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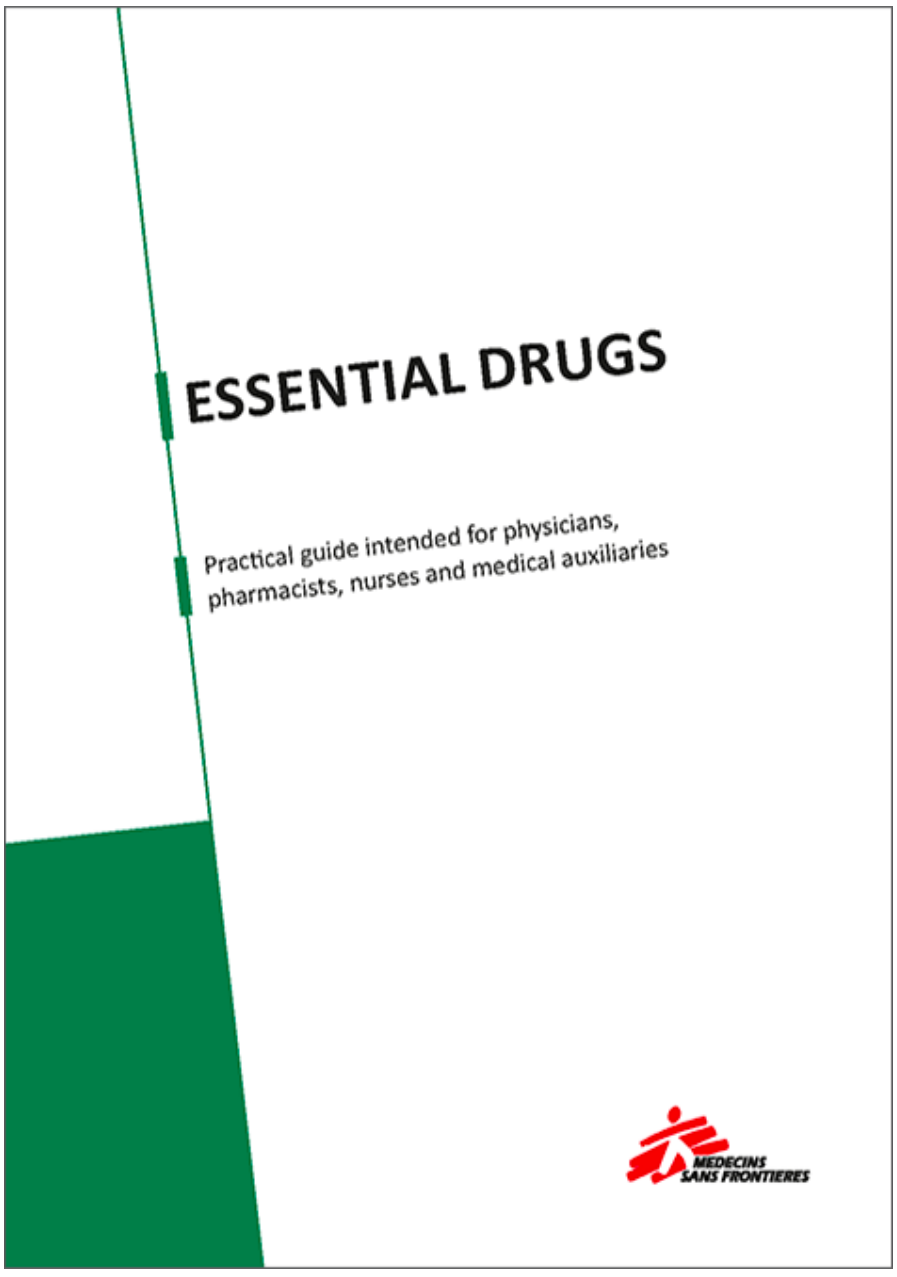
Essential drugs

Practical guide intended for physicians, pharmacists, nurses and medical auxiliaries



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Preface

The 1978 Alma Ata Conference on primary health care recognized that essential drugs are vital for preventing and treating illnesses which affect millions of people throughout the world. Essential drugs save lives and improve health.
In 1981, the World Health Organization established the Action Programme on Essential Drugs to support countries to implementing national drug policies and to work towards rational use of drugs. This work was broadened in 1998 when WHO created the department of Essential Drugs and Other Medicines (EDM), combining the responsibilities of the former DAP with WHO's global efforts to promote quality, safety, efficacy, and accurate information for all medicines.
EDM works with countries, international agencies, NGOs like Médecins Sans Frontières, and other organizations to ensure that people everywhere have access to the essential drugs they need at a price which is affordable; that the drugs are safe, effective, and of good quality; and that they are prescribed and used rationally.
Appropriate tools are critical to the effective implementation of essential drugs policies. This practical handbook, based on Médecins Sans Frontières' field experience, is one of the tools which we strongly recommend.
Designed to give practical, concise information to physicians, pharmacists and nurses, this “Essential drugs - practical guidelines” is an important contribution from Médecins Sans Frontières to improve the rational use of drugs, which will be a continuing challenge in the coming years.

Dr Jonathan D. Quick
Director,
Essential Drugs and Other medicines
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Foreword

This guide is not a dictionary of pharmacological agents. It is a practical manual intended for health professionals, physicians, pharmacists, nurses and health auxiliaries involved in curative care and drug management.

We have tried to provide simple, practical solutions to the questions and problems faced by medical staff, using the accumulated field experience of Médecins Sans Frontières, the recommendations of reference organizations such as the World Health Organization (WHO) and specialized documentation in each field.

This manual is not only used by Médecins Sans Frontières, but also in a wide range of other programmes and contexts.

The list of drugs in this edition has been revised: in accordance to the most recent WHO list of essential medicines (https://www.who.int/publications/i/item/WHO-MHP-HPS-EML-2023.02), certain drugs have been added, others have been removed.

Among the entries in this guide, some are not listed in the WHO list of essential medicines. However these drugs are in the same pharmaceutical class for which the WHO has named only one "*example of a therapeutic group*" preceded by a square symbol to indicate that various drugs can be used as alternatives.

Certain medicines, which are not on the WHO list, are still frequently administered although their use is not recommended. These medicines have been included in this guide by entries marked by a grey diagonal line.

The entries are classified according to the route of administration and in alphabetical order. This classification reflects the drug management system proposed in this manual (see Organization and management of a pharmacy).

Only the main contra-indications, adverse effects, precautions and drug interactions of each drug have been indicated in this manual. For further detailed information refer to specialised literature. Concerning antiretrovirals, the interactions are too many to be listed: it is therefore essential to refer to specialised literature.

This manual is a collective effort by medical professionals from many disciplines, all with field experience.
Despite all efforts, it is possible that certain errors may have been overlooked in this manual. Please inform the authors of any errors detected. It is important to remember, that if in doubt, it is the responsibility of the prescribing medical professional to ensure that the doses indicated in this manual conform to the manufacturer's specifications.

To ensure that this guide continues to evolve while remaining adapted to field realities, please send any comments or suggestions.

As treatment protocols are regularly revised, please check the monthly updates.

Use of the guide

Last updated: April 2024

Nomenclature of drugs

The International Non-proprietary Names (INN) of drugs is used in this guide.

Dosage

Prescription tables showing average dosage in drug units (tablets, ampoules etc.) according to weight or age of patients are included for the most commonly used drugs.

Dilution and administration of injectable drugs

Refer to the manufacturer's instructions as the primary source of information. Manufacturer's instructions are tailored to the specific formulation and concentration of a drug to ensure its effectiveness and safe use.
The dilution and administration instructions in this guide are provided as a guidance, to be used only if the manufacturer's instructions are not available.

Symbols

Prescription under medical supervision

This box indicates potentially toxic drugs, administered under medical prescription only in many countries.

This symbol is used to draw attention to drugs whose toxicity is significant and whose use requires specific precautions and/or closer patient monitoring.

Recommendations for drug storage

Protect from light

Protect from humidity

If no temperature for storage is recommended, this indicates that no information was found in medical literature.

Abbreviations and acronyms

Last update: March 2024

ACE	angiotensin converting enzyme
ACT	artemisinin-based combination therapy
ALT	alanine aminotransferase
amp.	ampoule
ARV	antiretroviral
AST	aspartate aminotransferase
BCG	bacillus Calmette-Guérin
BP	blood pressure
°C	degree Celsius
cap	capsule
CNS	central nervous sytem
co-amoxiclav	amoxicillin + clavulanic acid
co-trimoxazole	sulfamethoxazole + trimethoprim
CSF	cerebrospinal fluid
D1 (D2, D3, etc.)	Day 1 or first day (Day 2 or 2nd day, Day 3 or 3rd day, etc.)
e.g.	for example
dl	decilitre
DRESS	drug reaction with eosinophilia and systemic symptoms
EPI	expanded program on immunization
FBC	full blood count
g	gram

HIV	human immunodeficiency virus
i.e.	that is
Ig	immunoglobulin
IM	intramuscular
IO	intraosseous
IU	international unit
IV	intravenous
kcal	kilocalorie
KCl	potassium chloride
kg	kilogram
mEq	milliequivalent
mg	milligram
MIU	million international units
ml	millilitre
mmHg	millimetre of mercury
mmol	millimole
MSF	Médecins Sans Frontières
NaCl	sodium chloride
NSAID	nonsteroidal anti-inflammatory drug
ORS	oral rehydration solution or salts
PO	per os – oral administration

SC	subcutaneous
SMX	sulfamethoxazole
SMX + TMP	sulfamethoxazole + trimethoprim = co-trimoxazole
sol.	solution
SpO_2	arterial blood oxygen saturation measured by pulse oximetry
SSRI	selective serotonin reuptake inhibitor
susp.	suspension
tab	tablet
TMP	trimethoprim
v/v	volume in volume
WHO	World Health Organization

Oral drugs

ERGOCALCIFEROL = VITAMIN D2 oral

ERYTHROMYCIN oral

ETHAMBUTOL = E oral

ETHINYLESTRADIOL/LEVONORGESTREL oral

FERROUS salts oral

FERROUS salts/FOLIC acid oral

FLUCONAZOLE oral

FLUCYTOSINE oral

FLUOXETINE oral

FOLIC acid = VITAMIN B9 oral

FOSFOMYCIN TROMETAMOL oral

FUROSEMIDE oral

GLIBENCLAMIDE oral

GLICLAZIDE oral

GLYCERYL TRINITRATE = NITROGLYCERIN = TRINITRIN oral

GRISEOFULVIN oral

HALOPERIDOL oral

HYDROCHLOROTHIAZIDE oral

HYDROXYZINE oral

HYOSCINE BUTYLBROMIDE = BUTYLSCOPOLAMINE oral

IBUPROFEN oral

IODIZED OIL oral

IPRATROPIUM bromide metered dose inhaler

IPRATROPIUM bromide nebuliser solution

ISONIAZID = H oral

ISOSORBIDE DINITRATE oral

ITRACONAZOLE oral

IVERMECTIN oral

LABETALOL oral

SPIRONOLACTONE oral

SULFADIAZINE oral

SULFADOXINE/PYRIMETHAMINE = SP oral

SULFAMETHOXAZOLE (SMX)/TRIMETHOPRIM (TMP) oral

TENOFOVIR DISOPROXIL FUMARATE = TDF oral

THIAMINE = VITAMIN B1 oral

TINIDAZOLE oral

TRAMADOL oral

TRANEXAMIC acid oral

TRICLABENDAZOLE oral

TRIHEXYPHENIDYL oral

TRINITRIN oral

ULIPRISTAL oral

VALPROIC acid = VPA = SODIUM VALPROATE oral

VITAMIN A oral

VITAMIN B1 oral

VITAMIN B3 oral

VITAMIN B6 oral

VITAMIN B9 oral

VITAMIN C oral

VITAMIN D2 oral

VITAMIN D3 oral

VITAMIN PP oral

ZIDOVUDINE = AZT = ZDV oral

ZINC SULFATE oral

ABACAVIR = ABC oral

Last updated: October 2024

Prescription under medical supervision

Therapeutic action

- Antiretroviral, HIV nucleoside reverse transcriptase inhibitor

Indications

- HIV infection, in combination with other antiretrovirals

Forms and strengths

- Fixed-dose combinations with lamivudine (3TC):
  - 120 mg abacavir/60 mg lamivudine breakable and dispersible tablet
  - 600 mg abacavir/300 mg lamivudine tablet

Dosage

The daily dose can be administered once daily or in 2 divided doses.

- Child 1 month and over and adult:

Weight	Daily dose ABC/3TC	120/60 mg tablet	600/300 mg tablet
3 to < 6 kg	120/60 mg	½ tab x 2 or 1 tab x 1	–
6 to < 10 kg	180/90 mg	½ tab morning and 1 tab evening or 1 ½ tab x 1	–
10 to < 14 kg	240/120 mg	1 tab x 2 or 2 tab x 1	–
14 to < 20 kg	300/150 mg	1 tab morning and 1 ½ tab evening or 2 ½ tab x 1	–
20 to < 25 kg	360/180 mg	1 ½ tab x 2 or 3 tab x 1	–
≥ 25 kg	600/300 mg	–	1 tab x 1

Duration

- Depending on the efficacy and tolerance of abacavir.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe hepatic impairment or history of hypersensitivity reaction to abacavir that led to discontinuation of treatment.
- Administer with caution to patients with hypertension, diabetes, hyperlipidaemia (might increase the risk of coronary disease).
- May cause:
  - hypersensitivity reactions: fever, rash, gastrointestinal disturbances (nausea, vomiting, diarrhoea, abdominal pain), pharyngitis, cough, dyspnoea, malaise, headache, lethargy, myalgia, arthralgia;
  - lactic acidosis, pancreatitis and hepatic disorders.

  In all these cases, stop taking abacavir immediately and permanently.
- **Pregnancy**: no contra-indication

Remarks

- Do not cut, crush or chew the 600/300 mg tablets.
- Also comes in fixed-dose combination 60 mg abacavir/30 mg lamivudine/5 mg dolutegravir dispersible tablet. Preferably use this formulation when available in children.

Storage

– – Below 25 °C

ACETAMINOPHEN oral

See PARACETAMOL oral

ACETYLSALICYLIC acid = ASPIRIN = ASA oral

Last updated: April 2024

Prescription under medical supervision

Due to their better safety profile, prefer paracetamol or ibuprofen for pain and fever management.

Therapeutic action

- Analgesic, antipyretic, non steroidal anti-inflammatory (NSAID)
- Platelet antiaggregant (at low dose)

Indications

- Mild pain, fever
- Secondary prevention of severe pre-eclampsia

Forms and strengths

- 300 mg tablet
- 75 mg enteric coated tablet

Dosage and duration

Pain and fever
Adolescent over 16 years and adult: 300 mg to 1 g every 4 to 6 hours (max. 4 g daily), for 1 to 3 days

Prevention of pre-eclampsia:
75 to 150 mg once daily from the 12th to the 36th week of gestation. Stop treatment 5 to 10 days before the expected date of delivery.

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to aspirin and NSAID, gastroduodenal ulcer, coagulation disorders, haemorrhage, severe renal, hepatic or cardiac impairment.
- Do not administer to children for pain or fever (use paracetamol).
- Administer with caution to older patients or patients with asthma.

- Do not exceed indicated doses, particularly in older patients. Intoxications are severe, possibly fatal.
- May cause:
  - allergic reactions, epigastric pain, gastroduodenal ulcer, haemorrhage;
  - dizziness, tinnitus (early signs of overdose);
  - Reye's syndrome in children (encephalopathy and severe hepatic disorders).

  For all cases above, stop aspirin.
- Do not combine with methotrexate, anticoagulants or NSAID.
- Monitor combination with insulin (increased hypoglycaemia) and corticosteroids.
- **Pregnancy**:
  - pain and fever: avoid. CONTRA-INDICATED from the beginning of the 6th month. Use paracetamol.
  - prevention of pre-eclampsia: do not exceed 150 mg daily.
- **Breast-feeding**: avoid. Use paracetamol.

Remarks

- Take during meals, preferably with a lot of water.
- Do not crush enteric coated tablets.
- Aspirin may be administered in secondary prevention of atherothrombosis, at a dose of 75 to 300 mg daily.
- Also comes in 500 mg tablets and 300 mg dispersible tablets.

Storage

– Below 25 °C

Do not use if tablets have a strong smell of vinegar. A slight vinegar smell is always present.

ACICLOVIR oral

Prescription under medical supervision

Therapeutic action

- Antiviral active against herpes simplex virus and varicella zoster virus

Indications

- Treatment of recurrent or extensive oral and oesophageal herpes in immunocompromised patients
- Treatment of herpetic kerato-uveitis
- Treatment of genital herpes
- Secondary prophylaxis of herpes in patients with frequent and/or severe recurrences
- Treatment of severe forms of zoster: necrotic or extensive forms, facial or ophthalmic zoster

Forms and strengths

- 200 mg and 800 mg tablets
  Also comes in 40 mg/ml oral suspension.

Dosage and duration

Treatment of recurrent or extensive oral and oesophageal herpes in immunocompromised patients, treatment of herpetic kerato-uveitis

- Child under 2 years: 200 mg 5 times daily for 7 days
- Child 2 years and over and adult: 400 mg 5 times daily for 7 days

Treatment of genital herpes

- Child 2 years and over and adult: 400 mg 3 times daily for 7 days; in immunocompromised patients, continue treatment until clinical resolution

Secondary prophylaxis of herpes in patients with frequent and/or severe recurrences

- Child under 2 years: 200 mg 2 times daily
- Child 2 years and over and adult: 400 mg 2 times daily

Treatment of severe forms of zoster

- Adult: 800 mg 5 times daily for 7 days

Contra-indications, adverse effects, precautions

- Do not administer to patients with hypersensitivity to aciclovir.
- May cause: headache, skin rash, allergic reactions, gastrointestinal disturbances, raised transaminases, neurologic disorders in patients with renal impairment and elderly patients; rarely, haematological disorders.
- Reduce dosage in patients with renal impairment.
- Drink a lot of liquid during treatment.
- **Pregnancy:** no contra-indication
- **Breast-feeding:** no contra-indication

Remarks

- For the treatment of herpes simplex, aciclovir should be started as soon as possible (within 96 hours) after the appearance of lesions to reduce severity and duration of infection.
- For the treatment of herpes zoster, aciclovir should be start preferably within 72 hours after the appearance of lesions. Aciclovir administration does not reduce the likelihood of developing zosterassociated pain but reduces the overall duration of this pain.

Storage

- Below 25 °C

ALBENDAZOLE oral

Prescription under medical supervision

Therapeutic action

- Anthelminthic

Indications

- Ascariasis (*Ascaris lumbricoides*), enterobiasis (*Enterobius vermicularis*), hookworm infections (*Ancylostoma duodenale*, *Necator americanus*)
- Trichuriasis (*Trichuris trichiura*), strongyloidiasis (*Strongyloides stercoralis*)
- Trichinellosis (*Trichinella* sp)

Forms and strengths

- 400 mg tablet

Dosage and duration

Ascariasis, enterobiasis, hookworm infections

- Child over 6 months and adult: 400 mg single dose
- Child over 6 months but under 10 kg: 200 mg single dose
- In the event of enterobiasis, a second dose may be given after 2 to 4 weeks.

Trichuriasis, strongyloidiasis

- Child over 6 months and adult: 400 mg once daily for 3 days
- Child over 6 months but under 10 kg: 200 mg once daily for 3 days

Trichinellosis

- Child over 2 years: 5 mg/kg 2 times daily for 10 to 15 days
- Adult: 400 mg 2 times daily for 10 to 15 days

Contra-indications, adverse effects, precautions

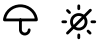
- Do not administer to children under 6 months.
- Do not administer to patients with ocular cysticercosis.
- May cause:
  - gastrointestinal disturbances, headache, dizziness;
  - neurological disorders (headache, seizures) in patients with undiagnosed neuro cysticercosis.

- **Pregnancy**: avoid during the first trimester
- **Breast-feeding**: no contra-indication

Remarks

- Tablets are to be chewed or crushed: follow manufacturer's recommendations.
- In the treatment of strongyloidiasis, ivermectin is more effective than albendazole.
- Albendazole is also used in the treatment of cutaneous larva migrans (*Ancylostoma braziliense* and *caninum*), larval cestode infections (hydatid disease, certain forms of neurocysticercosis) and in mass treatment for lymphatic filariasis (check national recommendations).

Storage

 - Below 25 °C

ALBUTEROL aerosol

See SALBUTAMOL aerosol

ALBUTEROL nebuliser solution

See SALBUTAMOL nebuliser solution

ALUMINIUM HYDROXIDE/MAGNESIUM HYDROXIDE oral

Therapeutic action

- Antacid

Indications

- Stomach pain associated with gastritis and peptic ulcer

Forms and strengths

- 400 mg aluminium hydroxide/400 mg magnesium hydroxide chewable tablet

Dosage

- Child over 5 years: rarely indicated. When necessary: half a tablet 3 times daily
- Adult: 1 to 2 tablets 3 times daily 20 minutes to one hour after meals, or 1 tablet during painful attacks

Duration

- According to clinical response

Contra-indications, adverse effects, precautions

- Decreases intestinal absorption of many drugs. Do not administer simultaneously with:
  - atazanavir, chloroquine, digoxin, doxycycline, iron salts, gabapentin, itraconazole, levothyroxine (take at least 2 hours apart).
  - ciprofloxacin (take ciprofloxacin 2 hours before or 4 hours after antacids), dolutegravir (take dolutegravir 2 hours before or 6 hours after antacids), velpatasvir (take 4 hours apart).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Chew tablets.
- There are numerous preparations of aluminium and/or magnesium hydroxide and different dosages.
- Antacids are not included in the WHO list of essential medicines.

Storage

Below 25 °C

AMITRIPTYLINE oral

Last updated: March 2024

Prescription under medical supervision

Due to the numerous and potentially severe adverse effects of amitriptyline, patients should be kept under close surveillance.

Therapeutic action

- Tricyclic antidepressant

Indications

- Neuropathic pain
- Major depression (preferably use selective serotonin re-uptake inhibitors for this indication)

Forms and strengths

- 25 mg tablet

Dosage

Neuropathic pain

- Adult: 25 mg once daily at bedtime (Week 1); 50 mg once daily at bedtime (Week 2); 75 mg once daily at bedtime (as of Week 3)

Major depression

- Adult: 25 mg once daily at bedtime. Depending on efficacy and tolerance, increase over 8 to 10 days, up to 75 mg once daily at bedtime.

Do not exceed 150 mg daily. Reduce the dose by half in older patients.

Duration

- Neuropathic pain: 3 to 6 months after pain relief is obtained. If pain reappears, recommence treatment.
- Major depression: at least 9 months. Discontinue treatment gradually (over 4 weeks). If signs of relapse or withdrawal occur, increase the dose then decrease it more gradually.

Contra-indications, adverse effects, precautions

- Do not administer to patients with recent myocardial infarction, arrhythmia, closed-angle glaucoma, prostate disorders.
- Administer with caution and carefully monitor use in older patients and in patients with epilepsy, chronic constipation, renal or hepatic impairment (reduce the dose by half), history of bipolar disorders and suicidal ideation.
- May cause:
  - drowsiness (caution when driving or operating machinery), orthostatic hypotension, sexual dysfunction;
  - anticholinergic effects: dry mouth, constipation, blurred vision, tachycardia, disorders of micturition. Treatment should be discontinued in the event of severe reactions (confusional state, urinary retention, cardiac rhythm disorders);
- Administer with caution and monitor combination with: CNS depressants (opioid analgesics, sedatives, H1 antihistamines, etc.), drugs known to have anticholinergic effects (atropine, chlorpromazine, promethazine, etc.), drugs which lower the seizure threshold (antipsychotics, mefloquine, etc.), serotonergic drugs (SSRI, tricyclic antidepressants, ondansetron, tramadol, etc.), anti-hypertensive drugs.
- Avoid alcohol during treatment (increased risk of adverse effects).
- **Pregnancy**: re-evaluate whether the treatment is still necessary; if it is continued, maintain amitriptyline at effective dose. Observe the neonate the first few days (risk of agitation, tremors, hypotonia, respiratory difficulties, sleeping disorders, etc.) if the mother was under treatment in the 3rd trimester of pregnancy. If treatment for major depression starts during pregnancy, preferably use sertraline.
- **Breast-feeding**: monitor the child for excessive somnolence.

Remarks

- Sedative effect occurs following initial doses, analgesic effect is delayed for 7 to 10 days and the antidepressant effect is delayed for at least 4 weeks. This must be explained to the patient.
- For neuropathic pain, amitriptyline is often administered in combination with carbamazepine or gabapentin.

Storage

– Below 25 °C

AMLODIPINE oral

Last updated: March 2024

Prescription under medical supervision

Therapeutic action

- Antihypertensive vasodilator (calcium channel blocker)

Indications

- Hypertension

Forms and strengths

- 5 mg tablet

Dosage

- Adult: 5 mg once daily. Increase to 10 mg once daily if necessary (max. 10 mg daily).

In older patients or patients with hepatic impairment, start with 2.5 mg once daily then increase gradually if necessary.

Duration

- According to clinical response.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe hypotension, shock, unstable heart failure after acute myocardial infarction.
- May cause:
  - headache, dizziness, sensation of flushing or warmth, fatigue, ankle oedema (common at the start of treatment);
  - hypotension, palpitations, abdominal pain, nausea, gingival hyperplasia.
- Administer with caution and monitor use with:
  - other antihypertensive drugs (risk of hypotension);
  - drugs with hypotensive effects (e.g. haloperidol, amitriptyline);
  - fluconazole, erythromycin, fluoxetine, ritonavir (effects of amlodipine increased, particularly the antihypertensive effect);
  - rifampicin, phenytoin, phenobarbital, carbamazepine (effects of amlodipine decreased).

- **Pregnancy**: no contra-indication. For the management of hypertension in pregnancy, use labetalol.
- **Breast-feeding**: avoid

Remarks

- Also comes in telmisartan 40 mg/amlopidine 5 mg coformulated tablet.

Storage

– – Below 25 °C

AMOXICILLIN oral

Last updated: April 2024

Prescription under medical supervision

Therapeutic action

- Penicillin antibacterial

Indications

- Acute otitis media, streptococcal tonsillitis, sinusitis, bronchitis, pneumonia with no signs of severity
- Infection due to *Helicobacter pylori* (in combination with omeprazole and clarithromycin), leptospirosis, uncomplicated cutaneous anthrax
- Uncomplicated typhoid fever if the strain is susceptible (recent drug susceptibility test)
- Completion treatment following therapy with parenteral penicillins or cephalosporins

Forms and strengths

- 250 mg and 500 mg tablets or capsules
- 250 mg dispersible scored tablet, for paediatric use
- 125 mg/5 ml powder for oral suspension:
  - to be reconstituted with filtered water
  - to be administered using a measuring device (oral syringe, measuring spoon, or cup with graduations)

Dosage

Usual dosage (e.g. leptospirosis, tonsillitis, infection due to *H. pylori*)

- Child: 25 mg/kg (max. 1 g) 2 times daily
- Adult: 1 g 2 times daily

Age	Weight	Daily dose	125 mg/5 ml susp.	250 mg tablet	500 mg tablet
< 3 months	< 6 kg	125 mg x 2	5 ml x 2	½ tab x 2	–
3 to < 24 months	6 to < 12 kg	250 mg x 2	10 ml x 2	1 tab x 2	–
2 to < 8 years	12 to < 25 kg	500 mg x 2	20 ml x 2	2 tab x 2	1 tab x 2
≥ 8 years and adult	≥ 25 kg	1 g x 2	–	4 tab x 2	2 tab x 2

High dosage (e.g. pneumonia, typhoid fever, resistant pneumococcal infections, cutaneous anthrax)

- Child: 30 mg/kg (max. 1 g) 3 times daily
- Adult: 1 g 3 times daily

Age	Weight	Daily dose	125 mg/5 ml susp.	250 mg tablet	500 mg tablet
< 3 months	< 6 kg	125 mg x 3	5 ml x 3	½ tab x 3	–
3 to < 24 months	6 to < 12 kg	250 mg x 3	10 ml x 3	1 tab x 3	–
2 to < 8 years	12 to < 25 kg	500 mg x 3	20 ml x 3	2 tab x 3	1 tab x 3
≥ 8 years and adult	≥ 25 kg	1 g x 3	–	4 tab x 3	2 tab x 3

Duration

- Otitis media, bronchitis, pneumonia: 5 days
- Tonsillitis: 6 days
- Leptospirosis, *H. pylori* infection: 7 days
- Sinusitis: 7 to 10 days
- Cutaneous anthrax: 7 to 14 days depending on severity
- Typhoid fever: 14 days

Contra-indications, adverse effects, precautions

- Do not administer to penicillin-allergic patients or patients with mononucleosis.
- Administer with caution to patients allergic to cephalosporins (cross-sensitivity may occur).

- May cause: gastrointestinal disturbances, allergic reactions, sometimes severe. In the event of allergic reaction, stop treatment immediately.
- Reduce dosage in patients with severe renal impairment.
- Do not combine with methotrexate.
- **Pregnancy and breast-feeding**: no contra-indication

Storage

– – Below 25 °C

For the oral suspension (powder or reconstituted suspension): follow manufacturer's instructions.

AMOXICILLIN/CLAVULANIC acid = CO-AMOXICLAV oral

Prescription under medical supervision

Therapeutic action

- Combination of two antibacterials. The addition of clavulanic acid to amoxicillin extends its spectrum of activity to cover beta-lactamase producing Gram-positive and Gram-negative organisms, including some Gram-negative anaerobes.

Indications

- Animal bites, if antibiotic therapy or antibiotic prophylaxis is clearly indicated
- Second line treatment of acute otitis media and acute bacterial sinusitis, when amoxicillin alone given at high dose failed
- Acute uncomplicated cystitis (no systemic signs) in girls over 2 years
- Postpartum upper genital tract infection
- Parenteral to oral switch therapy in severe infections (e.g. severe pneumonia)

Forms and strengths

- The ratio of amoxicillin and clavulanic acid varies according to the manufacturer:

Ratio 8:1	• 500 mg amoxicillin/62.5 mg clavulanic acid tablet • 500 mg amoxicillin/62.5 mg clavulanic acid/5 ml powder for oral suspension
Ratio 7:1	• 875 mg amoxicillin/125 mg clavulanic acid tablet • 400 mg amoxicillin/57 mg clavulanic acid/5 ml, powder for oral suspension • 200 mg amoxicillin/28.5 mg clavulanic acid dispersible tablet

Dosage

(expressed in amoxicillin)

Animal bites; second line treatment of acute otitis media and acute sinusitis

- Child < 40 kg: 25 mg/kg 2 times daily
- Child ≥ 40 kg and adult:

- Ratio 8:1: 2000 mg daily = 2 tablets of 500/62.5 mg 2 times daily
- Ratio 7:1: 1750 mg daily = 1 tablet of 875/125 mg 2 times daily

Acute uncomplicated cystitis in girls > 2 years

- 12.5 mg/kg 2 times daily

Postpartum upper genital tract infection; parenteral to oral switch therapy in severe infections

- Child < 40 kg: 50 mg/kg 2 times daily
- Child ≥ 40 kg and adult:
  - Ratio 8:1: 3000 mg daily = 2 tablets of 500/62.5 mg 3 times daily
  - Ratio 7:1: 2625 mg daily = 1 tablet of 875/125 mg 3 times daily

Duration

- Animal bites: 5 to 7 days
- Otitis media: 5 days
- Sinusitis: 7 to 10 days
- Cystitis: 3 days
- Upper genital tract infection: 7 days
- Parenteral to oral switch therapy in severe pneumonia: to complete a total of 10 to 14 days of treatment.

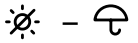
Contra-indications, adverse effects, precautions

- Do not administer to penicillin-allergic patients and patients with history of hepatic disorders during a previous treatment with co-amoxiclav.
- Administer with caution to patients allergic to cephalosporins (cross-sensitivity may occur).
- Administer with caution to patients with hepatic impairment; reduce dosage and give every 12 or 24 hours in patients with severe renal impairment.
- May cause: gastrointestinal disturbances (mainly diarrhoea); allergic reactions sometimes severe (stop treatment immediately); jaundice and cholestatic hepatitis in the event of prolonged treatment (> 10 to 15 days).
- The dose of clavulanic acid should not exceed 12.5 mg/kg daily or 375 mg daily.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Take with meals.
- Also comes in formulations with a ratio of amoxicillin/clavulanic acid of 4:1: 125 mg amoxicillin/31.25 mg clavulanic acid/5 ml powder for oral suspension and 500 mg amoxicillin/125 mg clavulanic acid tablet. The maximum dose (expressed in amoxicillin) that can be given with these formulations is 50 mg/kg daily, without exceeding 1500 mg daily.

Storage

 – Below 25 °C

ARTEMETHER/LUMEFANTRINE = AL oral

Prescription under medical supervision

Therapeutic action

- Antimalarial

Indications

- Treatment of uncomplicated falciparum malaria
- Treatment of uncomplicated malaria due to other Plasmodium species, when chloroquine cannot be used
- Completion treatment following parenteral therapy for severe malaria

Forms and strengths

- Co-formulated tablets of artemether/lumefantrine, in blister packs, for a complete treatment for one individual
- There are 5 different blister packs corresponding to 4 different categories of weight:
  - 20 mg artemether/120 mg lumefantrine dispersible tablet, blister pack of 6 tablets
  - 20 mg artemether/120 mg lumefantrine dispersible tablet, blister pack of 12 tablets
  - 20 mg artemether/120 mg lumefantrine tablet, blister pack of 18 tablets
  - 20 mg artemether/120 mg lumefantrine tablet, blister pack of 24 tablets
  - 80 mg artemether/480 mg lumefantrine tablet, blister pack of 6 tablets

Dosage and duration

- The treatment is administered 2 times daily for 3 days. On D1, the first dose is given at 0 hour and the second dose at 8-12 hours. Subsequent doses on D2 and D3 are given 2 times daily (morning and evening).

Weight	20/120 mg tablet			80/480 mg tablet		
	D1	D2	D3	D1	D2	D3
5 to < 15 kg	1 disp tab x 2	1 disp tab x 2	1 disp tab x 2	–	–	–
15 to < 25 kg	2 disp tab x 2	2 disp tab x 2	2 disp tab x 2	–	–	–
25 to < 35 kg	3 tab x 2	3 tab x 2	3 tab x 2	–	–	–
≥ 35 kg	4 tab x 2	4 tab x 2	4 tab x 2	1 tab x 2	1 tab x 2	1 tab x 2

Contra-indications, adverse effects, precautions

- May cause: headache, dizziness and gastrointestinal disturbances.
- Administer with caution to patients taking drugs that prolong the QT interval: amiodarone, other antimalarials, antipsychotics, fluconazole, fluoroquinolones, hydroxyzine, macrolides, ondansetron, etc.
  re-administer the full dose.
- If the patient vomits within 30 minutes after administration: re-administer the full dose. If the patient vomits between 30 minutes and 1 hour after administration, re-administer half of the dose.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Take with meals or a fat containing drink (e.g. milk).
- Lumefantrine is also called co-artemether.

Storage

- Below 30 °C

Leave tablets in blisters until use. Once a tablet is removed from its blister, it must be administered immediately.

ARTESUNATE/AMODIAQUINE = AS/AQ oral

Prescription under medical supervision

Therapeutic action

- Antimalarial

Indications

- Treatment of uncomplicated falciparum malaria
- Treatment of uncomplicated malaria due to other Plasmodium species, when chloroquine cannot be used
- Completion treatment following parenteral therapy for severe malaria

Forms and strengths

- Co-formulated tablets of artesunate (AS)/amodiaquine (AQ), in blister packs, for a complete treatment for one individual
- There are 4 different blister packs corresponding to 4 different categories of weight:
  - 25 mg AS/67.5 mg AQ base tablet blister pack of 3 tablets
  - 50 mg AS/135 mg AQ base tablet blister pack of 3 tablets
  - 100 mg AS/270 mg AQ base tablet blister pack of 3 tablets
  - 100 mg AS/270 mg AQ base tablet blister pack of 6 tablets

Dosage and duration

Tablets are to be taken once daily for 3 days.

Weight	Tablets	D1	D2	D3
4.5 to < 9 kg	25 mg AS/67.5 mg AQ base	1 tab	1 tab	1 tab
9 to < 18 kg	50 mg AS/135 mg AQ base	1 tab	1 tab	1 tab
18 to < 36 kg	100 mg AS/270 mg AQ base **blister pack of 3 tab**	1 tab	1 tab	1 tab
≥ 36 kg	100 mg AS/270 mg AQ base **blister pack of 6 tab**	2 tab	2 tab	2 tab

Contra-indications, adverse effects, precautions

- Do not administer in the event of previous severe adverse reaction to treatment with amodiaquine (e.g. hypersensitivity reaction, hepatitis, leucopenia, agranulocytosis).
- Do not administer to patients taking efavirenz.
- Avoid combination with drugs that prolong QT interval: amiodarone, other antimalarials, antipsychotics, fluconazole, fluoroquinolones, hydroxyzine, macrolides, ondansetron, etc.
- May cause: gastrointestinal disturbances, pruritus, somnolence or insomnia, cough.
- If the patient vomits within 30 minutes after administration, re-administer the full dose. If the patient vomits between 30 minutes and 1 hour after administration, re-administer half of the dose.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- For patients unable to swallow the tablets (e.g. young children), the tablets can be dispersed by gentle agitation for approximately one minute in a small amount of water. After administration, give children some sugar or sugared water to cover amodiaquine's bitter taste.

Storage

- - Below 30 °C

Leave tablets in blisters until use. Once a tablet is removed from its blister, it must be administered immediately.

ASCORBIC acid = VITAMIN C oral

Therapeutic action

- Vitamin

Indications

- Treatment and prevention of scurvy (vitamin C deficiency)

Forms and strengths

- 250 mg chewable tablet
- 500 mg tablet

Dosage and duration

Treatment of scurvy:
The optimal dose has not been established. For information:
- Child 1 month to 11 years: 100 mg 3 times daily
- Child 12 years and over and adult: 250 mg 3 times daily

or
- Child 1 month to 3 years: 100 mg 2 times daily
- Child 4 to 11 years: 250 mg 2 times daily
- Child 12 years and over and adult : 500 mg 2 times daily

Treatment is administered at least 2 weeks or longer (until symptoms resolve), then preventive treatment is given as long as the situation requires.

Prevention of scurvy:
- Child and adult: 50 mg daily, as long as the situation requires

Contra-indications, adverse effects, precautions

- Ascorbic acid is well tolerated at indicated doses.
- May cause: gastrointestinal disturbances and nephrolithiasis at doses > 1 g daily; may interfere with the measurement of glucose in blood and urine at doses ≥ 2 g daily.
- **Pregnancy**: no contra-indication, do not exceed 1 g daily.
- **Breast-feeding**: no contra-indication

Storage

– – Below 25 °C

ASPIRIN oral

See ACETYLSALICYLIC ACID = ASA

ATAZANAVIR = ATV oral

Last updated: November 2022

Prescription under medical supervision

Therapeutic action

- Antiretroviral, HIV protease inhibitor

Indications

- HIV infection, in combination with ritonavir (booster) and other antiretrovirals

Forms and strengths

- 200 mg capsule
- 300 mg atazanavir/100 mg ritonavir tablet

Dosage

- Child 10 to < 25 kg: one 200 mg capsule once daily (+ 100 mg ritonavir once daily)
- Child ≥ 25 kg and adult: one 300 mg/100 mg tablet once daily

Duration

- Depending on the efficacy and tolerance of atazanavir and ritonavir.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe hepatic impairment.
- Administer with caution and monitor use in patients with haemophilia (increased bleeding) or mild to moderate hepatic impairment.
- May cause:
  - jaundice, gastrointestinal disturbances, headache, insomnia, fatigue, peripheral neuropathy, asymptomatic hyperbilirubinaemia, cholelithiasis, urolithiasis, conduction disorders, hyperglycaemia, hyperlipidaemia, lipodystrophy;
  - skin rash sometimes severe, hepatic disorders; in this event, stop treatment immediately.
- Do not combine with rifampicin or omeprazole (decreased plasma concentrations of atazanavir):
  - replace rifampicin with rifabutin;
  - if omeprazole is necessary, do not exceed 20 mg daily and take each drug 12 hours apart.

- Administer with caution and monitor combination with drugs that prolong the QT interval (amiodarone, co-artemether, mefloquine, quinine, haloperidol, etc.).
- Do not administer simultaneously with antacids containing aluminium or magnesium hydroxide. Take 2 hours apart.
- Atazanavir in combination with ritonavir reduces the efficacy of implants and oral contraceptives: use injectable medroxyprogesterone or an intrauterine device or an oral contraceptive containing at least 30 micrograms of ethinylestradiol per tablet.
- **Pregnancy**: no contra-indication; monitor bilirubin levels and/or signs of jaundice in neonates.

Remarks

- Take with meals together with ritonavir.
- Do not open the capsules.
- Also comes in 100 mg, 150 mg and 300 mg capsules, not in combination with ritonavir.

Storage

– Below 25 °C

AZITHROMYCIN oral

Last updated: June 2025

Prescription under medical supervision

Therapeutic action

- Macrolide antibacterial

Indications

- Trachoma, conjunctivitis due to *Chlamydia trachomatis*
- Cervicitis and urethritis due to *Chlamydia trachomatis* (in combination with a treatment for gonorrhoea), donovanosis, chancroid, early syphilis
- Cholera (if the strain is susceptible), typhoid fever, yaws, leptospirosis, louse-borne and tick-borne relapsing fevers
- Pertussis, diphtheria, pneumonia due to *Mycoplasma pneumoniae* and *Chlamydophila pneumoniae*
- Second-line treatment of shigellosis
- Streptococcal tonsillitis, acute otitis media, in penicillin-allergic patients only

Forms and strengths

- 250 mg and 500 mg tablets
- 200 mg/5 ml powder for oral suspension, to be reconstituted with filtered water

Dosage and duration

Trachoma, cholera, cervicitis and urethritis due to *C. trachomatis*, chancroid, early syphilis

- Child: 20 mg/kg (max. 1 g) single dose
- Adult: 1 g single dose (2 g single dose in early syphilis)

Yaws

- Child and adult: 30 mg/kg (max. 2 g) single dose

Conjunctivitis due to *C. trachomatis*

- Child: 20 mg/kg (max. 1 g) once daily for 3 days
- Adult: 1 g once daily for 3 days

Typhoid fever

- Child: 10 to 20 mg/kg (max. 1 g) once daily for 7 days
- Adult: 500 mg to 1 g once daily for 7 days or 1 g on D1 then 500 mg once daily from D2 to D7

Donovanosis (granuloma inguinale)

- Adult: 1 g on D1 then 500 mg once daily until healing of lesions

Pertussis

- Child under 6 months: 10 mg/kg once daily for 5 days
- Child 6 months and over: 10 mg/kg (max. 500 mg) on D1 then 5 mg/kg (max. 250 mg) once daily from D2 to D5
- Adult: 500 mg on D1 then 250 mg once daily from D2 to D5

Pneumonia due to *M. pneumoniae* and *C. pneumoniae*

- Child: 10 mg/kg (max. 500 mg) once daily for 5 days
- Adult: 500 mg on D1 then 250 mg once daily from D2 to D5

Leptospirosis

- Child: 10 mg/kg (max. 500 mg) on D1 then 5 mg/kg (max. 250 mg) once daily on D2 and D3
- Adult: 1 g on D1 then 500 mg once daily on D2 and D3

Shigellosis

- Child: 12 mg/kg (max. 500 mg) on D1 then 6 mg/kg (max. 250 mg) once daily from D2 to D5
- Adult: 500 mg on D1 then 250 mg once daily from D2 to D5

Diphtheria

- Child: 10 to 12 mg/kg (max. 500 mg) once daily for 14 days
- Adult: 500 mg once daily for 14 days

Relapsing fevers (louse-borne and tick-borne)

- Child: 10 mg/kg (max. 500 mg) single dose for louse-borne relapsing fever and once daily for 7 to 10 days for tick-borne relapsing fever
- Adult: 500 mg single dose for louse-borne relapsing fever and once daily for 7 to 10 days for tick-borne relapsing fever

Streptococcal tonsillitis, only in penicillin-allergic patients

- Child: 20 mg/kg (max. 500 mg) once daily for 3 days
- Adult: 500 mg once daily for 3 days

Acute otitis media, only in penicillin-allergic patients

- Child: 10 mg/kg (max. 500 mg) once daily for 3 days

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to azithromycin or another macrolide, and to patients with severe hepatic impairment.
- Administer with caution to children under 6 weeks of age (risk of hypertrophic pyloric stenosis) and patients with risk factors for QT prolongation (e.g. electrolyte disturbances, pre-existing cardiac and renal disorders, older patients).
- May cause:
  - gastrointestinal disturbances, reversible hearing disorders, electrolytes disturbances, QT prolongation;

    - rarely: hypersensitivity reactions (including severe cutaneous reactions such as Stevens-Johnson, Lyell and DRESS syndromes) and life-threatening hepatotoxicity. In these cases, stop treatment. Signs and symptoms of hypersensitivity reaction (e.g. fever, rash, mouth ulcers, bleeding) and hepatic disorders (e.g. anorexia, nausea, general malaise, dark urine, pale stools, hepatomegaly, jaundice) require immediate medical attention.
- Do not administer simultaneously with antacids (aluminium or magnesium hydroxide, etc.). Administer 2 hours apart.
- Avoid combination with drugs that prolong the QT interval (amiodarone, chloroquine, co-artemether, fluconazole, haloperidol, mefloquine, moxifloxacin, ondansetron, pentamidine, quinine, etc.).
- Administer with caution and monitor use in patients taking digoxin (increased digoxin toxicity ~~plasma levels~~).
- **Pregnancy and breast-feeding**: no contra-indication

Remarks

- Azithromycin is also used for septicaemia of pulmonary or gynaecological origin (child: 10 to 20 mg/kg (max. 1 g) once daily; adult: 500 mg to 1 g once daily), in combination with other antibacterials.
- Also comes in 250 mg or 500 mg capsules, to be taken one hour before or 2 hours after a meal.

