reduction in the combined incidence was maintained after 30 days (from 23.3 to 19.8%; relative risk reduction of 15%).

There were no significant differences in major haemorrhages, although a haemorrhage at the site of the subcutaneous injection was more frequent.

### Treatment of acute ST-segment elevation myocardial infarction

In a large multicentre study, 20,479 patients with STEMI eligible to receive fibrinolytic therapy were randomised to receive either enoxaparin sodium in a single 3,000 IU (30 mg) intravenous bolus plus a 100 IU/kg (1 mg/kg) subcutaneous dose followed by an subcutaneous injection of 100 IU/kg (1 mg/kg) every 12 hours or intravenous unfractionated heparin adjusted based on aPTT for 48 hours. All patients were also treated with acetylsalicylic acid for a minimum of 30 days. The enoxaparin sodium dosing strategy was adjusted for severe renally impaired patients and for the elderly of at least 75 years of age. The subcutaneous injections of enoxaparin sodium were given until hospital discharge or for a maximum of eight days (whichever came first).

4,716 patients underwent percutaneous coronary intervention receiving antithrombotic support with blinded investigational medicinal product. Therefore, for patients on enoxaparin sodium, the PCI was to be performed on enoxaparin sodium (no switch) using the regimen established in previous studies i.e. no additional dosing, if last subcutaneous administration given less than 8 hours before balloon inflation, intravenous bolus of 30 IU/kg (0.3 mg/kg) enoxaparin sodium, if the last subcutaneous administration given more than 8 hours before balloon inflation.

Enoxaparin sodium compared to unfractionated heparin significantly decreased the incidence of the primary end point, a composite of death from any cause or myocardial re-infarction in the first 30 days after randomization [9.9 percent in the enoxaparin sodium group, as compared with 12.0 percent in the unfractionated heparin group] with a 17 percent relative risk reduction ( $p < 0.001$ ).

The treatment benefits of enoxaparin sodium, evident for a number of efficacy outcomes, emerged at 48 hours, at which time there was a 35 percent reduction in the relative risk of myocardial re-infarction, as compared with treatment with unfractionated heparin ( $p < 0.001$ ).

The beneficial effect of enoxaparin sodium on the primary end point was consistent across key subgroups including age, gender, infarct location, history of diabetes, history of prior myocardial infarction, type of fibrinolytic administered, and time to treatment with the investigational medicinal product.

There was a significant treatment benefit of enoxaparin sodium, as compared with unfractionated heparin, in patients who underwent percutaneous coronary intervention within 30 days after randomization (23 percent reduction in relative risk) or who were treated medically (15 percent reduction in relative risk,  $p = 0.27$  for interaction).

The rate of the 30 day composite endpoint of death, myocardial re-infarction or intracranial haemorrhage (a measure of net clinical benefit) was significantly lower ( $p < 0.0001$ ) in the enoxaparin sodium group (10.1%) as compared to the heparin group (12.2%), representing a 17% relative risk reduction in favour of treatment with enoxaparin sodium.

The incidence of major bleeding at 30 days was significantly higher ( $p < 0.0001$ ) in the enoxaparin sodium group (2.1%) versus the heparin group (1.4%). There was a higher incidence of gastrointestinal bleeding in the enoxaparin sodium group (0.5%) versus the heparin group (0.1%), while the incidence of intracranial haemorrhage was similar in both groups (0.8% with enoxaparin sodium versus 0.7% with heparin).

The beneficial effect of enoxaparin sodium on the primary end point observed during the first 30 days was maintained over a 12 month follow-up period.

### Hepatic impairment

Based on literature data the use of enoxaparin sodium 4,000 IU (40 mg) in cirrhotic patients (Child-Pugh class B-C) appears to be safe and effective in preventing portal vein thrombosis. It should be noted that the literature studies may have limitations. Caution should be used in patients with hepatic impairment as these patients have an increased potential for bleeding (see section 4.4) and no formal dose finding studies have been performed in cirrhotic patients (Child Pugh class A, B nor C).

## **5.2 Pharmacokinetic properties**

### General characteristics

The pharmacokinetic parameters of enoxaparin sodium have been studied primarily in terms of the time course of plasma anti-Xa activity and also by anti-IIa activity, at the recommended dose ranges after single and repeated subcutaneous administration and after single intravenous administration. The quantitative determination of anti-Xa and anti-IIa pharmacokinetic activities was conducted by validated amidolytic methods.

### Absorption

The absolute bioavailability of enoxaparin sodium after subcutaneous injection, based on anti-Xa activity, is close to 100%.

Different doses and formulations and dosing regimens can be used.

The mean maximum plasma anti-Xa activity level is observed 3 to 5 hours after subcutaneous injection and achieves approximately 0.2, 0.4, 1.0 and 1.3 anti-Xa IU/mL following single subcutaneous administration of 2,000 IU, 4,000 IU, 100 IU/kg and 150 IU/kg (20 mg, 40 mg, 1 mg/kg and 1.5 mg/kg) doses, respectively.

A 3,000 IU (30 mg) intravenous bolus immediately followed by a 100 IU/kg (1 mg/kg) subcutaneous every 12 hours provided initial maximum anti-Xa activity level of 1.16 IU/mL (n = 16) and average exposure corresponding to 88% of steady-state levels. Steady-state is achieved on the second day of treatment.

After repeated subcutaneous administration of 4,000 IU (40 mg) once daily and 150 IU/kg (1.5 mg/kg) once daily regimens in healthy volunteers, the steady-state is reached on day 2 with an average exposure ratio about 15% higher than after a single dose. After repeated subcutaneous administration of the 100 IU/kg (1 mg/kg) twice daily regimen, the steady-state is reached from day 3 to 4 with mean exposure about 65% higher than after a single dose and mean maximum and trough anti-Xa activity levels of about 1.2 and 0.52 IU/mL, respectively.

Injection volume and dose concentration over the range 100-200 mg/mL does not affect pharmacokinetic parameters in healthy volunteers.

Enoxaparin sodium pharmacokinetics appears to be linear over the recommended dose ranges.

Intra-patient and inter-patient variability is low. Following repeated subcutaneous administration no accumulation takes place.

Plasma anti-IIa activity after subcutaneous administration is approximately ten-fold lower than anti-Xa activity. The mean maximum anti-IIa activity level is observed approximately 3 to 4 hours following subcutaneous injection and reaches 0.13 IU/mL and 0.19 IU/mL following repeated administration of 100 IU/kg (1 mg/kg) twice daily and 150 IU/kg (1.5 mg/kg) once daily, respectively.

### Distribution

The volume of distribution of enoxaparin sodium anti-Xa activity is about 4.3 litres and is close to the blood volume.

### Biotransformation

Enoxaparin sodium is primarily metabolised in the liver by desulfation and/or depolymerisation to lower molecular weight species with much reduced biological potency.

### Elimination

Enoxaparin sodium is a low clearance substance with a mean anti-Xa plasma clearance of 0.74 L/h after a 150 IU /kg (1.5 mg/kg) 6-hour intravenous infusion.

Elimination appears monophasic with a half-life of about 5 hours after a single subcutaneous dose to about 7 hours after repeated dosing.

Renal clearance of active fragments represents about 10% of the administered dose and total renal excretion of active and non-active fragments 40% of the dose.

### Special populations

#### *Elderly*

Based on the results of a population pharmacokinetic analysis, the enoxaparin sodium kinetic profile is not different in elderly subjects compared to younger subjects when renal function is normal. However, since renal function is known to decline with age, elderly patients may show reduced elimination of enoxaparin sodium (see sections 4.2 and 4.4).

#### *Hepatic impairment*

In a study conducted in patients with advanced cirrhosis treated with enoxaparin sodium 4,000 IU (40 mg) once daily, a decrease in maximum anti-Xa activity was associated with an increase in the severity of hepatic impairment (assessed by Child-Pugh categories). This decrease was mainly attributed to a decrease in ATIII level secondary to a reduced synthesis of ATIII in patients with hepatic impairment.

#### *Renal impairment*

A linear relationship between anti-Xa plasma clearance and creatinine clearance at steady-state has been observed, which indicates decreased clearance of enoxaparin sodium in patients with reduced renal function. Anti-Xa exposure represented by AUC, at steady-state, is marginally increased in mild (creatinine clearance 50-80 mL/min) and moderate (creatinine clearance 30-50 mL/min) renal impairment after repeated subcutaneous 4,000 IU (40 mg) once daily doses. In patients with severe renal impairment (creatinine clearance < 30 mL/min), the AUC at steady state is significantly increased on average by 65% after repeated subcutaneous 4,000 IU (40 mg) once daily doses (see sections 4.2 and 4.4).

#### *Haemodialysis*

Enoxaparin sodium pharmacokinetics appeared similar than control population, after a single 25 IU, 50 IU or 100 IU/kg (0.25, 0.50 or 1.0 mg/kg) intravenous dose however, AUC was two-fold higher than control.

#### *Weight*

After repeated subcutaneous 150 IU/kg (1.5 mg/kg) once daily dosing, mean AUC of anti-Xa activity is marginally higher at steady state in obese healthy volunteers (BMI 30-48 kg/m<sup>2</sup>) compared to non-obese control subjects, while maximum plasma anti-Xa activity level is not increased. There is a lower weight-adjusted clearance in obese subjects with subcutaneous dosing.

When non-weight adjusted dosing was administered, it was found after a single- subcutaneous 4,000 IU (40 mg) dose, that anti-Xa exposure is 52% higher in low-weight women (< 45 kg) and 27% higher in low-weight men (< 57 kg) when compared to normal weight control subjects (see section 4.4).

### Pharmacokinetic interactions

No pharmacokinetic interactions were observed between enoxaparin sodium and thrombolytics when administered concomitantly.

### 5.3 Preclinical safety data

Besides the anticoagulant effects of enoxaparin sodium, there was no evidence of adverse reactions at 15 mg/kg/day in the 13-week subcutaneous toxicity studies both in rats and dogs and at 10 mg/kg/day in the 26-week subcutaneous and intravenous toxicity studies both in rats, and monkeys.

Enoxaparin sodium has shown no mutagenic activity based on *in vitro* tests, including the Ames test, mouse lymphoma cell forward mutation test, and *no clastogenic* activity based on an *in vitro* human lymphocyte chromosomal aberration test, and the *in vivo* rat bone marrow chromosomal aberration test.

Studies conducted in pregnant rats and rabbits at subcutaneous doses of enoxaparin sodium up to 30 mg/kg/day did not reveal any evidence of teratogenic effects or foetotoxicity. Enoxaparin sodium was found to have no effect on fertility or reproductive performance of male and female rats at subcutaneous doses up to 20 mg/kg/day.

## 6. PHARMACEUTICAL PARTICULARS

### 6.1 List of excipients

Water for injections

### 6.2 Incompatibilities

#### SC injection

Do not mix with other medicinal products.

#### IV (bolus) injection (for acute STEMI indication only)

Enoxaparin sodium may be safely administered with sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections (see section 4.2).

### 6.3 Shelf life

#### Pre-filled syringe

3 years

#### Diluted medicinal product with sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections.

8 hours

### 6.4 Special precautions for storage

Store below 25 °C. Do not freeze.

### 6.5 Nature and contents of container

1 mL of solution in a clear, colourless type I neutral glass syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a dark blue polypropylene plunger rod. The syringe can be additionally equipped with needle guard.

Packs of:

- 2, 10 and 30 pre-filled syringes,
- 10 and 30 pre-filled syringes with needle guard.

Not all pack sizes may be marketed.

## 6.6 Special precautions for disposal and other handling

### INSTRUCTIONS FOR USE: PRE-FILLED SYRINGE

#### How to give yourself an injection of Inhixa with a pre-filled syringe without needle guard

If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

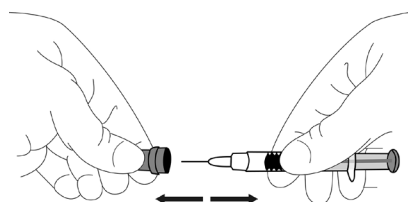
- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

#### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

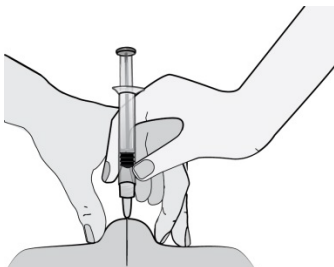


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin

Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold



- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection

- 9) Remove the needle by pulling it straight out.



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

#### How to give yourself an injection of Inhixa with a pre-filled syringe with needle guard

Your pre-filled syringe has a needle guard attached to it in order to protect you from needle stick injury. If you are able to give this medicinal product to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

- Check the expiry date on the medicinal product. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicinal product if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicinal product. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicinal product should be

injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).

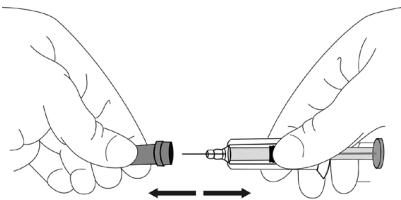
- The pre-filled syringe is intended for single use only.

### **Instructions on injecting yourself with Inhixa**

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

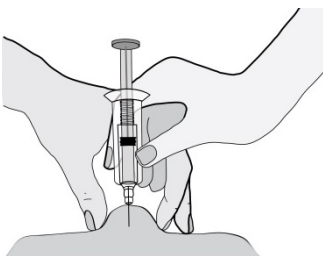


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin

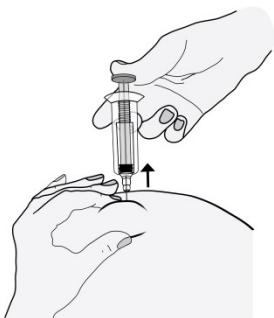
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold



- 8) Press down on the plunger with your thumb. This will inject the medicinal product into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection

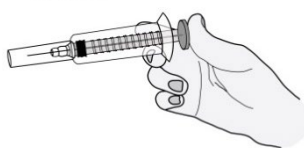
- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10)** Push hard the plunger. The needle guard, which is in the form of a plastic cylinder, will be activated automatically and it will completely cover the needle.

"CLICK"



- 11)** Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

## **7. MARKETING AUTHORISATION HOLDER**

Techdow Pharma Netherlands B.V.  
Strawinskyalaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

## **8. MARKETING AUTHORISATION NUMBER(S)**

EU/1/16/1132/070  
EU/1/16/1132/074  
EU/1/16/1132/078  
EU/1/16/1132/079  
EU/1/16/1132/080

## **9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION**

Date of first authorisation: 15/09/2016  
Date of latest renewal: 26/08/2021



## **10. DATE OF REVISION OF THE TEXT**

Detailed information on this medicinal product is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.

## 1. NAME OF THE MEDICINAL PRODUCT

Inhixa 30,000 IU (300 mg)/3 mL solution for injection in multidose container

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each vial contains enoxaparin sodium 30,000 IU anti-Xa activity (equivalent to 300 mg) in 3.0 mL water for injections.

Each mL contains 10,000 IU (100 mg) enoxaparin sodium.

Enoxaparin sodium is a biological substance obtained by alkaline depolymerisation of heparin benzyl ester derived from porcine intestinal mucosa.

### Excipient(s) with known effect

Benzyl alcohol (45 mg in 3.0 mL)

For the full list of excipients, see section 6.1.

## 3. PHARMACEUTICAL FORM

Solution for injection

Clear, colourless to pale yellow solution.

## 4. CLINICAL PARTICULARS

### 4.1 Therapeutic indications

Inhixa is indicated in adults for:

Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients, in particular those undergoing orthopaedic or general surgery including cancer surgery.

Prophylaxis of venous thromboembolic disease in medical patients with an acute illness (such as acute heart failure, respiratory insufficiency, severe infections or rheumatic diseases) and reduced mobility at increased risk of venous thromboembolism (VTE).

Treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE), excluding PE likely to require thrombolytic therapy or surgery.

Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer.

Prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Acute coronary syndrome:

- Treatment of unstable angina and Non ST-segment elevation myocardial infarction (NSTEMI), in combination with oral acetylsalicylic acid.
- Treatment of acute ST-segment elevation myocardial infarction (STEMI) including patients to be managed medically or with subsequent percutaneous coronary intervention (PCI).

### 4.2 Posology and method of administration

#### Posology

#### Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients

Individual thromboembolic risk for patients can be estimated using validated risk stratification model.

- In patients at moderate risk of thromboembolism, the recommended dose of enoxaparin sodium is 2,000 IU (20 mg) once daily by subcutaneous injection. Preoperative initiation (2 hours before surgery) of enoxaparin sodium 2,000 IU (20 mg) was proven effective and safe in moderate risk surgery.  
In moderate risk patients, enoxaparin sodium treatment should be maintained for a minimal period of 7-10 days whatever the recovery status (e.g. mobility). Prophylaxis should be continued until the patient no longer has significantly reduced mobility.
- In patients at high risk of thromboembolism, the recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily given by subcutaneous injection preferably started 12 hours before surgery. If there is a need for earlier than 12 hours enoxaparin sodium preoperative prophylactic initiation (e.g. high risk patient waiting for a deferred orthopaedic surgery), the last injection should be administered no later than 12 hours prior to surgery and resumed 12 hours after surgery.
  - For patients who undergo major orthopaedic surgery an extended thromboprophylaxis up to 5 weeks is recommended.
  - For patients with a high venous thromboembolism (VTE) risk who undergo abdominal or pelvic surgery for cancer an extended thromboprophylaxis up to 4 weeks is recommended.

#### Prophylaxis of venous thromboembolism in medical patients

The recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily by subcutaneous injection. Treatment with enoxaparin sodium is prescribed for at least 6 to 14 days whatever the recovery status (e.g. mobility). The benefit is not established for a treatment longer than 14 days.

#### Treatment of DVT and PE

Enoxaparin sodium can be administered subcutaneously either as a once daily injection of 150 IU/kg (1.5 mg/kg) or as twice daily injections of 100 IU/kg (1 mg/kg).

The regimen should be selected by the physician based on an individual assessment including evaluation of the thromboembolic risk and of the risk of bleeding. The dose regimen of 150 IU/kg (1.5 mg/kg) administered once daily should be used in uncomplicated patients with low risk of VTE recurrence. The dose regimen of 100 IU/kg (1 mg/kg) administered twice daily should be used in all other patients such as those with obesity, with symptomatic PE, cancer, recurrent VTE or proximal (*vena iliaca*) thrombosis.

Enoxaparin sodium treatment is prescribed for an average period of 10 days. Oral anticoagulant therapy should be initiated when appropriate (see “Switch between enoxaparin sodium and oral anticoagulants” at the end of section 4.2).

In the extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer, physicians should carefully assess the individual thromboembolic and bleeding risks of the patient.

The recommended dose is 100 IU/kg (1 mg/kg) administered twice daily by SC injections for 5 to 10 days, followed by a 150 IU/kg (1.5 mg/kg) once daily SC injection up to 6 months. The benefit of continuous anticoagulant therapy should be reassessed after 6 months of treatment.

#### Prevention of thrombus formation during haemodialysis

The recommended dose is 100 IU/kg (1 mg/kg) of enoxaparin sodium.

For patients with a high risk of haemorrhage, the dose should be reduced to 50 IU/kg (0.5 mg/kg) for double vascular access or 75 IU/kg (0.75 mg/kg) for single vascular access.

During haemodialysis, enoxaparin sodium should be introduced into the arterial line of the circuit at the beginning of the dialysis session. The effect of this dose is usually sufficient for a 4-hour session; however, if fibrin rings are found, for example after a longer than normal session, a further dose of 50 IU to 100 IU/kg (0.5 to 1 mg/kg) may be given.

No data are available in patients using enoxaparin sodium for prophylaxis or treatment and during haemodialysis sessions.

### Acute coronary syndrome: treatment of unstable angina and NSTEMI and treatment of acute STEMI

- For treatment of unstable angina and NSTEMI, the recommended dose of enoxaparin sodium is 100 IU/kg (1 mg/kg) every 12 hours by subcutaneous injection administered in combination with antiplatelet therapy. Treatment should be maintained for a minimum of 2 days and continued until clinical stabilization. The usual duration of treatment is 2 to 8 days.  
Acetylsalicylic acid is recommended for all patients without contraindications at an initial oral loading dose of 150–300 mg (in acetylsalicylic acid-naïve patients) and a maintenance dose of 75–325 mg/day long-term regardless of treatment strategy.
- For treatment of acute STEMI, the recommended dose of enoxaparin sodium is a single intravenous bolus of 3,000 IU (30 mg) plus a 100 IU/kg (1 mg/kg) subcutaneous dose followed by 100 IU/kg (1 mg/kg) administered subcutaneously every 12 hours (maximum 10,000 IU (100 mg) for each of the first two subcutaneous doses). Appropriate antiplatelet therapy such as oral acetylsalicylic acid (75 mg to 325 mg once daily) should be administered concomitantly unless contraindicated. The recommended duration of treatment is 8 days or until hospital discharge, whichever comes first. When administered in conjunction with a thrombolytic (fibrin specific or non-fibrin specific), enoxaparin sodium should be given between 15 minutes before and 30 minutes after the start of fibrinolytic therapy.
  - For dose in patients  $\geq 75$  years of age, see paragraph “Elderly”.
  - For patients managed with PCI, if the last subcutaneous dose of enoxaparin sodium was given less than 8 hours before balloon inflation, no additional dosing is needed. If the last subcutaneous administration was given more than 8 hours before balloon inflation, an intravenous bolus of 30 IU/kg (0.3 mg/kg) enoxaparin sodium should be administered.

### Special populations

#### Paediatric population

The safety and efficacy of enoxaparin sodium in paediatric population have not been established. No data are available.

#### Elderly

For all indications except STEMI, no dose reduction is necessary in the elderly patients, unless kidney function is impaired (see below paragraph “Renal impairment” and section 4.4).

For treatment of acute STEMI in elderly patients  $\geq 75$  years of age, an initial intravenous bolus must not be used. Initiate dosing with 75 IU/kg (0.75 mg/kg) subcutaneously every 12 hours (maximum 7,500 IU (75 mg) for each of the first two subcutaneous doses only, followed by 75 IU/kg (0.75 mg/kg) subcutaneous dosing for the remaining doses). For dose in elderly patients with impaired kidney function, see below “renal impairment” and section 4.4.

#### Hepatic impairment

Limited data are available in patients with hepatic impairment (see sections 5.1 and 5.2) and caution should be used in these patients (see section 4.4).

#### Renal impairment (see sections 4.4 and 5.2)

##### Severe renal impairment

Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance  $<15$  mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Dose table for patients with severe renal impairment (creatinine clearance [15–30] mL/min):

<u>Indication</u>	<u>Dosing regimen</u>
Prophylaxis of venous thromboembolic disease	2,000 IU (20 mg) subcutaneously once daily
Treatment of DVT and PE	100 IU/kg (1 mg/kg) body weight subcutaneously once daily

Extended treatment of DVT and PE in patients with active cancer	100 IU/kg (1 mg/kg) body weight SC once daily
Treatment of unstable angina and NSTEMI	100 IU/kg (1 mg/kg) body weight subcutaneously once daily
Treatment of acute STEMI (patients under 75)	1 x 3,000 IU (30 mg) intravenous bolus plus 100 IU/kg (1 mg/kg) body weight subcutaneously and then 100 IU/kg (1 mg/kg) body weight subcutaneously every 24 hours
Treatment of acute STEMI (patients over 75)	No intravenous initial bolus, 100 IU/kg (1 mg/kg) body weight subcutaneously and then 100 IU/kg (1 mg/kg) body weight subcutaneously every 24 hours

The recommended dose adjustments do not apply to the haemodialysis indication.

#### *Moderate and mild renal impairment*

Although no dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment, careful clinical monitoring is advised.

Inhixa multidose vial contains benzyl alcohol and must not be used in newborn babies and premature neonates (see section 4.3).

#### Method of administration

Inhixa is not indicated for intramuscular use and should not be administered by this route.

For the prophylaxis of venous thromboembolic disease following surgery, treatment of DVT and PE, extended treatment of DVT and PE in patients with active cancer, treatment of unstable angina and NSTEMI, enoxaparin sodium should be administered by subcutaneous injection.

- For acute STEMI, treatment is to be initiated with a single intravenous bolus injection immediately followed by a subcutaneous injection.
- For the prevention of thrombus formation in the extra corporeal circulation during haemodialysis, it is administered through the arterial line of a dialysis circuit.

The use of a tuberculin syringe or equivalent is recommended when using multidose vials to assure withdrawal of the appropriate volume of the medicinal product.

#### SC injection technique

Injection should be made preferably when the patient is lying down. Enoxaparin sodium is administered by deep SC injection.

When using pre-filled syringes, the air bubble should not be expelled from the syringe before the injection in order to avoid the loss of the medicinal product. When the quantity of the medicinal product to be injected requires to be adjusted based on the patient's body weight, the graduated pre-filled syringes should be used to reach the required volume by discarding the excess before injection. In some cases it is not possible to achieve an exact dose due to the graduations on the syringe, and in such case the volume shall be rounded up to the nearest graduation.

The administration should be alternated between the left and right anterolateral or posterolateral abdominal wall.

The whole length of the needle should be introduced vertically into a skin fold gently held between the thumb and index finger. The skin fold should not be released until the injection is complete. The injection site should not be rubbed after administration.

#### IV (bolus) injection (for acute STEMI indication only)

For acute STEMI, treatment is to be initiated with a single intravenous bolus injection immediately followed by a subcutaneous injection.

For intravenous injection, either the multidose vial or pre-filled syringe can be used.

Enoxaparin sodium should be administered through an intravenous line. It should not be mixed or co-administered with other medicinal products. To avoid the possible mixture of enoxaparin sodium with other medicinal products, the intravenous access chosen should be flushed with a sufficient amount of sodium chloride 9 mg/mL (0.9%) solution for infusion or 5% glucose in water for injections prior to and following the intravenous bolus administration of enoxaparin sodium to clear the port of the medicinal product.

Enoxaparin sodium may be safely administered with sodium chloride 9 mg/mL (0.9%) solution for infusion or 5% glucose in water for injections.

#### *Initial 3,000 IU (30 mg) bolus*

For the initial 3,000 IU (30 mg) bolus, using an enoxaparin sodium graduated pre-filled syringe, the excessive volume has to be expelled to retain only 3,000 IU (30 mg) in the syringe. The 3,000 IU (30 mg) dose can then be directly injected into the intravenous line.

#### *Additional bolus for PCI when last subcutaneous administration was given more than 8 hours before balloon inflation*

For patients being managed with PCI, an additional intravenous bolus of 30 IU/kg (0.3 mg/kg) is to be administered if last subcutaneous administration was given more than 8 hours before balloon inflation.

In order to assure the accuracy of the small volume to be injected, it is recommended to dilute the medicinal product to 300 IU/mL (3 mg/mL).

To obtain a 300 IU/mL (3 mg/mL) solution, using a 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe, it is recommended to use a 50 mL infusion bag (i.e. using either sodium chloride 9 mg/mL (0.9%) solution for infusion or 5% glucose in water for injections) as follows:

30 mL of the solution should be withdrawn from the infusion bag with a syringe and discarded. The complete contents of the 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe should be injected into the 20 mL remaining in the bag. The contents of the bag should be gently mixed. Then, the required volume of diluted solution should be withdrawn with a syringe for administration into the intravenous line.

After dilution is completed, the volume to be injected can be calculated using the following formula [volume of diluted solution (mL) = patient weight (kg) x 0.1] or using the table below. It is recommended to prepare the dilution immediately before use.

Volume to be injected through intravenous line after dilution is completed at a concentration of 300 IU (3 mg)/mL.

Weight [kg]	Required dose 30 IU/kg (0.3 mg/kg)		Volume to inject when diluted to a final concentration of 300 IU (3 mg)/mL [mL]
	IU	[mg]	
45	1,350	13.5	4.5
50	1,500	15	5
55	1,650	16.5	5.5
60	1,800	18	6
65	1,950	19.5	6.5
70	2,100	21	7
75	2,250	22.5	7.5
80	2,400	24	8
85	2,550	25.5	8.5
90	2,700	27	9
95	2,850	28.5	9.5
100	3,000	30	10
105	3,150	31.5	10.5

110	3,300	33	11
115	3,450	34.5	11.5
120	3,600	36	12
125	3,750	37.5	12.5
130	3,900	39	13
135	4,050	40.5	13.5
140	4,200	42	14
145	4,350	43.5	14.5
150	4,500	45	15

#### Arterial line injection

It is administered through the arterial line of a dialysis circuit for the prevention of thrombus formation in the extra corporeal circulation during haemodialysis.

#### Switch between enoxaparin sodium and oral anticoagulants

##### *Switch between enoxaparin sodium and vitamin K antagonists (VKA)*

Clinical monitoring and laboratory tests [prothrombin time expressed as the International Normalised Ratio (INR)] must be intensified to monitor the effect of VKA.

As there is an interval before the VKA reaches its maximum effect, enoxaparin sodium therapy should be continued at a constant dose for as long as necessary in order to maintain the INR within the desired therapeutic range for the indication in two successive tests.

For patients currently receiving a VKA, the VKA should be discontinued and the first dose of enoxaparin sodium should be given when the INR has dropped below the therapeutic range.

##### *Switch between enoxaparin sodium and direct oral anticoagulants (DOAC)*

For patients currently receiving enoxaparin sodium, discontinue enoxaparin sodium and start the DOAC 0 to 2 hours before the time that the next scheduled administration of enoxaparin sodium would be due as per DOAC label.

For patients currently receiving a DOAC, the first dose of enoxaparin sodium should be given at the time the next DOAC dose would be taken.

#### Administration in spinal/epidural anaesthesia or lumbar puncture

Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, careful neurological monitoring is recommended due to the risk of neuraxial haematomas (see section 4.4).

- *At doses used for prophylaxis*

A puncture-free interval of at least 12 hours shall be kept between the last injection of enoxaparin sodium at prophylactic doses and the needle or catheter placement.

For continuous techniques, a similar delay of at least 12 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 24 hours.

The 2 hours preoperative initiation of enoxaparin sodium 2,000 IU (20 mg) is not compatible with neuraxial anaesthesia.

- *At doses used for treatment*

A puncture-free interval of at least 24 hours shall be kept between the last injection of enoxaparin sodium at curative doses and the needle or catheter placement (see also section 4.3).

For continuous techniques, a similar delay of 24 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 48 hours.

Patients receiving the twice daily doses (i.e. 75 IU/kg (0.75 mg/kg) twice daily or 100 IU/kg (1 mg/kg) twice-daily) should omit the second enoxaparin sodium dose to allow a sufficient delay before catheter placement or removal.

Anti-Xa levels are still detectable at these time points, and these delays are not a guarantee that neuraxial hematoma will be avoided.

Likewise, consider not using enoxaparin sodium until at least 4 hours after the spinal/epidural puncture or after the catheter has been removed. The delay must be based on a benefit-risk assessment considering both the risk for thrombosis and the risk for bleeding in the context of the procedure and patient risk factors.

### 4.3 Contraindications

Enoxaparin sodium is contraindicated in patients with:

- Hypersensitivity to enoxaparin sodium, heparin or its derivatives, including other low molecular weight heparins (LMWH), to benzyl alcohol or any other of the excipients listed in section 6.1;
- History of immune mediated heparin-induced thrombocytopenia (HIT) within the past 100 days or in the presence of circulating antibodies (see also section 4.4 );
- Active clinically significant bleeding and conditions with a high risk of haemorrhage, including recent haemorrhagic stroke, gastrointestinal ulcer, presence of malignant neoplasm at high risk of bleeding, recent brain, spinal or ophthalmic surgery, known or suspected oesophageal varices, arteriovenous malformations, vascular aneurysms or major intraspinal or intracerebral vascular abnormalities;
- Spinal or epidural anaesthesia or loco-regional anaesthesia when enoxaparin sodium is used for treatment in the previous 24 hours (see section 4.4).

Because of the content of benzyl alcohol (see section 6.1), enoxaparin sodium multiple dose vial formulation must not be given to newborns or premature neonates (see sections 4.4 and 4.6).

### 4.4 Special warnings and precautions for use

#### Traceability

LMWHs are biological medicinal products. In order to improve the traceability of biological medicinal products, the name and the batch number of the administered product should be clearly recorded.

#### General

Enoxaparin sodium cannot be used interchangeably (unit for unit) with other LMWHs. These medicinal products differ in their manufacturing process, molecular weights, specific anti-Xa and anti-IIa activities, units, dose and clinical efficacy and safety. This results in differences in pharmacokinetics and associated biological activities (e.g. anti-thrombin activity, and platelet interactions). Special attention and compliance with the instructions for use specific to each proprietary medicinal product are therefore required.

#### History of HIT (>100 days)

Use of enoxaparin sodium in patients with a history of immune mediated HIT within the past 100 days or in the presence of circulating antibodies is contraindicated (see section 4.3). Circulating antibodies may persist several years.

Enoxaparin sodium is to be used with extreme caution in patients with a history (>100 days) of heparin-induced thrombocytopenia without circulating antibodies. The decision to use enoxaparin sodium in such a case must be made only after a careful benefit risk assessment and after non-heparin alternative treatments are considered (e.g. danaparoid sodium or lepirudin).

#### Monitoring of platelet counts

In patients with cancer with a platelet count below 80 G/L, anticoagulation treatment can only be considered on a case-by-case basis and careful monitoring is recommended.



The risk of antibody-mediated HIT also exists with LMWHs. Should thrombocytopenia occur, it usually appears between the 5<sup>th</sup> and the 21<sup>st</sup> day following the beginning of enoxaparin sodium treatment. The risk of HIT is higher in postoperative patients and mainly after cardiac surgery and in patients with cancer.

Therefore, it is recommended that the platelet counts be measured before the initiation of therapy with enoxaparin sodium and then regularly thereafter during the treatment.

If there are clinical symptoms suggestive of HIT (any new episode of arterial and/or venous thromboembolism, any painful skin lesion at the injection site, any allergic or anaphylactoid reactions on treatment), platelet count should be measured. Patients must be aware that these symptoms may occur and if so, that they should inform their primary care physician.

In practice, if a confirmed significant decrease of the platelet count is observed (30 to 50 % of the initial value), enoxaparin sodium treatment must be immediately discontinued and the patient switched to another non-heparin anticoagulant alternative treatment.

### Haemorrhage

As with other anticoagulants, bleeding may occur at any site. If bleeding occurs, the origin of the haemorrhage should be investigated and appropriate treatment instituted.

Enoxaparin sodium, as with any other anticoagulant therapy, should be used with caution in conditions with increased potential for bleeding, such as:

- impaired haemostasis,
- history of peptic ulcer,
- recent ischemic stroke,
- severe arterial hypertension,
- recent diabetic retinopathy,
- neuro- or ophthalmologic surgery,
- concomitant use of medicinal products affecting haemostasis (see section 4.5).

### Laboratory tests

At doses used for prophylaxis of venous thromboembolism, enoxaparin sodium does not influence bleeding time and global blood coagulation tests significantly, nor does it affect platelet aggregation or binding of fibrinogen to platelets.

At higher doses, increases in activated partial thromboplastin time (aPTT), and activated clotting time (ACT) may occur. Increases in aPTT and ACT are not linearly correlated with increasing enoxaparin sodium antithrombotic activity and therefore are unsuitable and unreliable for monitoring enoxaparin sodium activity.

### Spinal/Epidural anaesthesia or lumbar puncture

Spinal/epidural anaesthesia or lumbar puncture must not be performed within 24 hours of administration of enoxaparin sodium at therapeutic doses (see also section 4.3).

There have been cases of neuraxial haematomas reported with the concurrent use of enoxaparin sodium and spinal/epidural anaesthesia or spinal puncture procedures resulting in long term or permanent paralysis.

These events are rare with enoxaparin sodium dose regimens 4,000 IU (40 mg) once daily or lower. The risk of these events is higher with the use of post-operative indwelling epidural catheters, with the concomitant use of additional medicinal products affecting haemostasis such as Non-Steroidal Anti-Inflammatory Drugs (NSAIDs), with traumatic or repeated epidural or spinal puncture, or in patients with a history of spinal surgery or spinal deformity.

To reduce the potential risk of bleeding associated with the concurrent use of enoxaparin sodium and epidural or spinal anaesthesia/analgesia or spinal puncture, consider the pharmacokinetic profile of enoxaparin sodium (see section 5.2). Placement or removal of an epidural catheter or lumbar puncture is best performed when the anticoagulant effect of enoxaparin sodium is low; however, the exact timing to reach a sufficiently low anticoagulant effect in each patient is not known. For patients with creatinine clearance [15-30 mL/minute], additional considerations are necessary because elimination of enoxaparin sodium is more prolonged (see section 4.2).

Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, frequent monitoring must be exercised to detect any signs and symptoms of neurological impairment such as midline back pain, sensory and motor deficits (numbness or weakness in lower limbs), bowel and/or bladder dysfunction. Instruct patients to report immediately if they experience any of the above signs or symptoms. If signs or symptoms of spinal hematoma are suspected, initiate urgent diagnosis and treatment including consideration for spinal cord decompression even though such treatment may not prevent or reverse neurological sequelae.

#### Skin necrosis/cutaneous vasculitis

Skin necrosis and cutaneous vasculitis have been reported with LMWHs and should lead to prompt treatment discontinuation.

#### Percutaneous coronary revascularization procedures

To minimise the risk of bleeding following the vascular instrumentation during the treatment of unstable angina, NSTEMI and acute STEMI, adhere precisely to the intervals recommended between enoxaparin sodium injection doses. It is important to achieve haemostasis at the puncture site after PCI. In case a closure device is used, the sheath can be removed immediately. If a manual compression method is used, sheath should be removed 6 hours after the last intravenous/ subcutaneous enoxaparin sodium injection. If the treatment with enoxaparin sodium is to be continued, the next scheduled dose should be given no sooner than 6 to 8 hours after sheath removal. The site of the procedure should be observed for signs of bleeding or hematoma formation.

#### Acute infective endocarditis

Use of heparin is usually not recommended in patients with acute infective endocarditis due to the risk of cerebral haemorrhage. If such use is considered absolutely necessary, the decision must be made only after a careful individual benefit risk assessment.

#### Mechanical prosthetic heart valves

The use of enoxaparin sodium has not been adequately studied for thromboprophylaxis in patients with mechanical prosthetic heart valves. Isolated cases of prosthetic heart valve thrombosis have been reported in patients with mechanical prosthetic heart valves who have received enoxaparin sodium for thromboprophylaxis. Confounding factors, including underlying disease and insufficient clinical data, limit the evaluation of these cases. Some of these cases were pregnant women in whom thrombosis led to maternal and foetal death.

#### *Pregnant women with mechanical prosthetic heart valves*

The use of enoxaparin sodium for thromboprophylaxis in pregnant women with mechanical prosthetic heart valves has not been adequately studied. In a clinical study of pregnant women with mechanical prosthetic heart valves given enoxaparin sodium (100 IU/kg (1 mg/kg) twice daily) to reduce the risk of thromboembolism, 2 of 8 women developed clots resulting in blockage of the valve and leading to maternal and foetal death. There have been isolated post-marketing reports of valve thrombosis in pregnant women with mechanical prosthetic heart valves while receiving enoxaparin sodium for thromboprophylaxis. Pregnant women with mechanical prosthetic heart valves may be at higher risk for thromboembolism.

#### Elderly

No increased bleeding tendency is observed in the elderly with the prophylactic dose ranges. Elderly patients (especially patients eighty years of age and older) may be at an increased risk for bleeding complications with the therapeutic dose ranges. Careful clinical monitoring is advised and dose reduction might be considered in patients older than 75 years treated for STEMI (see sections 4.2 and 5.2).

### Renal impairment

- In patients with renal impairment, there is an increase in exposure of enoxaparin sodium which increases the risk of bleeding. In these patients, careful clinical monitoring is advised, and biological monitoring by anti-Xa activity measurement might be considered (see sections 4.2 and 5.2).
- Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance <15 mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

In patients with severe renal impairment (creatinine clearance 15-30 mL/min), since exposure of enoxaparin sodium is significantly increased, a dose adjustment is recommended for therapeutic and prophylactic dose ranges (see section 4.2).

No dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment.

### Hepatic impairment

Enoxaparin sodium should be used with caution in patients with hepatic impairment due to an increased potential for bleeding. Dose adjustment based on monitoring of anti-Xa levels is unreliable in patients with liver cirrhosis and not recommended (see section 5.2).

### Low weight

An increase in exposure of enoxaparin sodium with prophylactic doses (non-weight adjusted) has been observed in low-weight women (<45 kg) and low-weight men (<57 kg), which may lead to a higher risk of bleeding. Therefore, careful clinical monitoring is advised in these patients (see section 5.2).

### Obese patients

Obese patients are at higher risk for thromboembolism. The safety and efficacy of prophylactic doses in obese patients (BMI >30 kg/m<sup>2</sup>) has not been fully determined and there is no consensus for dose adjustment. These patients should be observed carefully for signs and symptoms of thromboembolism.

### Hyperkalaemia

Heparins can suppress adrenal secretion of aldosterone leading to hyperkalaemia (see section 4.8), particularly in patients such as those with diabetes mellitus, chronic renal failure, pre-existing metabolic acidosis, taking medicinal products known to increase potassium (see section 4.5). Plasma potassium should be monitored regularly especially in patients at risk.

### Benzyl alcohol

Benzyl alcohol may cause allergic reactions.

Intravenous administration of benzyl alcohol has been associated with serious adverse events and death in neonates ("Gasping Syndrome") (see section 4.3). The minimum amount of benzyl alcohol at which toxicity may occur is not known. Benzyl alcohol may also cause toxic reactions in infants and children up to 3 years old, due to increased risk of accumulation.

High volumes of medicinal products containing benzyl alcohol should be used with caution and only if necessary in patients with liver or kidney impairment, or in pregnant women, because of the risk of accumulation of benzyl alcohol and its toxicity (metabolic acidosis).

### Sodium

This medicinal product contains less than 1 mmol sodium (23 mg) per dose within the recommended dose range, that is to say essentially 'sodium-free'.

### Acute generalized exanthematous pustulosis

Acute generalized exanthematous pustulosis (AGEP) has been reported with frequency not known in association with enoxaparin treatment. At the time of prescription patients should be advised of the signs and symptoms and monitored closely for skin reactions. If signs and symptoms suggestive of these reactions appear, enoxaparin should be withdrawn immediately and an alternative treatment considered (as appropriate).

#### **4.5 Interaction with other medicinal products and other forms of interaction**

##### Concomitant use not recommended

##### *Medicinal products affecting haemostasis (see section 4.4)*

It is recommended that some agents which affect haemostasis should be discontinued prior to enoxaparin sodium therapy unless strictly indicated. If the combination is indicated, enoxaparin sodium should be used with careful clinical and laboratory monitoring when appropriate. These agents include medicinal products such as:

- Systemic salicylates, acetylsalicylic acid at anti-inflammatory doses, and NSAIDs including ketorolac,
- Other thrombolytics (e.g. alteplase, reteplase, streptokinase, tenecteplase, urokinase) and anticoagulants (see section 4.2).

##### Concomitant use with caution

The following medicinal products may be administered with caution concomitantly with enoxaparin sodium:

- *Other medicinal products affecting haemostasis such as:*
  - Platelet aggregation inhibitors including acetylsalicylic acid used at antiaggregant dose (cardioprotection), clopidogrel, ticlopidine, and glycoprotein IIb/IIIa antagonists indicated in acute coronary syndrome due to the risk of bleeding,
  - Dextran 40,
  - Systemic glucocorticoids.
- *Medicinal products increasing potassium levels*

Medicinal products that increase serum potassium levels may be administered concurrently with enoxaparin sodium under careful clinical and laboratory monitoring (see sections 4.4 and 4.8).

#### **4.6 Fertility, pregnancy and lactation**

##### Pregnancy

In humans, there is no evidence that enoxaparin crosses the placental barrier during the second and third trimester of pregnancy. There is no information available concerning the first trimester.

Animal studies have not shown any evidence of foetotoxicity or teratogenicity (see section 5.3). Animal data have shown that enoxaparin passage through the placenta is minimal.

Enoxaparin sodium should be used during pregnancy only if the physician has established a clear need.

Pregnant women receiving enoxaparin sodium should be carefully monitored for evidence of bleeding or excessive anticoagulation and should be warned of the haemorrhagic risk. Overall, the data suggest that there is no evidence for an increased risk of haemorrhage, thrombocytopenia or osteoporosis with respect to the risk observed in non-pregnant women, other than that observed in pregnant women with prosthetic heart valves (see section 4.4).

If an epidural anaesthesia is planned, it is recommended to withdraw enoxaparin sodium treatment before (see section 4.4).

As benzyl alcohol may cross the placenta, it is recommended to use a formulation that does not contain benzyl alcohol.

## Breast-feeding

It is not known whether unchanged enoxaparin is excreted in human breast milk. In lactating rats, the passage of enoxaparin or its metabolites in milk is very low. The oral absorption of enoxaparin sodium is unlikely. Inhixa can be used during breastfeeding.

## Fertility

There are no clinical data for enoxaparin sodium in fertility. Animal studies did not show any effect on fertility (see section 5.3).

### **4.7 Effects on ability to drive and use machines**

Enoxaparin sodium has no or negligible influence on the ability to drive and use machines.

### **4.8 Undesirable effects**

#### Summary of the safety profile

Enoxaparin sodium has been evaluated in more than 15,000 patients who received enoxaparin sodium in clinical trials. These included 1,776 for prophylaxis of DVT following orthopaedic or abdominal surgery in patients at risk for thromboembolic complications, 1,169 for prophylaxis of DVT in acutely ill medical patients with severely restricted mobility, 559 for treatment of DVT with or without PE, 1,578 for treatment of unstable angina and non-Q-wave myocardial infarction and 10,176 for treatment of acute STEMI.

Enoxaparin sodium regimen administered during these clinical trials varies depending on indications. The enoxaparin sodium dose was 4,000 IU (40 mg) subcutaneously once daily for prophylaxis of DVT following surgery or in acutely ill medical patients with severely restricted mobility. In treatment of DVT with or without PE, patients receiving enoxaparin sodium were treated with either a 100 IU/kg (1 mg/kg) subcutaneous dose every 12 hours or a 150 IU/kg (1.5 mg/kg) subcutaneous dose once a day. In the clinical trials for treatment of unstable angina and non-Q-wave myocardial infarction, doses were 100 IU/kg (1 mg/kg) subcutaneously every 12 hours, and in the clinical study for treatment of acute STEMI enoxaparin sodium regimen was a 3,000 IU (30 mg) intravenous bolus followed by 100 IU/kg (1 mg/kg) subcutaneously every 12 hours.

In clinical trials, haemorrhages, thrombocytopenia and thrombocytosis were the most commonly reported reactions (see sections 4.4 and "Description of selected adverse reactions" below).

The safety profile of enoxaparin for extended treatment of DVT and PE in patients with active cancer is similar to its safety profile for the treatment of DVT and PE.

Acute generalized exanthematous pustulosis (AGEP) has been reported in association with enoxaparin treatment (see section 4.4).

#### Tabulated list of adverse reactions

Other adverse reactions observed in clinical trials and reported in post-marketing experience (\* indicates reactions from post-marketing experience) are detailed below.

Frequencies are defined as follows: very common ( $\geq 1/10$ ); common ( $\geq 1/100$  to  $< 1/10$ ); uncommon ( $\geq 1/1,000$  to  $< 1/100$ ); rare ( $\geq 1/10,000$  to  $< 1/1,000$ ); and very rare ( $< 1/10,000$ ) or not known (cannot be estimated from available data). Within each system organ class, adverse reactions are presented in order of decreasing seriousness.

#### *Blood and the lymphatic system disorders*

Common: Haemorrhage, haemorrhagic anaemia\*, thrombocytopenia, thrombocytosis

Rare: Eosinophilia\*

Rare: Cases of immuno-allergic thrombocytopenia with thrombosis; in some of them thrombosis was complicated by organ infarction or limb ischaemia (see section 4.4).

#### *Immune system disorders*

Common: Allergic reaction

Rare: Anaphylactic/Anaphylactoid reactions including shock\*

#### *Nervous system disorders*

Common: Headache\*

#### *Vascular disorders*

Rare: Spinal haematoma\* (or neuraxial haematoma). These reactions have resulted in varying degrees of neurologic injuries including long-term or permanent paralysis (see section 4.4).

#### *Hepatobiliary disorders*

Very common: Hepatic enzyme increases (mainly transaminases > 3 times the upper limit of normality)

Uncommon: Hepatocellular liver injury \*

Rare: Cholestatic liver injury\*

#### *Skin and subcutaneous tissue disorders*

Common: Urticaria, pruritus, erythema

Uncommon: Bullous dermatitis

Rare: Alopecia\*

Rare: Cutaneous vasculitis\*, skin necrosis\* usually occurring at the injection site (these phenomena have been usually preceded by purpura or erythematous plaques, infiltrated and painful).

Injection site nodules\* (inflammatory nodules, which were not cystic enclosure of enoxaparin). They resolve after a few days and should not cause treatment discontinuation.

Not known: Acute generalized exanthematous pustulosis (AGEP)

#### *Musculoskeletal and connective tissue disorders*

Rare: Osteoporosis\* following long term therapy (greater than 3 months)

#### *General disorders and administration site conditions*

Common: Injection site haematoma, injection site pain, other injection site reaction (such as oedema, haemorrhage, hypersensitivity, inflammation, mass, pain, or reaction)

Uncommon: Local irritation, skin necrosis at injection site

#### *Investigations*

Rare: Hyperkalaemia\* (see sections 4.4 and 4.5).

### Description of selected adverse reactions

#### *Haemorrhages*

These included major haemorrhages, reported at most in 4.2 % of the patients (surgical patients). Some of these cases have been fatal. In surgical patients, haemorrhage complications were considered major: (1) if the haemorrhage caused a significant clinical event, or (2) if accompanied by haemoglobin decrease  $\geq 2$  g/dL or transfusion of 2 or more units of blood products. Retroperitoneal and intracranial haemorrhages were always considered major.

As with other anticoagulants, haemorrhage may occur in the presence of associated risk factors such as: organic lesions liable to bleed, invasive procedures or the concomitant use of medicinal products affecting haemostasis (see sections 4.4 and 4.5).

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
<i>Blood and lymphatic system disorders</i>	<i>Very common:</i> Haemorrhage <sup>a</sup>  <i>Rare:</i> Retroperitoneal haemorrhage	<i>Common:</i> Haemorrhage <sup>a</sup>	<i>Very common:</i> Haemorrhage <sup>a</sup>  <i>Uncommon:</i> Intracranial haemorrhage, Retroperitoneal haemorrhage	<i>Common</i> <sup>b</sup> : Haemorrhage	<i>Common:</i> Haemorrhage <sup>a</sup>  <i>Rare:</i> Retroperitoneal haemorrhage	<i>Common:</i> Haemorrhage <sup>a</sup>  <i>Uncommon:</i> Intracranial haemorrhage, Retroperitoneal haemorrhage

<sup>a</sup>: such as haematoma, ecchymosis other than at injection site, wound haematoma, haematuria, epistaxis and gastro-intestinal haemorrhage.

<sup>b</sup>: frequency based on a retrospective study on a registry including 3526 patients (see section 5.1)

#### *Thrombocytopenia and thrombocytosis (see section 4.4 monitoring of platelet counts)*

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
<i>Blood and lymphatic system disorders</i>	<i>Very common:</i> Thrombocytosis <sup>β</sup>  <i>Common:</i> Thrombocytopenia	<i>Uncommon:</i> Thrombocytopenia	<i>Very common:</i> Thrombocytosis <sup>β</sup>  <i>Common:</i> Thrombocytopenia	<i>Unknown:</i> Thrombocytopenia	<i>Uncommon:</i> Thrombocytopenia	<i>Common:</i> Thrombocytosis <sup>β</sup> Thrombocytopenia <i>Very rare:</i> Immuno-allergic thrombocytopenia

<sup>β</sup>: Platelet increased >400 G/L

#### Paediatric population

The safety and efficacy of enoxaparin sodium in children have not been established (see section 4.2).

Intravenous administration of benzyl alcohol has been associated with serious adverse events and death in neonates (“Gasping Syndrome”) (see section 4.3).

Benzyl alcohol may also cause toxic reactions in infants and children up to 3 years old, due to increased risk of accumulation (see section 4.4).

#### Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the national reporting system listed in [Appendix V](#).

## 4.9 Overdose

### Signs and symptoms

Accidental overdose with enoxaparin sodium after intravenous, extracorporeal or subcutaneous administration may lead to haemorrhagic complications. Following oral administration of even large doses, it is unlikely that enoxaparin sodium will be absorbed.

### Management

The anticoagulant effects can be largely neutralised by the slow intravenous injection of protamine. The dose of protamine depends on the dose of enoxaparin sodium injected; 1 mg protamine neutralises the anticoagulant effect of 100 IU (1 mg) of enoxaparin sodium, if enoxaparin sodium was administered in the previous 8 hours. An infusion of 0.5 mg protamine per 100 IU (1 mg) of enoxaparin sodium may be administered if enoxaparin sodium was administered greater than 8 hours previous to the protamine administration, or if it has been determined that a second dose of protamine is required. After 12 hours of the enoxaparin sodium injection, protamine administration may not be required. However, even with high doses of protamine, the anti-Xa activity of enoxaparin sodium is never completely neutralised (maximum about 60%) (see the prescribing information for protamine salts).

## 5. PHARMACOLOGICAL PROPERTIES

### 5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Antithrombotic agents, heparin group. ATC code: B01A B05

Inhixa is a biosimilar medicinal product. Detailed information is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.

### Pharmacodynamic effects

Enoxaparin is a LMWH with a mean molecular weight of approximately 4,500 daltons, in which the antithrombotic and anticoagulant activities of standard heparin have been dissociated. The active substance is the sodium salt.

In the *in vitro* purified system, enoxaparin sodium has a high anti-Xa activity (approximately 100 IU/mg) and low anti-IIa or anti thrombin activity (approximately 28 IU/mg), with a ratio of 3.6. These anticoagulant activities are mediated through anti-thrombin III (ATIII) resulting in anti-thrombotic activities in humans.

Beyond its anti-Xa/IIa activity, further antithrombotic and anti-inflammatory properties of enoxaparin have been identified in healthy subjects and patients as well as in non-clinical models. These include ATIII-dependent inhibition of other coagulation factors like factor VIIa, induction of endogenous Tissue Factor Pathway Inhibitor (TFPI) release as well as a reduced release of von Willebrand factor (vWF) from the vascular endothelium into the blood circulation. These factors are known to contribute to the overall antithrombotic effect of enoxaparin sodium.

When used as prophylactic treatment, enoxaparin sodium does not significantly affect the aPTT. When used as curative treatment, aPTT can be prolonged by 1.5-2.2 times the control time at peak activity.

### Clinical efficacy and safety

#### *Prevention of venous thromboembolic disease associated with surgery*

##### *Extended prophylaxis of VTE following orthopaedic surgery*

In a double blind study of extended prophylaxis for patients undergoing hip replacement surgery, 179 patients with no venous thromboembolic disease initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) subcutaneously, were randomised to a post-discharge regimen of either enoxaparin



sodium 4,000 IU (40 mg) (n=90) once a day subcutaneously or to placebo (n=89) for 3 weeks. The incidence of DVT during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo, no PE was reported. No major bleeding occurred. The efficacy data are provided in the table below.

	Enoxaparin sodium 4,000 IU (40 mg) once a day subcutaneously n (%)	Placebo once a day subcutaneously n (%)
All treated extended prophylaxis patients	90 (100)	89 (100)
Total VTE (%)	6 (6.6)	18 (20.2)
Total DVT (%)	6 (6.6)*	18 (20.2)
Proximal DVT (%)	5 (5.6) <sup>#</sup>	7 (8.8)

\*p value versus placebo =0.008

<sup>#</sup>p value versus placebo =0.537

In a second double-blind study, 262 patients without VTE disease and undergoing hip replacement surgery initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) subcutaneously were randomised to a post-discharge regimen of either enoxaparin sodium 4,000 IU (40 mg) (n=131) once a day subcutaneously or to placebo (n=131) for 3 weeks. Similar to the first study the incidence of VTE during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo for both total VTE (enoxaparin sodium 21 [16%] versus placebo 45 [34.4%]; p=0.001) and proximal DVT (enoxaparin sodium 8 [6.1%] versus placebo 28 [21.4%]; p<0.001). No difference in major bleeding was found between the enoxaparin sodium and the placebo group.

#### *Extended prophylaxis of DVT following cancer surgery*

A double-blind, multicentre trial, compared a four-week and a one-week regimen of enoxaparin sodium prophylaxis in terms of safety and efficacy in 332 patients undergoing elective surgery for abdominal or pelvic cancer. Patients received enoxaparin sodium (4,000 IU (40 mg) subcutaneously) daily for 6 to 10 days and were then randomly assigned to receive either enoxaparin sodium or placebo for another 21 days. Bilateral venography was performed between days 25 and 31, or sooner if symptoms of venous thromboembolism occurred. The patients were followed for three months. Enoxaparin sodium prophylaxis for four weeks after surgery for abdominal or pelvic cancer significantly reduced the incidence of venographically demonstrated thrombosis, as compared with enoxaparin sodium prophylaxis for one week. The rates of venous thromboembolism at the end of the double-blind phase were 12.0 % (n=20) in the placebo group and 4.8% (n=8) in the enoxaparin sodium group; p=0.02. This difference persisted at three months [13.8% vs. 5.5% (n=23 vs 9), p=0.01]. There were no differences in the rates of bleeding or other complications during the double-blind or follow-up periods.

#### *Prophylaxis of venous thromboembolic disease in medical patients with an acute illness expected to induce limitation of mobility*

In a double blind multicentre, parallel group study, enoxaparin sodium 2,000 IU (20 mg) or 4,000 IU (40 mg) once a day subcutaneously was compared to placebo in the prophylaxis of DVT in medical patients with severely restricted mobility during acute illness (defined as walking distance of <10 meters for ≤3 days). This study included patients with heart failure (NYHA Class III or IV); acute respiratory failure or complicated chronic respiratory insufficiency, and acute infection or acute rheumatic; if associated with at least one VTE risk factor (age ≥75 years, cancer, previous VTE, obesity, varicose veins, hormone therapy, and chronic heart or respiratory failure).

A total of 1,102 patients were enrolled in the study, and 1,073 patients were treated. Treatment continued for 6 to 14 days (median duration 7 days). When given at a dose of 4,000 IU (40 mg) once a day subcutaneously, enoxaparin sodium significantly reduced the incidence of VTE as compared to placebo. The efficacy data are provided in the table below.

	Enoxaparin sodium 2,000 IU (20 mg)	Enoxaparin sodium 4,000 IU (40 mg)	Placebo n (%)
--	---------------------------------------	---------------------------------------	------------------

	once a day subcutaneously n (%)	once a day subcutaneously n (%)	
All treated medical patients during acute illness	287 (100)	291(100)	288 (100)
Total VTE (%)	43 (15.0)	16 (5.5)*	43 (14.9)
Total DVT (%)	43 (15.0)	16 (5.5)	40 (13.9)
Proximal DVT (%)	13 (4.5)	5 (1.7)	14 (4.9)

VTE = Venous thromboembolic events which included DVT, PE, and death considered to be thromboembolic in origin

\* p value versus placebo = 0.0002

At approximately 3 months following enrolment, the incidence of VTE remained significantly lower in the enoxaparin sodium 4,000 IU (40 mg) treatment group versus the placebo treatment group.

The occurrence of total and major bleeding were respectively 8.6% and 1.1% in the placebo group, 11.7% and 0.3% in the enoxaparin sodium 2,000 IU (20 mg) group and 12.6% and 1.7% in the enoxaparin sodium 4,000 IU (40 mg) group.

#### Treatment of DVT with or without PE

In a multicentre, parallel group study, 900 patients with acute lower extremity DVT with or without PE were randomised to an inpatient (hospital) treatment of either (i) enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day subcutaneously, (ii) enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours subcutaneously, or (iii) heparin intravenous bolus (5,000 IU) followed by a continuous infusion (administered to achieve an aPTT of 55 to 85 seconds). A total of 900 patients were randomised in the study and all patients were treated. All patients also received warfarin sodium (dose adjusted according to prothrombin time to achieve an INR of 2.0 to 3.0), commencing within 72 hours of initiation of enoxaparin sodium or standard heparin therapy, and continuing for 90 days. Enoxaparin sodium or standard heparin therapy was administered for a minimum of 5 days and until the targeted warfarin sodium INR was achieved. Both enoxaparin sodium regimens were equivalent to standard heparin therapy in reducing the risk of recurrent venous thromboembolism (DVT and/or PE). The efficacy data are provided in the table below.

	Enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day subcutaneously n (%)	Enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day subcutaneously n (%)	Heparin aPTT Adjusted Intravenous Therapy n (%)
All treated DVT patients with or without PE	298 (100)	312 (100)	290 (100)
Total VTE (%)	13 (4.4)*	9 (2.9)*	12 (4.1)
DVT only (%)	11 (3.7)	7 (2.2)	8 (2.8)
Proximal DVT (%)	9 (3.0)	6 (1.9)	7 (2.4)
PE (%)	2 (0.7)	2 (0.6)	4 (1.4)

VTE = venous thromboembolic event (DVT and/or PE)

\* The 95% confidence intervals for the treatment differences for total VTE were:

- enoxaparin sodium once a day versus heparin (-3.0 to 3.5)
- enoxaparin sodium every 12 hours versus heparin (-4.2 to 1.7).

Major bleeding were respectively 1.7% in the enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day group, 1.3% in the enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day group and 2.1% in the heparin group.

#### Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer

In clinical trials with limited number of patients, reported rates of recurrent VTE in patients treated with enoxaparin given once or twice daily for 3 to 6 months appear comparable to those with warfarin.

Effectiveness in real-life setting was assessed in a cohort of 4,451 patients with symptomatic VTE and active cancer from the multinational registry RIETE of patients with VTE and other thrombotic conditions. 3,526

patients received SC enoxaparin up to 6 months and 925 patients received tinzaparin or dalteparin SC. Among the 3,526 patients receiving enoxaparin treatment, 891 patients were treated with 1.5 mg/kg once daily as initial therapy and extended treatment up to 6 months (once daily alone), 1,854 patients received initial 1.0 mg/kg twice daily regimen and extended treatment up to 6 months (twice daily alone), and 687 patients received 1.0 mg/kg twice daily as initial treatment followed by 1.5 mg/kg once daily (twice daily-once daily) as the extended treatment up to 6 months. The mean and median duration of treatment until regimen change was 17 days and 8 days, respectively. There was no significant difference for VTE recurrence rate between the two treatments groups (see table), with enoxaparin meeting the prespecified criterion for non inferiority of 1.5 (HR adjusted by relevant covariates 0.817, 95% CI: 0.499-1.336). There was no statistically significant difference between the two treatment groups with regards to the relative risks of major (fatal or non-fatal) bleeding and all-cause death (see table).

**Table. Efficacy and safety outcomes in the RIETECAT study**

<b>Outcome</b>	<b>Enoxaparin n=3526</b>	<b>Other LMWH n=925</b>	<b>Adjusted hazard ratios enoxaparin / other LMWH [95% confidence interval]</b>
VTE recurrence	70 (2.0%)	23 (2.5%)	0.817, [ 0.499-1.336]
Major bleeding	111 (3.1%)	18 (1.9%)	1.522, [ 0.899-2.577]
Non-major bleeding	87 (2.5%)	24 (2.6%)	0.881, [0.550-1.410]
Overall death	666 (18.9%)	157 (17.0%)	0.974, [ 0.813-1.165]

An overview of outcomes per treatment regimen used in the RIETECAT study among 6-month completers is provided below:

**Table. 6-month outcomes in patients completing 6-month treatment, by different regimens**

<b>Outcome N (%) (95% CI)</b>	<b>Enoxapa rin all regimens</b>	<b>Enoxaparin all regimens</b>					<b>EU- authorized LMWHs</b>
		<b>Enoxapa rin OD</b>	<b>Enoxapa rin BID</b>	<b>Enoxapa rin BID to OD</b>	<b>Enoxapar in OD to BID</b>	<b>Enoxapar in More than one switch</b>	
	N=1432	N=444	N=529	N=406	N=14	N=39	N=428
Recurrence of VTE	70 (4.9%) (3.8%- 6.0%)	33 (7.4%) (5.0%- 9.9%)	22 (4.2%) (2.5%- 5.9%)	10 (2.5%) (0.9%- 4.0%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	23 (5.4%) (3.2%- 7.5%)
Major bleeding (fatal and non-fatal)	111 (7.8%) (6.4%- 9.1%)	31 (7.0%) (4.6%- 9.4%)	52 (9.8%) (7.3%- 12.4%)	21 (5.2%) (3.0%- 7.3%)	1 (7.1%) (0%- 22.6%)	6 (15.4%) (3.5%- 27.2%)	18 (4.2%) (2.3%- 6.1%)
Non-major bleedings of clinical significance	87 (6.1%) (4.8%- 7.3%)	26 (5.9%) (3.7%- 8.0%)	33 (6.2%) (4.2%- 8.3%)	23 (5.7%) (3.4%- 7.9%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	24 (5.6%) (3.4%- 7.8%)
All-cause death	666 (46.5%) (43.9%- 49.1%)	175 (39.4%) (34.9%- 44.0%)	323 (61.1%) (56.9%- 65.2%)	146 (36.0%) (31.3%- 40.6%)	6 (42.9%) (13.2%- 72.5%)	16 (41.0%) (24.9%- 57.2%)	157 (36.7%) (32.1%- 41.3%)
Fatal PE or fatal bleeding related death	48 (3.4%) (2.4%- 4.3%)	7 (1.6%) (0.4%- 2.7%)	35 (6.6%) (4.5%- 8.7%)	5 (1.2%) (0.2%- 2.3%)	0 (0%) -	1 (2.6%) (0%- 7.8%)	11 (2.6%) (1.1%- 4.1%)

\*All data with 95% CI

### Treatment of unstable angina and non ST elevation myocardial infarction

In a large multicentre study, 3,171 patients enrolled at the acute phase of unstable angina or non-Q-wave myocardial infarction were randomised to receive in association with acetylsalicylic acid (100 to 325 mg once daily), either subcutaneous enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours or intravenous unfractionated heparin adjusted based on aPTT. Patients had to be treated in hospital for a minimum of 2 days and a maximum of 8 days, until clinical stabilization, revascularization procedures or hospital discharge. The patients had to be followed up to 30 days. In comparison with heparin, enoxaparin sodium significantly reduced the combined incidence of angina pectoris, myocardial infarction and death, with a decrease of 19.8 to 16.6% (relative risk reduction of 16.2%) on day 14. This reduction in the combined incidence was maintained after 30 days (from 23.3 to 19.8%; relative risk reduction of 15%). There were no significant differences in major haemorrhages, although a haemorrhage at the site of the subcutaneous injection was more frequent.

### Treatment of acute ST-segment elevation myocardial infarction

In a large multicentre study, 20,479 patients with STEMI eligible to receive fibrinolytic therapy were randomised to receive either enoxaparin sodium in a single 3,000 IU (30 mg) intravenous bolus plus a 100 IU/kg (1 mg/kg) subcutaneous dose followed by an subcutaneous injection of 100 IU/kg (1 mg/kg) every 12 hours or intravenous unfractionated heparin adjusted based on aPTT for 48 hours. All patients were also treated with acetylsalicylic acid for a minimum of 30 days. The enoxaparin sodium dosing strategy was adjusted for severe renally impaired patients and for the elderly of at least 75 years of age. The subcutaneous injections of enoxaparin sodium were given until hospital discharge or for a maximum of eight days (whichever came first).

4,716 patients underwent percutaneous coronary intervention receiving antithrombotic support with blinded investigational medicinal product. Therefore, for patients on enoxaparin sodium, the PCI was to be performed on enoxaparin sodium (no switch) using the regimen established in previous studies i.e. no additional dosing, if last subcutaneous administration given less than 8 hours before balloon inflation, intravenous bolus of 30 IU/kg (0.3 mg/kg) enoxaparin sodium, if the last subcutaneous administration given more than 8 hours before balloon inflation.

Enoxaparin sodium compared to unfractionated heparin significantly decreased the incidence of the primary end point, a composite of death from any cause or myocardial re-infarction in the first 30 days after randomization [9.9 percent in the enoxaparin sodium group, as compared with 12.0 percent in the unfractionated heparin group] with a 17 percent relative risk reduction ( $p < 0.001$ ).

The treatment benefits of enoxaparin sodium, evident for a number of efficacy outcomes, emerged at 48 hours, at which time there was a 35 percent reduction in the relative risk of myocardial re-infarction, as compared with treatment with unfractionated heparin ( $p < 0.001$ ).

The beneficial effect of enoxaparin sodium on the primary end point was consistent across key subgroups including age, gender, infarct location, history of diabetes, history of prior myocardial infarction, type of fibrinolytic administered, and time to treatment with the investigational medicinal product.

There was a significant treatment benefit of enoxaparin sodium, as compared with unfractionated heparin, in patients who underwent percutaneous coronary intervention within 30 days after randomization (23 percent reduction in relative risk) or who were treated medically (15 percent reduction in relative risk,  $p = 0.27$  for interaction).

The rate of the 30 day composite endpoint of death, myocardial re-infarction or intracranial haemorrhage (a measure of net clinical benefit) was significantly lower ( $p < 0.0001$ ) in the enoxaparin sodium group (10.1%) as compared to the heparin group (12.2%), representing a 17% relative risk reduction in favour of treatment with enoxaparin sodium.

The incidence of major bleeding at 30 days was significantly higher ( $p < 0.0001$ ) in the enoxaparin sodium group (2.1%) versus the heparin group (1.4%). There was a higher incidence of gastrointestinal bleeding in the enoxaparin sodium group (0.5%) versus the heparin group (0.1%), while the incidence of intracranial haemorrhage was similar in both groups (0.8% with enoxaparin sodium versus 0.7% with heparin).

The beneficial effect of enoxaparin sodium on the primary end point observed during the first 30 days was maintained over a 12 month follow-up period.

### Hepatic impairment

Based on literature data the use of enoxaparin sodium 4,000 IU (40 mg) in cirrhotic patients (Child-Pugh class B-C) appears to be safe and effective in preventing portal vein thrombosis. It should be noted that the literature studies may have limitations. Caution should be used in patients with hepatic impairment as these patients have an increased potential for bleeding (see section 4.4) and no formal dose finding studies have been performed in cirrhotic patients (Child Pugh class A, B nor C).

## **5.2 Pharmacokinetic properties**

### General characteristics

The pharmacokinetic parameters of enoxaparin sodium have been studied primarily in terms of the time course of plasma anti-Xa activity and also by anti-IIa activity, at the recommended dose ranges after single and repeated subcutaneous administration and after single intravenous administration. The quantitative determination of anti-Xa and anti-IIa pharmacokinetic activities was conducted by validated amidolytic methods.

### Absorption

The absolute bioavailability of enoxaparin sodium after subcutaneous injection, based on anti-Xa activity, is close to 100%.

Different doses and formulations and dosing regimens can be used.

The mean maximum plasma anti-Xa activity level is observed 3 to 5 hours after subcutaneous injection and achieves approximately 0.2, 0.4, 1.0 and 1.3 anti-Xa IU/mL following single subcutaneous administration of 2,000 IU, 4,000 IU, 100 IU/kg and 150 IU/kg (20 mg, 40 mg, 1 mg/kg and 1.5 mg/kg) doses, respectively.

A 3,000 IU (30 mg) intravenous bolus immediately followed by a 100 IU/kg (1 mg/kg) subcutaneous every 12 hours provided initial maximum anti-Xa activity level of 1.16 IU/mL (n=16) and average exposure corresponding to 88% of steady-state levels. Steady-state is achieved on the second day of treatment.

After repeated subcutaneous administration of 4,000 IU (40 mg) once daily and 150 IU/kg (1.5 mg/kg) once daily regimens in healthy volunteers, the steady-state is reached on day 2 with an average exposure ratio about 15% higher than after a single dose. After repeated subcutaneous administration of the 100 IU/kg (1 mg/kg) twice daily regimen, the steady-state is reached from day 3 to 4 with mean exposure about 65% higher than after a single dose and mean maximum and trough anti-Xa activity levels of about 1.2 and 0.52 IU/mL, respectively.

Injection volume and dose concentration over the range 100-200 mg/mL does not affect pharmacokinetic parameters in healthy volunteers.

Enoxaparin sodium pharmacokinetics appears to be linear over the recommended dose ranges.

Intra-patient and inter-patient variability is low. Following repeated subcutaneous administration no accumulation takes place.

Plasma anti-IIa activity after subcutaneous administration is approximately ten-fold lower than anti-Xa activity. The mean maximum anti-IIa activity level is observed approximately 3 to 4 hours following subcutaneous injection and reaches 0.13 IU/mL and 0.19 IU/mL following repeated administration of 100 IU/kg (1 mg/kg) twice daily and 150 IU/kg (1.5 mg/kg) once daily, respectively.

### Distribution

The volume of distribution of enoxaparin sodium anti-Xa activity is about 4.3 litres and is close to the blood volume.

### Biotransformation

Enoxaparin sodium is primarily metabolised in the liver by desulfation and/or depolymerisation to lower molecular weight species with much reduced biological potency.

### Elimination

Enoxaparin sodium is a low clearance substance with a mean anti-Xa plasma clearance of 0.74 L/h after a 150 IU/kg (1.5 mg/kg) 6-hour intravenous infusion.

Elimination appears monophasic with a half-life of about 5 hours after a single subcutaneous dose to about 7 hours after repeated dosing.

Renal clearance of active fragments represents about 10% of the administered dose and total renal excretion of active and non-active fragments 40% of the dose.

### Special populations

#### *Elderly*

Based on the results of a population pharmacokinetic analysis, the enoxaparin sodium kinetic profile is not different in elderly subjects compared to younger subjects when renal function is normal. However, since renal function is known to decline with age, elderly patients may show reduced elimination of enoxaparin sodium (see sections 4.2 and 4.4).

#### *Hepatic impairment*

In a study conducted in patients with advanced cirrhosis treated with enoxaparin sodium 4,000 IU (40 mg) once daily, a decrease in maximum anti-Xa activity was associated with an increase in the severity of hepatic impairment (assessed by Child-Pugh categories). This decrease was mainly attributed to a decrease in ATIII level secondary to a reduced synthesis of ATIII in patients with hepatic impairment.

#### *Renal impairment*

A linear relationship between anti-Xa plasma clearance and creatinine clearance at steady-state has been observed, which indicates decreased clearance of enoxaparin sodium in patients with reduced renal function. Anti-Xa exposure represented by AUC, at steady-state, is marginally increased in mild (creatinine clearance 50-80 mL/min) and moderate (creatinine clearance 30-50 mL/min) renal impairment after repeated subcutaneous 4,000 IU (40 mg) once daily doses. In patients with severe renal impairment (creatinine clearance <30 mL/min), the AUC at steady state is significantly increased on average by 65% after repeated subcutaneous 4,000 IU (40 mg) once daily doses (see sections 4.2 and 4.4).

#### *Haemodialysis*

Enoxaparin sodium pharmacokinetics appeared similar than control population, after a single 25 IU, 50 IU or 100 IU/kg (0.25, 0.50 or 1.0 mg/kg) intravenous dose however, AUC was two-fold higher than control.

#### *Weight*

After repeated subcutaneous 150 IU/kg (1.5 mg/kg) once daily dosing, mean AUC of anti-Xa activity is marginally higher at steady state in obese healthy volunteers (BMI 30-48 kg/m<sup>2</sup>) compared to non-obese control subjects, while maximum plasma anti-Xa activity level is not increased. There is a lower weight-adjusted clearance in obese subjects with subcutaneous dosing.

When non-weight adjusted dosing was administered, it was found after a single- subcutaneous 4,000 IU (40 mg) dose, that anti-Xa exposure is 52% higher in low-weight women (<45 kg) and 27% higher in low-weight men (<57 kg) when compared to normal weight control subjects (see section 4.4).

### Pharmacokinetic interactions

No pharmacokinetic interactions were observed between enoxaparin sodium and thrombolytics when administered concomitantly.

### 5.3 Preclinical safety data

Besides the anticoagulant effects of enoxaparin sodium, there was no evidence of adverse reactions at 15 mg/kg/day in the 13-week subcutaneous toxicity studies both in rats and dogs and at 10 mg/kg/day in the 26-week subcutaneous and intravenous toxicity studies both in rats, and monkeys.

Enoxaparin sodium has shown no mutagenic activity based on *in vitro* tests, including the Ames test, mouse lymphoma cell forward mutation test, and no clastogenic activity based on an *in vitro* human lymphocyte chromosomal aberration test, and the *in vivo* rat bone marrow chromosomal aberration test.

Studies conducted in pregnant rats and rabbits at subcutaneous doses of enoxaparin sodium up to 30 mg/kg/day did not reveal any evidence of teratogenic effects or foetotoxicity. Enoxaparin sodium was found to have no effect on fertility or reproductive performance of male and female rats at subcutaneous doses up to 20 mg/kg/day.

## 6. PHARMACEUTICAL PARTICULARS

### 6.1 List of excipients

Benzyl alcohol  
Water for injections

### 6.2 Incompatibilities

#### SC injection

Should not be mixed with other medicinal products.

#### IV (bolus) injection (for acute STEMI indication only)

This medicinal product must not be mixed with other medicinal products except those mentioned in section 6.6.

### 6.3 Shelf life

3 years

#### After first opening

Chemical and physical in-use stability has been demonstrated for 28 days at 25 °C.

From a microbiological point of view, once opened, the medicinal product may be stored for a maximum of 28 days below 25 °C. Other in-use storage times and conditions are the responsibility of the user.

#### After dilution with sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose solution for injection.

Chemical and physical in-use stability has been demonstrated for 8 hours at 25 °C.

From a microbiological point of view, unless the method of dilution precludes the risk of microbial contamination, the medicinal product should be used immediately. If not used immediately, in-use storage times and conditions are the responsibility of user.

### 6.4 Special precautions for storage

Store below 25 °C. Do not freeze.

For storage conditions after first opening and dilution of the medicinal product, see section 6.3.

## **6.5 Nature and contents of container**

3 mL of solution in clear, colourless type I glass vial sealed with rubber injection stopper and white aluminium-plastic cap in a cardboard box.

Pack-sizes of 1 vial containing 3 mL.

## **6.6 Special precautions for disposal and other handling**

Enoxaparin sodium may be safely administered with sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections (see section 4.2).

Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

## **7. MARKETING AUTHORISATION HOLDER**

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

## **8. MARKETING AUTHORISATION NUMBER(S)**

EU/1/16/1132/071

## **9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION**

Date of first authorisation: 15/09/2016

Date of latest renewal: 26/08/2021

## **10. DATE OF REVISION OF THE TEXT**

Detailed information on this medicinal product is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.



## 1. NAME OF THE MEDICINAL PRODUCT

Inhixa 50,000 IU (500 mg)/5 mL solution for injection in multidose container

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each vial contains enoxaparin sodium 50,000 IU anti-Xa activity (equivalent to 500 mg) in 5.0 mL water for injections.

Each mL contains 10,000 IU (100 mg) enoxaparin sodium.

Enoxaparin sodium is a biological substance obtained by alkaline depolymerisation of heparin benzyl ester derived from porcine intestinal mucosa.

### Excipient(s) with known effect

Benzyl alcohol (75 mg in 5.0 mL)

For the full list of excipients, see section 6.1.

## 3. PHARMACEUTICAL FORM

Solution for injection

Clear, colourless to pale yellow solution.

## 4. CLINICAL PARTICULARS

### 4.1 Therapeutic indications

Inhixa is indicated in adults for:

Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients, in particular those undergoing orthopaedic or general surgery including cancer surgery.

