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**EPAR summary for the public**

**Keytruda**

**pembrolizumab**

This is a summary of the European public assessment report (EPAR) for Keytruda. It explains how the Agency assessed the medicine to recommend its authorisation in the EU and its conditions of use. It is not intended to provide practical advice on how to use Keytruda.

For practical information about using Keytruda, patients should read the package leaflet or contact their doctor or pharmacist.

**What is Keytruda and what is it used for?**

Keytruda is a medicine used to treat the following cancers:

- melanoma (a skin cancer) that has spread or cannot be removed with surgery;
- a type of lung cancer known as non-small cell lung cancer (NSCLC); Keytruda is used specifically when the tumour produces a protein known as PD-L1 and has spread or cannot be surgically removed;
- classical Hodgkin lymphoma, a cancer of the lymphocytes (a type of white blood cell). Keytruda is used only after failure of treatments with brentuximab vedotin and an autologous stem cell transplant (ASCT, a type of transplant used to replace the bone marrow with the patient’s own stem cells), or after brentuximab vedotin has failed and a transplant is not possible.

The medicine contains the active substance pembrolizumab.

**How is Keytruda used?**

Keytruda is given as an infusion (drip) into a vein once every three weeks. The recommended dose for previously untreated NSCLC and for classical Hodgkin lymphoma is 200 mg. For melanoma and
previously treated NSCLC, the dose depends on the patient’s weight and is 2 mg per kilogram body weight.

The doctor may need to delay doses if certain side effects occur, or stop treatment altogether if side effects are severe. Treatment is continued until the disease gets worse or side effects become unmanageable.

For patients with lung cancer, doctors should test the tumours to check if the cancer cells produce the PD-L1 protein before starting treatment.

Treatment with Keytruda must be started and supervised by a doctor experienced in the treatment of cancer. The medicine can only be obtained with a prescription.

For further information, see the summary of product characteristics (also part of the EPAR).

**How does Keytruda work?**

The active substance in Keytruda, pembrolizumab, is a monoclonal antibody, a type of protein that has been designed to recognise and block a receptor called PD-1. Some cancers can make a protein that combines with PD-1 to switch off the activity of certain cells of the immune system (the body’s natural defences) preventing them from attacking the cancer. By blocking PD-1, pembrolizumab stops the cancer switching off these immune cells, thereby increasing the ability of the immune system to kill the cancer cells.

**What benefits of Keytruda have been shown in studies?**

**Skin cancer**

Keytruda has been shown to be effective in delaying worsening of melanoma and improving survival. Early results from a study of 540 previously treated melanoma patients showed that 6 months after start of treatment, the disease had not worsened in 34% of patients treated with Keytruda compared with 16% of patients treated with chemotherapy.

A second study looked at 834 patients with melanoma who received either Keytruda or another medicine, ipilimumab. Early results from this study showed that the patients treated with Keytruda lived for up to 5.5 months without their disease getting worse compared with 2.8 months with ipilimumab. The study also found that patients treated with Keytruda lived longer than patients who received ipilimumab. Up to 71% of patients lived for at least 12 months after start of their treatment compared with 58% of patients on ipilimumab.

**Lung cancer**

Keytruda has been also shown to be effective in delaying worsening of the disease and improving survival in patients with NSCLC that tested positive for the PD-L1 protein.

In a study looking at around 1,000 previously treated patients, patients lived longer with Keytruda (around 11 months) than with another cancer medicine called docetaxel (around 8 months) and the period during which the disease did not get worse was around 4 months with both treatments. Keytruda was more effective in those patients who tested strongly for PD-L1, with these patients living for 15 months on average and for 5 months without their disease worsening.

In a second lung cancer study of 305 patients whose tumours tested strongly for PD-L1 who had not been treated before, patients on Keytruda lived for around 10 months without their disease getting worse compared with 6 months in patients taking platinum-based chemotherapy.
Hodgkin lymphoma

Keytruda has been shown to be effective at partially or completely clearing the cancer cells in classical Hodgkin lymphoma that had not responded to or returned after treatment with brentuximab vedotin, with or without an autologous stem cell transplant.

In a main study of 210 patients, Keytruda produced a complete or partial remission (clearing) of the cancer in 145 patients (69%); a complete remission occurred in 47 (22%) of them, meaning they no longer had any signs of cancer. The average time that the response lasted and patients lived without their disease getting worse again was around 11 months.

What are the risks associated with Keytruda?

The most common side effects with Keytruda (which may affect more than 1 in 10 people) are diarrhoea, nausea (feeling sick), itching, rash and tiredness, most of which are mild to moderate in severity. Other common side effects of Keytruda related to the activity of the immune system causing inflammation of body organs. Most will resolve following appropriate treatment or on stopping Keytruda.

For the full list of all side effects and restrictions with Keytruda, see the package leaflet.

Why is Keytruda approved?

The Agency’s Committee for Medicinal Products for Human Use (CHMP) decided that Keytruda’s benefits are greater than its risks and recommended that it be approved for use in the EU.

The CHMP considered that available study results, although not final, consistently showed the benefits of Keytruda in patients with advanced melanoma. The safety profile was considered favourable compared with other treatment, including ipilimumab and chemotherapy, and side effects appear manageable.

With respect to NSCLC, the CHMP noted that Keytruda helps prolong survival and slows the worsening of the disease. The safety profile of Keytruda in lung cancer patients is similar to that in melanoma patients and its overall safety compares well with that of chemotherapy.

In classical Hodgkin lymphoma, the CHMP considered the responses seen so far to be clinically significant in this group of patients, in whom other treatments had failed and who had few other treatment options. The safety of the medicine in this condition otherwise appeared comparable to that in its other uses.

What measures are being taken to ensure the safe and effective use of Keytruda?

The company that makes Keytruda will provide educational packs for doctors who are expected to prescribe Keytruda containing information on how the medicine should be used and how to manage side effects, particularly side effects on the immune system. Information on the risks of being given donor stem cell transplants after Keytruda treatment will also be included. The company will provide an alert card for patients with information on the risks of the medicine, as well as instructions on when to contact their doctor if they experience symptoms.

In addition, the company will provide the final results of the studies with Keytruda to confirm the long-term benefits of the medicine. Moreover, the company will carry out analyses to better understand which patients are likely to benefit most from treatment with Keytruda.
Recommendations and precautions to be followed by healthcare professionals and patients for the safe and effective use of Keytruda have also been included in the summary of product characteristics and the package leaflet.

Other information about Keytruda

The European Commission granted a marketing authorisation valid throughout the European Union for Keytruda on 17 July 2015.

The full EPAR and risk management plan summary for Keytruda can be found on the Agency’s website: ema.europa.eu/Find medicine/Human medicines/European public assessment reports. For more information about treatment with Keytruda, read the package leaflet (also part of the EPAR) or contact your doctor or pharmacist.

This summary was last updated in 04-2017.