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Practical policies for students

Методичні вказівки для студентів з фармакотерапії

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Rickets. Hypervitaminosis D. Tetany

Example of prescription (for a child of 7 months for treatment of rickets II)	**ERGOCALCIFEROL** **Synonyms:** Calciferol, Vitamin D. **Pharmacological group:** vitamins. **Form of manufacturing:** Tablets, ergocalciferol 250 micrograms (10 000 units); Injection, ergocalciferol, 7.5 mg (300 000 units)/mL in oil. **Mechanism of action:** contributes to bone strength as proper levels create optimum conditions for bone formation; supports proper functioning of the immune and nervous systems; promotes the intestinal absorption of calcium; supports fetal skeletal development and tooth enamel formation; contributes to healthy levels of phosphorus in the body. **Indications for prescribing:** nutritional vitamin-D deficiency rickets, nutritional or physiological supplement; prevention of rickets, vitamin D deficiency in intestinal malabsorption or in chronic liver disease. **Contraindications for using:** hypercalcaemia; metastatic calcification. **Possible side effects:** symptoms of overdosage include anorexia, lassitude, nausea and vomiting, diarrhea,constipation, weight loss, polyuria, sweating, headache,thirst, vertigo, and raised concentrations of calcium and phosphate in plasma and urine. **Dosage and way of administration:** Nutritional vitamin-D deficiency rickets • By mouth **Child 1–6 months** 3000 units daily, adjusted as necessary; **Child 6 months–12 years** 6000 units daily, adjusted as necessary; **Child 12–18 years** 10 000 units daily, adjusted as necessary. Nutritional or physiological supplement; prevention of rickets • By mouth **Neonate** 400 units daily; **Child 1 month–18 years.** Vitamin D deficiency in intestinal malabsorption or in chronic liver disease • By mouth or by intramuscular **Child 1–12 years** 10 000–adjusted as necessary; **Child 12–18 years** 10 000–adjusted as necessary.
Example of prescription (for a child of 2 month, for prevention of rickets)	**COLECALCIFEROL** **Synonyms:** Cholecalciferol, vitamin D_3, Adcal-D_3 (with calcium) **Pharmacological group:** vitamins. **Form of manufacturing:** **Adcal-D3** Tablets (chewable), lemon or tutti-frutti flavour, calcium carbonate 1.5 g (calcium 600 mg or $Ca2^+$ 15 mmol), colecalciferol 10 micrograms (400 units), Dissolve (effervescent tablets), lemon flavour, calcium carbonate 1.5 g (calcium 600 mg or $Ca2^+$ 15 mmol), colecalciferol 10 micrograms (400 units), **Mechanism of action:** contributes to bone strength as proper levels create optimum conditions for bone formation; supports proper

	functioning of the immune and nervous systems; promotes the intestinal absorption of calcium; supports fetal skeletal development and tooth enamel formation; contributes to healthy levels of phosphorus in the body. **Indications for prescribing:** nutritional vitamin-D deficiency rickets, nutritional or physiological supplement; prevention of rickets, vitamin D deficiency in intestinal malabsorption or in chronic liver disease. **Contraindications for using:** hypercalcaemia; metastatic calcification. **Possible side effects:** symptoms of overdosage include anorexia, lassitude, nausea and vomiting, diarrhea, constipation, weight loss, polyuria, sweating, headache, thirst, vertigo, and raised concentrations of calcium and phosphate in plasma and urine. **Dosage and way of administration:** Nutritional vitamin-D deficiency rickets • By mouth **Child 1–6 months** 3000 units daily, adjusted as necessary; **Child 6 months–12 years** 6000 units daily, adjusted as necessary; **Child 12–18 years** 10 000 units daily, adjusted as necessary. Nutritional or physiological supplement; prevention of rickets • By mouth **Neonate** 400 units daily. Vitamin D deficiency in intestinal malabsorption or in chronic liver disease • By mouth or by intramuscular **Child 1–12 years** 10 000–adjusted as necessary; **Child 12–18 years** 10 000–adjusted as necessary.
Example of prescription (for a child of 8 month, weight 8 kg)	**CALCIUM GLUCONATE** **Pharmacological group:** Minerals. **Form of manufacturing:** Injection, calcium gluconate 10% (calcium 8.4 mg or Ca^{2+} 226 micromol)/mL; Effervescent tablets, calcium gluconate 1 g (calcium 89 mg or Ca^{2+} 2.23 mmol). **Mechanism of action:** replenishes calcium deficiency; has antiallergic and hemostatic effects; reduces vascular permeability. **Indications for prescribing:** hypocalcaemia, hyperkalaemia (prevention of arrhythmias). **Contraindications for using:** conditions associated with hypercalcaemia and hypercalciuria (e.g. some forms of malignant disease). **Possible side effects:** gastro-intestinal disturbances, constipation; bradycardia, arrhythmias; with injection, peripheral vasodilatation, fall in blood pressure, injectionsite reactions, severe tissue damage with extravasation. **Dosage and way of administration:** • By mouth **Neonate** 0.25 mmol/kg 4 times a day, adjusted to response **Child 1 month–years** 0.25 mmol/kg 4 times a day, adjusted to response; **Child 5–12 years** 0.2 mmol/kg 4 times a day, adjusted to response; **Child 12–18 years** 10 mmol 4 times a day, adjusted to response. Acute hypocalcaemia, urgent correction; hyperkalaemia (prevention of arrhythmias) • By slow intravenous injection over 5–10 minutes

	Neonate 0.11 mmol/kg (0.5 mL/kg of calcium gluconate 10 %) as a single dose; **Child 1 month–18 years** 0.11 mmol/kg (0.5 mL/kg calcium gluconate 10%), max 4.5 mmol (20 mL calcium gluconate 10 %). Acute hypocalcaemia, maintenance • By continuous intravenous infusion **Neonate** 0.5 mmol/kg daily over 24 hours, adjusted to response, use oral route as soon as possible due to risk of extravasation; **Child 1 month–2 years** 1 mmol/kg daily (usual max 8.8 mmol) over 24 hours, use oral route as soon as possible due to risk of extravasation; **Child 2–18 years** 8.8 mmol over 24 hours, use oral route as soon as possible due to risk of extravasation.
Example of prescription (for a child of 2 years, weight 13 kg)	**CALCIUM CHLORIDE** **Pharmacological group:** Minerals **Form of manufacturing:** Injection, calcium chloride dihydrate 10% (calcium 27.3 mg or Ca^{2+} 680 micromol/mL), **Mechanism of action:** see Calcium Gluconate. **Indications for prescribing:** hypocalcaemia, hyperkalaemia (prevention of arrhythmias). **Contraindications for using:** see Calcium Gluconate. **Possible side effects:** see Calcium Gluconate. **Dosage and way of administration:** see Calcium Gluconate. **Cautions:** 10 % Calcium Chloride is irritating to veins and must not be injected into tissues, since severe necrosis and sloughing may occur.
Example of prescription (for a child of 1 year, weight 10 kg)	**DIAZEPAM** **Synonyms:** Sibazon, Seduxen, Relanium. **Pharmacological group:** Drugs used in status epilepticus. **Form of manufacturing:** Injection (solution), diazepam 5 mg/mL, Injection (emulsion), diazepam 5 mg/mL (0.5 %), Rectal tubes (= rectal solution), diazepam 2 mg/mL. **Mechanism of action:** Diazepam enhances the effect of the neurotransmitter GABA by binding to the benzodiazepine site on the GABA- receptor (via the constituent chlorine atom) leading to central nervous system depression. **Indications for prescribing:** Status epilepticus, febrile convulsions. **Contraindications for using:** respiratory depression; marked neuromuscular respiratory weakness including unstable myasthenia gravis; acute pulmonary insufficiency; sleep apnoea syndrome; not for chronic psychosis; should not be used alone in depression or in anxiety with depression. **Possible side effects:** drowsiness and lightheadedness the next day; confusion and ataxia; amnesia; dependence; paradoxical increase in aggression; muscle weakness; occasionally: headache, vertigo, hypotension, salivation changes, gastrointestinal disturbances, visual disturbances, dysarthria, tremor, changes in libido, incontinence, urinary retention; blood disorders and jaundice reported; skin reactions; on intravenous injection, pain, thrombophlebitis and rarely apnoea.

