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**ASSESSMENT OF THE PAEDIATRIC NEEDS
GASTRO-ENTEROLOGY**

DISCLAIMER

The Paediatric Working Party (PEG) identified the needs in different therapeutic areas where there should be research and development of medicinal products for children, either old (i.e. off patent) or new ones (including those under development). Products on the list are not in any order of priority.

The lists should not be viewed as a prescription tool nor as recommendations for treatment. Accuracy of data including in particular authorised doses cannot be guaranteed.

Information on existing marketing authorisations is very limited and therefore information under “authorised” includes the indication in broad term (only related to chemotherapy), the lower age group authorised in at least one Member State, the authorised dose(s) (if authorised for use in patients less than 18 years of age) and formulation(s) in at least in one Member State.

Please refer to the EMEA/PEG procedure for identifying the paediatric needs for further information.

Comments from third parties are expected especially to complete and or update the list as necessary.

With entry into force of Regulation 1901/2006 (Paediatric Regulation) as amended on 26 January 2007 and establishment of the Paediatric Committee at the EMEA the PEG has ceased its activities. The identification of paediatric needs has been transferred to the Paediatric Committee and based on the work carried out by the Paediatric Working Party the list has been finalised and adopted.

ADOPTION PAEDIATRIC COMMITTEE FOR RELEASE FOR PUBLIC CONSULTATION	26 October 2007
END OF CONSULTATION (DEADLINE FOR COMMENTS)	30 April 2008

Comments should be provided using this [template](#) to Paediatrics: paediatrics@emea.europa.eu
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APERIENTS AND LAXATIVES	
BISACODYL	
<i>Authorised indication</i>	Constipation, bowel cleansing
<i>Authorised age group</i>	> 4 years Suppositories > 2 years (<i>United Kingdom</i>) Enemas > 0 years (<i>Norway</i>)
<i>Authorised dose</i>	5 mg daily for children 4-10 years, 5-10 mg for children 10-18 years Enema 5 mg from 0-3 years (<i>Norway</i>)
<i>Authorised formulation</i>	Tablets 5, 10 mg; Suppositories 5, 10 mg; Enema 2 mg/ml
<i>Needs</i>	Age appropriate oral formulation Data on efficacy and safety in children < 4 years
LACTULOSE	
<i>Authorised indication</i>	Constipation, hepatic encephalopathy (12-18 years)
<i>Authorised age group</i>	1 month-18 years
<i>Authorised dose</i>	1 month-1 year: 2.5 ml, 1-5 years: 5 ml, 5-10 years: 10 ml, 10-18 years: 15 ml each twice daily
<i>Authorised formulation</i>	Lactulose 3.1-3.7 g/5 ml
<i>Needs</i>	Refine the approved dose Data on efficacy and safety in newborns
MACROGOL (POLYETHYLENE GLYCOL 3350/4000)	
<i>Authorised indication</i>	Constipation, faecal impaction Lavage bowel preparation
<i>Authorised age group</i>	2-18 years (<i>United Kingdom, France</i>)
<i>Authorised dose</i>	Constipation 0.5-1 g/kg/d Lavage Start 10 ml/kg, increase to 25 – 35 ml/kg/h, 70 – 100 ml/kg maximum if tolerated
<i>Authorised formulation</i>	<i>Laxative</i> Various preparations of Macrogol with KCl and NaCl <i>Lavage solution</i> Various preparations of Macrogol with KCl and NaCl
<i>Needs</i>	Data on PK, safety and efficacy in newborns and infants < 2 years Data on safety of use for lavage
H2 ANTIHISTAMINICS	
RANITIDINE	
<i>Authorised indication</i>	Reflux oesophagitis, benign gastric and duodenal ulceration, prophylaxis of duodenal ulceration
<i>Authorised age group</i>	No age limit specified (<i>France</i>), > 6 years (<i>Germany</i>)
<i>Authorised dose</i>	5-10 mg/kg/day
<i>Authorised formulation</i>	Capsule, Tablets, Effervescent tablets, Oral solution, Solution for iv injection
<i>Needs</i>	Age appropriate formulation (alcohol-free for neonates)
FAMOTIDINE	
<i>Authorised indication</i>	Gastric or duodenal ulceration, prophylaxis and treatment of gastroduodenal ulceration due to NSAID's
<i>Authorised age group</i>	No age limit specified (<i>France</i>), > 12 years (<i>The Netherlands</i>)
<i>Authorised dose</i>	10-20 mg/day