Storage

☼ - ☂ - Below 25 °C
For the oral suspension (powder or reconstituted suspension): follow manufacturer's instructions.

BECLOMETASONE metered dose inhaler

Last updated: June 2023

Prescription under medical supervision

Therapeutic action

- Steroidal anti-inflammatory drug (inhaled corticosteroid)

Indications

- Long term treatment of chronic asthma (maintenance and symptomatic treatment), alone or in combination with a beta-2 agonist bronchodilator

Forms and strengths

- Solution or suspension for inhalation in pressurised metered dose inhalers, delivering 50, 100 or 250 micrograms of beclometasone dipropionate/puff

Dosage

Start at the step most appropriate to initial severity. Always try to administer the lowest effective dose.

Asthma severity	6 to 11 years	12 years and over and adult
Intermittent asthma	_	Only when symptomatic: 200 to 500 micrograms, in combination with salbutamol
Mild persistent asthma	50 to 100 micrograms (low dose) 2 times daily	100 to 250 micrograms (low dose) 2 times daily
Moderate persistent asthma	50 to 100 micrograms (low dose) 2 times daily, in combination with salmeterol OR (if salmeterol is not available) 150 to 200 micrograms (medium dose) 2 times daily	100 to 250 micrograms (low dose) 2 times daily, in combination with salmeterol OR (if salmeterol is not available) 300 to 500 micrograms (medium dose) 2 times daily
Severe persistent asthma	150 to 200 micrograms (medium dose) 2 times daily, in combination with salmeterol	300 to 500 micrograms (medium dose) 2 times daily, in combination with salmeterol OR (if salmeterol is not available) > 500 micrograms (high dose) 2 times daily

In all cases, do not exceed 2000 micrograms daily.

Duration

- As long as required. Re-evaluate after 2 to 3 months if doses are adequate or need to be increased or decreased.

Administration technique

- Shake the inhaler. Remove the mouthpiece cover.
- Breathe in and breathe out as completely as possible. Place the lips tightly around the mouthpiece. Inhale deeply while activating the inhaler. Hold breath 10 seconds before exhaling.
- If hand-breath co-ordination is difficult, use a spacer to facilitate administration and improve the efficacy of treatment.

Contra-indications, adverse effects, precautions

- Do not administer to patients with untreated respiratory infection.
- May cause:

    - throat irritation, hoarseness and cough at the beginning of treatment; oro-pharyngeal candidiasis;
    - adrenal suppression with high doses for prolonged periods.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- When beclometasone is given with salbutamol, preferably use combination inhaler. If not available, beclometasone should be inhaled right after salbutamol.
- Relief of symptoms may require several days or weeks of continuous therapy.
- Clean the mouthpiece before and after each use.
- Do not pierce or incinerate used aerosol containers (risk of explosion).
- Also comes in a combination metered dose inhaler with formoterol.

Storage

– Below 25 °C

BECLOMETASONE/FORMOTEROL metered dose inhaler

Last updated: June 2023

Prescription under medical supervision

Therapeutic action

- Combination of inhaled corticosteroid (beclometasone) and long-acting beta-2 agonist bronchodilator (formoterol)

Indications

- Long term treatment of chronic asthma (maintenance and symptomatic treatment)

Forms and strengths

- Solution or suspension for inhalation in pressurised metered dose inhaler, delivering 100 micrograms of beclometasone dipropionate (extrafine particles) and 6 micrograms of formoterol fumarate/puff

Dosage

Start at the step most appropriate to initial severity.

- Child 12 years and over and adult:

Asthma severity	100/6 micrograms per puff
Intermittent asthma	Only when symptomatic: 1 puff
Mild persistent asthma	
Moderate persistent asthma	1 puff (low dose) 2 times daily and 1 puff when symptomatic
Severe persistent asthma	2 puffs (medium dose) 2 times daily and 1 puff when symptomatic

- In all cases, do not exceed 8 puffs/day

Duration

- As long as required. Re-evaluate after 2 to 3 months if doses are adequate or need to be increased or decreased.

Administration technique

- Shake the inhaler. Remove the mouthpiece cover.
- Breathe in and breathe out as completely as possible. Place the lips tightly around the mouthpiece. Inhale deeply while activating the inhaler. Hold breath 10 seconds before exhaling.
- Hand-breath co-ordination is very difficult in older patients and patients with severe dyspnoea. Use a spacer to facilitate administration and improve the efficacy of treatment.

Contra-indications, adverse effects, precautions

- Do not administer to patients with untreated respiratory infection.
- May cause:
  - throat irritation, hoarseness and cough at the beginning of treatment; oro-pharyngeal candidiasis; adrenal suppression with high doses for prolonged periods;
  - headache, tremor and tachycardia, hyperglycaemia; hypokalaemia (after high doses).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Relief of symptoms may require several days or weeks of continuous therapy.
- Clean the mouthpiece before and after each use.
- Do not pierce or incinerate used aerosol containers (risk of explosion).
- 100 micrograms of beclometasone dipropionate extrafine particles is equivalent to 250 micrograms of beclometasone dipropionate non-extrafine particles.
- Beclometasone/formoterol may also be available as a dry powder inhaler. Doses are the same as for metered dose inhaler.
- Manufacturers may express the content per inhaler actuation in "metered dose" or "delivered dose".

Storage

- Before use: between 2 °C and 8 °C. Do not freeze.
- After first use: below 25 °C for 3 months maximum.

BIPERIDEN oral

Prescription under medical supervision

Therapeutic action

- Anticholinergic antiparkinson drug

Indications

- First-line treatment of extrapyramidal reactions induced by antipsychotics

Forms and strengths

- 2 mg tablet

Dosage

- Adult: 2 mg once daily, then increase if necessary up to 2 mg 2 to 3 times daily (max. 12 mg daily)
- Administer at the lowest effective dose in elderly patients and do not exceed 10 mg daily.

Duration

- As long as the antipsychotic treatment lasts.

Contra-indications, adverse effects, precautions

- Do not administer to patients with closed-angle glaucoma, prostate disorders, gastrointestinal obstruction or atony.
- Administer with caution and carefully monitor use in elderly patients (risk of confusion, hallucinations).
- May cause: anticholinergic effects (dry mouth, constipation, blurred vision, tachycardia, disorders of micturition), confusion, hallucinations, memory impairment.
- Avoid or monitor combination with other drugs known to have anticholinergic effects (atropine, amitriptyline, chlorpromazine, promethazine, etc.).
- **Pregnancy**: re-evaluate whether the antipsychotic treatment is still necessary; if treatment is continued, administer biperiden at the lowest effective dose and observe the child if the mother was under treatment in the 3rd trimester (risk of anticholinergic effect, e.g. tremors, abdominal distension).
- **Breast-feeding**: if treatment is necessary, administer at the lowest effective dose and observe the child (risk of anticholinergic effects, e.g. tachycardia, constipation, thickening of bronchial

secretions).

Remarks

- Also comes in 4 mg extended-release tablet, administered once daily.
- Biperiden is also used in the treatment of Parkinson's disease.

Storage

- - Below 25 °C

BISACODYL oral

Therapeutic action

- Stimulant laxative

Indications

- Prevention of constipation in patients taking opioid analgesics (codeine, morphine, etc.)
- Short-term, symptomatic treatment of constipation

Forms and strengths

- 5 mg enteric-coated tablet

Dosage

- Child over 3 years: 5 to 10 mg once daily
- Adult: 10 to 15 mg once daily

Duration

- Prevention of constipation in patients taking opioids: start bisacodyl when analgesic treatment continues more than 48 hours. Tablets must be taken daily, at night (onset of effect within 6 to 12 hours after administration), until the end of the opioid treatment. Regular follow up (frequency/consistency of stools) is essential in order to adjust dosage correctly.
- Treatment of constipation: until the patient passes stools, maximum 7 days.

Contra-indications, adverse effects, precautions

- Do not administer to patients with Crohn's disease, ulcerative colitis, intestinal obstruction, undiagnosed abdominal pain and dehydration.
- May cause: diarrhoea, abdominal cramps, hypokalaemia.
- In the event of diarrhoea: exclude a faecal impaction or intestinal obstruction, stop treatment for 24 hours and then start again with a half dose.
- In the event of abdominal cramps: reduce or divide the daily dose. Stop treatment if pain continues.
- Do not combine with drugs that induce *torsades de pointe* (halofantrine, erythromycin IV, pentamidine, etc.).
- Closely monitor patients taking drugs that induce hypokalaemia (furosemide, amphotericin B, corticosteroids, etc.) or cardiac glycosides.
- **Pregnancy and breast-feeding**: avoid; for routine prevention of constipation due to opioids, use lactulose.

Remarks

- To prevent constipation in patients taking opioids, use lactulose if the patient’s stools are solid; use bisacodyl if the patient’s stools are soft.
- In children from 6 months to 3 years, do not use the oral route. Use only 5 mg paediatric suppositories (one suppository daily).
- Swallow tablets whole; do not crush or chew.
- Bisacodyl is equivalent to senna, the representative example of laxative stimulants in the WHO list of essential medicines.
- The treatment must be accompanied by dietary measures (plenty of fluids and fibre).

Storage

Below 25 °C

BISOPROLOL oral

Prescription under medical supervision

Therapeutic action

- Cardioselective beta-blocker

Indications

- Hypertension, treatment of chronic stable angina pectoris
- Chronic stable heart failure in combination with a converting enzyme inhibitor (enalapril)

Forms and strengths

- 2.5 mg breakable tablet
- 10 mg breakable in ¼ tablet

Dosage

Hypertension, angina pectoris

- Adult: 5 to 10 mg once daily, preferably in the morning (max. 20 mg daily)
  In patients with renal or hepatic impairment: start with 2.5 mg once daily then increase, if necessary, according to clinical response (max. 10 mg daily)

Heart failure

- Adult: start with 1.25 mg once daily and increase according to the table below, as long as the drug is well tolerated (heart rate, blood pressure, signs of worsening heart failure)

Weeks	Daily dose	Tablet(s)
Week 1	1.25 mg once daily	2.5 mg tab: ½ tab daily
Week 2	2.5 mg once daily	2.5 mg tab: 1 tab daily or 10 mg tab: ¼ tab daily
Week 3	3.75 mg once daily	2.5 mg tab: 1½ tab daily
Week 4 to 8	5 mg once daily	10 mg tab: ½ tab daily
Week 9 to 12	7.5 mg once daily	2.5 mg tab: 1 tab daily + 10 mg tab: ½ tab daily or 10 mg tab: ¾ tab daily
From week 13	10 mg once daily (max. 10 mg daily)	10 mg tab: 1 tab daily

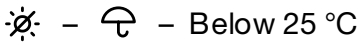
Duration

- According to clinical response. Do not stop treatment abruptly, decrease doses gradually.

Contra-indications, adverse effects, precautions

- Do not administer to patients with asthma, chronic obstructive bronchopneumonia, acute heart failure, severe hypotension, bradycardia < 50/minute, atrio-ventricular heart blocks, Raynaud's syndrome.
- May cause:
  - bradycardia, hypotension, worsening of heart failure (reduce dose);
  - bronchospasm in patients with an obstructive respiratory disease;
  - hypoglycaemia, gastrointestinal disturbances, headache, fatigue, muscle weakness, erectile dysfunction.
- Administer with caution to patients with diabetes (risk of hypoglycaemia).
- In the event of anaphylactic shock, risk of resistance to epinephrine.
- Avoid or monitor combination with:
  - mefloquine, digoxin, amiodarone, diltiazem, verapamil (risk of bradycardia);
  - tricyclic antidepressants, antipsychotics, anti-hypertensive drugs (risk of hypotension).
- **Pregnancy and breast-feeding**: use labetalol, particularly for the management of hypertension in pregnancy.

Storage

 – Below 25 °C

BUDESONIDE/FORMOTEROL metered dose inhaler

Last updated: June 2023

Prescription under medical supervision

Therapeutic action

- Combination of inhaled corticosteroid (budesonide) and long-acting beta-2 agonist bronchodilator (formoterol)

Indications

- Long term treatment of chronic asthma (maintenance and symptomatic treatment)

Forms and strengths

- Solution or suspension for inhalation in pressurised metered dose inhaler, delivering 80 micrograms of budesonide and 4.5 micrograms of formoterol fumarate/puff

Dosage

Start at the step most appropriate to initial severity.

Moderate persistent asthma

- Child 6 to 11 years: 1 puff once daily (very low dose) and 1 puff when symptomatic (max. 8 puffs daily)

Severe persistent asthma

- Child 6 to 11 years: 1 puff 2 times daily (low dose) and 1 puff when symptomatic (max. 8 puffs daily)

Duration

- As long as required. Re-evaluate after 2 to 3 months if doses are adequate or need to be increased or decreased.

Administration technique

- Shake the inhaler. Remove the mouthpiece cover.
- Breathe in and breathe out as completely as possible. Place the lips tightly around the mouthpiece. Inhale deeply while activating the inhaler. Hold breath 10 seconds before exhaling.

- Hand-breath co-ordination is difficult in children. Use a spacer to facilitate administration and improve the efficacy of treatment.

Contra-indications, adverse effects, precautions

- Do not administer to children with untreated respiratory infection.
- May cause:
  - throat irritation, hoarseness and cough at the beginning of treatment; oro-pharyngeal candidiasis; adrenal suppression with high doses for prolonged periods;
  - headache, tremor and tachycardia, hyperglycaemia; hypokalaemia (after high doses).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Relief of symptoms may require several days or weeks of continuous therapy.
- Clean the mouthpiece before and after each use.
- Do not pierce or incinerate used aerosol containers (risk of explosion).
- Budesonide/formoterol may also be available as a dry powder inhaler. Doses are the same as for metered dose inhaler.
- Manufacturers may express the content per inhaler actuation in "metered dose" or "delivered dose".

Storage

– Below 25 °C

BUTYLSCOPOLAMINE oral

See HYOSCINE BUTYLBROMIDE oral

CABERGOLINE oral

Prescription under medical supervision

Therapeutic action

- Long-lasting lactation inhibitor

Indications

- Inhibition of lactation or suppression of established lactation in case of intrauterine foetal death or neonatal death

Forms and strengths

- 0.5 mg scored tablet

Dosage and duration

Lactation inhibition

- 1 mg single dose on the first day post-partum

Lactation suppression

- 0.25 mg every 12 hours for 2 days

Contra-indications, adverse effects, precautions

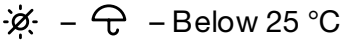
- Do not administer to patients with postpartum hypertension or psychosis, preeclampsia, valvulopathy, and history of pulmonary, retroperitoneal or pericardial fibrosis.
- May cause: hypotension, valvulopathy, dizziness, headache, nausea, drowsiness, hallu cinations.
- Do not combine with chlorpromazine, haloperidol, metoclopramide, promethazine (effect of cabergoline antagonised), methylergometrine (risk of vasoconstriction and hypertensive crisis), and macrolides (effect of cabergoline increased).
- **Pregnancy**: CONTRA-INDICATED

Remarks

- The use of cabergoline is not recommended to inhibit lactation in women who chose to not breastfeed: it is not justified to expose women to the adverse effects of cabergoline, lactation will stop spontaneously.
- Cabergoline is not included in the WHO list of essential medicines.

- Cabergoline is a dopamine agonist also used in the treatment of Parkinson’s disease.

Storage

 – Below 25 °C

CALCIUM FOLINATE = FOLINIC acid oral

Prescription under medical supervision

Therapeutic action

- Antidote to folate antagonists

Indications

- Prevention of haemotological toxicity of pyrimethamine when pyrimethamine is used as prophylaxis for, or in the treatment of toxoplasmosis or isosporiasis in immunodeficient patients

Forms and strengths

- 15 mg tablet

Also comes in 5 mg and 25 mg capsules.

Dosage

When pyrimethamine is used as primary or secondary prophylaxis for toxoplasmosis

- Adult: 25 to 30 mg once weekly

During treatment of toxoplasmosis

- Adult: 10 to 25 mg once daily

During treatment of isosporiasis

- Adult: 5 to 15 mg once daily

Duration

- For the duration of the pyrimethamine treatment

Contra-indications, adverse effects, precautions

- **Pregnancy**: NO CONTRA-INDICATION
- **Breast-feeding**: NO CONTRA-INDICATION

Remarks

- Folic acid cannot be used as an alternative to folinic acid for the treatment of toxoplasmosis: folic acid reduces the antiprotozoal activity of pyrimethamine.
- Calcium folinate is also called calcium leucovorin.

Storage

 - below 25 °C

CARBAMAZEPINE = CBZ oral

Last updated: October 2024

Prescription under medical supervision

Due to the numerous and potentially severe adverse effects of CBZ, patients should be kept under close surveillance.

Therapeutic action

- Antiseizure (antiepileptic), mood stabilizer

Indications

- Epilepsy generalised tonic-clonic seizures and focal (partial) seizures
- Neuropathic pain (alone or combined with amitriptyline)
- Prevention of recurrence of bipolar disorder

Forms and strengths

- 200 mg tablet
- 100 mg/5 ml oral solution, to be administered using a measuring device (oral syringe, measuring spoon, or cup with graduations).

Dosage

Start with a low dose then increase gradually based on patient's response and tolerance.

Epilepsy

- Child 1 month to 11 years: start with 5 mg/kg once daily or 2.5 mg/kg 2 times daily; increase the daily dose by increments of 2.5 to 5 mg/kg every 3 to 7 days, up to 5 mg/kg 2 or 3 times daily if necessary (max. 20 mg/kg daily).
- Child 12 years and over: start with 100 to 200 mg once daily or 50 to 100 mg 2 times daily; increase the daily dose by increments of 100 to 200 mg every week, up to 200 to 400 mg 2 or 3 times daily if necessary (max. 1800 mg daily).
- Adult: start with 100 to 200 mg once daily or 50 to 100 mg 2 times daily; increase the daily dose by increments of 100 to 200 mg every week, up to 400 mg 2 or 3 times daily if necessary (max. 2 g daily).

Neuropathic pain

- Adult: start with 200 mg once daily at bedtime for one week, then 200 mg 2 times daily for one week, then 200 mg 3 times daily

Prevention of recurrence of bipolar disorder

- Adult: start with 100 mg 2 times daily; increase the daily dose by increments of 200 mg every week, up to 200 mg 2 or 3 times daily if necessary (max. 1200 mg daily)

Duration

- Epilepsy, prevention of recurrence of bipolar disorder: as long as required. Do not stop treatment abruptly, even if changing to another medication.
- Neuropathic pain: continue several months after pain relief is obtained, then attempt to stop treatment.

Contra-indications, adverse effects, precautions

- Do not administer to patients with atrioventricular block, history of bone marrow depression.
- Administer with caution to patients with glaucoma, urinary retention, hepatic or renal impairment, heart failure or blood disorders and to older patients.
- May cause:
  - headache, dizziness, confusional state and agitation in older patients; drowsiness (caution when driving or operating machinery);
  - gastrointestinal and visual disturbances, vitamin D deficiency (consider supplementation), osteoporosis, leucopenia (often transitory), rash;
  - rarely: haematologic disorders (agranulocytosis, anaemia, bone marrow depression), hypersensitivity reactions (including severe cutaneous reactions such as Stevens-Johnson, Lyell and DRESS syndromes), pancreatitis, hepatitis, cardiac conduction defect. In these cases, stop treatment. Early symptoms such as fever, rash, mouth ulcers and bleeding require immediate medical attention.
    Hypersensitivity reactions to CBZ are more common in individuals from China and Southeast Asia.
- If possible, perform at least FBC, liver enzymes and serum sodium levels, at baseline then regularly during treatment.
- Avoid or monitor the combination with:
  - rifampicin, mefloquine (reduced effect of CBZ);
  - erythromycin, isoniazid, fluoxetine, omeprazole, protease inhibitors, fluconazole, valproic acid, etc. (increased CBZ toxicity);
  - drugs containing alcohol, benzodiazepines, opioid analgesics, antipsychotics, first-generation antihistamines (hydroxyzine, promethazine), antidepressants, other antiseizure medications, etc. (increased sedation).
- CBZ may reduce the effect of many drugs:
  - diazepam, midazolam, oral anticoagulants, corticosteroids, tricyclic antidepressants, antipsychotics, protease inhibitors, rifampicin, itraconazole, doxycycline, tramadol, etc. Adjust dosage if necessary.

    - implants and oral contraceptives: use injectable medroxyprogesterone or an intrauterine device.
- Avoid alcohol during treatment (increased risk of adverse effects).
- **Pregnancy**:
    - Epilepsy and bipolar disorder: avoid (risk of neural tube defects, cardiac and facial malformations, hypospadias).
        - In case of pregnancy during treatment of epilepsy, prefer a safer drug (levetiracetam). If CBZ is the only option, provide counselling about the risks to the child; use the lowest effective dose.
        - Administer folic acid high dose (5 mg daily) during the first trimester. Start as soon as possible, including during the preconception period in case of planned pregnancy.
        - CBZ plasma concentrations may decrease during pregnancy. Monitor clinical response; increase dose if needed then resume the usual dose after delivery. Monitor the child for a few days (risk of withdrawal symptoms).
    - Neuropathic pain: not recommended
- **Breast-feeding**: administer with caution (excreted in milk); reduce the dose if increased during pregnancy and monitor the child (risk of drowsiness, poor feeding and transient hepatic impairment).

Remarks

- CBZ is not recommended for myoclonic, atonic and absence seizures (risk of worsening symptoms).

Storage

– – Below 25 °C

CEFALEXIN oral

Last updated: January 2024

Prescription under medical supervision

Therapeutic action

- First-generation cephalosporin antibacterial

Indications

- Skin infections due to staphylococci and/or streptococci: impetigo, furuncle, erysipelas and superficial cellulitis

Forms and strengths

- 250 mg capsule
- 125 mg/5 ml powder for oral suspension,:
  - to be reconstituted with filtered water
  - to be administered using a measuring device (oral syringe, measuring spoon, or cup with graduations)

Dosage

- Neonate under 7 days: 25 mg/kg 2 times daily
- Neonate 7 to 28 days: 25 mg/kg 3 times daily

The exact dose should be calculated according to the newborn's weight.

- Child 1 month to under 12 years: 12.5 to 25 mg/kg 2 times daily
- Child 12 years and over and adult: 1 g 2 times daily

Age	Weight	Daily dose	125 mg/5 ml oral susp.	250 mg capsule
1 to < 5 months	4 to < 7 kg	125 mg x 2	5 ml x 2	–
5 months to < 3 years	7 to < 15 kg	187.5 mg x 2	7.5 ml x 2	–
3 to < 6 years	15 to < 20 kg	250 mg x 2	10 ml x 2	–
6 to < 12 years	20 to < 40 kg	500 mg x 2	–	2 cap x 2
≥ 12 years and adult	≥ 40 kg	1 g x 2	–	4 cap x 2

Duration

- Impetigo, furuncle: 7 days
- Erysipelas, cellulitis: 7 to 10 days

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to cephalosporin.
- Administer with caution to patients with allergy to penicillin (cross-sensitivity may occur) and severe renal impairment (reduce the dose).
- May cause: gastrointestinal disturbances (particularly diarrhoea), allergic reactions (skin eruption, fever, pruritus).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Take preferably between meals.

Storage

– – Below 25 °C
For the oral suspension (powder or reconstituted suspension): follow manufacturer's instructions.

CEFIXIME oral

Last updated: September 2022

Prescription under medical supervision

Therapeutic action

- Third-generation cephalosporin antibacterial

Indications

- Typhoid fever
- Acute cystitis in girls over 2 years, pregnant women and lactating women
- Acute pyelonephritis in adults
- Cervicitis and urethritis due to *Neisseria gonorrhoeae* (in combination with a treatment for chlamydia)
- Second-line treatment of shigellosis

Forms and strengths

- 200 mg tablet
- 100 mg/5 ml powder for oral suspension, to be reconstituted with filtered water

Dosage

Typhoid fever

- Child: 10 mg/kg (max. 200 mg) 2 times daily
- Adult: 200 mg 2 times daily

Acute cystitis in girls over 2 years and shigellosis

- Child: 8 mg/kg (max. 400 mg) once daily
- Adult: 400 mg once daily

Acute cystitis in pregnant and lactating women, acute pyelonephritis in adult

- 200 mg 2 times daily

Cervicitis and urethritis due to *Neisseria gonorrhoeae*

- Child: 8 mg/kg (max. 400 mg) single dose
- Adult: 400 mg single dose

Duration

- Typhoid fever and acute pyelonephritis: 10 to 14 days
- Acute cystitis: 3 days for girls and 5 days for adults
- Shigellosis: 5 days

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to cephalosporins.
- Administer with caution to penicillin-allergic patients (cross-sensitivity may occur) and in patients with severe renal impairment (reduce dosage).
- May cause: gastrointestinal disturbances (especially diarrhoea), headache, dizziness, allergic reactions (rash, pruritus, fever). In the event of allergic reaction, stop treatment immediately.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Storage

– – Below 25 °C

For the oral suspension (powder or reconstituted suspension): follow manufacturer's instructions.

Activated CHARCOAL oral

Therapeutic action

- Adsorbent

Indications

- Poisoning by drugs, in particular: paracetamol, aspirin, ibuprofen, chloroquine, quinine, dapsone, phenobarbital, carbamazepine, digoxin
- Poisoning by other toxic substances: certain plants (datura, lantana, etc.), certain domestic, industrial or agricultural chemicals

Forms and strengths

- Granules for oral suspension, in 50 g bottle, to be reconstituted with 250 ml of water

Dosage and duration

The dose of charcoal has to be administered as soon as possible (preferably within one hour after ingestion of the toxic compound) and swallowed within a limited period, e.g., in 15 to 20 minutes:

- Child under 1 year: 1 g per kg
- Child from 1 to 12 years: 25 g
- Child over 12 years and adult: 50 g

If the dose of charcoal is not entirely swallowed or the toxic substance was ingested in large quantities or over 2 hours beforehand: follow the treatment for 24 hours after poisoning, by administering half or a quarter of the initial dose of charcoal every 4 or 6 hours, depending on the tolerance and cooperation of the patient.

Contra-indications, adverse effects, precautions

- Do not administer in case of poisoning by caustic or foaming products, or hydrocarbons: risk of aggravation of lesions during vomiting (caustic products), aspiration pneumonia (foaming products, hydrocarbons), and airway obstruction due to foaming when vomiting (foaming products).
- The charcoal is ineffective in poisoning by: alcohols (ethanol, ethylene glycol, methanol, isopropyl alcohol, etc.), organophosphorus and carbamate insecticides, metals (lithium, iron salts, etc.).
- May cause: black colouring of stools (normal), constipation; vomiting in the event of rapid administration of large quantities.
- Do not administer charcoal simultaneously with other drugs by oral route. Administer 2 hours apart.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- To facilitate the administration of charcoal and avoid vomiting in children, mask the taste (mix with fruit juice, syrup) and administer the suspension slowly in small quantities.
- If there is a specific antidote to the drug ingested, use it in complement.

Storage

 - Below 25 °C

CHLOROQUINE sulfate or phosphate oral

Last updated: December 2023

Given that resistance of *P. falciparum* to chloroquine is widespread, this drug must not be used for the treatment of falciparum malaria.

Therapeutic action

- Antimalarial

Indications

- Treatment of malaria due to:
  - chloroquine-sensitive *P. vivax*
  - *P. ovale, P. malariae and P. knowlesi*

Forms and strengths

- 155 mg chloroquine base tablet

The dose written on the labels is sometimes in chloroquine salt and sometimes in chloroquine base which leads to frequent confusion. WHO recommends prescriptions and labels in chloroquine base. 155 mg base = approx. 200 mg sulfate = approx. 250 mg phosphate or diphosphate.

Dosage and duration

- Child and adult:
  - Day 1: 10 mg base/kg
  - Day 2: 10 mg base/kg
  - Day 3: 5 mg base/kg

Contra-indications, adverse effects, precautions

- Do not administer to patients with retinopathy.
- May cause: gastrointestinal disturbances, headache, transitory pruritus (lasting 72 hours), allergic reactions (urticaria, angioedema), visual disturbances.
- If the patient vomits within 30 minutes after administration: re-administer the full dose. If the patient vomits between 30 minutes and 1 hour after administration, re-administer half of the dose.
- There is a narrow margin between the therapeutic and toxic dose. Doses of 20 mg base/kg in children and 2 g base in adults are considered toxic.
- Avoid combination with drugs that prolong QT interval: amiodarone, other antimalarials, antipsychotics, fluconazole, fluoroquinolones, hydroxyzine, macrolides, ondansetron,

etc.

- Do not administer simultaneously with antacids (aluminium/magnesium hydroxide, etc.) or calcium carbonate: administer 2 hours apart.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Also comes in 100 mg chloroquine base tablet and 50 mg chloroquine base/5 ml syrup.

Storage

– Below 25 °C

CHLORPROMAZINE oral

Last updated: February 2024

Prescription under medical supervision

Due to the numerous and potentially severe adverse effects of chlorpromazine, patients should be kept under close surveillance.

Therapeutic action

- Sedative antipsychotic

Indications

- Acute or chronic psychosis, in the event of intolerance or treatment failure with other antipsychotics (preferably use haloperidol for this indication)

Forms and strengths

- 25 mg and 100 mg tablets

Dosage

- Adult: 25 to 50 mg once daily in the evening for one week. Increase gradually to 50 mg in the morning and 100 mg in the evening; if insufficient, administer 100 mg 3 times daily.
- Reduce the dose by half in older patients.
- Use the lowest effective dose, especially in the event of prolonged treatment.

Duration

- Acute psychosis: at least 3 months
- Chronic psychosis: at least one year

Discontinue treatment gradually (over 4 weeks). If signs of relapse occur, increase the dose then decrease it more gradually.

Contra-indications, adverse effects, precautions

- Do not administer to patients with cardiac disorders (heart failure, recent myocardial infarction, conduction disorders, bradycardia, etc.), dementia (e.g. Alzheimer's disease), closed-angle glaucoma, prostate disorders, Parkinson's disease and history of neuroleptic malignant syndrome.

- Administer with caution and carefully monitor use in older patients and patients with hypokalaemia, hypotension, renal or hepatic impairment, history of seizures.
- May cause:
  - drowsiness (caution when driving/operating machinery), dyskinesia, extrapyramidal symptoms, weight gain, orthostatic hypotension, hyperprolactinaemia, anticholinergic effects (dry mouth, blurred vision, urinary retention, constipation, tachycardia);
  - hyperglycaemia, photosensitivity, impaired thermoregulation; agranulocytosis, neuroleptic malignant syndrome (unexplained hyperthermia with neuromuscular disorders), rare but requiring immediate treatment discontinuation.
- In case of extrapyramidal symptoms, try reducing the dose of chlorpromazine or, if the extrapyramidal symptoms are severe, add biperiden or trihexyphenidyl.
- Avoid or monitor combination with:
  - central nervous system depressants (opioid analgesics, sedatives, H1 antihistamines, etc.); drugs with anticholinergic effects (amitriptyline, atropine, promethazine, etc.), antidiabetics, lithium;
  - antihypertensive drugs (risk of hypotension); drugs that prolong the QT interval (amiodarone, chloroquine, erythromycin, fluconazole, mefloquine, pentamidine, quinine, etc.).
- Avoid alcohol during treatment (increased risk of adverse effects).
- **Pregnancy**: re-evaluate whether the treatment is still necessary; if it is continued, use the lowest effective dose. Observe the neonate the first few days (risk of agitation, tremors, hypertonia/hypotonia, respiratory difficulties, sleeping disorders, etc.) if the mother was under treatment in the 3rd trimester. If treatment starts during pregnancy, preferably use haloperidol.
- **Breast-feeding**: if absolutely necessary, use the lowest effective dose.

Remarks

- Do not crush tablets (risk of contact dermatitis).

Storage

– – Below 25 °C

CIMETIDINE oral

Prescription under medical supervision

Therapeutic action

- Antiulcer agent (histamine H2-receptor antagonist)

Indications

- Prophylaxis of acid pulmonary aspiration syndrome in anaesthesia:
  - in patients with a full stomach (emergency caesarean section, etc.)
  - when a difficult intubation is expected

Forms and strengths

- 200 mg effervescent tablet
  Also comes 800 mg effervescent tablet.

Dosage and duration

- Adult: 200 to 400 mg single dose, if possible one hour before anaesthetic induction

Contra-indications, adverse effects, precautions

- May cause: diarrhoea, headache, dizziness, skin rash, fever.
- Do not administer with an antacid (aluminium hydroxide, etc.).

Remarks

- Effervescent cimetidine can be replaced by effervescent ranitidine, another H2-receptor antagonist, as a single dose of 150 mg.
- The onset of acid inhibition with cimetidine non-effervescent tablets (200 mg, 400 mg and 800 mg film coated tablets) or ranitidine non-effervescent tablets (150 mg and 300 mg film coated tablets) occurs 30 minutes after administration. The effervescent tablets containing sodium citrate have a more rapid onset of action, and can thus be used for emergency surgery.
- Omeprazole, another antiulcer agent (proton pump inhibitor), is not compatible with emergency situations as it must be administered at least 4 hours before surgery.
- Cimetidine in film coated tablets is also used in the treatment of gastro-oesophageal reflux and peptic ulcer. Use by preference ranitidine or omeprazole for these indications.

Storage

- - Below 25 °C

CIPROFLOXACIN oral

Last updated: September 2023

Prescription under medical supervision

Therapeutic action

- Fluoroquinolone antibacterial

Indications

- Shigellosis, uncomplicated cutaneous anthrax
- Uncomplicated acute pyelonephritis, acute prostatitis, acute cystitis in non-pregnant women in the event of previous treatment failure
- Plague, alone or in combination with other antibacterials
- Completion treatment following therapy with parenteral ciprofloxacin

Forms and strengths

- 250 mg and 500 mg tablets
- 250 mg/5 ml granules and solvent for oral suspension

Dosage

Shigellosis, uncomplicated cutaneous anthrax

- Child 1 month and over: 15 mg/kg (max. 500 mg) 2 times daily
- Adult: 500 mg 2 times daily

Uncomplicated acute pyelonephritis, acute prostatitis, acute cystitis

- Adult: 500 mg 2 times daily

Age	Weight	250 mg/5 ml susp.	250 mg tablet	500 mg tablet
1 to < 3 months	4 to < 6 kg	1.5 ml x 2	–	–
3 to < 7 months	6 to < 8 kg	2 ml x 2	–	–
7 months to < 2 years	8 to < 12 kg	2.5 ml x 2	–	–
2 to < 3 years	12 to < 15 kg	4 ml x 2	–	–
3 to < 8 years	15 to < 26 kg	5 ml x 2	1 tab x 2	–
8 to < 11 years	26 to < 36 kg	8 ml x 2	–	–
≥ 11 years and adult	≥ 36 kg	–	2 tab x 2	1 tab x 2

Plague

- Child 1 month and over: 15 mg/kg 2 to 3 times daily (max. 750 mg 2 times daily or 500 mg 3 times daily)
- Adult: 750 mg 2 times daily (500 mg 3 times daily in pregnant women)

Duration

- Shigellosis, cystitis: 3 days
- Cutaneous anthrax: 7 to 14 days depending on severity
- Pyelonephritis, plague: 10 to 14 days
- Prostatitis: 14 days (if signs and symptoms are ongoing after 14 days, continue the same treatment for a further 14 days)

Contra-indications, adverse effects, precautions

- Do not administer to patients with history of allergy or serious adverse effects due to a fluoroquinolone, e.g. tendinitis, tendon rupture.
- Administer with caution to epileptic patients (risk of seizures), older patients and patients with hypertension and heart disorders.
- Reduce the dose by half in patients with renal impairment.
- May cause: gastrointestinal disturbances, neurological disorders (headache, dizziness, confusion, hallucinations, seizures), allergic reaction, peripheral neuropathy, photosensitivity (protect skin from sun exposure), joint and muscle pain, tendinitis (especially Achilles tendinitis), QT interval prolongation, hypo/hyperglycaemia, haemolytic anaemia in patients with G6PD deficiency. In the event of allergic reaction, severe neurological disorders, peripheral neuropathy, joint or muscle pain or tendinitis, stop treatment immediately.

- Avoid combination with drugs that prolong the QT interval (amiodarone, chloroquine, co-artemether, fluconazole, haloperidol, mefloquine, ondansetron, pentamidine, quinine, etc.).
- Monitor patients taking glibenclamide (risk of hypoglycaemia), NSAIDs (risk of seizure) and corticosteroids (risk of tendinitis).
- Do not administer simultaneously with:
  - antacids (aluminium or magnesium hydroxide, etc.): take ciprofloxacin 2 hours before or 4 hours after antacids;
  - iron salts, calcium, zinc sulfate: take 2 hours apart.
- Drink a lot of liquid during treatment (risk of crystalluria).
- **Pregnancy**: reserved for severe infections, when there is no therapeutic alternative.
- **Breast-feeding**: no contra-indication

Remarks

- Ciprofloxacin is also used:
  - as first-line treatment of typhoid fever in some countries, however fluoroquinolone resistance is endemic in Asia and is increasing in several parts of the world;
  - as an alternative to first-line treatment for septicaemia (child: 15 to 20 mg/kg (max. 750 mg) 2 times daily; adult: 500 to 750 mg 2 times daily), in combination with other antibacterials.

Storage

– – Below 25 °C

CLARITHROMYCIN oral

Prescription under medical supervision

Therapeutic action

- Macrolide antibacterial

Indications

- Eradication of *Helicobacter pylori*, in combination with omeprazole and amoxicillin

Forms and strengths

- 500 mg tablet

Dosage and duration

- Adult: 500 mg 2 times daily for 7 days

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to clarithromycin or another macrolide.
- May cause:
  - headache, taste disturbances, insomnia, gastrointestinal disturbances, reversible hearing disorders;
  - heart rhythm disorders (QT prolongation);
  - hypersensitivity reactions sometimes severe (in this event, stop treatment immediately).
- Administer with caution and reduce dosage by half in patients with severe renal impairment.
- Avoid combination with drugs that prolong the QT interval: amiodarone, antimalarials, antipsychotics, efavirenz, fluconazole, fluoroquinolones, hydroxyzine, ondansetron, etc.
- Administer with caution and monitor combination with: oral antidiabetics, atorvastatin, carbamazepine, daclatasvir, digoxin, phenytoin, rifabutin (increased plasma concentrations of these drugs).
- **Pregnancy**: avoid (safety not established)
- **Breast-feeding**: no contra-indication

Remarks

- Clarithromycin is also used for the treatment of non-tuberculous mycobacterial infections.

Storage

Below 25 °C

CLINDAMYCIN oral

Last update: September 2022

Prescription under medical supervision

Therapeutic action

- Lincosamide antibacterial

Indications

- Severe staphylococcal and/or streptococcal infections (e.g. erysipelas, cellulitis, pneumonia):
  - in betalactam-allergic patients
  - in infections due to methicillin-resistant *Staphylococcus aureus*
- Uncomplicated cutaneous anthrax
- Completion treatment following therapy with parenteral clindamycin

Forms and strengths

- 150 mg and 300 mg capsules

Dosage

- Child: 10 to 13 mg/kg (max. 600 mg) 3 times daily
- Adult: 600 mg 3 times daily

Age	Weight	150 mg capsule	300 mg capsule
1 to < 6 years	10 to < 20 kg	1 cap x 3	–
6 to < 9 years	20 to < 30 kg	–	1 cap x 3
9 to < 13 years	30 to < 45 kg	3 cap x 3	–
≥ 13 years and adult	≥ 45 kg	–	2 cap x 3

Duration

- Erysipelas, cellulitis: 7 to 10 days

- Cutaneous anthrax: 7 to 14 days depending on severity
- Pneumonia: 10 to 14 days

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to lincosamides or history of pseudomembranous colitis.
- Reduce dosage in patients with hepatic impairment.
- May cause: pseudomembranous colitis, rash, jaundice, severe allergic reactions. In these cases, stop treatment.
- In the event of pseudomembranous colitis, treat for *Clostridium difficile* infection (oral metronidazole).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: use only when there is no therapeutic alternative. Check infant's stools (risk of pseudomembranous colitis).

Remarks

- Take capsules with a full glass of water (risk of esophageal irritation).
- If needed, open the capsule and mix the content into a spoon with food or fruit juice to mask the unpleasant taste.
- Clindamycin is use in combination with quinine for the treatment of malaria in pregnant women (10 mg/kg 2 times daily for 7 days).

Storage

– – Below 25 °C

CLOXACILLIN oral

Prescription under medical supervision

Therapeutic action

- Penicillin antibacterial

Indications

- Impetigo (preferably use cefalexin for this indication)

Forms and strengths

- 250 mg and 500 mg capsules

Dosage and duration

- Child over 10 years: 15 mg/kg 3 times daily for 7 days (max. 3 g daily)
- Adult: 1 g 3 times daily for 7 days

Age	Weight	250 mg capsule	500 mg capsule
10 to < 13 years	30 to < 45 kg	2 cap x 3	1 cap x 3
13 to < 15 years	45 to < 55 kg	3 cap x 3	–
Adult	≥ 55 kg	4 cap x 3	2 cap x 3

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to penicillin.
- Administer with caution to patients with allergy to cephalosporins (cross-sensitivity may occur) or severe renal impairment (reduce the dosage).
- May cause: gastrointestinal disturbances (particularly diarrhoea), allergic reactions sometimes severe; rarely, haematological disorders.
- Do not combine with methotrexate (increased methotrexate toxicity).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Take between meals.
- Dicloxacillin, flucloxacillin and oxacillin are antibacterials used for the same indication.
- Also comes in powder for oral solution 125 mg/5 ml and 1 g capsules.

Storage

 - Below 25 °C

CO-AMOXICLAV oral

See AMOXICILLIN/CLAVULANIC acid oral

CO-ARTEMETHER oral

See ARTEMETHER/LUMEFANTRINE = AL oral

CODEINE oral

Last updated: October 2024

Prescription under medical supervision

- Use for short term treatment (risk of dependence and tolerance).
- Due to the numerous and potentially severe adverse effects of codeine, patients should be kept under close surveillance.

Therapeutic action

- Opioid analgesic

Indications

- Moderate pain, alone or in combination with a non-opioid analgesic

Forms and strengths

- 30 mg codeine phosphate tablet

Dosage

- Child over 12 years and adult: 30 to 60 mg every 4 to 6 hours; maximum 240 mg daily

Duration

- According to clinical evolution; as short as possible.

Contra-indications, adverse effects, precautions

- Do not administer to patients with acute respiratory depression or asthma attack.
- May cause:
  - constipation, nausea, vomiting, drowsiness, dizziness;
  - rarely: respiratory depression, allergic reactions, dependence, withdrawal syndrome.
- Do not combine with:
  - other agonist opioids such as morphine (increased risk of respiratory depression);
  - agonist-antagonist opioids such as buprenorphine, nalbuphine, pentazocine (competitive action).
- Reduce dosage in patients with renal or hepatic impairment and in elderly patients.

- Management of respiratory depression includes assisted ventilation and/or administration of naloxone.
- **Pregnancy**: no contra-indication. The newborn infant may develop withdrawal symptoms, respiratory depression and drowsiness in the event of prolonged administration of large doses at the end of the 3rd trimester. In this event, closely monitor the newborn infant.
- **Breast-feeding**: use with caution, for a short period (2-3 days), at the lowest effective dose. Monitor the mother and the infant: in the event of excessive drowsiness, stop treatment.

Remarks

- Administer an appropriate laxative (e.g. lactulose) if analgesic treatment continues more than 48 hours.
- In some countries, codeine is on the list of narcotics: follow national regulations.

Storage

- Below 25 °C

COLECALCIFEROL = VITAMIN D3 oral

Prescription under medical supervision

Therapeutic action

- Vitamin necessary for the intestinal absorption of calcium and phosphate and for normal bone calcification

Indications

- Prevention and treatment of vitamin D deficiencies (rickets, osteomalacia)

Forms and strengths

- 10 000 IU/ml oral solution, in 10 ml vial
- 50 000 IU/ml oral solution, in 2 ml ampoule (100 000 IU)

Dosage and duration

Colecalciferol and ergocalciferol are used at the same doses:

Prevention of vitamin D deficiencies

- Term neonate: 400 to 800 IU once daily until 6 months of age
- Term neonate in contexts of high prevalence of vitamin D deficiency: 600 to 1200 IU once daily until 6 months of age
- Pregnant woman: 100 000 IU single dose (one 2 ml ampoule) in the 6^{th} or 7^{th} month of pregnancy

Treatment of vitamin D deficiencies

- Child < 3 months: 2 000 IU once daily for 3 months
- Child from 3 to < 12 months: 2 000 IU once daily for 3 months or 50 000 IU single dose
- Child from 12 months to < 12 years: 3 000 to 6 000 IU once daily for 3 months or 150 000 IU single dose
- Child ≥ 12 years and adult: 6 000 IU once daily for 3 months or 300 000 IU single dose

Then continue with preventive dose, as long as the situation requires:

- Child < 12 months: 400 IU once daily
- Child ≥ 12 months and adult: 600 IU once daily

Do not exceed 600 000 IU yearly.

Contra-indications, adverse effects, precautions

- Do not administer to patients with hypercalcaemia, hypercalciuria, calcic lithiasis, severe renal impairment.
- Stop treatment if signs of overdosage occur: headache, anorexia, nausea, vomiting, increased thirst, polyuria.
- Avoid combination with thiazide diuretics, e.g. hydrochlorothiazide (decreased urinary calcium excretion).
- Monitor, if possible, calcaemia and calciuria during curative treatment.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication. When curative treatment is being administered to the mother, do not give vitamin D to the child.

Remarks

- The number of IU per drop of oral solution varies according to manufacturers. Check instructions for use.
- Preferably use the vials of oral solution that, once opened, keep for 6 months.
- During the first 3 months of curative treatment, administer a supplement of 500 mg of calcium once daily.