	Dosage and way of administration: Status epilepticus, febrile convulsions, convulsions caused by poisoning • By intravenous injection over 3–5 minutes **Neonate** 300–400 micrograms/kg repeated once after 10 minutes if necessary; **Child 1 month–12 years** 300–400 micrograms/kg (max. 10 mg) repeated once after 10 minutes if necessary; **Child 12–18 years** 10 mg repeated once after 10 minutes if necessary. • By rectum (as rectal solution) **Neonate** 1.25–2.5 mg repeated once after 10 minutes if necessary; **Child 1 month–2 years** 5 mg repeated once after 10 minutes if necessary; **Child 2–12 years** 5–10 mg repeated once after 10 minutes if necessary; **Child 12–18 years** 10–20 mg repeated once after 10 minutes if necessary.
Example of prescription (for a child of 10 month, weight 9 kg)	**PHENOBARBITAL** **Pharmacological group:** barbiturates. **Form of manufacturing:** Tablets, phenobarbital 15 mg, 28-tab; 30 mg, 28-tab; 60 mg, 28-tab Elixir, phenobarbital 15 mg/5 mL, 100 mL; Injection, phenobarbital sodium 15 mg/mL, 1-mL amp; 30 mg/mL, 1-mL amp; 60 mg/mL, 1-mL amp; 200 mg/mL, 1-mL amp. **Mechanism of action:** Phenobarbital is capable of producing all levels of CNS mood alteration, from excitation to mild sedation to hypnosis, and deep coma. Phenobarbital induces anesthesia. Phenobarbital depresses the sensory cortex, decreases motor activity, alters cerebellar function, and produces drowsiness, sedation, and hypnosis. **Indications for prescribing:** treat or prevent convulsions. It is also used short-term to treat insomnia, or as a sedative before surgery. **Contraindications for using:** hypersensitivity to phenobarbital, manifest or latent porphyria. **Possible side effects:** hepatitis, cholestasis; hypotension; respiratory depression; drowsiness, lethargy, depression, ataxia, behavioural disturbances, nystagmus, irritability, hallucinations, impaired memory and cognition, hyperactivity; osteomalacia; megaloblastic anemia, agranulocytosis, thrombocytopenia; allergic skin reactions; very rarely Stevens-Johnson syndrome and toxic epidermal necrolysis. **Dosage and way of administration:** • By mouth or by intravenous injection **Neonate** initially 20 mg/kg by slow intravenous injection then 2.5–5 mg/kg once daily either by slow intravenous injection or by mouth; dose and frequency adjusted according to response; • By mouth **Child 1 month–12 years** initially 1–1.5 mg/kg twice daily, increased by 2 mg/kg daily as required; usual maintenance dose 2.5–4 mg/kg once or twice daily; **Child 12–18 years** 60–180 mg once daily.

Functional gastrointestinal disorders in infants and toddlers. Malnutrition

Example of prescription (for a child of 1 year, weight 10 kg)	**DOMPERIDONE** **Synonyms:** Motilium. **Pharmacological group:** motility stimulants. **Form of manufacturing:** Tablets, 10 mg (as maleate), Suspension, domperidone 5 mg/5 mL, Suppositories, domperidone 30 mg. **Mechanism of action:** Domperidone is dopamine receptor antagonist which stimulate gastric emptying and small intestinal transit, and enhance the strength of oesophageal sphincter contraction. **Indications for prescribing:** Gastro-oesophageal reflux disease, gastro-intestinal stasis, nausea and vomiting. **Contraindications for using:** prolactinaemia; if increased gastro-intestinal motility harmful. **Possible side effects:** rarely gastro-intestinal disturbances (including cramps), and hyperprolactinaemia; very rarely ventricular arrhythmias, agitation, drowsiness, nervousness, seizures, extrapyramidal effects, headache, and rashes; also reported QT-interval prolongation. **Dosage and way of administration:** Gastro-oesophageal reflux disease, gastro-intestinal stasis • By mouth **Neonate** 100–300 micrograms/kg 4–6 times daily before feeds; **Child 1 month–12 years** 200–400 micrograms/ kg (max. 20 mg) 3–4 times daily before food; **Child 12–18 years** 10–20 mg, 3–4 times daily before food. Nausea and vomiting • By mouth **Child over 1 month and body-weight up to 35 kg** 250–500 micrograms/kg 3–4 times daily; max. 2.4 mg/kg in 24 hours; **Body-weight 35 kg and over** 10–20 mg 3–4 times daily, max. 80 mg daily. • By rectum **Body-weight 15–35 kg** 30 mg twice daily; **Body-weight over 35 kg** 60 mg twice daily.
Example of prescription (for a child of 2 years, weight 13 kg)	**LOPERAMIDE HYDROCHLORIDE** **Synonyms:** Imodium. **Pharmacological group:** antimotility drugs. **Form of manufacturing:** Capsules, loperamide hydrochloride 2 mg, Tablets, loperamide hydrochloride 2 mg. **Mechanism of action:** excites opioid receptors of the digestive tract, decreases tone of smooth muscles of the intestine, increases the tone of the sphincter including anal. **Indications for prescribing:** acute and chronic diarrhea. **Contraindications for using:** conditions where inhibition of peristalsis should be avoided, where abdominal distension develops, or in conditions such as active ulcerative colitis or antibiotic-associated colitis. **Possible side effects:** abdominal cramps, dizziness, drowsiness, and skin reactions including urticaria; paralytic ileus and abdominal bloating also reported.

	Dosage and way of administration: Chronic diarrhea • By mouth **Child 1 month–1 year** 100–200 micrograms/kg twice daily, 30 minutes before feeds; up to 2 mg/kg daily in divided doses occasionally required; **Child 1–12 years** 100–200 micrograms/kg (max. 2 mg) 3–4 times daily; up to 1.25 mg/kg daily in divided doses may be required (max. 16 mg daily); **Child 12–18 years** 2–4 mg 2–4 times daily (max. 16 mg daily). Acute diarrhea • By mouth **Child 4–8 years** 1 mg 3–4 times daily for up to 3 days only; **Child 8–12 years** 2 mg 4 times daily for up to 5 days; **Child 12–18 years** initially 4 mg, then 2 mg after each loose stool for up to 5 days (usual dose 6–8 mg daily; max. 16 mg daily).
Example of prescription (for a child of 2 years, weight 13 kg)	**DIOSMECTITE** **Synonyms:** Smecta. **Pharmacological group:** Antidiarrheal Gastro-intestinal protectant. **Form of manufacturing:** powder for oral suspension, Diosmectite 3 g, in each sachet; box of 10 sachets. **Mechanism of action:** Smecta antidiarrhoeal properties involved two mechanisms: adsorption of toxin, bacteria and viruses and reinforces the intestinal mucus barrier, a pharmacological effect that related to the clinically observed reduction in duration of acute diarrhoea. **Indications for prescribing:** diarrhea and of painful symptoms associated with oesophageal-gastric and intestinal diseases. **Contraindications for using:** hypersensitivity, intestinal obstruction. **Possible side effects:** development or worsening of constipation, allergic reactions. **Dosage and way of administration:** • By mouth **Child under 1 year** 1 sachet per day; **Child 1–2 years** 1 to 2 sachets per day; **Child over 2 years** 2 to 3 sachets per day; **Adult** an average of 3 sachets per day, mixed with half a glass of water.
Example of prescription (for a child of 4 month, weight 6,5 kg)	**SIMETICONE** **Synonyms:** Infacol. **Pharmacological group:** anti-foaming agent. **Form of manufacturing:** Colic drops (= emulsion), simeticone 21 mg/2.5-mL. **Mechanism of action:** simethicone is an anti-foaming agent that decreases the surface tension of gas bubbles , causing them to combine into larger bubbles in the stomach that can be passed more easily. **Indications for prescribing:** Simeticone is used to treat infantile colic. Simeticone is added to an antacid as an antifoaming agent to relieve flatulence; may be useful for the relief of hiccup in palliative care **Contraindications for using:** hypersensitivity. **Possible side effects:** rarely – allergic reactions. **Dosage and way of administration:** • By mouth **Neonate** 2.5mL with or after each feed (max. 6 doses in 24 hours); may be added to bottle feed; **Child 1 month–2 years** 2.5 mL with or after each feed (max. 6 doses in 24 hours); may be added to bottle feed.

Example of prescription (for a child of 2 years, weight 13 kg)	**PANCREATIN** **Synonyms:** Creon. **Pharmacological group:** pancreatin, containing a mixture of protease, lipase and amylase, aids the digestion of starch, fat, and protein. **Form of manufacturing:** **Creon 10 000** Capsules, brown/clear, enclosing buff-coloured e/c granules of pancreatin (pork), providing: protease 600 units, lipase 10 000 units, amylase 8000 units. **Creon 25 000** Capsules, orange/clear, enclosing brown-coloured e/c pellets of pancreatin (pork), providing: protease (total) 1000 units, lipase 25 000 units, amylase 18 000 units. **Creon 40 000** Capsules, brown/clear, enclosing brown-coloured e/c granules of pancreatin (pork), providing: protease (total) 1600 units, lipase 40 000 units, amylase 25 000 units. **Mechanism of action:** promotes the breakdown of proteins to amino acids, fats to glycerol and fatty acids, starch and dextrins to monosaccharides; normalizes the process of digestion. **Indications for prescribing:** chronic pancreatitis, digestive disorders with liver diseases, gastritis, chronic enterocolitis. **Contraindications for using:** individual intolerance. **Possible side effects:** nausea, vomiting, abdominal discomfort; skin and mucosal irritation. **Dosage and way of administration:** • By mouth **Creon 10 000** **Child 1 month–18 years** initially 1–2 capsules with each meal either taken whole or contents mixed with fluid or soft food (then swallowed immediately without chewing. **Creon 25 000** **Child 2–18 years** initially 1 capsule with meals either taken whole or contents mixed with fluid or soft food (then swallowed immediately without chewing). **Creon 40 000** **Child 2–18 years** initially 1–2 capsules with meals either taken whole or contents mixed with fluid or soft food (then swallowed immediately without chewing). *Daily dose should not exceed 10 000 lipase units per kg body-weight per day!*

Upper respiratory tract infections. Bronchitis

Example of prescription (for a child of 10 years, weight 35 kg)	**INOSINE PRANOBEX** **Synonyms:** Groprinosin, Isoprinosin. **Pharmacological group:** antiviral drugs. **Form of manufacturing:** Tablets, Inosine Pranobex 500 mg; Syrup, Inosine Pranobex 250 mg/5 ml. **Mechanism of action:** Inosine Pranobex stimulates the biochemical processes in macrophages, increases the production of interleukins. Increased synthesis of antibodies, do proliferatiou lymphocytes t., T-helper cells, natural killer cells. **Indications for prescribing:** Inosine pranobex is indicated as an immunomodulator for the treatment of patients with immunodepression suffering from viral infections such as subacute sclerosing panencephalitis, varicella, herpes simplex Type 1 & 2, in the treatment of recurrent herpes simplex Type 1 & 2, as an adjunct in the treatment of genital warts.