<i>Authorised formulation</i>	Tablets, Solution for injection (<i>France</i>)
Needs	Age appropriate formulation Data on PK, efficacy and safety < 12 years Long term safety data
NIZATIDINE	
<i>Authorised indication</i>	GER, acid-related dyspepsia, duodenal and benign gastric ulcers, prophylaxis of acid aspiration, Zollinger Ellison syndrome
<i>Authorised age group</i>	> 1 year (<i>France</i>)
<i>Authorised dose</i>	1 mg/kg/day
<i>Authorised formulation</i>	Capsule, Tablets, Powder for reconstitution for injection
Needs	Age appropriate formulation Data on PK, efficacy and safety < 1 year Long term safety data
PROTON PUMP INHIBITORS	
OMEPRAZOLE	
<i>Authorised indication</i>	GER, duodenal and gastric ulcers, Zollinger Ellison syndrome, Helicobacter eradication therapy
<i>Authorised age group</i>	> 1 year (<i>United Kingdom</i>), Solution for injection > 1 year (<i>German, Norway</i>), HP therapy > 4 years/15 kg (oral)
<i>Authorised dose</i>	0.7-1.4 mg/kg/once daily, 1-2 mg/kg/d twice daily (<i>Germany</i>)
<i>Authorised formulation</i>	Capsule (enterocoated granules), Tablets, Solution for injection
Needs	Age appropriate formulation for infants and newborns < 1 year including newborns Data on PK, safety and efficacy data Data on PK, efficacy and safety in prophylactic use (ulcer prevention during intensive care treatment) including parenteral use Data on long-term safety for chronic use
ESOMEPRAZOLE	
<i>Authorised indication</i>	Duodenal and gastric ulcers, GER
<i>Authorised age group</i>	> 12 years (<i>Germany</i>)
<i>Authorised dose</i>	20 mg
<i>Authorised formulation</i>	Enterocoated tablets, solution for injection
Needs	Data on PK, efficacy and safety in children, infants and newborns Age appropriate formulation Data on PK, efficacy and safety in prophylactic use (ulcer prevention during intensive care treatment) including parenteral use Long term safety for chronic use
LANSOPRAZOLE	
<i>Authorised indication</i>	Duodenal and gastric ulcers, GER, helicobacter pylori eradication, prophylaxis in reflux oesophagitis
<i>Authorised age group</i>	> 12 years (<i>Germany</i>)
<i>Authorised dose</i>	Ulcers: 30mg daily Helicobacter eradication: 30mg twice daily Prophylaxis: 15mg daily
<i>Authorised formulation</i>	Tablets, Suspension sachet, Capsules (enterocoated granules)
Needs	PK, efficacy and safety in children, infants and newborns for twice daily administration Age appropriate formulation Data on PK, efficacy and safety in prophylactic use (ulcer prevention