Storage

– Below 25 °C

CO-TRIMOXAZOLE = SULFAMETHOXAZOLE (SMX)/TRIMETHOPRIM (TMP) oral

Last updated: December 2024

Prescription under medical supervision

Therapeutic action

- Combination of two antibacterials: a sulfonamide (sulfamethoxazole) and a diaminopyrimidine antifolate (trimethoprim)

Indications

- Treatment of cerebral toxoplasmosis, pneumocystosis, isosporiasis, cyclosporiasis and brucellosis
- Prophylaxis of pneumocystosis, toxoplasmosis and isosporiasis
- Second-line treatment of pertussis
- Uncomplicated typhoid fever if the strain is susceptible (recent drug susceptibility test)

Forms and strengths

- 400 mg SMX/80 mg TMP and 800 mg SMX/160 mg TMP tablets
- 100 mg SMX/20 mg TMP dispersible tablet

Dosage

Treatment of cerebral toxoplasmosis

- Child 6 weeks and over and adult: 25 mg SMX/5 mg TMP/kg 2 times daily

Treatment of pneumocystosis

- Child 4 weeks and over: 50 mg SMX/10 mg TMP/kg (max. 1600 mg SMX/320 mg TMP) 2 times daily
- Adult: 1600 mg SMX/320 mg TMP 3 times daily

Treatment of isosporiasis and cyclosporiasis

- Adult: 800 mg SMX/160 mg TMP 2 times daily

Prophylaxis of pneumocystosis, toxoplasmosis and isosporiasis

- Child 4 weeks and over: 50 mg SMX/10 mg TMP/kg (max. 800 mg SMX/160 mg TMP) once daily, as long as necessary
- Adult: 800 mg SMX/160 mg TMP once daily, as long as necessary

Treatment of pertussis, brucellosis and typhoid fever

- Child 6 weeks and over: 20 mg SMX/4 mg TMP/kg (max. 800 mg SMX/160 mg TMP) 2 times daily
- Adult: 800 mg SMX/160 mg TMP 2 times daily

Duration

- Cyclosporiasis: 7 days
- Isosporiasis: 7 to 10 days
- Typhoid fever, pertussis: 14 days
- Pneumocystosis: 21 days
- Cerebral toxoplasmosis: 4 to 6 weeks
- Brucellosis: 6 weeks

Contra-indications, adverse effects, precautions

- Do not administer:
  - to children under 6 weeks (risk of neonatal hyperbilirubinemia and haemolysis), except for the treatment and prophylaxis of pneumocystosis;
  - to patients with severe renal or hepatic impairment or with history of hypersensitivity to sulfonamides.
- May cause:
  - haemolytic anaemia in patients with G6PD deficiency, haematologic disorders (thrombocytopenia, leucopenia, agranulocytosis, megaloblastic anaemia due to folic acid deficiency);
  - hypersensitivity reactions (including severe cutaneous reactions such as Stevens-Johnson, Lyell and DRESS syndromes). Early symptoms such as fever, rash, mouth ulcers and bleeding require immediate medical attention.
    In all these cases, stop treatment immediately.
  - gastrointestinal disturbances, hepatic or renal disorders (crystalluria, etc.), metabolic disorders (hyperkalaemia, hypoglycaemia, hyponatraemia);, neuropathy, photosensitivity (protect skin from sun exposure).
- In the event of prolonged treatment, monitor full blood count if possible.
- Avoid or monitor combination with:
  - drugs inducing hyperkalaemia such as potassium salts, spironolactone, enalapril, NSAIDs, heparin (increased risk of hyperkalaemia);
  - phenytoin (increased plasma concentrations of phenytoin);
  - zidovudine (increased risk of haematotoxicity), antidiabetics (increased risk of hypoglycaemia).
- Drink plenty of water during treatment to reduce risk of crystalluria.
- **Pregnancy**: risk of congenital malformations (first trimester) and neonatal haemolysis and hyperbilirubinaemia (after 36 weeks of pregnancy).
  - For prophylaxis and treatment of pneumocystosis in HIV-exposed and HIV-infected women, the benefits outweigh the risks. If used after 36 weeks of pregnancy, observe the child for signs of anaemia or jaundice.

    - For other indications: avoid if possible.
- **Breast-feeding**: avoid in women breastfeeding neonates and in women breastfeeding infants that are premature, low birth weight, jaundiced, or ill (same risk as neonates). If used, observe the child for signs of anaemia or jaundice.

Remarks

- Preferably take during meals.

Storage

– Below 25 °C

DAPSONE oral

Last updated: October 2023

Prescription under medical supervision

Due to the numerous and potentially severe adverse effects of dapsone, patients should be kept under close surveillance.

Therapeutic action

- Sulfone antibacterial, antileprotic

Indications

- Prophylaxis of toxoplasmosis and pneumocystosis, in combination with pyrimethamine and folinic acid
- Treatment of pneumocystosis, in combination with trimethoprim
- Paucibacillary and multibacillary leprosy, in combination with rifampicin and clofazimine

Forms and strengths

- 50 mg and 100 mg tablets

Dosage

Prophylaxis of pneumocystosis only

- Child: 2 mg/kg once daily (max. 100 mg daily)
- Adult: 100 mg once daily

Prophylaxis of toxoplasmosis and pneumocystosis

- Child: 2 mg/kg once daily (max. 25 mg daily)
- Adult: 200 mg once weekly or 50 mg once daily

Treatment of pneumocystosis

- Child: 2 mg/kg once daily (max. 100 mg daily)
- Adult: 100 mg once daily

Paucibacillary and multibacillary leprosy

- Child under 10 years: 2 mg/kg once daily
- Child from 10 to 14 years: 50 mg once daily
- Child 15 years and over and adult: 100 mg once daily

Duration

- Prophylaxis of toxoplasmosis and pneumocystosis: as long as necessary
- Treatment of pneumocystosis: 21 days
- Paucibacillary leprosy: 6 months
- Multibacillary leprosy: 12 months

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to sulfones or severe anaemia (first treat anaemia).
- Administer with caution to patients with renal or hepatic impairment.
- May cause: haemolytic anaemia in patients with G6PD deficiency, dose-related haemolytic anaemia, neutropenia, methaemoglobinaemia, pruritus, rash, gastrointestinal disturbances, peripheral neuropathies, agranulocytosis; hypersensitivity reactions during the first month of treatment (fever, jaundice, hepatitis, adenopathy, exfoliative dermatitis, etc.) requiring permanent discontinuation of treatment.
- Monitor blood count and transaminases if possible.
- Monitor combination with zidovudine (increased haematological toxicity).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Storage

– – Below 25 °C

DARUNAVIR = DRV oral

Last updated: November 2022

Prescription under medical supervision

Therapeutic action

- Antiretroviral, HIV protease inhibitor

Indications

- HIV infection, in combination with ritonavir (booster) and other antiretrovirals

Forms and strengths

- 75 mg, 150 mg, 400 mg and 600 mg tablets
- 400 mg darunavir/50 mg ritonavir tablet

Dosage

Patients with no previous use of protease inhibitors

- Single formulations
  - Child 14 to < 35 kg: 600 mg once daily (+ 100 mg ritonavir once daily)
  - Child ≥ 35 kg and adult: 800 mg once daily (+ 100 mg ritonavir once daily)
- Fixed-dose combination
  - Child ≥ 40 kg and ≥ 12 years and adult: two 400/50 mg tablets once daily

Patients with previous use of protease inhibitors

- Single formulations
  - Child 14 to < 25 kg: 375 mg 2 times daily (+ 50 mg ritonavir 2 times daily)
  - Child 25 to < 35 kg: 400 mg 2 times daily (+ 100 mg ritonavir 2 times daily)
  - Child ≥ 35 kg and adult: 600 mg 2 times daily (+ 100 mg ritonavir 2 times daily)

Duration

- Depending on the efficacy and tolerance of darunavir and ritonavir.

Contra-indications, adverse effects, precautions

- Do not administer to children under 3 years; and to patients with severe hepatic impairment or allergy to sulfonamides (risk of cross-sensitivity).

- Do not combine with rifampicin (decreased plasma concentrations of darunavir). Replace rifampicin with rifabutin.
- Administer with caution and monitor use in patients with haemophilia (increased bleeding) or mild to moderate hepatic impairment.
- May cause:
  - gastrointestinal disturbances, headache, insomnia, fatigue, dizziness, peripheral neuropathy, renal disorders, myocardial infarction, hypertension, tachycardia, hyperglycaemia, hyperlipidaemia, lipodystrophy;
  - skin rash sometimes severe, hepatic disorders; in this event, stop treatment immediately.
- Darunavir in combination with ritonavir reduces the efficacy of implants and oral contraceptives: use injectable medroxyprogesterone or an intrauterine device.
- **Pregnancy**: no contra-indication; use 2 times daily dosing due to decreased plasma concentrations of darunavir during pregnancy.

Remarks

- Take with meals together with ritonavir.

Storage

– Below 25 °C

DESOGESTREL oral

Prescription under medical supervision

Therapeutic action

- Hormonal contraceptive, progestogen

Indications

- Oral contraception

Forms and strengths

- 0.075 mg (75 micrograms) tablet

Dosage

- One tablet daily to be taken at the same time each day, on a continuous basis, including during menstruation.
- Contraception may be started at any moment of the cycle if it is reasonably certain the woman is not pregnant, including when switching from another form of contraception. Contraception will be effective as of the 3rd tablet.
  Use condoms for the first 2 days of the pack if the pill is started:
  - more than 5 days after the start of menstruation;
  - more than 28 days postpartum if not breastfeeding;
  - more than 7 days after an abortion.
- If a pill is missed, it should be taken as soon as possible and usual treatment continued. The missed pill and next scheduled pill can be taken together.
  If the missed pill is more than 12 hours overdue, the effectiveness of the contraceptive is reduced.
  Use:
  - condoms for the following 2 days;
  - emergency contraception if the woman has had intercourse in the 5 days preceding the missed pill.

Duration

- If there are no adverse effects, as long as this method of contraception is desired.

Contra-indications, adverse effects, precautions

- Do not administer to women with breast cancer, severe or recent liver disease, unexplained vaginal bleeding, active thromboembolic disorders.
- May cause: amenorrhoea, menstrual disturbances, nausea, weight gain, breast tenderness, mood changes, acne, headache.
- Enzyme-inducing drugs (rifampicin, rifabutine, efavirenz, nevirapine, lopinavir, ritonavir, phenobarbital, phenytoin, carbamazepine, griseofulvin, etc.) reduce the effectiveness of the contraceptive.
- **Pregnancy**: CONTRA-INDICATED
- **Breast-feeding**: no contra-indication

Remarks

- Desogestrel is a possible alternative when oestroprogestogens are contra-indicated or poorly tolerated. It has a wider window for error and may therefore be ~~is~~ preferred to levonorgestrel which must be taken at strictly the exact same time daily.

Storage

- Below 25 °C

DEXAMETHASONE oral

Last updated: September 2023

Prescription under medical supervision

Therapeutic action

- Long-acting steroidal anti-inflammatory drug (corticosteroid)

Indications

- Symptomatic treatment of severe allergic and inflammatory reactions

Forms and strengths

- 2 mg and 4 mg tablets

Dosage and duration

Dosage varies according to indication, reaction severity and clinical response:
- Child: 0.15 to 0.6 mg/kg (max. 16 mg) once daily
- Adult: 0.5 to 24 mg (max. 40 mg) once daily

Duration varies according to indication. Due to dexamethasone's long half-life, a treatment of 1 or 2 days is usually sufficient in asthma or croup. In the event of treatment longer than 10 days, decrease doses gradually to avoid adrenal suppression.

Contra-indications, adverse effects, precautions

- In case of systemic infection, only administer if patient is under antimicrobial treatment.
- May cause (if prolonged treatment with high doses): adrenal suppression, muscle atrophy, growth retardation, increased susceptibility to infections, sodium and water retention (oedema and hypertension), osteoporosis, hypokalaemia, digitalis toxicity due to potassium loss in patients taking digitalis glycosides.
- **Pregnancy and breast-feeding**: no contra-indication; use the lowest effective dose.

Remarks

- 0.75 mg of dexamethasone has the same anti-inflammatory activity as 5 mg of prednisolone or prednisone and 20 mg of hydrocortisone.

Storage

 – Below 25 °C

DIAZEPAM oral

Last updated: February 2024

Prescription under medical supervision

Do not exceed the recommended duration of treatment (risk of dependence and tolerance).

Therapeutic action

- Anxiolytic, sedative, antiseizure (anticonvulsant), muscle relaxant

Indications

- Severe anxiety, insomnia, and agitation

Forms and strengths

- 2 mg and 5 mg tablets

Dosage and duration

Anxiety

- Adult: 2.5 to 5 mg 2 times daily for 2 to 3 weeks max. reducing the dose by half the last days before stopping treatment

Insomnia

- Adult: 2 to 5 mg once daily at bedtime for 7 days max.

Agitation

- Adult: 10 mg single dose

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe respiratory insufficiency, severe hepatic impairment or acute alcohol intoxication.
- Administer with caution:
  - to older patients and patients with renal or hepatic impairment (reduce the dose by half);
  - to patients with history of drug/substance abuse or mental health disorders.
- May cause:

    - hypotension, muscle weakness, ataxia, hypotonia, drowsiness (caution when driving/operating machinery), lethargy, confusion, impaired concentration, memory loss, hyperactive or aggressive behaviour;
    - withdrawal syndrome or rebound effect if prolonged treatment is discontinued abruptly;
    - respiratory depression and coma in the event of overdose.
- Avoid or monitor in combination with:
    - drugs containing alcohol, opioid analgesics, antipsychotics, first-generation antihistamines (hydroxyzine, promethazine), antidepressants, other antiseizure medications, etc. (increased sedation);
    - enzyme inducers such as rifampicin, rifabutin, nevirapine, phenobarbital, phenytoin, carbamazepine, etc. (reduced effect of diazepam);
    - omeprazole, macrolides, ritonavir, isoniazid, fluconazole, itraconazole, etc. (increased diazepam toxicity);
    - phenytoin (increased phenytoin toxicity).
- Avoid alcohol during treatment (increased risk of adverse effects).
- **Pregnancy and breast-feeding**: avoid (passage through the placenta and breast milk)

Remarks

- Diazepam is subject to international controls: follow national regulations.
- Diazepam is also used in the treatment of pre-delirium tremens (alcohol withdrawal) in adults: 10 mg every 6 hours for 1 to 3 days, then reduce and stop over 7 days.

Storage

– – Below 25 °C

DIETHYLCARBAMAZINE = DEC oral

Last updated: November 2023

Prescription under medical supervision

Due to the numerous and potentially severe adverse effects of DEC, patients should be kept under close surveillance.

Therapeutic action

- Anthelminthic (antifilarial)

Indications

- Lymphatic filariasis

Forms and strengths

- 100 mg breakable tablet

Dosage

- Child under 10 years: 0.5 mg/kg on D1, then increase the dose gradually over 3 days to 1 mg/kg 3 times daily
- Child over 10 years and adult: 1 mg/kg on D1, then increase the dose gradually over 3 days to 2 mg/kg 3 times daily

Duration

- *W. bancrofti*: 12 days
- *B. malayi, B. timori*: 6 to 12 days

Contra-indications, adverse effects, precautions

- Do not administer to patients with onchocerciasis or heavy *Loa loa* microfilareamia; to infants, older patients and patients with heart or renal diseases.
- Do not administer during acute attacks (risk of severe reactions).
- Administer with caution in patients with history of seizures.
- May cause:
  - nausea, vomiting, headache, dizziness, drowsiness, fever, joint pain, urticaria, transient haematuria, subcutaneous nodules, lymphangitis, localized oedema;

    - in patients with associated onchocerciasis: severe ocular damages (optic nerve lesions, retinal lesions);
    - in patients with associated loiasis: encephalitis (potentially fatal) if *Loa loa* microfilaraemia is high.
- Reduce dosage in patients with renal impairment.
- **Pregnancy**: CONTRA-INDICATED (treatment may be deferred until after delivery)
- **Breast-feeding**: not recommended

Remarks

- In countries with a national programme for the elimination of bancroftian filariasis, the combination diethylcarbamazine + albendazole is administered as a single annual dose for 4 to 6 years. This regimen is only suitable for countries that are free from *Onchocerca volvulus* and/or *Loa loa*.

Storage

– Between 15 °C and 25 °C

DIGOXIN oral

Last updated: February 2024

Prescription under medical supervision

Due to narrow margin between therapeutic and toxic dose, patients should be kept under close surveillance.

Therapeutic action

- Cardiotonic

Indications

- Supraventricular arrhythmias (fibrillation, flutter, paroxysmal tachycardia)
- Heart failure

Forms and strengths

- 250 micrograms (0.25 mg) tablet

Dosage

- Adult: 125 to 250 micrograms (0.125 to 0.25 mg) once daily
- Reduce the dose by half in older patients and in patients with renal impairment.

Duration

- According to clinical response

Contra-indications, adverse effects, precautions

- Do not administer to patients with bradycardia, ill defined arrhythmia, coronary artery disease.
- It is essential to monitor heart rate in the initial stage of treatment.
- May cause in the event of overdose: gastrointestinal disturbances (nausea, vomiting, diarrhoea), blurred vision, headache, confusion, conduction and rhythm disorders. If so, reduce dose or stop treatment.
- Do not combine with calcium, particularly by IV route (serious arrhythmias).
- Monitor combination with:
  - amiodarone, macrolides, itraconazole, quinine, chloroquine (increased digoxin concentration);

    - potassium-depleting drugs: diuretics, corticosteroids, amphotericin B (increased risk of digoxin toxicity).
- Monitor if possible serum potassium level in patients taking potassium-depleting drugs and serum creatinine level in patients with renal impairment.
- Do not administer simultaneously with antacids such as aluminium hydroxide, etc., administer 2 hours apart.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Storage

– Below 25 °C

DIHYDROARTEMISININ/PIPERAQUINE = DHA/PPQ oral

Prescription under medical supervision

Therapeutic action

- Antimalarial

Indications

- Treatment of uncomplicated falciparum malaria
- Treatment of uncomplicated malaria due to other Plasmodium species, when chloroquine cannot be used
- Completion treatment following parenteral therapy for severe malaria

Forms and strengths

- Co-formulated tablets of dihydroartemisinin (DHA)/piperaquine (PPQ), in blister pack, for a complete treatment for one individual
- There are 5 different blister packs:
  - 20 mg DHA/160 mg PPQ tablets blister pack of 3 tablets
  - 40 mg DHA/320 mg PPQ tablets blister pack of 3 tablets
  - 40 mg DHA/320 mg PPQ tablets blister pack of 6 tablets
  - 40 mg DHA/320 mg PPQ tablets blister pack of 9 tablets
  - 40 mg DHA/320 mg PPQ tablets blister pack of 12 tablets

Dosage and duration

- Child 5 to < 25 kg: 2.5 to 10 mg/kg daily of DHA + 20 to 32 mg/kg daily of PPQ
- Child 25 kg and over and adult: 2 to 10 mg/kg daily of DHA + 16 to 27 mg/kg daily of PPQ

Weight	20 mg/160 mg tablet	40 mg/320 mg tablet
5 to < 8 kg	1 tab	–
8 to < 11 kg	1½ tab	–
11 to < 17 kg	–	1 tab
17 to < 25 kg	–	1½ tab
25 to < 36 kg	–	2 tab
36 to < 60 kg	–	3 tab
60 to < 80 kg	–	4 tab
≥ 80 kg	–	5 tab

- Tablets are to be taken once daily for 3 days.

Contra-indications, adverse effects, precautions

- Do not administer in the event of cardiac disorders (bradycardia, heart rhythm disorders, congestive heart failure).
- Do not combine with drugs that prolong the QT interval: amiodarone, other antimalarials, antipsychotics, fluconazole, fluoroquinolones, hydroxyzine, macrolides, ondansetron, etc.
- Administer with caution to patients > 60 years or with renal or hepatic impairment.
- May cause: cardiac disorders (QT prolongation, tachycardia); rarely, gastrointestinal disturbances, pruritus, hepatic disorders, joint and muscle pain.
- Monitor combination with: antiretrovirals (increased blood levels of these drugs), enzymes inducers such as rifampicin, carbamazepine, phenytoin, phenobarbital (reduced blood levels of DHA/PPQ).
- If the patient vomits within 30 minutes after administration, re-administer the full dose. If the patient vomits between 30 minutes and 1 hour after administration, re-administer half of the dose.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Take 3 hours before or after meals, with a glass of water.
- The tablets may be crushed and mixed with water.

Storage

- - Below 25 °C

DOLUTEGRAVIR = DTG oral

Last updated: October 2024

Prescription under medical supervision

Therapeutic action

- Antiretroviral, inhibitor of HIV integrase

Indications

- HIV infection, in combination with other antiretrovirals

Forms and strengths

- 10 mg dispersible tablet
- 50 mg tablet

Dosage

The daily dose is administered once daily.

- Child 1 month and over and adult:

Weight	Daily dose	Tablets
3 to < 6 kg	5 mg	½ disp tab 10 mg
6 to < 10 kg	15 mg	1 ½ disp tab 10 mg
10 to < 14 kg	20 mg	2 disp tab 10 mg
14 to < 20 kg	25 mg	2 ½ disp tab 10 mg
≥ 20 kg	30 mg or 50 mg	3 disp tab 10 mg or 1 tab 50 mg

Duration

- Depending on the efficacy and tolerance of dolutegravir.

Contra-indications, adverse effects, precautions

- Administer with caution to patients with severe hepatic impairment or coinfection with hepatitis B or hepatitis C virus.
- May cause:
  - insomnia, depression, anxiety, dizziness, headache, skin rash, gastrointestinal disturbances (nausea, vomiting, diarrhoea, etc.);
  - rarely: hepatotoxicity, hypersensitivity reactions.
- Do not administer simultaneously with antacids (aluminium or magnesium hydroxide, etc.), ferrous salts, calcium and zinc salts (effect of dolutegravir decreased). Take these drugs at least 6 hours before or 2 hours after dolutegravir.
- In patients taking:
  - metformin: monitor closely blood glucose level and renal function and adjust dose as needed (effect of metformin increased). Do not exceed 1 g of metformin daily.
  - enzyme-inducing drug (e.g. rifampicin, carbamazepine, phenytoin, phenobarbital, efavirenz, nevirapine): double the daily dose of dolutegravir (effect of dolutegravir decreased), e.g. 30 mg 2 times daily rather than 30 mg once daily, and maintain the double dose for 2 weeks after enzyme-inducing drug treatment completion.
- In adolescents and women of childbearing age, offer hormonal contraception or an intrauterine device.
- **Pregnancy**: small increased risk of neural tube defects but the benefits outweigh the risks. The administration of folic acid during the first trimester may reduce this risk.

Remarks

- Three 10 mg dispersible tablets are equivalent to one 50 mg tablet.
- In children 20 kg and over, preferably use 50 mg tablet unless they cannot swallow tablets.
- Do not cut, crush or chew dispersible tablets. They can be swallowed or dispersed in a small amount of water.
- Dolutegravir is also used for HIV post-exposure prophylaxis in combination with other antiretrovirals.
- Also comes in fixed-dose combinations:
  - 300 mg tenofovir /300 mg lamivudine /50 mg dolutegravir. Preferably use this formulation when available in adolescents 30 kg and over and adults. In patients taking enzyme-inducing drugs, administer the fixed-dose combination in the morning and dolutegravir 50 mg in the evening.
  - 60 mg abacavir/30 mg lamivudine/5 mg dolutegravir dispersible tablet. Preferably use this formulation when available in children 3 months of age and over and weighing from 6 to under 25 kg.

Storage

– – Below 25 °C

DOXYCYCLINE oral

Last updated: September 2023

Prescription under medical supervision

In children under 8 years, doxycycline can be used in treatments no longer than 21 days.

Therapeutic action

- Cycline antibacterial

Indications

- Cholera, uncomplicated cutaneous anthrax, louse-borne and tick-borne relapsing fevers, epidemic typhus and other rickettsioses, plague, brucellosis, leptospirosis, lymphogranuloma venereum
- Lymphatic filariasis, alternative to ivermectin in onchocerciasis
- Alternative to first-line treatments of treponematosis, atypical pneumonia (*Mycoplasma pneumoniae, Chlamydophila pneumoniae*), cervicitis and urethritis due to *Chlamydia trachomatis* (in combination with a treatment for gonorrhoea), donovanosis, syphilis

Forms and strengths

- 100 mg tablet

Dosage

Louse-borne relapsing fever, epidemic typhus, cholera

- Child: 4 mg/kg (max. 100 mg) single dose
- Adult: 200 mg (300 mg in cholera) single dose

Plague

- Child under 45 kg: 4.4 mg/kg (max. 200 mg) on D1 then 2.2 mg/kg (max. 100 mg) 2 times daily
- Child 45 kg and over and adult: 200 mg on D1 then 100 mg 2 times daily

Other indications

- Child under 45 kg: 2 to 2.2 mg/kg (max. 100 mg) 2 times daily
- Child 45 kg and over and adult: 100 mg 2 times daily
- In severe infections, a loading dose (as for plague) is recommended.

Duration

- Rickettsiosis: 5 to 7 days or until 3 days after fever has disappeared
- Leptospirosis, cervicitis and urethritis due to *C. trachomatis:* 7 days
- Cutaneous anthrax, tick-borne relapsing fever: 7 to 10 days
- Plague, atypical pneumonia: 10 to 14 days
- Early syphilis, bejel, pinta, lymphogranuloma: 14 days
- Filariasis: minimum 4 weeks
- Late latent syphilis: 30 days
- Brucellosis: 6 weeks
- Donovanosis: until complete healing of lesions

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to cyclines.
- Do not administer treatments longer than 21 days in children under 8 years (risk of discolouration of teeth).
- Administer with caution to patients with hepatic or renal impairment.
- May cause: gastrointestinal disturbances, allergic reactions, photosensitivity (protect exposed skin from sun exposure), oesophageal ulcerations (take tablets during meals with a glass of water in an upright position and at least 1 hour before going to bed).
- Do not give simultaneously with ferrous salts, zinc sulfate, calcium carbonate, antiacids (aluminium/magnesium hydroxide, etc.): administer 2 hours apart.
- Monitor combination with hepatic enzyme inducers: rifampicin, phenobarbital, phenytoin, carbamazepine, etc. (reduction of the doxycycline efficacy).
- **Pregnancy**: avoid during the 2nd and 3rd trimester (risk of discolouration and malformation of teeth). Use only for severe infections when doxycycline is the most effective option, and the benefits outweigh the risks. No contra-indication for single dose treatments.
- **Breast-feeding**: avoid if possible (risk of infant teeth discolouration) or do not exceed 10 days of treatment if there is no alternative.

Remarks

- Doxycycline is also used:
  - as an alternative to first-line treatment for septicaemia of pulmonary origin (dose as for plague), in combination with other antibacterials;
  - for prophylaxis of plague, scrub typhus and leptospirosis.

Storage

– – Below 25 °C

EFAVIRENZ = EFV = EFZ oral

Last updated: November 2022

Prescription under medical supervision

Therapeutic action

- Antiretroviral, HIV-1 non nucleoside reverse transcriptase inhibitor

Indications

- HIV-1 infection, in combination with other antiretrovirals

Forms and strengths

- 200 mg breakable tablet, 200 mg capsule and 600 mg tablet

Dosage

The daily dose is administered once daily at bedtime, on an empty stomach.

- Child 3 years and over and adult:

Weight	Daily dose	Tablets or capsules
10 to < 14 kg	200 mg	1 tab 200 mg or 1 cap 200 mg
14 to < 25 kg	300 mg	1 tab 200 mg + ½ tab 200 mg
25 to < 35 kg	400 mg	2 tab 200 mg or 2 cap 200 mg
≥ 35 kg	400 mg or 600 mg	2 tab 200 mg or 2 cap 200 mg or 1 tab 600 mg

Duration

- Depending on the efficacy and tolerance of efavirenz.

Contra-indications, adverse effects, precautions

- Do not administer to children under 3 years and to patients with severe hepatic impairment.
- Do not combine with amodiaquine (risk of hepatotoxicity).
- Administer with caution to patients with psychiatric disorders (or history of) or epilepsy.
- Administer with caution and monitor combination with:
  - central nervous system depressants (opioids, benzodiazepines, phenobarbital, etc.), carbamazepine, phenytoin, oral anticoagulants;
  - QT prolonging drugs (amiodarone, co-artemether, mefloquine, quinine, haloperidol, etc.).
- May cause:
  - neuropsychiatric disorders: dizziness, headache, insomnia, drowsiness, abnormal dreaming, anxiety, aggressive behaviour, impaired concentration, seizures, depression, suicidal ideation;
  - hepatotoxicity and gastrointestinal disturbances;
  - skin reactions, possibly severe (Stevens-Johnson syndrome).
- Efavirenz reduces the efficacy of implants and oral contraceptives: use injectable medroxyprogesterone or an intrauterine device.
- **Pregnancy**: no contra-indication

Remarks

- Capsules can be opened and their content mixed into a spoon with a small amount of food.
- Also comes in fixed-dose combinations (tenofovir/emtricitabine/efavirenz or tenofovir/lamivudine/efavirenz). Preferably use these formulations when available.

Storage

– – Below 25 °C

ENALAPRIL oral

Prescription under medical supervision

Therapeutic action

- Angiotensin converting enzyme inhibitor (ACE)

Indications

- Hypertension
- Chronic heart failure

Forms and strengths

- 5 mg and 20 mg tablets

Dosage

Hypertension

- Adult: start with 5 mg once daily, then increase the dose gradually every 1 to 2 weeks, according to blood pressure, up to 10 to 20 mg once daily (max. 40 mg daily)
- In elderly patients, patients taking a diuretic or patients with renal impairment: start with 2.5 mg once daily then adapt dose according to renal function.

Chronic heart failure

- Adult:
  Week 1: 2.5 mg once daily for 3 days then 5 mg once daily
  Week 2: 10 mg once daily for 3 days then 20 mg once daily
  The usual dose is 10 to 20 mg once daily or 5 to 10 mg 2 times daily depending on tolerance (max. 40 mg daily).
  Reduce dosage in patients with renal impairment.

Duration

- According to clinical response

Contra-indications, adverse effects, precautions

- Do not administer to patients with history of enalapril-related angioedema.
- May cause:

    - hypotension, dizziness, headache, gastrointestinal disturbances, dry cough, renal impairment, hyperkalaemia, hyponatraemia;
    - allergic reactions, angioedema; hypoglycaemia, haematological disorders.
- Avoid or monitor combination with: potassium-sparing diuretics and/or potassium chloride (risk of hyperkalaemia); non steroidal anti-inflammatory drugs and/or diuretics (risk of renal impairment).
- Monitor combination with:
    - other antihypertensive drugs (risk of hypotension);
    - drugs that provoke hypotension (e.g. haloperidol, amitriptyline);
    - oral antidiabetics and insulin (risk of hypoglycaemia).
- **Pregnancy**: CONTRA-INDICATED
- **Breast-feeding**: no contra-indication at recommended doses

Storage

– Below 25 °C

ERGOCALCIFEROL = VITAMIN D2 oral

See COLECALCIFEROL = VITAMIN D3 oral

ERYTHROMYCIN oral

Last updated: January 2024

Prescription under medical supervision

Therapeutic action

- Macrolide antibacterial

Indications

- Alternative to first-line antibiotic treatment of:
  - Louse-borne relapsing fever, leptospirosis
  - Acute otitis media, pharyngitis and sinusitis; diphtheria, pertussis, atypical pneumonia due to *Mycoplasma pneumoniae* or *Chlamydophila pneumoniae*
  - Leg ulcer
  - Cervicitis and urethritis due to *Chlamydia trachomatis* (in combination with a treatment for gonorrhoea), donovanosis, chancroid, lymphogranuloma venereum, syphilis
  - Trachoma
- Neonatal conjunctivitis due to *Chlamydia trachomatis*
- Completion treatment following parenteral therapy with erythromycin

Forms and strengths

- 250 mg and 500 mg tablets
- 125 mg/5 ml powder for oral suspension: ;
  - to be reconstituted with filtered water
  - to be administered using a measuring device (oral syringe, measuring spoon, or cup with graduations)

Dosage

Louse-borne relapsing fever

- Child under 5 years: 250 mg single dose
- Child 5 years and over and adult: 500 mg single dose

Diphtheria

- Child under 40 kg: 10 to 15 mg/kg (max. 500 mg) 4 times daily
- Child 40 kg and over and adult: 500 mg 4 times daily

Neonatal conjunctivitis due to *C. trachomatis*

- Neonate: 12.5 mg/kg 4 times daily

Other indications

- Child: 30 to 50 mg/kg daily in divided doses

Age	Weight	Daily dose	125 mg/5 ml susp.	250 mg tablet	500 mg tablet
1 to < 2 months	4 to < 5 kg	62.5 mg x 2	2.5 ml x 2	¼ tab x 2	–
2 to < 12 months	5 to < 10 kg	125 mg x 2	5 ml x 2	½ tab x 2	¼ tab x 2
1 to < 3 years	10 to < 15 kg	250 mg x 2	10 ml x 2	1 tab x 2	½ tab x 2
3 to < 8 years	15 to < 25 kg	250 mg x 3	10 ml x 3	1 tab x 3	½ tab x 3
8 to < 11 years	25 to < 35 kg	500 mg x 2	–	2 tab x 2	1 tab x 2
11 to < 13 years	35 to < 45 kg	500 mg x 3	–	2 tab x 3	1 tab x 3

- Adult: 500 mg 4 times daily or 1 g 2 to 3 times daily

Duration

- Leptospirosis, pertussis, cervicitis and urethritis, chancroid, leg ulcer: 7 days
- Sinusitis: 7 to 10 days
- Pharyngitis, otitis: 10 days
- Atypical pneumonia: 10 to 14 days
- Diphtheria, early syphilis, lymphogranuloma venereum, donovanosis, conjunctivitis due to *C. trachomatis*, trachoma: 14 days
- Late latent syphilis: 30 days

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to erythromycin or another macrolide.
- Avoid or administer with caution to children under 6 months and particularly to neonates under 2 weeks (risk of hypertrophic pyloric stenosis).
- Administer with caution to patients with hepatic or renal impairment (max. 1.5 g daily for adult with severe renal impairment), electrolyte disturbances or at increased risk of cardiovascular morbidity.
- May cause: gastrointestinal disturbances, reversible hearing disorders, heart rhythm disorders (QT prolongation); allergic reactions sometimes severe. In the event of allergic reaction, stop treatment immediately.
- Avoid combination with drugs that prolong the QT interval (amiodarone, chloroquine, co-artemether, fluconazole, haloperidol, mefloquine, moxifloxacin, ondansetron, pentamidine, quinine, etc.).

- Administer with caution and monitor use in patients taking carbamazepine, digoxin or warfarin (plasma concentrations of these drugs increased).
- **Pregnancy and breast-feeding**: no contra-indication

Remarks

- Take tablets preferably one hour before or 2 hours after a meal.

Storage

– – Below 25 °C
For the oral suspension (powder or reconstituted suspension): follow manufacturer's instructions.

ETHAMBUTOL = E oral

Last updated: August 2022

Prescription under medical supervision

Therapeutic action

- First line antituberculosis antibacterial (bacteriostatic activity)

Indications

- Tuberculosis, in combination with other antituberculosis antibacterials

Forms and strengths

- 100 mg and 400 mg tablets
- 50 mg and 100 mg dispersible tablets

Dosage

- Child and adult: 15 to 25 mg/kg once daily
- Do not exceed 1200 mg daily.
- Patient with renal impairment: 15 to 25 mg/kg 3 times weekly

Duration

- According to protocol

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe renal impairment or pre-existing optic neuritis (e.g. diabetic retinopathy).
- May cause: dose-related retrobulbar optic neuritis, exacerbated in renal impairment. Patients should be warned that they must immediately stop treatment and seek medical attention in the event of visual disturbances such as blurred vision, reduced visual acuity, green-red colour blindness. Visual alterations are usually reversible a few weeks after stopping ethambutol.
- The dosage must be carefully adjusted to the body weight, especially for children under 5 years, as it is more difficult to detect visual alterations at this age.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- For patients sensitive to first-line antituberculosis treatment, ethambutol is given as part of a fixed dose combination.

Storage

– – Below 25 °C

ETHINYLESTRADIOL/LEVONORGESTREL oral

Last updated: October 2021

Prescription under medical supervision

Therapeutic action

- Combined hormonal contraceptive, oestrogen-progestogen

Indications

- Oral contraception
- Abnormal uterine bleeding (especially functional uterine bleeding unrelated to pregnancy)

Forms and strengths

- 28-day pack: 21 active tablets of 0.03 mg (30 micrograms) ethinylestradiol + 0.15 mg (150 micrograms) levonorgestrel and 7 inactive tablets (ferrous salts)

Dosage and duration

- **Oral contraception**
  Adolescent and adult: one tablet daily, to be taken preferably at the same time each day, on a continuous basis, including during menstruation.
  Explain to the woman which are the active and inactive tablets. Careful not to start with inactive tablets.
  - Contraception may be started at any moment of the cycle if it is reasonably certain the woman is not pregnant, including when switching from another form of contraception. Contraception will be effective as of the 8th tablet.
    Use condoms for the first 7 days of the pack if the tablets are started:
    - more than 5 days after the start of menstruation;
    - more than 28 days postpartum if not breastfeeding;
    - more than 7 days after an abortion.
  - Continue treatment as long as this method of contraception is desired and well tolerated.
  - If one or two active tablets are missed, take one tablet as soon as possible and then continue treatment as usual. 2 tablets can be taken at the same time: the missed tablet and the daily tablet.

    - If 3 or more successive active tablets are missed, contraceptive effectiveness is compromised. Take one tablet as soon as possible, then continue treatment as usual and use condoms for the next 7 days.
        - if the tablets are missed during the 1st week of a pack (1st to 7th tablet) or if the woman has had intercourse in the 5 days before forgetting the tablets, use emergency contraception.
        - if the tablets are missed during the 3rd week of the pack (15th to 21st tablet), finish all the active tablets and start a new pack the next day, without taking the inactive tablets. If it is not possible to start a new pack immediately, use condoms for the next 7 days.
- **Persistent abnormal uterine bleeding despite tranexamic acid therapy or heavy bleeding when tranexamic acid is CONTRA-INDICATED**
  Adolescent and adult: one tablet 3 times daily for 7 days
- **Long-term treatment of functional uterine bleeding**
  Adolescent and adult: one tablet daily (as for contraception). Continue treatment according to clinical response.

Contra-indications, adverse effects, precautions

- Do not administer to women with breast cancer, hypertension, uncontrolled or complicated diabetes, history of thromboembolic disorders, coronary insufficiency, valvular disease, stroke, severe or recent hepatic disease, migraine with neurological signs, renal impairment, hyperlipidaemia, to women smokers over age 35.
- May cause: reduced menstrual flow, nausea, weight gain, breast tenderness, mood changes, acne and headache. Other rare and severe adverse effects require discontinuation of treatment: hypertension, cardiovascular and thromboembolic disorders, jaundice, migraine, visual disturbances.
- Enzyme-inducing drugs (rifampicin, rifabutine, efavirenz, nevirapine, lopinavir, ritonavir, phenobarbital, phenytoin, carbamazepine, griseofulvin, etc.) reduce the effectiveness of the contraceptive.
- Clinical examinations must be carried out before (blood pressure, breasts) and during treatment (blood pressure).
- **Pregnancy**: CONTRA-INDICATED
- **Breast-feeding**: CONTRA-INDICATED before 6 weeks postpartum; not recommended between 6 weeks and 6 months (except if it is the only available or acceptable contraceptive method); no contra-indication after 6 months.

Remarks

- Oestrogen-progestogens are easier to take that progestogen-only tablets in that they do not requiring taking the tablet at an exact time of day. Taking ethinylestradiol/levonorgestrel at the same time every day helps avoid forgetting tablets.
- Also comes in packs with 21 active tablets of ethinylestradiol/levonorgestrel that require 7 days of interruption between two packs. 28-day packs help improve compliance.

Storage

– Below 25 °C

FERROUS salts oral

Therapeutic action

- Antianaemia drug

Indications

- Prevention of iron-deficiency
- Treatment of iron-deficiency anaemia

Forms and strengths

- 140 mg/5 ml syrup of ferrous fumarate containing approximately 45 mg/5 ml of elemental iron
- 200 mg ferrous fumarate or sulfate tablet containing approximately 65 mg of elemental iron

Dosage

(expressed as elemental iron)

Prevention of iron-deficiency

- Neonate: 4.5 mg once daily
- Child 1 month to < 12 years: 1 to 2 mg/kg once daily (max. 65 mg daily)
- Child ≥ 12 years and adult: 65 mg once daily

Treatment of iron-deficiency anaemia

- Neonate: 1 to 2 mg/kg 2 times daily
- Child 1 month to < 6 years: 1.5 to 3 mg/kg 2 times daily
- Child 6 to < 12 years: 65 mg 2 times daily
- Child ≥ 12 years and adult: 65 mg 2 to 3 times daily

Age	Weight	Prevention		Treatment	
		45 mg/5 ml syrup	65 mg tablet	45 mg/5 ml syrup	65 mg tablet
< 1 month	< 4 kg	0.5 ml	–	0.5 ml x 2	–
1 month to < 1 year	4 to < 10 kg	1 ml	–	1.5 ml x 2	–
1 to < 6 years	10 to < 20 kg	2.5 ml	–	2.5 ml x 2	–
6 to < 12 years	20 to < 40 kg	5 ml	–	–	1 tab x 2
≥ 12 years and adult	≥ 40 kg	–	1 tab	–	1 tab x 2 or 3

Duration

- Prevention: during risk period (pregnancy, malnutrition)
- Treatment: 3 months

Contra-indications, adverse effects, precautions

- Do not administer to patients with other forms of anaemia.
- May cause: abdominal pain, nausea, vomiting, diarrhoea or constipation, black stools.
- Do not exceed recommended doses in children (risk of overdose). 20 mg/kg of elemental iron (60 mg/kg of ferrous fumarate or sulfate) is considered toxic.
- Do not give simultaneously with doxycycline, ciprofloxacin, dolutegravir, antacids (aluminium hydroxide or magnesium, etc.), levodopa or zinc sulfate (reduced absorption of both drugs). Administer each drug at least 2 hours apart.
- Adminstration in combination with ascorbic acid (vitamin C) increases iron absorption.
- Rince mouth or drink water after administration of syrup (risk of tooth staining).
- **Pregnancy and breast-feeding:** no contra-indication

Remarks

- To reduce gastrointestinal disturbances, take during meals and gradually increase dosage.
- For the prevention of iron-deficiency during pregnancy, preferably use tablets containing both ferrous salts and folic acid.

Storage

- Below 25 °C

FERROUS salts/FOLIC acid oral

Last updated: October 2023

Indications

- Prevention of iron and folic acid deficiency, mainly during pregnancy
- Treatment of iron-deficiency anaemia

Forms and strengths

- Tablet of 185 mg ferrous fumurate or sulfate (60 mg of elemental iron) + 400 micrograms folic acid (vitamin B_9)

Dosage

- See dosage of ferrous salts

Remarks

- This fixed-dose combination is not effective for the treatment of folic acid deficiency because of its low dose.

Storage

☼ – Below 25 °C

FLUCONAZOLE oral

Last updated: September 2023

Prescription under medical supervision

Therapeutic action

- Antifungal

Indications

- Oesophageal candidiasis
- Moderate to severe oropharyngeal candidiasis
- Secondary prophylaxis of recurrent candidiasis in immunocompromised patients
- Cryptococcal meningitis, after treatment with amphotericin B + flucytosine or in combination with amphotericin B or flucytosine
- Secondary prophylaxis of cryptococcal infections

Forms and strengths

- 50 mg and 200 mg capsules
- 50 mg/5 ml oral suspension

Dosage and duration

Oesophageal candidiasis, oropharyngeal candidiasis, secondary prophylaxis of recurrent candidiasis

- Child 1 month and over: 3 to 6 mg/kg (max. 200 mg) once daily
- Adult: 50 to 200 mg (max. 400 mg) once daily

The treatment lasts 14 to 21 days for oesophageal candidiasis; 7 to 14 days for oropharyngeal candidiasis; as long as required for secondary prophylaxis.

Cryptococcal meningitis

After treatment with amphotericin B + flucytosine	Child ≥ 1 month	12 mg/kg once daily for 1 week then 6 to 12 mg/kg once daily for 8 weeks Max. 800 mg once daily
	Adult	1200 mg once daily for 1 week then 800 mg once daily for 8 weeks
or		
In combination with amphotericin B or flucytosine	Child ≥ 1 month	12 mg/kg once daily for 2 weeks (with amphotericin B or flucytosine) then 6 to 12 mg/kg once daily for 8 weeks Max. 800 mg once daily
	Adult	1200 mg once daily for 2 weeks (with amphotericin B or flucytosine) then 800 mg once daily for 8 weeks

Secondary prophylaxis of cryptococcal infections

- Child: 6 mg/kg (max. 200 mg) once daily, as long as required
- Adult: 200 mg once daily, as long as required

Contra-indications, adverse effects, precautions

- Administer with caution to patients with hepatic or renal impairment, cardiac disorders (bradycardia, heart rhythm disorders, etc.).
- Reduce the dose by half in patients with renal impairment.
- May cause: gastrointestinal disturbances, headache, skin reactions sometimes severe, anaphylactic reactions; severe hepatic disorders, haematologic (leukopenia, thrombocytopenia) and cardiac disorders (QT-prolongation). Stop treatment in the event of anaphylactic reaction, hepatic disorders or severe skin reaction.
- In the event of prolonged treatment, monitor hepatic function.
- Do not administer simultaneously with rifampicin, administer 12 hours apart (rifampicin in the morning, fluconazole in the evening).
- Avoid or monitor combination with:
  - drugs that prolong the QT interval (amiodarone, chloroquine, erythromycin, haloperidol, mefloquine, pentamidine, quinine);
  - warfarin, carbamazepine, phenytoin, rifabutin, benzodiazepines, calcium-channel blockers, certain antiretrovirals (e.g. nevirapine, zidovudine): increased plasma concentrations of these drugs.
- **Pregnancy and breast-feeding**: to be used only in severe or life-threatening infections, particularly during the first trimester of pregnancy (risk of foetal malformations).