	Contraindications for using: gout; kidney stones; arrhythmia; children up to age 2 years; hypersensitivity to the preparation components. **Possible side effects:** On the part of the digestive system: reduced appetite, nausea, vomiting, diarrhea. Other: a slight increase in the concentration of uric acid in the blood and urine, allergic reactions. **Dosage and way of administration:** • By mouth **Child 2–12 years** appointed dose 50 mg/kg/day, divided into 3–4 reception; **Adult** appointed dose 3–4 g (from 6 up to 8 tab.)/d, divided into 3–4 reception.
Example of prescription (for a child of 12 years, weight 45 kg)	**OSELTAMIVIR** **Synonyms:** Tamiflu. **Pharmacological group:** antiviral drugs. **Form of manufacturing:** Capsules, oseltamivir 30 mg (yellow); Oral suspension, sugar-free, tutti-frutti-flavoured, oseltamivir for reconstitution with water, 60 mg/5 mL. **Mechanism of action:** reduce replication of influenza A and B viruses by inhibiting viral neuraminidase. **Indications for prescribing:** treatment and prevention of influenza A and B. **Contraindications for using:** individual intolerance. **Possible side effects:** nausea, vomiting, abdominal pain, diarrhea; headache; conjunctivitis; less commonly eczema; also reported hepatitis, gastro-intestinal bleeding, arrhythmias, neuropsychiatric disorders, thrombocytopenia, visual disturbances, Stevens-Johnson syndrome, and toxic epidermal necrolysis. **Dosage and way of administration:** Prevention of influenza • By mouth **Child under 1 month** 2 mg/kg once daily for 10 days for post-exposure prophylaxis; **Child 1–3 months** 2.5 mg/kg once daily for 10 days for post-exposure prophylaxis; **Child 3 months–1 year** 3 mg/kg once daily for 10 days for post-exposure prophylaxis; **Child 1–13 years** **Body-weight under 15 kg** 30 mg once daily for 10 days for post-exposure prophylaxis; for up to 6 weeks during an epidemic; **Body-weight 15–23 kg** 45 mg once daily for 10 days for post-exposure prophylaxis; for up to 6 weeks during an epidemic; **Body-weight 23–40 kg** 60 mg once daily for 10 days for post-exposure prophylaxis; for up to 6 weeks during an epidemic; **Body-weight over 40 kg** 75 mg once daily for 10 days for post-exposure prophylaxis; for up to 6 weeks during an epidemic; **Child 13–18 years** 75 mg once daily for 10 days for post-exposure prophylaxis; for up to 6 weeks during an epidemic. Treatment of influenza • By mouth **Child under 1 month** 2 mg/kg twice daily for 5 days; **Child 1–3 months** 2.5 mg/kg twice daily for 5 days; **Child 3 months–1 year** 3 mg/kg twice daily for 5 days; **Child 1–13 years**

	Body-weight under 15 kg 30 mg twice daily for 5 days; **Body-weight 15–23 kg** 45 mg twice daily for 5 days; **Body-weight 23–40 kg** 60 mg twice daily for 5days; **Body-weight over 40 kg** 75 mg twice daily for 5days4 **Child 13–18 years** 75 mg twice daily for 5 days.
Example of prescription (for a child of 4 years, weight 17 kg)	**PARACETAMOL** **Synonyms:** Acetaminophen, panadol, perfalgan. **Pharmacological group:** antipyretic, analgesic, anti-inflammatory drags. **Form of manufacturing:** Tablets and caplets, paracetamol 500 mg; Paediatric soluble tablets, paracetamol 120 mg; Oral suspension, paracetamol 120 mg/5 mL, 250 mg/5 mL; Suppositories, paracetamol 60 mg; Perfalgan: Intravenous infusion, paracetamol 10 mg/mL. **Mechanism of action:** Paracetamol has analgesic and antipyretic properties, but no demonstrable anti-inflammatory activity; unlike opioid analgesics, it does not cause respiratory depression and is less irritant to the stomach than the NSAIDs. **Indications for prescribing:** pain; pyrexia. **Contraindications for using:** abnormal liver function and blood system. **Possible side effects:** rashes, blood disorders (including thrombocytopenia, leucopenia, neutropenia); hypotension, flushing, and tachycardia on infusion; liver damage (and less frequently renal damage) following overdosage. **Dosage and way of administration:** • By mouth **Neonate 28–32 weeks postmenstrual age** 20 mg/kg as a single dose then 10–15 mg/kg every 8–12 hours as necessary; max. 30 mg/kg daily in divided doses; **Neonate over 32 weeks postmenstrual age** 20 mg/kg as a single dose then 10–15 mg/kg every 6–8 hours as necessary; max. 60 mg/kg daily in divided doses; **Child 1–3 months** 30–60 mg every 8 hours as;necessary; **Child 3–12 months** 60–120 mg every 4–6 hours (max. 4 doses in 24 hours); **Child 1–6 years** 120–250 mg every 4–6 hours (max. 4 doses in 24 hours); **Child 6–12 years** 250–500 mg every 4–6 hours (max. 4 doses in 24 hours); **Child 12–18 years** 500 mg every 4–6 hours; • By rectum **Neonate 28–32 weeks postmenstrual age** 20 mg/kg as a single dose then 15 mg/kg every 12 hours as necessary; max. 30 mg/kg daily in divided doses; **Neonate over 32 weeks postmenstrual age** 30 mg/kg as a single dose then 20 mg/kg every 8 hours as necessary; max. 60 mg/kg daily in divided doses; **Child 1–3 months** 30–60 mg every 8 hours as necessary; **Child 3–12 months** 60–125 mg every 4–6 hours as necessary (max. 4 doses in 24 hours); **Child 1–5 years** 125–250 mg every 4–6 hours as necessary (max. 4 doses in 24 hours); **Child 5–12 years** 250–500 mg every 4–6 hours as necessary (max. 4 doses in 24 hours); **Child 12–18 years** 500 mg every 4–6 hours; • By intravenous infusion over 15 minutes

	Preterm neonate over 32 weeks postmenstrual age 7.5 mg/kg every 8 hours; max. 25 mg/kg daily **Neonate** 10 mg/kg every 4–6 hours; max. 30 mg/kg daily **Child body-weight under 50 kg** 15 mg/kg every 4–6 hours; max. 60 mg/kg daily; **Child body-weight over 50 kg** 1 g every 4–6 hours; max. 4 g daily.
Example of prescription (for a child of 3 years, weight 15 kg)	**AMINOPHYLLINE** **Synonyms:** theophylline, neophylline. **Pharmacological group:** xanthine. **Form of manufacturing:** Injection, aminophylline 25 mg/mL, 10-mL amp; Injection, aminophylline 2 mg/mL, 20-mL amp; 5 mg/mL, 20-mL amp. **Mechanism of action:** Theophylline is a xanthine used as a bronchodilator. **Indications for prescribing:** bronchial asthma, asthmatic status, obstructive bronchitis. **Contraindications for using:** hypotension, tachyarrhythmia, myocardial infarction, renal failure. **Possible side effects:** nausea, vomiting, gastric irritation, diarrhea, palpitation, tachycardia, arrhythmias, headache, CNS stimulation, insomnia, convulsions. **Dosage and way of administration:** For intravenous infusion, dilute to a concentration of 1 mg/mL with Glucose 5 % or Sodium Chloride 0.9 %. • By intravenous injection over at least 20 minutes **Child 1 month–18 years** 5 mg/kg (max. 500 mg) then by intravenous infusion.
Example of prescription (for a child of 8 years, weight 27 kg)	**AMBROXOL** **Synonyms:** Lasolvan. **Pharmacological group:** mucolytic / cough remedies. **Form of manufacturing:** Tablets, ambroxol 30 mg; Syrup, ambroxol 30 mg/5 mL, 60 mL; Pediatric Syrup, ambroxol 15 mg/5 mL, 120 mL. **Mechanism of action:** Ambroxol is a clinically proven systemically active mucolytic agent. The breakdown of acid mucopolysaccharide fibers makes the sputum thinner and less viscous and therefore more easily removed by coughing. Although sputum volume eventually decreases, its viscosity remains low for as long as treatment is maintained. **Indications for prescribing:** Ambroxol is used for the relief of cough secondary to acute and chronic diseases of the respiratory tract accompanied by excessive lung secretions. **Contraindications for using:** hypersensitivity, depression of the cough reflex, pregnancy. **Possible side effects:** mild stomach disturbance such as diarrhea, heartburn, nausea and vomiting may occur. Occasionally headache, polyuria (excessive urination), fatigue, and skin rashes have been reported. **Dosage and way of administration:** • By mouth **Child 1–2 years** 7,5 mg (2,5 mL) every 12 hours;