Prophylaxis of venous thromboembolic disease in medical patients with an acute illness (such as acute heart failure, respiratory insufficiency, severe infections or rheumatic diseases) and reduced mobility at increased risk of venous thromboembolism (VTE).

Treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE), excluding PE likely to require thrombolytic therapy or surgery.

Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer.

Prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Acute coronary syndrome:

- Treatment of unstable angina and Non ST-segment elevation myocardial infarction (NSTEMI), in combination with oral acetylsalicylic acid.
- Treatment of acute ST-segment elevation myocardial infarction (STEMI) including patients to be managed medically or with subsequent percutaneous coronary intervention (PCI).

### 4.2 Posology and method of administration

#### Posology

#### Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients

Individual thromboembolic risk for patients can be estimated using validated risk stratification model.

- In patients at moderate risk of thromboembolism, the recommended dose of enoxaparin sodium is 2,000 IU (20 mg) once daily by subcutaneous injection. Preoperative initiation (2 hours before surgery) of enoxaparin sodium 2,000 IU (20 mg) was proven effective and safe in moderate risk surgery.  
In moderate risk patients, enoxaparin sodium treatment should be maintained for a minimal period of 7-10 days whatever the recovery status (e.g. mobility). Prophylaxis should be continued until the patient no longer has significantly reduced mobility.
- In patients at high risk of thromboembolism, the recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily given by subcutaneous injection preferably started 12 hours before surgery. If there is a need for earlier than 12 hours enoxaparin sodium preoperative prophylactic initiation (e.g. high risk patient waiting for a deferred orthopaedic surgery), the last injection should be administered no later than 12 hours prior to surgery and resumed 12 hours after surgery.
  - For patients who undergo major orthopaedic surgery an extended thromboprophylaxis up to 5 weeks is recommended.
  - For patients with a high venous thromboembolism (VTE) risk who undergo abdominal or pelvic surgery for cancer an extended thromboprophylaxis up to 4 weeks is recommended.

#### Prophylaxis of venous thromboembolism in medical patients

The recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily by subcutaneous injection. Treatment with enoxaparin sodium is prescribed for at least 6 to 14 days whatever the recovery status (e.g. mobility). The benefit is not established for a treatment longer than 14 days.

#### Treatment of DVT and PE

Enoxaparin sodium can be administered subcutaneously either as a once daily injection of 150 IU/kg (1.5 mg/kg) or as twice daily injections of 100 IU/kg (1 mg/kg).

The regimen should be selected by the physician based on an individual assessment including evaluation of the thromboembolic risk and of the risk of bleeding. The dose regimen of 150 IU/kg (1.5 mg/kg) administered once daily should be used in uncomplicated patients with low risk of VTE recurrence. The dose regimen of 100 IU/kg (1 mg/kg) administered twice daily should be used in all other patients such as those with obesity, with symptomatic PE, cancer, recurrent VTE or proximal (*vena iliaca*) thrombosis.

Enoxaparin sodium treatment is prescribed for an average period of 10 days. Oral anticoagulant therapy should be initiated when appropriate (see “Switch between enoxaparin sodium and oral anticoagulants” at the end of section 4.2).

In the extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer, physicians should carefully assess the individual thromboembolic and bleeding risks of the patient.

The recommended dose is 100 IU/kg (1 mg/kg) administered twice daily by SC injections for 5 to 10 days, followed by a 150 IU/kg (1.5 mg/kg) once daily SC injection up to 6 months. The benefit of continuous anticoagulant therapy should be reassessed after 6 months of treatment.

#### Prevention of thrombus formation during haemodialysis

The recommended dose is 100 IU/kg (1 mg/kg) of enoxaparin sodium.

For patients with a high risk of haemorrhage, the dose should be reduced to 50 IU/kg (0.5 mg/kg) for double vascular access or 75 IU/kg (0.75 mg/kg) for single vascular access.

During haemodialysis, enoxaparin sodium should be introduced into the arterial line of the circuit at the beginning of the dialysis session. The effect of this dose is usually sufficient for a 4-hour session; however, if fibrin rings are found, for example after a longer than normal session, a further dose of 50 IU to 100 IU/kg (0.5 to 1 mg/kg) may be given.

No data are available in patients using enoxaparin sodium for prophylaxis or treatment and during haemodialysis sessions.

### Acute coronary syndrome: treatment of unstable angina and NSTEMI and treatment of acute STEMI

- For treatment of unstable angina and NSTEMI, the recommended dose of enoxaparin sodium is 100 IU/kg (1 mg/kg) every 12 hours by subcutaneous injection administered in combination with antiplatelet therapy. Treatment should be maintained for a minimum of 2 days and continued until clinical stabilization. The usual duration of treatment is 2 to 8 days.  
Acetylsalicylic acid is recommended for all patients without contraindications at an initial oral loading dose of 150–300 mg (in acetylsalicylic acid-naïve patients) and a maintenance dose of 75–325 mg/day long-term regardless of treatment strategy.
- For treatment of acute STEMI, the recommended dose of enoxaparin sodium is a single intravenous bolus of 3,000 IU (30 mg) plus a 100 IU/kg (1 mg/kg) subcutaneous dose followed by 100 IU/kg (1 mg/kg) administered subcutaneously every 12 hours (maximum 10,000 IU (100 mg) for each of the first two subcutaneous doses). Appropriate antiplatelet therapy such as oral acetylsalicylic acid (75 mg to 325 mg once daily) should be administered concomitantly unless contraindicated. The recommended duration of treatment is 8 days or until hospital discharge, whichever comes first. When administered in conjunction with a thrombolytic (fibrin specific or non-fibrin specific), enoxaparin sodium should be given between 15 minutes before and 30 minutes after the start of fibrinolytic therapy.
  - For dose in patients  $\geq 75$  years of age, see paragraph “Elderly”.
  - For patients managed with PCI, if the last subcutaneous dose of enoxaparin sodium was given less than 8 hours before balloon inflation, no additional dosing is needed. If the last subcutaneous administration was given more than 8 hours before balloon inflation, an intravenous bolus of 30 IU/kg (0.3 mg/kg) enoxaparin sodium should be administered.

### Special populations

#### Paediatric population

The safety and efficacy of enoxaparin sodium in paediatric population have not been established. No data are available.

#### Elderly

For all indications except STEMI, no dose reduction is necessary in the elderly patients, unless kidney function is impaired (see below paragraph “Renal impairment” and section 4.4).

For treatment of acute STEMI in elderly patients  $\geq 75$  years of age, an initial intravenous bolus must not be used. Initiate dosing with 75 IU/kg (0.75 mg/kg) subcutaneously every 12 hours (maximum 7,500 IU (75 mg) for each of the first two subcutaneous doses only, followed by 75 IU/kg (0.75 mg/kg) subcutaneous dosing for the remaining doses). For dose in elderly patients with impaired kidney function, see below “renal impairment” and section 4.4.

#### Hepatic impairment

Limited data are available in patients with hepatic impairment (see sections 5.1 and 5.2) and caution should be used in these patients (see section 4.4).

#### Renal impairment (see sections 4.4 and 5.2)

##### Severe renal impairment

Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance  $<15$  mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Dose table for patients with severe renal impairment (creatinine clearance [15–30] mL/min):

<u>Indication</u>	<u>Dosing regimen</u>
Prophylaxis of venous thromboembolic disease	2,000 IU (20 mg) subcutaneously once daily
Treatment of DVT and PE	100 IU/kg (1 mg/kg) body weight subcutaneously once daily

Extended treatment of DVT and PE in patients with active cancer	100 IU/kg (1 mg/kg) body weight SC once daily
Treatment of unstable angina and NSTEMI	100 IU/kg (1 mg/kg) body weight subcutaneously once daily
Treatment of acute STEMI (patients under 75)	1 x 3,000 IU (30 mg) intravenous bolus plus 100 IU/kg (1 mg/kg) body weight subcutaneously and then 100 IU/kg (1 mg/kg) body weight subcutaneously every 24 hours
Treatment of acute STEMI (patients over 75)	No intravenous initial bolus, 100 IU/kg (1 mg/kg) body weight subcutaneously and then 100 IU/kg (1 mg/kg) body weight subcutaneously every 24 hours

The recommended dose adjustments do not apply to the haemodialysis indication.

#### *Moderate and mild renal impairment*

Although no dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment, careful clinical monitoring is advised.

Inhixa multidose vial contains benzyl alcohol and must not be used in newborn babies and premature neonates (see section 4.3).

#### Method of administration

Inhixa is not indicated for intramuscular use and should not be administered by this route.

For the prophylaxis of venous thromboembolic disease following surgery, treatment of DVT and PE, extended treatment of DVT and PE in patients with active cancer, treatment of unstable angina and NSTEMI, enoxaparin sodium should be administered by subcutaneous injection.

- For acute STEMI, treatment is to be initiated with a single intravenous bolus injection immediately followed by a subcutaneous injection.
- For the prevention of thrombus formation in the extra corporeal circulation during haemodialysis, it is administered through the arterial line of a dialysis circuit.

The use of a tuberculin syringe or equivalent is recommended when using multidose vials to assure withdrawal of the appropriate volume of the medicinal product.

#### SC injection technique

Injection should be made preferably when the patient is lying down. Enoxaparin sodium is administered by deep SC injection.

When using pre-filled syringes, the air bubble should not be expelled from the syringe before the injection in order to avoid the loss of the medicinal product. When the quantity of the medicinal product to be injected requires to be adjusted based on the patient's body weight, the graduated pre-filled syringes should be used to reach the required volume by discarding the excess before injection. In some cases it is not possible to achieve an exact dose due to the graduations on the syringe, and in such case the volume shall be rounded up to the nearest graduation.

The administration should be alternated between the left and right anterolateral or posterolateral abdominal wall.

The whole length of the needle should be introduced vertically into a skin fold gently held between the thumb and index finger. The skin fold should not be released until the injection is complete. The injection site should not be rubbed after administration.

#### IV (bolus) injection (for acute STEMI indication only)

For acute STEMI, treatment is to be initiated with a single intravenous bolus injection immediately followed by a subcutaneous injection.

For intravenous injection, either the multidose vial or pre-filled syringe can be used.

Enoxaparin sodium should be administered through an intravenous line. It should not be mixed or co-administered with other medicinal products. To avoid the possible mixture of enoxaparin sodium with other medicinal products, the intravenous access chosen should be flushed with a sufficient amount of sodium chloride 9 mg/mL (0.9%) solution for infusion or 5% glucose in water for injection prior to and following the intravenous bolus administration of enoxaparin sodium to clear the port of the medicinal product. Enoxaparin sodium may be safely administered with sodium chloride 9 mg/mL (0.9%) solution for infusion or 5% glucose in water for injections.

#### *Initial 3,000 IU (30 mg) bolus*

For the initial 3,000 IU (30 mg) bolus, using an enoxaparin sodium graduated pre-filled syringe, the excessive volume has to be expelled to retain only 3,000 IU (30 mg) in the syringe. The 3,000 IU (30 mg) dose can then be directly injected into the intravenous line.

#### *Additional bolus for PCI when last subcutaneous administration was given more than 8 hours before balloon inflation*

For patients being managed with PCI, an additional intravenous bolus of 30 IU/kg (0.3 mg/kg) is to be administered if last subcutaneous administration was given more than 8 hours before balloon inflation.

In order to assure the accuracy of the small volume to be injected, it is recommended to dilute the medicinal product to 300 IU/mL (3 mg/mL).

To obtain a 300 IU/mL (3 mg/mL) solution, using a 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe, it is recommended to use a 50 mL infusion bag (i.e. using either sodium chloride 9 mg/mL (0.9%) solution for infusion or 5% glucose in water for injections) as follows:

30 mL of the solution should be withdrawn from the infusion bag with a syringe and discarded. The complete contents of the 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe should be injected into the 20 mL remaining in the bag. The contents of the bag should be gently mixed. Then, the required volume of diluted solution should be withdrawn with a syringe for administration into the intravenous line.

After dilution is completed, the volume to be injected can be calculated using the following formula [volume of diluted solution (mL) = patient weight (kg) x 0.1] or using the table below. It is recommended to prepare the dilution immediately before use.

Volume to be injected through intravenous line after dilution is completed at a concentration of 300 IU (3 mg)/mL.

Weight	Required dose 30 IU/kg (0.3 mg/kg)		Volume to inject when diluted to a final concentration of 300 IU (3 mg)/mL
[kg]	IU	[mg]	[mL]
45	1,350	13.5	4.5
50	1,500	15	5
55	1,650	16.5	5.5
60	1,800	18	6
65	1,950	19.5	6.5
70	2,100	21	7
75	2,250	22.5	7.5
80	2,400	24	8
85	2,550	25.5	8.5
90	2,700	27	9
95	2,850	28.5	9.5
100	3,000	30	10

105	3,150	31.5	10.5
110	3,300	33	11
115	3,450	34.5	11.5
120	3,600	36	12
125	3,750	37.5	12.5
130	3,900	39	13
135	4,050	40.5	13.5
140	4,200	42	14
145	4,350	43.5	14.5
150	4,500	45	15

### Arterial line injection

It is administered through the arterial line of a dialysis circuit for the prevention of thrombus formation in the extra corporeal circulation during haemodialysis.

### Switch between enoxaparin sodium and oral anticoagulants

#### *Switch between enoxaparin sodium and vitamin K antagonists (VKA)*

Clinical monitoring and laboratory tests [prothrombin time expressed as the International Normalised Ratio (INR)] must be intensified to monitor the effect of VKA.

As there is an interval before the VKA reaches its maximum effect, enoxaparin sodium therapy should be continued at a constant dose for as long as necessary in order to maintain the INR within the desired therapeutic range for the indication in two successive tests.

For patients currently receiving a VKA, the VKA should be discontinued and the first dose of enoxaparin sodium should be given when the INR has dropped below the therapeutic range.

#### *Switch between enoxaparin sodium and direct oral anticoagulants (DOAC)*

For patients currently receiving enoxaparin sodium, discontinue enoxaparin sodium and start the DOAC 0 to 2 hours before the time that the next scheduled administration of enoxaparin sodium would be due as per DOAC label.

For patients currently receiving a DOAC, the first dose of enoxaparin sodium should be given at the time the next DOAC dose would be taken.

### Administration in spinal/epidural anaesthesia or lumbar puncture

Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, careful neurological monitoring is recommended due to the risk of neuraxial haematomas (see section 4.4).

- *At doses used for prophylaxis*

A puncture-free interval of at least 12 hours shall be kept between the last injection of enoxaparin sodium at prophylactic doses and the needle or catheter placement.

For continuous techniques, a similar delay of at least 12 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 24 hours.

The 2 hours preoperative initiation of enoxaparin sodium 2,000 IU (20 mg) is not compatible with neuraxial anaesthesia.

- *At doses used for treatment*

A puncture-free interval of at least 24 hours shall be kept between the last injection of enoxaparin sodium at curative doses and the needle or catheter placement (see also section 4.3).

For continuous techniques, a similar delay of 24 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 48 hours.

Patients receiving the twice daily doses (i.e. 75 IU/kg (0.75 mg/kg) twice daily or 100 IU/kg (1 mg/kg) twice-daily) should omit the second enoxaparin sodium dose to allow a sufficient delay before catheter placement or removal.

Anti-Xa levels are still detectable at these time points, and these delays are not a guarantee that neuraxial hematoma will be avoided.

Likewise, consider not using enoxaparin sodium until at least 4 hours after the spinal/epidural puncture or after the catheter has been removed. The delay must be based on a benefit-risk assessment considering both the risk for thrombosis and the risk for bleeding in the context of the procedure and patient risk factors.

### 4.3 Contraindications

Enoxaparin sodium is contraindicated in patients with:

- Hypersensitivity to enoxaparin sodium, heparin or its derivatives, including other low molecular weight heparins (LMWH), to benzyl alcohol or any other of the excipients listed in section 6.1;
- History of immune mediated heparin-induced thrombocytopenia (HIT) within the past 100 days or in the presence of circulating antibodies (see also section 4.4 );
- Active clinically significant bleeding and conditions with a high risk of haemorrhage, including recent haemorrhagic stroke, gastrointestinal ulcer, presence of malignant neoplasm at high risk of bleeding, recent brain, spinal or ophthalmic surgery, known or suspected oesophageal varices, arteriovenous malformations, vascular aneurysms or major intraspinal or intracerebral vascular abnormalities;
- Spinal or epidural anaesthesia or loco-regional anaesthesia when enoxaparin sodium is used for treatment in the previous 24 hours (see section 4.4).

Because of the content of benzyl alcohol (see section 6.1), enoxaparin sodium multiple dose vial formulation must not be given to newborns or premature neonates (see sections 4.4 and 4.6).

### 4.4 Special warnings and precautions for use

#### Traceability

LMWHs are biological medicinal products. In order to improve the traceability of biological medicinal products, the name and the batch number of the administered product should be clearly recorded.

#### General

Enoxaparin sodium cannot be used interchangeably (unit for unit) with other LMWHs. These medicinal products differ in their manufacturing process, molecular weights, specific anti-Xa and anti-IIa activities, units, dose and clinical efficacy and safety. This results in differences in pharmacokinetics and associated biological activities (e.g. anti-thrombin activity, and platelet interactions). Special attention and compliance with the instructions for use specific to each proprietary medicinal product are therefore required.

#### History of HIT (>100 days)

Use of enoxaparin sodium in patients with a history of immune mediated HIT within the past 100 days or in the presence of circulating antibodies is contraindicated (see section 4.3). Circulating antibodies may persist several years.

Enoxaparin sodium is to be used with extreme caution in patients with a history (>100 days) of heparin-induced thrombocytopenia without circulating antibodies. The decision to use enoxaparin sodium in such a case must be made only after a careful benefit risk assessment and after non-heparin alternative treatments are considered (e.g. danaparoid sodium or lepirudin).

#### Monitoring of platelet counts

In patients with cancer with a platelet count below 80 G/L, anticoagulation treatment can only be considered on a case-by-case basis and careful monitoring is recommended.

The risk of antibody-mediated HIT also exists with LMWHs. Should thrombocytopenia occur, it usually appears between the 5<sup>th</sup> and the 21<sup>st</sup> day following the beginning of enoxaparin sodium treatment. The risk of HIT is higher in postoperative patients and mainly after cardiac surgery and in patients with cancer.

Therefore, it is recommended that the platelet counts be measured before the initiation of therapy with enoxaparin sodium and then regularly thereafter during the treatment.

If there are clinical symptoms suggestive of HIT (any new episode of arterial and/or venous thromboembolism, any painful skin lesion at the injection site, any allergic or anaphylactoid reactions on treatment), platelet count should be measured. Patients must be aware that these symptoms may occur and if so, that they should inform their primary care physician.

In practice, if a confirmed significant decrease of the platelet count is observed (30 to 50 % of the initial value), enoxaparin sodium treatment must be immediately discontinued and the patient switched to another non-heparin anticoagulant alternative treatment.

### Haemorrhage

As with other anticoagulants, bleeding may occur at any site. If bleeding occurs, the origin of the haemorrhage should be investigated and appropriate treatment instituted.

Enoxaparin sodium, as with any other anticoagulant therapy, should be used with caution in conditions with increased potential for bleeding, such as:

- impaired haemostasis,
- history of peptic ulcer,
- recent ischemic stroke,
- severe arterial hypertension,
- recent diabetic retinopathy,
- neuro- or ophthalmologic surgery,
- concomitant use of medicinal products affecting haemostasis (see section 4.5).

### Laboratory tests

At doses used for prophylaxis of venous thromboembolism, enoxaparin sodium does not influence bleeding time and global blood coagulation tests significantly, nor does it affect platelet aggregation or binding of fibrinogen to platelets.

At higher doses, increases in activated partial thromboplastin time (aPTT), and activated clotting time (ACT) may occur. Increases in aPTT and ACT are not linearly correlated with increasing enoxaparin sodium antithrombotic activity and therefore are unsuitable and unreliable for monitoring enoxaparin sodium activity.

### Spinal/Epidural anaesthesia or lumbar puncture

Spinal/epidural anaesthesia or lumbar puncture must not be performed within 24 hours of administration of enoxaparin sodium at therapeutic doses (see also section 4.3).

There have been cases of neuraxial haematomas reported with the concurrent use of enoxaparin sodium and spinal/epidural anaesthesia or spinal puncture procedures resulting in long term or permanent paralysis.

These events are rare with enoxaparin sodium dose regimens 4,000 IU (40 mg) once daily or lower. The risk of these events is higher with the use of post-operative indwelling epidural catheters, with the concomitant use of additional medicinal products affecting haemostasis such as Non-Steroidal Anti-Inflammatory Drugs (NSAIDs), with traumatic or repeated epidural or spinal puncture, or in patients with a history of spinal surgery or spinal deformity.

To reduce the potential risk of bleeding associated with the concurrent use of enoxaparin sodium and epidural or spinal anaesthesia/analgesia or spinal puncture, consider the pharmacokinetic profile of enoxaparin sodium (see section 5.2). Placement or removal of an epidural catheter or lumbar puncture is best performed when the anticoagulant effect of enoxaparin sodium is low; however, the exact timing to reach a sufficiently low anticoagulant effect in each patient is not known. For patients with creatinine clearance [15-30 mL/minute], additional considerations are necessary because elimination of enoxaparin sodium is more prolonged (see section 4.2).



Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, frequent monitoring must be exercised to detect any signs and symptoms of neurological impairment such as midline back pain, sensory and motor deficits (numbness or weakness in lower limbs), bowel and/or bladder dysfunction. Instruct patients to report immediately if they experience any of the above signs or symptoms. If signs or symptoms of spinal hematoma are suspected, initiate urgent diagnosis and treatment including consideration for spinal cord decompression even though such treatment may not prevent or reverse neurological sequelae.

#### Skin necrosis/cutaneous vasculitis

Skin necrosis and cutaneous vasculitis have been reported with LMWHs and should lead to prompt treatment discontinuation.

#### Percutaneous coronary revascularization procedures

To minimise the risk of bleeding following the vascular instrumentation during the treatment of unstable angina, NSTEMI and acute STEMI, adhere precisely to the intervals recommended between enoxaparin sodium injection doses. It is important to achieve haemostasis at the puncture site after PCI. In case a closure device is used, the sheath can be removed immediately. If a manual compression method is used, sheath should be removed 6 hours after the last intravenous/ subcutaneous enoxaparin sodium injection. If the treatment with enoxaparin sodium is to be continued, the next scheduled dose should be given no sooner than 6 to 8 hours after sheath removal. The site of the procedure should be observed for signs of bleeding or hematoma formation.

#### Acute infective endocarditis

Use of heparin is usually not recommended in patients with acute infective endocarditis due to the risk of cerebral haemorrhage. If such use is considered absolutely necessary, the decision must be made only after a careful individual benefit risk assessment.

#### Mechanical prosthetic heart valves

The use of enoxaparin sodium has not been adequately studied for thromboprophylaxis in patients with mechanical prosthetic heart valves. Isolated cases of prosthetic heart valve thrombosis have been reported in patients with mechanical prosthetic heart valves who have received enoxaparin sodium for thromboprophylaxis. Confounding factors, including underlying disease and insufficient clinical data, limit the evaluation of these cases. Some of these cases were pregnant women in whom thrombosis led to maternal and foetal death.

##### *Pregnant women with mechanical prosthetic heart valves*

The use of enoxaparin sodium for thromboprophylaxis in pregnant women with mechanical prosthetic heart valves has not been adequately studied. In a clinical study of pregnant women with mechanical prosthetic heart valves given enoxaparin sodium (100 IU/kg (1 mg/kg) twice daily) to reduce the risk of thromboembolism, 2 of 8 women developed clots resulting in blockage of the valve and leading to maternal and foetal death. There have been isolated post-marketing reports of valve thrombosis in pregnant women with mechanical prosthetic heart valves while receiving enoxaparin sodium for thromboprophylaxis. Pregnant women with mechanical prosthetic heart valves may be at higher risk for thromboembolism.

#### Elderly

No increased bleeding tendency is observed in the elderly with the prophylactic dose ranges. Elderly patients (especially patients eighty years of age and older) may be at an increased risk for bleeding complications with the therapeutic dose ranges. Careful clinical monitoring is advised and dose reduction might be considered in patients older than 75 years treated for STEMI (see sections 4.2 and 5.2).

#### Renal impairment

- In patients with renal impairment, there is an increase in exposure of enoxaparin sodium which increases the risk of bleeding. In these patients, careful clinical monitoring is advised, and biological monitoring by anti-Xa activity measurement might be considered (see sections 4.2 and 5.2).
- Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance <15 mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

In patients with severe renal impairment (creatinine clearance 15-30 mL/min), since exposure of enoxaparin sodium is significantly increased, a dose adjustment is recommended for therapeutic and prophylactic dose ranges (see section 4.2).

No dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment.

### Hepatic impairment

Enoxaparin sodium should be used with caution in patients with hepatic impairment due to an increased potential for bleeding. Dose adjustment based on monitoring of anti-Xa levels is unreliable in patients with liver cirrhosis and not recommended (see section 5.2).

### Low weight

An increase in exposure of enoxaparin sodium with prophylactic doses (non-weight adjusted) has been observed in low-weight women (<45 kg) and low-weight men (<57 kg), which may lead to a higher risk of bleeding. Therefore, careful clinical monitoring is advised in these patients (see section 5.2).

### Obese patients

Obese patients are at higher risk for thromboembolism. The safety and efficacy of prophylactic doses in obese patients (BMI >30 kg/m<sup>2</sup>) has not been fully determined and there is no consensus for dose adjustment. These patients should be observed carefully for signs and symptoms of thromboembolism.

### Hyperkalaemia

Heparins can suppress adrenal secretion of aldosterone leading to hyperkalaemia (see section 4.8), particularly in patients such as those with diabetes mellitus, chronic renal failure, pre-existing metabolic acidosis, taking medicinal products known to increase potassium (see section 4.5). Plasma potassium should be monitored regularly especially in patients at risk.

### Benzyl alcohol

Benzyl alcohol may cause allergic reactions.

Intravenous administration of benzyl alcohol has been associated with serious adverse events and death in neonates ("Gasping Syndrome") (see section 4.3). The minimum amount of benzyl alcohol at which toxicity may occur is not known. Benzyl alcohol may also cause toxic reactions in infants and children up to 3 years old, due to increased risk of accumulation.

High volumes of medicinal products containing benzyl alcohol should be used with caution and only if necessary in patients with liver or kidney impairment, or in pregnant women, because of the risk of accumulation of benzyl alcohol and its toxicity (metabolic acidosis).

### Sodium

This medicinal product contains less than 1 mmol sodium (23 mg) per dose within the recommended dose range, that is to say essentially 'sodium-free'.

### Acute generalized exanthematous pustulosis

Acute generalized exanthematous pustulosis (AGEP) has been reported with frequency not known in association with enoxaparin treatment. At the time of prescription patients should be advised of the signs and symptoms and monitored closely for skin reactions. If signs and symptoms suggestive of these reactions appear, enoxaparin should be withdrawn immediately and an alternative treatment considered (as appropriate).

## 4.5 Interaction with other medicinal products and other forms of interaction

### Concomitant use not recommended

#### Medicinal products affecting haemostasis (see section 4.4)

It is recommended that some agents which affect haemostasis should be discontinued prior to enoxaparin sodium therapy unless strictly indicated. If the combination is indicated, enoxaparin sodium should be used with careful clinical and laboratory monitoring when appropriate. These agents include medicinal products such as:

- Systemic salicylates, acetylsalicylic acid at anti-inflammatory doses, and NSAIDs including ketorolac,
- Other thrombolytics (e.g. alteplase, reteplase, streptokinase, tenecteplase, urokinase) and anticoagulants (see section 4.2).

### Concomitant use with caution

The following medicinal products may be administered with caution concomitantly with enoxaparin sodium:

- *Other medicinal products affecting haemostasis such as:*
  - Platelet aggregation inhibitors including acetylsalicylic acid used at antiaggregant dose (cardioprotection), clopidogrel, ticlopidine, and glycoprotein IIb/IIIa antagonists indicated in acute coronary syndrome due to the risk of bleeding,
  - Dextran 40,
  - Systemic glucocorticoids.
- *Medicinal products increasing potassium levels*

Medicinal products that increase serum potassium levels may be administered concurrently with enoxaparin sodium under careful clinical and laboratory monitoring (see sections 4.4 and 4.8).

## 4.6 Fertility, pregnancy and lactation

### Pregnancy

In humans, there is no evidence that enoxaparin crosses the placental barrier during the second and third trimester of pregnancy. There is no information available concerning the first trimester.

Animal studies have not shown any evidence of foetotoxicity or teratogenicity (see section 5.3). Animal data have shown that enoxaparin passage through the placenta is minimal.

Enoxaparin sodium should be used during pregnancy only if the physician has established a clear need.

Pregnant women receiving enoxaparin sodium should be carefully monitored for evidence of bleeding or excessive anticoagulation and should be warned of the haemorrhagic risk. Overall, the data suggest that there is no evidence for an increased risk of haemorrhage, thrombocytopenia or osteoporosis with respect to the risk observed in non-pregnant women, other than that observed in pregnant women with prosthetic heart valves (see section 4.4).

If an epidural anaesthesia is planned, it is recommended to withdraw enoxaparin sodium treatment before (see section 4.4).

As benzyl alcohol may cross the placenta, it is recommended to use a formulation that does not contain benzyl alcohol.

## Breast-feeding

It is not known whether unchanged enoxaparin is excreted in human breast milk. In lactating rats, the passage of enoxaparin or its metabolites in milk is very low. The oral absorption of enoxaparin sodium is unlikely. Inhixa can be used during breastfeeding.

## Fertility

There are no clinical data for enoxaparin sodium in fertility. Animal studies did not show any effect on fertility (see section 5.3).

### **4.7 Effects on ability to drive and use machines**

Enoxaparin sodium has no or negligible influence on the ability to drive and use machines.

### **4.8 Undesirable effects**

#### Summary of the safety profile

Enoxaparin sodium has been evaluated in more than 15,000 patients who received enoxaparin sodium in clinical trials. These included 1,776 for prophylaxis of DVT following orthopaedic or abdominal surgery in patients at risk for thromboembolic complications, 1,169 for prophylaxis of DVT in acutely ill medical patients with severely restricted mobility, 559 for treatment of DVT with or without PE, 1,578 for treatment of unstable angina and non-Q-wave myocardial infarction and 10,176 for treatment of acute STEMI.

Enoxaparin sodium regimen administered during these clinical trials varies depending on indications. The enoxaparin sodium dose was 4,000 IU (40 mg) subcutaneously once daily for prophylaxis of DVT following surgery or in acutely ill medical patients with severely restricted mobility. In treatment of DVT with or without PE, patients receiving enoxaparin sodium were treated with either a 100 IU/kg (1 mg/kg) subcutaneous dose every 12 hours or a 150 IU/kg (1.5 mg/kg) subcutaneous dose once a day. In the clinical trials for treatment of unstable angina and non-Q-wave myocardial infarction, doses were 100 IU/kg (1 mg/kg) subcutaneously every 12 hours, and in the clinical study for treatment of acute STEMI enoxaparin sodium regimen was a 3,000 IU (30 mg) intravenous bolus followed by 100 IU/kg (1 mg/kg) subcutaneously every 12 hours.

In clinical trials, haemorrhages, thrombocytopenia and thrombocytosis were the most commonly reported reactions (see sections 4.4 and “Description of selected adverse reactions” below).

The safety profile of enoxaparin for extended treatment of DVT and PE in patients with active cancer is similar to its safety profile for the treatment of DVT and PE.

Acute generalized exanthematous pustulosis (AGEP) has been reported in association with enoxaparin treatment (see section 4.4).

#### Tabulated list of adverse reactions

Other adverse reactions observed in clinical trials and reported in post-marketing experience (\* indicates reactions from post-marketing experience) are detailed below.

Frequencies are defined as follows: very common ( $\geq 1/10$ ); common ( $\geq 1/100$  to  $< 1/10$ ); uncommon ( $\geq 1/1,000$  to  $< 1/100$ ); rare ( $\geq 1/10,000$  to  $< 1/1,000$ ); and very rare ( $< 1/10,000$ ) or not known (cannot be estimated from available data). Within each system organ class, adverse reactions are presented in order of decreasing seriousness.

#### *Blood and the lymphatic system disorders*

Common: Haemorrhage, haemorrhagic anaemia\*, thrombocytopenia, thrombocytosis

Rare: Eosinophilia\*

Rare: Cases of immuno-allergic thrombocytopenia with thrombosis; in some of them thrombosis was complicated by organ infarction or limb ischaemia (see section 4.4).

#### *Immune system disorders*

Common: Allergic reaction

Rare: Anaphylactic/Anaphylactoid reactions including shock\*

#### *Nervous system disorders*

Common: Headache\*

#### *Vascular disorders*

Rare: Spinal haematoma\* (or neuraxial haematoma). These reactions have resulted in varying degrees of neurologic injuries including long-term or permanent paralysis (see section 4.4).

#### *Hepatobiliary disorders*

Very common: Hepatic enzyme increases (mainly transaminases > 3 times the upper limit of normality)

Uncommon: Hepatocellular liver injury \*

Rare: Cholestatic liver injury\*

#### *Skin and subcutaneous tissue disorders*

Common: Urticaria, pruritus, erythema

Uncommon: Bullous dermatitis

Rare: Alopecia\*

Rare: Cutaneous vasculitis\*, skin necrosis\* usually occurring at the injection site (these phenomena have been usually preceded by purpura or erythematous plaques, infiltrated and painful).

Injection site nodules\* (inflammatory nodules, which were not cystic enclosure of enoxaparin). They resolve after a few days and should not cause treatment discontinuation.

Not known: Acute generalized exanthematous pustulosis (AGEP)

#### *Musculoskeletal and connective tissue disorders*

Rare: Osteoporosis\* following long term therapy (greater than 3 months)

#### *General disorders and administration site conditions*

Common: Injection site haematoma, injection site pain, other injection site reaction (such as oedema, haemorrhage, hypersensitivity, inflammation, mass, pain, or reaction)

Uncommon: Local irritation, skin necrosis at injection site

#### *Investigations*

Rare: Hyperkalaemia\* (see sections 4.4 and 4.5).

### Description of selected adverse reactions

#### *Haemorrhages*

These included major haemorrhages, reported at most in 4.2 % of the patients (surgical patients). Some of these cases have been fatal. In surgical patients, haemorrhage complications were considered major: (1) if the haemorrhage caused a significant clinical event, or (2) if accompanied by haemoglobin decrease  $\geq 2$  g/dL or transfusion of 2 or more units of blood products. Retroperitoneal and intracranial haemorrhages were always considered major.

As with other anticoagulants, haemorrhage may occur in the presence of associated risk factors such as: organic lesions liable to bleed, invasive procedures or the concomitant use of medicinal products affecting haemostasis (see sections 4.4 and 4.5).

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
<i>Blood and lymphatic system disorders</i>	<i>Very common:</i> Haemorrhage <sup>a</sup>  <i>Rare:</i> Retroperitoneal haemorrhage	<i>Common:</i> Haemorrhage <sup>a</sup>	<i>Very common:</i> Haemorrhage <sup>a</sup>  <i>Uncommon:</i> Intracranial haemorrhage, Retroperitoneal haemorrhage	<i>Common</i> <sup>b</sup> : Haemorrhage	<i>Common:</i> Haemorrhage <sup>a</sup>  <i>Rare:</i> Retroperitoneal haemorrhage	<i>Common:</i> Haemorrhage <sup>a</sup>  <i>Uncommon:</i> Intracranial haemorrhage, Retroperitoneal haemorrhage

<sup>a</sup>: such as haematoma, ecchymosis other than at injection site, wound haematoma, haematuria, epistaxis and gastro-intestinal haemorrhage.

<sup>b</sup>: frequency based on a retrospective study on a registry including 3526 patients (see section 5.1)

#### *Thrombocytopenia and thrombocytosis (see section 4.4 monitoring of platelet counts)*

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
<i>Blood and lymphatic system disorders</i>	<i>Very common:</i> Thrombocytosis <sup>β</sup>  <i>Common:</i> Thrombocytopenia	<i>Uncommon:</i> Thrombocytopenia	<i>Very common:</i> Thrombocytosis <sup>β</sup>  <i>Common:</i> Thrombocytopenia	<i>Unknown:</i> Thrombocytopenia	<i>Uncommon:</i> Thrombocytopenia	<i>Common:</i> Thrombocytosis <sup>β</sup> Thrombocytopenia  <i>Very rare:</i> Immuno-allergic thrombocytopenia

<sup>β</sup>: Platelet increased >400 G/L

#### Paediatric population

The safety and efficacy of enoxaparin sodium in children have not been established (see section 4.2).

Intravenous administration of benzyl alcohol has been associated with serious adverse events and death in neonates (“Gasping Syndrome”) (see section 4.3).

Benzyl alcohol may also cause toxic reactions in infants and children up to 3 years old, due to increased risk of accumulation (see section 4.4).

#### Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via [the national reporting system listed in Appendix V](#).

## 4.9 Overdose

### Signs and symptoms

Accidental overdose with enoxaparin sodium after intravenous, extracorporeal or subcutaneous administration may lead to haemorrhagic complications. Following oral administration of even large doses, it is unlikely that enoxaparin sodium will be absorbed.

### Management

The anticoagulant effects can be largely neutralised by the slow intravenous injection of protamine. The dose of protamine depends on the dose of enoxaparin sodium injected; 1 mg protamine neutralises the anticoagulant effect of 100 IU (1 mg) of enoxaparin sodium, if enoxaparin sodium was administered in the previous 8 hours. An infusion of 0.5 mg protamine per 100 IU (1 mg) of enoxaparin sodium may be administered if enoxaparin sodium was administered greater than 8 hours previous to the protamine administration, or if it has been determined that a second dose of protamine is required. After 12 hours of the enoxaparin sodium injection, protamine administration may not be required. However, even with high doses of protamine, the anti-Xa activity of enoxaparin sodium is never completely neutralised (maximum about 60%) (see the prescribing information for protamine salts).

## 5. PHARMACOLOGICAL PROPERTIES

### 5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Antithrombotic agents, heparin group. ATC code: B01A B05

Inhixa is a biosimilar medicinal product. Detailed information is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.

### Pharmacodynamic effects

Enoxaparin is a LMWH with a mean molecular weight of approximately 4,500 daltons, in which the antithrombotic and anticoagulant activities of standard heparin have been dissociated. The active substance is the sodium salt.

In the *in vitro* purified system, enoxaparin sodium has a high anti-Xa activity (approximately 100 IU/mg) and low anti-IIa or anti thrombin activity (approximately 28 IU/mg), with a ratio of 3.6. These anticoagulant activities are mediated through anti-thrombin III (ATIII) resulting in anti-thrombotic activities in humans.

Beyond its anti-Xa/IIa activity, further antithrombotic and anti-inflammatory properties of enoxaparin have been identified in healthy subjects and patients as well as in non-clinical models. These include ATIII-dependent inhibition of other coagulation factors like factor VIIa, induction of endogenous Tissue Factor Pathway Inhibitor (TFPI) release as well as a reduced release of von Willebrand factor (vWF) from the vascular endothelium into the blood circulation. These factors are known to contribute to the overall antithrombotic effect of enoxaparin sodium.

When used as prophylactic treatment, enoxaparin sodium does not significantly affect the aPTT. When used as curative treatment, aPTT can be prolonged by 1.5-2.2 times the control time at peak activity.

### Clinical efficacy and safety

#### *Prevention of venous thromboembolic disease associated with surgery*

##### *Extended prophylaxis of VTE following orthopaedic surgery*

In a double blind study of extended prophylaxis for patients undergoing hip replacement surgery, 179 patients with no venous thromboembolic disease initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) subcutaneously, were randomised to a post-discharge regimen of either enoxaparin

sodium 4,000 IU (40 mg) (n=90) once a day subcutaneously or to placebo (n=89) for 3 weeks. The incidence of DVT during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo, no PE was reported. No major bleeding occurred. The efficacy data are provided in the table below.