Remarks

- As in neonates the half-life of fluconazole is prolonged, it should be administered every 72 hours (neonates < 14 days) or every 48 hours (neonates ≥ 14 days).
- For the treatment of histoplasmosis, fluconazole is less effective than itraconazole. In patients unable to tolerate itraconazole, the dose of fluconazole is:
  - child: 10 to 12 mg/kg (max. 400 mg) once daily for 6 to 12 weeks
  - adult: 400 mg on D1 then 200 to 400 mg once daily for 6 to 12 weeks
- For the treatment of genital candidiasis (vulvovaginitis, balanitis), fluconazole is only used if local treatment fails: 150 mg single dose in adults.

Storage

– Below 25 °C

Once reconstituted, oral suspension keeps for 2 weeks.

FLUCYTOSINE oral

Last updated: September 2023

Prescription under medical supervision

Therapeutic action

- Antifungal

Indications

- Cryptococcocal meningitis (induction phase), in combination with amphotericin B or fluconazole

Forms and strengths

- 500 mg capsule and tablet

Dosage

- Child over 1 week and adult: 25 mg/kg 4 times daily

Duration

- One week if in combination with amphotericin B
- 2 weeks if in combination with fluconazole

Contra-indications, adverse effects, precautions

- Administer with caution and monitor use in patients > 60 years or with renal impairment or haematological disorders.
- Reduce the dose by half (25 mg/kg 2 times daily) in patients with renal impairment.
- May cause: gastrointestinal disturbances, haematological disorders (leukopenia, thrombocytopenia, less frequently, agranulocytosis), increase in transaminase levels, allergic reactions sometimes severe; sometimes, confusion and halucinations.
- Monitor blood count and liver and renal function until the end of treatment.
- **Pregnancy and breast-feeding**: flucytosine is generally not recommended. It is teratogenic in animals and its safety in pregnant or lactating women has not been established. However, taking into account the severity of the disease, the potential benefit of treatment for the mother and in the absence of a safer alternative, it may be used despite the potential risks for the child.

Remarks

- For children, tablets may be crushed.
- Also comes in 250 mg capsule and tablet.

Storage

– Below 25 °C

FLUOXETINE oral

Last updated: March 2024

Prescription under medical supervision

Therapeutic action

- Antidepressant, selective serotonin re-uptake inhibitor (SSRI)

Indications

- Major depression
- Generalised anxiety
- Severe post-traumatic stress disorder

Forms and strengths

- 20 mg capsule

Dosage

Major depression

- Adult: 20 mg on alternate days for one week, then 20 mg once daily. In case of insufficient response after 3 weeks, increase up to 40 mg daily max.

Generalised anxiety, severe post-traumatic stress disorder

- Adult: 20 mg once daily

Duration

- Major depression: at least 9 months. Discontinue treatment gradually (e.g. half dose once daily for 2 weeks then on alternate days for 2 weeks). If signs of relapse or withdrawal occur, increase the dose then decrease it more gradually.
- Generalised anxiety, severe post-traumatic stress disorder: 2 to 3 months after symptoms resolve. Discontinue treatment gradually (over at least 2 weeks).

Contra-indications, adverse effects, precautions

- Administer with caution and monitor use in patients with epilepsy, diabetes, hepatic impairment (reduce dose or frequency of administration) or severe renal impairment; history of gastrointestinal bleeding, bipolar disorders, suicidal ideation (in young adults) or closed-angle glaucoma.
- May cause:

    - gastrointestinal disturbances, drowsiness (caution when driving or operating machinery); fatigue, headache, dizziness, seizures, sexual dysfunction, blurred vision, hyponatraemia especially in older patients;
    - mental disorders: anxiety, insomnia, agitation, aggressive behaviour, suicidal ideation in young adults;
    - withdrawal symptoms very frequent if discontinued abruptly: dizziness, paraesthesia, nightmares, anxiety, tremors and headaches.
- Avoid combination with:
    - aspirin, NSAIDs and warfarin (risk of bleeding);
    - serotonergic drugs: other SSRI, tricyclic antidepressants, ondansetron, tramadol, etc. (risk of serotonin syndrome).
- Monitor combination with: carbamazepine, phenytoin, risperidone (increased plasma concentrations), drugs which lower the seizure threshold (antipsychotics, mefloquine, etc.).
- Avoid alcohol during treatment (increased risk of adverse effects).
- **Pregnancy**: re-evaluate whether the treatment is still necessary; if it is continued, maintain fluoxetine at effective dose or consider switching to another SSRI if the woman plans to breast-feed. Observe the neonate (risk of agitation, tremors, hypotony, respiratory difficulties, sleeping disorders, etc.) if the mother was under treatment in the 3rd trimester. If treatment starts during pregnancy, preferably use sertraline.
- **Breast-feeding**: avoid; consider switching to sertraline or if not available, paroxetine.

Remarks

- Do not open the capsules.
- It is necessary to wait at least 2 to 3 weeks before assessing the antidepressant effect. This must be explained to the patient.

Storage

– – Below 25 °C

FOLIC acid = VITAMIN B9 oral

Prescription under medical supervision

Therapeutic action

- Antianaemia drug

Indications

- Treatment of folate-deficient megaloblastic anaemias: severe malnutrition, repeated attacks of malaria, intestinal parasitosis, etc.

Forms and strengths

- 5 mg tablet

Dosage and duration

- Child under 1 year: 0.5 mg/kg once daily for 4 months
- Child over 1 year and adult: 5 mg once daily for 4 months; 15 mg once daily in malabsorption states

Contra-indications, adverse effects, precautions

- Do not combine with sulfadiazine-pyrimethamine in patients with toxoplasmosis nor sulfadoxine-pyrimethamine in patients with malaria: folic acid reduces the efficacy of these treatments.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Folic acid must not be used for the treatment of anaemia due to antifolates (pyrimethamine, trimethoprim or methotrexate). Use folinic acid.
- Folic acid is also used for primary and secondary prophylaxis of neural tube defects and for prophylaxis of acute anaemia in patients with sickle-cell anaemia.

Storage

– Below 25 °C

FOSFOMYCIN TROMETAMOL oral

Prescription under medical supervision

Therapeutic action

- Phosphonic acid derivative antibacterial

Indications

- Acute uncomplicated cystitis in women, without fever nor flank pain
- Asymptomatic bacteriuria in pregnant women

Forms and strengths

- Granules for oral solution in 3 g sachet, to be dissolved in filtered water

Dosage and duration

- 3 g single dose

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe renal impairment, allergy to fosfomycin.
- May cause: gastrointestinal disturbances, skin rash; rarely, allergic reactions.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- In the treatment of cystitis, symptoms should improve within 3 days of treatment. If not, the patient should consult again. Treatment failure may be due to the presence of naturally fosfomycin-resistant organisms (*Staphylococcus saprophyticus*).
- Take between meals or at bedtime (food decreases absorption).
- Fosfomycin is not included in the WHO list of essential medicines.

Storage

– – Below 25 °C

FUROSEMIDE oral

Prescription under medical supervision

Therapeutic action

- Loop diuretic

Indications

- Oedema associated with renal, hepatic or congestive heart failure

Forms and strengths

- 20 mg and 40 mg tablets

Dosage

- Adult: start with 20 mg once daily. Increase, if necessary, according to clinical response up to 80 mg once daily or 2 times daily (max. 160 mg daily). Once oedema decrease, reduce to 20 to 40 mg once daily.

Duration

- According to clinical response

Contra-indications, adverse effects, precautions

- Do not administer to patients with dehydration, severe hypokalaemia and hyponatraemia.
- May cause:
  - dehydration, hypotension, hypokalaemia, hyponatraemia, hyperuricemia;
  - renal impairment, deafness, photosensitivity.
- Avoid or monitor combination with NSAIDs, ACE inhibitors (risk of renal impairment); ototoxic drugs (e.g. aminoglycosides, quinine); lithium (increased plasma concentrations of lithium).
- Monitor combination with:
  - drugs that provoke hypotension (e.g. haloperidol, amitriptyline) and antihypertensive drugs (risk of hypotension);
  - potassium-depleting drugs (e.g. corticosteriods, laxatives, amphotericin B), sodium-depleting drugs (e.g. SSRI, carbamazepine);
  - oral antidiabetics and insulin (risk of hyperglycaemia).
- **Pregnancy**: administer only if clearly needed

- **Breast-feeding**: CONTRA-INDICATED (excreted in milk and reduces milk production)

Remarks

- Preferably take in the morning.
- A potassium-rich diet (dates, bananas, mangos, oranges, tomatoes, etc.) is recommended during treatment. If potassium level is < 3.5 mmol/litre, administer a sustained-release potassium supplement.
- Diuretics are not indicated in the treatment of nutritional oedema or oedema associated with pre-eclampsia.

Storage

- Below 25 °C

GLIBENCLAMIDE oral

Prescription under medical supervision

Therapeutic action

- Sulfonylurea antidiabetic

Indications

- Second-line treatment of type 2 diabetes, in patients under 60 years:
  - as monotherapy, when metformin is not tolerated or contra-indicated
  - in combination with metformin, when glycaemic control is inadequate with metformin alone

Forms and strengths

- 5 mg scored tablet

Dosage and duration

- Adult:
  Week 1: 2.5 mg once daily in the morning
  Week 2: 5 mg once daily in the morning
  Increase if necessary in increments of 2.5 mg weekly, according to blood glucose levels.
  The usual dose is 5 mg 2 times daily (max. 15 mg daily).

Contra-indications, adverse effects, precautions

- Do not administer in the event of:
  - allergy to sulfonamides;
  - type 1 diabetes, juvenile diabetes, ketoacidosis;
  - severe renal or hepatic impairment.
- May cause: hypoglycaemia, especially in patients over 60 years; gastrointestinal disturbances, weight gain; rarely, allergic reactions.
- Monitor combination with:
  - diuretics, angiotensin-converting enzyme inhibitors, non-steroidal anti-inflammatory drugs, azole antifungals (fluconazole, miconazole), ciprofloxacin, erythromycin, co-trimoxazole (enhanced hypoglycaemic effect);
  - rifampicin (decreased hypoglycaemic effect);
  - drugs increasing blood glucose levels: corticosteroids, hydrochlorothiazide, salbutamol, chlorpromazine.

- Avoid combination with alcohol (antabuse reaction and risk of hypoglycaemia).
- **Pregnancy**: avoid. Insulin is the drug of choice for the treatment of type 2 diabetes in pregnant women (improved glycaemic control; reduced risk of foetal anomalies and neonatal complications).
- **Breast-feeding**: CONTRA-INDICATED

Remarks

- Take with meals.
- For doses greater than 5 mg/day, divide the daily dose into 2 doses.

Storage

 - Below 25 °C

GLICLAZIDE oral

Prescription under medical supervision

Therapeutic action

- Sulfonylurea antidiabetic

Indications

- Second-line treatment of type 2 diabetes, in patients over 60 years:
  - as monotherapy, when metformin is not tolerated or contra-indicated
  - in combination with metformin, when glycaemic control is inadequate with metformin alone

Forms and strengths

- 80 mg scored tablet

Dosage and duration

- Adult:
  Weeks 1 and 2: 40 mg once daily in the morning
  Increase if necessary in increments of 40 mg every 2 weeks, according to blood glucose levels (Weeks 3 and 4: 80 mg once daily in the morning).
  The usual dose is 80 to 160 mg daily (max. 240 mg daily).

Contra-indications, adverse effects, precautions

- Do not administer in the event of:
  - allergy to sulfonamides;
  - type 1 diabetes, juvenile diabetes, ketoacidosis;
  - severe renal or hepatic impairment.
- May cause: hypoglycaemia, gastrointestinal disturbances, weight gain; rarely, allergic reactions.
- Monitor combination with:
  - diuretics, angiotensin-converting enzyme inhibitors, non-steroidal anti-inflammatories, azole antifungals (fluconazole, miconazole), ciprofloxacin, erythromycin, co-trimoxazole (enhanced hypoglycaemic effect);
  - rifampicin (decreased hypoglycaemic effect);
  - drugs increasing blood glucose levels: corticosteroids, hydrochlorothiazide, salbutamol, chlorpromazine.
- Avoid combination with alcohol (risk of hypoglycaemia).

- **Pregnancy:** avoid. Insulin is the drug of choice for the treatment of type 2 diabetes in pregnant women (improved glycaemic control; reduced risk of foetal anomalies and neonatal complications).
- **Breast-feeding**: CONTRA-INDICATED

Remarks

- Take with meals (reduced risk of gastrointestinal disturbances).
- For doses greater than 80 mg daily, divide the daily dose into 2 doses.
- Also comes in 30 and 60 mg modified release tablets.

Storage

- Below 25 °C

GLYCERYL TRINITRATE = NITROGLYCERIN = TRINITRIN oral

Last updated: August 2021

Prescription under medical supervision

Therapeutic action

- Vasodilator, antianginal

Indications

- Short-term prophylaxis and treatment of acute angina
- Adjunctive therapy in acute heart failure (acute pulmonary oedema)

Forms and strengths

- 0.5 mg sublingual tablet

Dosage

Short-term prophylaxis of acute angina

- Adult: 0.5 to 1 mg sublingually taken 5 to 10 minutes before a precipitating event (physical exertion, stress, etc.)

Treatment of acute angina

- Adult: 0.5 to 1 mg sublingually, to be repeated 1 to 3 times at 3-4 minute intervals

Adjunctive therapy in acute heart failure (acute pulmonary oedema)

- Adult: 0.5 mg sublingually, to be repeated 1 to 2 times at 5 minute intervals if necessary. The objective is to lower the systolic pressure to 120-150 mmHg and the diastolic pressure to under 110 mmHg.

Do not exceed 3 mg daily.

Duration

- According to clinical response

Contra-indications, adverse effects, precautions

- Do not administer to patients with obstructive cardiomyopathy, hypotension, shock, severe anaemia, intracranial hypertension or neurologic injury.
- May cause:
  - orthostatic hypotension (especially in older patients), headache, nausea, flushing of the face, haemolytic anaemia in patients with G6PD deficiency;
  - severe hypotension with risk of circulatory collapse in the event of overdose.
- Avoid combination or use the lowest effective dose in patients taking another nitrate derivative, a vasodilator, a diuretic or an antihypertensive drug (enhances hypotensive effects), and in older patients.
- Do not combine with sildenafil or other drugs used for erectile dysfunction (risk of severe hypotension, syncope and acute coronary syndrome).
- **Pregnancy**: not recommended (safety is not established)
- **Breast-feeding**: not recommended (safety is not established)

Remarks

- Antianginal effect appears within less than 5 minutes and persists for less than 1 hour.
- Tolerance to nitrates develops with prolonged use and can be overcome by short periods of nitrate withdrawal, and not by dose escalation.
- Sustained-release formulations are used for the long-term management of acute angina and the treatment of heart failure.

Storage

- - Below 25 °C, preferably in airtight glass container

GRISEOFULVIN oral

Prescription under medical supervision

Therapeutic action

- Antifungal

Indications

- Dermatophyte infections of the scalp (scalp ringworm)
- Dermatophyte infections of the skin and folds, in the event of extended lesions or if the topical treatment has failed

Forms and strengths

- 125 mg and 500 mg tablets

Dosage

- Child 1 to 12 years: 10 to 20 mg/kg once daily (max. 500 mg daily)
- Child 12 years and over and adult: 500 mg once daily; 1 g once daily in severe infections

Age	Weight	125 mg tablet	500 mg tablet
1 to < 2 years	10 to < 13 kg	1 tab	¼ tab
2 to < 7 years	13 to < 24 kg	2 tab	½ tab
7 to < 12 years	24 to < 35 kg	4 tab	1 tab
≥ 12 years and adult	≥ 35 kg	4 to 8 tab	1 to 2 tab

Duration

- Scalp: 6 weeks minimum
- Skin and folds: 4 to 6 weeks

Contra-indications, adverse effects, precautions

- Do not administer to patients with hepatic impairment, lupus erythematous, porphyria (may trigger attacks of acute porphyria).
- May cause: gastrointestinal disturbances, headache, skin reactions (eruption, urticaria, etc.); photosensitivity (protect exposed skin from sun exposure).
- In women, use a non-hormonal contraception or injectable medroxyprogesterone during treatment and up to one month after the end of treatment.
- Monitor patients taking warfarin (anticoagulant effect decreased).
- Avoid alcohol during treatment (antabuse effect).
- **Pregnancy and breast-feeding:** CONTRA-INDICATED. Apply a topical treatment (miconazole 2% cream or Whitfield ointment) in order to limit the lesions until it is possible to use griseofulvin.

Remarks

- Take with meals.
- For young children, crush the tablet and mix it with a liquid.

Storage

Below 25 °C

HALOPERIDOL oral

Last updated: February 2024

Prescription under medical supervision

Due to the numerous and potentially severe adverse effects of haloperidol, patients should be kept under close surveillance.

Therapeutic action

- Antipsychotic

Indications

- Acute confusional state (delirium) and acute alcohol intoxication
- Acute or chronic psychosis
- Acute manic episode
- Agitation or aggressive behaviour in patients with acute or chronic psychosis, in combination with promethazine

Forms and strengths

- 0.5 mg, 1.5 mg and 5 mg tablets
- 2 mg/ml oral solution with pipette graduated in mg

Dosage

Acute confusional state (delirium) and acute alcohol intoxication

- Adult: 0.5 to 1 mg 2 times daily

Acute or chronic psychosis

- Adult: 0.5 to 1 mg 2 times daily. Gradually increase up to 10 mg daily if necessary (max. 15 mg daily).

Acute manic episode

- Adult: 5 mg once daily. Gradually increase up to 10 mg daily if necessary (max. 15 mg daily).

Agitation or aggressive behaviour in patients with acute or chronic psychosis, with promethazine

- Adult: 5 mg, to be repeated after 60 minutes if necessary

Reduce the dose by half in older patients (max. 5 mg daily).
Use the lowest effective dose, especially in the event of prolonged treatment.

Duration

- Delirium and acute alcohol intoxication: as short as possible (max. 7 days)
- Acute psychosis: at least 3 months
- Chronic psychosis: at least one year
- Manic episode: 8 weeks after remission of symptoms

Discontinue treatment gradually (over 4 weeks). If signs of relapse occur, increase the dose then decrease it more gradually.

Contra-indications, adverse effects, precautions

- Do not administer to patients with cardiac disorders (heart failure, recent myocardial infarction, conduction disorders, bradycardia, etc.), dementia (e.g. Alzheimer's disease), Parkinson's disease and history of neuroleptic malignant syndrome.
- Administer with caution and carefully monitor use in older patients and patients with hypokalaemia, hypotension, hyperthyroidism, renal or hepatic impairment, history of seizures.
- May cause: drowsiness (caution when driving/operating machinery), extrapyramidal symptoms, early or tardive dyskinesia, anticholinergic effects (constipation, dry mouth), hyperprolactinaemia, weight gain, sexual dysfunction, QT-prolongation, ventricular arrhythmia, orthostatic hypotension; neuroleptic malignant syndrome (unexplained hyperthermia with neuromuscular disorders), rare but requiring immediate treatment discontinuation.
- In case of extrapyramidal symptoms, try reducing the dose of haloperidol or, if the extrapyramidal symptoms are severe, add biperiden or trihexyphenidyl.
- Avoid or monitor combination with:
  - central nervous system depressants (opioid analgesics, sedatives, H1 antihistamines, etc.);
  - fluoxetine, paroxetine, sertraline, ritonavir (increased plasma concentrations of haloperidol);
  - carbamazepine, rifampicin, phenobarbital, phenytoin (decreased plasma concentrations of haloperidol);
  - antihypertensive drugs (risk of hypotension); drugs that prolong the QT interval (amiodarone, chloroquine, erythromycin, fluconazole, mefloquine, pentamidine, quinine, etc.).
- Avoid alcohol during treatment (increased risk of adverse effects).
- **Pregnancy**: re-evaluate whether the treatment is still necessary; if it is continued, use the lowest effective dose. Observe the neonate the first few days (risk of agitation, tremors, hypertonia/hypotonia, respiratory difficulties, sleeping disorders, etc.) if the mother was under treatment in the 3rd trimester.
- **Breast-feeding**: if absolutely necessary, do not exceed 10 mg daily.

Storage

– – Below 25 °C

HYDROCHLOROTHIAZIDE oral

Prescription under medical supervision

Therapeutic action

- Thiazide diuretic

Indications

- Hypertension
- Oedema associated with renal, hepatic or congestive heart failure

Forms and strengths

- 12.5 mg and 25 mg tablets

Dosage

Hypertension

- Adult: 12.5 to 25 mg once daily in the morning (max. 25 mg daily)

Oedema associated with renal, hepatic or congestive heart failure

- Adult: 25 mg once daily in the morning or 25 mg 2 times daily (max. 100 mg daily)

Duration

- According to clinical response

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe renal failure.
- Administer with caution in patients with hypokalaemia, hyponatraemia and in elderly patients.
- May cause:
  - dehydration, hypotension, hypokalaemia, hyponatraemia;
  - gastrointestinal disturbances, headache, dizziness, skin rash, impotence, photosensitivity.
- Avoid or monitor combination with NSAIDs (risk of renal impairment); lithium (increased plasma concentrations of lithium).
- Monitor combination with:
  - drugs that provoke hypotension (e.g. haloperidol, amitriptyline) and antihypertensive drugs (risk of hypotension);

    - potassium-depleting drugs (e.g. corticosteriods, laxatives, amphotericin B), sodium-depleting drugs (e.g. SSRI, carbamazepine), drugs enhancing hypercalcemic effect (e.g. calcium, ergocalciferol);
    - oral antidiabetics and insulin (risk of hyperglycaemia).
- **Pregnancy**: CONTRA-INDICATED
- **Breast-feeding:** CONTRA-INDICATED

Remarks

- A potassium-rich diet (dates, bananas, mangos, oranges, tomatoes, etc.) is recommended during treatment. If potassium level is < 3.5 mmol/litre, administer a sustained-released potassium supplement.
- Diuretics are not indicated in the treatment of nutritional oedema.

Storage

- Below 25 °C

HYDROXYZINE oral

Last updated: February 2024

Prescription under medical supervision

Therapeutic action

- Sedating H1 antihistamine

Indications

- Moderate anxiety
- Insomnia

Forms and strengths

- 25 mg tablet

Dosage

Moderate anxiety

- Adult: 25 to 50 mg 2 times daily (max. 100 mg daily)
  Reduce the dose by half in older patients.

Insomnia

- Adult: 25 mg once daily at bedtime

Duration

- Moderate anxiety: as short as possible (max. 2 weeks)
- Insomnia: 7 to 10 days

Contra-indications, adverse effects, precautions

- Do not administer to patients with closed-angle glaucoma, prostate disorders, dementia, history of QT interval prolongation.
- Do not combine with drugs that prolong the QT interval (amiodarone, co-artemether, erythromycin, fluconazole, haloperidol, mefloquine, pentamidine, quinine, etc.).
- Administer with caution (max. 50 mg daily) and monitor use in older patients or patients with hepatic impairment or severe renal impairment.
- May cause:
  - drowsiness (caution when driving/operating machinery), headache, dizziness;

    - anticholinergic effects (dry mouth, constipation, blurred vision, tachycardia, disorders of micturition);
    - rarely: seizures, QT interval prolongation, allergic reactions.
- Administer with caution and monitor combination with:
    - central nervous system depressants (opioid analgesics, sedatives, etc.);
    - anticholinergic drugs (atropine, amitriptyline, chlorpromazine, promethazine, etc.).
- Avoid alcohol during treatment (increased risk of adverse effects).
- **Pregnancy and breast-feeding**: avoid

Storage

– – Below 25 °C

HYOSCINE BUTYLBROMIDE = BUTYLSCOPOLAMINE oral

Last updated: November 2024

Prescription under medical supervision

Do not exceed recommended doses, especially in children and older patients (risk of severe anticholinergic effects).

Therapeutic action

- Antispasmodic

Indications

- Spasms of the gastrointestinal tract and genitourinary tract

Forms and strengths

- 10 mg tablet

Dosage

- Adult: 10 to 20 mg, to be repeated up to 3 or 4 times daily if necessary

Duration

- According to clinical response; no prolonged treatment.

Contra-indications, adverse effects, precautions

- Do not administer to patients with urethro-prostatic disorders, cardiac disorders, closed-angle glaucoma.
- May cause: urinary retention, dryness of the mouth, constipation, blurred vision, tachycardia.
- Administer with caution and under close supervision to patients taking other anticholinergic drugs (antidepressants, antipsychotics, H-1 antihistamines, antiparkinsonians, etc.).
- Administer with caution to patients with fever (may affect thermoregulation).

- **Pregnancy**: no contra-indication; NO PROLONGED TREATMENT
  Breast-feeding: no contra-indication; NO PROLONGED TREATMENT

Remarks

- Oral antispasmodic drugs are not included in the WHO list of essential medicines.

Storage

– – Below 25 °C

IBUPROFEN oral

Prescription under medical supervision

Therapeutic action

- Analgesic, antipyretic, non-steroidal anti-inflammatory (NSAID)

Indications

- Mild to moderate pain, fever, rheumatic diseases

Forms and strengths

- 200 mg and 400 mg enteric-coated tablets
- 100 mg/5 ml oral suspension, with pipette graduated per kg of body weight (each kg graduation corresponds to 10 mg ibuprofen)

Dosage

Pain, fever

- Child over 3 months: 5 to 10 mg/kg 3 to 4 times daily (max. 30 mg/kg daily)
- Child 12 years and over and adult: 200 to 400 mg 3 to 4 times daily (max. 1200 mg daily)
- In post-operative period, ibuprofen should be given on a regular basis, every 8 hours, rather than “as needed”.

Age	Weight	100 mg/5 ml susp.	200 mg tablet	400 mg tablet
3 months to < 6 years	5 to < 20 kg	1 pipette filled up to the graduation corresponding to the child's weight x 3	–	–
6 to < 10 years	20 to < 30 kg	1 pipette filled up to the graduation corresponding to the child's weight x 3	1 tab x 3	–
10 to < 12 years	30 to < 40 kg	–	1 tab x 4	–
≥ 12 years and adult	≥ 40 kg	–	2 tab x 3 or 1 tab x 4	1 tab x 3

Rheumatic diseases
- Child: up to 40 mg/kg daily maximum
- Adult: up to 3200 mg daily maximum

Duration

- According to clinical response
- Post-operative pain: 8 days max.

Contra-indications, adverse effects, precautions

- Do not administer to children under 3 months, patients with allergy to NSAID, peptic ulcer, coagulation defects, haemorrhage, surgery with risk of major blood loss, severe renal or hepatic impairment, severe heart failure, severe malnutrition, uncorrected dehydration or hypovolaemia, severe infection.
- May cause: allergic reactions, epigastric pain, peptic ulcer, haemorrhage, renal impairment.
- Administer with caution to elderly or asthmatic patients.
- Do not combine with: methotrexate, anticoagulants and other NSAIDs.
- Monitor combination with diuretics and angiotensin-converting enzyme inhibitors (drink plenty of fluids to avoid renal failure).
- **Breast-feeding**: no contra-indication (short term treatment)
- **Pregnancy**: avoid. CONTRA-INDICATED from the beginning of the 6^{th} month. Use paracetamol.

Remarks

- Take with meals. Doses must be taken at least 4 hours apart.

- Clean the graduated pipette after use. Shake the bottle before use.
- If ibuprofen alone does not provide pain relief, combine with paracetamol and/or an opioid analgesic.

Storage

– – Below 25 °C
Once opened, oral suspension must be stored between 8 °C and 15 °C.

IODIZED OIL oral

Therapeutic action

- Iodine supplementation

Indications

- Prevention and treatment of severe iodine deficiency

Forms and strengths

- 190 mg capsule of iodine

Dosage and duration

- Child under 1 year: 1 capsule (190 mg) once a year
- Child from 1 to < 6 years: 2 capsules (380 mg) once a year
- Child from 6 to 15 years: 3 capsules (570 mg) once a year
- Pregnant woman or women of childbearing age: 2 capsules (380 mg) once a year

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to iodine or hyperthyrodism.
- Do not administer to patients over 45 years.
- May cause: allergic reactions, dysthyroidism.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- For young children, open the capsule and empty the contents into the child's mouth.
- Also comes in 10 ml ampoules containing 480 mg/ml to be administered by IM injection using a glass syringe.

Storage

- - Below 25 °C

IPRATROPIUM bromide metered dose inhaler

Last updated: June 2023

Prescription under medical supervision

Therapeutic action

- Bronchodilator, anticholinergic drug

Indications

- Severe asthma attack, in combination with salbutamol

Forms and strengths

- Solution for inhalation in pressurised metered dose inhaler, delivering 20 micrograms of ipratropium/puff

Dosage and duration

- Child and adult: 4 to 8 puffs (80 to 160 micrograms) every 20 minutes for the first hour

Administration technique

- Shake the inhaler. Remove the mouthpiece cover.
- Inhale and breathe out as completely as possible. Place the lips tightly around the mouthpiece. Inhale deeply while activating the inhaler. Hold breath 10 seconds before exhaling.
- Hand-breath co-ordination is very difficult in children under 6 years, older patients and patients with severe dyspnoea. Use a spacer to facilitate administration and improve the efficacy of treatment.

Contra-indications, adverse effects, precautions

- May cause:
  - throat irritation, headache, cough, vomiting;
  - anticholinergic effects: dryness of the mouth, constipation, dilation of the pupils, blurred vision, urinary retention, tachycardia.
- Administer with caution to older patients and patients with closed-angle glaucoma, urethroprostatic disorders, urinary retention.

- Avoid or monitor combination with drugs known to have anticholinergic effects: tricyclic antidepressants (e.g. amitriptyline), first generation H-1 antihistamines (e.g. hydroxyzine, promethazine), biperiden, antispasmodics (e.g. atropine, hyoscine butylbromide), antipsychotics (e.g. chlorpromazine, haloperidol), etc. (increased risk of adverse effects).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- In severe asthma attack, preferably administer the treatment by nebulisation.
- Clean the mouthpiece before and after each use.
- Do not pierce or incinerate used aerosol containers (risk of explosion).

Storage

– Below 25 °C

IPRATROPIUM bromide nebuliser solution

Last updated: June 2023

Prescription under medical supervision

Therapeutic action

- Bronchodilator, anticholinergic drug

Indications

- Severe asthma attack, in combination with salbutamol

Forms and strengths

- Solution for inhalation, in unit dose vial of 0.25 mg in 1 ml (0.25 mg/ml) and 0.5 mg in 2 ml (0.25 mg/ml), to be administered via a nebuliser

Dosage and duration

- Child under 5 years: 0.25 mg (1 ml) per nebulisation every 20 minutes for the first hour
- Child 5 years and over and adult: 0.5 mg (2 ml) per nebulisation every 20 minutes for the first hour

Contra-indications, adverse effects, precautions

- May cause:
  - throat irritation, headache, cough, vomiting;
  - anticholinergic effects: dryness of the mouth, constipation, dilation of the pupils, blurred vision, urinary retention, tachycardia.
- Administer with caution to older patients and patients with closed-angle glaucoma, urethro-prostatic disorders, urinary retention.
- Avoid or monitor combination with drugs known to have anticholinergic effects: tricyclic antidepressants (e.g. amitriptyline), first generation H-1 antihistamines (e.g. hydroxyzine, promethazine),-biperiden, antispasmodics (e.g. atropine, hyoscine butylbromide), antipsychotics (e.g. chlorpromazine, haloperidol), etc. (increased risk of adverse effects).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Volumes of nebuliser solution to be administered are insufficient to obtain efficient nebulisation in most nebulisers: add ipratropium to salbutamol and then 0.9% sodium chloride to obtain a total volume of 5 ml in the reservoir of the nebuliser. Stop the nebulisation when the reservoir is empty (after around 10 to 15 minutes).

Storage

– Below 25 °C

ISONIAZID = H oral

Last updated: June 2021

Prescription under medical supervision

Therapeutic action

- First line antituberculosis antibacterial (bactericidal activity)

Indications

- Tuberculosis, in combination with other antituberculosis antibacterials
- Latent tuberculosis, as monotherapy or in combination with rifampicin or rifapentine

Forms and strengths

- 100 mg and 300 mg tablets
- 50 mg and 100 mg dispersible tablets

Dosage

Tuberculosis, latent tuberculosis as monotherapy or in combination with daily rifampicin

- Child under 30 kg: 10 mg/kg (7 to 15 mg/kg) once daily, on an empty stomach
- Child 30 kg and over and adult: 5 mg/kg (4 to 6 mg/kg) once daily, on an empty stomach

Do not exceed 300 mg daily.

Latent tuberculosis in combination with weekly rifapentine

- Child under 30 kg and over 2 years: 20 to 30 mg/kg once weekly, on an empty stomach
- Child 30 kg and over and adult: 900 mg once weekly, on an empty stomach

Latent tuberculosis in combination with daily rifapentine

- Child 13 years and over and adult: 300 mg once daily, on an empty stomach

Duration

- Tuberculosis and latent tuberculosis as monotherapy: according to protocol
- Latent tuberculosis in combination with daily rifampicin or weekly rifapentine: 3 months
- Latent tuberculosis in combination with daily rifapentine: 1 month

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe hepatic impairment.
- May cause:
  - peripheral neuropathy, especially in malnourished, alcoholic, diabetic, HIV-infected patients; pregnant and breast-feeding women and patients with renal impairment;
  - hepatotoxicity, especially in alcoholic patients or patients with chronic hepatic disease or receiving rifampicin, or over 35 years;
  - hypersensitivity reactions, psychotic reactions, seizures and depression.
- Monitor liver function in patients with known hepatic disease.
- If signs of hepatotoxicity (e.g. jaundice) develop, isoniazid should be discontinued until symptoms resolve.
- Administer with caution and closely monitor patients taking phenytoin, carbamazepine, benzodiazepines (risk of toxicity), warfarin (risk of bleeding).
- Administer pyridoxine (vitamin B_6) in patients at risk of peripheral neuropathy (child: 5 to 10 mg once daily; adult: 10 mg once daily).
- **Pregnancy**: no contra-indication. Administer pyridoxine to the mother (10 mg once daily).
- **Breast-feeding**: no contra-indication;. Administer pyridoxine to the mother (10 mg once daily) and the infant (5 mg once daily).

Remarks

- For patients sensitive to first-line antituberculosis treatment, isoniazid is given as part of a fixed dose combination.
- Also comes in fixed dose combination containing 300 mg of rifapentine/300 mg of isoniazid for the treatment of latent tuberculosis in children over 14 years and adults.

Storage

– – Below 25 °C

ISOSORBIDE DINITRATE oral

Last updated: August 2021

Prescription under medical supervision

Therapeutic action

- Vasodilator, antianginal

Indications

- Prophylaxis and treatment of acute angina
- Treatment of left-sided or global chronic heart failure in patients with intolerance to angiotensin-converting enzyme (ACE) inhibitors
- Adjunctive therapy in acute heart failure (acute pulmonary oedema)

Forms and strengths

- 5 mg sublingual tablet

Dosage

Short-term prophylaxis of acute angina

- Adult: 5 to 10 mg sublingually taken 10 minutes before a precipitating event (physical exertion, stress, etc.)

Long-term prophylaxis of acute angina and treatment of left-sided or global chronic heart failure

- Adult: 5 to 40 mg orally 2 to 3 times daily
  Gradually increase the dose until effective. Do not stop treatment abruptly.

Treatment of acute angina

- Adult: 5 to 10 mg sublingually, to be repeated after 10 minutes if necessary

Adjunctive therapy in acute heart failure (acute pulmonary oedema)

- Adult: 5 mg sublingually, to be repeated after 10 minutes if necessary. The objective is to lower the systolic pressure to 120-150 mmHg and the diastolic pressure to under 110 mmHg.

Duration

- According to clinical response

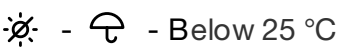
Contra-indications, adverse effects, precautions

- Do not administer to patients with obstructive cardiomyopathy, hypotension, shock, severe anaemia, intracranial hypertension or neurologic injury.
- May cause:
  - orthostatic hypotension (especially in older patients), headache, nausea, flushing of the face, haemolytic anaemia in patients with G6PD deficiency;
  - severe hypotension with risk of circulatory collapse in the event of overdose.
- Avoid combination or use the lowest effective dose in patients taking another nitrate derivative, a vasodilator, a diuretic or an antihypertensive drug (enhances hypotensive effects), and in older patients.
- Do not combine with sildenafil or other drugs used for erectile dysfunction (risk of severe hypotension, syncope and acute coronary syndrome).
- **Pregnancy**: not recommended (safety is not established)
- **Breast-feeding**: not recommended (safety is not established)

Remarks

- By sublingual route, antianginal effect appears within less than 10 minutes and persists for 1 to 2 hours.
- Tolerance to nitrates develops with prolonged use and can be overcome by short periods of nitrate withdrawal, and not by dose escalation.
- Sustained-release formulations are used for the long-term management of acute angina and the treatment of heart failure. The time interval between each administration depends on the preparations.

Storage

 - Below 25 °C

ITRACONAZOLE oral

Prescription under medical supervision

Therapeutic action

- Antifungal

Indications

- Histoplasmosis and penicilliosis: treatment and secondary prophylaxis
- Dermatophytosis of the scalp (*Tinea capitis*)

Forms and strengths

- 100 mg capsule
- Also comes in 50 mg/5 ml oral solution.

Dosage and duration

Histoplasmosis (moderate symptoms)
- Child: 5 mg/kg once daily for 6 to 12 weeks
- Adult: 200 mg 3 times daily for 3 days then 200 mg 1 to 2 times daily for 6 to 12 weeks

Histoplasmosis (severe symptoms, disseminated form)
- Same treatment for 12 weeks, preceded by one to 2 weeks of treatment with amphotericin B

Penicilliosis (moderate symptoms)
- Adult: 200 mg 2 times daily for 8 weeks

Penicilliosis (severe symptoms)
- Same treatment for 10 weeks, preceded by 2 weeks of treatment with amphotericin B

Secondary prophylaxis of histoplasmosis and penicilliosis
- Adult: 200 mg once daily as long as required

Dermatophytosis of the scalp
- Child: 3 to 5 mg/kg once daily for 4 weeks
- Adult: 200 mg once daily for 2 to 4 weeks

Contra-indications, adverse effects, precautions

- Administer with caution and monitor use in patients > 60 years or with hepatic or renal impairment or congestive heart failure.
- May cause: gastrointestinal disturbances, headache, skin reactions sometimes severe, anaphylactic reaction, hepatic disorders sometimes severe, paraesthesia, oedema, cardiac failure. Stop treatment in the event of anaphylactic reaction, hepatic disorders or severe skin reaction.
- In case of prolonged treatment, monitor liver function.
- Do not combine with quinidine (risk of arrhythmia).
- Avoid or monitor combination with amiodarone, calcium-channel blockers, benzodiazepines, certain antiretrovirals (e.g. indinavir, ritonavir, saquinavir), corticosteroids (dexamethasone, prednisolone), warfarin, carbamazepine, digoxin: increased blood concentration of these drugs.
- Efficacy of itraconazole may be reduced when combined with: rifampicin, rifabutin, isoniazid, efavirenz, phenytoin, phenobarbital.
- Do not administer simultaneously with aluminium or magnesium hydroxide: administer 2 hours apart.
- **Pregnancy and breast-feeding**: avoid; for histoplasmosis, amphotericin B alone for 4 to 6 weeks is an alternative in pregnant women. Do not administer in the event of dermatophytosis of the scalp (apply a topical treatment until it is possible to use itraconazole).

Remarks

- Do not open the capsules; take with meals.

Storage

Below 25 °C

IVERMECTIN oral

Prescription under medical supervision

Therapeutic action

- Anthelminthic, scabicide

Indications

- Onchocerciasis
- Scabies

Forms and strengths

- 3 mg tablet

Dosage and duration

Onchocerciasis

- Child over 15 kg and adult: 150 micrograms/kg single dose. A 2nd dose should be administered after 3 months if clinical signs persist. Repeat the treatment every 6 or 12 months to maintain the parasite load below the threshold at which clinical signs appear.

Height **Weight**	**0 to < 90 cm** **< 15 kg**	**90 to < 120 cm** **15 to < 25 kg**	**120 to < 140 cm** **25 to < 45 kg**	**140 to < 160 cm** **45 to < 65 kg**	**≥ 160 cm** **≥ 65 kg**
3 mg tablet	**Do not administer**	1 tab	2 tab	3 tab	4 tab

Ordinary scabies

- Child over 15 kg and adult: 200 micrograms/kg single dose. A single dose may be sufficient; a 2nd dose one week later reduces the risk of treatment failure.

Crusted scabies

- Child over 15 kg and adult: 2 doses of 200 micrograms/kg one week apart, in combination with a topical keratolytic and topical scabicide; additional doses may be necessary.

Contra-indications, adverse effects, precautions

- May cause:
  - increased itching;
  - moderate reactions in patients with onchocerciasis: ocular irritation, headache, arthralgia, myalgia, lymphadenopathy, fever, oedema;
  - severe reactions in patients co-infected with *Loa loa*: marked functional impairment if *Loa loa* microfilaraemia > 8,000 mf/ml; encephalopathy if *Loa loa* microfilaraemia > 30,000 mf/ml.
- Administer with caution in regions where loiasis is endemic:
  - For symptomatic onchocerciasis:
    Evaluate the severity of *Loa loa* microfilaraemia and manage accordingly: either treat as an out-patient under supervision, or hospitalise, or choose an alternative treatment (doxycycline).
    If it is not possible to perform a thick film examination: ivermectin may be administered if the patient has no history of loiasis (migration of an adult worm under the conjunctiva or transient « Calabar » swellings), nor history of severe adverse reactions following a previous treatment with ivermectin. In other cases, it is wiser either to treat under supervision, or to choose an alternative treatment (doxycycline), or decide not to treat, according to the severity of the onchocerciasis and the previous history.
  - For ordinary scabies:
    Review the patient's history and if in doubt, topical scabicidal treatment is preferred.
- **Pregnancy**: avoid (safety is not established)
- **Breast-feeding:** no contra-indication

Remarks

- Take tablets on an empty stomach. Tablets may be crushed for administration to small children.
- Ivermectin is also used for the treatment of strongyloidiasis (200 micrograms/kg single dose) and cutaneous larva migrans (200 micrograms/kg daily for 1 to 2 days).

Storage

- Below 25 °C

LABETALOL oral

Last updated: March 2024

Prescription under medical supervision

Therapeutic action

- Non cardioselective beta-blocker

Indications

- Hypertension in pregnancy

Forms and strengths

- 100 mg and 200 mg tablets

Dosage

- 100 mg 2 times daily. Increase if necessary in 100 to 200 mg increments until an effective dose is reached, usually 400 to 800 mg daily (max. 2400 mg daily). If higher doses are required, give in 3 divided doses.

Duration

- According to clinical response. Do not stop treatment abruptly, decrease doses gradually.

Contra-indications, adverse effects, precautions

- Do not administer to patients with asthma, chronic obstructive bronchopneumonia, heart failure, severe hypotension, bradycardia < 50/minute, atrio-ventricular heart blocks, Raynaud's syndrome, hepatic impairment.
- May cause: bradycardia, hypotension, heart failure, bronchospasm, hypoglycaemia, gastrointestinal disturbances, dizziness, headache, weakness, urinary retention.
- Administer with caution to patients with diabetes (risk of hypoglycaemia).
- Reduce dosage in patients with renal impairment.
- In the event of anaphylactic shock, risk of resistance to epinephrine.
- Avoid or monitor combination with: mefloquine, digoxin, amiodarone, diltiazem, verapamil (risk of bradycardia); tricyclic antidepressants, antispychotics, other anti-hypertensive drugs (risk of hypotension).

- Do not administer simultaneously with antacids (aluminium or magnesium hydroxide, etc.). Administer 2 hours apart.
- Monitor the neonate: risk of hypoglycaemia, bradycardia, respiratory distress occurring most often during the first 24 hours and until 72 hours after the birth.
- **Breast-feeding**: no contra-indication

Storage

– – Below 25 °C

LACTULOSE oral

Last updated: January 2024

Therapeutic action

- Osmotic laxative

Indications

- Prevention of constipation in patients taking opioid analgesics (e.g. codeine, morphine)

Forms and strengths

- 10 g/15 ml oral solution, to be administered using a measuring device (oral syringe, measuring spoon, or cup with graduations)

Dosage and duration

- Child under 1 year: 5 ml daily (3.3 g daily)
- Child from 1 to 6 years: 5 to 10 ml daily (3.3 to 6.7 g daily)
- Child from 7 to 14 years: 10 to 15 ml daily (6.7 to 10 g daily)
- Child over 14 years and adult: 15 to 45 ml daily (10 to 30 g daily)

Start lactulose when analgesic treatment continues more than 48 hours.
Lactulose must be taken daily, until the end of the opioid treatment. Regular follow up (frequency/consistency of stools) is essential in order to adjust dosage correctly.

Contra-indications, adverse effects, precautions

- Do not administer to patients with Crohn's disease, ulcerative colitis, intestinal obstruction, undiagnosed abdominal pain.
- May cause: abdominal discomfort, flatulence and diarrhoea.
- In the event of diarrhoea, exclude a faecal impaction and intestinal obstruction; reduce the dose.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- It may take up to 48 hours, or even longer, before the treatment is effective. Lactulose is not indicated in acute constipation where a rapid result is needed.
- If necessary, lactulose may be given in combination with a stimulant laxative (e.g. bisacodyl, senna).
- The oral solution may be taken undiluted, or diluted in water.
- The treatment should be accompanied by dietary measures (fluids and fibre).

Storage

Below 25 °C. Do not store in a refrigerator (cristallisation).