	Child 3–6 years 7,5 mg (2,5 mL) every 8 hours; **Child 7–12 years** 15 mg (5 mL) every 8 to 12 hours; **Adult and child above 12 years** 30 mg (10 mL or 1 tablet) every 8 hours
Example of prescription (for a child of 6 years, weight 21 kg)	**ACETYLCYSTEINE** **Synonyms:** ACC. **Pharmacological group:** mucolytics. **Form of manufacturing:** Oral granules, acetylcysteine 100 mg/sachet; 200 mg/sachet. Concentrate for intravenous infusion, acetylcysteine 200 mg/mL, 10-mL amp. **Mechanism of action:** used to facilitate mucociliary clearance and expectoration by reducing sputum viscosity. **Indications for prescribing:** acute and chronic bronchitis, tracheitis, pneumonia, bronchiectasis, asthma, atelectasis, sinusitis; paracetamol overdosage. **Contraindications for using:** gastric ulcer and duodenal ulcer in acute phase, hemoptysis, pulmonary hemorrhage. **Possible side effects:** hypersensitivity-like reactions including rashes and anaphylaxis. **Dosage and way of administration:** • By mouth **Child 1 month–2 years** 100–200 mg 3 times daily; **Child 2–12 years** 200 mg 3 times daily; **Child 12–18 years** 200–400 mg 3 times daily.

Pneumonia

Example of prescription (for a child of 15 years, weight 54 kg)	**BENZYLPENICILLIN SODIUM** **Synonyms:** Penicillin G, Crystapen. **Pharmacological group:** Penicillins. **Form of manufacturing:** Crystapen. Injection, powder for reconstitution, benzylpenicillin sodium (unbuffered), 600-mg vial, 2-vial 'GP pack'; 1.2-g vial. **Mechanism of action:** The penicillins are bactericidal and act by interfering with bacterial cell wall synthesis. Benzylpenicillin remains an important and useful antibiotic but is inactivated by bacterial beta-lactamases. **Indications for prescribing:** Mild to moderate susceptible infections (including throat infections, otitis media,pneumonia, cellulitis, neonatal sepsis), endocarditis (combined with another antibacterial if necessary, meningitis, meningococcal disease, proven or suspected neonatal group B streptococcus infection. **Contraindications for using:** penicillin hypersensitivity. **Possible side effects:** hypersensitivity reactions including urticaria, fever, joint pains, rashes, angioedema, anaphylaxis, serum sickness-like reactions; rarely CNS toxicity including convulsions (especially with high doses or in severe renal impairment), interstitial nephritis, haemolytic anaemia, leucopenia, thrombocytopenia and coagulation disorders; also reported diarrhea (including antibiotic-associated colitis). **Dosage and way of administration:** Mild to moderate susceptible infections (including throat infections, otitis media, pneumonia, cellulitis, neonatal sepsis): • By intramuscular injection or by slow intravenous injection or infusion (intravenous route recommended in neonates and infants)

	Neonate under 7 days 25 mg/kg every 12 hours; dose doubled in severe infection; **Neonate 7–28 days** 25 mg/kg every 8 hours; dose doubled in severe infection; **Child 1 month–18 years** 25 mg/kg every 6 hours; increased to 50 mg/kg every 4–6 hours (max. 2.4 g every 4 hours) in severe nfection; Endocarditis (combined with another antibacterial if necessary) • By slow intravenous injection or infusion **Child 1 month–18 years** 25 mg/kg every 4 hours, increased if necessary to 50 mg/kg (max. 2.4 g) every 4 hours; Meningitis, meningococcal disease • By slow intravenous injection or infusion **Neonate** 75 mg/kg every 8 hours; **Child 1 month–18 years** 50 mg/kg every 4–6 hours (max. 2.4 g every 4 hours); Proven or suspected neonatal group B streptococcus infection • By slow intravenous injection or infusion **Neonate under 7 days** 50 mg/kg every 12 hours; **Neonate 7–28 days** 50 mg/kg every 8 hours.
Example of prescription (for a child of 8 years, weight 27 kg)	**AMOXICILLIN** **Synonyms:** Amoxil. **Pharmacological group:** Broad-spectrum penicillins. **Form of manufacturing:** Capsules, amoxicillin (as trihydrate) 250 mg, 500 mg, Oral suspension, amoxicillin (as trihydrate) for reconstitution with water, 125 mg/5 mL, 100 mL; 250 mg/5 mL, 100mL; Injection, powder for reconstitution, amoxicillin as sodium salt, 250-mg vial; 500-mg vial. Amoxil: Capsules, both maroon/gold, amoxicillin (as trihydrate), 250 mg; 500 mg; Paediatric suspension, amoxicillin 125 mg (as trihydrate)/1.25 mL when reconstituted with water, 20 mL (peach-strawberry- and lemon-flavoured); Injection, amoxicillin, 500-mg vial; 1-g vial. **Mechanism of action:** Ampicillin is active against certain Gram-positive and Gram-negative organisms but is inactivated by penicillinases including those produced by Staphylococcus aureus and by common Gram-negative bacilli such as Escherichia coli. Ampicillin is also active against Listeria spp. and enterococci. Almost all staphylococci, approx. 60 % of E. coli strains and approx. 20 % of Haemophilus influenzae strains are now resistant. **Indications for prescribing:** Susceptible infections including urinary-tract infections, sinusitis, uncomplicated community-acquired pneumonia, oral infections, Lyme disease, salmonellosis, otitis media, listerial meningitis (in combination with another antibacterial), group B streptococcal infection, enterococcal endocarditis, cystic fibrosis, Helicobacter pylori eradication. **Contraindications for using:** penicillin hypersensitivity. **Possible side effects:** nausea, vomiting, diarrhoea; rashes (discontinue treatment); rarely, antibiotic-associated colitis; see also Benzylpenicillin.

	Dosage and way of administration: Susceptible infections including urinary-tract infections, sinusitis, uncomplicated community- acquired pneumonia, oral infections, Lyme disease, salmonellosis • By mouth **Neonate 7–28 days** 30 mg/kg (max. 62.5 mg) 3 times daily; dose doubled in severe infection; **Child 1 month–1 year** 62.5 mg 3 times daily; **Child 1–5 years** 125 mg 3 times daily; dose doubled in severe infection; **Child 5–18 years** 250 mg 3 times daily; dose doubled in severe infection; • By intravenous injection or infusion **Neonate under 7 days** 30 mg/kg every 12 hours; dose doubled in severe infection; **Neonate 7–28 days** 30 mg/kg every 8 hours; dose doubled in severe infection; **Child 1 month – 18 years** 20–30 mg/kg (max. 500 mg) every 8 hours; dose doubled in severe infection (max. 4 g daily).
Example of prescription (for a child of 14 years, weight 52 kg)	**CO-AMOXICLAV** **Synonyms:** Augmentin. **Pharmacological group:** antibacterial combination drug. **Form of manufacturing:** Augmentin: Tablets 375 mg, f/c, co-amoxiclav 250/125 (amoxicillin 250 mg as trihydrate, clavulanic acid 125 mg as potassium salt), 21-tab pack; Tablets 625 mg, f/c, co-amoxiclav 500/125 (amoxicillin 500 mg as trihydrate, clavulanic acid 125 mg as potassium salt), 21-tab pack; Suspension '125/31 SF', sugar-free, co-amoxiclav 125/31 (amoxicillin 125 mg as trihydrate, clavulanic acid 31.25 mg as potassium salt)/5 mL when reconstituted with water, 100 mL. Suspension '250/62 SF', sugar-free, co-amoxiclav 250/62 (amoxicillin 250 mg as trihydrate, clavulanic acid 62.5 mg as potassium salt)/5 mL when reconstituted with water, 100 mL. Injection 600 mg, powder for reconstitution, coamoxiclav 500/100 (amoxicillin 500 mg as sodium salt, clavulanic acid 100 mg as potassium salt), vial; Injection 1.2 g, powder for reconstitution, co-amoxiclav 1000/200 (amoxicillin 1 g as sodium salt, clavulanic acid 200 mg as potassium salt), vial. **Mechanism of action:** A mixture of amoxicillin (as the trihydrate or as the sodium salt) and clavulanic acid (as potassium clavulanate). **Indications for prescribing:** Infections due to beta-lactamase-producing strains (where amoxicillin alone not appropriate) including respiratory-tract infections, bone and joint infections, genito-urinary and abdominal infections, cellulitis, animal bites; severe dental infection with spreading cellulitis or dental infection not responding to first-line antibacterial. **Contraindications for using:** penicillin hypersensitivity, history of co-amoxiclav-associated or penicillin-associated jaundice or hepatic dysfunction. **Possible side effects:** nausea, vomiting, diarrhea; rashes (discontinue treatment); rarely, antibiotic-associated colitis; hepatitis, cholestatic jaundice; Stevens-Johnson syndrome, toxic epidermal necrolysis, exfoliative dermatitis, vasculitis reported; rarely prolongation of bleeding time, dizziness, headache, convulsions (particularlywith high doses or in renal impairment). **Dosage and way of administration:** • By mouth, expressed as co-amoxiclav • **Neonate** 0.25 mL/kg of 125/31 suspension 3 times daily;