	Enoxaparin sodium 4,000 IU (40 mg) once a day subcutaneously n (%)	Placebo once a day subcutaneously n (%)
All treated extended prophylaxis patients	90 (100)	89 (100)
Total VTE (%)	6 (6.6)	18 (20.2)
Total DVT (%)	6 (6.6)*	18 (20.2)
Proximal DVT (%)	5 (5.6)#	7 (8.8)

\*p value versus placebo =0.008

#p value versus placebo =0.537

In a second double-blind study, 262 patients without VTE disease and undergoing hip replacement surgery initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) subcutaneously were randomised to a post-discharge regimen of either enoxaparin sodium 4,000 IU (40 mg) (n=131) once a day subcutaneously or to placebo (n=131) for 3 weeks. Similar to the first study the incidence of VTE during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo for both total VTE (enoxaparin sodium 21 [16%] versus placebo 45 [34.4%]; p=0.001) and proximal DVT (enoxaparin sodium 8 [6.1%] versus placebo 28 [21.4%]; p<0.001). No difference in major bleeding was found between the enoxaparin sodium and the placebo group.

#### *Extended prophylaxis of DVT following cancer surgery*

A double-blind, multicentre trial, compared a four-week and a one-week regimen of enoxaparin sodium prophylaxis in terms of safety and efficacy in 332 patients undergoing elective surgery for abdominal or pelvic cancer. Patients received enoxaparin sodium (4,000 IU (40 mg) subcutaneously) daily for 6 to 10 days and were then randomly assigned to receive either enoxaparin sodium or placebo for another 21 days. Bilateral venography was performed between days 25 and 31, or sooner if symptoms of venous thromboembolism occurred. The patients were followed for three months. Enoxaparin sodium prophylaxis for four weeks after surgery for abdominal or pelvic cancer significantly reduced the incidence of venographically demonstrated thrombosis, as compared with enoxaparin sodium prophylaxis for one week. The rates of venous thromboembolism at the end of the double-blind phase were 12.0 % (n=20) in the placebo group and 4.8% (n=8) in the enoxaparin sodium group; p=0.02. This difference persisted at three months [13.8% vs. 5.5% (n=23 vs 9), p=0.01]. There were no differences in the rates of bleeding or other complications during the double-blind or follow-up periods.

#### *Prophylaxis of venous thromboembolic disease in medical patients with an acute illness expected to induce limitation of mobility*

In a double blind multicentre, parallel group study, enoxaparin sodium 2,000 IU (20 mg) or 4,000 IU (40 mg) once a day subcutaneously was compared to placebo in the prophylaxis of DVT in medical patients with severely restricted mobility during acute illness (defined as walking distance of <10 meters for ≤3 days). This study included patients with heart failure (NYHA Class III or IV); acute respiratory failure or complicated chronic respiratory insufficiency, and acute infection or acute rheumatic; if associated with at least one VTE risk factor (age ≥75 years, cancer, previous VTE, obesity, varicose veins, hormone therapy, and chronic heart or respiratory failure).

A total of 1,102 patients were enrolled in the study, and 1,073 patients were treated. Treatment continued for 6 to 14 days (median duration 7 days). When given at a dose of 4,000 IU (40 mg) once a day subcutaneously, enoxaparin sodium significantly reduced the incidence of VTE as compared to placebo. The efficacy data are provided in the table below.

	Enoxaparin sodium 2,000 IU (20 mg)	Enoxaparin sodium 4,000 IU (40 mg)	Placebo n (%)
--	---------------------------------------	---------------------------------------	------------------



	once a day subcutaneously n (%)	once a day subcutaneously n (%)	
All treated medical patients during acute illness	287 (100)	291(100)	288 (100)
Total VTE (%)	43 (15.0)	16 (5.5)*	43 (14.9)
Total DVT (%)	43 (15.0)	16 (5.5)	40 (13.9)
Proximal DVT (%)	13 (4.5)	5 (1.7)	14 (4.9)

VTE = Venous thromboembolic events which included DVT, PE, and death considered to be thromboembolic in origin

\* p value versus placebo = 0.0002

At approximately 3 months following enrolment, the incidence of VTE remained significantly lower in the enoxaparin sodium 4,000 IU (40 mg) treatment group versus the placebo treatment group.

The occurrence of total and major bleeding were respectively 8.6% and 1.1% in the placebo group, 11.7% and 0.3% in the enoxaparin sodium 2,000 IU (20 mg) group and 12.6% and 1.7% in the enoxaparin sodium 4,000 IU (40 mg) group.

#### *Treatment of DVT with or without PE*

In a multicentre, parallel group study, 900 patients with acute lower extremity DVT with or without PE were randomised to an inpatient (hospital) treatment of either (i) enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day subcutaneously, (ii) enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours subcutaneously, or (iii) heparin intravenous bolus (5,000 IU) followed by a continuous infusion (administered to achieve an aPTT of 55 to 85 seconds). A total of 900 patients were randomised in the study and all patients were treated. All patients also received warfarin sodium (dose adjusted according to prothrombin time to achieve an INR of 2.0 to 3.0), commencing within 72 hours of initiation of enoxaparin sodium or standard heparin therapy, and continuing for 90 days. Enoxaparin sodium or standard heparin therapy was administered for a minimum of 5 days and until the targeted warfarin sodium INR was achieved. Both enoxaparin sodium regimens were equivalent to standard heparin therapy in reducing the risk of recurrent venous thromboembolism (DVT and/or PE). The efficacy data are provided in the table below.

	Enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day subcutaneously n (%)	Enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day subcutaneously n (%)	Heparin aPTT Adjusted Intravenous Therapy n (%)
All treated DVT patients with or without PE	298 (100)	312 (100)	290 (100)
Total VTE (%)	13 (4.4)*	9 (2.9)*	12 (4.1)
DVT only (%)	11 (3.7)	7 (2.2)	8 (2.8)
Proximal DVT (%)	9 (3.0)	6 (1.9)	7 (2.4)
PE (%)	2 (0.7)	2 (0.6)	4 (1.4)

VTE = venous thromboembolic event (DVT and/or PE)

\* The 95% confidence intervals for the treatment differences for total VTE were:

- enoxaparin sodium once a day versus heparin (-3.0 to 3.5)
- enoxaparin sodium every 12 hours versus heparin (-4.2 to 1.7).

Major bleeding were respectively 1.7% in the enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day group, 1.3% in the enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day group and 2.1% in the heparin group.

#### *Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer*

In clinical trials with limited number of patients, reported rates of recurrent VTE in patients treated with enoxaparin given once or twice daily for 3 to 6 months appear comparable to those with warfarin.

Effectiveness in real-life setting was assessed in a cohort of 4,451 patients with symptomatic VTE and active cancer from the multinational registry RIETE of patients with VTE and other thrombotic conditions. 3,526

patients received SC enoxaparin up to 6 months and 925 patients received tinzaparin or dalteparin SC. Among the 3,526 patients receiving enoxaparin treatment, 891 patients were treated with 1.5 mg/kg once daily as initial therapy and extended treatment up to 6 months (once daily alone), 1,854 patients received initial 1.0 mg/kg twice daily regimen and extended treatment up to 6 months (twice daily alone), and 687 patients received 1.0 mg/kg twice daily as initial treatment followed by 1.5 mg/kg once daily (twice daily-once daily) as the extended treatment up to 6 months. The mean and median duration of treatment until regimen change was 17 days and 8 days, respectively. There was no significant difference for VTE recurrence rate between the two treatments groups (see table), with enoxaparin meeting the prespecified criterion for non inferiority of 1.5 (HR adjusted by relevant covariates 0.817, 95% CI: 0.499-1.336). There was no statistically significant difference between the two treatment groups with regards to the relative risks of major (fatal or non-fatal) bleeding and all-cause death (see table).

**Table. Efficacy and safety outcomes in the RIETECAT study**

<b>Outcome</b>	<b>Enoxaparin n=3526</b>	<b>Other LMWH n=925</b>	<b>Adjusted hazard ratios enoxaparin / other LMWH [95% confidence interval]</b>
VTE recurrence	70 (2.0%)	23 (2.5%)	0.817, [ 0.499-1.336]
Major bleeding	111 (3.1%)	18 (1.9%)	1.522, [ 0.899-2.577]
Non-major bleeding	87 (2.5%)	24 (2.6%)	0.881, [0.550-1.410]
Overall death	666 (18.9%)	157 (17.0%)	0.974, [ 0.813-1.165]

An overview of outcomes per treatment regimen used in the RIETECAT study among 6-month completers is provided below:

**Table. 6-month outcomes in patients completing 6-month treatment, by different regimens**

<b>Outcome N (%) (95% CI)</b>	<b>Enoxapa rin all regimens</b>	<b>Enoxaparin all regimens</b>					<b>EU- authorized LMWHs</b>
		<b>Enoxapa rin OD</b>	<b>Enoxapa rin BID</b>	<b>Enoxapa rin BID to OD</b>	<b>Enoxapar in OD to BID</b>	<b>Enoxapar in More than one switch</b>	
	N=1432	N=444	N=529	N=406	N=14	N=39	N=428
Recurrence of VTE	70 (4.9%) (3.8%- 6.0%)	33 (7.4%) (5.0%- 9.9%)	22 (4.2%) (2.5%- 5.9%)	10 (2.5%) (0.9%- 4.0%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	23 (5.4%) (3.2%- 7.5%)
Major bleeding (fatal and non-fatal)	111 (7.8%) (6.4%- 9.1%)	31 (7.0%) (4.6%- 9.4%)	52 (9.8%) (7.3%- 12.4%)	21 (5.2%) (3.0%- 7.3%)	1 (7.1%) (0%- 22.6%)	6 (15.4%) (3.5%- 27.2%)	18 (4.2%) (2.3%- 6.1%)
Non-major bleedings of clinical significance	87 (6.1%) (4.8%- 7.3%)	26 (5.9%) (3.7%- 8.0%)	33 (6.2%) (4.2%- 8.3%)	23 (5.7%) (3.4%- 7.9%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	24 (5.6%) (3.4%- 7.8%)
All-cause death	666 (46.5%) (43.9%- 49.1%)	175 (39.4%) (34.9%- 44.0%)	323 (61.1%) (56.9%- 65.2%)	146 (36.0%) (31.3%- 40.6%)	6 (42.9%) (13.2%- 72.5%)	16 (41.0%) (24.9%- 57.2%)	157 (36.7%) (32.1%- 41.3%)
Fatal PE or fatal bleeding related death	48 (3.4%) (2.4%- 4.3%)	7 (1.6%) (0.4%- 2.7%)	35 (6.6%) (4.5%- 8.7%)	5 (1.2%) (0.2%- 2.3%)	0 (0%) -	1 (2.6%) (0%- 7.8%)	11 (2.6%) (1.1%- 4.1%)

\*All data with 95% CI

### Treatment of unstable angina and non ST elevation myocardial infarction

In a large multicentre study, 3,171 patients enrolled at the acute phase of unstable angina or non-Q-wave myocardial infarction were randomised to receive in association with acetylsalicylic acid (100 to 325 mg once daily), either subcutaneous enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours or intravenous unfractionated heparin adjusted based on aPTT. Patients had to be treated in hospital for a minimum of 2 days and a maximum of 8 days, until clinical stabilization, revascularization procedures or hospital discharge. The patients had to be followed up to 30 days. In comparison with heparin, enoxaparin sodium significantly reduced the combined incidence of angina pectoris, myocardial infarction and death, with a decrease of 19.8 to 16.6% (relative risk reduction of 16.2%) on day 14. This reduction in the combined incidence was maintained after 30 days (from 23.3 to 19.8%; relative risk reduction of 15%). There were no significant differences in major haemorrhages, although a haemorrhage at the site of the subcutaneous injection was more frequent.

### Treatment of acute ST-segment elevation myocardial infarction

In a large multicentre study, 20,479 patients with STEMI eligible to receive fibrinolytic therapy were randomised to receive either enoxaparin sodium in a single 3,000 IU (30 mg) intravenous bolus plus a 100 IU/kg (1 mg/kg) subcutaneous dose followed by an subcutaneous injection of 100 IU/kg (1 mg/kg) every 12 hours or intravenous unfractionated heparin adjusted based on aPTT for 48 hours. All patients were also treated with acetylsalicylic acid for a minimum of 30 days. The enoxaparin sodium dosing strategy was adjusted for severe renally impaired patients and for the elderly of at least 75 years of age. The subcutaneous injections of enoxaparin sodium were given until hospital discharge or for a maximum of eight days (whichever came first).

4,716 patients underwent percutaneous coronary intervention receiving antithrombotic support with blinded investigational medicinal product. Therefore, for patients on enoxaparin sodium, the PCI was to be performed on enoxaparin sodium (no switch) using the regimen established in previous studies i.e. no additional dosing, if last subcutaneous administration given less than 8 hours before balloon inflation, intravenous bolus of 30 IU/kg (0.3 mg/kg) enoxaparin sodium, if the last subcutaneous administration given more than 8 hours before balloon inflation.

Enoxaparin sodium compared to unfractionated heparin significantly decreased the incidence of the primary end point, a composite of death from any cause or myocardial re-infarction in the first 30 days after randomization [9.9 percent in the enoxaparin sodium group, as compared with 12.0 percent in the unfractionated heparin group] with a 17 percent relative risk reduction ( $p < 0.001$ ).

The treatment benefits of enoxaparin sodium, evident for a number of efficacy outcomes, emerged at 48 hours, at which time there was a 35 percent reduction in the relative risk of myocardial re-infarction, as compared with treatment with unfractionated heparin ( $p < 0.001$ ).

The beneficial effect of enoxaparin sodium on the primary end point was consistent across key subgroups including age, gender, infarct location, history of diabetes, history of prior myocardial infarction, type of fibrinolytic administered, and time to treatment with the investigational medicinal product.

There was a significant treatment benefit of enoxaparin sodium, as compared with unfractionated heparin, in patients who underwent percutaneous coronary intervention within 30 days after randomization (23 percent reduction in relative risk) or who were treated medically (15 percent reduction in relative risk,  $p = 0.27$  for interaction).

The rate of the 30 day composite endpoint of death, myocardial re-infarction or intracranial haemorrhage (a measure of net clinical benefit) was significantly lower ( $p < 0.0001$ ) in the enoxaparin sodium group (10.1%) as compared to the heparin group (12.2%), representing a 17% relative risk reduction in favour of treatment with enoxaparin sodium.

The incidence of major bleeding at 30 days was significantly higher ( $p < 0.0001$ ) in the enoxaparin sodium group (2.1%) versus the heparin group (1.4%). There was a higher incidence of gastrointestinal bleeding in the enoxaparin sodium group (0.5%) versus the heparin group (0.1%), while the incidence of intracranial haemorrhage was similar in both groups (0.8% with enoxaparin sodium versus 0.7% with heparin).

The beneficial effect of enoxaparin sodium on the primary end point observed during the first 30 days was maintained over a 12 month follow-up period.

### Hepatic impairment

Based on literature data the use of enoxaparin sodium 4,000 IU (40 mg) in cirrhotic patients (Child-Pugh class B-C) appears to be safe and effective in preventing portal vein thrombosis. It should be noted that the literature studies may have limitations. Caution should be used in patients with hepatic impairment as these patients have an increased potential for bleeding (see section 4.4) and no formal dose finding studies have been performed in cirrhotic patients (Child Pugh class A, B nor C).

## **5.2 Pharmacokinetic properties**

### General characteristics

The pharmacokinetic parameters of enoxaparin sodium have been studied primarily in terms of the time course of plasma anti-Xa activity and also by anti-IIa activity, at the recommended dose ranges after single and repeated subcutaneous administration and after single intravenous administration. The quantitative determination of anti-Xa and anti-IIa pharmacokinetic activities was conducted by validated amidolytic methods.

### Absorption

The absolute bioavailability of enoxaparin sodium after subcutaneous injection, based on anti-Xa activity, is close to 100%.

Different doses and formulations and dosing regimens can be used.

The mean maximum plasma anti-Xa activity level is observed 3 to 5 hours after subcutaneous injection and achieves approximately 0.2, 0.4, 1.0 and 1.3 anti-Xa IU/mL following single subcutaneous administration of 2,000 IU, 4,000 IU, 100 IU/kg and 150 IU/kg (20 mg, 40 mg, 1 mg/kg and 1.5 mg/kg) doses, respectively.

A 3,000 IU (30 mg) intravenous bolus immediately followed by a 100 IU/kg (1 mg/kg) subcutaneous every 12 hours provided initial maximum anti-Xa activity level of 1.16 IU/mL (n=16) and average exposure corresponding to 88% of steady-state levels. Steady-state is achieved on the second day of treatment.

After repeated subcutaneous administration of 4,000 IU (40 mg) once daily and 150 IU/kg (1.5 mg/kg) once daily regimens in healthy volunteers, the steady-state is reached on day 2 with an average exposure ratio about 15% higher than after a single dose. After repeated subcutaneous administration of the 100 IU/kg (1 mg/kg) twice daily regimen, the steady-state is reached from day 3 to 4 with mean exposure about 65% higher than after a single dose and mean maximum and trough anti-Xa activity levels of about 1.2 and 0.52 IU/mL, respectively.

Injection volume and dose concentration over the range 100-200 mg/mL does not affect pharmacokinetic parameters in healthy volunteers.

Enoxaparin sodium pharmacokinetics appears to be linear over the recommended dose ranges.

Intra-patient and inter-patient variability is low. Following repeated subcutaneous administration no accumulation takes place.

Plasma anti-IIa activity after subcutaneous administration is approximately ten-fold lower than anti-Xa activity. The mean maximum anti-IIa activity level is observed approximately 3 to 4 hours following subcutaneous injection and reaches 0.13 IU/mL and 0.19 IU/mL following repeated administration of 100 IU/kg (1 mg/kg) twice daily and 150 IU/kg (1.5 mg/kg) once daily, respectively.

### Distribution

The volume of distribution of enoxaparin sodium anti-Xa activity is about 4.3 litres and is close to the blood volume.

### Biotransformation

Enoxaparin sodium is primarily metabolised in the liver by desulfation and/or depolymerisation to lower molecular weight species with much reduced biological potency.

### Elimination

Enoxaparin sodium is a low clearance substance with a mean anti-Xa plasma clearance of 0.74 L/h after a 150 IU/kg (1.5 mg/kg) 6-hour intravenous infusion.

Elimination appears monophasic with a half-life of about 5 hours after a single subcutaneous dose to about 7 hours after repeated dosing.

Renal clearance of active fragments represents about 10% of the administered dose and total renal excretion of active and non-active fragments 40% of the dose.

### Special populations

#### *Elderly*

Based on the results of a population pharmacokinetic analysis, the enoxaparin sodium kinetic profile is not different in elderly subjects compared to younger subjects when renal function is normal. However, since renal function is known to decline with age, elderly patients may show reduced elimination of enoxaparin sodium (see sections 4.2 and 4.4).

#### *Hepatic impairment*

In a study conducted in patients with advanced cirrhosis treated with enoxaparin sodium 4,000 IU (40 mg) once daily, a decrease in maximum anti-Xa activity was associated with an increase in the severity of hepatic impairment (assessed by Child-Pugh categories). This decrease was mainly attributed to a decrease in ATIII level secondary to a reduced synthesis of ATIII in patients with hepatic impairment.

#### *Renal impairment*

A linear relationship between anti-Xa plasma clearance and creatinine clearance at steady-state has been observed, which indicates decreased clearance of enoxaparin sodium in patients with reduced renal function. Anti-Xa exposure represented by AUC, at steady-state, is marginally increased in mild (creatinine clearance 50-80 mL/min) and moderate (creatinine clearance 30-50 mL/min) renal impairment after repeated subcutaneous 4,000 IU (40 mg) once daily doses. In patients with severe renal impairment (creatinine clearance <30 mL/min), the AUC at steady state is significantly increased on average by 65% after repeated subcutaneous 4,000 IU (40 mg) once daily doses (see sections 4.2 and 4.4).

#### *Haemodialysis*

Enoxaparin sodium pharmacokinetics appeared similar than control population, after a single 25 IU, 50 IU or 100 IU/kg (0.25, 0.50 or 1.0 mg/kg) intravenous dose however, AUC was two-fold higher than control.

#### *Weight*

After repeated subcutaneous 150 IU/kg (1.5 mg/kg) once daily dosing, mean AUC of anti-Xa activity is marginally higher at steady state in obese healthy volunteers (BMI 30-48 kg/m<sup>2</sup>) compared to non-obese control subjects, while maximum plasma anti-Xa activity level is not increased. There is a lower weight-adjusted clearance in obese subjects with subcutaneous dosing.

When non-weight adjusted dosing was administered, it was found after a single-subcutaneous 4,000 IU (40 mg) dose, that anti-Xa exposure is 52% higher in low-weight women (<45 kg) and 27% higher in low-weight men (<57 kg) when compared to normal weight control subjects (see section 4.4).

### Pharmacokinetic interactions

No pharmacokinetic interactions were observed between enoxaparin sodium and thrombolytics when administered concomitantly.

### 5.3 Preclinical safety data

Besides the anticoagulant effects of enoxaparin sodium, there was no evidence of adverse reactions at 15 mg/kg/day in the 13-week subcutaneous toxicity studies both in rats and dogs and at 10 mg/kg/day in the 26-week subcutaneous and intravenous toxicity studies both in rats, and monkeys.

Enoxaparin sodium has shown no mutagenic activity based on *in vitro* tests, including the Ames test, mouse lymphoma cell forward mutation test, and no clastogenic activity based on an *in vitro* human lymphocyte chromosomal aberration test, and the *in vivo* rat bone marrow chromosomal aberration test.

Studies conducted in pregnant rats and rabbits at subcutaneous doses of enoxaparin sodium up to 30 mg/kg/day did not reveal any evidence of teratogenic effects or foetotoxicity. Enoxaparin sodium was found to have no effect on fertility or reproductive performance of male and female rats at subcutaneous doses up to 20 mg/kg/day.

## 6. PHARMACEUTICAL PARTICULARS

### 6.1 List of excipients

Benzyl alcohol  
Water for injections

### 6.2 Incompatibilities

#### SC injection

Should not be mixed with other medicinal products.

#### IV (bolus) injection (for acute STEMI indication only)

This medicinal product must not be mixed with other medicinal products except those mentioned in section 6.6.

### 6.3 Shelf life

3 years

#### After first opening

Chemical and physical in-use stability has been demonstrated for 28 days at 25 °C.

From a microbiological point of view, once opened, the medicinal product may be stored for a maximum of 28 days below 25 °C. Other in-use storage times and conditions are the responsibility of the user.

#### After dilution with sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose solution for injection.

Chemical and physical in-use stability has been demonstrated for 8 hours at 25 °C.

From a microbiological point of view, unless the method of dilution precludes the risk of microbial contamination, the medicinal product should be used immediately. If not used immediately, in-use storage times and conditions are the responsibility of user.

### 6.4 Special precautions for storage

Store below 25 °C. Do not freeze.

For storage conditions after first opening and dilution of the medicinal product, see section 6.3.

## **6.5 Nature and contents of container**

5 mL of solution in clear, colourless type I glass vial sealed with rubber injection stopper and grey aluminium-plastic cap in a cardboard box.

Pack-sizes of 5 vials containing 5 mL.

## **6.6 Special precautions for disposal and other handling**

Enoxaparin sodium may be safely administered with sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections (see section 4.2).

Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

## **7. MARKETING AUTHORISATION HOLDER**

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

## **8. MARKETING AUTHORISATION NUMBER(S)**

EU/1/16/1132/072

## **9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION**

Date of first authorisation: 15/09/2016

Date of latest renewal: 26/08/2021

## **10. DATE OF REVISION OF THE TEXT**

Detailed information on this medicinal product is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.

## 1. NAME OF THE MEDICINAL PRODUCT

Inhixa 100,000 IU (1000 mg)/10 mL solution for injection in multidose container

## 2. QUALITATIVE AND QUANTITATIVE COMPOSITION

Each vial contains enoxaparin sodium 100,000 IU anti-Xa activity (equivalent to 1000 mg) in 10.0 mL water for injections.

Each mL contains 10,000 IU (100 mg) enoxaparin sodium.

Enoxaparin sodium is a biological substance obtained by alkaline depolymerisation of heparin benzyl ester derived from porcine intestinal mucosa.

### Excipient(s) with known effect

Benzyl alcohol (150 mg in 10.0 mL)

For the full list of excipients, see section 6.1.

## 3. PHARMACEUTICAL FORM

Solution for injection

Clear, colourless to pale yellow solution.

## 4. CLINICAL PARTICULARS

### 4.1 Therapeutic indications

Inhixa is indicated in adults for:

Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients, in particular those undergoing orthopaedic or general surgery including cancer surgery.

Prophylaxis of venous thromboembolic disease in medical patients with an acute illness (such as acute heart failure, respiratory insufficiency, severe infections or rheumatic diseases) and reduced mobility at increased risk of venous thromboembolism (VTE).

Treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE), excluding PE likely to require thrombolytic therapy or surgery.

Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer.

Prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Acute coronary syndrome:

- Treatment of unstable angina and Non ST-segment elevation myocardial infarction (NSTEMI), in combination with oral acetylsalicylic acid.
- Treatment of acute ST-segment elevation myocardial infarction (STEMI) including patients to be managed medically or with subsequent percutaneous coronary intervention (PCI).

### 4.2 Posology and method of administration

#### Posology

#### Prophylaxis of venous thromboembolic disease in moderate and high risk surgical patients

Individual thromboembolic risk for patients can be estimated using validated risk stratification model.



- In patients at moderate risk of thromboembolism, the recommended dose of enoxaparin sodium is 2,000 IU (20 mg) once daily by subcutaneous injection. Preoperative initiation (2 hours before surgery) of enoxaparin sodium 2,000 IU (20 mg) was proven effective and safe in moderate risk surgery.  
In moderate risk patients, enoxaparin sodium treatment should be maintained for a minimal period of 7-10 days whatever the recovery status (e.g. mobility). Prophylaxis should be continued until the patient no longer has significantly reduced mobility.
- In patients at high risk of thromboembolism, the recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily given by subcutaneous injection preferably started 12 hours before surgery. If there is a need for earlier than 12 hours enoxaparin sodium preoperative prophylactic initiation (e.g. high risk patient waiting for a deferred orthopaedic surgery), the last injection should be administered no later than 12 hours prior to surgery and resumed 12 hours after surgery.
  - For patients who undergo major orthopaedic surgery an extended thromboprophylaxis up to 5 weeks is recommended.
  - For patients with a high venous thromboembolism (VTE) risk who undergo abdominal or pelvic surgery for cancer an extended thromboprophylaxis up to 4 weeks is recommended.

#### Prophylaxis of venous thromboembolism in medical patients

The recommended dose of enoxaparin sodium is 4,000 IU (40 mg) once daily by subcutaneous injection. Treatment with enoxaparin sodium is prescribed for at least 6 to 14 days whatever the recovery status (e.g. mobility). The benefit is not established for a treatment longer than 14 days.

#### Treatment of DVT and PE

Enoxaparin sodium can be administered subcutaneously either as a once daily injection of 150 IU/kg (1.5 mg/kg) or as twice daily injections of 100 IU/kg (1 mg/kg).

The regimen should be selected by the physician based on an individual assessment including evaluation of the thromboembolic risk and of the risk of bleeding. The dose regimen of 150 IU/kg (1.5 mg/kg) administered once daily should be used in uncomplicated patients with low risk of VTE recurrence. The dose regimen of 100 IU/kg (1 mg/kg) administered twice daily should be used in all other patients such as those with obesity, with symptomatic PE, cancer, recurrent VTE or proximal (*vena iliaca*) thrombosis.

Enoxaparin sodium treatment is prescribed for an average period of 10 days. Oral anticoagulant therapy should be initiated when appropriate (see “Switch between enoxaparin sodium and oral anticoagulants” at the end of section 4.2).

In the extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer, physicians should carefully assess the individual thromboembolic and bleeding risks of the patient.

The recommended dose is 100 IU/kg (1 mg/kg) administered twice daily by SC injections for 5 to 10 days, followed by a 150 IU/kg (1.5 mg/kg) once daily SC injection up to 6 months. The benefit of continuous anticoagulant therapy should be reassessed after 6 months of treatment.

#### Prevention of thrombus formation during haemodialysis

The recommended dose is 100 IU/kg (1 mg/kg) of enoxaparin sodium.

For patients with a high risk of haemorrhage, the dose should be reduced to 50 IU/kg (0.5 mg/kg) for double vascular access or 75 IU/kg (0.75 mg/kg) for single vascular access.

During haemodialysis, enoxaparin sodium should be introduced into the arterial line of the circuit at the beginning of the dialysis session. The effect of this dose is usually sufficient for a 4-hour session; however, if fibrin rings are found, for example after a longer than normal session, a further dose of 50 IU to 100 IU/kg (0.5 to 1 mg/kg) may be given.

No data are available in patients using enoxaparin sodium for prophylaxis or treatment and during haemodialysis sessions.

### Acute coronary syndrome: treatment of unstable angina and NSTEMI and treatment of acute STEMI

- For treatment of unstable angina and NSTEMI, the recommended dose of enoxaparin sodium is 100 IU/kg (1 mg/kg) every 12 hours by subcutaneous injection administered in combination with antiplatelet therapy. Treatment should be maintained for a minimum of 2 days and continued until clinical stabilization. The usual duration of treatment is 2 to 8 days.  
Acetylsalicylic acid is recommended for all patients without contraindications at an initial oral loading dose of 150–300 mg (in acetylsalicylic acid-naïve patients) and a maintenance dose of 75–325 mg/day long-term regardless of treatment strategy.
- For treatment of acute STEMI, the recommended dose of enoxaparin sodium is a single intravenous bolus of 3,000 IU (30 mg) plus a 100 IU/kg (1 mg/kg) subcutaneous dose followed by 100 IU/kg (1 mg/kg) administered subcutaneously every 12 hours (maximum 10,000 IU (100 mg) for each of the first two subcutaneous doses). Appropriate antiplatelet therapy such as oral acetylsalicylic acid (75 mg to 325 mg once daily) should be administered concomitantly unless contraindicated. The recommended duration of treatment is 8 days or until hospital discharge, whichever comes first. When administered in conjunction with a thrombolytic (fibrin specific or non-fibrin specific), enoxaparin sodium should be given between 15 minutes before and 30 minutes after the start of fibrinolytic therapy.
  - For dose in patients  $\geq 75$  years of age, see paragraph “Elderly”.
  - For patients managed with PCI, if the last subcutaneous dose of enoxaparin sodium was given less than 8 hours before balloon inflation, no additional dosing is needed. If the last subcutaneous administration was given more than 8 hours before balloon inflation, an intravenous bolus of 30 IU/kg (0.3 mg/kg) enoxaparin sodium should be administered.

### Special populations

#### Paediatric population

The safety and efficacy of enoxaparin sodium in paediatric population have not been established. No data are available.

#### Elderly

For all indications except STEMI, no dose reduction is necessary in the elderly patients, unless kidney function is impaired (see below paragraph “Renal impairment” and section 4.4).

For treatment of acute STEMI in elderly patients  $\geq 75$  years of age, an initial intravenous bolus must not be used. Initiate dosing with 75 IU/kg (0.75 mg/kg) subcutaneously every 12 hours (maximum 7,500 IU (75 mg) for each of the first two subcutaneous doses only, followed by 75 IU/kg (0.75 mg/kg) subcutaneous dosing for the remaining doses). For dose in elderly patients with impaired kidney function, see below “renal impairment” and section 4.4.

#### Hepatic impairment

Limited data are available in patients with hepatic impairment (see sections 5.1 and 5.2) and caution should be used in these patients (see section 4.4).

#### Renal impairment (see sections 4.4 and 5.2)

##### Severe renal impairment

Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance  $< 15$  mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

Dose table for patients with severe renal impairment (creatinine clearance [15–30] mL/min):

<u>Indication</u>	<u>Dosing regimen</u>
Prophylaxis of venous thromboembolic disease	2,000 IU (20 mg) subcutaneously once daily
Treatment of DVT and PE	100 IU/kg (1 mg/kg) body weight subcutaneously once daily

Extended treatment of DVT and PE in patients with active cancer	100 IU/kg (1 mg/kg) body weight SC once daily
Treatment of unstable angina and NSTEMI	100 IU/kg (1 mg/kg) body weight subcutaneously once daily
Treatment of acute STEMI (patients under 75)	1 x 3,000 IU (30 mg) intravenous bolus plus 100 IU/kg (1 mg/kg) body weight subcutaneously and then 100 IU/kg (1 mg/kg) body weight subcutaneously every 24 hours
Treatment of acute STEMI (patients over 75)	No intravenous initial bolus, 100 IU/kg (1 mg/kg) body weight subcutaneously and then 100 IU/kg (1 mg/kg) body weight subcutaneously every 24 hours

The recommended dose adjustments do not apply to the haemodialysis indication.

#### *Moderate and mild renal impairment*

Although no dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment, careful clinical monitoring is advised.

Inhixa multidose vial contains benzyl alcohol and must not be used in newborn babies and premature neonates (see section 4.3).

#### Method of administration

Inhixa is not indicated for intramuscular use and should not be administered by this route.

For the prophylaxis of venous thromboembolic disease following surgery, treatment of DVT and PE, extended treatment of DVT and PE in patients with active cancer, treatment of unstable angina and NSTEMI, enoxaparin sodium should be administered by subcutaneous injection.

- For acute STEMI, treatment is to be initiated with a single intravenous bolus injection immediately followed by a subcutaneous injection.
- For the prevention of thrombus formation in the extra corporeal circulation during haemodialysis, it is administered through the arterial line of a dialysis circuit.

The use of a tuberculin syringe or equivalent is recommended when using multidose vials to assure withdrawal of the appropriate volume of the medicinal product.

#### SC injection technique

Injection should be made preferably when the patient is lying down. Enoxaparin sodium is administered by deep SC injection.

When using pre-filled syringes, the air bubble should not be expelled from the syringe before the injection in order to avoid the loss of the medicinal product. When the quantity of the medicinal product to be injected requires to be adjusted based on the patient's body weight, the graduated pre-filled syringes should be used to reach the required volume by discarding the excess before injection. In some cases it is not possible to achieve an exact dose due to the graduations on the syringe, and in such case the volume shall be rounded up to the nearest graduation.

The administration should be alternated between the left and right anterolateral or posterolateral abdominal wall.

The whole length of the needle should be introduced vertically into a skin fold gently held between the thumb and index finger. The skin fold should not be released until the injection is complete. The injection site should not be rubbed after administration.

#### IV (bolus) injection (for acute STEMI indication only)

For acute STEMI, treatment is to be initiated with a single intravenous bolus injection immediately followed by a subcutaneous injection.

For intravenous injection, either the multidose vial or pre-filled syringe can be used.

Enoxaparin sodium should be administered through an intravenous line. It should not be mixed or co-administered with other medicinal products. To avoid the possible mixture of enoxaparin sodium with other medicinal products, the intravenous access chosen should be flushed with a sufficient amount of sodium chloride 9 mg/mL (0.9%) solution for infusion or 5% glucose in water for injection prior to and following the intravenous bolus administration of enoxaparin sodium to clear the port of the medicinal product. Enoxaparin sodium may be safely administered with sodium chloride 9 mg/mL (0.9%) solution for infusion or 5% glucose in water for injections.

#### *Initial 3,000 IU (30 mg) bolus*

For the initial 3,000 IU (30 mg) bolus, using an enoxaparin sodium graduated pre-filled syringe, the excessive volume has to be expelled to retain only 3,000 IU (30 mg) in the syringe. The 3,000 IU (30 mg) dose can then be directly injected into the intravenous line.

#### *Additional bolus for PCI when last subcutaneous administration was given more than 8 hours before balloon inflation*

For patients being managed with PCI, an additional intravenous bolus of 30 IU/kg (0.3 mg/kg) is to be administered if last subcutaneous administration was given more than 8 hours before balloon inflation.

In order to assure the accuracy of the small volume to be injected, it is recommended to dilute the medicinal product to 300 IU/mL (3 mg/mL).

To obtain a 300 IU/mL (3 mg/mL) solution, using a 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe, it is recommended to use a 50 mL infusion bag (i.e. using either sodium chloride 9 mg/mL (0.9%) solution for infusion or 5% glucose in water for injections) as follows:

30 mL of the solution should be withdrawn from the infusion bag with a syringe and discarded. The complete contents of the 6,000 IU (60 mg) enoxaparin sodium pre-filled syringe should be injected into the 20 mL remaining in the bag. The contents of the bag should be gently mixed. Then, the required volume of diluted solution should be withdrawn with a syringe for administration into the intravenous line.

After dilution is completed, the volume to be injected can be calculated using the following formula [volume of diluted solution (mL) = patient weight (kg) x 0.1] or using the table below. It is recommended to prepare the dilution immediately before use.

Volume to be injected through intravenous line after dilution is completed at a concentration of 300 IU (3 mg)/mL.

Weight	Required dose 30 IU/kg (0.3 mg/kg)		Volume to inject when diluted to a final concentration of 300 IU (3 mg)/mL
[kg]	IU	[mg]	[mL]
45	1,350	13.5	4.5
50	1,500	15	5
55	1,650	16.5	5.5
60	1,800	18	6
65	1,950	19.5	6.5
70	2,100	21	7
75	2,250	22.5	7.5
80	2,400	24	8
85	2,550	25.5	8.5
90	2,700	27	9
95	2,850	28.5	9.5
100	3,000	30	10

105	3,150	31.5	10.5
110	3,300	33	11
115	3,450	34.5	11.5
120	3,600	36	12
125	3,750	37.5	12.5
130	3,900	39	13
135	4,050	40.5	13.5
140	4,200	42	14
145	4,350	43.5	14.5
150	4,500	45	15

#### Arterial line injection

It is administered through the arterial line of a dialysis circuit for the prevention of thrombus formation in the extra corporeal circulation during haemodialysis.

#### Switch between enoxaparin sodium and oral anticoagulants

##### *Switch between enoxaparin sodium and vitamin K antagonists (VKA)*

Clinical monitoring and laboratory tests [prothrombin time expressed as the International Normalised Ratio (INR)] must be intensified to monitor the effect of VKA.

As there is an interval before the VKA reaches its maximum effect, enoxaparin sodium therapy should be continued at a constant dose for as long as necessary in order to maintain the INR within the desired therapeutic range for the indication in two successive tests.

For patients currently receiving a VKA, the VKA should be discontinued and the first dose of enoxaparin sodium should be given when the INR has dropped below the therapeutic range.

##### *Switch between enoxaparin sodium and direct oral anticoagulants (DOAC)*

For patients currently receiving enoxaparin sodium, discontinue enoxaparin sodium and start the DOAC 0 to 2 hours before the time that the next scheduled administration of enoxaparin sodium would be due as per DOAC label.

For patients currently receiving a DOAC, the first dose of enoxaparin sodium should be given at the time the next DOAC dose would be taken.

#### Administration in spinal/epidural anaesthesia or lumbar puncture

Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, careful neurological monitoring is recommended due to the risk of neuraxial haematomas (see section 4.4).

##### *- At doses used for prophylaxis*

A puncture-free interval of at least 12 hours shall be kept between the last injection of enoxaparin sodium at prophylactic doses and the needle or catheter placement.

For continuous techniques, a similar delay of at least 12 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 24 hours.

The 2 hours preoperative initiation of enoxaparin sodium 2,000 IU (20 mg) is not compatible with neuraxial anaesthesia.

##### *- At doses used for treatment*

A puncture-free interval of at least 24 hours shall be kept between the last injection of enoxaparin sodium at curative doses and the needle or catheter placement (see also section 4.3).

For continuous techniques, a similar delay of 24 hours should be observed before removing the catheter.

For patients with creatinine clearance [15-30] mL/min, consider doubling the timing of puncture/catheter placement or removal to at least 48 hours.

Patients receiving the twice daily doses (i.e. 75 IU/kg (0.75 mg/kg) twice daily or 100 IU/kg (1 mg/kg) twice-daily) should omit the second enoxaparin sodium dose to allow a sufficient delay before catheter placement or removal.

Anti-Xa levels are still detectable at these time points, and these delays are not a guarantee that neuraxial hematoma will be avoided.