LAMIVUDINE = 3TC oral

Last updated: November 2022

Prescription under medical supervision

Therapeutic action

- Antiretroviral, nucleoside reverse transcriptase inhibitor

Indications

- HIV infection, in combination with other antiretrovirals

Forms and strengths

- 150 mg tablet
- 50 mg/5 ml oral solution

Dosage

The daily dose is administered once daily or in 2 divided doses.

- Child 1 month and over and adult:

Weight	Daily dose	50 mg/5 ml oral sol.	150 mg tablet
3 to < 6 kg	60 mg	3 ml x 2	–
6 to < 10 kg	80 mg	4 ml x 2	–
10 to < 14 kg	120 mg	6 ml x 2	–
14 to < 20 kg	150 mg	–	½ tab x 2 or 1 tab x 1
20 to < 25 kg	225 mg	–	½ tab morning and 1 tab evening or 1 ½ tab x 1
≥ 25 kg	300 mg	–	1 tab x 2 or 2 tab x 1

Duration

- Depending on the efficacy and tolerance of lamivudine.

Contra-indications, adverse effects, precautions

- Administer with caution to patients with history of hepatic disorders.
- May cause: gastrointestinal disturbances (diarrhoea, nausea, vomiting, etc.) and possibly: haematological disorders, especially when combined with zidovudine (neutropenia, anaemia, thrombocytopenia), myopathy, hepatic or pancreatic disorders.
- Reduce dosage in patients with renal impairment.
- **Pregnancy**: no contra-indication

Remarks

- In neonates, the dosage of lamivudine 50 mg/5 ml (i.e. 10 mg/ml) solution is:
  - 2 to < 3 kg: 0.5 ml 2 times daily (daily dose: 10 mg)
  - 3 to < 4 kg: 0.8 ml 2 times daily (daily dose: 16 mg)
  - 4 to < 5 kg: 1 ml 2 times daily (daily dose: 20 mg)
- Lamivudine is also used for HIV post-exposure prophylaxis, in combination with other antiretrovirals.
- Also comes in fixed-dose combinations with other antiretrovirals. Preferably use these formulations when available.

Storage

Below 25 °C
Once opened, oral solution keeps for 30 days maximum.

LEVETIRACETAM = LEV oral

Last updated: October 2024

Prescription under medical supervision

Due to the numerous and potentially severe adverse effects of LEV, patients should be kept under close surveillance.

Therapeutic action

- Antiseizure (antiepileptic)

Indications

- Epilepsy: generalised tonic-clonic seizures, focal (partial) seizures and absence seizures

Forms and strengths

- 250 mg, 500 mg, 750 mg and 1 g tablets
- 500 mg/5 ml oral solution, to be administered using a measuring device (oral syringe, measuring spoon, or cup with graduations)

Dosage

Start with a low dose then increase gradually based on patient's response and tolerance.

- Child 1 to 5 months: start with 7 mg/kg once daily; increase to 7 mg/kg 2 times daily after 2 weeks, then by increments of 7 mg/kg 2 times daily every 2 weeks if necessary (max. 21 mg/kg 2 times daily).
- Child 6 months to 17 years (< 50 kg): start with 10 mg/kg once daily; increase to 10 mg/kg 2 times daily after 2 weeks, then by increments of 10 mg/kg 2 times daily every 2 weeks if necessary (max. 30 mg/kg 2 times daily).
- Child 50 kg and over and adult: start with 250 mg 2 times daily; increase to 500 mg 2 times daily after 2 to 4 weeks, then by increments of 500 mg 2 times daily every 2 to 4 weeks if necessary (max. 1.5 g 2 times daily).

Duration

- As long as required. Do not stop treatment abruptly, even if changing treatment to another antiseizure medication.

Contra-indications, adverse effects, precautions

- Administer with caution to patients with renal impairment (reduce dosage) or heart disorders.
- May cause:
  - drowsiness (caution when driving/operating machinery), headache, asthenia, dizziness, mood and behavioural disturbances, anxiety, depression, insomnia;
  - haematologic disorders, gastrointestinal disturbances, cough, nasopharyngitis;
  - rarely: QT prolongation, hypersensitivity reactions (including severe cutaneous reactions such as Stevens-Johnson, Lyell and DRESS syndromes). In these cases stop treatment. Early symptoms such as fever, rash, mouth ulcers and bleeding require immediate medical attention.
  - respiratory depression and coma in the event of overdose.
- Avoid or monitor the combination with:
  - mefloquine (reduced effect of LEV);
  - drugs that prolong the QT interval (antimalarials, antipsychotics, fluconazole, fluoroquinolones, hydroxyzine, macrolides, ondansetron, etc.);
  - drugs containing alcohol, benzodiazepines, opioid analgesics, antipsychotics, first-generation antihistamines (hydroxyzine, promethazine), antidepressants, other antiseizure medications, etc. (increased sedation).
- Avoid alcohol during treatment (increased risk of adverse effects).
- **Pregnancy**: use the lowest effective dose.
  - Administer folic acid high dose (5 mg daily) during the first trimester. Start as soon as possible, including during the preconception period in case of planned pregnancy.
  - Plasma concentrations may decrease during pregnancy. Monitor clinical response; increase dose if needed then resume the usual dose after delivery.
- **Breast-feeding**: administer with caution (excreted in milk); reduce the dose if increased during pregnancy and monitor the child (risk of drowsiness and poor feeding).

Remarks

- LEV can be used with contraceptive implants and oral contraceptives.

Storage

– Below 25 °C

LEVODOPA/CARBIDOPA oral

Last updated: April 2024

Prescription under medical supervision

Due to the numerous and potentially severe adverse effects of levodopa/carbidopa, patients should be kept under close surveillance.

Therapeutic action

- Antiparkinson drug

Indications

- Parkinson's disease and extrapyramidal disorders except those induced by antipsychotics

Forms and strengths

- 100 mg levodopa + 10 mg carbidopa tablet
- 250 mg levodopa + 25 mg carbidopa tablet

Dosage

Doses are expressed as levodopa:

- Adult:
  - Initial dose: 50 to 125 mg 3 times daily, immediately after meals. Increase by 50 to 125 mg every day or every 2 days until the optimal dose for the individual patient is reached.
  - Maintenance dose usually: 250 to 500 mg 3 times daily, immediately after meals (max. 2 g daily)
- Reduce dosage in older patients.

Duration

- According to clinical response

Contra-indications, adverse effects, precautions

- Do not administer in case of severe psychosis, confusion, closed-angle glaucoma, recent myocardial infarction, malignant melanoma.
- May cause:
  - early in treatment, when dose is not adjusted : anorexia, vomiting, orthostatic hypotension, cardiac arrhythmia, agitation, insomnia or drowsiness, depression;

    - frequent delayed adverse effects, signs of excessive dosage, mainly:
        - dyskinesia, tremor;
        - mental disorders more frequent in older patients: confusional state or depression with or without suicidal tendencies;
    - later in treatment : fluctuation of the effect during the day (in this event, daily dosage may be divided into smaller doses and taken more frequently); or reduction of the effect (progression of the disease).
- Administer with caution in mental disorders, cardiac disease, gastroduodenal ulcer.
- Do not administer simultaneously with MAOI antidepressants, antipsychotics, reserpine.
- **Pregnancy**: CONTRA-INDICATED
- **Breast-feeding**: CONTRA-INDICATED

Remarks

- Tablet must be swallowed whole. Do not chew or dissolve.

Storage

– Below 25 °C

LEVONORGESTREL oral

Prescription under medical supervision

Therapeutic action

- Hormonal contraceptive, progestogen

Indications

- Oral contraception

Forms and strengths

- 0.03 mg (30 micrograms) tablet

Dosage

- One tablet daily to be taken at the same time each day, on a continuous basis, including during menstruation.
- Contraception may be started at any moment of the cycle if it is reasonably certain the woman is not pregnant, including when switching from another form of contraception. Contraception will be effective as of the 3rd tablet.
  Use condoms for the first 2 days of the pack if the pill is started:
  - more than 5 days after the start of menstruation;
  - more than 28 days postpartum if not breastfeeding;
  - more than 7 days after an abortion.
- If a pill is missed, it should be taken as soon as possible and usual treatment continued. The missed pill and next scheduled pill can be taken together.
  If the missed pill is more than 3 hours overdue, the effectiveness of the contraceptive is reduced.
  Use:
  - condoms for the following 2 days;
  - emergency contraception if the woman has had intercourse in the 5 days preceding the missed pill.

Duration

- If there are no adverse effects, as long as this method of contraception is desired.

Contra-indications, adverse effects, precautions

- Do not administer to women with breast cancer, severe or recent liver disease, unexplained vaginal bleeding, active thromboembolic disorders.
- May cause: amenorrhoea, menstrual disturbances, nausea, weight gain, breast tenderness, mood changes, acne, headache.
- Enzyme-inducing drugs (rifampicin, rifabutine, efavirenz, nevirapine, lopinavir, ritonavir, phenobarbital, phenytoin, carbamazepine, griseofulvin, etc.) reduce the effectiveness of the contraceptive.
- **Pregnancy**: CONTRA-INDICATED
- **Breast-feeding**: no contra-indication

Remarks

- Levonorgestrel is a possible alternative when oestroprogestogens are contra-indicated or poorly tolerated. Its use requires taking pills at strictly the exact time daily, no more than 3 hours late.

Storage

- Below 25 °C

LEVONORGESTREL for emergency contraception

Therapeutic action

- Hormonal contraceptive, progestogen

Indications

- Emergency contraception after unprotected or inadequately protected intercourse (e.g. forgotten pill or condom breaking)

Forms and strengths

- 1.5 mg tablet

Dosage and duration

- One 1.5 mg tablet, whatever the day of the cycle, as soon as possible after unprotected or inadequately protected intercourse and preferably within the first 72 hours as effectiveness decreases with time. It is however recommended to administer the treatment up to 120 hours (5 days) after unprotected intercourse.

Contra-indications, adverse effects, precautions

- May cause: disturbance of next menstrual cycle, metrorrhagia, nausea, headache, dizziness.
- Re-administer treatment immediately if vomiting occurs within 2 hours of taking treatment.
- Double the dose (3 mg single dose) in women taking enzyme-inducing drugs (rifampicin, rifabutin, efavirenz, nevirapine, lopinavir, ritonavir, phenobarbital, phenytoin, carbamazepine, griseofulvin, etc.): can reduce the effectiveness of the contraceptive.
- **Pregnancy:** in the event of treatment failure (i.e. pregnancy develops) or if used during an undiagnosed pregnancy, there is no known harm for the foetus.
- **Breast-feeding**: no contra-indication

Remarks

- Emergency contraception is intended to prevent pregnancy; it cannot terminate an ongoing pregnancy.
- If hormonal contraception is started or resumed immediately after taking levonorgestrel as emergency contraception, use condoms during the first 7 days.

- There is a risk of treatment failure; carry out a pregnancy test if signs or symptoms of pregnancy (no menstruation, etc.) appear one month after taking levonorgestrel as emergency contraception.

Storage

- Below 25 °C

LOPERAMIDE oral

Last updated: January 2024

Prescription under medical supervision

Therapeutic action

- Opioid antidiarrhoeal

Indications

- Symptomatic treatment of persistent diarrhoea in adults with HIV infection, in combination with rehydration

Forms and strengths

- 2 mg capsule or tablet

Dosage

- Adult: 4 mg (2 capsules), then 2 mg (1 capsule) after each loose stool, without exceeding 16 mg daily (8 capsules daily).

Duration

- According to clinical response

Contra-indications, adverse effects, precautions

- Do not exceed indicated doses.
- Do not administer to children.
- Do not administer to patients with bloody diarrhoea, ulcerative colitis, diarrhoea due to antibiotics.
- May cause: constipation, allergic skin reactions, drowsiness, dizziness.
- In the event of overdosage, treat with naloxone.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Rehydration is essential and must be adapted to the severity of diarrhoea.
- Loperamide is not included in the WHO list of essential medicines.

Storage

– Below 25 °C

LOPINAVIR/RITONAVIR = LPV/r oral

Last updated: November 2022

Prescription under medical supervision

Therapeutic action

- Antiretrovirals, HIV protease inhibitors

Indications

- HIV infection, in combination with other antiretrovirals

Forms and strengths

- 40 mg lopinavir/10 mg ritonavir sachet of granules
- 100 mg lopinavir/25 mg ritonavir film coated tablet

Dosage

The daily dose is administered in 2 divided doses.

- Child 2 weeks and over:

Weight	Daily dose LPV/r	40/10 mg granules	100/25 mg tablet
3 to < 6 kg	160/40 mg	2 sachets x 2	–
6 to < 10 kg	240/60 mg	3 sachets x 2	–
10 to < 14 kg	320/80 mg	4 sachets x 2	–
14 to < 20 kg	400/100 mg	5 sachets x 2	2 tab x 2
20 to < 25 kg	400/100 mg	–	2 tab x 2
25 to < 35 kg	600/150 mg	–	3 tab x 2
≥ 35 kg	800/200 mg	–	4 tab x 2

    - In children 10 to < 14 kg who can swallow the tablets whole, administer two 100/25 mg tablets in the morning and one 100/25 mg tablet in the evening (daily dose: 300/75 mg).
    - In children on nevirapine or efavirenz: increase the dose of LPV/r according to manufacturer's instructions.
- Adult:
    - 400/100 mg (4 tablets) 2 times daily (daily dose: 800/200 mg)
    - In adult on nevirapine or efavirenz: 500/125 mg (5 tablets) 2 times daily (daily dose: 1000/250 mg)

Duration

- Depending on the efficacy and tolerance of lopinavir and ritonavir.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe hepatic impairment or hypokalaemia.
- Do not combine with rifampicin, replace with rifabutin. If rifabutin is not available and LPV/r is essential, adjust the dose:
    - child: increase the dose of RTV to obtain a one-to-one (1:1) LPV/r ratio;
    - adult: double the dose (800/200 mg 2 times daily).
- Administer with caution and monitor use in patients with haemophilia (increased bleeding) or mild to moderate hepatic impairment.
- May cause:
    - gastrointestinal disturbances (mainly diarrhoea), skin rash, fatigue, headache, insomnia, paraesthesia, muscle pain hyperglycaemia, conduction disorders, hyperlipidaemia, lipodystrophy;
    - hepatic and pancreatic disorders; in this event, stop treatment immediately.
- Administer with caution and monitor combination with drugs that prolong the QT interval (amiodarone, co-artemether, mefloquine, quinine, haloperidol, etc.).
- LPV/r reduces the efficacy of implants and oral contraceptives: use injectable medroxyprogesterone or an intrauterine device.
- **Pregnancy:** no contra-indication

Remarks

- Do not cut, crush or chew tablets.
- Pour granules into a small amount of breast milk, water or soft foods and administer immediately (within 2 hours of preparation max.).

Storage

– – Below 25 °C

LORATADINE oral

Last updated: February 2024

Prescription under medical supervision

Therapeutic action

- H1 antihistamine

Indications

- Symptomatic treatment of minor allergic reactions (urticaria, allergic conjunctivitis, etc.)

Forms and strengths

- 5 mg/5 ml oral solution
- 10 mg tablet

Dosage

- Child over 2 years and under 30 kg: 5 mg (5 ml) once daily
- Child over 30 kg and adult: 10 mg (1 tab) once daily

Duration

- As short as possible (a few days).

Contra-indications, adverse effects, precautions

- Administer with caution and reduce the dose (administer every other day) in patients with severe renal or hepatic impairment.
- May cause: headache, dizziness, drowsiness (caution when driving/operating machinery), nervousness, insomnia, increased appetite, rash.
- Monitor combination with:
  - central nervous system depressants (opioid analgesics, antipsychotics, sedatives, antidepressants, etc.);
  - erythromycin, fluconazole, fluoxetine, amiodarone, ritonavir, cimetidine (increased plasma concentrations of loratadine).
- Avoid alcohol during treatment (increased risk of adverse effects).
- **Pregnancy**: avoid during the first trimester (uncertain risk of hypospadias)
- **Breast-feeding**: no contra-indication

Remarks

- Loratadine is less sedating than promethazine.

Storage

– Below 25 °C

MEBENDAZOLE oral

Prescription under medical supervision

Therapeutic action

- Anthelminthic

Indications

- Ascariasis (*Ascaris lumbricoides*), trichuriasis (*Trichuris trichiura*), hookworm infections (*Ancylostoma duodenale, Necator americanus*), enterobiasis (*Enterobius vermicularis*), trichinellosis (*Trichinella* sp)

Forms and strengths

- 100 mg tablet

Dosage and duration

Ascariasis, trichuriasis, hookworm infections

- Child over 6 months and adult: 100 mg 2 times daily for 3 days
- Child over 6 months but under 10 kg: 50 mg 2 times daily for 3 days

Enterobiasis

- Child over 6 months and adult: 100 mg single dose
- Child over 6 months but under 10 kg: 50 mg single dose

A second dose may be given after 2 to 4 weeks.

Trichinellosis

- Child over 2 years: 2.5 mg/kg 2 times daily for 10 to 15 days
- Adult: 200 mg 2 times daily for 10 to 15 days

Contra-indications, adverse effects, precautions

- Do not administer to children under 6 months.
- May cause: gastrointestinal disturbances, headache, dizziness.
- **Pregnancy**: avoid during the first trimester
- **Breast-feeding**: no contra-indication

Remarks

- Use albendazole in preference to mebendazole: albendazole is easier to use and is preferred in mixed infections as it has a broader spectrum of activity.
- Tablets are to be chewed or crushed: follow manufacturer's instructions.
- Take tablets between meals.

Storage

– – Below 25 °C

MEDROXYPROGESTERONE acetate oral

Last updated: October 2021

Prescription under medical supervision

Therapeutic action

- Progestogen

Indications

- Abnormal uterine bleeding (especially functional uterine bleeding unrelated to pregnancy)

Forms and strengths

- 10 mg tablet

Dosage and duration

Persistent abnormal uterine bleeding despite tranexamic acid therapy or heavy bleeding when tranexamic acid is contra-indicated

- Adolescent and adult: 20 mg 3 times daily for 7 days

Long-term treatment of functional uterine bleeding

- Adult: 10 mg once daily (up to 30 mg once daily if necessary). Continue treatment according to clinical response.

Contra-indications, adverse effects, precautions

- Do not administer to patients with breast cancer, severe hypertension (≥ 160/100), active thromboembolic disorders, uncontrolled or complicated diabetes, severe or recent hepatic disease.
- May cause: menstrual irregularities, amenorrhoea, menometrorrhagia, breast tenderness, headache, weight gain, acne, mood change, abdominal pain, gastrointestinal disturbances.
- **Pregnancy:** ***CONTRA-INDICATED***
- **Breast-feeding:** no contra-indication

Remarks

- Unlike injectable medroxyprogesterone, the oral form has no contraceptive effect.

Storage

 – Below 25 °C

METFORMIN oral

Last updated: September 2023

Prescription under medical supervision

Therapeutic action

- Biguanide antidiabetic

Indications

- First-line treatment of type 2 diabetes, when diet and lifestyle measures alone are insufficient, as monotherapy or in combination with another antidiabetic

Forms and strengths

- 500 mg and 1 g tablets

Dosage and duration

- Adult:
  - Week 1: 500 mg once daily in the morning
  - Week 2: 500 mg 2 times daily (morning and evening)

  Increase if necessary in increments of 500 mg per week, according to blood glucose levels and as long as the drug is well tolerated, without exceeding 2 g daily (1 g morning and evening).

Contra-indications, adverse effects, precautions

- Do not administer to patients with: ketoacidosis; cardiac, respiratory, hepatic or severe renal impairment.
- May cause:
  - often: dose-related gastrointestinal disturbances (nausea, vomiting, diarrhoea, abdominal pain), loss of appetite, metallic taste in mouth;
  - rarely: lactic acidosis (in the event of acute alcohol intoxication, dehydration, taking drugs that alter renal function, etc.); decreased absorption of vitamin B_{12} (risk of macrocytic anaemia).
- Reduce dose (max. 1 g daily) in case of moderate renal impairment.
- Monitor combination with:
  - diuretics, angiotensin-converting enzyme inhibitors, non-steroidal anti-inflammatory drugs (risk of lactic acidosis due to altered renal function);
  - drugs increasing blood glucose levels: corticosteroids, hydrochlorothiazide, salbutamol, chlorpromazine.

- Stop metformin before surgery or the injection of iodinated contrast agents. Resume treatment 48 hours later after checking renal function.
- **Pregnancy***:* insulin is the drug of choice for type 2 diabetes in pregnant women (improved glycaemic control; reduced risk of foetal anomalies and neonatal complications). Nevertheless, metformin is not contra-indicated.
- **Breast-feeding***:* no contra-indication

Remarks

- To reduce gastrointestinal intolerance, gradually increase the dose and take tablets with meals.

Storage

– Below 25 °C

METHYLDOPA oral

Prescription under medical supervision

Therapeutic action

- Centrally acting antihypertensive

Indications

- Hypertension in pregnancy

Forms and strengths

- 250 mg tablet

Dosage

- Initially 250 mg 2 to 3 times daily for 2 days, then increase gradually if necessary by 250 mg every 2 to 3 days, until the optimal dose is reached, usually 1.5 g daily. Do not exceed 3 g daily.

Duration

- According to clinical response. Do not stop treatment abruptly; reduce doses gradually.

Contra-indications, adverse effects, precautions

- Do not administer to patients with active liver disease, history of drug-induced hepatitis, severe depression.
- Administer with caution to patients with hepatic impairment, and reduce doses in patients with renal impairment.
- May cause:
  - orthostatic hypotension, drowsiness, headache, gastrointestinal disturbances, dry mouth;
  - rarely: haematological, hepatic, mental disorders; allergic reactions.
- Stop treatment in the event of haemolytic anaemia or jaundice.
- In the event of unexplained fever during treatment, check blood count and transaminases for possible hepatitis due to methyldopa.
- Monitor combination with lithium (risk of lithium overdose), antidepressants (enhanced hypotensive effect), CNS depressants (increased sedation).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Storage

Below 25 °C

METOCLOPRAMIDE oral

Last updated: February 2024

Prescription under medical supervision

Do not exceed the recommended dose and duration of treatment (risk of serious neurological adverse effects).

Therapeutic action

- Antiemetic (dopamine antagonist)

Indications

- Symptomatic treatment of nausea and vomiting in adults

Forms and strengths

- 10 mg tablet

Dosage

- Adult under 60 kg: 5 mg 3 times daily
- Adult over 60 kg: 10 mg 3 times daily

The interval between each dose should be at least 6 hours (even in the event of vomiting).

Duration

- Max. 5 days

Contra-indications, adverse effects, precautions

- Do not administer to children < 18 years and to patients with gastrointestinal haemorrhage, obstruction or perforation.
- Reduce the dose by half in patients with severe renal impairment.
- Administer with caution and monitor use in patients > 60 years and patients with epilepsy or Parkinson's disease.
- May cause: drowsiness (caution when driving/operating machinery), dizziness, confusion, extrapyramidal symptoms, seizures (especially in patients with epilepsy), allergic reactions;

neuroleptic malignant syndrome (unexplained hyperthermia with neuromuscular disorders), exceptional but requiring immediate treatment discontinuation.

- Do not combine with levodopa (antagonism).
- Avoid combination with CNS depressants (opioid analgesics, antipsychotics, sedatives, antidepressants, antihistamines, etc.).
- Avoid alcohol during treatment (increased risk of adverse effects).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Storage

– – Below 25 °C

METRONIDAZOLE oral

Prescription under medical supervision

Therapeutic action

- Antiprotozoal, antibacterial (group of nitroimidazoles)

Indications

- Amoebiasis, giardiasis, trichomoniasis
- Bacterial vaginitis, infections due to anaerobic bacteria (e.g. *Clostridium* sp*, Bacteroides* sp, etc.)

Forms and strengths

- 250 mg and 500 mg tablets
- 200 mg/5 ml oral suspension

Dosage and duration

Amoebiasis

- Child: 15 mg/kg 3 times daily
- Adult: 500 mg 3 times daily

The treatment lasts 5 days in intestinal amoebiasis and 5 to 10 days in hepatic amoebiasis.

Giardiasis

- Child: 30 mg/kg once daily for 3 days
- Adult: 2 g once daily for 3 days

Trichomoniasis and bacterial vaginitis

- Adult: 2 g single dose

In the event of trichomoniasis, also treat sexual partner.

Infections due to anaerobic bacteria

- Child: 10 mg/kg 3 times daily
- Adult: 500 mg 3 times daily

According to indication, metronidazole may be used in combination with other anti bacterials; treatment duration depends on indication.

Contra-indications, adverse effects, precautions

- Do not administer to patients with hypersensitivity to metronidazole or another nitroimidazole (tinidazole, secnidazole, etc.).
- May cause: gastrointestinal disturbances; rarely: allergic reactions, brownish urine, headache, dizziness. Risk of antabuse reaction when combined with alcohol.
- Administer with caution in patients taking oral anticoagulants (risk of haemorrhage), lithium, phenytoin, ergometrine (increased plasma concentrations of these drugs).
- Reduce total daily dose to one third and give once daily to patients with severe hepatic impairment.
- **Pregnancy**: no contra-indication; divide into smaller doses, avoid prolonged use.
- **Breast-feeding**: significantly excreted in milk (risk of gastrointestinal disturbances in breastfed infants); divide into smaller doses, avoid prolonged use.

Storage

☼ – Below 25 °C

For the oral suspension: follow manufacturer's instructions.

MICONAZOLE oral gel

Prescription under medical supervision

Therapeutic action

- Antifungal

Indications

- Mild oropharyngeal candidiasis

Forms and strengths

- 2% oral gel (24 mg/ml) together with, depending on the manufacturer:
  - a 2.5 ml measuring spoon with 1.25 ml and 2.5 ml graduation
    or
  - a 5 ml measuring spoon with 2.5 ml and 5 ml graduation

Dosage

- Child from 6 months to 2 years: 1.25 ml 4 times daily
- Child over 2 years and adult: 2.5 ml 4 times daily

The oral gel should be kept in the mouth 2 to 3 minutes and then swallowed, or in young children, applied to the tongue and inside of each cheek.

Duration

- 7 days; 14 days of treatment may be necessary.

Contra-indications, adverse effects, precautions

- Do not administer:
  - to children under 6 months or patients with swallowing difficulties (risk of suffocation due to oral gel form);
  - in patients with hepatic impairment.
- Do not combine with antivitamin K agents (risk of haemorrhage), glibenclamide (increased hypoglycaemic effect), phenytoin (increased plasma concentration of phenytoin).
- May cause: nausea, taste disturbances.
- **Pregnancy**: no contra-indication

- **Breast-feeding**: no contra-indication

Remarks

- Use the measuring spoon provided and check the graduation.
- Administer between meals (preferably after meals).
- In patients with dentures, clean dentures with oral gel when removed.
- In the event of moderate or severe oropharyngeal candidiasis, use oral fluconazole.
- Miconazole oral gel is not included in the WHO list of essential medicines.

Storage

– Below 25 °C

MIFEPRISTONE oral

Prescription under medical supervision

Therapeutic action

- Antiprogestogen

Indications

- Termination of intra-uterine pregnancy up to 22 weeks after the last menstrual period, in combination with misoprostol

Forms and strengths

- 200 mg tablet

Dosage and duration

- 200 mg single dose, followed by the administration of misoprostol 1 to 2 days later

Contra-indications, adverse effects, precautions

- Do not administer to patients with chronic adrenal failure or severe uncontrolled asthma.
- May cause: gastrointestinal disturbances, vaginal bleeding, uterine contractions, headache.
- **Breast-feeding**: no contra-indication for a single dose; to be avoided if multiple doses

Remarks

- Do not use mifepristone in ectopic or molar pregnancy.

Storage

– – Below 25 °C

MISOPROSTOL oral

Last updated: December 2024

Prescription under medical supervision

Therapeutic action

- Oxytocic drug, prostaglandin analogue

Indications

- Incomplete abortion
- Termination of intra-uterine pregnancy, preferably in combination with mifepristone
- Induction of labour
- Treatment of post-partum haemorrhage due to uterine atony, when injectable oxytocics are not available or ineffective
- Cervical dilation before aspiration or curettage

Forms and strengths

- 25 micrograms and 200 micrograms tablets

Dosage and duration

Incomplete abortion

- Up to 13 weeks since the last menstrual period: 400 micrograms single dose sublingually or 600 micrograms single dose orally
- From 13 to 22 weeks since the last menstrual period: 400 micrograms sublingually every 3 hours

Termination of pregnancy

- Up to 13 weeks since the last menstrual period: 800 micrograms single dose sublingually or vaginally. If expulsion has not occurred within 24 hours administer a 2nd dose of 800 micrograms.
- From 13 to 22 weeks since the last menstrual period: 400 micrograms single dose sublingually or vaginally every 3 hours

Induction of labour

- 25 micrograms orally every 2 hours, or if not possible, vaginally every 6 hours, until labour starts (max. 200 micrograms per 24 hours)

Treatment of post-partum haemorrhage

- 800 micrograms single dose sublingually

Cervical dilation before aspiration or curettage

- 400 micrograms single dose sublingually 1 to 3 hours before the procedure or vaginally 3 hours before the procedure

Contra-indications, adverse effects, precautions

- For induction of labour if the foetus is viable:
  - Do not administer in the event of previous caesarean section.
  - Administer with caution in case of grand multiparity or overdistention of the uterus (risk of uterine rupture).
  - Monitor the intensity and frequency of contractions as well as foetal heart rate after administration of misoprostol.
  - Do not administer simultaneously with oxytocin. At least 4 hours must have elapsed since the last administration of misoprostol before oxytocin can be given.
- For incomplete abortion or termination of pregnancy after 13 weeks since the last menstrual period: reduce the dose by half in the event of 2 or more previous caesarean sections.
- May cause: dose-dependent diarrhoea, vomiting, uterine hypertony, headache, fever, chills, foetal heart rhythm disorders, foetal distress.
- **Breast-feeding**: no contra-indication

Remarks

- Do not use misoprostol in ectopic or molar pregnancy.
- Rectal route is used for the treatment of post-partum haemorrhage when the sublingual route cannot be used.
- Also comes is 25 micrograms vaginal tablet for induction of labour (every 6 hours until labour starts). These tablets are intended to be used by vaginal route only.

Storage

– – Below 25 °C

MORPHINE immediate-release (MIR) oral

Last updated: October 2024

Prescription under medical supervision

Due to the numerous and potentially severe adverse effects of morphine, patients should be kept under close surveillance.

Therapeutic action

- Centrally acting opioid analgesic

Indications

- Severe pain

Forms and strengths

- 10 mg immediate-release tablet
- 10 mg/5 ml oral solution, for pediatric use

Dosage

There is no standard dose. The optimal dose is that which provides efficient pain relief to the patient. It is adjusted in relation to the regular assessment of pain intensity and the incidence of adverse effects.

Day 1:

- Start with a scheduled treatment (scheduled doses):
  - Child over 6 months: 0.15 mg/kg every 4 hours
  - Adult: 10 mg every 4 hours
- Adjust the treatment if pain persists by administering “rescue” doses between the scheduled doses. The rescue doses administered are the same as the scheduled doses.
- Then, adjust scheduled treatment every 24 hours according to the total dose given the day before (i.e. total scheduled doses + total rescue doses).
  For example, Day 1, for a dose of 60 mg, i.e. 10 mg every 4 hours:

Hours	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	0	1	2	3	4	5	6	7
Scheduled doses	10 mg				10 mg				10 mg				10 mg				10 mg				10 mg			
Example simple verbal scale	severe pain		moderate pain		mild pain		moderate pain		mild pain		mild pain		mild pain		moderate pain		mild pain				mild pain			
Example rescue doses			10 mg				10 mg								10 mg									

In this example, the scheduled treatment on Day 2 is 90 mg, i.e. 60 mg (total scheduled doses on Day 1) + 30 mg (total rescue doses on Day 1), i.e. 15 mg every 4 hours.

- Scheduled doses must be administered at regular time intervals and not on demand, even at night, unless the patient is abnormally drowsy (in this event, delay the administration).
- Reduce the dose by half in elderly patients and patients with renal or hepatic impairment.

Duration

- Once the pain is controlled, change to sustained-release morphine.

Contra-indications, adverse effects, precautions

- See sustained-release oral morphine (MSR).

Remarks

- Administer an appropriate laxative (e.g. lactulose) if analgesic treatment continues more than 48 hours.
- The morphine dose in tablets is not suitable for young children. Use oral solution instead. If this is not available, use injectable morphine by the oral route: dilute an ampoule of 10 mg/ml (1 ml) with 9 ml of water to obtain a solution containing 1 mg/ml.
- Morphine is on the list of narcotics: follow national regulations.

Storage:

– Below 25 °C

MORPHINE sustained-release (MSR) oral

Last updated: October 2024

Prescription under medical supervision

Due to the numerous and potentially severe adverse effects of morphine, patients should be kept under close surveillance.

Therapeutic action

- Centrally acting opioid analgesic

Indications

- Severe and persistent pain, especially cancer pain

Forms and strengths

- 10 mg, 30 mg and 60 mg sustained-release capsules or tablets

Dosage

- Usually, the effective daily dose is determined during the initial treatment with immediate-release morphine (MIR). When changing from MIR to MSR, the daily dose remains the same.
  For example, if the effective dose of MIR is 20 mg every 4 hours (120 mg daily), the dose of MSR is 60 mg every 12 hours (120 mg daily).
- If treatment is initiated directly with MSR:
  - Child over 6 months: initially 0.5 mg/kg every 12 hours
  - Adult: initially 30 mg every 12 hours

  Adjust the dose if necessary, increasing the dose by 50% per day until pain relief is obtained.
- Patients stabilized on MSR may require rescue doses of MIR in the event of episodic (breakthrough) pain. A rescue dose corresponds to 10% of the daily MSR dose. If a patient regularly requires more than 3 rescue doses per day, increase the daily MSR dose by the sum of rescue doses.

Duration

- According to clinical response. Do not stop long-term treatment abruptly. Decrease doses progressively to avoid withdrawal symptoms.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe respiratory impairment or decompensated hepatic impairment.
- Do not initiate treatment with the sustained-release formulation in elderly patients or those with renal or hepatic impairment. Begin treatment with the immediate release formulation (MIR).
- May cause:
  - dose-related sedation and respiratory depression, nausea, vomiting, constipation, urinary retention, confusion, raised intracranial pressure, pruritus;
  - in the event of overdose: excessive sedation, respiratory depression, coma.
- Management of respiratory depression includes assisted ventilation and/or administration of naloxone. Monitor patient closely for several hours.
- Administer with caution to patients with respiratory impairment, head injury, raised intracranial pressure, uncontrolled epilepsy or urethroprostatic disorders.
- Do not combine with opioid analgesics with mixed agonist-antagonist activity such as buprenorphine, nalbuphine, pentazocine (competitive action).
- Increased risk of sedation and respiratory depression, when combined with alcohol and drugs acting on the central nervous system: benzodiazepines (diazepam, etc.), neuroleptics (chlorpromazine, haloperidol, etc.), antihistamines (chlorphenamine, promethazine), phenobarbital, etc.
- **Pregnancy and breast-feeding**: no contra-indication. The child may develop withdrawal symptoms, respiratory depression and drowsiness when the mother receives morphine at the end of the 3rd trimester and during breast-feeding. In these situations, administer with caution, for a short period, at the lowest effective dose, and monitor the child.

Remarks

- Administer an appropriate laxative (e.g. lactulose) if analgesic treatment continues more than 48 hours.
- Do not crush or chew capsules. They can be opened and emptied into food.
- Morphine is on the list of narcotics: follow national regulations.

Storage:

– – Below 25 °C

MULTIVITAMINS - VITAMIN B COMPLEX oral

Therapeutic action

- Vitamin supplementation

Indications

- Few indications: this drug has no effect in case of real vitamin deficiency. Nevertheless, vitamin supplementation helps to prevent some deficiencies in people at risk (e.g. pregnant women).

Forms and strengths

- Tablet. Composition varies in quality and quantity, with manufacturers.

Examples of composition per tablet:

	Multivitamins	B complex	Daily needs (adult)
Vitamin A	2500 IU	/	2500 IU
Vitamin B_1	1 mg	1 mg	0.9 to 1.3 mg
Vitamin B_2	0.5 mg	1 mg	1.5 to 1.8 mg
Vitamin B_3 (= PP)	7.5 mg	15 mg	15 to 20 mg
Vitamin C	15 mg	/	10 mg
Vitamin D_3	300 IU	/	100 to 200 IU

Dosage

- Child under 5 years: 1 tablet daily
- Child over 5 years: 2 tablets daily
- Adult: 3 tablets daily

Duration

- Depending on situation

Contra-indications, adverse effects, precautions

- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Specific vitamin deficiency states require appropriate doses of vitamins.
- Multivitamins are not included in the WHO list of essential medicines.

Storage

– Keep in a cool place (8 °C to 15 °C)

NEVIRAPINE = NVP oral

Last updated: January 2025

Prescription under medical supervision

Due to the numerous and potentially severe adverse effects of NVP, patients should be kept under close surveillance.

Therapeutic action

- Antiretroviral, HIV-1 non nucleoside reverse transcriptase inhibitor

Indications

- Prevention of mother-to-child transmission (PMTCT) of HIV in neonates, alone or in combination with other antiretrovirals

Forms and strengths

- 50 mg/5 ml oral suspension
- 50 mg scored dispersible tablet

Dosage

- Full term neonate:
  Follow national recommendations. For information (WHO simplified age-based dosage):
- From birth to 6 weeks of age (from 0 to 42 days): 15 mg (1.5 ml) oral suspension or 25 mg (1/2 tab) dispersible tablet once daily. From birth to 4 weeks of age, preferably use the oral suspension.

  Then, when indicated,
- After 6 weeks and up to 12 weeks of age (from 43 to 84 days): 20 mg (2 ml) oral suspension or 25 mg (1/2 tab) dispersible tablet once daily
- Preterm or low-birth weight neonate: seek specialist advice.

Duration

Depending on the risk of acquiring HIV infection (for information):

- High risk: 6 weeks (NVP combined with zidovudine). For breastfed children, treatment is extended for an additional 6 weeks (NVP alone or combined with zidovudine).
- Low risk (NVP alone): 4 to 6 weeks for non-breastfed children; 6 weeks for breastfed children.

Contra-indications, adverse effects, precautions

- Do not administer to neonates:
  - with severe hepatic impairment;
  - born to mothers with resistance to NVP or HIV-2 mono-infection.
- May cause:
  - rash and hepatic disorders, especially in the first 6 weeks of treatment; gastrointestinal disturbances;
  - less frequently, hypersensitivity reactions (including severe cutaneous reactions such as Stevens-Johnson, Lyell and DRESS syndromes) and life-threatening hepatotoxicity.
- Any isolated rash requires immediate medical attention and surveillance.
- Stop NVP immediately and permanently in the event of:
  - severe rash or rash associated with signs and symptoms of hypersensitivity reaction (e.g. fever, mouth ulcer, cutaneous blister, conjunctivitis, facial oedema);
  - signs and symptoms of hepatic disorders (e.g. anorexia, nausea, general malaise, dark urine, pale stools, hepatomegaly, jaundice).
- NVP is a hepatic enzyme inducer. It may interact with many drugs and concomitant use requires monitoring (e.g. azole derivates, phenobarbital, phenytoin, carbamazepine, clarithromycin).
- Avoid combination with rifampicin (decreased NVP plasma concentrations).

Remarks

- Shake the oral suspension well before use. The 50 mg tablet should be dispersed in 10 ml of water immediately before administration.
- NVP is also used for the treatment of HIV-1 infection in children and adults, in combination with other antiretrovirals. Check national recommendations.
- Also comes in fixed-dose combinations with other antiretrovirals. For PMTCT, NVP is sometimes given as a fixed-dose combination of zidovudine/lamivudine/nevirapine.

Storage

☂ – Below 25 °C

Once opened, oral suspension keeps for 2 months maximum.

NICLOSAMIDE oral

Therapeutic action

- Anthelminthic (taenicide)

Indications

- Taeniasis: beef tapeworm (*Taenia saginata*), pork tapeworm (*Taenia solium*), dwarf tapeworm (*Hymenolepis nana*) and fish tapeworm (*Diphyllobothrium latum*)

Forms and strengths

- 500 mg chewable tablet

Dosage and duration

T. saginata, T. solium and D. latum

- Child under 2 years: 500 mg single dose
- Child from 2 to 6 years: 1 g single dose
- Child over 6 years and adult: 2 g single dose

H. nana

- Child under 2 years: 500 mg on D1, then 250 mg once daily for 6 days
- Child from 2 to 6 years: 1 g on D1, then 500 mg once daily for 6 days
- Child over 6 years and adult: 2 g on D1, then 1 g once daily for 6 days

Contra-indications, adverse effects, precautions

- May cause: gastrointestinal disturbances.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Chew or crush the tablets before swallowing with water.
- In the event of vomiting, the single dose may be divided in 2 doses taken with an interval of one hour.
- As niclosamide is a taenicide not a taenifuge, do not expect the patient to expel the worm, portions are voided in a partially digested form.
- Niclosamide is not active against the larval form of *T. solium* (cysticercosis).

Storage

– Below 25 °C

NICOTINAMIDE = VITAMIN PP = VITAMIN B3 oral

Therapeutic action

- Vitamin

Indications

- Treatment of pellagra

Forms and strengths

- 100 mg tablet

Dosage and duration

- Child and adult: 100 mg 3 times daily, with a diet rich in protein, until the patient is fully cured

Contra-indications, adverse effects, precautions

- **Pregnancy and breast-feeding**: avoid, except if clearly needed (safety is not established)

Remarks

- Nicotinamide is also called niacinamide.
- Vitamin PP deficiency is common when diet is almost entirely based on sorghum, millet or maize.
- Vitamin PP deficiency often occurs in association with other vitamin B-complex deficiency (thiamine, pyridoxine), especially in alcoholic patients.
- Vitamin PP is usually one of the components of multivitamin preparations and B-complex (7.5 mg to 15 mg per tablet).
- Nicotinic acid has a similar action to nicotinamide, but is no longer used because of its adverse effects, especially its vasodilator action.

Storage

☼ – Below 25 °C

NIFEDIPINE oral

Last updated: February 2024

Prescription under medical supervision

Immediate-release forms of nifedipine should not be used in either long-term treatment of hypertension or treatment of hypertensive crisis (risk of excessive fall in blood pressure and cerebral or myocardial ischaemia in patients with coronary artery disease).

Therapeutic action

- Uterine relaxant

Indications

- Threatened premature labour

Forms and strengths

- 10 mg immediate-release soft capsule or tablet

Dosage and duration

- 10 mg by oral route, to be repeated every 15 minutes if uterine contractions persist (max. 4 doses or 40 mg), then 20 mg by oral route every 6 hours

The total duration of treatment is 48 hours.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe cardiac disease (recent myocardial infarction, unstable angina).
- Do not administer if systolic blood pressure is below 90 mmHg.
- May cause:
  - headache, flushing, peripheral oedema (common adverse effects at the start of treatment);
  - dizziness, hypotension, tachycardia, nausea, gingival hyperplasia, rash.
- Stop nifedipine if ischaemic chest pain occurs or existing pain increases after starting treatment.
- Do not combine with magnesium sulphate, salbutamol IV, and other calcium channel blockers.
- Monitor combination with cimetidine (enhances hypotensive effects), phenytoin (risk of phenytoin overdose), rifampicin (efficacy of nifedipine diminished), itraconazole (increased risk of oedema), beta-blockers (increased adverse cardiac effects).

- **Pregnancy**: **CONTRA-INDICATED** during the first trimester. Never administer sublingually (risk of foetal death from placental hypoperfusion).
- **Breast-feeding**: avoid

Remarks

- Nifedipine is a calcium channel blocker that is also used in the management of hypertension at doses of 10 to 40 mg 2 times daily or 20 to 90 mg once daily, depending on the sustained-release form used.

Storage

– Below 25 °C

NITROFURANTOIN oral

Prescription under medical supervision

Therapeutic action

- Antibacterial (group of nitrofuranes)

Indications

- Uncomplicated cystitis, without fever or lower back pain, when no other antibiotic can be used

Forms and strengths

- 100 mg tablet

Dosage and duration

- Adult: 100 mg 3 times daily for 5 to 7 days

Contra-indications, adverse effects, precautions

- Do not administer to patients with renal impairment, G6PD deficiency or allergy to nitrofurantoin.
- May cause:
  - nausea, vomiting, headache, dizziness, brownish urine;
  - haemolytic anaemia in patients with G6PD deficiency, pulmonary and hepatic disorders, allergic reactions.
- Do not administer simultaneously with antacids (aluminium or magnesium hydroxide, etc.). Administer doses at least 2 hours apart.
- **Pregnancy**: CONTRA-INDICATED during the last month of pregnancy (risk of haemolysis in the newborn)
- **Breast-feeding**: avoid during the first month

Remarks

- Take during meals.
- Do not use nitrofurantoin to prevent cystitis.
- Also comes in modified release capsules to be administered 2 times daily.

Storage

– – Below 25 °C

NITROGLYCERIN oral

See GLYCERYL TRINITRATE oral

NYSTATIN oral

Therapeutic action

- Antifungal

Indications

- Mild oropharyngeal candidiasis

Forms and strengths

- 100 000 IU/ml oral suspension, bottle with calibrated dropper

Dosage and duration

- Child and adult: 100 000 IU 4 times daily (1 ml of the oral suspension 4 times daily) for 7 days

The oral suspension should be retained in the mouth for a few minutes before swallowing, or, in young children, applied to the tongue and the inside of the cheeks.

Contra-indications, adverse effects, precautions

- Take between meals (e.g. at least 30 minutes before eating).
- Shake oral suspension well before using.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Nystatin also comes in:
  - 100 000 IU lozenge for the treatment of oropharyngeal candidiasis;
  - 100 000 IU and 500 000 IU film coated tablets for the treatment of oesophageal candidiasis.
- For the treatment of moderate to severe oropharyngeal candidiasis and oesophageal candidiasis, oral fluconazole is the first-line treatment.