	Child 1 month–1 year 0.25 mL/kg of 125/31 suspension 3 times daily; dose doubled in severe infection; **Child 1–6 years** 5mL of 125/31 suspension 3 times daily or 0.25 mL/kg of 125/31 suspension 3 times daily; dose doubled in severe infection; **Child 6–12 years** 5mL of 250/62 suspension 3 times daily or 0.15 mL/kg of 250/62 suspension 3 times daily; dose doubled in severe infection; **Child 12–18 years** one 250/125 strength tablet 3 times daily; increased in severe infections to one 500/125 strength tablet 3 times daily; • By intravenous injection over 3–4 minutes or by intravenous infusion, expressed as coamoxiclav **Neonate** 30 mg/kg every 12 hours; **Child 1–3 months** 30 mg/kg every 12 hours; **Child 3 months–18 years** 30 mg/kg (max. 1.2 g) every 8 hours.
Example of prescription (for a child of 2 years, weight 12 kg)	**CEFALEXIN** **Synonyms:** Ceporex, Keflex. **Pharmacological group:** 'first generation' cephalosporins. **Form of manufacturing:** Capsules, cefalexin 250 mg, 28-cap; 500 mg, 21-cap; Dental prescribing on NHS Cefalexin Capsules may be prescribed; Tablets, cefalexin 250 mg, 28-tab; 500 mg, 21-tab; Dental prescribing on NHS Cefalexin Tablets may be prescribed Oral suspension, cefalexin for reconstitution with;water, 125 mg/5 mL, 100 mL; 250 mg/5 mL, 100 mL. **Mechanism of action:** The pharmacology of the cephalosporins is similar to that of the penicillins, excretion being principally renal. Cephalosporins penetrate the cerebrospinal fluid poorly unless the meninges are inflamed. **Indications for prescribing:** Infections due to sensitive Gram-positive and Gram-negative bacteria. **Contraindications for using:** cephalosporin hypersensitivity. **Possible side effects:** diarrhea (rarely antibiotic-associated colitis), nausea and vomiting, abdominal discomfort, headache; allergic reactions including rashes, pruritus, urticaria, serum sickness-like reactions with rashes, fever and arthralgia, and anaphylaxis; Stevens-Johnson syndrome, toxic epidermal necrolysis reported; disturbances in liver enzymes, transient hepatitis and cholestatic jaundice; other side-effects reported include eosinophilia and blood disorders (including thrombocytopenia, leucopenia, agranulocytosis, aplastic anaemia and haemolytic anaemia); reversible interstitial nephritis, hyperactivity, nervousness, sleep disturbances, hallucinations, confusion, hypertonia, and dizziness. **Dosage and way of administration:** • By mouth **Neonate under 7 days** 25 mg/kg (max. 125 mg) twice daily; **Neonate 7–21 days** 25 mg/kg (max. 125 mg) 3 times daily; **Neonate 21–28 days** 25 mg/kg (max. 125 mg) 4 times daily; **Child 1 month–12 years** 12.5 mg/kg twice daily; dose doubled in severe infection; max. 25 mg/kg 4 times daily (max. 1 g 4 times daily) or **Child 1 month–1 year** 125 mg twice daily; **Child 1–5 years** 125 mg 3 times daily; **Child 5–12 years** 250 mg 3 times daily; **Child 12–18 years** 500 mg 2–3 times daily, increased to 1–1.5 g 3–4 times daily for severe infection.

Example of prescription (for a child of 6 years, weight 21 kg)	**CEFUROXIME** **Synonyms:** Zinacef, Zinnat. **Pharmacological group:** 'second generation' cephalosporins. **Form of manufacturing:** Tablets, cefuroxime (as axetil) 250 mg, 14-tab; Injection, powder for reconstitution, cefuroxime (as sodium salt), 750-mg vial. **Mechanism of action:** The pharmacology of the cephalosporins is similar to that of the penicillins, excretion being principally renal. Cephalosporins penetrate the cerebrospinal fluid poorly unless the meninges are inflamed. Cefuroxim is less susceptible than the arlier cephalosporins to inactivation by beta-lactamases. It is, therefore, active against certain bacteria that are resistant to the other drugs and has greater activity against Haemophilus influenzae. **Indications for prescribing:** Infections due to sensitive Gram-positive and Gram-negative bacteria. **Contraindications for using:** cephalosporin hypersensitivity. **Possible side effects:** diarrhea (rarely antibiotic-associated colitis), nausea and vomiting, abdominal discomfort, headache; allergic reactions including rashes, pruritus, urticaria, serum sickness-like reactions with rashes, fever and arthralgia, and anaphylaxis; Stevens-Johnson syndrome, toxic epidermal necrolysis reported; disturbances in liver enzymes, transient hepatitis and cholestatic jaundice; other side-effects reported include eosinophilia and blood disorders (including thrombocytopenia, leucopenia, agranulocytosis, aplastic anaemia and haemolytic anaemia); reversible interstitial nephritis, hyperactivity, nervousness, sleep disturbances, hallucinations, confusion, hypertonia, and dizziness. **Dosage and way of administration:** • By mouth (as cefuroxime axetil) **Child 3 months–2 years** 10 mg/kg (max. 125 mg) twice daily; **Child 2–12 years** 15 mg/kg (max. 250 mg) twice daily; **Child 12–18 years** 250 mg twice daily; dose doubled in severe lower respiratory-tract infections, or if pneumonia suspected; dose reduced to 125 mg twice daily in lower urinary-tract infection; • By intravenous injection or infusion or by intramuscular injection **Neonate under 7 days** 25 mg/kg every 12 hours; dose doubled in severe infection, intravenous route only; **Neonate 7–21 days** 25 mg/kg every 8 hours; dose doubled in severe infection, intravenous route only; **Neonate 21–28 days** 25 mg/kg every 6 hours; dose doubled in severe infection, intravenous route only; **Child 1 month–18 years** 20 mg/kg (max. 750 mg) every 8 hours; increase to 50–60 mg/kg (max. 1.5 g) every 6–8.
Example of prescription (for a child of 11 years, weight 37 kg)	**CEFIXIME** Synonyms: Suprax, Cefix. **Pharmacological group:** 'third generation' cephalosporins. **Form of manufacturing:** <u>Suprax</u> Tablets, cefixime 200 mg, 7-tab; Paediatric oral suspension, cefixime 100 mg/5 mL when reconstituted with water, 50 mL (with double-ended spoon for measuring 3.75 mL or 5mL since dilution not recommended), 100mL.

	Mechanism of action: Cefixime has a longer duration of action than the other cephalosporins that are active by mouth. It is only licensed for acute infections. **Indications for prescribing:** Acute infections due to sensitive Gram-positive and Gram-negative bacteria, uncomplicated gonorrhea. **Contraindications for using:** cephalosporin hypersensitivity. **Possible side effects:** diarrhea (rarely antibiotic-associated colitis), nausea and vomiting, abdominal discomfort, headache; allergic reactions including rashes, pruritus, urticaria, serum sickness-like reactions with rashes, fever and arthralgia, and anaphylaxis; Stevens-Johnson syndrome, toxic epidermal necrolysis reported; disturbances in liver enzymes, transient hepatitis and cholestatic jaundice; other side-effects reported include eosinophilia and blood disorders (including thrombocytopenia, leucopenia, agranulocytosis, aplastic anaemia and haemolytic anaemia); reversible interstitial nephritis, hyperactivity, nervousness, sleep disturbances, hallucinations, confusion, hypertonia, and dizziness. **Dosage and way of administration:** • By mouth **Child 6 months–1 year** 75 mg daily; **Child 1–5 years** 100 mg daily; **Child 5–10 years** 200 mg daily; **Child 10–18 years** 200–400 mg daily or 100–200 mg twice daily.
Example of prescription (for a child of 2 years, weight 13 kg)	**CEFTRIAXONE** **Synonyms:** Rocephin. **Pharmacological group:** 'third generation' cephalosporins. **Form of manufacturing:** Injection, powder for reconstitution, ceftriaxone (as sodium salt), 1-g vial; 2-g vial. **Mechanism of action:** Ceftriaxone has a longer half-life and therefore needs to be given only once daily. **Indications for prescribing:** Infections due to sensitive Gram-positive and Gram-negative bacteria. Indications include serious infections such as septicaemia, pneumonia, and meningitis. **Contraindications for using:** cephalosporin hypersensitivity. Neonates less than 41 weeks postmenstrual age; neonates over 41 weeks postmenstrual age with jaundice, hypoalbuminaemia, or acidosis; concomitant treatment with intravenous calcium (including total parenteral nutrition containing calcium) in neonates over 41 weeks postmenstrual age—risk of precipitation in urine and lungs. **Possible side effects:** diarrhea (rarely antibiotic-associated colitis), nausea and vomiting, abdominal discomfort, headache; allergic reactions including rashes, pruritus, urticaria, serum sickness-like reactions with rashes, fever and arthralgia, and anaphylaxis; Stevens-Johnson syndrome, toxic epidermal necrolysis reported; disturbances in liver enzymes, transient hepatitis and cholestatic jaundice; other side-effects reported include eosinophilia and blood disorders (including thrombocytopenia, leucopenia, agranulocytosis, aplastic anaemia and haemolytic anaemia); reversible interstitial nephritis, hyperactivity, nervousness, sleep disturbances, hallucinations, confusion, hypertonia, and dizziness. Calcium ceftriaxone precipitates in urine (particularly in very young, dehydrated or those who are immobilised) or in gall bladder—consider discontinuation if symptomatic; rarely prolongation of prothrombin time, pancreatitis.