Likewise, consider not using enoxaparin sodium until at least 4 hours after the spinal/epidural puncture or after the catheter has been removed. The delay must be based on a benefit-risk assessment considering both the risk for thrombosis and the risk for bleeding in the context of the procedure and patient risk factors.

### 4.3 Contraindications

Enoxaparin sodium is contraindicated in patients with:

- Hypersensitivity to enoxaparin sodium, heparin or its derivatives, including other low molecular weight heparins (LMWH), to benzyl alcohol or any other of the excipients listed in section 6.1;
- History of immune mediated heparin-induced thrombocytopenia (HIT) within the past 100 days or in the presence of circulating antibodies (see also section 4.4 );
- Active clinically significant bleeding and conditions with a high risk of haemorrhage, including recent haemorrhagic stroke, gastrointestinal ulcer, presence of malignant neoplasm at high risk of bleeding, recent brain, spinal or ophthalmic surgery, known or suspected oesophageal varices, arteriovenous malformations, vascular aneurysms or major intraspinal or intracerebral vascular abnormalities;
- Spinal or epidural anaesthesia or loco-regional anaesthesia when enoxaparin sodium is used for treatment in the previous 24 hours (see section 4.4).

Because of the content of benzyl alcohol (see section 6.1), enoxaparin sodium multiple dose vial formulation must not be given to newborns or premature neonates (see sections 4.4 and 4.6).

### 4.4 Special warnings and precautions for use

#### Traceability

LMWHs are biological medicinal products. In order to improve the traceability of biological medicinal products, the name and the batch number of the administered product should be clearly recorded.

#### General

Enoxaparin sodium cannot be used interchangeably (unit for unit) with other LMWHs. These medicinal products differ in their manufacturing process, molecular weights, specific anti-Xa and anti-IIa activities, units, dose and clinical efficacy and safety. This results in differences in pharmacokinetics and associated biological activities (e.g. anti-thrombin activity, and platelet interactions). Special attention and compliance with the instructions for use specific to each proprietary medicinal product are therefore required.

#### History of HIT (>100 days)

Use of enoxaparin sodium in patients with a history of immune mediated HIT within the past 100 days or in the presence of circulating antibodies is contraindicated (see section 4.3). Circulating antibodies may persist several years.

Enoxaparin sodium is to be used with extreme caution in patients with a history (>100 days) of heparin-induced thrombocytopenia without circulating antibodies. The decision to use enoxaparin sodium in such a case must be made only after a careful benefit risk assessment and after non-heparin alternative treatments are considered (e.g. danaparoid sodium or lepirudin).

#### Monitoring of platelet counts

In patients with cancer with a platelet count below 80 G/L, anticoagulation treatment can only be considered on a case-by-case basis and careful monitoring is recommended.

The risk of antibody-mediated HIT also exists with LMWHs. Should thrombocytopenia occur, it usually appears between the 5<sup>th</sup> and the 21<sup>st</sup> day following the beginning of enoxaparin sodium treatment. The risk of HIT is higher in postoperative patients and mainly after cardiac surgery and in patients with cancer.

Therefore, it is recommended that the platelet counts be measured before the initiation of therapy with enoxaparin sodium and then regularly thereafter during the treatment.

If there are clinical symptoms suggestive of HIT (any new episode of arterial and/or venous thromboembolism, any painful skin lesion at the injection site, any allergic or anaphylactoid reactions on treatment), platelet count should be measured. Patients must be aware that these symptoms may occur and if so, that they should inform their primary care physician.

In practice, if a confirmed significant decrease of the platelet count is observed (30 to 50 % of the initial value), enoxaparin sodium treatment must be immediately discontinued and the patient switched to another non-heparin anticoagulant alternative treatment.

### Haemorrhage

As with other anticoagulants, bleeding may occur at any site. If bleeding occurs, the origin of the haemorrhage should be investigated and appropriate treatment instituted.

Enoxaparin sodium, as with any other anticoagulant therapy, should be used with caution in conditions with increased potential for bleeding, such as:

- impaired haemostasis,
- history of peptic ulcer,
- recent ischemic stroke,
- severe arterial hypertension,
- recent diabetic retinopathy,
- neuro- or ophthalmologic surgery,
- concomitant use of medicinal products affecting haemostasis (see section 4.5).

### Laboratory tests

At doses used for prophylaxis of venous thromboembolism, enoxaparin sodium does not influence bleeding time and global blood coagulation tests significantly, nor does it affect platelet aggregation or binding of fibrinogen to platelets.

At higher doses, increases in activated partial thromboplastin time (aPTT), and activated clotting time (ACT) may occur. Increases in aPTT and ACT are not linearly correlated with increasing enoxaparin sodium antithrombotic activity and therefore are unsuitable and unreliable for monitoring enoxaparin sodium activity.

### Spinal/Epidural anaesthesia or lumbar puncture

Spinal/epidural anaesthesia or lumbar puncture must not be performed within 24 hours of administration of enoxaparin sodium at therapeutic doses (see also section 4.3).

There have been cases of neuraxial haematomas reported with the concurrent use of enoxaparin sodium and spinal/epidural anaesthesia or spinal puncture procedures resulting in long term or permanent paralysis.

These events are rare with enoxaparin sodium dose regimens 4,000 IU (40 mg) once daily or lower. The risk of these events is higher with the use of post-operative indwelling epidural catheters, with the concomitant use of additional medicinal products affecting haemostasis such as Non-Steroidal Anti-Inflammatory Drugs (NSAIDs), with traumatic or repeated epidural or spinal puncture, or in patients with a history of spinal surgery or spinal deformity.

To reduce the potential risk of bleeding associated with the concurrent use of enoxaparin sodium and epidural or spinal anaesthesia/analgesia or spinal puncture, consider the pharmacokinetic profile of enoxaparin sodium (see section 5.2). Placement or removal of an epidural catheter or lumbar puncture is best performed when the anticoagulant effect of enoxaparin sodium is low; however, the exact timing to reach a sufficiently low anticoagulant effect in each patient is not known. For patients with creatinine clearance [15-30 mL/minute], additional considerations are necessary because elimination of enoxaparin sodium is more prolonged (see section 4.2).

Should the physician decide to administer anticoagulation in the context of epidural or spinal anaesthesia/analgesia or lumbar puncture, frequent monitoring must be exercised to detect any signs and symptoms of neurological impairment such as midline back pain, sensory and motor deficits (numbness or weakness in lower limbs), bowel and/or bladder dysfunction. Instruct patients to report immediately if they experience any of the above signs or symptoms. If signs or symptoms of spinal hematoma are suspected, initiate urgent diagnosis and treatment including consideration for spinal cord decompression even though such treatment may not prevent or reverse neurological sequelae.

#### Skin necrosis/cutaneous vasculitis

Skin necrosis and cutaneous vasculitis have been reported with LMWHs and should lead to prompt treatment discontinuation.

#### Percutaneous coronary revascularization procedures

To minimise the risk of bleeding following the vascular instrumentation during the treatment of unstable angina, NSTEMI and acute STEMI, adhere precisely to the intervals recommended between enoxaparin sodium injection doses. It is important to achieve haemostasis at the puncture site after PCI. In case a closure device is used, the sheath can be removed immediately. If a manual compression method is used, sheath should be removed 6 hours after the last intravenous/ subcutaneous enoxaparin sodium injection. If the treatment with enoxaparin sodium is to be continued, the next scheduled dose should be given no sooner than 6 to 8 hours after sheath removal. The site of the procedure should be observed for signs of bleeding or hematoma formation.

#### Acute infective endocarditis

Use of heparin is usually not recommended in patients with acute infective endocarditis due to the risk of cerebral haemorrhage. If such use is considered absolutely necessary, the decision must be made only after a careful individual benefit risk assessment.

#### Mechanical prosthetic heart valves

The use of enoxaparin sodium has not been adequately studied for thromboprophylaxis in patients with mechanical prosthetic heart valves. Isolated cases of prosthetic heart valve thrombosis have been reported in patients with mechanical prosthetic heart valves who have received enoxaparin sodium for thromboprophylaxis. Confounding factors, including underlying disease and insufficient clinical data, limit the evaluation of these cases. Some of these cases were pregnant women in whom thrombosis led to maternal and foetal death.

##### *Pregnant women with mechanical prosthetic heart valves*

The use of enoxaparin sodium for thromboprophylaxis in pregnant women with mechanical prosthetic heart valves has not been adequately studied. In a clinical study of pregnant women with mechanical prosthetic heart valves given enoxaparin sodium (100 IU/kg (1 mg/kg) twice daily) to reduce the risk of thromboembolism, 2 of 8 women developed clots resulting in blockage of the valve and leading to maternal and foetal death. There have been isolated post-marketing reports of valve thrombosis in pregnant women with mechanical prosthetic heart valves while receiving enoxaparin sodium for thromboprophylaxis. Pregnant women with mechanical prosthetic heart valves may be at higher risk for thromboembolism.

#### Elderly

No increased bleeding tendency is observed in the elderly with the prophylactic dose ranges. Elderly patients (especially patients eighty years of age and older) may be at an increased risk for bleeding complications with the therapeutic dose ranges. Careful clinical monitoring is advised and dose reduction might be considered in patients older than 75 years treated for STEMI (see sections 4.2 and 5.2).

#### Renal impairment



- In patients with renal impairment, there is an increase in exposure of enoxaparin sodium which increases the risk of bleeding. In these patients, careful clinical monitoring is advised, and biological monitoring by anti-Xa activity measurement might be considered (see sections 4.2 and 5.2).
- Enoxaparin sodium is not recommended for patients with end stage renal disease (creatinine clearance <15 mL/min) due to lack of data in this population outside the prevention of thrombus formation in extra corporeal circulation during haemodialysis.

In patients with severe renal impairment (creatinine clearance 15-30 mL/min), since exposure of enoxaparin sodium is significantly increased, a dose adjustment is recommended for therapeutic and prophylactic dose ranges (see section 4.2).

No dose adjustment is recommended in patients with moderate (creatinine clearance 30-50 mL/min) and mild (creatinine clearance 50-80 mL/min) renal impairment.

### Hepatic impairment

Enoxaparin sodium should be used with caution in patients with hepatic impairment due to an increased potential for bleeding. Dose adjustment based on monitoring of anti-Xa levels is unreliable in patients with liver cirrhosis and not recommended (see section 5.2).

### Low weight

An increase in exposure of enoxaparin sodium with prophylactic doses (non-weight adjusted) has been observed in low-weight women (<45 kg) and low-weight men (<57 kg), which may lead to a higher risk of bleeding. Therefore, careful clinical monitoring is advised in these patients (see section 5.2).

### Obese patients

Obese patients are at higher risk for thromboembolism. The safety and efficacy of prophylactic doses in obese patients (BMI >30 kg/m<sup>2</sup>) has not been fully determined and there is no consensus for dose adjustment. These patients should be observed carefully for signs and symptoms of thromboembolism.

### Hyperkalaemia

Heparins can suppress adrenal secretion of aldosterone leading to hyperkalaemia (see section 4.8), particularly in patients such as those with diabetes mellitus, chronic renal failure, pre-existing metabolic acidosis, taking medicinal products known to increase potassium (see section 4.5). Plasma potassium should be monitored regularly especially in patients at risk.

### Benzyl alcohol

Benzyl alcohol may cause allergic reactions.

Intravenous administration of benzyl alcohol has been associated with serious adverse events and death in neonates (“Gasping Syndrome”) (see section 4.3). The minimum amount of benzyl alcohol at which toxicity may occur is not known. Benzyl alcohol may also cause toxic reactions in infants and children up to 3 years old, due to increased risk of accumulation.

High volumes of medicinal products containing benzyl alcohol should be used with caution and only if necessary in patients with liver or kidney impairment, or in pregnant women, because of the risk of accumulation of benzyl alcohol and its toxicity (metabolic acidosis).

### Sodium

This medicinal product contains less than 1 mmol sodium (23 mg) per dose within the recommended dose range, that is to say essentially ‘sodium-free’.

### Acute generalized exanthematous pustulosis

Acute generalized exanthematous pustulosis (AGEP) has been reported with frequency not known in association with enoxaparin treatment. At the time of prescription patients should be advised of the signs and symptoms and monitored closely for skin reactions. If signs and symptoms suggestive of these reactions appear, enoxaparin should be withdrawn immediately and an alternative treatment considered (as appropriate).

## 4.5 Interaction with other medicinal products and other forms of interaction

### Concomitant use not recommended

#### Medicinal products affecting haemostasis (see section 4.4)

It is recommended that some agents which affect haemostasis should be discontinued prior to enoxaparin sodium therapy unless strictly indicated. If the combination is indicated, enoxaparin sodium should be used with careful clinical and laboratory monitoring when appropriate. These agents include medicinal products such as:

- Systemic salicylates, acetylsalicylic acid at anti-inflammatory doses, and NSAIDs including ketorolac,
- Other thrombolytics (e.g. alteplase, reteplase, streptokinase, tenecteplase, urokinase) and anticoagulants (see section 4.2).

### Concomitant use with caution

The following medicinal products may be administered with caution concomitantly with enoxaparin sodium:

- *Other medicinal products affecting haemostasis such as:*
  - Platelet aggregation inhibitors including acetylsalicylic acid used at antiaggregant dose (cardioprotection), clopidogrel, ticlopidine, and glycoprotein IIb/IIIa antagonists indicated in acute coronary syndrome due to the risk of bleeding,
  - Dextran 40,
  - Systemic glucocorticoids.
- *Medicinal products increasing potassium levels*

Medicinal products that increase serum potassium levels may be administered concurrently with enoxaparin sodium under careful clinical and laboratory monitoring (see sections 4.4 and 4.8).

## 4.6 Fertility, pregnancy and lactation

### Pregnancy

In humans, there is no evidence that enoxaparin crosses the placental barrier during the second and third trimester of pregnancy. There is no information available concerning the first trimester.

Animal studies have not shown any evidence of foetotoxicity or teratogenicity (see section 5.3). Animal data have shown that enoxaparin passage through the placenta is minimal.

Enoxaparin sodium should be used during pregnancy only if the physician has established a clear need.

Pregnant women receiving enoxaparin sodium should be carefully monitored for evidence of bleeding or excessive anticoagulation and should be warned of the haemorrhagic risk. Overall, the data suggest that there is no evidence for an increased risk of haemorrhage, thrombocytopenia or osteoporosis with respect to the risk observed in non-pregnant women, other than that observed in pregnant women with prosthetic heart valves (see section 4.4).

If an epidural anaesthesia is planned, it is recommended to withdraw enoxaparin sodium treatment before (see section 4.4).

As benzyl alcohol may cross the placenta, it is recommended to use a formulation that does not contain benzyl alcohol.

## Breast-feeding

It is not known whether unchanged enoxaparin is excreted in human breast milk. In lactating rats, the passage of enoxaparin or its metabolites in milk is very low. The oral absorption of enoxaparin sodium is unlikely. Inhixa can be used during breastfeeding.

## Fertility

There are no clinical data for enoxaparin sodium in fertility. Animal studies did not show any effect on fertility (see section 5.3).

### **4.7 Effects on ability to drive and use machines**

Enoxaparin sodium has no or negligible influence on the ability to drive and use machines.

### **4.8 Undesirable effects**

#### Summary of the safety profile

Enoxaparin sodium has been evaluated in more than 15,000 patients who received enoxaparin sodium in clinical trials. These included 1,776 for prophylaxis of DVT following orthopaedic or abdominal surgery in patients at risk for thromboembolic complications, 1,169 for prophylaxis of DVT in acutely ill medical patients with severely restricted mobility, 559 for treatment of DVT with or without PE, 1,578 for treatment of unstable angina and non-Q-wave myocardial infarction and 10,176 for treatment of acute STEMI.

Enoxaparin sodium regimen administered during these clinical trials varies depending on indications. The enoxaparin sodium dose was 4,000 IU (40 mg) subcutaneously once daily for prophylaxis of DVT following surgery or in acutely ill medical patients with severely restricted mobility. In treatment of DVT with or without PE, patients receiving enoxaparin sodium were treated with either a 100 IU/kg (1 mg/kg) subcutaneous dose every 12 hours or a 150 IU/kg (1.5 mg/kg) subcutaneous dose once a day. In the clinical trials for treatment of unstable angina and non-Q-wave myocardial infarction, doses were 100 IU/kg (1 mg/kg) subcutaneously every 12 hours, and in the clinical study for treatment of acute STEMI enoxaparin sodium regimen was a 3,000 IU (30 mg) intravenous bolus followed by 100 IU/kg (1 mg/kg) subcutaneously every 12 hours.

In clinical trials, haemorrhages, thrombocytopenia and thrombocytosis were the most commonly reported reactions (see sections 4.4 and “Description of selected adverse reactions” below).

The safety profile of enoxaparin for extended treatment of DVT and PE in patients with active cancer is similar to its safety profile for the treatment of DVT and PE.

Acute generalized exanthematous pustulosis (AGEP) has been reported in association with enoxaparin treatment (see section 4.4).

#### Tabulated list of adverse reactions

Other adverse reactions observed in clinical trials and reported in post-marketing experience (\* indicates reactions from post-marketing experience) are detailed below.

Frequencies are defined as follows: very common ( $\geq 1/10$ ); common ( $\geq 1/100$  to  $< 1/10$ ); uncommon ( $\geq 1/1,000$  to  $< 1/100$ ); rare ( $\geq 1/10,000$  to  $< 1/1,000$ ); and very rare ( $< 1/10,000$ ) or not known (cannot be estimated from available data). Within each system organ class, adverse reactions are presented in order of decreasing seriousness.

#### *Blood and the lymphatic system disorders*

Common: Haemorrhage, haemorrhagic anaemia\*, thrombocytopenia, thrombocytosis

Rare: Eosinophilia\*

Rare: Cases of immuno-allergic thrombocytopenia with thrombosis; in some of them thrombosis was complicated by organ infarction or limb ischaemia (see section 4.4).

#### *Immune system disorders*

Common: Allergic reaction

Rare: Anaphylactic/Anaphylactoid reactions including shock\*

#### *Nervous system disorders*

Common: Headache\*

#### *Vascular disorders*

Rare: Spinal haematoma\* (or neuraxial haematoma). These reactions have resulted in varying degrees of neurologic injuries including long-term or permanent paralysis (see section 4.4).

#### *Hepatobiliary disorders*

Very common: Hepatic enzyme increases (mainly transaminases > 3 times the upper limit of normality)

Uncommon: Hepatocellular liver injury \*

Rare: Cholestatic liver injury\*

#### *Skin and subcutaneous tissue disorders*

Common: Urticaria, pruritus, erythema

Uncommon: Bullous dermatitis

Rare: Alopecia\*

Rare: Cutaneous vasculitis\*, skin necrosis\* usually occurring at the injection site (these phenomena have been usually preceded by purpura or erythematous plaques, infiltrated and painful).

Injection site nodules\* (inflammatory nodules, which were not cystic enclosure of enoxaparin). They resolve after a few days and should not cause treatment discontinuation.

Not known: Acute generalized exanthematous pustulosis (AGEP)

#### *Musculoskeletal and connective tissue disorders*

Rare: Osteoporosis\* following long term therapy (greater than 3 months)

#### *General disorders and administration site conditions*

Common: Injection site haematoma, injection site pain, other injection site reaction (such as oedema, haemorrhage, hypersensitivity, inflammation, mass, pain, or reaction)

Uncommon: Local irritation, skin necrosis at injection site

#### *Investigations*

Rare: Hyperkalaemia\* (see sections 4.4 and 4.5).

### Description of selected adverse reactions

#### *Haemorrhages*

These included major haemorrhages, reported at most in 4.2 % of the patients (surgical patients). Some of these cases have been fatal. In surgical patients, haemorrhage complications were considered major: (1) if the haemorrhage caused a significant clinical event, or (2) if accompanied by haemoglobin decrease  $\geq 2$  g/dL or transfusion of 2 or more units of blood products. Retroperitoneal and intracranial haemorrhages were always considered major.

As with other anticoagulants, haemorrhage may occur in the presence of associated risk factors such as: organic lesions liable to bleed, invasive procedures or the concomitant use of medicinal products affecting haemostasis (see sections 4.4 and 4.5).

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
<i>Blood and lymphatic system disorders</i>	<i>Very common:</i> Haemorrhage <sup>a</sup>  <i>Rare:</i> Retroperitoneal haemorrhage	<i>Common:</i> Haemorrhage <sup>a</sup>	<i>Very common:</i> Haemorrhage <sup>a</sup>  <i>Uncommon:</i> Intracranial haemorrhage, Retroperitoneal haemorrhage	<i>Common</i> <sup>b</sup> : Haemorrhage	<i>Common:</i> Haemorrhage <sup>a</sup>  <i>Rare:</i> Retroperitoneal haemorrhage	<i>Common:</i> Haemorrhage <sup>a</sup>  <i>Uncommon:</i> Intracranial haemorrhage, Retroperitoneal haemorrhage

<sup>a</sup>: such as haematoma, ecchymosis other than at injection site, wound haematoma, haematuria, epistaxis and gastro-intestinal haemorrhage.

<sup>b</sup>: frequency based on a retrospective study on a registry including 3526 patients (see section 5.1)

#### *Thrombocytopenia and thrombocytosis (see section 4.4 monitoring of platelet counts)*

System organ class	Prophylaxis in surgical patients	Prophylaxis in medical patients	Treatment in patients with DVT with or without PE	Extended treatment of DVT and PE in patients with active cancer	Treatment in patients with unstable angina and non-Q-wave MI	Treatment in patients with acute STEMI
<i>Blood and lymphatic system disorders</i>	<i>Very common:</i> Thrombocytosis <sup>β</sup>  <i>Common:</i> Thrombocytopenia	<i>Uncommon:</i> Thrombocytopenia	<i>Very common:</i> Thrombocytosis <sup>β</sup>  <i>Common:</i> Thrombocytopenia	<i>Unknown:</i> Thrombocytopenia	<i>Uncommon:</i> Thrombocytopenia	<i>Common:</i> Thrombocytosis <sup>β</sup> Thrombocytopenia <i>Very rare:</i> Immuno-allergic thrombocytopenia

<sup>β</sup>: Platelet increased >400 G/L

#### Paediatric population

The safety and efficacy of enoxaparin sodium in children have not been established (see section 4.2).

Intravenous administration of benzyl alcohol has been associated with serious adverse events and death in neonates (“Gasping Syndrome”) (see section 4.3).

Benzyl alcohol may also cause toxic reactions in infants and children up to 3 years old, due to increased risk of accumulation (see section 4.4).

#### Reporting of suspected adverse reactions

Reporting suspected adverse reactions after authorisation of the medicinal product is important. It allows continued monitoring of the benefit/risk balance of the medicinal product. Healthcare professionals are asked to report any suspected adverse reactions via the national reporting system listed in [Appendix V](#).

## 4.9 Overdose

### Signs and symptoms

Accidental overdose with enoxaparin sodium after intravenous, extracorporeal or subcutaneous administration may lead to haemorrhagic complications. Following oral administration of even large doses, it is unlikely that enoxaparin sodium will be absorbed.

### Management

The anticoagulant effects can be largely neutralised by the slow intravenous injection of protamine. The dose of protamine depends on the dose of enoxaparin sodium injected; 1 mg protamine neutralises the anticoagulant effect of 100 IU (1 mg) of enoxaparin sodium, if enoxaparin sodium was administered in the previous 8 hours. An infusion of 0.5 mg protamine per 100 IU (1 mg) of enoxaparin sodium may be administered if enoxaparin sodium was administered greater than 8 hours previous to the protamine administration, or if it has been determined that a second dose of protamine is required. After 12 hours of the enoxaparin sodium injection, protamine administration may not be required. However, even with high doses of protamine, the anti-Xa activity of enoxaparin sodium is never completely neutralised (maximum about 60%) (see the prescribing information for protamine salts).

## 5. PHARMACOLOGICAL PROPERTIES

### 5.1 Pharmacodynamic properties

Pharmacotherapeutic group: Antithrombotic agents, heparin group. ATC code: B01A B05

Inhixa is a biosimilar medicinal product. Detailed information is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.

### Pharmacodynamic effects

Enoxaparin is a LMWH with a mean molecular weight of approximately 4,500 daltons, in which the antithrombotic and anticoagulant activities of standard heparin have been dissociated. The active substance is the sodium salt.

In the *in vitro* purified system, enoxaparin sodium has a high anti-Xa activity (approximately 100 IU/mg) and low anti-IIa or anti thrombin activity (approximately 28 IU/mg), with a ratio of 3.6. These anticoagulant activities are mediated through anti-thrombin III (ATIII) resulting in anti-thrombotic activities in humans.

Beyond its anti-Xa/IIa activity, further antithrombotic and anti-inflammatory properties of enoxaparin have been identified in healthy subjects and patients as well as in non-clinical models. These include ATIII-dependent inhibition of other coagulation factors like factor VIIa, induction of endogenous Tissue Factor Pathway Inhibitor (TFPI) release as well as a reduced release of von Willebrand factor (vWF) from the vascular endothelium into the blood circulation. These factors are known to contribute to the overall antithrombotic effect of enoxaparin sodium.

When used as prophylactic treatment, enoxaparin sodium does not significantly affect the aPTT. When used as curative treatment, aPTT can be prolonged by 1.5-2.2 times the control time at peak activity.

### Clinical efficacy and safety

#### *Prevention of venous thromboembolic disease associated with surgery*

##### *Extended prophylaxis of VTE following orthopaedic surgery*

In a double blind study of extended prophylaxis for patients undergoing hip replacement surgery, 179 patients with no venous thromboembolic disease initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) subcutaneously, were randomised to a post-discharge regimen of either enoxaparin

sodium 4,000 IU (40 mg) (n=90) once a day subcutaneously or to placebo (n=89) for 3 weeks. The incidence of DVT during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo, no PE was reported. No major bleeding occurred. The efficacy data are provided in the table below.

	Enoxaparin sodium 4,000 IU (40 mg) once a day subcutaneously n (%)	Placebo once a day subcutaneously n (%)
All treated extended prophylaxis patients	90 (100)	89 (100)
Total VTE (%)	6 (6.6)	18 (20.2)
Total DVT (%)	6 (6.6)*	18 (20.2)
Proximal DVT (%)	5 (5.6) <sup>#</sup>	7 (8.8)

\*p value versus placebo =0.008

<sup>#</sup>p value versus placebo =0.537

In a second double-blind study, 262 patients without VTE disease and undergoing hip replacement surgery initially treated, while hospitalised, with enoxaparin sodium 4,000 IU (40 mg) subcutaneously were randomised to a post-discharge regimen of either enoxaparin sodium 4,000 IU (40 mg) (n=131) once a day subcutaneously or to placebo (n=131) for 3 weeks. Similar to the first study the incidence of VTE during extended prophylaxis was significantly lower for enoxaparin sodium compared to placebo for both total VTE (enoxaparin sodium 21 [16%] versus placebo 45 [34.4%]; p=0.001) and proximal DVT (enoxaparin sodium 8 [6.1%] versus placebo 28 [21.4%]; p<0.001). No difference in major bleeding was found between the enoxaparin sodium and the placebo group.

#### *Extended prophylaxis of DVT following cancer surgery*

A double-blind, multicentre trial, compared a four-week and a one-week regimen of enoxaparin sodium prophylaxis in terms of safety and efficacy in 332 patients undergoing elective surgery for abdominal or pelvic cancer. Patients received enoxaparin sodium (4,000 IU (40 mg) subcutaneously) daily for 6 to 10 days and were then randomly assigned to receive either enoxaparin sodium or placebo for another 21 days. Bilateral venography was performed between days 25 and 31, or sooner if symptoms of venous thromboembolism occurred. The patients were followed for three months. Enoxaparin sodium prophylaxis for four weeks after surgery for abdominal or pelvic cancer significantly reduced the incidence of venographically demonstrated thrombosis, as compared with enoxaparin sodium prophylaxis for one week. The rates of venous thromboembolism at the end of the double-blind phase were 12.0 % (n=20) in the placebo group and 4.8% (n=8) in the enoxaparin sodium group; p=0.02. This difference persisted at three months [13.8% vs. 5.5% (n=23 vs 9), p=0.01]. There were no differences in the rates of bleeding or other complications during the double-blind or follow-up periods.

#### *Prophylaxis of venous thromboembolic disease in medical patients with an acute illness expected to induce limitation of mobility*

In a double blind multicentre, parallel group study, enoxaparin sodium 2,000 IU (20 mg) or 4,000 IU (40 mg) once a day subcutaneously was compared to placebo in the prophylaxis of DVT in medical patients with severely restricted mobility during acute illness (defined as walking distance of <10 meters for ≤3 days). This study included patients with heart failure (NYHA Class III or IV); acute respiratory failure or complicated chronic respiratory insufficiency, and acute infection or acute rheumatic; if associated with at least one VTE risk factor (age ≥75 years, cancer, previous VTE, obesity, varicose veins, hormone therapy, and chronic heart or respiratory failure).

A total of 1,102 patients were enrolled in the study, and 1,073 patients were treated. Treatment continued for 6 to 14 days (median duration 7 days). When given at a dose of 4,000 IU (40 mg) once a day subcutaneously, enoxaparin sodium significantly reduced the incidence of VTE as compared to placebo. The efficacy data are provided in the table below.

	Enoxaparin sodium 2,000 IU (20 mg)	Enoxaparin sodium 4,000 IU (40 mg)	Placebo n (%)
--	---------------------------------------	---------------------------------------	------------------

	once a day subcutaneously n (%)	once a day subcutaneously n (%)	
All treated medical patients during acute illness	287 (100)	291(100)	288 (100)
Total VTE (%)	43 (15.0)	16 (5.5)*	43 (14.9)
Total DVT (%)	43 (15.0)	16 (5.5)	40 (13.9)
Proximal DVT (%)	13 (4.5)	5 (1.7)	14 (4.9)

VTE = Venous thromboembolic events which included DVT, PE, and death considered to be thromboembolic in origin

\* p value versus placebo = 0.0002

At approximately 3 months following enrolment, the incidence of VTE remained significantly lower in the enoxaparin sodium 4,000 IU (40 mg) treatment group versus the placebo treatment group.

The occurrence of total and major bleeding were respectively 8.6% and 1.1% in the placebo group, 11.7% and 0.3% in the enoxaparin sodium 2,000 IU (20 mg) group and 12.6% and 1.7% in the enoxaparin sodium 4,000 IU (40 mg) group.

#### *Treatment of DVT with or without pulmonary embolism*

In a multicentre, parallel group study, 900 patients with acute lower extremity DVT with or without PE were randomised to an inpatient (hospital) treatment of either (i) enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day subcutaneously, (ii) enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours subcutaneously, or (iii) heparin intravenous bolus (5,000 IU) followed by a continuous infusion (administered to achieve an aPTT of 55 to 85 seconds). A total of 900 patients were randomised in the study and all patients were treated. All patients also received warfarin sodium (dose adjusted according to prothrombin time to achieve an INR of 2.0 to 3.0), commencing within 72 hours of initiation of enoxaparin sodium or standard heparin therapy, and continuing for 90 days. Enoxaparin sodium or standard heparin therapy was administered for a minimum of 5 days and until the targeted warfarin sodium INR was achieved. Both enoxaparin sodium regimens were equivalent to standard heparin therapy in reducing the risk of recurrent venous thromboembolism (DVT and/or PE). The efficacy data are provided in the table below.

	Enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day subcutaneously n (%)	Enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day subcutaneously n (%)	Heparin aPTT Adjusted Intravenous Therapy n (%)
All treated DVT patients with or without PE	298 (100)	312 (100)	290 (100)
Total VTE (%)	13 (4.4)*	9 (2.9)*	12 (4.1)
DVT only (%)	11 (3.7)	7 (2.2)	8 (2.8)
Proximal DVT (%)	9 (3.0)	6 (1.9)	7 (2.4)
PE (%)	2 (0.7)	2 (0.6)	4 (1.4)

VTE = venous thromboembolic event (DVT and/or PE)

\* The 95% confidence intervals for the treatment differences for total VTE were:

- enoxaparin sodium once a day versus heparin (-3.0 to 3.5)
- enoxaparin sodium every 12 hours versus heparin (-4.2 to 1.7).

Major bleeding were respectively 1.7% in the enoxaparin sodium 150 IU/kg (1.5 mg/kg) once a day group, 1.3% in the enoxaparin sodium 100 IU/kg (1 mg/kg) twice a day group and 2.1% in the heparin group.

#### *Extended treatment of deep vein thrombosis (DVT) and pulmonary embolism (PE) and prevention of its recurrence in patients with active cancer*

In clinical trials with limited number of patients, reported rates of recurrent VTE in patients treated with enoxaparin given once or twice daily for 3 to 6 months appear comparable to those with warfarin.

Effectiveness in real-life setting was assessed in a cohort of 4,451 patients with symptomatic VTE and active cancer from the multinational registry RIETE of patients with VTE and other thrombotic conditions. 3,526



patients received SC enoxaparin up to 6 months and 925 patients received tinzaparin or dalteparin SC. Among the 3,526 patients receiving enoxaparin treatment, 891 patients were treated with 1.5 mg/kg once daily as initial therapy and extended treatment up to 6 months (once daily alone), 1,854 patients received initial 1.0 mg/kg twice daily regimen and extended treatment up to 6 months (twice daily alone), and 687 patients received 1.0 mg/kg twice daily as initial treatment followed by 1.5 mg/kg once daily (twice daily-once daily) as the extended treatment up to 6 months. The mean and median duration of treatment until regimen change was 17 days and 8 days, respectively. There was no significant difference for VTE recurrence rate between the two treatments groups (see table), with enoxaparin meeting the prespecified criterion for non inferiority of 1.5 (HR adjusted by relevant covariates 0.817, 95% CI: 0.499-1.336). There was no statistically significant difference between the two treatment groups with regards to the relative risks of major (fatal or non-fatal) bleeding and all-cause death (see table).

**Table. Efficacy and safety outcomes in the RIETECAT study**

<b>Outcome</b>	<b>Enoxaparin n=3526</b>	<b>Other LMWH n=925</b>	<b>Adjusted hazard ratios enoxaparin / other LMWH [95% confidence interval]</b>
VTE recurrence	70 (2.0%)	23 (2.5%)	0.817, [ 0.499-1.336]
Major bleeding	111 (3.1%)	18 (1.9%)	1.522, [ 0.899-2.577]
Non-major bleeding	87 (2.5%)	24 (2.6%)	0.881, [0.550-1.410]
Overall death	666 (18.9%)	157 (17.0%)	0.974, [ 0.813-1.165]

An overview of outcomes per treatment regimen used in the RIETECAT study among 6-month completers is provided below:

**Table. 6-month outcomes in patients completing 6-month treatment, by different regimens**

<b>Outcome N (%) (95% CI)</b>	<b>Enoxapa rin all regimens</b>	<b>Enoxaparin all regimens</b>					<b>EU- authorized LMWHs</b>
		<b>Enoxapa rin OD</b>	<b>Enoxapa rin BID</b>	<b>Enoxapa rin BID to OD</b>	<b>Enoxapar in OD to BID</b>	<b>Enoxapar in More than one switch</b>	
	N=1432	N=444	N=529	N=406	N=14	N=39	N=428
Recurrence of VTE	70 (4.9%) (3.8%- 6.0%)	33 (7.4%) (5.0%- 9.9%)	22 (4.2%) (2.5%- 5.9%)	10 (2.5%) (0.9%- 4.0%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	23 (5.4%) (3.2%- 7.5%)
Major bleeding (fatal and non-fatal)	111 (7.8%) (6.4%- 9.1%)	31 (7.0%) (4.6%- 9.4%)	52 (9.8%) (7.3%- 12.4%)	21 (5.2%) (3.0%- 7.3%)	1 (7.1%) (0%- 22.6%)	6 (15.4%) (3.5%- 27.2%)	18 (4.2%) (2.3%- 6.1%)
Non-major bleedings of clinical significance	87 (6.1%) (4.8%- 7.3%)	26 (5.9%) (3.7%- 8.0%)	33 (6.2%) (4.2%- 8.3%)	23 (5.7%) (3.4%- 7.9%)	1 (7.1%) (0%- 22.6%)	4 (10.3%) (0.3%- 20.2%)	24 (5.6%) (3.4%- 7.8%)
All-cause death	666 (46.5%) (43.9%- 49.1%)	175 (39.4%) (34.9%- 44.0%)	323 (61.1%) (56.9%- 65.2%)	146 (36.0%) (31.3%- 40.6%)	6 (42.9%) (13.2%- 72.5%)	16 (41.0%) (24.9%- 57.2%)	157 (36.7%) (32.1%- 41.3%)
Fatal PE or fatal bleeding related death	48 (3.4%) (2.4%- 4.3%)	7 (1.6%) (0.4%- 2.7%)	35 (6.6%) (4.5%- 8.7%)	5 (1.2%) (0.2%- 2.3%)	0 (0%) -	1 (2.6%) (0%- 7.8%)	11 (2.6%) (1.1%- 4.1%)

\*All data with 95% CI

### Treatment of unstable angina and non ST elevation myocardial infarction

In a large multicentre study, 3,171 patients enrolled at the acute phase of unstable angina or non-Q-wave myocardial infarction were randomised to receive in association with acetylsalicylic acid (100 to 325 mg once daily), either subcutaneous enoxaparin sodium 100 IU/kg (1 mg/kg) every 12 hours or intravenous unfractionated heparin adjusted based on aPTT. Patients had to be treated in hospital for a minimum of 2 days and a maximum of 8 days, until clinical stabilization, revascularization procedures or hospital discharge. The patients had to be followed up to 30 days. In comparison with heparin, enoxaparin sodium significantly reduced the combined incidence of angina pectoris, myocardial infarction and death, with a decrease of 19.8 to 16.6% (relative risk reduction of 16.2%) on day 14. This reduction in the combined incidence was maintained after 30 days (from 23.3 to 19.8%; relative risk reduction of 15%). There were no significant differences in major haemorrhages, although a haemorrhage at the site of the subcutaneous injection was more frequent.

### Treatment of acute ST-segment elevation myocardial infarction

In a large multicentre study, 20,479 patients with STEMI eligible to receive fibrinolytic therapy were randomised to receive either enoxaparin sodium in a single 3,000 IU (30 mg) intravenous bolus plus a 100 IU/kg (1 mg/kg) subcutaneous dose followed by an subcutaneous injection of 100 IU/kg (1 mg/kg) every 12 hours or intravenous unfractionated heparin adjusted based on aPTT for 48 hours. All patients were also treated with acetylsalicylic acid for a minimum of 30 days. The enoxaparin sodium dosing strategy was adjusted for severe renally impaired patients and for the elderly of at least 75 years of age. The subcutaneous injections of enoxaparin sodium were given until hospital discharge or for a maximum of eight days (whichever came first).

4,716 patients underwent percutaneous coronary intervention receiving antithrombotic support with blinded investigational medicinal product. Therefore, for patients on enoxaparin sodium, the PCI was to be performed on enoxaparin sodium (no switch) using the regimen established in previous studies i.e. no additional dosing, if last subcutaneous administration given less than 8 hours before balloon inflation, intravenous bolus of 30 IU/kg (0.3 mg/kg) enoxaparin sodium, if the last subcutaneous administration given more than 8 hours before balloon inflation.

Enoxaparin sodium compared to unfractionated heparin significantly decreased the incidence of the primary end point, a composite of death from any cause or myocardial re-infarction in the first 30 days after randomization [9.9 percent in the enoxaparin sodium group, as compared with 12.0 percent in the unfractionated heparin group] with a 17 percent relative risk reduction ( $p < 0.001$ ).

The treatment benefits of enoxaparin sodium, evident for a number of efficacy outcomes, emerged at 48 hours, at which time there was a 35 percent reduction in the relative risk of myocardial re-infarction, as compared with treatment with unfractionated heparin ( $p < 0.001$ ).

The beneficial effect of enoxaparin sodium on the primary end point was consistent across key subgroups including age, gender, infarct location, history of diabetes, history of prior myocardial infarction, type of fibrinolytic administered, and time to treatment with the investigational medicinal product.