Storage

Below 25 °C

OLANZAPINE oral

Last updated: February 2024

Prescription under medical supervision

Due to the numerous and potentially severe adverse effects of olanzapine, patients should be kept under close surveillance.

Therapeutic action

- Atypical antipsychotic

Indications

- Acute and chronic psychosis and acute manic episode, in the event of intolerance or treatment failure with other antipsychotics (preferably use haloperidol for these indications)

Forms and strengths

- 2.5 mg, 5 mg and 10 mg tablets

Dosage

- Adult: 10 mg once daily. Increase up to 15 mg daily if necessary (max. 20 mg daily).
- Reduce the dose by half in older patients (max. 10 mg daily).

Duration

- Acute psychosis: at least 3 months
- Chronic psychosis: at least one year
- Manic episode: 8 weeks after remission of symptoms

Discontinue treatment gradually (over 4 weeks). If signs of relapse occur, increase the dose then decrease it more gradually.

Contra-indications, adverse effects, precautions

- Do not administer to patients with cardiac disorders (heart failure, recent myocardial infarction, conduction disorders, bradycardia, etc.), dementia (e.g. Alzheimer's disease), Parkinson's disease, history of neuroleptic malignant syndrome and closed-angle glaucoma.

- Administer with caution and carefully monitor use in older patients and patients with hypokalaemia, hypotension, prostate disorders, renal or hepatic impairment, history of seizures.
- May cause: orthostatic hypotension, drowsiness (caution when driving/operating machinery), extrapyramidal symptoms, hyperprolactinaemia, weight gain, hyperlipidaemia, hyperglycaemia, anticholinergic effects (constipation, dry mouth), headache, insomnia, dizziness, sexual dysfunction; neuroleptic malignant syndrome (unexplained hyperthermia with neuromuscular disorders), rare but requiring immediate treatment discontinuation.
- In case of extrapyramidal symptoms, try reducing the dose of olanzapine or, if the extrapyramidal symptoms are severe, add biperiden or trihexyphenidyl.
- Avoid or monitor combination with:
  - central nervous system depressants (opioid analgesics, sedatives, H1 antihistamines, etc.);
  - ciprofloxacin (increased plasma concentrations of olanzapine);
  - carbamazepine, rifampicin, phenobarbital, phenytoin, ritonavir (decreased plasma concentrations of olanzapine);
  - antihypertensive drugs (risk of hypotension); drugs that prolong the QT interval (amiodarone, chloroquine, erythromycin, fluconazole, mefloquine, pentamidine, quinine, etc.).
- Avoid alcohol during treatment (increased risk of adverse effects).
- **Pregnancy**: re-evaluate whether the treatment is still necessary; if it is continued, use the lowest effective dose. Observe the neonate the first few days (risk of agitation, tremors, hypertonia/hypotonia, respiratory difficulties, sleeping disorders, etc.) if the mother was under treatment in the 3rd trimester. If treatment starts during pregnancy, preferably use haloperidol.
- **Breast-feeding**: if absolutely necessary, do not exceed 10 mg daily.

Storage

– Below 25 °C

OMEPRAZOLE oral

Prescription under medical supervision

Therapeutic action

- Antiulcer and gastric antisecretory agent (proton pump inhibitor)

Indications

- Gastro-oesophageal reflux
- Gastric and duodenal ulcers in adult

Forms and strengths

- 10 mg dispersible gastro-resistant tablet
- 20 mg gastro-resistant capsule

Dosage

Gastro-oesophageal reflux

- Child under 5 kg: 0.7 to 1.4 mg/kg (max. 2.8 mg/kg daily) once daily in the morning
- Child 5 to 10 kg: 5 mg once daily in the morning
- Child 10 to 20 kg: 10 mg once daily in the morning
- Child over 20 kg and adult: 20 mg once daily in the morning

Age	Weight	1 mg/ml sol. [a]	10 mg tablet [b]	20 mg capsule
< 2 months	< 5 kg	3 ml	–	–
2 months to < 1 year	5 to < 10 kg	5 ml	–	–
1 to < 6 years	10 to < 20 kg	–	1 tab	–
≥ 6 years and adult	≥ 20 kg	–	–	1 cap

a In a syringe, dissolve one 10 mg dispersible tablet in 10 ml of water to obtain a solution of 1 mg/ml.

b Dissolve 1 dispersible tablet in half a glass of water.

Gastric and duodenal ulcers

- Adult: 20 mg once daily in the morning
  In severe or recurrent cases, dose can be increased if necessary to 40 mg once daily.

Duration

- Gastro-oesophageal reflux: 3 days (short-term relief of symptoms) or 4 to 8 weeks (long-term treatment)
- Gastric and duodenal ulcers: 7 to 10 days or up to 8 weeks (severe or recurrent cases)

Contra-indications, adverse effects, precautions

- Do not exceed 0.7 mg/kg daily (max. 20 mg daily) in patients with severe hepatic impairment.
- May cause: headache, diarrhoea, constipation, nausea, vomiting, abdominal pain, dizziness, skin rash, fatigue.
- Monitor combination with:
  - atazanavir, itraconazole (decreased efficacy of these drugs);
  - diazepam, phenytoin, digoxin, raltegravir (increased toxicity of these drugs).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Do not open capsules.
- Omeprazole is also used in combination with 2 antibacterial drugs for cure of *Helicobacter pylori* infection, at a dosage of 20 mg 2 times daily for 7 days.

Storage

☼ – Below 25 °C
Once dissolved, dispersible tablets should be administered within 30 minutes.

ORAL REHYDRATION SALTS = ORS

Last updated: October 2024

Indications

- Prevention and treatment of dehydration from acute diarrhoea, cholera, etc.

Forms and strengths

- Sachet of powder to be diluted in 1 litre of clean water.
- WHO formulation:

	grams/litre
sodium chloride	2.6
glucose	13.5
potassium chloride	1.5
trisodium citrate	2.9
Total weight	20.5

	mmol/litre
sodium	75
chloride	65
glucose	75
potassium	20
citrate	10
Total osmolarity	245

Dosage

Prevention of dehydration (WHO - Treatment plan A)

- Child under 24 months: 50 to 100 ml after each loose stool (approximately 500 ml daily)
- Child from 2 to 10 years: 100 to 200 ml after each loose stool (approximately 1000 ml daily)
- Child over 10 years and adult: 200 to 400 ml after each loose stool (approximately 2000 ml daily)

Treatment of moderate dehydration (WHO - Treatment plan B)

Child and adult:

- Over the first four hours:

Age	**under 4 months**	**4 to 11 months**	**12 to 23 months**	**2 to 4 years**	**5 to 14 years**	**15 years and over**
Weight	under 5 kg	5 to 7.9 kg	8 to 10.9 kg	11 to 15.9 kg	16 to 29.9 kg	30 kg and over
ORS in ml	200 to 400	400 to 600	600 to 800	800 to 1200	1200 to 2200	2200 to 4000

- After four hours:
  If there are no signs of dehydration: follow *Treatment plan A.*
  If there are signs of moderate dehydration: repeat *Treatment plan B.*

If there are signs of severe dehydration: start IV therapy (*Treatment plan C*).

Treatment of severe dehydration (WHO - Treatment plan C)
In combination with IV therapy and only to a conscious patient:
Child and adult: 5 ml/kg per hour
After 3 hours (6 hours in infants), reassess and choose the appropriate plan *A, B* or *C*.

Duration

- As long as diarrhoea and signs of dehydration persist.

Contra-indications, adverse effects, precautions

- If the eyelids become puffy during the treatment: stop ORS, give plain water then, resume ORS according to Treatment plan A when the puffiness is gone.
- If case of vomiting, stop ORS for 10 min and then resume at a slower rate (very small, frequent, amounts); do not stop rehydration.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- A special ORS-formula, ReSoMal, is used under medical supervision, for severely malnourished children only. However, in malnourished children with cholera, standard ORS- formula is used instead of ReSoMal.
- Comes in flavoured and unflavoured ORS sachets.

Storage

☂ – Below 25 °C
Do not use the powder if it has turned into a yellow-brownish sticky substance.
Once prepared, the solution must be used within 24 hours.

PARACETAMOL = ACETAMINOPHEN oral

Last updated: October 2024

Do not exceed indicated doses, especially in children and older patients. Paracetamol intoxications are severe (hepatic cytolysis).

Therapeutic action

- Analgesic, antipyretic

Indications

- Mild pain
- Fever

Forms and strengths

- 100 mg and 500 mg tablets
- 100 mg dispersible tablet
- 120 mg/5 ml oral suspension

Dosage

- Child under 1 month: 10 mg/kg 3 or 4 times daily (max. 40 mg/kg daily)
- Child 1 month and over: 15 mg/kg 3 or 4 times daily (max. 60 mg/kg daily)
- Adult: 1 g 3 or 4 times daily (max. 4 g daily)

Age	Weight	120 mg/5 ml susp.	100 mg tablet	500 mg tablet
< 1 month	< 4 kg	1.5 ml x 3	–	–
1 to < 3 months	4 to < 6 kg	2.5 ml x 3	½ tab x 3	–
3 months to < 1 year	6 to < 10 kg	4 ml x 3	1 tab x 3	–
1 to < 3 years	10 to < 15 kg	6 ml x 3	1½ tab x 3	–
3 to < 5 years	15 to < 20 kg	8 ml x 3	2 tab x 3	–
5 to < 9 years	20 to < 30 kg	12 ml x 3	3 tab x 3	–
9 to < 14 years	30 to < 50 kg	–	–	1 tab x 3
≥ 14 years and adult	≥ 50 kg	–	–	2 tab x 3

Duration

- According to clinical response

Contra-indications, adverse effects, precautions

- Administer with caution to patients with hepatic impairment.
- Reduce the dose in:
  - children with severe acute malnutrition: 10 mg/kg up to 3 times maximum per 24 hours
  - patients with dengue with warning sign(s):
    - Child: 10 mg/kg 3 to 4 times daily
    - Adult: 500 mg 3 to 4 times daily
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- For mild pain, paracetamol is used alone or in combination with an NSAID.
- For moderate pain, paracetamol is used in combination with an NSAID and codeine or tramadol.
- For severe pain, paracetamol is used in combination with an NSAID and morphine.
- Paracetamol is particularly recommended for patients allergic to aspirin, patients with a history of gastric problems and for pregnant and breast-feeding women and children.
- Paracetamol has no anti-inflammatory properties.
- N-acetylcysteine IV is the antidote for paracetamol poisoning.

Storage

– Below 25 °C

PAROXETINE oral

Last updated: March 2024

Prescription under medical supervision

Therapeutic action

- Antidepressant, selective serotonin re-uptake inhibitor (SSRI)

Indications

- Major depression
- Generalised anxiety
- Severe post-traumatic stress disorder

Forms and strengths

- 20 mg scored tablet

Dosage

Major depression

- Adult: 10 mg once daily for 3 days, then 20 mg once daily. In case of insufficient response after 3 weeks, increase up to 40 mg daily max.

Generalised anxiety, severe post-traumatic stress disorder

- Adult: 10 to 20 mg once daily

Duration

- Major depression: at least 9 months.
  Discontinue treatment gradually (e.g. half dose once daily for 2 weeks then on alternate days for 2 weeks). If signs of relapse or withdrawal occur, increase the dose then decrease it more gradually.
- Generalised anxiety, severe post-traumatic stress disorder: 2 to 3 months after symptoms resolve.
  Discontinue treatment gradually (over at least 2 weeks).

Contra-indications, adverse effects, precautions

- Administer with caution and monitor use in patients with epilepsy, diabetes, hepatic or renal impairment (start at a lower dose); history of gastrointestinal bleeding, bipolar disorders, suicidal ideation (in young adults) or closed-angle glaucoma.
- May cause:

    - gastrointestinal disturbances, drowsiness (caution when driving or operating machinery), fatigue, headache, dizziness, seizures, sexual dysfunction, blurred vision, hyponatraemia especially in older patients;
    - mental disorders: anxiety, insomnia, agitation, aggressive behaviour, suicidal ideation in young adults;
    - frequent withdrawal symptoms if discontinued abruptly: dizziness, paraesthesia, nightmares, anxiety, tremors and headaches.
- Avoid combination with:
    - aspirin, NSAIDs and warfarin (risk of bleeding);
    - serotonergic drugs: other SSRI, tricyclic antidepressants, ondansetron, tramadol, etc. (risk of serotonin syndrome).
- Monitor combination with: risperidone (increased plasma concentration), drugs which lower the seizure threshold (antipsychotics, mefloquine, etc.).
- Avoid alcohol during treatment (increased risk of adverse effects).
- **Pregnancy and breast-feeding**: re-evaluate whether the treatment is still necessary; if it is continued, maintain paroxetine at effective dose. Observe the neonate (risk of agitation, tremors, hypotony, respiratory difficulties, sleeping disorders, etc.) if the mother was under treatment in the 3rd trimester of pregnancy. If treatment starts during pregnancy or breast-feeding, preferably use sertraline.

Remarks

- It is necessary to wait at least 2 to 3 weeks before assessing the antidepressant effect. This must be explained to the patient.

Storage

– – Below 25 °C

PHENOBARBITAL = PB oral

Last updated: October 2024

Prescription under medical supervision

Due to the numerous and potentially severe adverse effects of PB, patients should be kept under close surveillance.

Therapeutic action

- Antiseizure (antiepileptic), sedative

Indications

- Epilepsy: generalised tonic-clonic seizures and focal (partial) seizures

Forms and strengths

- 60 mg tablet

Dosage

Start with a low dose then increase gradually based on patient's response and tolerance.

- Child 1 month to 11 years: start with 2 to 3 mg/kg once daily at bedtime or 1 to 1.5 mg/kg 2 times daily for 2 weeks; increase the daily dose by increments of 1 to 2 mg/kg every week, up to 2 to 6 mg/kg once daily if necessary.
- Child 12 years and over and adult: start with 1 mg/kg (max. 60 mg) once daily at bedtime for 2 weeks; increase the daily dose by increments of 15 to 30 mg every week, up to 3 mg/kg once daily if needed (max. 180 mg daily).

Duration

- As long as required. Do not stop treatment abruptly, even if changing to another antiseizure medication.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe impairment of respiratory, renal or hepatic function (risk of accumulation).
- Administer with caution in children, older patients and patients with mild to moderate impairment of respiratory, renal or hepatic function.
- May cause:
  - drowsiness (caution when driving/operating machinery), dizziness, headache, behavioural disturbances;
  - respiratory depression, hypotension;
  - vitamin D deficiency (consider supplementation), osteoporosis, haematologic disorders, gastrointestinal disturbances;
  - rarely: hypersensitivity reactions (including severe cutaneous reactions such as Stevens-Johnson, Lyell and DRESS syndromes). In these cases, stop treatment. Early symptoms such as fever, rash, mouth ulcers and bleeding require immediate medical attention.
- Avoid or monitor the combination with:
  - mefloquine (reduced effect of PB);
  - drugs containing alcohol, benzodiazepines, opioid analgesics, antipsychotics, first-generation antihistamines (hydroxyzine, promethazine), antidepressants, other antiseizure medications, etc. (increased sedation).
- Use with extreme caution with benzodiazepines and opioid analgesics (increased risk of respiratory depression).
- PB may reduce the effect of many drugs:
  - diazepam, midazolam, antimicrobials, some antiretrovirals, corticosteroids, tricyclic antidepressants, itraconazole, direct-acting antivirals for chronic hepatitis C, warfarin, etc. Adjust dosage if necessary.
  - implants and oral contraceptives: use injectable medroxyprogesterone or an intrauterine device.
- Avoid alcohol during treatment (increased risk of adverse effects).
- **Pregnancy**: avoid (risk of facial and cardiac malformations, hypospadias, small for gestational age).
  - In case of pregnancy during treatment, prefer a safer drug (levetiracetam). If PB is the only option, provide counselling about the risks to the child; use the lowest effective dose.
  - Administer folic acid high dose (5 mg daily) during the first trimester. Start as soon as possible, including during the preconception period in case of planned pregnancy.
  - PB plasma concentrations may decrease during pregnancy. Monitor clinical response; increase dose if needed then resume the usual dose after delivery. Monitor the child for a few days (risk of accumulation and drowsiness or withdrawal symptoms).
- **Breast-feeding**: administer with caution (excreted in milk); reduce the dose if increased during pregnancy and monitor the child (risk of drowsiness, lethargy and poor feeding).

Remarks

- PB is subject to international controls: follow national regulations.
- PB is not recommended for absence seizures (risk of worsening symptoms).
- Plasma concentrations are stable after 2 to 3 weeks. Caution: risk of accumulation.
- Also comes in 15 mg and 30 mg tablets.

Storage

– Below 25 °C

PHENOXYMETHYLPENICILLIN = PENICILLIN V oral

Last updated: January 2024

Prescription under medical supervision

Therapeutic action

- Penicillin antibacterial

Indications

- Streptococcal pharyngitis, scarlet fever
- Alternative to first-line antibiotic treatment of diphtheria
- Completion treatment following parenteral therapy with penicillin

Forms and strengths

- 250 mg tablet (400 000 IU)
- Powder for oral suspension, 125 mg/5 ml (200 000 IU/5 ml): ;
  - to be reconstituted with filtered water
  - to be administered using a measuring device (oral syringe, measuring spoon, or cup with graduations)

Dosage

Streptococcal pharyngitis, scarlet fever

Age	Weight	Daily dose	125 mg/5 ml oral susp.	250 mg tablet
< 1 year	< 10 kg	125 mg x 2	5 ml x 2	–
1 to < 6 years	10 to < 21 kg	250 mg x 2	10 ml x 2	–
6 to < 12 years	21 to < 39 kg	500 mg x 2	20 ml x 2	2 tab x 2
≥ 12 years and adult	≥ 39 kg	1 g x 2	–	4 tab x 2

Diphtheria

- Child under 40 kg: 10 to 15 mg/kg (max. 500 mg) 4 times daily
- Child 40 kg and over and adult: 500 mg 4 times daily

Duration

- Streptococcal pharyngitis, scarlet fever: 10 days
- Diphtheria: 14 days

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to penicillin.
- Administer with caution to patients with allergy to cephalosporin (cross-sensitivity may occur) or severe renal impairment (reduce dose).
- May cause: diarrhea, nausea; allergic reactions sometimes severe.
- Do not combine with methotrexate.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Take between meals.
- Phenoxymethylpenicillin is also used in children for the prevention of pneumococcal infections in sickle cell disease and recurrence of acute rheumatic fever.

Storage

– – Below 25 °C

For the oral suspension (powder or reconstituted suspension): follow manufacturer's instructions.

PHENYTOIN = PHT oral

Last updated: October 2024

Prescription under medical supervision

- Due to the numerous and potentially severe adverse effects of PHT, patients should be kept under close surveillance.
- Be cautious when increasing doses (narrow margin between therapeutic and toxic dose and nonlinear pharmacokinetics).

Therapeutic action

- Antiseizure (antiepileptic)

Indications

- Epilepsy: generalised tonic-clonic seizures and focal (partial) seizures

Forms and strengths

- 100 mg tablet

Dosage

Start with a low dose then increase gradually based on patient's response and tolerance.

- Child 1 month to 11 years: start with 1.5 to 2.5 mg/kg 2 times daily; increase the daily dose by increments of 5 mg/kg every 3 to 4 weeks, up to 2.5 to 5 mg/kg 2 times daily if necessary (max. 7.5 mg/kg 2 times daily or 300 mg daily).
- Child 12 years and over: start with 75 to 150 mg 2 times daily; increase the daily dose by increments of 25 mg every 3 to 4 weeks, up to 150 to 200 mg 2 times daily if necessary (max. 300 mg 2 times daily).
- Adult: start with 150 to 300 mg once daily or 75 to 150 mg 2 times daily; increase the daily dose by increments of 50 mg every 3 to 4 weeks, up to 200 to 400 mg once daily or 100 to 250 mg 2 times daily if necessary (max. 400 mg once daily or 300 mg 2 times daily).

Duration

- As long as required. Do not stop treatment abruptly, even if changing treatment to another antiseizure medication.

Contra-indications, adverse effects, precautions

- Administer with caution to patients with hepatic impairment (reduce dosage), heart failure, atrioventricular block, cardiac rhythm disorders, hypotension.
- May cause:
  - drowsiness (caution when driving/operating machinery), dizziness, headache, behavioural disturbances, insomnia;
  - gastrointestinal disturbances (nausea, vomiting), vitamin D deficiency (consider supplementation), osteoporosis, hepatotoxicity and gingival hypertrophy;
  - rarely: haematologic disorders (thrombocytopenia, agranulocytosis, anaemia), hypersensitivity reactions (including severe cutaneous reactions such as Stevens-Johnson, Lyell and DRESS syndromes). In these cases, stop treatment. Early symptoms such as fever, rash, mouth ulcers and bleeding require immediate medical attention.
- If possible, perform at least FBC and liver enzymes, at baseline then regularly during treatment.
- Avoid or monitor the combination with:
  - rifampicin, mefloquine (reduced effect of PHT);
  - sulfonamides, chloramphenicol, fluconazole, isoniazid, fluoxetine, omeprazole (increased PHT toxicity);
  - drugs containing alcohol, benzodiazepines, opioid analgesics, antipsychotics, first-generation antihistamines (hydroxyzine, promethazine), antidepressants, other antiseizure medications, etc. (increased sedation).
- PHT may reduce the effect of many drugs:
  - diazepam, midazolam, digoxin, corticosteroids, antimicrobials, some antiretrovirals, itraconazole, warfarin, etc. Adjust dosage if necessary.
  - implants and oral contraceptives: use injectable medroxyprogesterone or an intrauterine device.
- Avoid alcohol during treatment (increased risk of adverse effects).
- **Pregnancy**: avoid (risk of cardiac malformations)
  - In case of pregnancy during treatment, prefer a safer drug (levetiracetam). If PHT is the only option, provide counselling about the risks to the child; use the lowest effective dose.
  - Administer folic acid high dose (5 mg daily) during the first trimester. Start as soon as possible, including during the preconception period in case of planned pregnancy.
  - PHT plasma concentrations may decrease during pregnancy. Monitor clinical response; increase dose if needed then resume the usual dose after delivery. Monitor the child for a few days (risk of accumulation and drowsiness or withdrawal symptoms).
- **Breast-feeding**: administer with caution (excreted in milk); reduce the dose if increased during pregnancy.

Remarks

- PHT is not recommended for myoclonic and absence seizures (risk of worsening symptoms).
- Also comes in 30 mg/5 ml oral solution.

Storage

 – Below 25 °C

POTASSIUM CHLORIDE immediate-release oral

Last updated: February 2024

Prescription under medical supervision

For long-term use (i.e. in combination with potassium-depleting diuretics), use only sustained-release formulations.

Therapeutic action

- Potassium supplement, when immediate effect is required

Indications

- Treatment of moderate hypokalaemia

Forms and strengths

- 7.5% potassium chloride syrup (1 mmol of K^+/ml), to be administered using a measuring device (oral syringe, mesuring spoon, or cup with graduations)

Dosage

- Child under 45 kg: 2 mmol/kg (2 ml/kg) daily (see table below)
- Child 45 kg and over and adult: 30 mmol (30 ml) 3 times daily

Age	Weight	7.5% syrup
< 2 months	< 5 kg	4 ml x 2
2 months to < 1 year	5 to < 10 kg	6 ml x 2
1 to < 3 years	10 to < 15 kg	12 ml x 2
3 to < 5 years	15 to < 20 kg	20 ml x 2
5 to < 7 years	20 to < 25 kg	25 ml x 2
7 to < 9 years	25 to < 30 kg	20 ml x 3
9 to < 13 years	30 to < 45 kg	25 ml x 3
≥ 13 years and adult	≥ 45 kg	30 ml x 3

Duration

- According to clinical response. Treatment of 1 to 2 days is typically sufficient when the patient is fully able to drink oral rehydration solution and can eat.

Contra-indications, adverse effects, precautions

- Reduce dosage in older patients and patients with renal impairment (risk of hyperkalaemia).
- Do not combine with spironolactone and angiotensin-converting-enzyme inhibitors (e.g. enalapril).
- May cause: gastrointestinal ulcerations, diarrhoea, nausea and vomiting, rarely hyperkalaemia.
- Administer with caution to patients with gastrointestinal ulcer (risk of gastrointestinal ulcerations).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Take with or at the end meals in order to reduce the risk of gastrointestinal ulcerations.
- Hypokalaemia is defined as a serum potassium concentration below 3.5 mmol/litre.

Storage

Below 25 °C

POTASSIUM CHLORIDE sustained-release oral

Prescription under medical supervision

Therapeutic action

- Potassium supplement

Indications

- Hypokalaemia induced by :
  - thiazide diuretics (e.g. hydrochlorothiazide)
  - loop diuretics (e.g. furosemide)

Forms and strengths

- 600 mg potassium chloride sustained-release tablet (8 mmol of K^+)

Dosage

- Adult: 15 to 25 mmol daily = 1 tablet 2 to 3 times daily
- Do not exceed indicated doses if potassium serum levels cannot be measured.

Duration

- According to clinical response and duration of diuretic treatment

Contra-indications, adverse effects, precautions

- Administer with caution and reduce dosage in elderly patients and in patients with renal impairment (risk of hyperkalaemia).
- Do not combine with spironolactone and angiotensin-converting-enzyme inhibitors (e.g. enalapril).
- May cause: hyperkalaemia, gastroduodenal ulcerations, diarrhoea, nausea and vomiting.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Take with or at the end meals in order to reduce the risk of gastrointestinal ulcerations.

- Hypokalaemia is defined as a serum potassium concentration below 3.5 mmol/litre.
- If tablets are not available, a lack of potassium may be corrected by a diet rich in dates, bananas, mangos, oranges, tomatoes, etc.

Storage

– Below 25 °C

PRAZIQUANTEL oral

Prescription under medical supervision

Therapeutic action

- Anthelminthic

Indications

- Urinary (*S. haematobium*) and intestinal (*S. mansoni, S. japonicum, S. mekongi, S. intercalatum*) schistosomiasis
- Taeniasis (*T. saginata, T. solium, D. latum, H. nana*)
- Pulmonary *(P. westermani*), hepatobiliary (*O. felineus, O. viverrini, C. sinensis*) and intestinal (*F. buski, H. heterophyes, M. yokogawai*) flukes

Forms and strengths

- 600 mg breakable tablet

Dosage and duration

Child 4 years and over and adult:

Schistosomiasis

- *S. haematobium, S. mansoni, S. intercalatum*: 40 mg/kg single dose or 2 doses of 20 mg/kg administered 4 hours apart
- *S. japonicum, S. mekongi*: 2 doses of 30 mg/kg or 3 doses of 20 mg/kg administered 4 hours apart

Taeniase

- *T. saginata, T. solium, D. latum*: 5 to 10 mg/kg single dose
- *H. nana*: 15 to 25 mg/kg single dose

Fluke infections

- lung and hepatobiliary: 25 mg/kg 3 times daily for 2 days
- intestinal: 25 mg/kg 3 times daily, 1 day

Contra-indications, adverse effects, precautions

- Do not administer to patients with ocular cysticercosis.
- May cause:

    - drowsiness, headache, gastrointestinal disturbances, dizziness; rarely: allergic reactions;
    - neurological disorders (headache, seizures) in patients with undiagnosed neuro cysticercosis.
- **Pregnancy**: no contra-indication for the treatment of schistosomiasis and taeniasis. If immediate treatment not considered essential for fluke infections, it should be delayed until after delivery.
- **Breast-feeding**: no contra-indication

Remarks

- Do not chew the tablets due to their bitter taste. Take during meals.
- Praziquantel is not active against certain liver flukes (*Fasciola hepatica* and *gigantica*). For this indication, use triclabendazole.

Storage

– Below 30 °C

PREDNISOLONE and PREDNISONE oral

Last updated: September 2023

Prescription under medical supervision

Therapeutic action

- Intermediate-acting steroidal anti-inflammatory drug (corticosteroid)

Indications

- Symptomatic treatment of allergic and inflammatory diseases or reactions

Forms and strengths

- 5 mg tablet and 5 mg soluble tablet

Dosage and duration

- Dosage varies according to indication, symptoms severity, clinical response and patient's tolerance. In the event of treatment longer than 10 days, a high initial dose should be reduced as quickly as possible to the lowest effective dose.
  - Child and adult: 0.5 to 2 mg/kg once daily in the morning or in 2 divided doses (max. 80 mg daily)
- Duration varies according to indication. In the event of treatment longer than 3 weeks, decrease doses gradually to avoid adrenal suppression.

Contra-indications, adverse effects, precautions

- In case of systemic infection, only administer if patient is under antimicrobial treatment.
- Do not administer to patients with active peptic ulcer (except if ulcer under treatment).
- May cause (if prolonged treatment with high doses): adrenal suppression, muscle atrophy, growth retardation, increased susceptibility to infections, sodium and water retention (oedema and hypertension), osteoporosis, hypokalaemia, digitalis toxicity due to potassium loss in patients taking digitalis glycosides.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication; use the lowest effective dose; for treatment longer than 7 days with doses higher than 40 mg daily, take tablets just after a feed and wait 4 hours before the next feed if possible.

Remarks

- Take with food.
- Prednisolone is also used for preventing inflammatory reaction triggered by certain antiparasitic treatment (e.g. trichinellosis, african trypanosomiasis).
- 5 mg of prednisolone or prednisone has the same anti-inflammatory activity as 0.75 mg of dexamethasone and 20 mg of hydrocortisone.

Storage

– Below 25 °C

PROMETHAZINE oral

Last updated: February 2024

Prescription under medical supervision

Therapeutic action

- Sedating H1 antihistamine

Indications

- Insomnia
- Agitation or aggressive behaviour in patients with acute or chronic psychosis, in combination with haloperidol

Forms and strengths

- 25 mg tablet

Dosage and duration

Insomnia

- Adult: 25 mg once daily at bedtime for 7 to 10 days max.

Agitation or aggressive behaviour in patients with acute or chronic psychosis, with haloperidol

- Adult: 25 mg, to be repeated after 60 minutes if necessary

Contra-indications, adverse effects, precautions

- Administer with caution and monitor use:
  - in older patients;
  - in patients with prostate disorders, closed-angle glaucoma, epilepsy, orthostatic hypotension, severe renal or hepatic impairment;
  - in patients taking central nervous system depressants (opioid analgesics, antipsychotics, sedatives, antidepressants, etc.) or drugs known to have an anticholinergic effect (atropine, amitriptyline, chlorpromazine, etc.).
- May cause:
  - drowsiness (caution when driving/operating machinery), dizziness, headache, confusional state, hypotension, photosensitivity (protect skin from sun exposure);
  - anticholinergic effects (dry mouth, constipation, blurred vision, tachycardia, disorders of micturition);

    - rarely: seizures, extrapyramidal symptoms, neuroleptic malignant syndrome (unexplained hyperthermia with neuromuscular disorders), allergic reactions.
- Avoid alcohol during treatment (increased risk of adverse effects).
- **Pregnancy and breast-feeding**: avoid

Remarks

- Promethazine is not included in the WHO list of essential medicines.

Storage

– – Below 25 °C

PYRAZINAMIDE = Z oral

Last updated: June 2021

Prescription under medical supervision

Therapeutic action

- First line antituberculosis antibacterial (sterilising and bactericidal activity)

Indications

- Tuberculosis, in combination with other antituberculosis antibacterials

Forms and strengths

- 400 mg tablet
- 150 mg dispersible tablet

Dosage

- Child under 30 kg: 35 mg/kg (30 to 40 mg/kg) once daily
- Child 30 kg and over and adult: 25 mg/kg (20 to 30 mg/kg) once daily
- Do not exceed 2 g daily.
- Patient with renal impairment: 25 mg/kg 3 times weekly

Duration

- According to protocol

Contra-indications, adverse effects, precautions

- Do not administer to patients with hypersensitivity to pyrazinamide, severe hepatic impairment or severe gout.
- May cause: gout and arthralgias, hepatotoxicity, photosensitivity (limit sun exposure), rash, gastrointestinal disturbances, hypersensitivity reactions.
- Monitor liver function in patients with known hepatic disease.
- If signs of hepatotoxicity (e.g. jaundice) develop, pyrazinamide should be discontinued until symptoms resolve.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- For patients on first-line antituberculosis treatment, pyrazinamide is given as part of a fixed dose combination.

Storage

– – Below 25 °C

PYRIDOXINE = VITAMIN B6 oral

Therapeutic action

- Vitamin

Indications

- Prevention and treatment of isoniazid-induced peripheral neuropathy

Forms and strengths

- 25 mg tablet

Also comes in 10 mg and 50 mg tablets.

Dosage

Prevention of isoniazid neuropathy

- Child under 5 kg: 5 mg once daily
- Child over 5 kg and adult: 10 mg once daily

Treatment of isoniazid neuropathy

- Child: 50 mg once daily
- Adult: 50 mg 3 times daily

Duration

- Prevention: as long as treatment with isoniazid continues.
- Treatment: according to clinical response (in general, ≤ 3 weeks) then, preventive dose, as long as treatment with isoniazid continues.

Contra-indications, adverse effects, precautions

- No contra-indication.
- May cause: peripheral neuropathy in the event of prolonged use with doses ≥ 200 mg daily.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- In children receiving isoniazid prophylaxis or treatment for tuberculosis: concomitant administration of pyridoxine at preventive dosage is recommended for children under 5 years and all children infected with HIV.

- Pyridoxine is also used for the prevention and treatment of cycloserin-induced neuropathy (150 to 200 mg daily in adults, in divided doses).

Storage

– Below 25 °C

PYRIMETHAMINE oral

Prescription under medical supervision

Therapeutic action

- Antiprotozoal

Indications

- Treatment and secondary prophylaxis of toxoplasmosis in immunodeficient patients, in combination with sulfadiazine or clindamycin
- Primary prophylaxis of toxoplasmosis in immunodeficient patients, in combination with dapsone (only if co-trimoxazole cannot be used)
- Second-line treatment of isosporiasis in immunodeficient patients (only if co-trimoxazole cannot be used)

Forms and strengths

- 25 mg tablet

Dosage and duration

Treatment of toxoplasmosis

- Adult: 2 doses of 100 mg on D1, then 75 to 100 mg once daily for at least 6 weeks

Secondary prophylaxis of toxoplasmosis

- Adult: 25 to 50 mg once daily, as long as necessary

Primary prophylaxis of toxoplasmosis

- Adult: 50 to 75 mg once weekly, as long as necessary

Treatment of isosporiasis

- Adult: 50 to 75 mg once daily for 10 days

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe renal or hepatic impairment.
- May cause: gastrointestinal disturbances, seizures, leucopenia, thrombocytopenia, megaloblastic anaemia due to folic acid deficiency.
- Administer calcium folinate to prevent folic acid deficiency.

- Avoid if possible combination with other folate antagonists: co-trimoxazole, methotrexate (increased risk of folic acid deficiency).
- Monitor combination with zidovudine (increased risk of zidovudine-associated haematotoxicity).
- **Pregnancy**: CONTRA-INDICATED during the first trimester
- **Breast-feeding**: no contra-indication; however avoid concomitant administration of other folate antagonists.

Remarks

- The combination of sulfadoxine/pyrimethamine is used for the treatment of uncomplicated falciparum malaria.

Storage

Below 25 °C

QUININE oral

Prescription under medical supervision

Therapeutic action

- Antimalarial

Indications

- Treatment of uncomplicated falciparum malaria, when artemisinin-based combinations cannot be used
- Completion treatment following parenteral therapy with quinine for severe falciparum malaria, when artemisinin-based combinations cannot be used

Forms and strengths

- 300 mg quinine sulfate tablet

Dosage and duration

Dosage is expressed in terms of salt. Except for quinine bisulfate, the dosage is the same for all quinine salts (sulfate, hydrochloride, dihydrochloride):

- Child and adult < 50 kg: 10 mg/kg 3 times daily at 8-hour intervals for 7 days
- Adult ≥ 50 kg: 600 mg 3 times daily at 8-hour intervals for 7 days

Age	Weight	300 mg tablet
5 months to < 2 years	7 to < 12 kg	¼ tab x 3
2 to < 8 years	12 to < 25 kg	½ tab x 3
8 to < 11 years	25 to < 35 kg	1 tab x 3
11 to < 14 years	35 to < 50 kg	1½ tab x 3
≥ 14 years	≥ 50 kg	2 tab x 3

Contra-indications, adverse effects, precautions

- May cause: headache, skin rash; visual, auditory and gastrointestinal disturbances.
- Do not exceed indicated doses: risk of toxicity in the event of overdose.
- Avoid combination with drugs that prolong QT interval: amiodarone, other antimalarials, antipsychotics, fluconazole, fluoroquinolones, hydroxyzine, macrolides, ondansetron, etc.
- If the patient vomits within 30 minutes after administration, re-administer the full dose. If the patient vomits between 30 minutes and 1 hour after administration, re-administer half of the dose.
- **Pregnancy***:* no contra-indication; it is recommended to administer quinine in combination with clindamycin if possible.
- **Breast-feeding***:* no contra-indication

Remarks

- 10 mg of quinine sulfate or hydrochloride or dihydrochloride = 8 mg of quinine base; 14 mg of quinine bisulfate = 8 mg of quinine base.

Storage

– Below 25 °C

ReSoMal (REhydration SOlution for MALnutrition) oral

Last updated: November 2022

Prescription under medical supervision

Therapeutic action

- Oral rehydration salts with high potassium and low sodium contents

Indications

- Prevention and treatment of dehydration, in children suffering from complicated acute malnutrition only

Forms and strengths

- Sachet containing 84 g of powder, to be diluted in 2 litres of clean, boiled and cooled water

Composition for one litre:

	mmol/litre		mmol/litre
Glucose	55	Citrate	7
Saccharose	73	Magnesium	3
Sodium	45	Zinc	0.3
Potassium	40	Copper	0.045
Chloride	70	Osmolarity	294 mEq/litre

Dosage and duration

Prevention of dehydration

- Child: 5 ml/kg after each loose stool as long as diarrhoea persists
  - Child under 5 kg: 25 ml
  - Child 5 to 9 kg: 50 ml
  - Child 10 to 19 kg: 100 ml
  - Child 20 kg and over: 200 ml

Treatment of some dehydration

- Child: 20 ml/kg/hour for 2 hours orally or by nasogastric tube. If improvement (diarrhoea and signs of dehydration regress), reduce to 10 ml/kg/hour until there are no signs of dehydration and/or target weight is reached, then change to prevention of dehydration as above.

Treatment of severe dehydration

Only if there is no circulatory impairment and rehydration by oral route or nasogastric tube is tolerated:

- Child: 20 ml/kg/hour for 1 hour orally or by nasogastric tube. If improvement (diarrhoea and signs of dehydration regress), continue with 20 ml/kg/hour for 2 hours, then reduce to 10 ml/kg/hour, as for some dehydration.

Contra-indications, adverse effects, precautions

- Do not administer to patients with cholera or uncomplicated acute malnutrition: use standard ORS instead.
- Closely monitor rate of administration.
- May cause:
  - fluid overload (increased respiratory and heart rates and new onset or worsening of oedema). In this event, stop ReSoMal for one hour then reassess the child's condition;
  - heart failure when administered too rapidly.

Remarks

- ReSoMal can also be administered in adults suffering from complicated acute malnutrition, including in pregnant or breastfeeding women.

Storage

– – Below 25 °C

Do not use the powder if it has turned sticky.

Once prepared, the solution should be used within 24 hours.

RETINOL = VITAMIN A oral

Therapeutic action

- Vitamin

Indications

- Prevention of vitamin A deficiency
- Treatment of vitamin A deficiency (xerophthalmia)

Forms and strengths

- 200 000 IU capsule, i.e. about 8 drops (1 drop = 25 000 IU)

Dosage and duration

Prevention of vitamin A deficiency

- Child under 6 months: 50 000 IU single dose
- Child from 6 to 12 months: one dose of 100 000 IU every 4 to 6 months
- Child over 1 year: one dose of 200 000 IU every 4 to 6 months

Treatment of vitamin A deficiency

- Child under 6 months: 50 000 IU once daily on D1, D2 and D8 (or D15)
- Child from 6 to 12 months: 100 000 IU once daily on D1, D2 and D8 (or D15)
- Child over 1 year and adult: 200 000 IU once daily on D1, D2 and D8 (or D15)

Age	200 000 IU capsule	
	Prevention	Treatment
< 6 months	2 drops	2 drops
6 months to < 1 year	4 drops	4 drops
1 to < 5 years	1 cap	1 cap
≥ 5 years and adult	–	1 cap

Contra-indications, adverse effects, precautions

- Do not exceed indicated doses.
- Overdosage may cause: gastrointestinal disturbances, headache, raised intracranial pressure (bulging fontanelle in infants); foetal abnormalities.
- **Pregnancy***:*
  Prevention: after delivery only, 200 000 IU single dose
  Treatment: dosage depends on severity of eye lesions:
  - Night blindness and Bitot's spots: 10 000 IU once daily or 25 000 IU once weekly for at least 4 weeks
  - Corneal lesion: 200 000 IU once daily on D1, D2 and D8 (or D15)
- **Breast-feeding**: no contra-indication at recommended doses

Remarks

- Do not swallow the capsule. Cut open the end of the capsule and squeeze the dose directly into the mouth.
- Administer routinely 2 doses (on D1 and D2) to children suffering from measles to prevent the complications of measles.

Storage

– Below 25 °C

RIFAMPICIN = R oral

Last updated: June 2021

Prescription under medical supervision

Therapeutic action

- Antibacterial, first line antituberculosis antibacterial (sterilising and bactericidal activity), antileprotic antibacterial (bactericidal activity)

Indications

- Tuberculosis, in combination with other antituberculosis antibacterials
- Paucibacillary and multibacillary leprosy, in combination with dapsone and clofazimine
- Brucellosis, in combination with another antibacterial
- Latent tuberculosis, as monotherapy or in combination with isoniazid

Forms and strengths

- 150 mg tablet and 300 mg capsule

Dosage

Tuberculosis, latent tuberculosis, as monotherapy or in combination with isoniazid

- Child under 30 kg: 15 mg/kg once daily, on an empty stomach
- Child 30 kg and over and adult: 10 mg/kg once daily, on an empty stomach

Do not exceed 600 mg daily.

Paucibacillary and multibacillary leprosy

- Child under 10 years: 10 mg/kg once monthly, on an empty stomach
- Child from 10 to 14 years: 450 mg once monthly, on an empty stomach
- Child 15 years and over and adult: 600 mg once monthly, on an empty stomach

Brucellosis

- Child: 15 to 20 mg/kg once daily, on an empty stomach (max. 600 mg daily)
- Adult: 600 to 900 mg once daily, on an empty stomach

In patients with hepatic impairment: do not exceed 8 mg/kg/day when treatment is administered daily.

Duration

- Tuberculosis: according to protocol
- Latent tuberculosis as monotherapy*:* 4 months
- Latent tuberculosis in combination with isoniazid: 3 months
- Paucibacillary leprosy: 6 months
- Multibacillary leprosy: 12 months
- Brucellosis: 6 weeks

Contra-indications, adverse effects, precautions

- Do not administer to patients with jaundice, hypersensitivity to rifamycins or history of severe haematological disorders (thrombocytopenia, purpura) during a previous treatment with rifamycins.
- Avoid or administer with caution to patients with hepatic disorders.
- May cause:
  - harmless orange-red discoloration of body secretions (urine, tears, saliva, sputum, sweat, etc.);
  - gastrointestinal disturbances (can be taken with a small amount of food to increase gastrointestinal tolerance); headache, drowsiness, hepatotoxicity;
  - influenza-like symptoms;
  - thrombocytopenia, hypersensitivity reactions.
- If signs of hepatotoxicity (e.g. jaundice) develop, rifampicin should be discontinued until symptoms resolve.
- Rifampicin reduces the effect of many drugs (antimicrobials, some antiretrovirals, some hormones, antidiabetics, corticosteroids, phenytoin, direct-acting antivirals for chronic hepatitis C, warfarin, etc.):
  - in patients taking nevirapine, lopinavir/ritonavir, atazanavir/ritonavir, use rifabutin in place of rifampicin;
  - in women using contraception, use injectable medroxyprogesterone or an intrauterine device;
  - in the event of concomitant fluconazole administration, administer each drug 12 hours apart (rifampicin in the morning, fluconazole in the evening);
  - for the other drugs, adjust dosage if necessary.
- **Pregnancy**: no contra-indication. Risk of maternal and neonatal bleeding disorders when the mother receives rifampicin in late pregnancy: administer phytomenadione (vitamin K) to the mother and the neonate to reduce the risk.
- **Breast-feeding**: no contra-indication

Remarks

- For patients sensitive to first-line antituberculosis treatment, rifampicin is given as part of a fixed dose combination.