	Dosage and way of administration: • By intravenous infusion over 60 minutes **Neonate** 20–50 mg/kg once daily; • By deep intramuscular injection, or by intravenous injection over 2–4 minutes, or by intravenous infusion; **Child 1 month–12 years** **Body-weight under 50 kg** 50 mg/kg once daily; up to 80 mg/kg daily in severe infections and meningitis; doses of 50 mg/kg and over by intravenous infusion only; **Body-weight 50 kg and over** dose as for child 12–18 years; **Child 12–18 years** 1 g daily; 2–4 g daily in severe infections and meningitis; intramuscular doses over 1 g divided between more than one site; single intravenous doses above 1 g by intravenous infusion only.
Example of prescription (for a child of 5 years, weight 18 kg)	**CEFOTAXIME** **Pharmacological group:** 'third generation' cephalosporins. **Form of manufacturing:** Injection, powder for reconstitution, cefotaxime (as sodium salt), net price 500-mg vial; 1-g vial; 2-g vial. **Mechanism of action:** Cefotaxime is 'third generation' cephalosporins with greater activity than the 'second generation' cephalosporins against certain Gram-negative bacteria. However, they are less active than cefuroxime against Gram-positive bacteria, most notably Staphylococcus aureus. Their broad antibacterial spectrum may encourage superinfection with resistant bacteria or fungi. **Indications for prescribing:** Infections due to sensitive Gram-positive and Gram-negative bacteria, surgical prophylaxis, Haemophilus epiglottitis and meningitis. **Contraindications for using:** cephalosporin hypersensitivity. **Possible side effects:** diarrhea (rarely antibiotic-associated colitis), nausea and vomiting, abdominal discomfort, headache; allergic reactions including rashes, pruritus, urticaria, serum sickness-like reactions with rashes, fever and arthralgia, and anaphylaxis; Stevens-Johnson syndrome, toxic epidermal necrolysis reported; disturbances in liver enzymes, transient hepatitis and cholestatic jaundice; other side-effects reported include eosinophilia and blood disorders (including thrombocytopenia, leucopenia, agranulocytosis, aplastic anaemia and haemolytic anaemia); reversible interstitial nephritis, hyperactivity, nervousness, sleep disturbances, hallucinations, confusion, hypertonia, and dizziness. Rarely arrhythmias following rapid injection reported. **Dosage and way of administration:** • By intramuscular or by intravenous injection or intravenous infusion. **Neonate under 7 days** 25 mg/kg every 12 hours; dose doubled in severe infection and meningitis; **Neonate 7–21 days** 25 mg/kg every 8 hours; dose doubled in severe infection and meningitis; **Neonate 21–28 days** 25 mg/kg every 6–8 hours; dose doubled in severe infection and meningitis; **Child 1 month–18 years** 50 mg/kg every 8–12 hours; increase to every 6 hours in very severe infections and meningitis (max. 12 g daily).

Example of prescription (for a child of 6 years, weight 21 kg)	**MEROPENEM** **Synonyms:** Meronem. **Pharmacological group:** Carbapenems. **Form of manufacturing:** Injection, meropenem (as trihydrate), 500-mg vial; 1-g vial. **Mechanism of action:** The carbapenems are beta-lactam antibacterials with a broad-spectrum of activity which includes many Gram-positive and Gram-negative bacteria, and anaerobes; meropenem has good activity against Pseudomonas aeruginosa. The carbapenems are not active against meticillin-resistant Staphylococcus aureus and Enterococcus faecium. **Indications for prescribing:** Meropenem are used for the treatment of severe hospital-acquired infections and polymicrobial infections caused by multiple-antibacterial resistant organisms (including septicaemia, hospital-acquired pneumonia, intra-abdominal infections, skin and softtissue infections, and complicated urinary-tract infections). **Contraindications for using:** hypersensitivity to beta-lactam antibacterials. **Possible side effects:** nausea, vomiting, diarrhoea (antibioticassociated colitis reported), abdominal pain, disturbances in liver function tests, headache, thrombocythaemia, rash, pruritus; less commonly paraesthesia, eosinophilia, thrombocytopenia, leucopenia; rarely convulsions; also reported haemolytic anaemia, positive Coombs' test, Stevens-Johnson syndrome, toxic epidermal necrolysis. **Dosage and way of administration:** Aerobic and anaerobic Gram-positive and Gram-negative infections, hospital-acquired septicaemia • By intravenous injection over 5 minutes or by intravenous infusion **Neonate under 7 days** 20 mg/kg every 12 hours, dose doubled in severe infection; **Neonate 7–28 days** 20 mg/kg every 8 hours; dose doubled in severe infection; **Child 1 month–12 years** **Body-weight under 50 kg** 10–20 mg/kg every 8 hours; **Body-weight over 50 kg** dose as for child 12–18 years; **Child 12–18 years** 0.5–1 g every 8 hours.
Example of prescription (for a child of 17 years, weight 56 kg)	**CIPROFLOXACIN** **Synonyms:** Ciproxin. **Pharmacological group:** Quinolones. **Form of manufacturing:** Tablets, ciprofloxacin (as hydrochloride) 100 mg, 6-tab; 250 mg, 10-tab and 20-tab; 500 mg, 10-tab and 20-tab; 750 mg, 10-tab. Intravenous infusion, ciprofloxacin (as lactate) 2 mg/mL, 50-mL bottle, 100-mL bottle, 200-mL bottle. **Mechanism of action:** Ciprofloxacin is active against both Gram-positive and Gram-negative bacteria. It is particularly active against Gram-negative bacteria, including salmonella, shigella, campylobacter, neisseria, and pseudomonas. Ciprofloxacin has only moderate activity against Gram-positive bacteria such as Streptococcus pneumoniae and Enterococcus faecalis; it should not be used for pneumococcal pneumonia. It is active against chlamydia and some mycobacteria. Most anaerobic organisms are not susceptible.

	Indications for prescribing: Severe respiratory-tract infections, gastrointestinal infections; complicated urinary-tract infections, Pseudomonal lower respiratory-tract infection in cystic fibrosis, gonorrhoea, eye infections, prophylaxis of meningococcal meningitis. Ciprofloxacin is licensed in children over 1 year of age for pseudomonal infections in cystic fibrosis, for complicated urinary-tract infections, and for treatment and prophylaxis of inhalation anthrax. When the benefits of treatment outweigh the risks, ciprofloxacin is licensed in children over 1 year of age for severe infections of the respiratory tract and of the gastro-intestinal system (including typhoid fever). **Contraindications for using:** Quinolone hypersensitivity. **Possible side effects:** nausea, vomiting, dyspepsia, abdominal pain, diarrhea (rarely antibiotic-associated colitis), headache, dizziness, rash (very rarely Stevens-Johnson syndrome and toxic epidermal necrolysis). Less frequent side-effects include anorexia, sleep disturbances, asthenia, confusion, anxiety, depression, hallucinations, tremor, blood disorders (including eosinophilia, leucopenia, thrombocytopenia), arthralgia, myalgia, disturbances in vision and taste. Other side-effects reported rarely or very rarely include hepatic dysfunction (including jaundice and hepatitis), hypotension, vasculitis, dyspnoea, convulsions, psychoses, paraesthesia, renal failure, interstitial nephritis, tendon inflammation and damage, photosensitivity, disturbances in hearing and smell. The drug should be discontinued if psychiatric, neurological or hypersensitivity reactions (including severe rash) occur. **Dosage and way of administration:** <u>Severe respiratory-tract infections, gastrointestinal infections</u> • By mouth **Neonate** 15 mg/kg twice daily; **Child 1 month–18 years** 20 mg/kg (max. 750 mg) twice daily; • By intravenous infusion over 60 minutes **Neonate** 10 mg/kg every 12 hours; **Child 1 month–18 years** 10 mg/kg (max. 400 mg) every 8 hours; <u>Complicated urinary-tract infections</u> • By mouth **Neonate** 10 mg/kg twice daily; **Child 1 month–18 years** 10 mg/kg twice daily; dose doubled in severe infection (max. 750 mg twice daily); • By intravenous infusion over 60 minutes **Neonate** 6 mg/kg every 12 hours; **Child 1 month–18 years** 6 mg/kg every 8 hours; increased to 10 mg/kg every 8 hours in severe infection (max. 400 mg every 8 hours).
Example of prescription (for a child of 4 years, weight 16 kg)	**AZITHROMYCIN** **Synonyms:** Zithromax. **Pharmacological group:** Macrolides. **Form of manufacturing:** Capsules, azithromycin (as dihydrate) 250 mg, 4-cap, 6-cap. Tablets, azithromycin (as monohydrate hemi-ethanolate) 250 mg, 4-tab; 500 mg, 3-tab. **Mechanism of action:** Azithromycin is a macrolide with slightly less activity than erythromycin against Gram-positive bacteria but enhanced activity against some Gram-negative organisms including H. influenzae. Plasma concentrations are very low but tissue concentrations are much higher. It has a long tissue half-life and once daily dosage is recommended.