There was a significant treatment benefit of enoxaparin sodium, as compared with unfractionated heparin, in patients who underwent percutaneous coronary intervention within 30 days after randomization (23 percent reduction in relative risk) or who were treated medically (15 percent reduction in relative risk,  $p = 0.27$  for interaction).

The rate of the 30 day composite endpoint of death, myocardial re-infarction or intracranial haemorrhage (a measure of net clinical benefit) was significantly lower ( $p < 0.0001$ ) in the enoxaparin sodium group (10.1%) as compared to the heparin group (12.2%), representing a 17% relative risk reduction in favour of treatment with enoxaparin sodium.

The incidence of major bleeding at 30 days was significantly higher ( $p < 0.0001$ ) in the enoxaparin sodium group (2.1%) versus the heparin group (1.4%). There was a higher incidence of gastrointestinal bleeding in the enoxaparin sodium group (0.5%) versus the heparin group (0.1%), while the incidence of intracranial haemorrhage was similar in both groups (0.8% with enoxaparin sodium versus 0.7% with heparin).

The beneficial effect of enoxaparin sodium on the primary end point observed during the first 30 days was maintained over a 12 month follow-up period.

### Hepatic impairment

Based on literature data the use of enoxaparin sodium 4,000 IU (40 mg) in cirrhotic patients (Child-Pugh class B-C) appears to be safe and effective in preventing portal vein thrombosis. It should be noted that the literature studies may have limitations. Caution should be used in patients with hepatic impairment as these patients have an increased potential for bleeding (see section 4.4) and no formal dose finding studies have been performed in cirrhotic patients (Child Pugh class A, B nor C).

## **5.2 Pharmacokinetic properties**

### General characteristics

The pharmacokinetic parameters of enoxaparin sodium have been studied primarily in terms of the time course of plasma anti-Xa activity and also by anti-IIa activity, at the recommended dose ranges after single and repeated subcutaneous administration and after single intravenous administration. The quantitative determination of anti-Xa and anti-IIa pharmacokinetic activities was conducted by validated amidolytic methods.

### Absorption

The absolute bioavailability of enoxaparin sodium after subcutaneous injection, based on anti-Xa activity, is close to 100%.

Different doses and formulations and dosing regimens can be used.

The mean maximum plasma anti-Xa activity level is observed 3 to 5 hours after subcutaneous injection and achieves approximately 0.2, 0.4, 1.0 and 1.3 anti-Xa IU/mL following single subcutaneous administration of 2,000 IU, 4,000 IU, 100 IU/kg and 150 IU/kg (20 mg, 40 mg, 1 mg/kg and 1.5 mg/kg) doses, respectively.

A 3,000 IU (30 mg) intravenous bolus immediately followed by a 100 IU/kg (1 mg/kg) subcutaneous every 12 hours provided initial maximum anti-Xa activity level of 1.16 IU/mL (n=16) and average exposure corresponding to 88% of steady-state levels. Steady-state is achieved on the second day of treatment.

After repeated subcutaneous administration of 4,000 IU (40 mg) once daily and 150 IU/kg (1.5 mg/kg) once daily regimens in healthy volunteers, the steady-state is reached on day 2 with an average exposure ratio about 15% higher than after a single dose. After repeated subcutaneous administration of the 100 IU/kg (1 mg/kg) twice daily regimen, the steady-state is reached from day 3 to 4 with mean exposure about 65% higher than after a single dose and mean maximum and trough anti-Xa activity levels of about 1.2 and 0.52 IU/mL, respectively.

Injection volume and dose concentration over the range 100-200 mg/mL does not affect pharmacokinetic parameters in healthy volunteers.

Enoxaparin sodium pharmacokinetics appears to be linear over the recommended dose ranges.

Intra-patient and inter-patient variability is low. Following repeated subcutaneous administration no accumulation takes place.

Plasma anti-IIa activity after subcutaneous administration is approximately ten-fold lower than anti-Xa activity. The mean maximum anti-IIa activity level is observed approximately 3 to 4 hours following subcutaneous injection and reaches 0.13 IU/mL and 0.19 IU/mL following repeated administration of 100 IU/kg (1 mg/kg) twice daily and 150 IU/kg (1.5 mg/kg) once daily, respectively.

### Distribution

The volume of distribution of enoxaparin sodium anti-Xa activity is about 4.3 litres and is close to the blood volume.

### Biotransformation

Enoxaparin sodium is primarily metabolised in the liver by desulfation and/or depolymerisation to lower molecular weight species with much reduced biological potency.

### Elimination

Enoxaparin sodium is a low clearance substance with a mean anti-Xa plasma clearance of 0.74 L/h after a 150 IU/kg (1.5 mg/kg) 6-hour intravenous infusion.

Elimination appears monophasic with a half-life of about 5 hours after a single subcutaneous dose to about 7 hours after repeated dosing.

Renal clearance of active fragments represents about 10% of the administered dose and total renal excretion of active and non-active fragments 40% of the dose.

### Special populations

#### *Elderly*

Based on the results of a population pharmacokinetic analysis, the enoxaparin sodium kinetic profile is not different in elderly subjects compared to younger subjects when renal function is normal. However, since renal function is known to decline with age, elderly patients may show reduced elimination of enoxaparin sodium (see sections 4.2 and 4.4).

#### *Hepatic impairment*

In a study conducted in patients with advanced cirrhosis treated with enoxaparin sodium 4,000 IU (40 mg) once daily, a decrease in maximum anti-Xa activity was associated with an increase in the severity of hepatic impairment (assessed by Child-Pugh categories). This decrease was mainly attributed to a decrease in ATIII level secondary to a reduced synthesis of ATIII in patients with hepatic impairment.

#### *Renal impairment*

A linear relationship between anti-Xa plasma clearance and creatinine clearance at steady-state has been observed, which indicates decreased clearance of enoxaparin sodium in patients with reduced renal function. Anti-Xa exposure represented by AUC, at steady-state, is marginally increased in mild (creatinine clearance 50-80 mL/min) and moderate (creatinine clearance 30-50 mL/min) renal impairment after repeated subcutaneous 4,000 IU (40 mg) once daily doses. In patients with severe renal impairment (creatinine clearance <30 mL/min), the AUC at steady state is significantly increased on average by 65% after repeated subcutaneous 4,000 IU (40 mg) once daily doses (see sections 4.2 and 4.4).

#### *Haemodialysis*

Enoxaparin sodium pharmacokinetics appeared similar than control population, after a single 25 IU, 50 IU or 100 IU/kg (0.25, 0.50 or 1.0 mg/kg) intravenous dose however, AUC was two-fold higher than control.

#### *Weight*

After repeated subcutaneous 150 IU/kg (1.5 mg/kg) once daily dosing, mean AUC of anti-Xa activity is marginally higher at steady state in obese healthy volunteers (BMI 30-48 kg/m<sup>2</sup>) compared to non-obese control subjects, while maximum plasma anti-Xa activity level is not increased. There is a lower weight-adjusted clearance in obese subjects with subcutaneous dosing.

When non-weight adjusted dosing was administered, it was found after a single-subcutaneous 4,000 IU (40 mg) dose, that anti-Xa exposure is 52% higher in low-weight women (<45 kg) and 27% higher in low-weight men (<57 kg) when compared to normal weight control subjects (see section 4.4).

### Pharmacokinetic interactions

No pharmacokinetic interactions were observed between enoxaparin sodium and thrombolytics when administered concomitantly.

### 5.3 Preclinical safety data

Besides the anticoagulant effects of enoxaparin sodium, there was no evidence of adverse reactions at 15 mg/kg/day in the 13-week subcutaneous toxicity studies both in rats and dogs and at 10 mg/kg/day in the 26-week subcutaneous and intravenous toxicity studies both in rats, and monkeys.

Enoxaparin sodium has shown no mutagenic activity based on *in vitro* tests, including the Ames test, mouse lymphoma cell forward mutation test, and no clastogenic activity based on an *in vitro* human lymphocyte chromosomal aberration test, and the *in vivo* rat bone marrow chromosomal aberration test.

Studies conducted in pregnant rats and rabbits at subcutaneous doses of enoxaparin sodium up to 30 mg/kg/day did not reveal any evidence of teratogenic effects or foetotoxicity. Enoxaparin sodium was found to have no effect on fertility or reproductive performance of male and female rats at subcutaneous doses up to 20 mg/kg/day.

## 6. PHARMACEUTICAL PARTICULARS

### 6.1 List of excipients

Benzyl alcohol  
Water for injections

### 6.2 Incompatibilities

#### SC injection

Should not be mixed with other medicinal products.

#### IV (bolus) injection (for acute STEMI indication only)

This medicinal product must not be mixed with other medicinal products except those mentioned in section 6.6.

### 6.3 Shelf life

3 years

#### After first opening

Chemical and physical in-use stability has been demonstrated for 28 days at 25 °C.

From a microbiological point of view, once opened, the medicinal product may be stored for a maximum of 28 days below 25 °C. Other in-use storage times and conditions are the responsibility of the user.

#### After dilution with sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose solution for injection.

Chemical and physical in-use stability has been demonstrated for 8 hours at 25 °C.

From a microbiological point of view, unless the method of dilution precludes the risk of microbial contamination, the medicinal product should be used immediately. If not used immediately, in-use storage times and conditions are the responsibility of user.

### 6.4 Special precautions for storage

Store below 25 °C. Do not freeze.

For storage conditions after first opening and dilution of the medicinal product, see section 6.3.

## **6.5 Nature and contents of container**

10 mL of solution in clear, colourless type I glass vial sealed with rubber injection stopper and white aluminium-plastic cap in a cardboard box.

Pack-sizes of 1 or 5 vials containing 10 mL.  
Not all pack sizes may be marketed

## **6.6 Special precautions for disposal and other handling**

Enoxaparin sodium may be safely administered with sodium chloride 9 mg/ml (0.9%) solution for injection or 5% glucose in water for injections (see section 4.2).

Any unused medicinal product or waste material should be disposed of in accordance with local requirements.

## **7. MARKETING AUTHORISATION HOLDER**

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

## **8. MARKETING AUTHORISATION NUMBER(S)**

EU/1/16/1132/081  
EU/1/16/1132/082

## **9. DATE OF FIRST AUTHORISATION/RENEWAL OF THE AUTHORISATION**

Date of first authorisation: 15/09/2016  
Date of latest renewal: 26/08/2021

## **10. DATE OF REVISION OF THE TEXT**

Detailed information on this medicinal product is available on the website of the European Medicines Agency <http://www.ema.europa.eu>.

## **ANNEX II**

- A. MANUFACTURER(S) OF THE BIOLOGICAL ACTIVE SUBSTANCE(S) AND  
MANUFACTURER(S) RESPONSIBLE FOR BATCH RELEASE**
- B. CONDITIONS OR RESTRICTIONS REGARDING SUPPLY AND USE**
- C. OTHER CONDITIONS AND REQUIREMENTS OF THE MARKETING  
AUTHORISATION**
- D. CONDITIONS OR RESTRICTIONS WITH REGARD TO THE SAFE AND EFFECTIVE  
USE OF THE MEDICINAL PRODUCT**

**A. MANUFACTURER(S) OF THE BIOLOGICAL ACTIVE SUBSTANCE(S) AND MANUFACTURER(S) RESPONSIBLE FOR BATCH RELEASE**

Name and address of the manufacturer(s) of the biological active substance(s)

Shenzhen Techdow Pharmaceutical Co., Ltd.  
No. 19, Gaoxinhongyi Road, Hi-tech Industrial Park,  
Nanshan District,  
Shenzhen City,  
Guangdong Province,  
518057, People's Republic of China

Shenzhen Hepalink Pharmaceutical Group Co., Ltd.  
No. 1 Rongtian Road, Kengzi Sub-district  
Pingshan District, Shenzhen  
518122, People's Republic of China

Name and address of the manufacturer responsible for batch release

SciencePharma spółka z ograniczoną odpowiedzialnością  
Chełmska 30/34  
00-725 Warsaw  
Poland

The printed package leaflet of the medicinal product must state the name and address of the manufacturer responsible for the release of the concerned batch.

**B. CONDITIONS OR RESTRICTIONS REGARDING SUPPLY AND USE**

Medicinal product subject to medical prescription.

**C. OTHER CONDITIONS AND REQUIREMENTS OF THE MARKETING AUTHORISATION**

- **Periodic safety update reports (PSURs)**

The requirements for submission of PSURs for this medicinal product are set out in the list of Union reference dates (EURD list) provided for under Article 107c(7) of Directive 2001/83/EC and any subsequent updates published on the European medicines web-portal.

**D. CONDITIONS OR RESTRICTIONS WITH REGARD TO THE SAFE AND EFFECTIVE USE OF THE MEDICINAL PRODUCT**

- **Risk management plan (RMP)**

The marketing authorisation holder (MAH) shall perform the required pharmacovigilance activities and interventions detailed in the agreed RMP presented in Module 1.8.2 of the marketing authorisation and any agreed subsequent updates of the RMP.

An updated RMP should be submitted:

- At the request of the European Medicines Agency;
- Whenever the risk management system is modified, especially as the result of new information being received that may lead to a significant change to the benefit/risk profile or as the result of an important (pharmacovigilance or risk minimisation) milestone being reached.



**ANNEX III**

**LABELLING AND PACKAGE LEAFLET**

## **A. LABELLING**

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING****CARTON (Packs of 1, 2, 6, 10, 20, 50 or 90)****1. NAME OF THE MEDICINAL PRODUCT**

Inhixa 2,000 IU (20 mg)/0.2 mL solution for injection in pre-filled syringe  
enoxaparin sodium

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each pre-filled syringe (0.2 mL) contains 2,000 IU (20 mg) enoxaparin sodium

**3. LIST OF EXCIPIENTS**

Water for injections.

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection

1 pre-filled syringe  
2 pre-filled syringes  
6 pre-filled syringes  
10 pre-filled syringes  
20 pre-filled syringes  
50 pre-filled syringes  
2 pre-filled syringes with needle guard  
6 pre-filled syringes with needle guard  
10 pre-filled syringes with needle guard  
20 pre-filled syringes with needle guard  
50 pre-filled syringes with needle guard  
90 pre-filled syringes with needle guard  
6 pre-filled syringes with manual needle guard  
10 pre-filled syringes with manual needle guard  
20 pre-filled syringes with manual needle guard  
2 pre-filled syringes with UltraSafe Passive needle guard  
6 pre-filled syringes with UltraSafe Passive needle guard

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For single use only.  
Read the package leaflet before use.  
Subcutaneous, intravenous use.  
Extracorporeal use (in the dialysis circuit).

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY**

**8. EXPIRY DATE**

EXP

The diluted solution must be used within 8 hours.

**9. SPECIAL STORAGE CONDITIONS**

Store below 25 °C.

Do not freeze.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE**

**11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/16/1132/021  
EU/1/16/1132/001  
EU/1/16/1132/033  
EU/1/16/1132/002  
EU/1/16/1132/064  
EU/1/16/1132/011  
EU/1/16/1132/034  
EU/1/16/1132/012  
EU/1/16/1132/023  
EU/1/16/1132/065  
EU/1/16/1132/051  
EU/1/16/1132/085  
EU/1/16/1132/090  
EU/1/16/1132/095  
EU/1/16/1132/053  
EU/1/16/1132/054  
EU/1/16/1132/117

**13. BATCH NUMBER**

Lot

<b>14. GENERAL CLASSIFICATION FOR SUPPLY</b>
--

Medicinal product subject to medical prescription.

<b>15. INSTRUCTIONS ON USE</b>
--------------------------------

<b>16. INFORMATION IN BRAILLE</b>
-----------------------------------

Inhixa 2,000 IU (20 mg)/0.2 mL

<b>17. UNIQUE IDENTIFIER – 2D BARCODE</b>
---

2D barcode carrying the unique identifier included.

<b>18. UNIQUE IDENTIFIER - HUMAN READABLE DATA</b>
--

PC  
SN  
NN

**MINIMUM PARTICULARS TO APPEAR ON BLISTERS OR STRIPS****PRE-FILLED SYRINGE****1. NAME OF THE MEDICINAL PRODUCT**

Inhixa 2,000 IU (20 mg)/0.2 mL injection  
enoxaparin sodium  
SC, IV and extracorporeal use

**2. NAME OF THE MARKETING AUTHORISATION HOLDER**

Techdow

**3. EXPIRY DATE****4. BATCH NUMBER****5. OTHER**

<b>MINIMUM PARTICULARS TO APPEAR ON SMALL IMMEDIATE PACKAGING UNITS</b> <b>PRE-FILLED SYRINGE</b>
--

<b>1. NAME OF THE MEDICINAL PRODUCT AND ROUTE(S) OF ADMINISTRATION</b>
--

Inhixa 2,000 IU (20 mg)/0.2 mL injection  
enoxaparin sodium  
SC, IV and extracorporeal use

<b>2. METHOD OF ADMINISTRATION</b>
------------------------------------

<b>3. EXPIRY DATE</b>
-----------------------

EXP

<b>4. BATCH NUMBER</b>
------------------------

Lot

<b>5. CONTENTS BY WEIGHT, BY VOLUME OR BY UNIT</b>
--

<b>6. OTHER</b>
-----------------

## **PARTICULARS TO APPEAR ON THE OUTER PACKAGING**

### **CARTON OF (Packs of 2, 5, 6, 10, 20, 30, 50 or 90)**

#### **1. NAME OF THE MEDICINAL PRODUCT**

Inhixa 4,000 IU (40 mg) /0.4 mL solution for injection in pre-filled syringe  
enoxaparin sodium

#### **2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each pre-filled syringe (0.4 mL) contains 4,000 IU (40 mg) enoxaparin sodium

#### **3. LIST OF EXCIPIENTS**

Water for injections.

#### **4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection

2 pre-filled syringes  
5 pre-filled syringes  
6 pre-filled syringes  
10 pre-filled syringes  
20 pre-filled syringes  
30 pre-filled syringes  
50 pre-filled syringes  
2 pre-filled syringes with needle guard  
5 pre-filled syringes with needle guard  
6 pre-filled syringes with needle guard  
10 pre-filled syringes with needle guard  
20 pre-filled syringes with needle guard  
30 pre-filled syringes with needle guard  
50 pre-filled syringes with needle guard  
90 pre-filled syringes with needle guard  
2 pre-filled syringes with manual needle guard  
6 pre-filled syringes with manual needle guard  
10 pre-filled syringes with manual needle guard  
20 pre-filled syringes with manual needle guard  
50 pre-filled syringes with manual needle guard  
2 pre-filled syringes with UltraSafe Passive needle guard  
6 pre-filled syringes with UltraSafe Passive needle guard

#### **5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For single use only.  
Read the package leaflet before use.  
Subcutaneous, intravenous use.



Extracorporeal use (in the dialysis circuit).

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY**

**8. EXPIRY DATE**

EXP

The diluted solution must be used within 8 hours.

**9. SPECIAL STORAGE CONDITIONS**

Store below 25 °C.

Do not freeze.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE**

**11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/16/1132/003  
EU/1/16/1132/066  
EU/1/16/1132/035  
EU/1/16/1132/004  
EU/1/16/1132/116  
EU/1/16/1132/043  
EU/1/16/1132/068  
EU/1/16/1132/013  
EU/1/16/1132/067  
EU/1/16/1132/036  
EU/1/16/1132/014  
EU/1/16/1132/024  
EU/1/16/1132/044  
EU/1/16/1132/025  
EU/1/16/1132/052  
EU/1/16/1132/096

EU/1/16/1132/086  
EU/1/16/1132/091  
EU/1/16/1132/097  
EU/1/16/1132/098  
EU/1/16/1132/055  
EU/1/16/1132/056

<b>13. BATCH NUMBER</b>
-------------------------

Lot

<b>14. GENERAL CLASSIFICATION FOR SUPPLY</b>
--

Medicinal product subject to medical prescription.

<b>15. INSTRUCTIONS ON USE</b>
--------------------------------

<b>16. INFORMATION IN BRAILLE</b>
-----------------------------------

Inhixa 4,000 IU (40 mg)/0.4 mL

<b>17. UNIQUE IDENTIFIER – 2D BARCODE</b>
---

2D barcode carrying the unique identifier included.

<b>18. UNIQUE IDENTIFIER - HUMAN READABLE DATA</b>
--

PC  
SN  
NN

**MINIMUM PARTICULARS TO APPEAR ON BLISTERS OR STRIPS****PRE-FILLED SYRINGE****1. NAME OF THE MEDICINAL PRODUCT**

Inhixa 4,000 IU (40 mg) /0.4 mL injection  
enoxaparin sodium  
SC, IV and extracorporeal use

**2. NAME OF THE MARKETING AUTHORISATION HOLDER**

Techdow

**3. EXPIRY DATE****4. BATCH NUMBER****5. OTHER**

**MINIMUM PARTICULARS TO APPEAR ON SMALL IMMEDIATE PACKAGING UNITS****PRE-FILLED SYRINGE****1. NAME OF THE MEDICINAL PRODUCT AND ROUTE(S) OF ADMINISTRATION**

Inhixa 4,000 IU (40 mg) /0.4 mL injection  
enoxaparin sodium  
SC, IV and extracorporeal use

**2. METHOD OF ADMINISTRATION****3. EXPIRY DATE**

EXP

**4. BATCH NUMBER**

Lot

**5. CONTENTS BY WEIGHT, BY VOLUME OR BY UNIT****6. OTHER**

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING****CARTON OF (Packs of 2, 6, 10, 12, 20, 24, 30 or 50)****1. NAME OF THE MEDICINAL PRODUCT**

Inhixa 6,000 IU (60 mg)/0.6 mL solution for injection in pre-filled syringe  
enoxaparin sodium

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each pre-filled syringe (0.6 mL) contains 6,000 IU (60 mg) enoxaparin sodium

**3. LIST OF EXCIPIENTS**

Water for injections.

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection

2 pre-filled syringes  
6 pre-filled syringes  
10 pre-filled syringes  
12 pre-filled syringes  
20 pre-filled syringes  
24 pre-filled syringes  
30 pre-filled syringes  
50 pre-filled syringes  
2 pre-filled syringes with needle guard  
6 pre-filled syringes with needle guard  
10 pre-filled syringes with needle guard  
12 pre-filled syringes with needle guard  
20 pre-filled syringes with needle guard  
24 pre-filled syringes with needle guard  
30 pre-filled syringes with needle guard  
50 pre-filled syringes with needle guard  
6 pre-filled syringes with manual needle guard  
10 pre-filled syringes with manual needle guard  
12 pre-filled syringes with manual needle guard  
20 pre-filled syringes with manual needle guard  
24 pre-filled syringes with manual needle guard  
50 pre-filled syringes with manual needle guard  
2 pre-filled syringes with UltraSafe Passive needle guard  
10 pre-filled syringes with UltraSafe Passive needle guard

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For single use only.  
Read the package leaflet before use.

Subcutaneous, intravenous use.  
Extracorporeal use (in the dialysis circuit).

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY**

**8. EXPIRY DATE**

EXP

The diluted solution must be used within 8 hours.

**9. SPECIAL STORAGE CONDITIONS**

Store below 25 °C.  
Do not freeze.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE**

**11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/16/1132/005  
EU/1/16/1132/037  
EU/1/16/1132/006  
EU/1/16/1132/045  
EU/1/16/1132/083  
EU/1/16/1132/015  
EU/1/16/1132/038  
EU/1/16/1132/016  
EU/1/16/1132/026  
EU/1/16/1132/027  
EU/1/16/1132/028  
EU/1/16/1132/046  
EU/1/16/1132/111  
EU/1/16/1132/087  
EU/1/16/1132/092

EU/1/16/1132/099  
EU/1/16/1132/100  
EU/1/16/1132/101  
EU/1/16/1132/102  
EU/1/16/1132/057  
EU/1/16/1132/058  
EU/1/16/1132/118  
EU/1/16/1132/119  
EU/1/16/1132/120

<b>13. BATCH NUMBER</b>
-------------------------

Lot

<b>14. GENERAL CLASSIFICATION FOR SUPPLY</b>
--

Medicinal product subject to medical prescription.

<b>15. INSTRUCTIONS ON USE</b>
--------------------------------

<b>16. INFORMATION IN BRAILLE</b>
-----------------------------------

Inhixa 6,000 IU (60 mg)/0.6 mL

<b>17. UNIQUE IDENTIFIER – 2D BARCODE</b>
---

2D barcode carrying the unique identifier included.

<b>18. UNIQUE IDENTIFIER - HUMAN READABLE DATA</b>
--

PC  
SN  
NN

**MINIMUM PARTICULARS TO APPEAR ON BLISTERS OR STRIPS****PRE-FILLED SYRINGE****1. NAME OF THE MEDICINAL PRODUCT**

Inhixa 6,000 IU (60 mg)/0.6 mL injection  
enoxaparin sodium  
SC, IV and extracorporeal use

**2. NAME OF THE MARKETING AUTHORISATION HOLDER**

Techdow

**3. EXPIRY DATE****4. BATCH NUMBER****5. OTHER**



**MINIMUM PARTICULARS TO APPEAR ON SMALL IMMEDIATE PACKAGING UNITS****PRE-FILLED SYRINGE****1. NAME OF THE MEDICINAL PRODUCT AND ROUTE(S) OF ADMINISTRATION**

Inhixa 6,000 IU (60 mg)/0.6 mL injection  
enoxaparin sodium  
SC, IV and extracorporeal use

**2. METHOD OF ADMINISTRATION****3. EXPIRY DATE**

EXP

**4. BATCH NUMBER**

Lot

**5. CONTENTS BY WEIGHT, BY VOLUME OR BY UNIT****6. OTHER**

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING****CARTON OF (Packs of 2, 6, 10, 12, 20, 24, 30 or 50)****1. NAME OF THE MEDICINAL PRODUCT**

Inhixa 8,000 IU (80 mg)/0.8 mL solution for injection in pre-filled syringe  
enoxaparin sodium

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each pre-filled syringe (0.8 mL) contains 8,000 IU (80 mg) enoxaparin sodium

**3. LIST OF EXCIPIENTS**

Water for injections.

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection

2 pre-filled syringes  
6 pre-filled syringes  
10 pre-filled syringes  
12 pre-filled syringes  
20 pre-filled syringes  
24 pre-filled syringes  
30 pre-filled syringes  
50 pre-filled syringes  
2 pre-filled syringes with needle guard  
6 pre-filled syringes with needle guard  
10 pre-filled syringes with needle guard  
12 pre-filled syringes with needle guard  
20 pre-filled syringes with needle guard  
24 pre-filled syringes with needle guard  
30 pre-filled syringes with needle guard  
50 pre-filled syringes with needle guard  
6 pre-filled syringes with manual needle guard  
10 pre-filled syringes with manual needle guard  
12 pre-filled syringes with manual needle guard  
20 pre-filled syringes with manual needle guard  
24 pre-filled syringes with manual needle guard  
50 pre-filled syringes with manual needle guard  
2 pre-filled syringes with UltraSafe Passive needle guard  
10 pre-filled syringes with UltraSafe Passive needle guard

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For single use only.  
Read the package leaflet before use.

Subcutaneous, intravenous use.  
Extracorporeal use (in the dialysis circuit).

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY**

**8. EXPIRY DATE**

EXP

The diluted solution must be used within 8 hours.

**9. SPECIAL STORAGE CONDITIONS**

Store below 25 °C.  
Do not freeze.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE**

**11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/16/1132/007  
EU/1/16/1132/039  
EU/1/16/1132/008  
EU/1/16/1132/047  
EU/1/16/1132/084  
EU/1/16/1132/017  
EU/1/16/1132/040  
EU/1/16/1132/018  
EU/1/16/1132/029  
EU/1/16/1132/112  
EU/1/16/1132/030  
EU/1/16/1132/048  
EU/1/16/1132/113  
EU/1/16/1132/088  
EU/1/16/1132/093

EU/1/16/1132/103  
EU/1/16/1132/104  
EU/1/16/1132/105  
EU/1/16/1132/106  
EU/1/16/1132/059  
EU/1/16/1132/060  
EU/1/16/1132/121  
EU/1/16/1132/122  
EU/1/16/1132/123

<b>13. BATCH NUMBER</b>
-------------------------

Lot

<b>14. GENERAL CLASSIFICATION FOR SUPPLY</b>
--

Medicinal product subject to medical prescription.

<b>15. INSTRUCTIONS ON USE</b>
--------------------------------

<b>16. INFORMATION IN BRAILLE</b>
-----------------------------------

Inhixa 8,000 IU (80 mg)/0.8 mL

<b>17. UNIQUE IDENTIFIER – 2D BARCODE</b>
---

2D barcode carrying the unique identifier included.

<b>18. UNIQUE IDENTIFIER - HUMAN READABLE DATA</b>
--

PC  
SN  
NN

**MINIMUM PARTICULARS TO APPEAR ON BLISTERS OR STRIPS****PRE-FILLED SYRINGE****1. NAME OF THE MEDICINAL PRODUCT**

Inhixa 8,000 IU (80 mg)/0.8 mL injection  
enoxaparin sodium  
SC, IV and extracorporeal use

**2. NAME OF THE MARKETING AUTHORISATION HOLDER**

Techdow

**3. EXPIRY DATE****4. BATCH NUMBER****5. OTHER**

**MINIMUM PARTICULARS TO APPEAR ON SMALL IMMEDIATE PACKAGING UNITS****PRE-FILLED SYRINGE****1. NAME OF THE MEDICINAL PRODUCT AND ROUTE(S) OF ADMINISTRATION**

Inhixa 8,000 IU (80 mg)/0.8 mL injection  
enoxaparin sodium  
SC, IV and extracorporeal use

**2. METHOD OF ADMINISTRATION****3. EXPIRY DATE**

EXP

**4. BATCH NUMBER**

Lot

**5. CONTENTS BY WEIGHT, BY VOLUME OR BY UNIT****6. OTHER**

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING****CARTON OF (Packs of 2, 6, 10, 12, 20, 24, 30, 50 or 90)****1. NAME OF THE MEDICINAL PRODUCT**

Inhixa 10,000 IU (100 mg)/1 mL solution for injection in pre-filled syringe  
enoxaparin sodium

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each pre-filled syringe (1 mL) contains 10,000 IU (100 mg) enoxaparin sodium

**3. LIST OF EXCIPIENTS**

Water for injections.

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection

2 pre-filled syringes

6 pre-filled syringes

10 pre-filled syringes

12 pre-filled syringes

20 pre-filled syringes

24 pre-filled syringes

30 pre-filled syringes

50 pre-filled syringes

90 pre-filled syringes

2 pre-filled syringes with needle guard

6 pre-filled syringes with needle guard

10 pre-filled syringes with needle guard

12 pre-filled syringes with needle guard

20 pre-filled syringes with needle guard

24 pre-filled syringes with needle guard

30 pre-filled syringes with needle guard

50 pre-filled syringes with needle guard

6 pre-filled syringes with manual needle guard

10 pre-filled syringes with manual needle guard

12 pre-filled syringes with manual needle guard

20 pre-filled syringes with manual needle guard

24 pre-filled syringes with manual needle guard

50 pre-filled syringes with manual needle guard

2 pre-filled syringes with UltraSafe Passive needle guard

10 pre-filled syringes with UltraSafe Passive needle guard

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For single use only.

Read the package leaflet before use.  
Subcutaneous, intravenous use.  
Extracorporeal use (in the dialysis circuit).

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY**

**8. EXPIRY DATE**

EXP  
The diluted solution must be used within 8 hours.

**9. SPECIAL STORAGE CONDITIONS**

Store below 25 °C.  
Do not freeze.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE**

**11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/16/1132/009  
EU/1/16/1132/041  
EU/1/16/1132/010  
EU/1/16/1132/049  
EU/1/16/1132/063  
EU/1/16/1132/022  
EU/1/16/1132/019  
EU/1/16/1132/042  
EU/1/16/1132/020  
EU/1/16/1132/031  
EU/1/16/1132/114  
EU/1/16/1132/032  
EU/1/16/1132/050  
EU/1/16/1132/115



EU/1/16/1132/089  
EU/1/16/1132/094  
EU/1/16/1132/107  
EU/1/16/1132/108  
EU/1/16/1132/109  
EU/1/16/1132/110  
EU/1/16/1132/061  
EU/1/16/1132/062  
EU/1/16/1132/124  
EU/1/16/1132/125  
EU/1/16/1132/126

**13. BATCH NUMBER**

Lot

**14. GENERAL CLASSIFICATION FOR SUPPLY**

Medicinal product subject to medical prescription.

**15. INSTRUCTIONS ON USE**

**16. INFORMATION IN BRAILLE**

Inhixa 10,000 IU (100 mg)/1 mL

**17. UNIQUE IDENTIFIER – 2D BARCODE**

2D barcode carrying the unique identifier included.

**18. UNIQUE IDENTIFIER - HUMAN READABLE DATA**

PC  
SN  
NN

**MINIMUM PARTICULARS TO APPEAR ON BLISTERS OR STRIPS****PRE-FILLED SYRINGE****1. NAME OF THE MEDICINAL PRODUCT**

Inhixa 10,000 IU (100 mg) /1 mL injection  
enoxaparin sodium  
SC, IV and extracorporeal use

**2. NAME OF THE MARKETING AUTHORISATION HOLDER**

Techdow

**3. EXPIRY DATE****4. BATCH NUMBER****5. OTHER**

**MINIMUM PARTICULARS TO APPEAR ON SMALL IMMEDIATE PACKAGING UNITS****PRE-FILLED SYRINGE****1. NAME OF THE MEDICINAL PRODUCT AND ROUTE(S) OF ADMINISTRATION**

Inhixa 10,000 IU (100 mg) /1 mL injection  
enoxaparin sodium  
SC, IV and extracorporeal use

**2. METHOD OF ADMINISTRATION****3. EXPIRY DATE**

EXP

**4. BATCH NUMBER**

Lot

**5. CONTENTS BY WEIGHT, BY VOLUME OR BY UNIT****6. OTHER**

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING****CARTON (Packs of 2, 10 or 30)****1. NAME OF THE MEDICINAL PRODUCT**

Inhixa 12,000 IU (120 mg)/0.8 mL solution for injection in pre-filled syringe  
enoxaparin sodium

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each pre-filled syringe (0.8 mL) contains 12,000 IU (120 mg) enoxaparin sodium.

**3. LIST OF EXCIPIENTS**

Water for injections.

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection

2 pre-filled syringes

10 pre-filled syringes

30 pre-filled syringes

10 pre-filled syringes with needle guard

30 pre-filled syringes with needle guard

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For single use only.

Read the package leaflet before use.

Subcutaneous, intravenous use.

Extracorporeal use (in the dialysis circuit).

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY****8. EXPIRY DATE**

EXP

The diluted solution must be used within 8 hours.

**9. SPECIAL STORAGE CONDITIONS**

Store below 25 °C.  
Do not freeze.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE****11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/16/1132/069  
EU/1/16/1132/076  
EU/1/16/1132/075  
EU/1/16/1132/077  
EU/1/16/1132/073

**13. BATCH NUMBER**

Lot

**14. GENERAL CLASSIFICATION FOR SUPPLY**

Medicinal product subject to medical prescription.

**15. INSTRUCTIONS ON USE****16. INFORMATION IN BRAILLE**

Inhixa 12,000 IU (120 mg)/0.8 mL

**17. UNIQUE IDENTIFIER – 2D BARCODE**

2D barcode carrying the unique identifier included.

**18. UNIQUE IDENTIFIER - HUMAN READABLE DATA**

PC  
SN

NN

**MINIMUM PARTICULARS TO APPEAR ON BLISTERS OR STRIPS****PRE-FILLED SYRINGE****1. NAME OF THE MEDICINAL PRODUCT**

Inhixa 12,000 IU (120 mg)/0.8 mL injection  
enoxaparin sodium  
SC, IV and extracorporeal use

**2. NAME OF THE MARKETING AUTHORISATION HOLDER**

Techdow

**3. EXPIRY DATE****4. BATCH NUMBER****5. OTHER**

**MINIMUM PARTICULARS TO APPEAR ON SMALL IMMEDIATE PACKAGING UNITS****PRE-FILLED SYRINGE****1. NAME OF THE MEDICINAL PRODUCT AND ROUTE(S) OF ADMINISTRATION**

Inhixa 12,000 IU (120 mg)/0.8 mL injection  
enoxaparin sodium  
SC, IV and extracorporeal use

**2. METHOD OF ADMINISTRATION****3. EXPIRY DATE**

EXP

**4. BATCH NUMBER**

Lot

**5. CONTENTS BY WEIGHT, BY VOLUME OR BY UNIT****6. OTHER**



**PARTICULARS TO APPEAR ON THE OUTER PACKAGING****CARTON (Packs of 2, 10 or 30)****1. NAME OF THE MEDICINAL PRODUCT**

Inhixa 15,000 IU (150 mg)/1 mL solution for injection in pre-filled syringe  
enoxaparin sodium

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each pre-filled syringe (1 mL) contains 15,000 IU (150 mg) enoxaparin sodium

**3. LIST OF EXCIPIENTS**

Water for injections.

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection

2 pre-filled syringes

10 pre-filled syringes

30 pre-filled syringes

10 pre-filled syringes with needle guard

30 pre-filled syringes with needle guard

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

For single use only.

Read the package leaflet before use.

Subcutaneous, intravenous use.

Extracorporeal use (in the dialysis circuit).

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY****8. EXPIRY DATE**

EXP

The diluted solution must be used within 8 hours.

**9. SPECIAL STORAGE CONDITIONS**

Store below 25 °C.  
Do not freeze.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE****11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/16/1132/074  
EU/1/16/1132/078  
EU/1/16/1132/080  
EU/1/16/1132/079  
EU/1/16/1132/070

**13. BATCH NUMBER**

Lot

**14. GENERAL CLASSIFICATION FOR SUPPLY**

Medicinal product subject to medical prescription.

**15. INSTRUCTIONS ON USE****16. INFORMATION IN BRAILLE**

Inhixa 15,000 IU (150 mg)/ mL

**17. UNIQUE IDENTIFIER – 2D BARCODE**

2D barcode carrying the unique identifier included.

**18. UNIQUE IDENTIFIER - HUMAN READABLE DATA**

PC

SN  
NN

**MINIMUM PARTICULARS TO APPEAR ON BLISTERS OR STRIPS****PRE-FILLED SYRINGE****1. NAME OF THE MEDICINAL PRODUCT**

Inhixa 15,000 IU (150 mg)/1 mL injection  
enoxaparin sodium  
SC, IV and extracorporeal use

**2. NAME OF THE MARKETING AUTHORISATION HOLDER**

Techdow

**3. EXPIRY DATE****4. BATCH NUMBER****5. OTHER**

**MINIMUM PARTICULARS TO APPEAR ON SMALL IMMEDIATE PACKAGING UNITS****PRE-FILLED SYRINGE****1. NAME OF THE MEDICINAL PRODUCT AND ROUTE(S) OF ADMINISTRATION**

Inhixa 15,000 IU (150 mg)/1 mL injection  
enoxaparin sodium  
SC, IV and extracorporeal use

**2. METHOD OF ADMINISTRATION****3. EXPIRY DATE**

EXP

**4. BATCH NUMBER**

Lot

**5. CONTENTS BY WEIGHT, BY VOLUME OR BY UNIT****6. OTHER**

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING****OUTER BOX MULTIDOSE CONTAINER****1. NAME OF THE MEDICINAL PRODUCT**

Inhixa 30,000 IU (300 mg)/3 mL solution for injection in multidose container  
enoxaparin sodium

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each mL contains 10,000 IU (100 mg) enoxaparin sodium.  
Each vial (3 mL) contains 30,000 IU (300 mg) enoxaparin sodium.

**3. LIST OF EXCIPIENTS**

Benzyl alcohol (see leaflet for further information)  
Water for injections

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection  
1 vial

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

Read the package leaflet before use.  
Subcutaneous, intravenous use.  
Extracorporeal use (in the dialysis circuit).

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY****8. EXPIRY DATE**

EXP  
The contents of the multidose vial should be used within 28 days of opening.