	during intensive care treatment) including parenteral use Long term safety for chronic use
PANTOPRAZOLE	
<i>Authorised indication</i>	GER, duodenal and gastric ulcers, Zollinger Ellison syndrome, Helicobacter eradication therapy
<i>Authorised age group</i>	Adults
<i>Authorised dose</i>	-
<i>Authorised formulation</i>	-
<i>Needs</i>	PK, efficacy and safety in children, infants and newborns Age appropriate formulation Data on PK, efficacy and safety in prophylactic use (ulcer prevention during intensive care treatment) including parenteral use Data on long term safety for chronic use
RABEPRAZOLE	
<i>Authorised indication</i>	Duodenal and gastric ulcers, GER, helicobacter pylori eradication
<i>Authorised age group</i>	Adults
<i>Authorised dose</i>	-
<i>Authorised formulation</i>	-
<i>Needs</i>	PK, efficacy and safety in children, infants and newborns Age appropriate formulation Data on PK, efficacy and safety in prophylactic use (ulcer prevention during intensive care treatment) including parenteral use Data on long term safety for chronic use
ANTIEMETICS	
ONDANSETRON	
<i>Authorised indication</i>	Nausea and vomiting induced by radiation and chemotherapy Postoperative nausea and vomiting
<i>Authorised age group</i>	1-18 years (post op > 2 years (<i>The Netherlands</i>))
<i>Authorised dose</i>	Cytotoxic: 5mg/m ² (max 8mg) x 8-12 hrs, Postop: 0.1 mg/kg iv (max 4 mg)
<i>Authorised formulation</i>	Tablets 4mg; Syrup 4mg/5ml; Injektion 2mg/ml; Suppositories 16mg (not authorised in children)
<i>Needs</i>	Data on PK, efficacy and safety in infants < 2 years including neonates Data on efficacy and safety in cyclical vomiting syndrome Appropriate strength rectal formulation
GRANISETRON	
<i>Authorised indication</i>	Nausea and vomiting induced by radiation and chemotherapy
<i>Authorised age group</i>	1 month -18 years
<i>Authorised dose</i>	<u>1 month-12 years:</u> Oral 20 µg/kg x 2 daily iv infusion 40mcg/kg x 1 daily <u>12-18 years:</u> Oral 1-2mg x2 daily iv infusion 3mg x1-3 daily (max 9mgdaily)
<i>Authorised formulation</i>	Tablets 1mg, Oral liquid 1mg /5ml, Solution for infusion 1mg/ml

<i>Needs</i>	Data on PK, efficacy and safety in infants and neonates Data on efficacy and safety in cyclical vomiting syndrome
TROPISETRONE	
<i>Authorised indication</i>	Prevention of cancer chemotherapy induced nausea
<i>Authorised age group</i>	> 2 years
<i>Authorised dose</i>	0.2 mg/kg/day (max 5 mg) for children < 25 kg iv, for children > 25 kg po
<i>Authorised formulation</i>	Capsules, solution for injection
<i>Needs</i>	PK, safety and efficacy in children < 2 years Age appropriate formulation Availability in all Member States
APREPITANT	
<i>Authorised indication</i>	Nausea and vomiting induced by radiation and chemotherapy
<i>Authorised age group</i>	Adults
<i>Authorised dose</i>	-
<i>Authorised formulation</i>	-
<i>Needs</i>	Data on efficacy and safety in infants and neonates Data on efficacy and safety in cyclical vomiting syndrome Age appropriate formulation
MOTILITY DRUGS	
LOPERAMIDE HYDROCHLORIDE	
<i>Authorised indication</i>	Diarrhoea
<i>Authorised age group</i>	> 2 years (<i>France, Germany</i>) (> 4 years syrup; > 8 years capsules (<i>United Kingdom</i>))
<i>Authorised dose</i>	0.01 - 0.03 mg/kg
<i>Authorised formulation</i>	Oral solution (0,2 mg/ml), Capsules, Tablets
<i>Needs</i>	Chronic diarrhoea in short bowel syndrome > 2 years (safety issue < 2 years)
BACLOFEN	
<i>Authorised indication</i>	Spasticity of cerebral origin GER not authorised
<i>Authorised age group</i>	0-18 years
<i>Authorised dose</i>	Oral dose 0.75-2 mg/kg daily (> 10 years max 2.5 mg/kg)
<i>Authorised formulation</i>	Tablets 10 mg, oral solution 5 mg/ 5 ml
<i>Needs</i>	Data on efficacy and safety in children with GOR 0- 18 years
ERYTHROMYCIN	
<i>Authorised indication</i>	Prophylaxis and treatment of infections Gastrointestinal stasis not authorised
<i>Authorised age group</i>	0-18 years (infections)
<i>Authorised dose</i>	By mouth 3 mg/kg 4x daily (infections)
<i>Authorised formulation</i>	Capsules, tablets 250, 500 mg, Suspension 125 mg/ 5 ml
<i>Needs</i>	Data on efficacy and safety in gastro-intestinal stasis