	Indications for prescribing: Respiratory-tract infections, otitis media, skin and soft-tissue infections, infection in cystic fibrosis, chronic Pseudomonas aeruginosa infection in cystic fibrosis, uncomplicated genital chlamydial infections and non-gonococcal urethritis, Lyme disease, prevention of group A streptococcal infection. **Contraindications for using:** Macrolides hypersensitivity. **Possible side effects:** Nausea, vomiting, abdominal discomfort, and diarrhea. Hepatotoxicity (including cholestatic jaundice) and rash occur less frequently. Other side-effects reported rarely or very rarely include pancreatitis, antibiotic-associated colitis, QT interval prolongation, arrhythmias, generally reversible hearing loss (sometimes with tinnitus) after large doses, Stevens-Johnson syndrome, and toxic epidermal necrolysis. Intravenous infusion may cause local tenderness and phlebitis. **Dosage and way of administration:** • By mouth **Child over 6 months** 10 mg/kg once daily (max. 500 mg once daily) for 3 days or **Body-weight 15–25 kg** 200 mg once daily for 3 days; **Body-weight 26–35 kg** 300 mg once daily for 3 days; **Body-weight 36–45 kg** 400 mg once daily for 3 days; **Body-weight over 45 kg** 500 mg once daily for 3 days.
Example of prescription (for a child of 2 years, weight 13 kg)	**SPIRAMYCIN** **Pharmacological group:** Macrolides. **Form of manufacturing:** Tablets, spiramycin 750 000 units (250 mg); 1.5 million units (500 mg); 3 million units (1 g); Syrup, spiramycin 75 000 units/mL (25 mg/mL). Note 3000 units : 1 mg spiramycin. **Mechanism of action:** spectrum of activity: Staphylococci, including synthesizing penicillinase, streptococci, Corynebacterium, Listeria, Neisser, Bordetella, Legionella, Campylobacter, Clostridium, E koplazma, Chlamydia, Treponema, Leptospira, the causative agent of toxoplasmosis. **Indications for prescribing:** Respiratory-tract infections, otitis media, skin and soft-tissue infections, uncomplicated chlamydial infections and non-gonococcal urethritis. **Contraindications for using:** Macrolides hypersensitivity. **Possible side effects:** gastro-intestinal disturbances including nausea, vomiting, diarrhoea; dizziness, headache; rash; hepatotoxicity; rarely, prolongation of QT interval, thrombocytopenia and vasculitis. **Dosage and way of administration:** • By mouth 150 000/kg – daily doses.
Example of prescription (for a child of 5 years, weight 18 kg)	**AMIKACIN** **Synonyms:** Amikin. **Pharmacological group:** Aminoglycosides. **Form of manufacturing:** Amikacin Injection, amikacin (as sulphate) 250 mg/mL, 2-mL vial. Amikin Injection, amikacin (as sulphate) 50 mg/mL, 2-mL vial.

	Mechanism of action: All are bactericidal and active against some Gram-positive and many Gram-negative organisms. Also active against Pseudomonas aeruginosa. The aminoglycosides are not absorbed from the gut (although there is a risk of absorption in inflammatory bowel disease and liver failure) and must therefore be given by injection for systemic infections. **Indications for prescribing:** Septicaemia, meningitis and other CNS infections, biliary-tract infection, acute pyelonephritis, endocarditis, pneumonia in hospital patients, adjunct in listerial meningitis, pseudomonal lung infection in cystic fibrosis, bacterial ventriculitis and CNS infection (supplement to systemic therapy), neonatal sepsis. Serious Gram-negative infections resistant to gentamicin. **Contraindications for using:** myasthenia gravis. **Possible side effects:** The important side-effects are ototoxicity, and nephrotoxicity; they occur most commonly in children with renal failure. Rarely, hypomagnesaemia on prolonged therapy, antibiotic-associated colitis; also reported, nausea, vomiting, rash, blood disorders. **Dosage and way of administration:** Serious Gram-negative infections resistant to gentamicin • By slow intravenous injection over 3–5 minutes **Child 1 month–12 years** 7.5 mg/kg every 12 hours; **Child 12–18 years** 7.5 mg/kg every 12 hours, increased to 7.5 mg/kg every 8 hours in severe infections, max. 500 mg every 8 hours for up to 10 days (max. cumulative dose 15 g).
Example of prescription	**GENTAMICIN** **Synonyms:** Cidomycin, Genticin. **Pharmacological group:** Aminoglycosides. **Form of manufacturing:** Injection, gentamicin (as sulphate), 40 mg/mL, 1-mL amp, 2-mL amp, 2-mL vial. Paediatric injection, gentamicin (as sulphate) 10 mg/mL, 2-mL vial. Intrathecal injection, gentamicin (as sulphate) 5 mg/mL, 1-mL amp. Intravenous infusion, gentamicin (as sulphate) 1 mg/mL in sodium chloride intravenous infusion 0.9 %, 80-mL (80 mg) bottle; 3 mg/mL, 80-mL (240 mg) bottle, 120-mL (360 mg) bottle. **Mechanism of action:** Gentamicin is used widely for the treatment of serious infections. It has a broad spectrum but is inactive against anaerobes and has poor activity against haemolytic streptococci and pneumococci. When used for the 'blind' therapy of undiagnosed serious infections it is usually given in conjunction with a penicillin or metronidazole (or both). **Indications for prescribing:** Septicaemia, meningitis and other CNS infections, biliary-tract infection, acute pyelonephritis, endocarditis, pneumonia in hospital patients, adjunct in listerial meningitis, pseudomonal lung infection in cystic fibrosis, bacterial ventriculitis and CNS infection (supplement to systemic therapy), neonatal sepsis. **Contraindications for using:** myasthenia gravis. **Possible side effects:** The important side-effects are ototoxicity, and nephrotoxicity; they occur most commonly in children with renal failure. Rarely, hypomagnesaemia on prolonged therapy, antibiotic-associated colitis; also reported, nausea, vomiting, rash, blood disorders. **Dosage and way of administration:** Septicaemia, meningitis and other CNS infections, biliary-tract infection, acute pyelonephritis, endocarditis, pneumonia in hospital patients, adjunct in listerial meningitis

	• Once daily dose regimen (not for endocarditis or meningitis) by intravenous infusion **Child 1 month–18 years** initially 7 mg/kg, then adjusted according to serum-gentamicin concentration. • Multiple daily dose regimen by intramuscular or by slow intravenous injection over at least minutes **Child 1 month–12 years** 2.5 mg/kg every 8 hours; **Child 12–18 years** 2 mg/kg every 8 hours.
Example of prescription (for a child of 4 years, weight 16 kg)	**APROTININ** **Synonyms:** Trasylol, Contrycal. **Pharmacological group:** Natural proteinase inhibitor obtained from bovine lung. **Form of manufacturing:** Injection, aprotinin 1,000,000 KIU, 100 mL, vials; 2,000,000 KIU, 200 mL, vials. **Mechanism of action:** Aprotinin is a broad spectrum protease inhibitor which modulates the systemic inflammatory response (SIR) associated with cardiopulmonary bypass surgery. SIR results in the interrelated activation of the hemostatic, fibrinolytic, cellular and humoral inflammatory systems. Aprotinin, through its inhibition of multiple mediators [e.g., kallikrein, plasmin] results in the attenuation of inflammatory responses, fibrinolysis, and thrombin generation. Aprotinin inhibits proinflammatory cytokine release and maintains glycoprotein homeostasis. In platelets, aprotinin reduces glycoprotein loss (e.g., GpIb, GpIIb/IIIa), while in granulocytes it prevents the expression of proinflammatory adhesive glycoproteins. **Indications for prescribing:** aprotinin is indicatedfor prophylactic use to reduce perioperativeblood loss and the need for blood transfusion in patients undergoingcardiopulmonary bypass in the course of coronary artery bypass graftsurgery who are at an increased risk for blood loss and blood transfusion; staphylococcal lung destruction. **Contraindications for using:** Hypersensitivity to aprotinin. Administration of Trasylol® (aprotinin) to patients with a known or suspected previous aprotinin exposure during the last 12 months is contraindicated. For patients with known or suspected history of exposure to aprotinin greater than 12 months previously. Aprotinin may also be a component of some fibrin sealant products and the use of these products should be included in the patient history. **Possible side effects:** Constipation; diarrhea; difficulty urinating; infection (eg, fever, chills, sore throat); lightheadedness; sleeplessness; vomiting; severe allergic reactions (rash; hives; itching; difficulty breathing; tightness in the chest; swelling of the mouth, face, lips, or tongue); asthma; chest pain; confusion; decreased urination; fast or irregular heartbeat; lung disorder; nausea; numbness of an arm or leg; one-sided weakness; severe stomach pain; sudden severe headache, dizziness, fainting, or vomiting; sudden weight gain; swelling of the hands, legs, or feet; vision or speech changes. **Dosage and way of administration:** • By intravenous injection 10,000 KIU/mL, which is equal to 1.4 mg/mL.