**9. SPECIAL STORAGE CONDITIONS**

Store below 25 °C.  
Do not freeze.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE****11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/16/1132/071

**13. BATCH NUMBER**

Lot

**14. GENERAL CLASSIFICATION FOR SUPPLY**

Medicinal product subject to medical prescription.

**15. INSTRUCTIONS ON USE****16. INFORMATION IN BRAILLE**

Inhixa 30,000 IU (300 mg)/3 mL

**17. UNIQUE IDENTIFIER – 2D BARCODE**

2D barcode carrying the unique identifier included.

**18. UNIQUE IDENTIFIER - HUMAN READABLE DATA**

PC  
SN  
NN

**MINIMUM PARTICULARS TO APPEAR ON SMALL IMMEDIATE PACKAGING UNITS****MULTIPLE DOSE CONTAINER****1. NAME OF THE MEDICINAL PRODUCT AND ROUTE(S) OF ADMINISTRATION**

Inhixa 30,000 IU (300 mg)/3 mL solution for injection in multidose container  
enoxaparin sodium  
SC, IV and extracorporeal use

**2. METHOD OF ADMINISTRATION****3. EXPIRY DATE**

EXP

**4. BATCH NUMBER**

Lot

**5. CONTENTS BY WEIGHT, BY VOLUME OR BY UNIT****6. OTHER**



**PARTICULARS TO APPEAR ON THE OUTER PACKAGING****OUTER BOX MULTIDOSE CONTAINER****1. NAME OF THE MEDICINAL PRODUCT**

Inhixa 50,000 IU (500 mg)/5 mL solution for injection in multidose container  
enoxaparin sodium

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each mL contains 10,000 IU (100 mg) enoxaparin sodium.  
Each vial (5 mL) contains 50,000 IU (500 mg) enoxaparin sodium.

**3. LIST OF EXCIPIENTS**

Benzyl alcohol (see leaflet for further information)  
Water for injections

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection  
5 vials

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

Read the package leaflet before use.  
Subcutaneous, intravenous use.  
Extracorporeal use (in the dialysis circuit).

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY****8. EXPIRY DATE**

EXP  
The contents of the multidose vial should be used within 28 days of opening.

**9. SPECIAL STORAGE CONDITIONS**

Store below 25 °C.  
Do not freeze.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE****11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/16/1132/072

**13. BATCH NUMBER**

Lot

**14. GENERAL CLASSIFICATION FOR SUPPLY**

Medicinal product subject to medical prescription.

**15. INSTRUCTIONS ON USE****16. INFORMATION IN BRAILLE**

Inhixa 50,000 IU (500 mg)/5 mL

**17. UNIQUE IDENTIFIER – 2D BARCODE**

2D barcode carrying the unique identifier included.

**18. UNIQUE IDENTIFIER - HUMAN READABLE DATA**

PC  
SN  
NN

**MINIMUM PARTICULARS TO APPEAR ON SMALL IMMEDIATE PACKAGING UNITS****MULTIPLE DOSE CONTAINER****1. NAME OF THE MEDICINAL PRODUCT AND ROUTE(S) OF ADMINISTRATION**

Inhixa 50,000 IU (500 mg)/5 mL solution for injection in multidose container  
enoxaparin sodium  
SC, IV and extracorporeal use

**2. METHOD OF ADMINISTRATION****3. EXPIRY DATE**

EXP

**4. BATCH NUMBER**

Lot

**5. CONTENTS BY WEIGHT, BY VOLUME OR BY UNIT****6. OTHER**

**PARTICULARS TO APPEAR ON THE OUTER PACKAGING****OUTER BOX MULTIDOSE CONTAINER****1. NAME OF THE MEDICINAL PRODUCT**

Inhixa 100,000 IU (1000 mg)/10 mL solution for injection in multidose container  
enoxaparin sodium

**2. STATEMENT OF ACTIVE SUBSTANCE(S)**

Each mL contains 10,000 IU (100 mg) enoxaparin sodium.  
Each vial (10 mL) contains 100,000 IU (1000 mg) enoxaparin sodium.

**3. LIST OF EXCIPIENTS**

Benzyl alcohol (see leaflet for further information)  
Water for injections

**4. PHARMACEUTICAL FORM AND CONTENTS**

Solution for injection

1 vial  
5 vials

**5. METHOD AND ROUTE(S) OF ADMINISTRATION**

Read the package leaflet before use.  
Subcutaneous, intravenous use.  
Extracorporeal use (in the dialysis circuit).

**6. SPECIAL WARNING THAT THE MEDICINAL PRODUCT MUST BE STORED OUT OF THE SIGHT AND REACH OF CHILDREN**

Keep out of the sight and reach of children.

**7. OTHER SPECIAL WARNING(S), IF NECESSARY****8. EXPIRY DATE**

EXP  
The contents of the multidose vial should be used within 28 days of opening.

**9. SPECIAL STORAGE CONDITIONS**

Store below 25 °C.

Do not freeze.

**10. SPECIAL PRECAUTIONS FOR DISPOSAL OF UNUSED MEDICINAL PRODUCTS OR WASTE MATERIALS DERIVED FROM SUCH MEDICINAL PRODUCTS, IF APPROPRIATE****11. NAME AND ADDRESS OF THE MARKETING AUTHORISATION HOLDER**

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

**12. MARKETING AUTHORISATION NUMBER(S)**

EU/1/16/1132/081

EU/1/16/1132/082

**13. BATCH NUMBER**

Lot

**14. GENERAL CLASSIFICATION FOR SUPPLY**

Medicinal product subject to medical prescription.

**15. INSTRUCTIONS ON USE****16. INFORMATION IN BRAILLE**

Inhixa 100,000 IU (1000 mg)/10 mL

**17. UNIQUE IDENTIFIER – 2D BARCODE**

2D barcode carrying the unique identifier included.

**18. UNIQUE IDENTIFIER - HUMAN READABLE DATA**

PC  
SN  
NN

<b>MINIMUM PARTICULARS TO APPEAR ON SMALL IMMEDIATE PACKAGING UNITS</b>
---

<b>MULTIPLE DOSE CONTAINER</b>
--------------------------------

<b>1. NAME OF THE MEDICINAL PRODUCT AND ROUTE(S) OF ADMINISTRATION</b>
--

Inhixa 100,000 IU (1000 mg)/10 mL solution for injection in multidose container  
enoxaparin sodium  
SC, IV and extracorporeal use

<b>2. METHOD OF ADMINISTRATION</b>
------------------------------------

<b>3. EXPIRY DATE</b>
-----------------------

EXP

<b>4. BATCH NUMBER</b>
------------------------

Lot

<b>5. CONTENTS BY WEIGHT, BY VOLUME OR BY UNIT</b>
--

<b>6. OTHER</b>
-----------------

**B. PACKAGE LEAFLET**

## **Package leaflet: Information for the user**

**Inhixa 2,000 IU (20 mg)/0.2 mL solution for injection**

**Inhixa 4,000 IU (40 mg)/0.4 mL solution for injection**

**Inhixa 6,000 IU (60 mg)/0.6 mL solution for injection**

**Inhixa 8,000 IU (80 mg)/0.8 mL solution for injection**

**Inhixa 10,000 IU (100 mg)/1 mL solution for injection**

enoxaparin sodium

**Read all of this leaflet carefully before you start using this medicine because it contains important information for you.**

- Keep this leaflet. You may need to read it again.
- If you have any further questions, ask your doctor, pharmacist or nurse.
- This medicine has been prescribed for you only. Do not pass it on to others. It may harm them, even if their signs of illness are the same as yours.
- If you get any side effects, talk to your doctor, pharmacist or nurse. This includes any possible side effects not listed in this leaflet. See section 4.

### **What is in this leaflet**

1. What Inhixa is and what it is used for
2. What you need to know before you use Inhixa
3. How to use Inhixa
4. Possible side effects
5. How to store Inhixa
6. Contents of the pack and other information

### **1. What Inhixa is and what it is used for**

Inhixa contains the active substance called enoxaparin sodium that is a low molecular weight heparin (LMWH).

Inhixa works in two ways:

- 1) Stopping existing blood clots from getting bigger. This helps your body to break them down and stop them causing you harm.
- 2) Stopping blood clots forming in your blood.

Inhixa can be used to:

- Treat blood clots that are in your blood
- Stop blood clots from forming in your blood in the following situations:
  - Before and after an operation
  - When you have an acute illness and face period of limited mobility
  - If you have experienced a blood clot due to cancer to prevent further clots from forming.
  - When you have unstable angina (a condition when not enough blood gets to your heart)
  - After a heart attack
- Stop blood clots forming in the tubes of your dialysis machine (used for people with severe kidney problems).

### **2. What you need to know before you use Inhixa**

#### **Do not use Inhixa**

- If you are allergic to enoxaparin sodium or any of the other ingredients of this medicine (listed in section 6). Signs of an allergic reaction include: rash, swallowing or breathing problems, swelling of your lips, face, throat or tongue.



- If you are allergic to heparin or other low molecular weight heparins such as nadroparin, tinzaparin or dalteparin.
- If you have had a reaction to heparin that caused a severe drop in the number of your clotting cells (platelets) - this reaction is called heparin-induced thrombocytopenia - within the last 100 days or if you have antibodies against enoxaparin in your blood.
- If you are bleeding heavily or have a condition with a high risk of bleeding (such as stomach ulcer, recent surgery of the brain or eyes), including recent bleeding stroke.
- If you are using Inhixa to treat blood clots in your body and going to receive spinal or epidural anaesthesia or lumbar puncture within 24 hours.

### **Warnings and precautions**

Inhixa **should not be used interchangeably** with other medicines belonging to the group of low molecular weight heparins. This is because they are not exactly the same and do not have the same activity and instructions for use.

### **Talk to your doctor or pharmacist before using Inhixa if:**

- you have ever had a reaction to heparin that caused a severe drop in the number of your platelets
- you are going to receive spinal or epidural anesthesia or lumbar puncture (see Operations and Anaesthetics): a delay should be respected between Inhixa use and this procedure
- you have had a heart valve fitted
- you have endocarditis (an infection of the inner lining of the heart)
- you have history of gastric ulcer
- you have had a recent stroke
- you have high blood pressure
- you have diabetes or problems with blood vessels in the eye caused by diabetes (called diabetic retinopathy)
- you have had an operation recently on your eyes or brain
- you are elderly (over 65 years old) and especially if you are over 75 years old
- you have kidney problems
- you have liver problems
- you are underweight or overweight
- you have high level of potassium in your blood (this may be checked with a blood test)
- you are currently using medicines which affect bleeding (see section below – Other medicines and Inhixa).

You may have a **blood test** before you start using this medicine and at intervals while you are using it; this is to check the level of the clotting cells (platelets) and potassium in your blood.

### **Children and adolescents**

The safety and efficacy of Inhixa has not been evaluated in children or adolescents.

### **Other medicines and Inhixa**

Tell your doctor, pharmacist or nurse if you are taking, have recently taken or might take any other medicines.

- Warfarin – another anticoagulant medicine used for thinning the blood
- Acetylsalicylic acid (also known as aspirin or ASA), clopidogrel or other medicines used to stop blood clots from forming (see also in section 3, “Changing anticoagulant medicine”)
- Dextran injection – used as a blood replacer
- Ibuprofen, diclofenac, ketorolac or other medicines known as non-steroidal anti-inflammatory agents which are used to treat pain and swelling in arthritis and other conditions
- Prednisolone, dexamethasone or other medicines used to treat asthma, rheumatoid arthritis and other conditions
- Medicines which increase potassium level in your blood such as potassium salts, water pills, some medicines for heart problems.

### **Operations and anaesthetics**

If you are going to have a spinal puncture or an operation where an epidural or spinal anaesthetic is used, tell your doctor that you are using Inhixa. See “Do not use Inhixa”. Also, tell your doctor if you have any problem with your spine or if you ever had spinal surgery.

### **Pregnancy and breast-feeding**

If you are pregnant, think you may be pregnant or are planning to have a baby, ask your doctor or pharmacist for advice before taking this medicine.

If you are pregnant and have a mechanical heart valve, you may be at an increased risk of developing blood clots. Your doctor should discuss this with you.

If you are breast-feeding or plan to breast-feed, you should ask your doctor for advice before taking this medicine.

### **Driving and using machines**

Inhixa does not affect the ability to drive and operate machinery.

### **Traceability**

It is important to keep a record of the batch number of your Inhixa. So, every time you get a new package of Inhixa, note down the date and the batch number (which is on the packaging after Lot) and keep this information in a safe place.

### **Inhixa contains sodium**

This medicine contains less than 1 mmol sodium (23 mg) per dose, that is to say essentially ‘sodium-free’.

## **3. How to use Inhixa**

Always use this medicine exactly as your doctor or pharmacist has told you. Check with your doctor or pharmacist if you are not sure.

### **Having this medicine**

- Your doctor or nurse will normally give you Inhixa. This is because it needs to be given as an injection.
- When you go home, you may need to continue to use Inhixa and give it yourself (see instructions below on how to do this).
- Inhixa is usually given by injection underneath the skin (subcutaneous).
- Inhixa can be given by injection into your vein (intravenous) after certain types of heart attack or operation.
- Inhixa can be added to the tube leaving the body (arterial line) at the start of the dialysis session.

Do not inject Inhixa into a muscle.

### **How much will be given to you**

- Your doctor will decide how much Inhixa to give you. The dose will depend on the reason it is being used.
- If you have problems with your kidneys you may be given a smaller amount of Inhixa.

#### **1. Treating blood clots that are in your blood**

- The usual dose is 150 IU (1.5 mg) for every kilogram of your weight once daily or 100 IU (1 mg) for every kilogram of your weight twice a day.
- Your doctor will decide how long you should receive Inhixa.

#### **2. Stopping blood clots forming in your blood in the following situations:**

##### **❖ Operation or periods of limited mobility due to an illness**

- The dose will depend on how likely you are to develop a clot. You will be given 2,000 IU (20 mg) or 4,000 IU (40 mg) of Inhixa each day.

- If you are going to have an operation your first injection will be usually given 2 hours or 12 hours before your operation.
- If you have restricted mobility due to illness, you will normally be given 4,000 IU (40 mg) of Inhixa each day.
- Your doctor will decide how long you should receive Inhixa.

❖ *After you have had a heart attack*

Inhixa can be used for two different types of heart attack called STEMI (ST segment elevation myocardial infarction) or non-STEMI (NSTEMI). The amount of Inhixa given to you will depend on your age and the kind of heart attack you have had.

NSTEMI type of heart attack:

- The usual dose is 100 IU (1 mg) for every kilogram of weight every 12 hours.
- Your doctor will normally ask you to take acetylsalicylic acid (aspirin) as well.
- Your doctor will decide how long you should receive Inhixa.

STEMI type of heart attack if you are under 75 years old:

- An initial dose of 3,000 IU (30 mg) of Inhixa will be given as injection into your vein.
- At the same time you will also be given Inhixa as an injection underneath your skin (subcutaneous injection). The usual dose is 100 IU (1 mg) for every kilogram of your weight, every 12 hours.
- Your doctor will normally ask you to take acetylsalicylic acid (aspirin) as well.
- Your doctor will decide how long you should receive Inhixa.

STEMI type of heart attack if you are 75 years old or older:

- The usual dose is 75 IU (0.75 mg) for every kilogram of your weight, every 12 hours.
- The maximum amount of Inhixa given for the first two injections is 7,500 IU (75 mg).
- Your doctor will decide how long you should receive Inhixa.

For patients having a procedure called percutaneous coronary intervention (PCI):

Depending on when you were last given Inhixa, your doctor may decide to give an additional dose of Inhixa before the PCI procedure. This is by injection into your vein.

### 3. Stopping blood clots from forming in the tubes of your dialysis machine

- The usual dose is 100 IU (1 mg) for every kilogram of your weight.
- Inhixa is added to the tube leaving the body (arterial line) at the start of the dialysis session. This amount is usually enough for a 4-hour session. However, your doctor may give you a further dose of 50 IU to 100 IU (0.5 to 1 mg) for every kilogram of your weight, if necessary.

### How to give yourself an injection of Inhixa with a pre-filled syringe without needle guard

If you are able to give this medicine to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

- Check the expiry date on the medicine. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicine if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so, talk to your doctor or nurse.
- Decide where you are going to inject the medicine. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicine should be injected just under

the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).

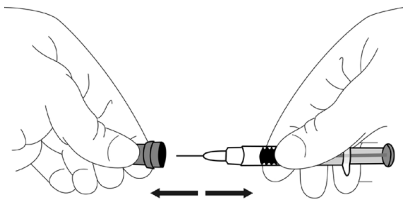
- The pre-filled syringe is intended for single use only.

**Instructions on injecting yourself with Inhixa**

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

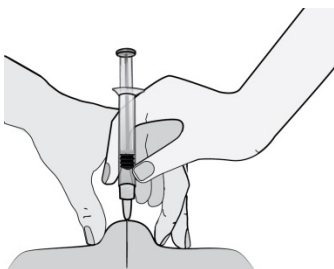


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

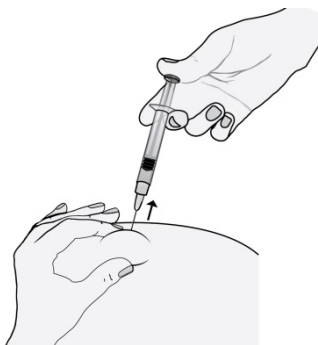
- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin.

Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90° angle). Insert the full length of the needle into the skin fold.



- 8) Press down on the plunger with your thumb. This will inject the medicine into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection.
- 9) Remove the needle by pulling it straight out.



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

#### How to give yourself an injection of Inhixa with a pre-filled syringe with needle guard

Your pre-filled syringe has a needle guard attached to it in order to protect you from needle stick injury. If you are able to give this medicine to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately. Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

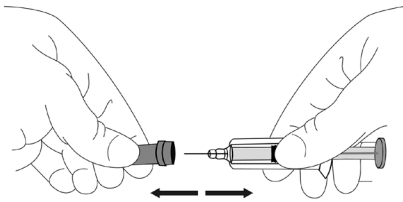
- Check the expiry date on the medicine. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicine if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicine. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicine should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

#### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

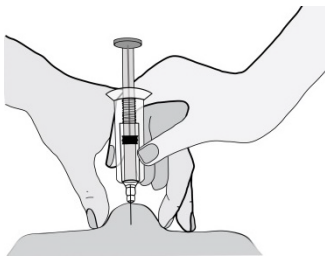


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

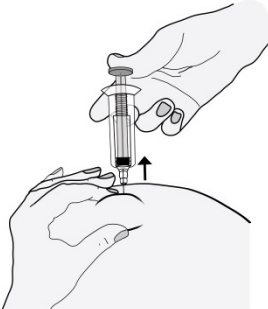
- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin.

Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold.



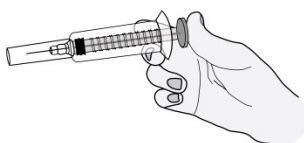
- 8) Press down on the plunger with your thumb. This will inject the medicine into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection.
- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Push hard the plunger. The needle guard, which is in the form of a plastic cylinder, will be activated automatically and it will completely cover the needle.

"CLICK"



- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

#### How to give yourself an injection of Inhixa with a pre-filled syringe with UltraSafe Passive needle guard

Your pre-filled syringe has UltraSafe Passive needle guard attached to it in order to protect you from needle stick injury.

If you are able to give this medicine to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

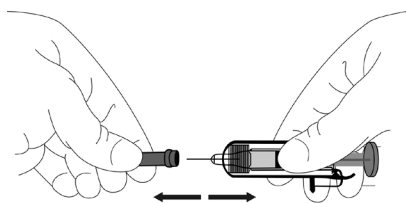
- Check the expiry date on the medicine. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicine if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicine. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicine should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

#### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

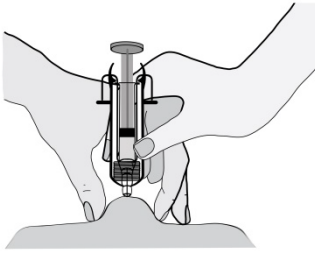


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin.

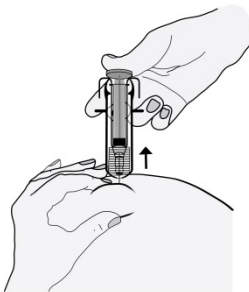
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90° angle). Insert the full length of the needle into the skin fold.



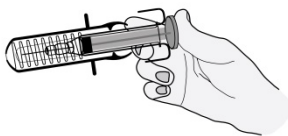
- 8) Press down on the plunger with your thumb. This will inject the medicine into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection.

- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Let go of the plunger and allow the syringe to move up until the entire needle is guarded and locks into place.



- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

How to give yourself an injection of Inhixa with a pre-filled syringe with manually activated needle guard

Your pre-filled syringe has a manually activated needle guard attached to it in order to protect you from needle stick injury.

If you are able to give this medicine to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.



Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

### ***Before injecting yourself with Inhixa***

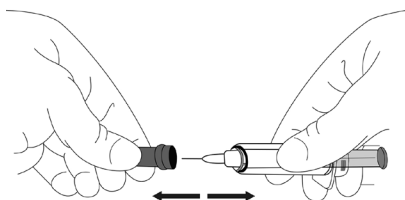
- Check the expiry date on the medicine. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicine if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicine. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicine should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

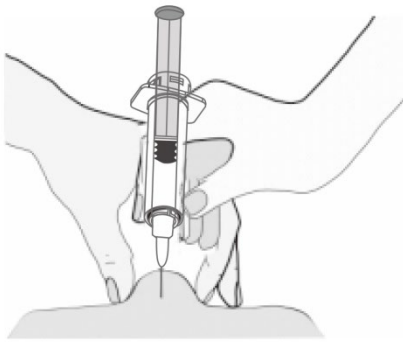


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

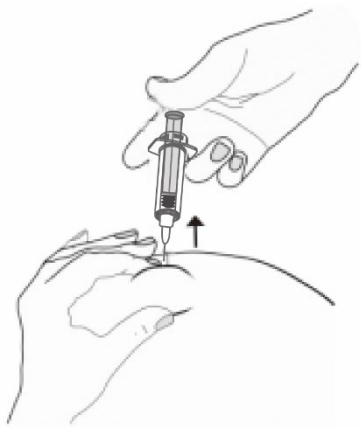
- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin.

Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold.

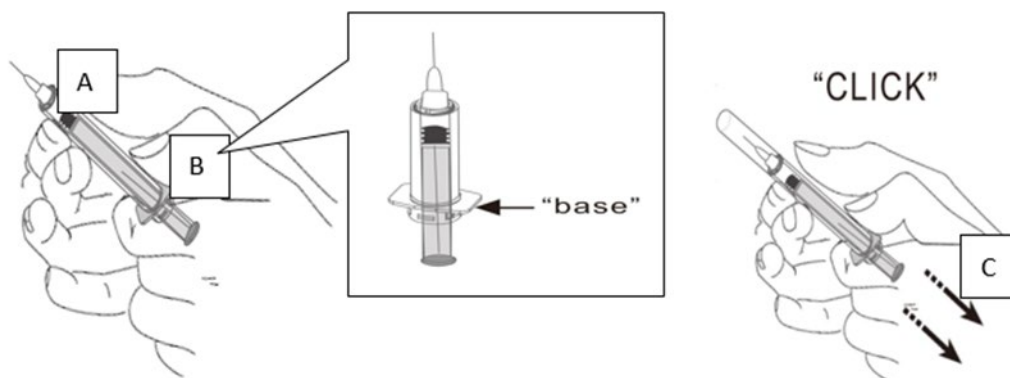


- 8) Press down on the plunger with your thumb. This will inject the medicine into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection.
- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Firmly hold the syringe tube with one hand (A). With the other hand hold the base, “wings” of the syringe (B), and pull the base until you hear a clicking sound (C). Now the used needle is completely protected.



- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

**Changing anticoagulant treatment**

- *Changing from Inhixa to blood thinners called vitamin-K antagonists (e.g. warfarin)*  
Your doctor will ask you to have performed blood tests called INR and tell you when to stop Inhixa accordingly.
- *Changing from blood thinners called vitamin-K antagonists (e.g. warfarin) to Inhixa*  
Stop taking the vitamin-K antagonist. Your doctor will ask you to have performed blood tests called INR and tell you when to start Inhixa accordingly.
- *Changing from Inhixa to treatment with direct oral anticoagulant (e.g apixaban, dabigatran, edoxaban, rivaroxaban)*  
Stop taking Inhixa. Start taking the direct oral anticoagulant 0-2 hours before the time you would have had the next Inhixa injection, then continue as normal.
- *Changing from treatment with direct oral anticoagulant to Inhixa*  
Stop taking direct oral anticoagulant. Do not start treatment with Inhixa until 12 hours after the final dose of direct oral anticoagulant.

#### **If you use more Inhixa than you should**

If you think that you have used too much or too little Inhixa, tell your doctor, nurse or pharmacist immediately, even if you have no signs of a problem. If a child accidentally injects or swallows Inhixa, take the child to a hospital casualty department straight away.

#### **If you forget to use Inhixa**

If you forget to give yourself a dose, have it as soon as you remember. Do not give yourself a double dose on the same day to make up for a forgotten dose. Keeping a diary will help to make sure you do not miss a dose.

#### **If you stop using Inhixa**

If you have any further questions on the use of this medicine, ask your doctor or pharmacist or nurse. It is important for you to keep having Inhixa injections until your doctor decides to stop them. If you stop, you could get a blood clot which can be very dangerous.

## **4. Possible side effects**

Like all medicines, this medicine can cause side effects, although not everybody gets them.

Like other anticoagulant medicines (medicines to reduce blood clotting), Inhixa may cause bleeding which may potentially be life-threatening. In some cases the bleeding may not be obvious.

If you experience any bleeding that does not stop by itself or if you experience signs of excessive bleeding (exceptional weakness, tiredness, paleness, dizziness, headache or unexplained swelling), consult your doctor immediately.

Your doctor may decide to keep you under closer observation or change your medicine.

Stop using Inhixa and talk to a doctor or nurse at once if you get any signs of a severe allergic reaction (such as difficulty breathing, swelling of the lips, mouth, throat or eyes).

Stop using enoxaparin and seek medical attention immediately if you notice any of the following symptoms:

- A red, scaly widespread rash with bumps under the skin and blisters accompanied by fever. The symptoms usually appear at the initiation of treatment (acute generalised exanthematous pustulosis).

You should tell your doctor straight away

- If you have any sign of blockage of a blood vessel by a blood clot such as:
  - cramping pain, redness, warmth, or swelling in one of your legs – these are symptoms of deep vein thrombosis

- breathlessness, chest pain, fainting or coughing up blood – these are symptoms of a pulmonary embolism
- If you have a painful rash of dark red spots under the skin which do not go away when you put pressure on them.

Your doctor may ask you to have performed a blood test to check your platelet count.

### **Overall list of possible side effects:**

Very common (may affect more than 1 in 10 people)

- Bleeding.
- Increases in liver enzymes.

Common (may affect up to 1 in 10 people)

- You bruise more easily than usual. This could be because of a blood problem with low platelet counts.
- Pink patches on your skin. These are more likely to appear in the area you have been injected with Inhixa.
- Skin rash (hives, urticaria).
- Itchy red skin.
- Bruising or pain at the injection site.
- Decreased red blood cell count.
- High platelet counts in the blood.
- Headache.

Uncommon (may affect up to 1 in 100 people)

- Sudden severe headache. This could be a sign of bleeding in the brain.
- A feeling of tenderness and swelling in your stomach. You may have bleeding in your stomach.
- Large red irregularly shaped skin marks with or without blisters.
- Skin irritation (local irritation).
- Yellowing of your skin or eyes and your urine becoming darker. These may be signs of a liver problem.

Rare (may affect up to 1 in 1,000 people)

- Severe allergic reaction. The signs may include: a rash, swallowing or breathing problems, swelling of your lips, face, throat or tongue.
- Increased potassium in your blood. This is more likely to happen in people with kidney problems or diabetes. Your doctor will be able to check this by carrying out a blood test.
- An increase in the number of white blood cells called eosinophils in your blood. Your doctor will be able to check this by carrying out a blood test.
- Hair loss.
- Osteoporosis (a condition where your bones are more likely to break) after long-term use.
- Tingling, numbness and muscular weakness (particularly in the lower part of your body) when you have had a spinal puncture or a spinal anaesthetic.
- Loss of control over your bladder or bowel (so you cannot control when you go to the toilet).
- Hard mass or lump at the injection site.

### **Reporting of side effects**

If you get any side effects, talk to your doctor or pharmacist. This includes any possible side effects not listed in this leaflet. You can also report side effects directly via the national reporting system listed in Appendix V. By reporting side effects you can help provide more information on the safety of this medicine.

## **5. How to store Inhixa**

Keep this medicine out of the sight and reach of children.

Do not use this medicine after the expiry date which is stated on the label and carton. The expiry date refers to the last day of that month.

Store below 25 °C. Do not freeze.

After dilution the solution should be used within 8 hours.

Do not use this medicine if you notice any visible change in the appearance of the solution.

The Inhixa pre-filled syringes are for single dose use only. Discard any unused medicine.

Do not throw away any medicines via wastewater or household waste. Ask your pharmacist how to throw away medicines you no longer use. These measures will help protect the environment.

## **6. Contents of the pack and other information**

### **What Inhixa contains**

- The active substance is enoxaparin sodium.  
Each mL contains 10,000 IU (100 mg) enoxaparin sodium.  
Each pre-filled syringe of 0.2 mL contains 2,000 IU (20 mg) of enoxaparin sodium.  
Each pre-filled syringe of 0.4 mL contains 4,000 IU (40 mg) of enoxaparin sodium.  
Each pre-filled syringe of 0.6 mL contains 6,000 IU (60 mg) of enoxaparin sodium.  
Each pre-filled syringe of 0.8 mL contains 8,000 IU (80 mg) of enoxaparin sodium.  
Each pre-filled syringe of 1 mL contains 10,000 IU (100 mg) of enoxaparin sodium.
- The other ingredient is water for injections.

### **What Inhixa looks like and contents of the pack**

Inhixa 2,000 IU (20 mg)/0.2 mL is 0.2 mL of solution in:

- a clear, colourless type I neutral glass syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a blue polypropylene plunger rod. The syringe can be additionally equipped with needle guard or manual needle guard; or
- a clear, colourless type I neutral glass syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a white polycarbonate plunger rod equipped with UltraSafe Passive needle guard.

Supplied in packs of:

- 1, 2, 6, 10, 20 and 50 pre-filled syringe(s)
- 2, 6, 10, 20, 50 and 90 pre-filled syringes with needle guard
- 6, 10 and 20 pre-filled syringes with manual needle guard
- 2 and 6 pre-filled syringes with UltraSafe Passive needle guard

Inhixa 4,000 IU (40 mg)/0.4 mL is 0.4 mL of solution in:

- a clear, colourless type I neutral glass syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a yellow polypropylene plunger rod. The syringe can be additionally equipped with needle guard or manual needle guard; or
- a clear, colourless type I neutral glass syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a white polycarbonate plunger rod equipped with UltraSafe Passive needle guard.

Supplied in packs of:

- 2, 5, 6, 10, 20, 30 and 50 pre-filled syringes
- 2, 5, 6, 10, 20, 30, 50 and 90 pre-filled syringes with needle guard
- 2, 6, 10, 20 and 50 pre-filled syringes with manual needle guard
- 2 and 6 pre-filled syringes with UltraSafe Passive needle guard

Inhixa 6,000 IU (60 mg)/0.6 mL is 0.6 mL of solution in:

- a clear, colourless type I neutral glass graduated syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and an orange polypropylene plunger rod. The syringe can be additionally equipped with needle guard or manual needle guard; or
- a clear, colourless type I neutral glass graduated syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a white polycarbonate plunger rod equipped with UltraSafe Passive needle guard.

Supplied in packs of:

- 2, 6, 10, 12, 20, 24, 30 and 50 pre-filled syringes
- 2, 6, 10, 12, 20, 24, 30 and 50 pre-filled syringes with needle guard
- 6, 10, 12, 20, 24 and 50 pre-filled syringes with manual needle guard
- 2 and 10 pre-filled syringes with UltraSafe Passive needle guard

Inhixa 8,000 IU (80 mg)/0.8 mL is 0.8 mL of solution in:

- a clear, colourless type I neutral glass graduated syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a red polypropylene plunger rod. The syringe can be additionally equipped with needle guard or manual needle guard; or
- a clear, colourless type I neutral glass graduated syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a white polycarbonate plunger rod equipped with UltraSafe Passive needle guard.

Supplied in packs of:

- 2, 6, 10, 12, 20, 24, 30 and 50 pre-filled syringes
- 2, 6, 10, 12, 20, 24, 30 and 50 pre-filled syringes with needle guard
- 6, 10, 12, 20, 24 and 50 pre-filled syringes with manual needle guard
- 2 and 10 pre-filled syringes with UltraSafe Passive needle guard

Inhixa 10,000 IU (100 mg)/1 mL is 1 mL of solution in:

- a clear, colourless type I neutral glass graduated syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a black polypropylene plunger rod. The syringe can be additionally equipped with needle guard or manual needle guard; or
- a clear, colourless type I neutral glass graduated syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a white polycarbonate plunger rod equipped with UltraSafe Passive needle guard.

Supplied in packs of:

- 2, 6, 10, 12, 20, 24, 30, 50 and 90 pre-filled syringes
- 2, 6, 10, 12, 20, 24, 30 and 50 pre-filled syringes with needle guard
- 6, 10, 12, 20, 24 and 50 pre-filled syringes with manual needle guard
- 2 and 10 pre-filled syringes with UltraSafe Passive needle guard

Not all pack sizes may be marketed.

#### **Marketing Authorisation Holder**

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

#### **Manufacturer**

SciencePharma spółka z ograniczoną odpowiedzialnością  
Chełmska 30/34  
00-725 Warsaw  
Poland

For any information about this medicine, please contact the local representative of the Marketing Authorisation Holder:

**België/Belgique/Belgien**

Techdow Pharma Netherlands B.V.  
+31208081112

**България**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

**Česká republika**

Techdow Pharma Netherlands B.V.  
+420255790502

**Danmark**

Techdow Pharma Netherlands B.V.  
+4578774377

**Deutschland**

Mitvertrieb: Techdow Pharma Germany GmbH  
Potsdamer Platz 1, 10785 Berlin  
+49 (0)30 98 321 31 00

**Eesti**

Techdow Pharma Netherlands B.V.  
+37125892152

**Ελλάδα**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

**España**

TECHDOW PHARMA SPAIN, S.L.  
Tel: +34 91 123 21 16

**France**

Viatrix Santé  
+33 4 37 25 75 00

**Hrvatska**

Techdow Pharma Netherlands B.V.  
+385 17776255

**Ireland**

Techdow Pharma Netherlands B.V.  
+31208081112

**Ísland**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

**Italia**

Techdow Pharma Italy S.R.L.  
Tel: +39 0256569157

**Lietuva**

Techdow Pharma Netherlands B.V.  
+37125892152

**Luxembourg/Luxemburg**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

**Magyarország**

Techdow Pharma Netherlands B.V.  
+3618001930

**Malta**

Mint Health Ltd.  
+356 2755 9990

**Nederland**

Techdow Pharma Netherlands B.V.  
+31208081112

**Norge**

Techdow Pharma Netherlands B.V.  
+4721569855

**Österreich**

Techdow Pharma Netherlands B.V.  
+43720230772

**Polska**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

**Portugal**

Laboratórios Atral, S.A.  
+351308801067

**România**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

**Slovenija**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

**Slovenská republika**

Techdow Pharma Netherlands B.V.  
+421233331071

**Suomi/Finland**

Techdow Pharma Netherlands B.V.  
+358942733040

**Κύπρος**

MA Pharmaceuticals Trading Ltd  
+357 25 587112

**Sverige**

Techdow Pharma Netherlands B.V.  
+46184445720

**Latvija**

Techdow Pharma Netherlands B.V.  
+37125892152

**This leaflet was last revised in**

**Other sources of information**

Detailed information on this medicine is available on the European Medicines Agency web site:  
<http://www.ema.europa.eu>.



## **Package leaflet: Information for the user**

**Inhixa 12,000 IU (120 mg)/0.8 mL solution for injection**  
**Inhixa 15,000 IU (150 mg)/1 mL solution for injection**

enoxaparin sodium

**Read all of this leaflet carefully before you start using this medicine because it contains important information for you.**

- Keep this leaflet. You may need to read it again.
- If you have any further questions, ask your doctor, pharmacist or nurse.
- This medicine has been prescribed for you only. Do not pass it on to others. It may harm them, even if their signs of illness are the same as yours.
- If you get any side effects, talk to your doctor, pharmacist or nurse. This includes any possible side effects not listed in this leaflet. See section 4.

### **What is in this leaflet**

1. What Inhixa is and what it is used for
2. What you need to know before you use Inhixa
3. How to use Inhixa
4. Possible side effects
5. How to store Inhixa
6. Contents of the pack and other information

### **1. What Inhixa is and what it is used for**

Inhixa contains the active substance called enoxaparin sodium that is a low molecular weight heparin (LMWH).

Inhixa works in two ways:

- 1) Stopping existing blood clots from getting bigger. This helps your body to break them down and stop them causing you harm.
- 2) Stopping blood clots forming in your blood.

Inhixa can be used to:

- Treat blood clots that are in your blood
- Stop blood clots from forming in your blood in the following situations:
  - Before and after an operation
  - When you have an acute illness and face period of limited mobility
  - If you have experienced a blood clot due to cancer to prevent further clots from forming.
  - When you have unstable angina (a condition when not enough blood gets to your heart)
  - After a heart attack
- Stop blood clots forming in the tubes of your dialysis machine (used for people with severe kidney problems).

### **2. What you need to know before you use Inhixa**

#### **Do not use Inhixa**

- If you are allergic to enoxaparin sodium or any of the other ingredients of this medicine (listed in section 6). Signs of an allergic reaction include: rash, swallowing or breathing problems, swelling of your lips, face, throat or tongue.
- If you are allergic to heparin or other low molecular weight heparins such as nadroparin, tinzaparin or dalteparin.

- If you have had a reaction to heparin that caused a severe drop in the number of your clotting cells (platelets) - this reaction is called heparin-induced thrombocytopenia - within the last 100 days or if you have antibodies against enoxaparin in your blood.
- If you are bleeding heavily or have a condition with a high risk of bleeding (such as stomach ulcer, recent surgery of the brain or eyes), including recent bleeding stroke.
- If you are using Inhixa to treat blood clots in your body and going to receive spinal or epidural anaesthesia or lumbar puncture within 24 hours.

### **Warnings and precautions**

Inhixa **should not be used interchangeably** with other medicines belonging to the group of low molecular weight heparins. This is because they are not exactly the same and do not have the same activity and instructions for use.

### **Talk to your doctor or pharmacist before using Inhixa if:**

- you have ever had a reaction to heparin that caused a severe drop in the number of your platelets
- you are going to receive spinal or epidural anesthesia or lumbar puncture (see Operations and Anaesthetics): a delay should be respected between Inhixa use and this procedure
- you have had a heart valve fitted
- you have endocarditis (an infection of the inner lining of the heart)
- you have history of gastric ulcer
- you have had a recent stroke
- you have high blood pressure
- you have diabetes or problems with blood vessels in the eye caused by diabetes (called diabetic retinopathy)
- you have had an operation recently on your eyes or brain
- you are elderly (over 65 years old) and especially if you are over 75 years old
- you have kidney problems
- you have liver problems
- you are underweight or overweight
- you have high level of potassium in your blood (this may be checked with a blood test)
- you are currently using medicines which affect bleeding (see section below – Other medicines and Inhixa).

You may have a **blood test** before you start using this medicine and at intervals while you are using it; this is to check the level of the clotting cells (platelets) and potassium in your blood.

### **Children and adolescents**

The safety and efficacy of Inhixa has not been evaluated in children or adolescents.

### **Other medicines and Inhixa**

Tell your doctor, pharmacist or nurse if you are taking, have recently taken or might take any other medicines.