Storage

– – Below 25 °C

RIFAPENTINE = P oral

Last updated: September 2023

Prescription under medical supervision

Therapeutic action

- Antituberculosis antibacterial (bactericidal activity)

Indications

- Latent tuberculosis, in combination with isoniazid

Forms and strengths

- 150 mg and 300 mg tablets

Dosage and duration

Weekly regimen for 3 months, in combination with isoniazid

- Child 2 years and over and adult:

Weight	Weekly dosage	150 mg tablet	300 mg tablet
10 to 14 kg	300 mg	2 tab once weekly	1 tab once weekly
14.1 to 25 kg	450 mg	3 tab once weekly	_
25.1 to 32 kg	600 mg	4 tab once weekly	2 tab once weekly
32.1 to 49 kg	750 mg	5 tab once weekly	_
≥ 50 kg	900 mg	6 tab once weekly	3 tab once weekly

Daily regimen for 1 month, in combination with isoniazid

- Child 13 years and over and adult: 600 mg once daily

Contra-indications, adverse effects, precautions

- Do not administer to patients with jaundice, hypersensitivity to rifamycins or history of severe haematological disorders (thrombocytopenia, purpura) during a previous treatment with rifamycins.
- Do not administer the weekly regimen to children under 2 years or the daily regimen to children under 13 years.
- Avoid or administer with caution to patients with hepatic disorders.
- May cause:
  - harmless orange-red discoloration of body secretions (urine, tears, saliva, sputum, sweat, etc.);
  - gastrointestinal disturbances; rarely, hepatotoxicity;
  - headache, influenza-like symptoms;
  - haematological disorders, cutaneous reactions (rash, pruritus) and hypersensitivity reactions (approximately 4% of patients).
- If signs of hepatotoxicity develop (e.g. jaundice), rifapentine should be discontinued until symptoms resolve.
- Rifapentine reduces the effect of many drugs (antimicrobials, anticonvulsants, some antiretrovirals, some hormones, antidiabetics, corticosteroids, direct-acting antivirals for chronic hepatitis C, warfarin, etc.):
  - do not administer in patients on protease inhibitors or nevirapine;
  - in women using contraceptive, use medroxyprogesterone or an intrauterine device;
  - in the event of concomitant fluconazole administration, administer each drug 12 hours apart (rifapentine in the morning, fluconazole in the evening);
  - for the other drugs, adjust dosage if necessary.
- **Pregnancy and breast-feeding**: not recommended (safety not established)

Remarks

- Tablets can be crushed and mixed into a spoon with a small amount of food.
- Also comes in fixed dose combination containing 300 mg of rifapentine/300 mg of isoniazid. Prefer this formulation for weekly regimens to reduce the pill burden (3 tablets once weekly). This formulation is only recommended for children over 14 years and adults.
- Rifapentine and rifampicin are not interchangeable in regimens for latent tuberculosis.

Storage

– – Below 25 °C

RISPERIDONE oral

Last updated: February 2024

Prescription under medical supervision

Due to the numerous and potentially severe adverse effects of risperidone, patients should be kept under close surveillance.

Therapeutic action

- Atypical antipsychotic

Indications

- Acute and chronic psychosis and acute manic episode, in the event of intolerance or treatment failure with other antipsychotics (preferably use haloperidol for these indications)

Forms and strengths

- 1 mg and 2 mg tablets

Dosage

Acute or chronic psychosis

- Adult: 1 mg 2 times daily. Gradually increase up to 3 mg 2 times daily if necessary (max. 10 mg daily).

Acute manic episode

- Adult: 2 mg once daily. Increase in increments of 1 mg per week if necessary (max. 6 mg daily).

Reduce the dose by half (initial dose and increments) in older patients and in patients with hepatic or renal impairment (max. 4 mg daily).

Duration

- Acute psychosis: at least 3 months
- Chronic psychosis: at least one year
- Manic episode: 8 weeks after remission of symptoms

Discontinue treatment gradually (over 4 weeks). If signs of relapse occur, increase the dose then decrease it more gradually.

Contra-indications, adverse effects, precautions

- Do not administer to patients with cardiac disorders (heart failure, recent myocardial infarction, conduction disorders, bradycardia, etc.), dementia (e.g. Alzheimer's disease), Parkinson's disease and history of neuroleptic malignant syndrome.
- Administer with caution and carefully monitor use in older patients, patients with hypokalaemia, hypotension, renal or hepatic impairment, history of seizures.
- May cause: drowsiness (caution when driving/operating machinery), insomnia, headache, extrapyramidal symptoms, agitation, anxiety, orthostatic hypotension, weight gain, hyperprolactinaemia, sexual dysfunction; neuroleptic malignant syndrome (unexplained hyperthermia with neuromuscular disorders), rare but requiring immediate treatment discontinuation.
- In case of extrapyramidal symptoms, try reducing the dose of risperidone or, if the extrapyramidal symptoms are severe, add biperiden or trihexyphenidyl.
- Avoid or monitor combination with:
  - central nervous system depressants (opioid analgesics, sedatives, H1 antihistamines, etc.);
  - fluoxetine, paroxetine, sertraline, verapamil (increased plasma concentrations of risperidone);
  - carbamazepine, rifampicin, phenobarbital, phenytoin (decreased plasma concentrations of risperidone);
  - antihypertensive drugs (risk of hypotension); drugs that prolong the QT interval (amiodarone, chloroquine, erythromycin, fluconazole, mefloquine, pentamidine, quinine, etc.).
- Avoid alcohol during treatment (increased risk of adverse effects).
- **Pregnancy**: re-evaluate whether the treatment is still necessary; if it is continued, use the lowest effective dose. Observe the neonate the first few days (risk of agitation, tremors, hypertonia/hypotonia, respiratory difficulties, sleeping disorders, etc.) if the mother was under treatment in the 3rd trimester. If treatment starts during pregnancy, preferably use haloperidol.
- **Breast-feeding**: if absolutely necessary, do not exceed 6 mg daily.

Storage

– Below 25 °C

RITONAVIR = RTV oral

Last updated: November 2022

Prescription under medical supervision

Therapeutic action

- Antiretroviral, HIV protease inhibitor

Indications

- Booster for protease inhibitors (atazanavir, darunavir, lopinavir, etc.) in HIV infection. Ritonavir should not be used alone.

Forms and strengths

- 25 mg and 100 mg tablets

Dosage

Dosage depends on the administration schedule of the boosted protease inhibitor. The daily dose is administered once daily or in 2 divided doses.

- Child 14 to < 25 kg:
  - 50 mg (two 25 mg tablets) 2 times daily, or
  - 100 mg (four 25 mg tablets or one 100 mg tablet) once daily
- Child ≥ 25 kg and adult: 100 mg (one 100 mg tablet) once or 2 times daily

Duration

- Depending on the efficacy and tolerance of the boosted protease inhibitor and ritonavir.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe hepatic impairment.
- Administer with caution and monitor use in patients with haemophilia (increased bleeding) or mild to moderate hepatic impairment.
- The adverse effects of ritonavir as a booster are also dependent on the boosted protease inhibitor.
- May cause:
  - gastrointestinal disturbances, fatigue, headache, dizziness, paraesthesia, joint and muscle pain, taste disturbances, hyperglycaemia, hyperlipidaemia, lipodystrophy, conduction disorders;

    - pancreatitis, hepatic disorders, skin rash sometimes severe; in this event, stop treatment immediately.
- Ritonavir reduces the efficacy of implants and oral contraceptives:: use injectable medroxyprogesterone or an intrauterine device. Only when combined with atazanavir, an oral contraceptive containing at least 30 micrograms of ethinylestradiol per tablet may also be used.
- **Pregnancy**: no contra-indication

Remarks

- Take with meals.
- Tablets are not recommended in children < 14 kg.
- Also comes in fixed-dose combinations with other protease inhibitors (atazanavir, darunavir, lopinavir, etc.). Preferably use these formulations when available.

Storage

– – Below 25 °C

SALBUTAMOL metered dose inhaler

Last updated: June 2023

Prescription under medical supervision

Therapeutic action

- Short-acting beta-2 agonist bronchodilator

Indications

- Symptomatic treatment of asthma attack

Forms and strengths

- Solution or suspension for inhalation in pressurised metered dose inhaler, delivering 100 micrograms of salbutamol/puff

Dosage and duration

Asthma attack

- Child and adult: 2 to 10 puffs (200 to 1000 micrograms) every 20 minutes for the first hour

Then:

- If the attack is completely resolved: 2 to 4 puffs (200 to 400 micrograms) every 4 to 6 hours for 24 to 48 hours
- If the attack is not completely resolved: 2 to 10 puffs (200 to 1000 micrograms) every 1 to 4 hours until symptoms subside then 2 to 4 puffs (200 to 400 micrograms) every 4 to 6 hours for 24 to 48 hours

Chronic asthma (when symptomatic only)

- Child and adult: 2 to 4 puffs (200 to 400 micrograms) up to 4 times daily if necessary

Administration technique

- Shake the inhaler. Remove the mouthpiece cover.
- Breathe in and breathe out as completely as possible. Place the lips tightly around the mouthpiece. Inhale deeply while activating the inhaler. Hold breath 10 seconds before exhaling.
- Hand-breath co-ordination is very difficult in children under 6 years, older patients and patients with severe dyspnoea. Use a spacer to facilitate administration and improve the efficacy of treatment.

Contra-indications, adverse effects, precautions

- May cause: headache, tremor and tachycardia, hyperglycaemia; hypokalaemia (after high doses).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- In severe asthma attack, preferably administer salbutamol by nebulisation, in combination with ipratropium. Use salbutamol metered dose inhaler only if nebuliser solution is not available.
- Salbutamol is also used for other conditions associated with bronchoconstriction (e.g. chronic obstructive pulmonary disease, some severe respiratory infections).
- Clean the mouthpiece before and after each use.
- Do not pierce or incinerate used aerosol containers (risk of explosion).

Storage

– Below 25 °C

SALBUTAMOL nebuliser solution

Last updated: June 2023

Prescription under medical supervision

Therapeutic action

- Short-acting beta-2 agonist bronchodilator

Indications

- Symptomatic treatment of severe asthma attack, in combination with ipratropium

Forms and strengths

- Solution for inhalation, in unit dose vial of 5 mg in 2.5 ml (2 mg/ml), to be administered via a nebuliser

Dosage and duration

- Child under 5 years: 2.5 mg (1.25 ml) per nebulisation every 20 minutes for the first hour
- Child 5 to 11 years: 2.5 to 5 mg (1.25 to 2.5 ml) per nebulisation every 20 minutes for the first hour
- Child 12 years and over and adult: 5 mg (2.5 ml) per nebulisation every 20 minutes for the first hour

Then:

- If symptoms do not improve, continue treatment every 20 minutes.
- If symptoms improve, reduce gradually the frequency of nebulisations then change to salbutamol metered dose inhaler.

Contra-indications, adverse effects, precautions

- May cause: headache, tremor and tachycardia, hyperglycaemia; hypokalaemia (after high doses).
- Never use nebuliser solution by the parenteral route.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Nebulised salbutamol should be reserved for severe asthma attacks. Otherwise, salbutamol should be delivered via a metered-dose inhaler with a spacer: administration is easier and faster, the treatment is as effective, or even more effective, than with a nebuliser and causes fewer adverse effects.

- Volumes of nebuliser solution to be administered are insufficient to obtain efficient nebulisation in most nebulisers: dilute salbutamol solution with 0.9% sodium chloride to obtain a total volume of 4 ml in the reservoir of the nebuliser. Stop the nebulisation when the reservoir is empty (after around 10 to 15 minutes).

Storage

– Below 25 °C

SALMETEROL metered dose inhaler

Last updated: June 2023

Prescription under medical supervision

Therapeutic action

- Long-acting beta-2 agonist bronchodilator

Indications

- Long term treatment of moderate and severe persistent asthma (maintenance treatment), in combination with an inhaled corticosteroid (beclometasone)

Forms and strengths

- Solution or suspension for inhalation in pressurised metered dose inhaler, delivering 25 micrograms of salmeterol/puff

Dosage

Start at the step most appropriate to initial severity. Always try to administer the lowest effective dose.

- Child 6 to 11 years: 2 puffs (50 micrograms) 2 times daily (max. 4 puffs or 100 micrograms daily)
- Child 12 years and over and adult: 2 to 4 puffs (50 to 100 micrograms) 2 times daily (max. 8 puffs or 200 micrograms daily)

Duration

- Treatment should be given as long as required. Re-evaluate after 2 to 3 months if doses are adequate or need to be increased or decreased.

Administration technique

- Shake the inhaler. Remove the mouthpiece cover.
- Breathe in and breathe out as completely as possible. Place the lips tightly around the mouthpiece. Inhale deeply while activating the inhaler. Hold breath 10 seconds before exhaling.
- If hand-breath co-ordination is difficult, use a spacer to facilitate administration and improve the efficacy of treatment.

Contra-indications, adverse effects, precautions

- May cause: headache, tremor and tachycardia, hyperglycaemia; hypokalaemia (after high doses).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Salmeterol must always be used with an inhaled corticosteroid. It should not be used for symptomatic relief of acute asthma.
- Relief of symptoms may require several days or weeks of continuous therapy.
- Clean the mouthpiece before and after each use.
- Do not pierce or incinerate used aerosol containers (risk of explosion).

Storage

– Below 25 °C

SERTRALINE oral

Last updated: March 2024

Prescription under medical supervision

Therapeutic action

- Antidepressant, selective serotonin re-uptake inhibitor (SSRI)

Indications

- Major depression, if fluoxetine or paroxetine poorly tolerated or contra-indicated
- Severe post-traumatic stress disorder

Forms and strengths

- 50 mg and 100 mg tablets

Dosage

Major depression

- Adult: 25 mg once daily for 3 days, then 50 mg once daily. In case of insufficient response after 3 weeks, increase up to 100 mg daily max.

Severe post-traumatic stress disorder

- Adult: 50 mg once daily

Duration

- Major depression: at least 9 months. Discontinue treatment gradually (e.g. half dose once daily for 2 weeks and then on alternate days for 2 weeks). If signs of relapse or withdrawal occur, increase the dose and decrease it more gradually.
- Severe post-traumatic stress disorder: 2 to 3 months after symptoms resolve. Discontinue treatment gradually (over at least 2 weeks).

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe hepatic impairment. Reduce the dose by half in patients with mild to moderate hepatic impairment.
- Administer with caution and monitor use in patients with epilepsy, diabetes; history of gastrointestinal bleeding, bipolar disorders, suicidal ideation (in young adults), or closed-angle glaucoma.

- May cause:
  - gastrointestinal disturbances, drowsiness (caution when driving or operating machinery), fatigue, headache, dizziness, seizures, sexual dysfunction, blurred vision, hyponatraemia especially in older patients;
  - mental disorders: anxiety, insomnia, agitation, aggressive behaviour, suicidal ideation in young adults;
  - withdrawal symptoms very frequent if discontinued abruptly: dizziness, paraesthesia, nightmares, anxiety, tremors and headaches.
- Avoid combination with:
  - aspirin, NSAIDs and warfarin (risk of bleeding);
  - serotonergic drugs: other SSRI, tricyclic antidepressants, ondansetron, tramadol, etc. (risk of serotonin syndrome).
- Monitor combination with: risperidone (increased plasma concentration), drugs which lower the seizure threshold (antipsychotics, mefloquine, etc.).
- Avoid alcohol during treatment (increased risk of adverse effects).
- **Pregnancy and breast-feeding**: no contra-indication; re-evaluate whether the treatment is still necessary; if it is continued, maintain sertraline at effective dose. Observe the neonate (risk of agitation, tremors, hypotony, respiratory difficulties, sleeping disorders, etc.) if the mother was under treatment in the 3rd trimester.

Remarks

- It is necessary to wait at least 2 to 3 weeks before assessing the antidepressant effect. This must be explained to the patient.

Storage

– – Below 25 °C

SODIUM VALPROATE oral

See VALPROIC acid oral

SOFOSBUVIR/DACLATASVIR = SOF/DCV oral

Last updated: September 2023

Prescription under medical supervision

Therapeutic action

- Combination of two direct-acting antivirals: a NS5B polymerase inhibitor (sofosbuvir) and a NS5A inhibitor (daclatasvir)

Indications

- Treatment of chronic hepatitis C

Forms and strengths

- 400 mg sofosbuvir/60 mg daclatasvir co-formulated tablet

Dosage and duration

Genotypes 1, 2, 4, 5, 6 without cirrhosis or with compensated cirrhosis and genotype 3 without cirrhosis

- Adult: one 400 mg/60 mg tablet once daily for 12 weeks

Genotype 3 with compensated cirrhosis or genotypes 1, 2, 3, 4, 5, 6 with decompensated cirrhosis

- Adult: one 400 mg/60 mg tablet once daily for 24 weeks

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to sofosbuvir or daclatasvir.
- May cause: fatigue, headache, insomnia, dizziness, gastrointestinal disturbances, arthralgia.
- Administer with caution to patients co-infected with hepatitis B virus (risk of HBV reactivation).
- Do not combine with: carbamazepine, phenobarbital, phenytoin, rifampicin, rifabutin, rifapentine, oral or injectable dexamethasone (decreased sofosbuvir and/or daclatasvir plasma concentrations); amiodarone (risk of severe bradycardia and heart block).
- Administer with caution and monitor combination with:
  - efavirenz, etravirine, nevirapine (decreased daclatasvir plasma concentrations);
  - clarithromycin, erythromycin, itraconazole, atazanavir/ritonavir (increased daclatasvir plasma concentrations);
  - digoxin (increased digoxin plasma concentrations).

- Closely monitor blood glucose levels in patients with diabetes (risk of hypoglycaemia); adjust the antidiabetic treatment if necessary.
- Provide effective contraception in women of childbearing age.
- **Pregnancy and breast-feeding**: CONTRA-INDICATED (safety not established)

Remarks

- Tablets have a bitter taste, they should be swallowed whole (not crushed or chewed), with meals.
- If the patient vomits within 2 hours after administration: take the same dose.
- If the patient misses a dose, the dose should be taken as soon as possible if remembered within 18 hours of the usual time. After 18 hours or more, the dose should be skipped, and the next dose taken at the usual time.
- Also comes in single drug formulations (sofosbuvir 200 mg tablet and daclatasvir 60 mg tablet) for paediatric use.

Storage

– Below 30 °C

SOFOSBUVIR/VELPATASVIR = SOF/VEL oral

Last updated: September 2023

Prescription under medical supervision

Therapeutic action

- Combination of two direct-acting antivirals: a NS5B polymerase inhibitor (sofosbuvir) and a NS5A inhibitor (velpatasvir)

Indications

- Treatment of chronic hepatitis C

Forms and strengths

- 400 mg sofosbuvir/100 mg velpatasvir co-formulated tablet

Dosage and duration

Genotypes 1, 2, 3, 4, 5, 6 with no cirrhosis or compensated cirrhosis

- Adult: one 400 mg/100 mg tablet once daily for 12 weeks

Genotypes 1, 2, 3, 4, 5, 6 with decompensated cirrhosis

- Adult: one 400 mg/100 mg tablet once daily for 24 weeks

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to sofosbuvir or velpatasvir.
- May cause: fatigue, headache, insomnia, nausea, rash.
- Administer with caution to patients co-infected with hepatitis B virus (risk of HBV reactivation).
- Do not combine with: carbamazepine, phenobarbital, phenytoin, rifampicin, rifabutin, rifapentine, efavirenz, nevirapine, etravirine (decreased sofosbuvir and/or velpatasvir plasma concentrations); amiodarone (risk of severe bradycardia and heart block)
- Administer with caution and monitor combination with: tenofovir, atorvastatin, digoxin (increased plasma concentration of these drugs)
- Do not administer simultaneously with:
  - omeprazole: take sofosbuvir/velpatasvir 4 hours before omeprazole, with food;
  - antacids (aluminium/magnesium hydroxide, etc.), calcium carbonate: take 4 hours apart.
- Closely monitor blood glucose levels in patients with diabetes (risk of hypoglycemia); adjust the antidiabetic treatment if necessary.

- **Pregnancy and breast-feeding**: CONTRA-INDICATED (safety not established)

Remarks

- Tablets have a bitter taste, they should be swallowed whole (not crushed or chewed), with meals.
- If the patient vomits within 3 hours after administration: take the same dose.
- If the patient misses a dose, the dose should be taken as soon as possible if remembered within 18 hours of the usual time. After 18 hours or more, the dose should be skipped, and the next dose taken at the usual time.
- Also comes in 200 mg sofosbuvir/50 mg velpatasvir co-formulated tablet for paediatric use.

Storage

☂ – Below 30 °C

SPIRONOLACTONE oral

Prescription under medical supervision

Therapeutic action

- Potassium-sparing diuretic, antagonist of aldosterone

Indications

- Oedema associated with heart failure, hepatic cirrhosis and nephrotic syndrome

Forms and strengths

- 25 mg tablet

Dosage

Adjunctive therapy in heart failure

- Adult: 25 mg once daily

Ascites in hepatic cirrhosis

- Adult: 100 to 400 mg daily.
  When weight is stable, administer the lowest possible maintenance dose, in order to prevent adverse effects.

Oedema in nephrotic syndrome

- Adult: 100 to 200 mg daily

The daily dose can be administered in 2 to 3 divided doses or once daily.

Duration

- According to clinical response; avoid prolonged use.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe renal impairment, anuria, hyperkalaemia > 5 mmol/litre, hyponatraemia.
- Do not combine with potassium salts, potassium-sparing diuretics; lithium (risk of lithium toxicity).

- Avoid or closely monitor combination with angiotensin-converting enzyme inhibitors (risk of severe, potentially fatal hyperkalaemia), digoxin (risk of digoxin toxicity) and reduce dosages.
- May cause:
  - hyperkalaemia (especially in elderly or diabetics patients, patients with renal impairment or patients taking NSAIDs), hyponatraemia; metabolic acidosis (in patients with decompensated cirrhosis);
  - gynecomastia, metrorrhagia, impotence, amenorrhoea, gastrointestinal disturbances, headache, skin rash, drowsiness.
- Administer with caution in patients with hepatic or renal impairment or diabetes.
- Monitor regularly plasma-potassium levels.
- **Pregnancy**: avoid, use only if clearly needed (risk of feminisation of foetus); spironolactone is not indicated in the treatment of pregnancy-related oedema.
- **Breast-feeding**: no contra-indication

Remarks

- In children with oedema, the daily dose is 1 to 3 mg/kg once daily or 0.5 to 1.5 mg/kg 2 times daily.
- Spironolactone is also used for the diagnosis and treatment of primary hyperaldosteronism.

Storage:

– Below 25 °C

SULFADIAZINE oral

Prescription under medical supervision

Therapeutic action

- Sulfonamide antibacterial

Indications

- Treatment and secondary prophylaxis of toxoplasmosis in immunodeficient patients, in combination with pyrimethamine

Forms and strengths

- 500 mg tablet

Dosage and duration

Treatment of toxoplasmosis

- Adult: 2 g 2 to 3 times daily for 6 weeks minimum

Secondary prophylaxis of toxoplasmosis

- Adult: 1 to 1.5 g 2 times daily, as long as necessary

Contra-indications, adverse effects, precautions

- Do not administer to sulfonamide-allergic patients; patients with severe renal or hepatic impairment.
- May cause:
  - gastrointestinal disturbances, renal disorders (crystalluria, etc.), photosensitivity, megaloblastic anaemia due to folic acid deficiency; haemolytic anaemia in patients with G6PD deficiency;
  - allergic reactions (fever, rash, etc.) sometimes severe (Lyell's and Stevens-Johnson syndromes, haematological disorders, etc.). In these cases, stop treatment immediately.
- Adverse effects occur more frequently in patients with HIV infection.
- Monitor blood count if possible.
- Reduce the dose by half in patients with renal impairment.
- Do not combine with methotrexate and phenytoin.
- Administer calcium folinate systematically to prevent folic acid deficiency.
- Drink a lot of liquid during treatment.

- **Pregnancy**: no contra-indication. However, avoid using during the last month of pregnancy (risk of jaundice and haemolytic anaemia in the newborn infant).
- **Breast-feeding**: avoid if preterm infant, jaundice, low-birth weight, infant under one month of age. If sulfadiazine is used, observe the infant for signs of jaundice.

Storage

– Below 25 °C

SULFADOXINE/PYRIMETHAMINE = SP oral

Last updated: October 2024

Prescription under medical supervision

Therapeutic action

- Antimalarial

Indications

- Intermittent preventive treatment of malaria in pregnancy (IPTp-SP), as of the second trimester, in areas with moderate to high malaria transmission in Africa

Forms and strengths

- Sulfadoxine 500 mg/pyrimethamine 25 mg tablet
- Sulfadoxine 500 mg/pyrimethamine 25 mg dispersible tablet

Dosage and duration

- 3 tablets single dose for each treatment, starting as early as possible in the second trimester
- Each treatment should be given at least one month apart and at least 3 doses should be given during pregnancy.

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to sulfonamides.
- Do not administer to HIV-infected women taking co-trimoxazole prophylaxis.
- May cause: gastrointestinal disturbances, skin reactions, sometimes severe (toxic epidermal necrolysis and Stevens-Johnson syndrome); anaemia, leukopenia, agranulocytosis, thrombocytopenia, haemolytic anaemia in patients with G6PD deficiency.
- Do not use in combination with co-trimoxazole.
- Do not give folic acid on the same day SP is administered, or within 2 weeks thereafter.
- **Pregnancy**: CONTRA-INDICATED during the first trimester (risk of neural tube defects)

Remarks

- Also comes as co-packaged dispersible tablets for seasonal malaria chemoprevention in children: amodiaquine 153 mg + sulfadoxine/pyrimethamine 500 mg/25 mg and amodiaquine 76.5 mg +

sulfadoxine/pyrimethamine 250 mg/12.5mg.

Storage

– Below 25 °C

SULFAMETHOXAZOLE (SMX)/TRIMETHOPRIM (TMP) oral

See CO-TRIMOXAZOLE oral

TENOFOVIR DISOPROXIL FUMARATE = TDF oral

Last updated: November 2022

Prescription under medical supervision

Therapeutic action

- Antiretroviral, HIV nucleotide reverse transcriptase inhibitor

Indications

- HIV infection with or without chronic hepatitis B coinfection, in combination with other antiretrovirals
- Chronic hepatitis B without HIV coinfection, in monotherapy

Forms and strengths

- 300 mg tablet, equivalent to 245 mg of tenofovir disoproxil

Dosage

- Child 35 kg and over and adult: 300 mg once daily

Duration

- Depending on the efficacy and tolerance of tenofovir.

Contra-indications, adverse effects, precautions

- Administer with caution and monitor use in patients with renal impairment, osteoporosis. In the event of deterioration of renal function, switch to another antiretroviral.
- Avoid combination (or monitor renal function in the event of combination) with nephrotoxic drugs: aminoglycosides (e.g. gentamicin, streptomycin), amphotericin B, pentamidine, NSAIDs, etc.
- May cause:
  - gastrointestinal disturbances (nausea, vomiting, diarrhoea, etc.), dizziness, fatigue, skin rash;
  - renal impairment, bone loss (osteoporosis, fractures), pancreatitis.
- **Pregnancy**: no contra-indication

Remarks

- Tenofovir is also used for HIV pre-exposure and post-exposure prophylaxis, in combination with other antiretrovirals.
- Also comes in fixed-dose combinations containing tenofovir and other antiretrovirals for the treatment of HIV infection. Preferably use these formulations when available.

Storage

– – Below 25 °C

THIAMINE = VITAMIN B1 oral

Therapeutic action

- Vitamin

Indications

- Vitamin B_1 deficiencies: beriberi, alcoholic neuritis

Forms and strengths

- 50 mg tablet

Also comes in 10 mg and 25 mg tablets.

Dosage and duration

Infantile beriberi

- 10 mg once daily, until complete recovery (3 to 4 weeks)

Acute beriberi

- 50 mg 3 times daily for a few days, until symptoms improve, then 10 mg once daily until complete recovery (several weeks)

Mild chronic deficiency

- 10 to 25 mg once daily

Contra-indications, adverse effects, precautions

- No contra-indication, or adverse effects with oral thiamine.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- In the treatment of severe cases, the use of injectable thiamine is justified to correct the disorder as rapidly as possible, but is no longer justified when symptoms have improved.
- Vitamin B_1 deficiency often occurs in association with other vitamin B-complex deficiencies, especially in alcoholic patients.
- Thiamine is also called aneurine.

Storage

 – In airtight non-metallic container

TINIDAZOLE oral

Prescription under medical supervision

Therapeutic action

- Antiprotozoal, antibacterial (group of nitroimidazoles)

Indications

- Amoebiasis, giardiasis, trichomoniasis
- Bacterial vaginitis, infections due to anaerobic bacteria (e.g. *Clostridium* sp*, Bacteroides* sp)

Forms and strengths

- 500 mg tablet

Dosage and duration

Amoebiasis

- Child: 50 mg/kg once daily (max. 2 g daily)
- Adult: 2 g once daily

The treatment lasts 3 days in intestinal amoebiasis; 5 days in hepatic amoebiasis.

Giardiasis, trichomoniasis and bacterial vaginitis

- Child: 50 mg/kg single dose (max. 2 g)
- Adult: 2 g single dose

In the event of trichomoniasis, also treat sexual partner.

Infections due to anaerobic bacteria

- Child over 12 years and adult: 2 g on D1 then 1 g once daily or 500 mg 2 times daily

According to indication, tinidazole may be used in combination with other antibacterials; treatment duration depends on indication.

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to tinidazole or another nitroimidazole (metronidazole, secnidazole, etc.).

- May cause: gastrointestinal disturbances; rarely: allergic reactions, brownish urine, headache, dizziness. Risk of antabuse reaction when combined with alcohol.
- Administer with caution in patients taking oral anticoagulants (risk of haemorrhage), lithium, phenytoin (increased plasma concentrations of these drugs).
- **Pregnancy**: no contra-indication; divide into smaller doses, avoid prolonged use.
- **Breast-feeding**: significantly excreted in milk (risk of gastrointestinal disturbances in breastfed infants); divide into smaller doses, avoid prolonged use.

Storage

– Below 25 °C

TRAMADOL oral

Last updated: October 2024

Prescription under medical supervision

- Use for short term treatment (risk of dependence and tolerance).
- Due to the numerous and potentially severe adverse effects of tramadol, patients should be kept under close surveillance.

Therapeutic action

- Opioid analgesic

Indications

- Moderate pain, alone or in combination with a non-opioid analgesic

Forms and strengths

- 50 mg capsule
- 100 mg/ml oral solution (1 drop = 2.5 mg)

Dosage

- Child over 12 years and adult: 50 to 100 mg every 4 to 6 hours (max. 400 mg daily)

Duration

- According to clinical evolution; as short as possible.
- In the event of prolonged treatment, do not stop abruptly, reduce doses progressively.

Contra-indications, adverse effects, precautions

- Do not administer in the event of severe respiratory depression and to patients that risk seizures (e.g. epilepsy, head injury, meningitis).
- May cause:
  - dizziness, nausea, vomiting, drowsiness, dry mouth, sweating;
  - rarely: allergic reactions, seizures, confusion; withdrawal symptoms; respiratory depression in the event of overdosage.
- Do not combine with opioid analgesics, including codeine.

- Avoid combination with carbamazepine, fluoxetine, chlorpromazine, promethazine, clomipramine, haloperidol, digoxin.
- Reduce doses by half and administer every 12 hours in elderly patients and in patients with severe renal or hepatic impairment (risk of accumulation).
- **Pregnancy**: no contra-indication. The neonate may develop withdrawal symptoms, respiratory depression and drowsiness in the event of prolonged administration of large doses at the end of the 3rd trimester. In this event, closely monitor the neonate.
- **Breast-feeding**: use with caution, for a short period (2-3 days), at the lowest effective dose. Monitor the mother and the child: in the event of excessive drowsiness, stop treatment.

Remarks

- Tramadol is approximately 10 times less potent than morphine.
- In some countries, tramadol is on the list of narcotics: follow national regulations.
- Tramadol is not included in the WHO list of essential medicines.

Storage:

– – Below 25 °C

TRANEXAMIC acid oral

Last updated: October 2021

Prescription under medical supervision

Therapeutic action

- Antifibrinolytic

Indications

- Abnormal uterine bleeding (especially functional uterine bleeding unrelated to pregnancy)

Forms and strengths

- 500 mg tablet

Dosage and duration

- Adolescent and adult: 1 g 3 times daily (max. 1 g 4 times daily) until bleeding stops (max. 5 days)

Contra-indications, adverse effects, precautions

- Do not administer in patients with (or with history of) venous or arterial thromboembolic disorders, severe renal impairment, history of seizures.
- Reduce dosage in patients with mild to moderate renal impairment (risk of accumulation).
- May cause: gastrointestinal disturbances, seizures with high doses, visual disturbances, allergic reactions.
- Avoid combination with drugs that increase the risk of thromboembolism. Concomitant use of oestrogens (e.g. ethinylestradiol/levonorgestrel) should be carefully considered on a case-by-case basis.
- **Pregnancy**: this drug is not indicated in the event of bleeding during pregnancy.
- **Breast-feeding**: no contra-indication

Remarks

- The treatment may be administered at each bleeding episode. In situations of repeated bleeding, it may be helpful to combine tranexamic acid with a non-steroidal anti-inflammatory drug and/or a long-term treatment with a levonorgestrel intrauterine device or ethinylestradiol/levonorgestrel or oral or injectable medroxyprogesterone.

Storage

Below 25 °C

TRICLABENDAZOLE oral

Prescription under medical supervision

Therapeutic action

- Anthelminthic

Indications

- Fascioliasis (*Fasciola hepatica* and *Fasciola gigantica* infections)
- Paragonimiasis

Forms and strengths

- 250 mg tablet

Dosage and duration

Fascioliasis

- Child and adult: 10 mg/kg single dose

Paragonimiasis

- Child and adult: 10 mg/kg 2 times daily

Contra-indications, adverse effects, precautions

- Do not administer to patients with hypersensitivity to triclabendazole or other benzimidazoles (albendazole, flubendazole, mebendazole, tiabendazole).
- May cause: abdominal pain, mild fever, headache, dizziness.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Take tablets after meals.
- Due to its efficacy, good tolerance, and ease of administration, triclabendazole is the drug of choice for fascioliasis.
- Bithionol may be used as an alternative to triclabendazole in the treatment of fascioliasis: 30 mg/kg daily for 5 days.
- Unlike infections with other flukes, fascioliasis does not respond to praziquantel.

Storage

– Below 25 °C

TRIHEXYPHENIDYL oral

Prescription under medical supervision

Therapeutic action

- Anticholinergic antiparkinson drug

Indications

- Second-line treatment of extrapyramidal reactions induced by antipsychotics

Forms and strengths

- 2 mg tablet

Dosage

- Adult: 2 mg once daily, then increase if necessary up to 2 mg 2 or 3 times daily (max. 12 mg daily)
- Administer the lowest effective dose in elderly patients and do not exceed 10 mg daily.

Duration

- As long as antipsychotic treatment lasts.

Contra-indications, adverse effects, precautions

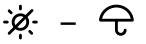
- Do not administer to patients with closed-angle glaucoma, prostate disorders, gastrointestinal obstruction or atony.
- Administer with caution and carefully monitor use in elderly patients (risk of mental confusion, hallucinations).
- May cause: anticholinergic effects (dry mouth, constipation, blurred vision, tachycardia, disorders of micturition), confusion, hallucinations, memory loss.
- Avoid or monitor combination with other anticholinergic drugs (atropine, amitriptyline, chlorpromazine, promethazine, etc.).
- **Pregnancy**: re-evaluate whether the antipsychotic treatment is still necessary; if treatment is continued, administer trihexyphenidyl at the lowest effective dose; observe the neonate if the mother was under treatment in the 3rd trimester (risk of anticholinergic effects, e.g. tremors, abdominal distension).
- **Breast-feeding**: if treatment is necessary, administer at the lowest effective dose and observe the child (risk of anticholinergic effects, e.g. tachycardia, constipation, thickening of bronchial

secretions).

Remarks

- Take with meals.
- Also comes in 2 mg extended-release capsule, administered once daily.
- Trihexyphenidyl is also used in treatment of Parkinson’s disease.

Storage

 – Below 25 °C

TRINITRIN oral

See GLYCERYL TRINITRATE oral

ULIPRISTAL oral

Therapeutic action

- Hormonal contraceptive, progesterone receptor modulator with agonist/antagonist effects

Indications

- Emergency contraception after unprotected or inadequately protected intercourse (e.g. forgotten pill or condom breaking)

Forms and strengths

- 30 mg tablet

Dosage and duration

- One 30 mg tablet, whatever the day of the cycle, as soon as possible after unprotected or inadequately protected intercourse and preferably within the first 120 hours (5 days)

Contra-indications, adverse effects, precautions

- May cause: headache, nausea, vomiting, abdominal pain, dysmenorrhea, disturbance of next menstrual cycle.
- Re-administer treatment immediately if vomiting occurs within 3 hours of taking treatment.
- Use with caution in patients taking drugs that might decrease ulipristal effectiveness:
  - omeprazole and antacids containing aluminium or magnesium hydroxide;
  - enzyme-inducing drugs: rifampicin, rifabutine, efavirenz, nevirapine, lopinavir, ritonavir, phenobarbital, phenytoin, carbamazepine, griseofulvin, etc.
- Avoid combination with hormonal contraceptives: decreased effectiveness of ulipristal and of the hormonal contraceptive if taken immediately after the administration of ulipristal.
- **Pregnancy**: in the event of treatment failure (i.e. pregnancy develops) or if used during an undiagnosed pregnancy, there is no known harm for the foetus.
- **Breast-feeding**: no contra-indication

Remarks

- Emergency contraception is intended to prevent pregnancy; it cannot terminate an ongoing pregnancy.
- If an oral contraceptive pill is missed, use preferably levonorgestrel or a copper intrauterine device as emergency contraception (fewer drug interactions).

- Start or resume hormonal contraception the 6th day after the administration of ulipristal. Use condoms for:
  - the first 7 days of taking an oral oestroprogestogen pill or an injection of medroxyprogesterone or the insertion of an implant;
  - the first 2 days of taking an oral progestogen only pill.
- There is a risk of treatment failure; carry out a pregnancy test if signs or symptoms of pregnancy (no menstruation, etc.) appear one month after taking ulipristal.

Storage

– Below 25 °C

VALPROIC acid = VPA = SODIUM VALPROATE oral

Last updated: October 2024

Prescription under medical supervision

- VPA must not be used in pregnancy or in women and girls of childbearing age. The risk of foetal harm is higher than with other antiseizure medications.
- Due to the numerous and potentially severe adverse effects of VPA, patients should be kept under close surveillance.

Therapeutic action

- Antiseizure (antiepileptic), mood stabilizer

Indications

- Epilepsy: generalised tonic-clonic seizures, focal (partial) seizures and absence seizures
- Prevention of recurrence of bipolar disorder

Forms and strengths

- 200 mg and 500 mg enteric-coated tablets
- 200 mg/5 ml oral solution, to be administered using a measuring device (oral syringe, measuring spoon, or cup with graduations).

Dosage

Start with a low dose then increase gradually based on patient's response and tolerance.

Epilepsy

- Child 2 to 11 years: start with 10 to 15 mg/kg once daily or 5 to 7.5 mg/kg 2 times daily; increase the daily dose by increments of 5 to 10 mg/kg every week, up to 12.5 to 15 mg/kg 2 times daily if necessary (max. 600 mg 2 times daily).
- Child 12 years and over and adult: start with 500 to 600 mg once daily; increase the daily dose by increments of 200 mg every 3 days, up to 500 mg to 1 g 2 times daily if necessary (max. 2.5 g daily).

Prevention of recurrence of bipolar disorder

- Adult: start with 200 mg 2 times daily; increase the daily dose until the optimal individual dose is reached, usually around 500 mg 2 times daily (max. 1g 2 times daily).

Duration

- As long as required. Do not stop treatment abruptly, even if changing treatment to another medication.

Contra-indications, adverse effects, precautions

- Do not administer:
  - to women and girls of childbearing age. If the treatment is necessary and if there is no alternative, a negative blood pregnancy test and effective contraception are required;
  - to children under 2 years (increased risk of hepatotoxicity);
  - to patients with pancreatitis, hepatic disease or history of hepatic disease.
- Reduce dosage in patients with renal impairment.
- May cause:
  - drowsiness (caution when driving/operating machinery), extrapyramidal symptoms, behavioural disturbances, confusional state, insomnia;
  - weight gain, menstrual irregularities, gastrointestinal disturbances, vitamin D deficiency (consider supplementation), osteoporosis, thrombocytopenia;
  - rarely: pancreatitis, hepatic disorders (e.g. elevated liver enzymes), prolonged bleeding time, hypersensitivity reactions (including severe cutaneous reactions such as Stevens-Johnson, Lyell and DRESS syndromes), hyperammonemic encephalopathy. In these cases, stop treatment. Early symptoms such as fever, rash, mouth ulcers and bleeding require immediate medical attention.
  - respiratory depression and coma in the event of overdose.
- If possible, perform at least FBC, liver enzymes and serum sodium levels, at baseline then regularly during treatment; check prothrombin time before surgical procedures.
- Avoid or monitor the combination with:
  - mefloquine, carbapenems, tricyclic antidepressants, rifampicin, protease inhibitors, other antiseizure medications (reduced effect of VPA);
  - acetylsalicylic acid, erythromycin, isoniazid (increased VPA toxicity);
  - drugs containing alcohol, benzodiazepines, opioid analgesics, antipsychotics, first-generation antihistamines (hydroxyzine, promethazine), antidepressants, other antiseizure medications, etc. (increased sedation).
- Avoid alcohol during treatment (increased risk of adverse effects).
- **Pregnancy**: do not use (risk of neural tube defects; urogenital, limb and facial malformations; neurodevelopmental disorders).
  - In case of pregnancy during treatment, change to a safer drug (levetiracetam). If VPA is the only option, provide counselling about the risks to the child; use the lowest effective dose and divide doses over the day to minimize peaks in plasma concentrations.
  - Administer folic acid high dose (5 mg daily) during the first trimester. Start as soon as possible, including during the preconception period in case of planned pregnancy.
- **Breast-feeding**: administer with caution (excreted in milk); monitor the child (risk of hepatotoxicity and bleeding).

Remarks

- Take with meals.
- VPA can be used with contraceptive implants and oral contraceptives, although estrogens may decrease VPA plasma concentrations.

Storage

– – Below 25 °C

VITAMIN A oral

See RETINOL oral

VITAMIN B1 oral

See THIAMINE oral

VITAMIN B3 oral

See NICOTINAMIDE oral

VITAMIN B6 oral

See PYRIDOXINE oral

VITAMIN B9 oral

See FOLIC acid oral

VITAMIN C oral

See ASCORBIC acid oral

VITAMIN D2 oral

See ERGOCALCIFEROL oral

VITAMIN D3 oral

See COLECALCIFEROL oral

VITAMIN PP oral

See NICOTINAMIDE oral

ZIDOVUDINE = AZT = ZDV oral

Last updated: January 2025

Prescription under medical supervision

Therapeutic action

- Antiretroviral, nucleoside reverse transcriptase inhibitor

Indications

- HIV infection, in combination with other antiretrovirals
- Prevention of mother-to-child transmission (PMTCT) of HIV in neonates, alone or in combination with other antiretrovirals

Forms and strengths

- Single formulations:
  - 300 mg tablet
  - 50 mg/5 ml oral solution
- Fixed-dose combinations with lamivudine (3TC):
  - 300 mg zidovudine/150 mg lamivudine breakable and dispersible tablet
  - 60 mg zidovudine/30 mg lamivudine breakable and dispersible tablet

Dosage

HIV infection, in combination with other antiretrovirals

The daily dose is administered in 2 divided doses.

- Child 1 month and over and adult:

Weight	Daily dose	50 mg/5 ml oral sol. (10 mg/ml)	300 mg tablet or 300 mg AZT/150 mg 3TC tablet	60 mg AZT /30 mg 3TC tablet
3 to < 6 kg	120 mg	6 ml x 2	–	1 tab x 2
6 to < 10 kg	180 mg	9 ml x 2	–	1 ½ tab x 2
10 to < 14 kg	240 mg	12 ml x 2	–	2 tab x 2
14 to < 20 kg	300 mg	15 ml x 2	–	2 ½ tab x 2
20 to < 25 kg	360 mg	18 ml x 2	–	3 tab x 2
≥ 25 kg	600 mg	–	1 tab x 2	–

PMTCT of HIV in neonates

- Full term neonate:
  Follow national recommendations. For information (WHO simplified age-based dosage):
  - From birth to 6 weeks of age (from 0 to 42 days): 15 mg (1.5 ml) oral suspension 2 times daily

  Then, if indicated:
  - After 6 weeks and up to 12 weeks of age (from 43 to 84 days): 60 mg (6 ml) oral suspension 2 times daily
- Preterm or low-birth weight neonate: seek specialist advice.

Duration

- HIV infection: depending on the efficacy and tolerance of AZT.
- PMTCT: depending on the risk of acquiring HIV infection (for information):
  - High risk: 6 weeks (AZT combined with nevirapine). For breastfed children, this combined treatment may be extended for an additional 6 weeks.
  - Low risk: 4 to 6 weeks (AZT alone), only for non-breastfed children.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe haematologic disorders (anaemia, neutropenia).
- Administer with caution to:
  - patients with hepatic impairment or coinfection with hepatitis B or hepatitis C virus;
  - neonates with hyperbilirubinaemia or raised transaminases.
- Reduce dosage in patients with severe renal or hepatic impairment.
- May cause:

    - rash, gastrointestinal disturbances, myopathy;
    - haematologic disorders (monitor FBC), hepatic disorders (e.g. anorexia, nausea, general malaise, dark urine, pale stools, hepatomegaly, jaundice) and lactic acidosis.
- Stop AZT in the event of:
    - severe anaemia or neutropenia. AZT may be resumed following recovery with reduced dosage and close surveillance.
    - signs and symptoms of lactic acidosis (e.g. rapid or difficult breathing, anorexia, nausea, fatigue, weakness, myalgias). If lactic acidosis is confirmed, stop AZT permanently.
- Avoid combination with ribavirin (increased risk of anaemia).
- Use with caution and monitor combination with co-trimoxazole, dapsone, pyrimethamine (increased risk of haematotoxicity), fluconazole (increased AZT plasma concentrations).
- **Pregnancy**: no contra-indication

Remarks

- AZT is also used for the treatment of HIV infection in neonates, in combination with other antiretrovirals. Check national recommendations.
- Also comes in fixed-dose combinations with other antiretrovirals. For PMTCT, zidovudine is sometimes given as a fixed-dose combination of zidovudine/lamivudine/nevirapine.

Storage

– Below 25 °C

ZINC SULFATE oral

Therapeutic action

- Micronutrient

Indications

- Adjunct to oral rehydration therapy in the event of acute and/or persistent diarrhoea in children under 5 years

Forms and strengths

- 20 mg scored and dispersible tablet, packed in a blister

Dosage and duration

- Child under 6 months: 10 mg (½ tablet) once daily for 10 days
- Child from 6 months to 5 years: 20 mg (1 tablet) once daily for 10 days

Place the half-tablet or full tablet in a teaspoon, add a bit of water to dissolve it, and give the entire spoonful to the child.