EXTERNAL PANCREATIC INSUFFICIENCY TREATMENTS	
PANCREATIC ENZYMES FROM CELLS OF PORCINE ORIGIN	
<i>Authorised indication</i>	Exocrine pancreatic insufficiency (cystic fibrosis)
<i>Authorised age group</i>	> 0 years
<i>Authorised dose</i>	Infants: 2 to 4000 U lipase /120 ml of milk Children: 1000 U lip/kg/meal
<i>Authorised formulation</i>	Microgranules, Capsules
<i>Needs</i>	Age appropriate formulation for infants and newborns
DISEASE MODIFYING AND IMMUNOSUPPRESSIVE AGENTS	
TACROLIMUS (IN GASTROENTEROLOGY)	
<i>Authorised indication</i>	Prophylaxis of transplant rejection in kidney, liver and heart allograft recipients; Treatment of allograft rejection resistant to treatment with other immunosuppressive medicinal products
<i>Authorised age group</i>	> 2 years (Liver)
<i>Authorised dose</i>	Liver and Kidney: initial oral dose of 0.30 mg/kg per day in two divided doses.
<i>Authorised formulation</i>	0.5, 1 mg and 5 mg capsules; 5mg/ml concentrate for dilution for infusion
<i>Needs</i>	Need for 0.25 mg capsule, oral suspension, PK, efficacy and safety < 2 years Dose, efficacy and safety in small bowel allograft Dose, efficacy and safety in Ulcerative Colitis and Crohn's Disease > 6 years
SIROLIMUS (IN GASTROENTEROLOGY)	
<i>Authorised indication</i>	Liver transplantation prevention of rejection where there is coexistent renal failure
<i>Authorised age group</i>	5-18 years
<i>Authorised dose</i>	2 mg/kg twice daily therapeutic drug monitoring required 5-10ng/ml
<i>Authorised formulation</i>	1 mg/ml, 2 mg/2ml, 5 mg/5ml oral solution; 1, 2, 5 mg coated tablets
<i>Needs</i>	Dose, efficacy and safety in Ulcerative Colitis and Crohn's Disease > 6 years Dose, efficacy and safety in small bowel allograft Age appropriate formulation
AZATHIOPRINE	
<i>Authorised indication</i>	Organ transplantation, autoimmune enterocolitis, ulcerative colitis and Crohn's disease
<i>Authorised age group</i>	All ages
<i>Authorised dose</i>	Starting dose 2mg/kg per day for transplants; measure TPMT activity
<i>Authorised formulation</i>	25, 50 mg scored tablets, Powder for reconstitution for injection
<i>Needs</i>	Age appropriate oral formulation.
MYCOPHENOLATE MOFETIL	
<i>Authorised indication</i>	Prevention and treatment of rejection in liver, kidney, heart transplants in combination with ciclosporin and steroids
<i>Authorised age group</i>	Children > 2 years
<i>Authorised dose</i>	< 600 mg/m ² twice daily via oral route
<i>Authorised formulation</i>	250 mg capsules, 500 mg tablets , 200mg/ml oral suspension, 500mg vial I/V