Atopic dermatitis. Allergic rhinitis. Urticaria

Example of prescription (for a child of 7 years, weight 24 kg)	**LORATADINE** **Synonyms:** Claritine. **Pharmacological group:** Antihistamines. **Form of manufacturing:** Tablets, loratadine 10 mg, 30-tab. Syrup, loratadine 5 mg/5 mL, 100 mL. **Mechanism of action:** histamine H1-receptor antagonists. **Indications for prescribing:** nasal allergies, particularly seasonal allergic rhinitis (hay fever), and may be of some value in vasomotor rhinitis; rhinorrhoea and sneezing is reduced, but antihistamines are usually less effective for nasal congestion. Topically to treat allergic reactions in the eye and in the nose. Prevent urticaria, and acute urticarial rashes, pruritus, insect bites, and stings. Loratadine is also used in the management of nausea and vomiting, of migraine, and the adjunctive management of anaphylaxis and angioedema . **Contraindications for using:** Hypersensitivity. **Possible side effects:** headache, psychomotor impairment, and anti-muscarinic effects such as urinary retention, dry mouth, blurred vision, and gastro-intestinal disturbances. Other rare side-effects of antihistamines include hypotension, palpitation, arrhythmias, extra-pyramidal effects, dizziness, confusion, depression, sleep disturbances, tremor, convulsions, hypersensitivity reactions (including bronchospasm, angioedema, anaphylaxis, rashes, and photosensitivity reactions), blood disorders, and liver dysfunction. **Dosage and way of administration:** • By mouth **Child 2–12 years** **Body-weight under 30 kg** 5 mg once daily; **Body-weight over 30 kg** 10 mg once daily4 **Child 12–18 years** 10 mg once daily.
Example of prescription (for a child of 2 years, weight 13 kg)	**PIMECROLIMUS** **Synonyms:** Elidel. **Pharmacological group:** Drugs affecting the immune response. **Form of manufacturing:** Cream, pimecrolimus 1%, 30 g; 60 g; 100 g. **Mechanism of action:** Drugs affecting the immune response are used for eczema or psoriasis. **Indications for prescribing:** Short-term treatment of mild to moderate atopic eczema (including flares). **Contraindications for using:** contact with eyes and mucous membranes, application under occlusion, infection at treatment site; congenital epidermal barrier defects; generalised erythroderma; immunodeficiency; concomitant use with drugs that cause immunosuppression; application to malignant or potentially malignant skin lesions. **Possible side effects:** burning sensation, pruritus, erythema, skin infections (including folliculitis and less commonly impetigo, herpes simplex and zoster, molluscum contagiosum); rarely papilloma, skin discoloration, local reactions including pain, paraesthesia, peeling, dryness, oedema, and worsening of eczema; skin malignancy reported. **Dosage and way of administration:** **Child 2–18 years** apply twice daily until symptoms resolve (stop treatment if eczema worsens or no response after 6 weeks).

Example of prescription (for a child of 10 years, weight 34 kg)	**EPINEPHRINE** **Synonyms:** Adrenaline. **Pharmacological group:** Vasoconstrictor sympathomimetics. **Form of manufacturing:** Adrenaline/Epinephrine 1 in 1000 Injection, adrenaline (as acid tartrate) 1 mg/mL, 0.5-mL amp; 1-mL amp. Adrenaline/Epinephrine 1 in 10 000 Injection, adrenaline (as acid tartrate) 100 micrograms/mL, 10-mL amp, 1-mL and 10-mL prefilled syringe. **Mechanism of action:** Adrenaline (epinephrine) is mainly used for its inotropic action. Low doses (acting on beta receptors) cause systemic and pulmonary vasodilation, with some increase in heart rate and stroke volume and also an increase in contractility; high doses act predominantly on alpha receptors causing intense systemic vasoconstriction**.** **Indications for prescribing:** Emergency treatment of acute anaphylaxis, angioedema. Cardiopulmonary arrest. Acute hypotension. **Contraindications for using:** hypertension (monitor blood pressure and rate of flow frequently). **Possible side effects:** nausea, vomiting, dry mouth, anorexia, hypersalivation; arrhythmias, palpitation, tachycardia, syncope, angina, hypertension (risk of cerebral haemorrhage), cold extremities, pallor; dyspnoea, pulmonary oedema (on excessive dosage or extreme sensitivity); anxiety, tremor, restlessness, headache, insomnia, confusion, weakness, dizziness, hallucinations, psychosis; hyperglycaemia; difficulty in micturition, urinary retention; metabolic acidosis; hypokalaemia; mydriasis, angle-closure glaucoma; tissue necrosis at injection site and of extremities, liver and kidneys, sweating. **Dosage and way of administration:** Emergency treatment of acute anaphylaxis, angioedema • By intramuscular injection (preferably midpoint in anterolateral thigh) of 1 in 1000 (1 mg/mL) solution; Acute anaphylaxis when there is doubt as to the adequacy of the circulation •By slow intravenous injection of 1 in 10 000 (100 micrograms/mL) solution (extreme caution—specialist use only).
Example of prescription (for a child of 15 years, weight 54 kg)	**CHLOROPYRAMINE HYDROCHLORIDE** **Synonyms:** Suprastin **Pharmacological group:** Antihistamines. Histamine blocker $(H)_1$-receptors. **Form of manufacturing:** Tablets, Chloropyramine hydrochloride 25 mg Injection, Chloropyramine hydrochloride 20 mg/mL, 1-mL amp. **Mechanism of action:** By blocking the effects of histamine, the drug inhibits the vasodilation, increased vascular permeability, and tissue edema associated with histamine release in the tissue. The H1-antagonistic properties of chloropyramine can be used by researchers for the purposes of blocking the effects of histamine on cells and tissues. In addition, chloropyramine has some anticholinergic properties. **Indications for prescribing:** Symptomatic relief of allergy such as hay fever, chronic idiopathic urticaria, atopic dermatitis. **Contraindications for using:** adenoma of the prostate, acute peptic ulcer, pyloric and duodenal stenosis, glaucoma, pregnancy, breast-feeding.

	Possible side effects: headache, psychomotor impairment, and anti-muscarinic effects such as urinary retention, dry mouth, blurred vision, and gastro-intestinal disturbances. Other rare side-effects of antihistamines include hypotension, palpitation, arrhythmias, extrapy-ramidal effects, dizziness, confusion, depression, sleep disturbances, tremor, convulsions, hypersensitivity reactions (including bronchospasm, angioedema, anaphylaxis, rashes, and photosensitivity reactions), blood disorders, and liver dysfunction. **Dosage and way of administration:** • By mouth **adults** – 25 mg (1 tabl.) 3–4 times daily (up to 150 mg, if necessary); **children over 5 years:** 1 tablet, 2–3 times daily (1–3 mg/kg/day, divided into 2–3 doses).; • By intramuscular or intravenous injection: in severe allergic reactions 1–2 ampoules; • External application: the skin or the conjuctiva of the eye can be treated up to several times a day by applying a thin layer of cream or ointment containing 1 % chloropyramine hydrochloride.
Example of prescription (for a child of 3 years, weight 15 kg)	**DIPHENHYDRAMINE HYDROCHLORIDE** **Synonyms:** Benadryl, Dimedrol. **Pharmacological group:** Antihistamines. Histamine blocker $(H)_1$-receptors. **Form of manufacturing:** Tablets, Diphenhydramine hydrochloride 25 mg; 50 mg; Injection, Diphenhydramine hydrochloride 10 mg/mL, 1-mL amp. **Mechanism of action:** This medication works by blocking a certain natural substance (histamine) that your body makes during an allergic reaction. **Indications for prescribing:** Diphenhydramine is an antihistamine used to relieve symptoms of allergy, hay fever, and the common cold. These symptoms include rash, itching, watery eyes, itchyeyes/nose/throat, cough, runny nose, and sneezing. It is also used to prevent and treatnausea, vomiting and dizziness caused by motion sickness. Diphenhydramine can also be used to help you relax and fall asleep. **Contraindications for using:** adenoma of the prostate, acute peptic ulcer, pyloric and duodenal stenosis, glaucoma, pregnancy, breast-feeding. **Possible side effects:** drowsiness, dizziess, constipation, stomach upset, blurred vision, or dry mouth/nose/throat. **Dosage and way of administration:** • By mouth **adults** – 25 to 50 mg orally every 6 to 8 hours. **Child under 1 year** – 2–5 mg; **Child 2–5 years** – 5–15 mg; **Child 6–12 years** – 15–30 mg. Externally applied 1–2 times/day. • By intramuscular or intravenous injection: **Infants under 1 year of age** – 0.2–0.5 ml; **Child 2–5 years** – 0.5–1.5 ml; **Child 6–12 years** – 1.5–3 ml. The drug is prescribed once or twice daily.

Навчальне видання

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