- Warfarin – another anticoagulant medicine used for thinning the blood
- Acetylsalicylic acid (also known as aspirin or ASA), clopidogrel or other medicines used to stop blood clots from forming (see also in section 3, “Changing anticoagulant medicine”)
- Dextran injection – used as a blood replacer
- Ibuprofen, diclofenac, ketorolac or other medicines known as non-steroidal anti-inflammatory agents which are used to treat pain and swelling in arthritis and other conditions
- Prednisolone, dexamethasone or other medicines used to treat asthma, rheumatoid arthritis and other conditions
- Medicines which increase potassium level in your blood such as potassium salts, water pills, some medicines for heart problems.

### **Operations and anaesthetics**

If you are going to have a spinal puncture or an operation where an epidural or spinal anaesthetic is used, tell your doctor that you are using Inhixa. See “Do not use Inhixa”. Also, tell your doctor if you have any problem with your spine or if you ever had spinal surgery.

### **Pregnancy and breast-feeding**

If you are pregnant, think you may be pregnant or are planning to have a baby, ask your doctor or pharmacist for advice before taking this medicine.

If you are pregnant and have a mechanical heart valve, you may be at an increased risk of developing blood clots. Your doctor should discuss this with you.

If you are breast-feeding or plan to breast-feed, you should ask your doctor for advice before taking this medicine.

### **Driving and using machines**

Inhixa does not affect the ability to drive and operate machinery.

### **Traceability**

It is important to keep a record of the batch number of your Inhixa. So, every time you get a new package of Inhixa, note down the date and the batch number (which is on the packaging after Lot) and keep this information in a safe place.

### **Inhixa contains sodium**

This medicine contains less than 1 mmol sodium (23 mg) per dose, that is to say essentially ‘sodium-free’.

## **3. How to use Inhixa**

Always use this medicine exactly as your doctor or pharmacist has told you. Check with your doctor or pharmacist if you are not sure.

### **Having this medicine**

- Your doctor or nurse will normally give you Inhixa. This is because it needs to be given as an injection.
- When you go home, you may need to continue to use Inhixa and give it yourself (see instructions below on how to do this).
- Inhixa is usually given by injection underneath the skin (subcutaneous).
- Inhixa can be given by injection into your vein (intravenous) after certain types of heart attack or operation.
- Inhixa can be added to the tube leaving the body (arterial line) at the start of the dialysis session.

Do not inject Inhixa into a muscle.

### **How much will be given to you**

- Your doctor will decide how much Inhixa to give you. The dose will depend on the reason it is being used.
- If you have problems with your kidneys you may be given a smaller amount of Inhixa.

#### **1. Treating blood clots that are in your blood**

- The usual dose is 150 IU (1.5 mg) for every kilogram of your weight once daily or 100 IU (1 mg) for every kilogram of your weight twice a day.
- Your doctor will decide how long you should receive Inhixa.

#### **2. Stopping blood clots forming in your blood in the following situations:**

##### **❖ *Operation or periods of limited mobility due to an illness***

- The dose will depend on how likely you are to develop a clot. You will be given 2,000 IU (20 mg) or 4,000 IU (40 mg) of Inhixa each day.

- If you are going to have an operation your first injection will be usually given 2 hours or 12 hours before your operation.
- If you have restricted mobility due to illness, you will normally be given 4,000 IU (40 mg) of Inhixa each day.
- Your doctor will decide how long you should receive Inhixa.

❖ *After you have had a heart attack*

Inhixa can be used for two different types of heart attack called STEMI (ST segment elevation myocardial infarction) or non-STEMI (NSTEMI). The amount of Inhixa given to you will depend on your age and the kind of heart attack you have had.

NSTEMI type of heart attack:

- The usual dose is 100 IU (1 mg) for every kilogram of weight every 12 hours.
- Your doctor will normally ask you to take acetylsalicylic acid (aspirin) as well.
- Your doctor will decide how long you should receive Inhixa.

STEMI type of heart attack if you are under 75 years old:

- An initial dose of 3,000 IU (30 mg) of Inhixa will be given as injection into your vein.
- At the same time you will also be given Inhixa as an injection underneath your skin (subcutaneous injection). The usual dose is 100 IU (1 mg) for every kilogram of your weight, every 12 hours.
- Your doctor will normally ask you to take acetylsalicylic acid (aspirin) as well.
- Your doctor will decide how long you should receive Inhixa.

STEMI type of heart attack if you are 75 years old or older:

- The usual dose is 75 IU (0.75 mg) for every kilogram of your weight, every 12 hours.
- The maximum amount of Inhixa given for the first two injections is 7,500 IU (75 mg).
- Your doctor will decide how long you should receive Inhixa.

For patients having a procedure called percutaneous coronary intervention (PCI):

Depending on when you were last given Inhixa, your doctor may decide to give an additional dose of Inhixa before the PCI procedure. This is by injection into your vein.

### 3. Stopping blood clots from forming in the tubes of your dialysis machine

- The usual dose is 100 IU (1 mg) for every kilogram of your weight.
- Inhixa is added to the tube leaving the body (arterial line) at the start of the dialysis session. This amount is usually enough for a 4-hour session. However, your doctor may give you a further dose of 50 IU to 100 IU (0.5 to 1 mg) for every kilogram of your weight, if necessary.

### How to give yourself an injection of Inhixa with a pre-filled syringe without needle guard

If you are able to give this medicine to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately.

Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

- Check the expiry date on the medicine. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicine if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so, talk to your doctor or nurse.
- Decide where you are going to inject the medicine. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicine should be injected just under

the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).

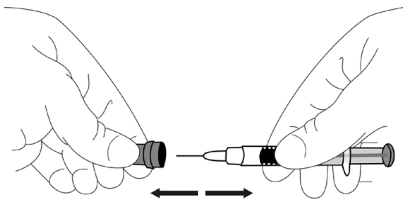
- The pre-filled syringe is intended for single use only.

**Instructions on injecting yourself with Inhixa**

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

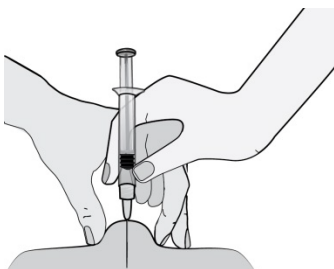


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

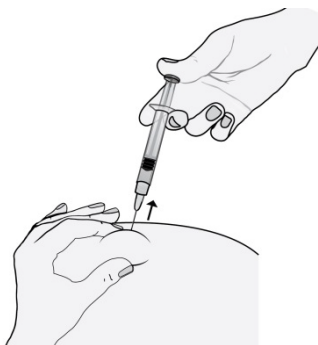
- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin.

Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90° angle). Insert the full length of the needle into the skin fold.



- 8) Press down on the plunger with your thumb. This will inject the medicine into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection.
- 9) Remove the needle by pulling it straight out.



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

#### How to give yourself an injection of Inhixa with a pre-filled syringe with needle guard

Your pre-filled syringe has a needle guard attached to it in order to protect you from needle stick injury. If you are able to give this medicine to yourself, your doctor or nurse will show you how to do this. Do not try to inject yourself if you have not been trained to do so. If you are not sure what to do, talk to your doctor or nurse immediately. Performing the injection properly under the skin (called “subcutaneous injection”) will help reduce pain and bruising at the injection site.

#### ***Before injecting yourself with Inhixa***

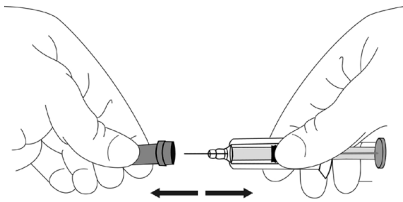
- Check the expiry date on the medicine. Do not use if the date has passed.
- Check if the syringe is not damaged and the liquid inside is clear. If not, use another syringe.
- Do not use this medicine if you notice any change in its appearance.
- Make sure you know how much you are going to inject.
- Check if the last injection caused any redness, change in skin colour, swelling, oozing or is still painful. If so talk to your doctor or nurse.
- Decide where you are going to inject the medicine. Change the place where you inject each time from the right to the left side of your abdomen (belly). This medicine should be injected just under the skin on your abdomen, but not too near the belly button or any scar tissue (at least 5 cm away from these).
- The pre-filled syringe is intended for single use only.

#### ***Instructions on injecting yourself with Inhixa***

- 1) Wash your hands and the area that you will inject with soap and water. Dry them.
- 2) Sit or lie in a comfortable position so you are relaxed. Make sure you can see the place you are going to inject. In a lounge chair, recliner, or propped up in bed with pillows is ideal.
- 3) Choose an area on the right or left side of your stomach. This should be at least 5 cm away from your belly button and out towards your sides.

**Remember:** Do not inject yourself within 5 cm of your belly button or around existing scars or bruises. Change the place where you inject between the left and right sides of your stomach, depending on the area you were last injected.

- 4) Remove the plastic blister containing the pre-filled syringe from the box. Open the blister and remove the pre-filled syringe.
- 5) Carefully pull off the needle cap from the syringe. Throw away the cap. The syringe is pre-filled and ready to use.

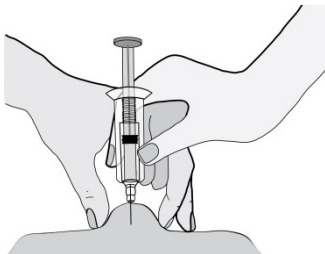


**Do not** press on the plunger to remove the air bubble before injecting. The air bubble should not be removed, as this can lead to loss of the medicine. Once you have removed the cap, do not allow the needle to touch anything. This is to make sure the needle stays clean (sterile).

- 6) Hold the syringe in the hand you write with (like a pencil) and with your other hand, gently pinch the cleaned area of your abdomen between your forefinger and thumb to make a fold in the skin.

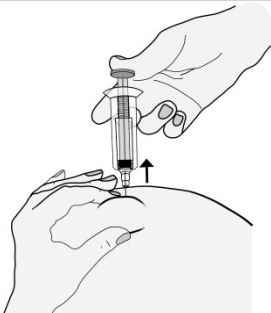
Make sure you **hold the skin fold throughout the injection.**

- 7) Hold the syringe so that the needle is pointing downwards (vertically at a 90 ° angle). Insert the full length of the needle into the skin fold.



- 8) Press down on the plunger with your thumb. This will inject the medicine into the fatty tissue of the abdomen. Make sure you hold the skin fold throughout the injection.

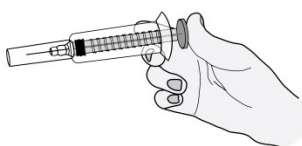
- 9) Remove the needle by pulling it straight out. Do not release the pressure on the plunger!



**To avoid bruising, do not rub the injection site after you have injected yourself.**

- 10) Push hard the plunger. The needle guard, which is in the form of a plastic cylinder, will be activated automatically and it will completely cover the needle.

"CLICK"



- 11) Drop the used syringe into the sharps container. Close the container lid tightly and place the container out of reach of children.

**When the container is full, dispose of it as your doctor or pharmacist has instructed. Do not put it in the household rubbish.**

### **Changing anticoagulant treatment**

- *Changing from Inhixa to blood thinners called vitamin-K antagonists (e.g. warfarin)*  
Your doctor will ask you to have performed blood tests called INR and tell you when to stop Inhixa accordingly.
- *Changing from blood thinners called vitamin-K antagonists (e.g. warfarin) to Inhixa*  
Stop taking the vitamin-K antagonist. Your doctor will ask you to have performed blood tests called INR and tell you when to start Inhixa accordingly.
- *Changing from Inhixa to treatment with direct oral anticoagulant (e.g. apixaban, dabigatran, edoxaban, rivaroxaban)*  
Stop taking Inhixa. Start taking the direct oral anticoagulant 0-2 hours before the time you would have had the next Inhixa injection, then continue as normal.
- *Changing from treatment with direct oral anticoagulant to Inhixa*  
Stop taking direct oral anticoagulant. Do not start treatment with Inhixa until 12 hours after the final dose of direct oral anticoagulant.

### **If you use more Inhixa than you should**

If you think that you have used too much or too little Inhixa, tell your doctor, nurse or pharmacist immediately, even if you have no signs of a problem. If a child accidentally injects or swallows Inhixa, take the child to a hospital casualty department straight away.

### **If you forget to use Inhixa**

If you forget to give yourself a dose, have it as soon as you remember. Do not give yourself a double dose on the same day to make up for a forgotten dose. Keeping a diary will help to make sure you do not miss a dose.

### **If you stop using Inhixa**

If you have any further questions on the use of this medicine, ask your doctor or pharmacist or nurse. It is important for you to keep having Inhixa injections until your doctor decides to stop them. If you stop, you could get a blood clot which can be very dangerous.

## **4. Possible side effects**

Like all medicines, this medicine can cause side effects, although not everybody gets them.

Like other anticoagulant medicines (medicines to reduce blood clotting), Inhixa may cause bleeding which may potentially be life-threatening. In some cases the bleeding may not be obvious.

If you experience any bleeding that does not stop by itself or if you experience signs of excessive bleeding (exceptional weakness, tiredness, paleness, dizziness, headache or unexplained swelling), consult your doctor immediately.

Your doctor may decide to keep you under closer observation or change your medicine.

Stop using Inhixa and talk to a doctor or nurse at once if you get any signs of a severe allergic reaction (such as difficulty breathing, swelling of the lips, mouth, throat or eyes).

Stop using enoxaparin and seek medical attention immediately if you notice any of the following symptoms:



- A red, scaly widespread rash with bumps under the skin and blisters accompanied by fever. The symptoms usually appear at the initiation of treatment (acute generalised exanthematous pustulosis).

You should tell your doctor straight away

- If you have any sign of blockage of a blood vessel by a blood clot such as:
  - cramping pain, redness, warmth, or swelling in one of your legs – these are symptoms of deep vein thrombosis
  - breathlessness, chest pain, fainting or coughing up blood – these are symptoms of a pulmonary embolism
- If you have a painful rash of dark red spots under the skin which do not go away when you put pressure on them.

Your doctor may ask you to have performed a blood test to check your platelet count.

### **Overall list of possible side effects:**

Very common (may affect more than 1 in 10 people)

- Bleeding.
- Increases in liver enzymes.

Common (may affect up to 1 in 10 people)

- You bruise more easily than usual. This could be because of a blood problem with low platelet counts.
- Pink patches on your skin. These are more likely to appear in the area you have been injected with Inhixa.
- Skin rash (hives, urticaria).
- Itchy red skin.
- Bruising or pain at the injection site.
- Decreased red blood cell count.
- High platelet counts in the blood.
- Headache.

Uncommon (may affect up to 1 in 100 people)

- Sudden severe headache. This could be a sign of bleeding in the brain.
- A feeling of tenderness and swelling in your stomach. You may have bleeding in your stomach.
- Large red irregularly shaped skin marks with or without blisters.
- Skin irritation (local irritation).
- Yellowing of your skin or eyes and your urine becoming darker. These may be signs of a liver problem.

Rare (may affect up to 1 in 1,000 people)

- Severe allergic reaction. The signs may include: a rash, swallowing or breathing problems, swelling of your lips, face, throat or tongue.
- Increased potassium in your blood. This is more likely to happen in people with kidney problems or diabetes. Your doctor will be able to check this by carrying out a blood test.
- An increase in the number of white blood cells called eosinophils in your blood. Your doctor will be able to check this by carrying out a blood test.
- Hair loss.
- Osteoporosis (a condition where your bones are more likely to break) after long-term use.
- Tingling, numbness and muscular weakness (particularly in the lower part of your body) when you have had a spinal puncture or a spinal anaesthetic.
- Loss of control over your bladder or bowel (so you cannot control when you go to the toilet).
- Hard mass or lump at the injection site.

### **Reporting of side effects**

If you get any side effects, talk to your doctor or pharmacist. This includes any possible side effects not listed in this leaflet. You can also report side effects directly via **the national reporting system listed in Appendix V**. By reporting side effects you can help provide more information on the safety of this medicine.

## **5. How to store Inhixa**

Keep this medicine out of the sight and reach of children.

Do not use this medicine after the expiry date which is stated on the label and carton. The expiry date refers to the last day of that month.

Store below 25 °C. Do not freeze.

After dilution the solution should be used within 8 hours.

Do not use this medicine if you notice any visible change in the appearance of the solution.

The Inhixa pre-filled syringes are for single dose use only. Discard any unused medicine.

Do not throw away any medicines via wastewater or household waste. Ask your pharmacist how to throw away medicines you no longer use. These measures will help protect the environment.

## **6. Contents of the pack and other information**

### **What Inhixa contains**

- The active substance is enoxaparin sodium.  
Each mL contains 15,000 IU (150 mg) enoxaparin sodium.  
Each pre-filled syringe of 0.8 mL contains 12,000 IU (120 mg) of enoxaparin sodium.  
Each pre-filled syringe of 1 mL contains 15,000 IU (150 mg) of enoxaparin sodium.
- The other ingredient is water for injections.

### **What Inhixa looks like and contents of the pack**

Inhixa 12,000 IU (120 mg)/0.8 mL is 0.8 mL of solution in:

- a clear, colourless type I neutral glass syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a purple polypropylene plunger rod. The syringe can be additionally equipped with needle guard.

Supplied in packs of:

- 2, 10 and 30 pre-filled syringes,
- 10 and 30 pre-filled syringes with needle guard.

Inhixa 15,000 IU (150 mg)/1 mL is 1 mL of solution in:

- a clear, colourless type I neutral glass syringe barrel with fixed needle and needle shield closed by chlorobutyl rubber stopper and a dark blue polypropylene plunger rod. The syringe can be additionally equipped with needle guard.

Supplied in packs of:

- 2, 10 and 30 pre-filled syringes,
- 10 and 30 pre-filled syringes with needle guard.

Not all pack sizes may be marketed.

### **Marketing Authorisation Holder**

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

### **Manufacturer**

SciencePharma spółka z ograniczoną odpowiedzialnością  
Chełmska 30/34  
00-725 Warsaw  
Poland

For any information about this medicine, please contact the local representative of the Marketing Authorisation Holder:

**België/Belgique/Belgien**

Techdow Pharma Netherlands B.V.  
+31208081112

**България**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

**Česká republika**

Techdow Pharma Netherlands B.V.  
+420255790502

**Danmark**

Techdow Pharma Netherlands B.V.  
+4578774377

**Deutschland**

Mitvertrieb: Techdow Pharma Germany GmbH  
Potsdamer Platz 1, 10785 Berlin  
+49 (0)30 98 321 31 00

**Eesti**

Techdow Pharma Netherlands B.V.  
+37125892152

**Ελλάδα**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

**España**

TECHDOW PHARMA SPAIN, S.L.  
Tel: +34 91 123 21 16

**France**

Viatrix Santé  
+33 4 37 25 75 00

**Hrvatska**

Techdow Pharma Netherlands B.V.  
+385 17776255

**Ireland**

Techdow Pharma Netherlands B.V.  
+31208081112

**Ísland**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

**Lietuva**

Techdow Pharma Netherlands B.V.  
+37125892152

**Luxembourg/Luxemburg**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

**Magyarország**

Techdow Pharma Netherlands B.V.  
+3618001930

**Malta**

Mint Health Ltd.  
+356 2755 9990

**Nederland**

Techdow Pharma Netherlands B.V.  
+31208081112

**Norge**

Techdow Pharma Netherlands B.V.  
+4721569855

**Österreich**

Techdow Pharma Netherlands B.V.  
+43720230772

**Polska**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

**Portugal**

Laboratórios Atral, S.A.  
+351308801067

**România**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

**Slovenija**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

**Slovenská republika**

Techdow Pharma Netherlands B.V.  
+421233331071

**Italia**

Techdow Pharma Italy S.R.L.  
Tel: +39 0256569157

**Suomi/Finland**

Techdow Pharma Netherlands B.V.  
+358942733040

**Κύπρος**

MA Pharmaceuticals Trading Ltd  
+357 25 587112

**Sverige**

Techdow Pharma Netherlands B.V.  
+46184445720

**Latvija**

Techdow Pharma Netherlands B.V.  
+37125892152

**This leaflet was last revised in**

**Other sources of information**

Detailed information on this medicine is available on the European Medicines Agency web site:  
<http://www.ema.europa.eu>.

## **Package leaflet: Information for the user**

**Inhixa 30,000 IU (300 mg)/3 mL solution for injection in multidose container**  
**Inhixa 50,000 IU (500 mg)/5 mL solution for injection in multidose container**  
**Inhixa 100,000 IU (1000 mg)/10 mL solution for injection in multidose container**

enoxaparin sodium

**Read all of this leaflet carefully before you start using this medicine because it contains important information for you.**

- Keep this leaflet. You may need to read it again.
- If you have any further questions, ask your doctor, pharmacist or nurse.
- This medicine has been prescribed for you only. Do not pass it on to others. It may harm them, even if their signs of illness are the same as yours.
- If you get any side effects, talk to your doctor, pharmacist or nurse. This includes any possible side effects not listed in this leaflet. See section 4.

### **What is in this leaflet**

1. What Inhixa is and what it is used for
2. What you need to know before you use Inhixa
3. How to use Inhixa
4. Possible side effects
5. How to store Inhixa
6. Contents of the pack and other information

### **1. What Inhixa is and what it is used for**

Inhixa contains the active substance called enoxaparin sodium that is a low molecular weight heparin (LMWH).

Inhixa works in two ways:

- 1) Stopping existing blood clots from getting bigger. This helps your body to break them down and stop them causing you harm.
- 2) Stopping blood clots forming in your blood.

Inhixa can be used to:

- Treat blood clots that are in your blood
- Stop blood clots from forming in your blood in the following situations:
  - Before and after an operation
  - When you have an acute illness and face period of limited mobility
  - If you have experienced a blood clot due to cancer to prevent further clots from forming.
  - When you have unstable angina (a condition when not enough blood gets to your heart)
  - After a heart attack
- Stop blood clots forming in the tubes of your dialysis machine (used for people with severe kidney problems).

### **2. What you need to know before you use Inhixa**

#### **Do not use Inhixa**

- If you are allergic to enoxaparin sodium or any of the other ingredients of this medicine (listed in section 6). Signs of an allergic reaction include: rash, swallowing or breathing problems, swelling of your lips, face, throat or tongue.
- If you are allergic to heparin or other low molecular weight heparins such as nadroparin, tinzaparin or dalteparin.

- If you have had a reaction to heparin that caused a severe drop in the number of your clotting cells (platelets) - this reaction is called heparin-induced thrombocytopenia - within the last 100 days or if you have antibodies against enoxaparin in your blood.
- If you are bleeding heavily or have a condition with a high risk of bleeding (such as stomach ulcer, recent surgery of the brain or eyes), including recent bleeding stroke.
- If you are using Inhixa to treat blood clots in your body and going to receive spinal or epidural anaesthesia or lumbar puncture within 24 hours.
- If the patient is a premature or newborn baby up to 1 month because of the risk of severe toxicity including abnormal respiration (“gasping syndrome”).

### **Warnings and precautions**

Inhixa **should not be used interchangeably** with other medicines belonging to the group of low molecular weight heparins. This is because they are not exactly the same and do not have the same activity and instructions for use.

### **Talk to your doctor or pharmacist before using Inhixa if:**

- you have ever had a reaction to heparin that caused a severe drop in the number of your platelets
- you are going to receive spinal or epidural anesthesia or lumbar puncture (see Operations and Anaesthetics): a delay should be respected between Inhixa use and this procedure
- you have had a heart valve fitted
- you have endocarditis (an infection of the inner lining of the heart)
- you have history of gastric ulcer
- you have had a recent stroke
- you have high blood pressure
- you have diabetes or problems with blood vessels in the eye caused by diabetes (called diabetic retinopathy)
- you have had an operation recently on your eyes or brain
- you are elderly (over 65 years old) and especially if you are over 75 years old
- you have kidney problems
- you have liver problems
- you are underweight or overweight
- you have high level of potassium in your blood (this may be checked with a blood test)
- you are currently using medicines which affect bleeding (see section below – Other medicines and Inhixa).

You may have a **blood test** before you start using this medicine and at intervals while you are using it; this is to check the level of the clotting cells (platelets) and potassium in your blood.

### **Children and adolescents**

The safety and efficacy of Inhixa has not been evaluated in children or adolescents.

### **Other medicines and Inhixa**

Tell your doctor, pharmacist or nurse if you are taking, have recently taken or might take any other medicines.

- Warfarin – another anticoagulant medicine used for thinning the blood
- Acetylsalicylic acid (also known as aspirin or ASA), clopidogrel or other medicines used to stop blood clots from forming (see also in section 3, “Changing anticoagulant medicine”)
- Dextran injection – used as a blood replacer
- Ibuprofen, diclofenac, ketorolac or other medicines known as non-steroidal anti-inflammatory agents which are used to treat pain and swelling in arthritis and other conditions
- Prednisolone, dexamethasone or other medicines used to treat asthma, rheumatoid arthritis and other conditions
- Medicines which increase potassium level in your blood such as potassium salts, water pills, some medicines for heart problems.

### **Operations and anaesthetics**

If you are going to have a spinal puncture or an operation where an epidural or spinal anaesthetic is used, tell your doctor that you are using Inhixa. See “Do not use Inhixa”. Also, tell your doctor if you have any problem with your spine or if you ever had spinal surgery.

### **Pregnancy and breast-feeding**

If you are pregnant, think you may be pregnant or are planning to have a baby, ask your doctor or pharmacist for advice before taking this medicine.

If you are pregnant and have a mechanical heart valve, you may be at an increased risk of developing blood clots. Your doctor should discuss this with you.

If you are breast-feeding or plan to breast-feed, you should ask your doctor for advice before taking this medicine.

### **Driving and using machines**

Inhixa does not affect the ability to drive and operate machinery.

### **Traceability**

It is important to keep a record of the batch number of your Inhixa. So, every time you get a new package of Inhixa, note down the date and the batch number (which is on the packaging after Lot) and keep this information in a safe place.

### **Inhixa contains sodium**

This medicine contains less than 1 mmol sodium (23 mg) per dose within the recommended dose range, that is to say essentially ‘sodium-free’.

### **Inhixa contains benzyl alcohol**

Inhixa contains benzyl alcohol (45 mg/3 mL; 75 mg/5 mL; 150 mg/10 mL). Benzyl alcohol may cause allergic reactions.

Benzyl alcohol has been linked with the risk of severe side effects including breathing problems (called “gasping syndrome”) in young children.

Do not give to your newborn baby (up to 4 weeks old), unless recommended by your doctor. Do not use for more than a week in young children (less than 3 years old), unless advised by your doctor or pharmacist.

Ask your doctor or pharmacist for advice if you have a liver or kidney disease, or if you are pregnant or breast-feeding. This is because large amounts of benzyl alcohol can build-up in your body and may cause side effects (called “metabolic acidosis”).

## **3. How to use Inhixa**

Always use this medicine exactly as your doctor or pharmacist has told you. Check with your doctor or pharmacist if you are not sure.

### **Having this medicine**

- Your doctor or nurse will normally give you Inhixa. This is because it needs to be given as an injection.
  - When you go home, you may need to continue to use Inhixa and give it yourself.
  - Inhixa is usually given by injection underneath the skin (subcutaneous).
  - Inhixa can be given by injection into your vein (intravenous) after certain types of heart attack or operation.
  - Inhixa can be added to the tube leaving the body (arterial line) at the start of the dialysis session.
- Do not inject Inhixa into a muscle.

### How much will be given to you

- Your doctor will decide how much Inhixa to give you. The dose will depend on the reason it is being used.
- If you have problems with your kidneys you may be given a smaller amount of Inhixa.

#### 1. Treating blood clots that are in your blood

- The usual dose is 150 IU (1.5 mg) for every kilogram of your weight once daily or 100 IU (1 mg) for every kilogram of your weight twice a day.
- Your doctor will decide how long you should receive Inhixa.

#### 2. Stopping blood clots forming in your blood in the following situations:

##### ❖ *Operation or periods of limited mobility due to an illness*

- The dose will depend on how likely you are to develop a clot. You will be given 2,000 IU (20 mg) or 4,000 IU (40 mg) of Inhixa each day.
- If you are going to have an operation your first injection will be usually given 2 hours or 12 hours before your operation.
- If you have restricted mobility due to illness, you will normally be given 4,000 IU (40 mg) of Inhixa each day.
- Your doctor will decide how long you should receive Inhixa.

##### ❖ *After you have had a heart attack*

Inhixa can be used for two different types of heart attack called STEMI (ST segment elevation myocardial infarction) or non-STEMI (NSTEMI). The amount of Inhixa given to you will depend on your age and the kind of heart attack you have had.

##### NSTEMI type of heart attack:

- The usual dose is 100 IU (1 mg) for every kilogram of weight every 12 hours.
- Your doctor will normally ask you to take acetylsalicylic acid (aspirin) as well.
- Your doctor will decide how long you should receive Inhixa.

##### STEMI type of heart attack if you are under 75 years old:

- An initial dose of 3,000 IU (30 mg) of Inhixa will be given as injection into your vein.
- At the same time you will also be given Inhixa as an injection underneath your skin (subcutaneous injection). The usual dose is 100 IU (1 mg) for every kilogram of your weight, every 12 hours.
- Your doctor will normally ask you to take acetylsalicylic acid (aspirin) as well.
- Your doctor will decide how long you should receive Inhixa.

##### STEMI type of heart attack if you are 75 years old or older:

- The usual dose is 75 IU (0.75 mg) for every kilogram of your weight, every 12 hours.
- The maximum amount of Inhixa given for the first two injections is 7,500 IU (75 mg).
- Your doctor will decide how long you should receive Inhixa.

For patients having a procedure called percutaneous coronary intervention (PCI):

Depending on when you were last given Inhixa, your doctor may decide to give an additional dose of Inhixa before the PCI procedure. This is by injection into your vein.

#### 3. Stopping blood clots from forming in the tubes of your dialysis machine

- The usual dose is 100 IU (1 mg) for every kilogram of your weight.
- Inhixa is added to the tube leaving the body (arterial line) at the start of the dialysis session. This amount is usually enough for a 4-hour session. However, your doctor may give you a further dose of 50 IU to 100 IU (0.5 to 1 mg) for every kilogram of your weight, if necessary.

### Changing anticoagulant treatment

- *Changing from Inhixa to blood thinners called vitamin-K antagonists (e.g. warfarin)*



Your doctor will ask you to have performed blood tests called INR and tell you when to stop Inhixa accordingly.

- *Changing from blood thinners called vitamin-K antagonists (e.g. warfarin) to Inhixa*  
Stop taking the vitamin-K antagonist. Your doctor will ask you to have performed blood tests called INR and tell you when to start Inhixa accordingly.
- *Changing from Inhixa to treatment with direct oral anticoagulant (e.g. apixaban, dabigatran, edoxaban, rivaroxaban)*  
Stop taking Inhixa. Start taking the direct oral anticoagulant 0-2 hours before the time you would have had the next Inhixa injection, then continue as normal.
- *Changing from treatment with direct oral anticoagulant to Inhixa*  
Stop taking direct oral anticoagulant. Do not start treatment with Inhixa until 12 hours after the final dose of direct oral anticoagulant.

#### **If you use more Inhixa than you should**

If you think that you have used too much or too little Inhixa, tell your doctor, nurse or pharmacist immediately, even if you have no signs of a problem. If a child accidentally injects or swallows Inhixa, take the child to a hospital casualty department straight away.

#### **If you forget to use Inhixa**

If you forget to give yourself a dose, have it as soon as you remember. Do not give yourself a double dose on the same day to make up for a forgotten dose. Keeping a diary will help to make sure you do not miss a dose.

#### **If you stop using Inhixa**

If you have any further questions on the use of this medicine, ask your doctor or pharmacist or nurse. It is important for you to keep having Inhixa injections until your doctor decides to stop them. If you stop, you could get a blood clot which can be very dangerous.

### **4. Possible side effects**

Like all medicines, this medicine can cause side effects, although not everybody gets them.

Like other anticoagulant medicines (medicines to reduce blood clotting), Inhixa may cause bleeding which may potentially be life-threatening. In some cases the bleeding may not be obvious.

If you experience any bleeding that does not stop by itself or if you experience signs of excessive bleeding (exceptional weakness, tiredness, paleness, dizziness, headache or unexplained swelling), consult your doctor immediately.

Your doctor may decide to keep you under closer observation or change your medicine.

Stop using Inhixa and talk to a doctor or nurse at once if you get any signs of a severe allergic reaction (such as difficulty breathing, swelling of the lips, mouth, throat or eyes).

Stop using enoxaparin and seek medical attention immediately if you notice any of the following symptoms:

- A red, scaly widespread rash with bumps under the skin and blisters accompanied by fever. The symptoms usually appear at the initiation of treatment (acute generalised exanthematous pustulosis).

You should tell your doctor straight away

- If you have any sign of blockage of a blood vessel by a blood clot such as:
  - cramping pain, redness, warmth, or swelling in one of your legs – these are symptoms of deep vein thrombosis
  - breathlessness, chest pain, fainting or coughing up blood – these are symptoms of a pulmonary embolism

- If you have a painful rash of dark red spots under the skin which do not go away when you put pressure on them.

Your doctor may ask you to have performed a blood test to check your platelet count.

### **Overall list of possible side effects:**

Very common (may affect more than 1 in 10 people)

- Bleeding.
- Increases in liver enzymes.

Common (may affect up to 1 in 10 people)

- You bruise more easily than usual. This could be because of a blood problem with low platelet counts.
- Pink patches on your skin. These are more likely to appear in the area you have been injected with Inhixa.
- Skin rash (hives, urticaria).
- Itchy red skin.
- Bruising or pain at the injection site.
- Decreased red blood cell count.
- High platelet counts in the blood.
- Headache.

Uncommon (may affect up to 1 in 100 people)

- Sudden severe headache. This could be a sign of bleeding in the brain.
- A feeling of tenderness and swelling in your stomach. You may have bleeding in your stomach.
- Large red irregularly shaped skin marks with or without blisters.
- Skin irritation (local irritation).
- Yellowing of your skin or eyes and your urine becoming darker. These may be signs of a liver problem.

Rare (may affect up to 1 in 1,000 people)

- Severe allergic reaction. The signs may include: a rash, swallowing or breathing problems, swelling of your lips, face, throat or tongue.
- Increased potassium in your blood. This is more likely to happen in people with kidney problems or diabetes. Your doctor will be able to check this by carrying out a blood test.
- An increase in the number of white blood cells called eosinophils in your blood. Your doctor will be able to check this by carrying out a blood test.
- Hair loss.
- Osteoporosis (a condition where your bones are more likely to break) after long-term use.
- Tingling, numbness and muscular weakness (particularly in the lower part of your body) when you have had a spinal puncture or a spinal anaesthetic.
- Loss of control over your bladder or bowel (so you cannot control when you go to the toilet).
- Hard mass or lump at the injection site.

### **Reporting of side effects**

If you get any side effects, talk to your doctor or pharmacist. This includes any possible side effects not listed in this leaflet. You can also report side effects directly via [the national reporting system listed in Appendix V](#). By reporting side effects you can help provide more information on the safety of this medicine.

## **5. How to store Inhixa**

Keep this medicine out of the sight and reach of children.

Do not use this medicine after the expiry date which is stated on the label and carton. The expiry date refers to the last day of that month.

Store below 25 °C. Do not freeze.

#### After first opening

Chemical and physical in-use stability has been demonstrated for 28 days at 25 °C.

From a microbiological point of view, once opened, the medicine may be stored for a maximum of 28 days below 25 °C. Other in-use storage times and conditions are the responsibility of the user.

#### After dilution with sodium chloride 9 mg/ml (0.9%) solution for infusion or 5% glucose solution for injection

Chemical and physical in-use stability has been demonstrated for 8 hours at 25 °C.

From a microbiological point of view, unless the method of dilution precludes the risk of microbial contamination, the medicine should be used immediately. If not used immediately, in-use storage times and conditions are the responsibility of user.

Do not use this medicine if you notice any visible change in the appearance of the solution.

Discard any unused medicine.

Do not throw away any medicines via wastewater or household waste. Ask your pharmacist how to throw away medicines you no longer use. These measures will help protect the environment.

## **6. Contents of the pack and other information**

### **What Inhixa contains**

- The active substance is enoxaparin sodium.  
Each mL contains 10,000 IU (100 mg) enoxaparin sodium.  
One vial (3.0 mL) contains 30,000 IU (300 mg) enoxaparin sodium.  
One vial (5.0 mL) contains 50,000 IU (500 mg) enoxaparin sodium.  
One vial (10.0 mL) contains 100,000 IU (1000 mg) enoxaparin sodium.
- The other ingredients are benzyl alcohol (see section 2) and water for injections.

### **What Inhixa looks like and contents of the pack**

- 3 mL of solution in clear, colourless type I glass vial sealed with rubber injection stopper and white aluminium-plastic cap in a cardboard box.

Supplied in packs of 1 vial.

- 5 mL of solution in clear, colourless type I glass vial sealed with rubber injection stopper and grey aluminium-plastic cap in a cardboard box.

Supplied in packs of 5 vials.

- 10 mL of solution in clear, colourless type I glass vial sealed with rubber injection stopper and white aluminium-plastic cap in a cardboard box.

Supplied in packs of 1 and 5 vials.

Not all pack sizes may be marketed.

### **Marketing Authorisation Holder**

Techdow Pharma Netherlands B.V.  
Strawinskylaan 1143, Toren C-11  
1077XX Amsterdam  
Netherlands

## Manufacturer

SciencePharma spółka z ograniczoną odpowiedzialnością  
Chełmska 30/34  
00-725 Warsaw  
Poland

For any information about this medicine, please contact the local representative of the Marketing Authorisation Holder:

### **België/Belgique/Belgien**

Techdow Pharma Netherlands B.V.  
+31208081112

### **България**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

### **Česká republika**

Techdow Pharma Netherlands B.V.  
+420255790502

### **Danmark**

Techdow Pharma Netherlands B.V.  
+4578774377

### **Deutschland**

Mitvertrieb: Techdow Pharma Germany GmbH  
Potsdamer Platz 1, 10785 Berlin  
+49 (0)30 98 321 31 00

### **Eesti**

Techdow Pharma Netherlands B.V.  
+37125892152

### **Ελλάδα**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

### **España**

TECHDOW PHARMA SPAIN, S.L.  
Tel: +34 91 123 21 16

### **France**

Viatrix Santé  
+33 4 37 25 75 00

### **Hrvatska**

Techdow Pharma Netherlands B.V.  
+385 17776255

### **Ireland**

Techdow Pharma Netherlands B.V.  
+31208081112

### **Ísland**

Techdow Pharma Netherlands B.V.

### **Lietuva**

Techdow Pharma Netherlands B.V.  
+37125892152

### **Luxembourg/Luxemburg**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

### **Magyarország**

Techdow Pharma Netherlands B.V.  
+3618001930

### **Malta**

Mint Health Ltd.  
+356 2755 9990

### **Nederland**

Techdow Pharma Netherlands B.V.  
+31208081112

### **Norge**

Techdow Pharma Netherlands B.V.  
+4721569855

### **Österreich**

Techdow Pharma Netherlands B.V.  
+43720230772

### **Polska**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

### **Portugal**

Laboratórios Atral, S.A.  
+351308801067

### **România**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

### **Slovenija**

Techdow Pharma Netherlands B.V.  
+49 (0)30 220 13 6906

### **Slovenská republika**

Techdow Pharma Netherlands B.V.

+49 (0)30 220 13 6906

**Italia**

Techdow Pharma Italy S.R.L.  
Tel: +39 0256569157

**Κύπρος**

MA Pharmaceuticals Trading Ltd  
+357 25 587112

**Latvija**

Techdow Pharma Netherlands B.V.  
+37125892152

+421233331071

**Suomi/Finland**

Techdow Pharma Netherlands B.V.  
+358942733040

**Sverige**

Techdow Pharma Netherlands B.V.  
+46184445720

**This leaflet was last revised in**

**Other sources of information**

Detailed information on this medicine is available on the European Medicines Agency web site:  
<http://www.ema.europa.eu>.