<i>Needs</i>	Data on dose, safety and efficacy in small bowel transplants and autoimmune and inflammatory bowel diseases.
METHOTREXATE	
<i>Authorised indication</i>	Oncology, Juvenile Idiopathic Arthritis, Psoriasis
<i>Authorised age group</i>	Unspecified age group
<i>Authorised dose</i>	10 mg/m ² /week. Can be increased to 20 mg/m ² /week
<i>Authorised formulation</i>	Solution for i.m. and s.c. injection, Tablets 2.5 and 10 mg, Solution for i.v. infusion 7.5 mg/ml
<i>Needs</i>	Age-appropriate oral formulation Data on safety and efficacy in Crohn's disease > 7 years
CYCLOPHOSPHAMIDE	
<i>Authorised indication</i>	Immunosuppressant for autoimmune disorders such as Wegener's granulomatosis, Goodpasture syndrome, lupus erythematosus, autoimmune nephropathies Oncology
<i>Authorised age group</i>	Children (age group unspecified)
<i>Authorised dose</i>	3 mg/kg per day
<i>Authorised formulation</i>	50, 200, 500, 1000, 2000 mg coated tablet; injectable form 100, 500, 1000 mg
<i>Needs</i>	Data on dose, efficacy and safety in severe autoimmune enterocolitis Age appropriate formulations, such as 5 mg, 10 mg, 15 mg and 30 mg capsules and liquid formulation
BIOLOGICAL AGENTS - IMMUNOMODULATORS	
ADALIMUMAB	
<i>Authorised indication</i>	Rheumatoid arthritis in adults
<i>Authorised age group</i>	> 18 years
<i>Authorised dose</i>	24mg/m ² max 40 mg every 2 weeks subcutaneously
<i>Authorised formulation</i>	Solution for injection
<i>Needs</i>	Data on dose, efficacy and safety including long term safety in Inflammatory Bowel Disease in children > 12 years Age appropriate formulation
DACLIZUMAB	
<i>Authorised indication</i>	Prevention of acute rejection in kidney transplant.
<i>Authorised age group</i>	> 1 year
<i>Authorised dose</i>	1 mg/kg every 14 days, 5 doses in total
<i>Authorised formulation</i>	Concentrate for solution for infusion
<i>Needs</i>	Data on efficacy, safety and dose in Inflammatory Bowel Disease in children > 6 years
RITUXIMAB	
<i>Authorised indication</i>	Lymphoma Prevention of acute rejection after de novo allogeneic kidney transplants
<i>Authorised age group</i>	Adults
<i>Authorised dose</i>	-
<i>Authorised formulation</i>	-
<i>Needs</i>	Data on dose, efficacy and safety in liver transplant in children

VITAMINS	
PEGYLATED VITAMIN E	
<i>Authorised indication</i>	Vitamin E deficiency in chronic cholestasis
<i>Authorised age group</i>	0-18 years
<i>Authorised dose</i>	2-10 mg/kg/daily
<i>Authorised formulation</i>	Suspension, Solution for injection
<i>Needs</i>	PK, efficacy, safety and dose in cholestasis (other than in cystic fibrosis) Age appropriate formulation
ANTIVIRAL AGENTS FOR HEPATITIS	
See List of Paediatric Needs Anti-infectious Therapy	

DEVOID OF INTEREST: The following products are considered by the PEG/PDCO to be devoid of interest in the paediatric population:
MAGNESIUM HYDROXIDE
DOCUSATE SODIUM
LIQUID PARAFFIN
SENNA
CISAPRIDE
URECHOLINE
CLEBOPRIDE
CIMETIDINE
MISOPROSTOL
OLSALAZINE

NO FURTHER NEED: For the following products the needs are considered to be already covered and no need for further paediatric data has been identified by the PEG / PDCO:
SODIUM PICOSULFATE
PHOSPHATES
DOMPERIDONE (MOTILIUM)
METOCLOPRAMIDE
SULFASALAZINE
MESALAZINE
CICLOSPORIN (in Gastroenterology)
INFLIXIMAB