Contra-indications, adverse effects, precautions

- No contra-indication.
- If the child vomits within 30 minutes after swallowing the tablet, re-administer the dose.
- Do not give simultaneously with ferrous salts, administer at least 2 hours apart.

Remarks

- Zinc sulfate is given as an adjunct to oral rehydration therapy in order to reduce the duration and severity of diarrhoea, as well as to prevent further occurrences in the 2 to 3 months after treatment. Zinc sulfate must never replace oral rehydration therapy which is essential (nor can it replace antibiotic therapy that may, in specific cases, be necessary).

Storage

– – Below 25 °C
Tablets are packed in a blister. Leave tablets in blister until use. Once a tablet is removed from the blister, it must be dissolved and administered immediately.

Injectable drugs

ACETAMINOPHEN injectable

See PARACETAMOL injectable

ADRENALINE injectable

See EPINEPHRINE = EPN injectable

ALBUTEROL injectable

See SALBUTAMOL injectable

AMOXICILLIN/CLAVULANIC ACID = CO-AMOXICLAV injectable

Last updated: November 2024

Prescription under medical supervision

Therapeutic action

- Penicillin antibacterial, combined with a beta-lactamase inhibitor. The addition of clavulanic acid to amoxicillin extends its spectrum of activity to cover beta-lactamase producing Gram-positive and Gram-negative organisms, including some Gram-negative anaerobes.

Indications

- Erysipelas and cellulitis
- Necrotizing infections of the skin and soft tissues (necrotizing fasciitis, gas gangrene, etc.), in combination with clindamycin
- Severe postpartum upper genital tract infection, in combination with gentamicin

Forms and strengths, route of administration

- Powder for injection, in 1 g amoxicillin/200 mg clavulanic acid vial, to be dissolved in 20 ml water for injection or 0.9% sodium chloride, for slow IV injection (3 minutes) or IV infusion (30 minutes).
- DO NOT DILUTE IN GLUCOSE.

Dosage

Doses expressed in amoxicillin:

Erysipelas, cellulitis

- Child under 3 months: 30 mg/kg every 12 hours
- Child 3 months and over: 20 to 30 mg/kg every 8 hours (max. 3 g daily)
- Adult: 1 g every 8 hours

Necrotizing infections

- Child under 3 months: 50 mg/kg every 12 hours
- Child 3 months and over and < 40 kg: 50 mg/kg every 8 hours (max. 6 g daily)
- Child 40 kg and over and adult: 2 g every 8 hours

Upper genital tract infection

- Adult: 1 g every 8 hours

For administration by IV infusion, dilute each dose of amoxicillin/clavulanic acid in 5 ml/kg of 0.9% sodium chloride in children less than 20 kg and in a bag of 100 ml of 0.9% sodium chloride in children 20 kg and over and in adults.

Duration

- Erysipelas, cellulitis: 7 to 10 days
- Necrotizing infections: 14 days
- Upper genital tract infection: depending on clinical response

Change to oral treatment as soon as possible.

Contra-indications, adverse effects, precautions

- Do not administer to penicillin-allergic patients, patients with history of hepatic disorders during a previous treatment with co-amoxiclav, patients with infectious mononucleosis.
- Administer with caution to patients allergic to cephalosporins (cross-sensitivity may occur), patients with hepatic impairment or severe renal impairment (reduce dosage and give every 12 or 24 hours).
- May cause: diarrhoea; hepatic disorders (avoid treatments longer than 14 days); allergic reactions sometimes severe.
- Do not combine with methotrexate (increased methotrexate toxicity).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Do not mix with other drugs in the same syringe or infusion bag.

Storage

Below 25 °C

Once reconstituted, the solution must be used immediately; discard any unused open vial.

AMPHOTERICIN B conventional injectable

Last updated: March 2024

Prescription under medical supervision

Due to the numerous and potentially severe adverse effects of conventional amphotericin B, patients should be kept under close surveillance.

Therapeutic action

- Antifungal

Indications

- Cryptococcal meningitis (induction phase), in combination with flucytosine or fluconazole
- Severe histoplasmosis or penicilliosis

Forms and strengths, route of administration

- Powder for injection, in 50 mg vial, to be dissolved in 10 ml of water for injection, to obtain a concentrated solution containing 5 mg/ml. The concentrated solution must be diluted in 500 ml of 5% glucose to obtain a solution containing 0.1 mg/ml, for slow IV infusion.

Dosage

- Child and adult: 0.7 to 1 mg/kg once daily over 4 to 6 hours depending on tolerance

Duration

- Cryptococcal meningitis: one week if in combination with flucytosine; 2 weeks if in combination with fluconazole
- Histoplasmosis: 1 to 2 weeks
- Penicilliosis: 2 weeks

Contra-indications, adverse effects, precautions

- Administer with caution to patients with renal impairment.
- May cause:
  - intolerance reactions during administration: fever, chills, headache, nausea, vomiting, hypotension; local reaction: pain and thrombophlebitis at injection site; allergic reactions;

    - muscle or joint pain, cardiovascular disorders (arrhythmias, heart failure, hypertension, cardiac arrest), neurologic (seizures, blurred vision, dizziness), haematological or hepatic disorders;
    - disturbances in renal function (reduced glomerular filtration, hypokalaemia, hypomagnesiemia).
- Avoid combination with: drugs causing hypokalaemia (furosemide, corticosteroids), nephrotoxic drugs (amikacin, ciclosporine, tenofovir); digoxin, zidovudine.
- To prevent renal toxicity, administer 500 ml to 1 litre of 0.9% NaCl or Ringer lactate prior to each amphotericin B infusion.
- In adults, as soon as the patient can swallow, give supplements of potassium (2 tab of 8 mmol 2 times daily) and magnesium (500 mg 2 times daily) until the end of amphotericin treatment.
- In the event of intolerance, stop infusion, give paracetamol or an antihistamine then, resume administration reducing infusion rate by half.
- Monitor serum creatinine levels, and if possible, serum potassium levels (1 to 2 times weekly) throughout treatment.
- If serum creatinine levels rise by over 50%, increase preventive hydration (1 litre every 8 hours) or stop treatment. Then, after improvement, resume amphotericin at the lowest effective dose or on alternate days.
- Use liposomal amphotericin B if serum creatinine levels increase again or if clearance is < 30 ml/minute or in patients with pre-existing severe renal failure.
- **Pregnancy**: check for renal dysfunction in the neonate if administered during the last month of pregnancy.
- **Breast-feeding**: avoid, except if vital

Remarks

- Only use 5% glucose for administration (incompatible with other infusion fluids). Do not use the preparation if there is visible precipitation (the glucose solution is too acid).
- Do not add other drugs in the infusion bottle or bag.
- Protect infusion bottle from light during administration (wrap in dark paper).

Storage

- Vial of powder: must be kept refrigerated (between 2 °C and 8 °C); in the absence of a refrigerator, 7 days maximum, below 25 °C.
- Concentrated solution (5 mg/1 ml): may be kept refrigerated 24 hours (between 2 °C and 8 °C).
- Solution for infusion (0.1 mg/ml): must be used immediately.

AMPHOTERICIN B liposomal injectable

Last updated: March 2024

Prescription under medical supervision

Due to the numerous and potentially severe adverse effects of liposomal amphotericin B, patients should be kept under close surveillance.

Therapeutic action

- Antifungal

Indications

- Cryptococcal meningitis, when conventional amphotericin B is contra-indicated (severe pre-existing renal impairment or amphotericin B induced renal impairment)
- Mucocutaneous or visceral leishmaniasis
- Severe histoplasmosis

Forms and strengths, route of administration

- Powder for injection, in 50 mg vial, to be dissolved in 12 ml of water for injection, to obtain a concentrated suspension containing 4 mg/ml
- With a syringe, withdraw the required dose of concentrated suspension. Attach the filter provided with the vial to the syringe; inject the contents of the syringe, through the filter, into the volume of 5% glucose (50 ml, 250 ml, 500 ml) needed to obtain a solution containing between 0.2 to 2 mg/ml, for IV perfusion.

Dosage and duration

Cryptococcal meningitis, severe histoplasmosis

Child over 1 month and adult: 3 mg/kg once daily over 30 to 60 minutes for 2 weeks

Weight	Liposomal amphotericin B, 50 mg-vial in 12 ml			G5%
	Daily dose in mg	Nb of vials	Volume of suspension (4 mg/ml) to be withdrawn	Volume required for administration
4 kg	12	1	3 ml	50 ml
5 kg	15		4 ml	
6 kg	18		4.5 ml	
7 kg	21		5 ml	
8 kg	24		6 ml	
9 kg	27		7 ml	
10 kg	30		7.5 ml	
15 kg	45		11 ml	
20 kg	60	2	15 ml	250 ml
25 kg	75		19 ml	
30 kg	90		23 ml	
35 kg	105	3	26 ml	500 ml
40 kg	120		30 ml	
45 kg	135		34 ml	
50 kg	150		38 ml	
55 kg	165	4	41 ml	500 ml
60 kg	180		45 ml	
65 kg	195		50 ml	

70 kg	210	5	53 ml	500 ml

Mucocutaneous or visceral leishmaniasis

Follow the recommended protocol, which varies from one region to another (exact dose, administration schedule, etc.). For information, the total dose in children over 1 month and adults is 15 to 30 mg/kg.

Contra-indications, adverse effects, precautions

- May cause:
  - intolerance reactions during administration: fever, chills, headache, nausea, vomiting, hypotension; local reaction: pain and thrombophlebitis at injection site; allergic reactions;
  - gastrointestinal disturbances, disturbances in renal function (raised creatinine or urea levels, renal impairment), hypokalaemia, hypomagnesiemia, elevated liver enzymes; rarely, haematological disorders (thrombocytopenia, anaemia).
- Avoid combination with: drugs causing hypokalaemia (furosemide, corticosteroids), nephrotoxic drugs (amikacin, ciclosporine, tenofovir); digoxin, zidovudine.
- The infusion may be administered over 2 hours if necessary to prevent or minimize adverse effects.
- Monitor serum creatinine levels, and if possible, serum potassium levels (once to twice weekly) throughout treatment; adapt adjunctive therapy (potassium and magnesium supplementation) according to the results.
- If renal function deteriorates, reduce the dose by half for a few days.
- **Pregnancy**: check for renal dysfunction in the neonate if administered during the last month of pregnancy.
- **Breast-feeding**: avoid, except if vital

Remarks

- Liposomal amphotericin B is better tolerated and less nephrotoxic than conventional amphotericin B.
- Do not add other drugs in the infusion bottle or bag; do not use the preparation if there is visible precipitation.
- Before each infusion, rinse the IV catheter with 5% glucose.

Storage

- Vial of powder: must be kept refrigerated (between 2 °C and 8 °C) or below 25 °C.
- Solutions (reconstituted and for infusion): be kept refrigerated 24 hours (between 2 °C and 8 °C).

AMPICILLIN injectable

Last updated: September 2023

Prescription under medical supervision

Therapeutic action

- Penicillin antibacterial

Indications

- Severe bacterial infections: septicaemia, meningitis, pneumonia, pyelonephritis, postpartum upper genital tract infection, severe cutaneous anthrax, etc., alone or in combination with other antibacterials, depending on indication

Forms and strengths, route of administration

- Powder for injection, in 500 mg and 1 g vials, to be dissolved in 5 ml of water for injection
- Prefer administration by slow IV injection (3 to 5 minutes) or IV infusion (30 minutes) in 0.9% sodium chloride or 5% glucose for high doses; use IM route only if correct IV administration is not possible.
- In neonates, administer only by slow IV injection or IV infusion.

Dosage

Severe bacterial infections, in combination with other antibacterials

The dose varies according to indication:

- Neonate:
  - 0 to 7 days (< 2 kg): 50 to 100 mg/kg every 12 hours
  - 0 to 7 days (≥ 2 kg): 50 to 100 mg/kg every 8 hours
  - 8 days to < 1 month: 50 to 100 mg/kg every 8 hours
- Child 1 month and over: 50 to 100 mg/kg every 8 hours
- Adult: 1 to 2 g every 6 to 8 hours (2 g every 4 hours in meningitis)

Severe cutaneous anthrax, in combination with clindamycin

- Child 1 month and over: 50 mg/kg (max. 3 g) every 6 hours or 65 mg/kg (max. 4 g) every 8 hours
- Adult: 3 g every 6 hours or 4 g every 8 hours

For administration by IV infusion, dilute each dose of ampicillin in 5 ml/kg of 0.9% sodium chloride or 5% glucose in children less than 20 kg and in a bag of 100 ml of 0.9% sodium chloride or 5% glucose in children 20 kg and over and in adults.

Duration

- According to indication and clinical response. Change to oral treatment as soon as possible with amoxicillin or a combination of antibacterials, depending on indication.

Contra-indications, adverse effects, precautions

- Do not administer to patients with infectious mononucleosis (risk of skin eruption) or to penicillin allergic patients.
- Administer with caution to patients allergic to cephalosporins (cross-sensitivity may occur) or patients with severe renal impairment (reduce dosage).
- May cause: skin eruption, gastrointestinal disturbances, allergic reactions sometimes severe.
- Do not combine with methotrexate (increased methotrexate toxicity).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Do not mix with another drug in the same syringe or infusion.
- Injectable amoxicillin is used for the same indications.

Storage

– Below 25 °C

Once reconstituted, the solution must be used immediately.

ARTESUNATE injectable

Last updated: June 2025

Prescription under medical supervision

This formulation requires a **2-step** reconstitution/dilution of the injectable artesunate powder. Do not confuse with injectable artesunate requiring a 1-step reconstitution (see following page).

Therapeutic action

- Antimalarial

Indications

- Treatment of severe malaria
- Initial treatment of uncomplicated malaria, when persistent vomiting precludes oral therapy

Forms and strengths, route of administration

- Powder for injection (artesunate), 60 mg vial, plus
- Solvent: 5% sodium bicarbonate, 1 ml ampoule, plus
- Diluent: 0.9% sodium chloride, 5 ml ampoule
- Preparation :
  - For reconstitution (Step-1): add the 1 ml ampoule of 5% sodium bicarbonate into the vial. Shake the vial gently until the powder is dissolved and the solution is clear.
  - For dilution (Step-2):
    - For slow IV (3 to 5 minutes): add 5 ml of 0.9% sodium chloride into the vial to obtain 6 ml of solution containing 10 mg of artesunate per ml
    - For slow IM: add 2 ml of 0.9% sodium chloride into the vial to obtain 3 ml of solution containing 20 mg of artesunate per ml
- NEVER ADMINISTER BY IV INFUSION.

Dosage and duration

- Child under 6 kg: seek specialist advice.
- Child 6 kg to < 20 kg: 3 mg/kg/dose
- Child 20 kg and over and adult: 2.4 mg/kg/dose

One dose on admission (H0) then 12 hours after admission (H12) then 24 hours after admission (H24) then, once daily.

Administer for at least 24 hours (minimum 3 doses), then, if the patient can tolerate the oral route, change to a full 3-day course of an artemisinin-based combination (ACT). If not, continue parenteral treatment with one dose daily until the patient can tolerate the oral route (do not exceed 7 days of parenteral treatment). The first dose of ACT should be taken 8 to 12 hours after the last injection of artesunate.

For information (WHO weight-based dosage):

Weight	Dose per injection (mg)	Artesunate 10 mg/ml solution for IV Dose per injection (ml)	Artesunate 20 mg/ml solution for IM Dose per injection (ml)
Child 6 to < 20 kg			
6 to < 7 kg	20 mg	2 ml	1 ml
7 to < 11 kg	30 mg	3 ml	2 ml
11 to < 14 kg	40 mg	4 ml	2 ml
14 to < 17 kg	50 mg	5 ml	3 ml
17 to < 20 kg	60 mg	6 ml	3 ml
Child ≥ 20 kg and adult			
20 to < 26 kg	60 mg	6 ml	3 ml
26 to < 30 kg [(a)]	70 mg	7 ml	4 ml
30 to < 34 kg	80 mg	8 ml	4 ml
34 to < 38 kg	90 mg	9 ml	5 ml
38 to < 42 kg	100 mg	10 ml	5 ml
42 to < 46 kg	110 mg	11 ml	6 ml
46 to < 51 kg	120 mg	12 ml	6 ml
51 to < 55 kg [(a)]	130 mg	13 ml	7 ml
55 to < 59 kg	150 mg	14 ml	7 ml
59 to < 63 kg	150 mg	15 ml	8 ml
63 to < 67 kg	160 mg	16 ml	8 ml
67 to < 71 kg	170 mg	17 ml	9 ml

71 to < 76 kg	180 mg	18 ml	9 ml
76 to < 80 kg [(a)]	190 mg	19 ml	10 ml
80 to < 84 kg	200 mg	20 ml	10 ml
84 to < 88 kg	210 mg	21 ml	11 ml

a For patients over 26 kg, a 2nd vial must be prepared to obtain the volume needed, a 3rd vial for patients over 51 kg and a 4th vial for patients over 76 kg.

Contra-indications, adverse effects, precautions

- May cause: gastrointestinal disturbances, dizziness, headache, fever, muscle and joint pain, pruritus; rarely rash, delayed haemolytic anaemia (appearing 2 to 3 weeks after treatment, especially in case of hyperparasitaemia and in young children).
- **Pregnancy and breast-feeding**: no contra-indication

Remarks

- The solution should be clear, do not use if the solution is cloudy or if a precipitate is present.
- Artesunate 60 mg **2-step** formulation and artesunate **1-step** formulation are bioequivalent and can be used interchangeably during the course of a treatment. For preparation, use only the solvent/diluent provided by the manufacturer for each formulation. However, to avoid confusion and reduce the risk of preparation errors, it is recommended to use only one formulation per patient per treatment course.

Storage

☼ – Below 30 °C
Once reconstituted, the solution must be used immediately.

ARTESUNATE (with arginine and sodium bicarbonate solvent) injectable

Last updated: June 2025

Prescription under medical supervision

This formulation requires a **1-step** reconstitution of the injectable artesunate powder. Do not confuse with injectable artesunate requiring a 2-step reconstitution/dilution (see artesunate).

Therapeutic action

- Antimalarial

Indications

- Treatment of severe malaria
- Initial treatment of uncomplicated malaria, when persistent vomiting precludes oral therapy

Forms and strengths, route of administration

- Powder for injection (artesunate), 60 mg vial, plus
- Solvent: 2% arginine + 0.84% sodium bicarbonate ($NaHCO_3$), 3 ml ampoule
- For reconstitution:
  - Add the entire ampoule of solvent into the vial, to obtain 3 ml of solution containing 20 mg of artesunate per ml.
  - Shake the vial gently until the powder is dissolved. Use when the solution is clear.
- Administer by slow IV (3 to 5 minutes) or slow IM injection. NEVER ADMINISTER BY IV INFUSION.

Dosage and duration

- Child under 6 kg: seek specialist advice.
- Child from 6 to < 20 kg: 3 mg/kg/dose
- Child 20 kg and over and adult: 2.4 mg/kg/dose

One dose on admission (H0) then 12 hours after admission (H12) then 24 hours after admission (H24) then, once daily.

Administer for at least for 24 hours (minimum 3 doses), then, if the patient can tolerate the oral route, change to a full 3-day course of an artemisinin-based combination (ACT). If not, continue parenteral treatment with one dose daily until the patient can tolerate the oral route (do not exceed 7 days of parenteral treatment). The first dose of ACT should be taken 8 to 12 hours after the last injection of artesunate.

For information (WHO weight-based dosage):

Artesunate (arginine/$NaHCO_3$ solvent) 20 mg/ml solution for IV or IM					
Weight	**Dose per injection (mg)**	**Dose per injection (ml)**	**Weight**	**Dose per injection (mg)**	**Dose per injection (ml)**
Child 6 to < 20 kg					
6 to < 7 kg	20 mg	1 ml	**14 to < 17 kg**	50 mg	3 ml
7 to < 11 kg	30 mg	2 ml	**17 to < 20 kg**	60 mg	3 ml
11 to < 14 kg	40 mg	2 ml	—	—	—
Child ≥ 20 kg and adult					
20 to < 26 kg	60 mg	3 ml	**55 to < 59 kg**	140 mg	7 ml
26 to < 30 kg [(a)]	70 mg	4 ml	**59 to < 63 kg**	150 mg	8 ml
30 to < 34 kg	80 mg	4 ml	**63 to < 67 kg**	160 mg	8 ml
34 to < 38 kg	90 mg	5 ml	**67 to < 71 kg**	170 mg	9 ml
38 to < 42 kg	100 mg	5 ml	**71 to < 76 kg**	180 mg	9 ml
42 to < 46 kg	110 mg	6 ml	**76 to < 80 kg** [(a)]	190 mg	10 ml
46 to < 51 kg	120 mg	6 ml	**80 to < 84 kg**	200 mg	10 ml
51 to < 55 kg [(a)]	130 mg	7 ml	**84 to < 88 kg**	210 mg	11 ml

a For patients over 26 kg, a 2nd vial must be prepared to obtain the volume needed, a 3rd vial for patients over 51 kg and a 4th vial for patients over 76 kg.

Contra-indications, adverse effects, precautions

- May cause: gastrointestinal disturbances, dizziness, headache, fever, muscle and joint pain, pruritus; rarely rash, delayed haemolytic anaemia (appearing 2 to 3 weeks after treatment, especially in case of hyperparasitaemia and in young children).
- **Pregnancy and breast-feeding**: no contra-indication

Remarks

- The solution should be clear, do not use if the solution is cloudy or if a precipitate is present.
- Artesunate 60 mg **1-step** formulation and artesunate **2-step** formulation are bioequivalent and can be used interchangeably during the course of a treatment. For preparation, use only the solvent/diluent provided by the manufacturer for each formulation. However, to avoid confusion and reduce the risk of preparation errors, it is recommended to use only one formulation per patient per treatment course.

Storage

☼ – Below 30 °C
Once reconstituted, the solution must be used immediately.

ATROPINE injectable

Last updated: November 2024

Prescription under medical supervision

Do not exceed recommended doses, especially in children and older patients (risk of severe anticholinergic effects).

Therapeutic action

- Parasympatholytic, antispasmodic

Indications

- Premedication in anaesthesia
- Spasms of the gastrointestinal tract
- Organophosphorus pesticide poisoning

Forms and strengths, route of administration

- 1 mg atropine sulfate in 1 ml ampoule (1 mg/ml) for SC, IM, IV injection
- Also comes in 0.25 mg/ml and 0.5 mg/ml ampoules.

Dosage and duration

Premedication in anaesthesia

- Child: 0.01 to 0.02 mg/kg by SC or IV injection
- Adult: 1 mg by SC or IV injection

Spasms of the gastrointestinal tract

- Child from 2 to 6 years: 0.25 mg by SC injection, single dose
- Child over 6 years: 0.5 mg by SC injection, single dose
- Adult: 0.25 to 1 mg by SC injection, every 6 hours if necessary (max. 2 mg daily)

Organophosphorus pesticide poisoning

- Child: 0.02 to 0.05 mg/kg by IM or slow IV injection
- Adult: 2 mg by IM or slow IV injection

Repeat every 5 to 10 minutes until signs of atropinisation appear (reduced secretions, tachycardia, dilatation of the pupils).

Contra-indications, adverse effects, precautions

- Do not administer to patients with urethro-prostatic disorders, cardiac disorders, glaucoma.
- Do not administer to children with high fever.
- May cause: urinary retention, dryness of the mouth, constipation, dizziness, headache, dilatation of the pupils, tachycardia.
- Administer with caution and under close supervision to patients taking other anticholinergic drugs (antidepressants, neuroleptics, H1 antihistamines, antiparkinsonians, etc.).
- **Pregnancy**: no contra-indication; NO PROLONGED TREATMENT
- **Breast-feeding**: avoid; NO PROLONGED TREATMENT

Remarks

- Atropine IV is also used to prevent bradycardic effects of neostigmine when used to reverse the effects of competitive muscle relaxants: 0.02 mg/kg in children; 1 mg in adults.
- Do not mix with other drugs in the same syringe.

Storage

☼ – Below 25 °C

AZITHROMYCIN injectable

Last updated: June 2025

Prescription under medical supervision

Therapeutic action

- Macrolide antibacterial

Indications

- Macrolide-sensitive severe infections, when oral administration is not possible (e.g. sepsis, diphtheria)

Forms and strengths, route of administration

- Powder for injection, in 500 mg vial, to be dissolved in 4.8 ml of water for injection, for IV infusion in 0.9% sodium chloride or 5% glucose
- DO NOT ADMINISTER BY IV or IM INJECTION.

Dosage

Sepsis

- Child: 10 to 20 mg/kg (max. 500 mg) once daily
- Adult: 500 mg to 1 g once daily

Diphtheria

- Child: 10 to 12 mg/kg (max. 500 mg) once daily
- Adult: 500 mg once daily

Dilute each dose in 0.9% sodium chloride or 5% glucose to obtain a final concentration of 2 mg/ml and administer over 60 minutes.
Examples:

- for a child weighing 15 kg, 150 mg (10 mg x 15 kg) in 75 ml of 0.9% sodium chloride or 5% glucose
- for an adult, 500 mg in 250 ml (or 1 g in 500 ml) of 0.9% sodium chloride or 5% glucose

Duration

- Change to oral treatment as soon as possible.

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to azithromycin or another macrolide, nor to patients with severe hepatic impairment.
- Administer with caution to children under 6 weeks of age (risk of hypertrophic pyloric stenosis) and patients with risk factors for QT prolongation (e.g. electrolyte disturbances, pre-existing cardiac and renal disorders, older patients).
- May cause:
  - gastrointestinal disturbances, reversible hearing disorders, electrolyte disturbances, QT prolongation;
  - rarely: hypersensitivity reactions (including severe cutaneous reactions such as Stevens-Johnson, Lyell and DRESS syndromes) and life-threatening hepatotoxicity. In these cases, stop treatment. Signs and symptoms of hypersensitivity reaction (e.g. fever, rash, mouth ulcers, bleeding) and hepatic disorders (e.g. anorexia, nausea, general malaise, dark urine, pale stools, hepatomegaly, jaundice) require immediate medical attention.
- Avoid combination with drugs that prolong the QT interval (amiodarone, chloroquine, co-artemether, fluconazole, haloperidol, mefloquine, moxifloxacin, ondansetron, pentamidine, quinine, etc.).
- Administer with caution and monitor use in patients taking digoxin (increased digoxin toxicity).
- **Pregnancy and breast-feeding**: no contra-indication

Remarks

- Do not mix with other drugs in the same infusion.

Storage

– Below 25 °C
Once reconstituted, the solution must be used immediately; discard any unused open vial.

BENZATHINE BENZYLPENICILLIN injectable

Prescription under medical supervision

Therapeutic action

- Long-acting penicillin antibacterial

Indications

- Early syphilis (primary, secondary, or early latent infection of less than 12 months duration)
- Late latent syphilis (infection of more than 12 months duration or of unknown duration)
- Congenital syphilis (absence of clinical signs in the neonate and adequate treatment in the mother)
- Endemic treponematoses (yaws, bejel, pinta)
- Streptococcal tonsillitis
- Prophylaxis of diphtheria in the event of direct contact
- Primary and secondary prophylaxis of rheumatic fever

Forms and strengths, route of administration

- Powder for injection in vials of:
  - 1.2 MIU (900 mg), to be dissolved in 4 ml of water for injection, for IM injection
  - 2.4 MIU (1.8 g), to be dissolved in 8 ml of water for injection, for IM injection
- NEVER FOR IV INJECTION NOR INFUSION

Dosage

Syphilis

- Child: 50 000 IU (37.5 mg)/kg per injection (max. 2.4 MIU or 1.8 g per injection)
- Adult: 2.4 MIU (1.8 g) per injection

Yaws, bejel, pinta

- Child under 10 years: 1.2 MIU (900 mg) per injection
- Child 10 years and over and adult: 2.4 MIU (1.8 g) per injection

Streptococcal tonsillitis, prophylaxis of diphtheria, prophylaxis of rheumatic fever

- Child under 30 kg: 600 000 IU (450 mg) per injection
- Child 30 kg and over and adult: 1.2 MIU (900 mg) per injection

Duration

- Early syphilis, congenital syphilis, tonsillitis, yaws, bejel, pinta, prophylaxis of diphtheria, primary prophylaxis of rheumatic fever: single dose
- Late latent syphilis: one injection/week for 3 weeks
- Secondary prophylaxis of rheumatic fever: one injection every 4 weeks for several years

Contra-indications, adverse effects, precautions

- Do not administer to penicillin-allergic patients.
- Administer with caution to patients allergic to cephalosporins (cross-sensitivity may occur) and renal impairment (reduce dosage).
- May cause:
  - gastroinstestinal disturbances, pain at injection site, allergic reactions sometimes severe;
  - Jarisch-Herxheimer reaction (fever, chills, myalgia, tachycardia) in patients with syphilis;
  - convulsions in the event of high dosages or renal impairment;
  - symptoms of shock with neuropsychiatric disorders in case of accidental IV injection.
- Ensure that the IM injection does not enter a blood vessel.
- Do not combine with methotrexate.
- **Pregnancy and breast-feeding**: no contra-indication

Remarks

- For a 2.4 MIU (1.8 g) dose, administer 1.2 MIU (900 mg) in each buttock.
- Do not confuse long-acting benzathine benzylpenicillin, for IM injection, with rapidly acting benzylpenicillin (or penicillin G), administered by Iv route.
- Do not mix with other drugs in the same syringe.

Storage

– – Below 25 °C
Once reconstituted, suspension must be used immediately.

BENZYLPENICILLIN = PENICILLIN G injectable

Last updated: June 2025

Prescription under medical supervision

This penicillin should be administered in a hospital setting (injections every 4 to 6 hours).

Therapeutic action

- Short-acting penicillin antibacterial

Indications

- Diptheria, when oral treatment is not possible
- Severe leptospirosis, neurosyphilis
- Congenital syphilis (presence of clinical signs in the neonate and lack of adequate treatment in the mother)

Forms and strengths, route of administration

- Powder for injection in vials of:
  - 1 MIU (600 mg), to be dissolved in 2 ml of water for injection or 0.9% sodium chloride
  - 5 MIU (3 g), to be dissolved in 5 ml of water for injection or 0.9% sodium chloride
- For IM injection, or slow IV injection through an infusion tube (3 to 5 minutes), or IV infusion (60 minutes) in 0.9% sodium chloride or 5% glucose.

Dosage

Diphtheria

- Child: 25 000 IU (15mg)/kg (max. 1 MIU or 600 mg) by IM or IV injection every 6 hours
- Adult: 1 MIU (600 mg) by IM or IV injection every 6 hours

Severe leptospirosis

- Child: 50 000 IU (30 mg)/kg (max. 2 MIU or 1200 mg) by IV injection every 6 hours
- Adult: 1 to 2 MIU (600 to 1200 mg) by IV injection every 6 hours

Neurosyphilis

- Adult: 2 to 4 MIU (1200 to 2400 mg) by IV injection every 4 hours

Congenital syphilis

- 50 000 IU (30 mg)/kg by IV injection every 12 hours from D1 to D7, then
- 50 000 IU (30 mg)/kg by IV injection every 8 hours from D8 to D10

Duration

- Diphtheria: change to an oral treatment as soon as the patient can swallow, to complete 14 days of treatment
- Severe leptospirosis: 7 days
- Neurosyphilis: 14 days
- Congenital syphilis: 10 days

Contra-indications, adverse effects, precautions

- Do not administer to penicillin-allergic patients.
- Administer with caution to patients allergic to cephalosporins (cross-sensitivity may occur) and renal impairment (reduce dosage in patients with neurosyphilis).
- May cause:
  - gastroinstestinal disturbances, pain at injection site, anaemia, allergic reactions sometimes severe;
  - Jarisch-Herxheimer reaction (fever, chills, myalgia, tachycardia) in patients with syphilis;
  - convulsions in the event of rapid IV injection, high dosages or renal impairment.
- Do not combine with methotrexate.
- **Pregnancy and breast-feeding**: no contra-indication

Remarks

- Do not confuse short-acting benzylpenicillin, administered several times a day by IV route, with long-acting penicillins (benzathine benzylpenicillin and procaine benzylpenicillin) administered by IM route only.
- Do not mix with other drugs in the same syringe or infusion.

Storage

☼ – Below 25 °C
Once reconstituted, suspension must be used immediately.

BENZYLPENICILLIN PROCAINE = PENICILLIN G PROCAINE injectable

Last updated: June 2025

Prescription under medical supervision

Therapeutic action

- Long-acting penicillin antibacterial (12 to 24 hours)

Indications

- Diphtheria, when oral treatment is not possible
- Congenital syphilis, if the neonate has clinical signs of syphilis or the mother did not receive adequate treatment for syphilis during pregnancy

Forms and strengths, route of administration

- Powder for injection in vials of:
  - 0.6 MIU (600 mg) ~~vial~~, to be dissolved with the diluent supplied by the manufacturer (4 ml ampoule of water for injection)
  - 1.2 MIU (1.2 g) ~~vial~~, to be dissolved with the diluent supplied by the manufacturer (5 ml ampoule of water for injection)
- For IM injection only. NEVER ADMINISTER BY IV INJECTION OR INFUSION.

Dosage

Diphtheria

- Child: 50 000 IU/kg (= 50 mg/kg) once daily (max. 1.2 MIU = or 1.2 g daily)
- Adult: 1.2 MIU (= 1.2 g) once daily

Congenital syphilis

- Neonate: 50 000 IU/kg (= 50 mg/kg) once daily

Duration

- Diphtheria: change to an oral treatment as soon as the patient can swallow, to complete 14 days of treatment

- Congenital syphilis: 10 days

Contra-indications, adverse effects, precautions

- Do not administer to patients allergic to penicillin and/or procaine.
- Administer with caution to patients allergic to cephalosporins (cross-sensitivity may occur) or with renal impairment.
- May cause:
  - gastrointestinal disturbances;
  - allergic reactions sometimes severe. In the event of allergic reactions, stop treatment immediately.
- Ensure that the needle does not accidentally enter a vessel (risk of serious neurovascular damage).
- **Pregnancy and breast-feeding**: no contra-indication

Remarks

- Also comes in 1 MIU, ~~and~~ 3 MIU and 4 MIU vials of powder for injection.
- Do not confuse procaine benzylpenicillin with short-acting benzylpenicillin (penicillin G), administered several times per day by IV route.
- Do not mix with other drugs in the same syringe.

Storage

☼ – Below 25 °C
Once reconstituted, suspension must be used immediately.

BUTYLSCOPOLAMINE injectable

See HYOSCINE BUTYLBROMIDE injectable

CALCIUM GLUCONATE injectable

Last updated: November 2022

Prescription under medical supervision

Therapeutic action

- Calcium therapy
- Antidote to magnesium sulfate

Indications

- Severe hypocalcaemia
- Magnesium sulfate intoxication

Forms and strengths, route of administration

- 1 g ampoule (100 mg/ml, 10 ml; 10% solution) for slow IV injection or infusion in 5% glucose or 0.9% sodium chloride or Ringer lactate
- For slow IV injection in children, dilute 1 part of calcium gluconate to 4 parts of diluent (i.e. 1 ml of calcium gluconate to 4 ml of diluent), however it may be administered undiluted in emergencies.
- For continuous infusion:
  - The calcium concentration in the infusion fluid should not exceed 50 mg/ml.
  - Mix thoroughly the calcium and the infusion fluid by inverting at least 5 times the infusion bottle or bag.
- NEVER USE BY IM OR SC INJECTION.

Dosage

Severe hypocalcaemia

- Neonate and child under 20 kg: 0.5 ml/kg (max. 10 ml) by slow IV injection (over at least 5 minutes) then 2 to 4 ml/kg (max. 40 ml) in a 100 ml bottle or bag by continuous infusion over 24 hours
- Child 20 kg and over and adult: 10 ml by slow IV injection (over at least 5 minutes) then 40 ml in a 250 ml or 500 ml bottle or bag by continuous infusion over 24 hours

Magnesium sulfate intoxication

- Child under 20 kg: 0.5 ml/kg (max. 10 ml) by slow IV injection (over at least 5 minutes)
- Child 20 kg and over and adult: 10 ml by slow IV injection (over at least 5 minutes)

Duration

- According to clinical response and plasma-calcium levels.
- For hypocalcaemia, change to oral route as soon as possible.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe renal disease or patients receiving cardiac glycosides.
- Do not administer ceftriaxone to neonates receiving calcium gluconate (risk of precipitation of ceftriaxone-calcium salts in lungs and kidneys).
- May cause:
  - tingling sensations, warm flushes, dizziness;
  - tissue necrosis in the event of extravasation;
  - hypercalcaemia in the event of too rapid IV injection or overtreatment. First signs of hypercalcaemia include nausea, vomiting, thirst and polyuria. In severe cases, risk of hypotension, bradycardia, arrhythmia, syncope and cardiac arrest.
- Hypercalcaemia can be confirmed by monitoring of serum-calcium levels and ECG changes. Do not use in prolonged treatment if plasma-calcium levels cannot be monitored.
- The patient should be placed in the horizontal position prior to injection and should remain lying down for 30 to 60 minutes.
- **Pregnancy and breast-feeding**: no contra-indication

Remarks

- Calcium gluconate is also administered as adjunctive therapy in insect bites or stings (black widow spider, scorpions) for the management of muscle pain and spasms. Several doses at 4-h intervals may be necessary.
- 1 g of calcium gluconate (2.2 mmol or 4.5 mEq) is equivalent to 89 mg of calcium.
- Calcium gluconate is incompatible with many drugs: do not mix with other drugs in the same syringe or infusion fluid. Flush the IV line thoroughly between infusions, especially in patients receiving ceftriaxone, cefazolin, amphotericin B and sodium bicarbonate.
- Do not use if the solution appears cloudy or particles are visible (calcium gluconate precipitate).

Storage

– Below 25 °C

CEFOTAXIME injectable

Prescription under medical supervision

Therapeutic action

- Third-generation cephalosporin antibacterial

Indications

In neonates:
- Bacterial meningitis, in combination with another antibacterial
- Urinary infection
- Pneumonia (ampicillin + gentamicin is preferred for this indication)
- Gonococcal conjunctivitis (if ceftriaxone is not available or contraindicated)

Forms and strengths, route of administration

- Powder for injection, in 250 mg and 500 mg vials, to be dissolved in 2 ml water for injection, for IM or slow IV injection (3 to 5 minutes) or IV infusion (20 to 60 minutes) in 0.9% sodium chloride or 5% glucose.

Dosage

Meningitis, urinary infection, pneumonia
- 0 to 7 days (< 2 kg): 50 mg/kg every 12 hours
- 0 to 7 days (≥ 2 kg): 50 mg/kg every 8 hours
- 8 days to < 1 month: 50 mg/kg every 8 hours

Gonococcal conjunctivitis
- 100 mg/kg IM single dose

For IV administration, cefotaxime powder can only be dissolved in water for injection. For infusions, each dose of cefotaxime must be dissolved in 5 ml/kg of 0.9% sodium chloride or 5% glucose.

Duration

- Depending on indication and clinical response

Contra-indications, adverse effects, precautions

- Do not administer to patients allergic to cephalosporins or penicillins (risk of cross-sensitivity).
- Administer with caution and reduce dosage in patients with renal impairment.
- Avoid or monitor combination with other nephrotoxic drugs: amphotericin B, aminoglycosides, pentamidine, etc.
- May cause: gastrointestinal disturbances (diarrhoea, nausea), haematological disorders (neutropenia, leucopenia), heart rhythm disorders if IV injection is too fast, allergic reactions and cutaneous reactions (Stevens-Johnson and Lyell syndromes), sometimes severe.

Remarks

- Do not mix with other drugs in the same syringe or bottle.

Storage

– – Below 25 °C
Once reconstituted, the solution must be used immediately.

CEFTRIAXONE injectable

Last updated: September 2023

Prescription under medical supervision

Therapeutic action

- Third-generation cephalosporin antibacterial

Indications

- Severe bacterial infections: septicaemia, meningitis, pneumonia, typhoid fever, shigellosis, leptospirosis, tick-borne relapsing fevers, pyelonephritis, neurosyphilis, etc.
- Cervicitis, urethritis and conjunctivitis due to *Neisseria gonorrhoeae* (in combination with a treatment for chlamydia, except in neonates), chancroid

Forms and strengths, route of administration

- Powder for injection, in 250 mg or 1 g vials, to be dissolved:
  - with the solvent containing lidocaine for IM injection only. DO NOT ADMINISTER BY IV INJECTION OR INFUSION the solution reconstituted with this solvent.
  - with water for injection for slow IV injection (3 minutes) or infusion (30 minutes) in 0.9% sodium chloride or 5% glucose

Dosage and duration

Severe bacterial infections

The dose varies according to indication:

- Child 1 month and over (< 50 kg): 50 to 100 mg/kg (max. 4 g) once daily
- Child 50 kg and over and adult: 1 to 2 g once daily (up to 2 g 2 times daily or 4 g once daily for meningitis and typhoid fever)

Duration varies according to indication and clinical response. Change to oral treatment as soon as possible. The choice of oral antibiotic depends on indication.

Gonococcal cervicitis and urethritis, chancroid

- Child under 45 kg: 125 mg IM single dose
- Child 45 kg and over and adult: 500 mg IM single dose (250 mg IM single dose for chancroid)

Gonococcal conjunctivitis

- Neonate: 50 mg/kg IM single dose (max. 125 mg)
- Adult: 1 g IM single dose

For administration by IV route, ceftriaxone powder is to be dissolved in water for injection only. For administration by IV infusion, dilute each dose of ceftriaxone in 5 ml/kg of 0.9% sodium chloride or 5% glucose in children less than 20 kg and in a bag of 100 ml of 0.9% sodium chloride or 5% glucose in children 20 kg and over and in adults.

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to cephalosporins or penicillins (cross-sensitivity may occur) and to neonates with jaundice (risk of bilirubin encephalopathy) or receiving calcium gluconate (risk of precipitation of ceftriaxone-calcium salts in lungs and kidneys).
- Administer with caution in patients with hepatic or renal impairment. Reduce dosage in patients with severe renal impairment (max. 50 mg/kg daily or 2 g daily in IV).
- May cause: gastrointestinal disturbances, hepatic dysfunction, blood disorders (anaemia, leucopenia, neutropenia), renal dysfunction; allergic reactions sometimes severe (Stevens-Johnson syndrome).
- Do not mix ceftriaxone with calcium-containing solutions such as Ringer lactate (risk of particulate formation).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Doses greater than 1 g IM should be administered in 2 equally divided injections (one in each buttock).
  Doses greater than 2 g should be administered by IV infusion only.
- Do not mix with another drug in the same syringe or infusion.

Storage

☼ – Below 25 °C
Once reconstituted, the solution must be used immediately.

CHLORAMPHENICOL injectable

Last updated: September 2022

Prescription under medical supervision

Therapeutic action

- Phenicol antibacterial

Indications

- Plague meningitis

Forms and strengths, route of administration

- 1 g powder for injection, to be dissolved in 10 ml of water for injection, for IV injection over 1 to 2 minutes

Dosage and duration

- Child 1 to 12 years: 25 mg/kg every 8 hours for 10 to 14 days
- Child 13 years and over and adult: 1 g every 8 hours for 10 to 14 days

Age	Weight	1 g vial (to be dissolved in 10 ml)
1 to < 2 years	10 to < 13 kg	3 ml x 3
2 to < 3 years	13 to < 15 kg	3.5 ml x 3
3 to < 6 years	15 to < 20 kg	5 ml x 3
6 to < 8 years	20 to < 25 kg	6 ml x 3
8 to < 9 years	25 to < 30 kg	7 ml x 3
9 to < 11 years	30 to < 35 kg	8 ml x 3
11 to < 13 years	35 to < 45 kg	9 ml x 3
≥ 13 years and adult	≥ 45 kg	10 ml x 3

Contra-indications, adverse effects, precautions

- Do not administer to children under 1 year.
- Do not administer to patients with:
  - history of allergic reaction or bone marrow depression during a previous treatment with chloramphenicol;
  - G6PD deficiency.
- May cause:
  - dose-related haematological toxicity (bone marrow depression, anaemia, leucopenia, thrombocytopenia), allergic reactions. In these events, stop treatment immediately;
  - gastrointestinal disturbances, peripheral and optic neuropathies.
- Reduce dosage in patients with hepatic or renal impairment.
- Avoid or monitor combination with potentially haematotoxic drugs (carbamazepine, co-trimoxazole, flucytocine, pyrimethamine, zidovudine, etc.).
- **Pregnancy and breast-feeding**: no contra-indication for plague meningitis.
  - If used during the 3rd trimester of pregancy, risk of grey syndrome in the neonate (vomiting, hypothermia, blue-grey skin colour and cardiovascular depression).
  - If used during breast-feeding, monitor neonate for haematological disorders and gastrointestinal disturbances.

Storage

– Below 25 °C

CLINDAMYCIN injectable

Last updated: September 2023

Prescription under medical supervision

Therapeutic action

- Lincosamide antibacterial

Indications

- Second-line treatment of severe infections due to anaerobic bacteria, staphylococci and/or streptococci (e.g. cellulitis, erysipelas, pneumonia, septicaemia), alone or in combination with other antibacterials, depending on indication
- Necrotizing skin and soft tissues infections (necrotizing fasciitis, gas gangrene, etc.), severe cutaneous anthrax, in combination with other antibacterials

Forms and strengths, route of administration

- 300 mg in 2 ml ampoule (150 mg/ml), for IV infusion in 0.9% sodium chloride or 5% glucose, to be administered over 30 minutes.
- **NEVER USE BY DIRECT UNDILUTED IV.**

Dosage

Severe infections due to anaerobic bacteria, staphylococci and/or streptococci

- Neonate 0 to 7 days (< 2 kg): 5 mg/kg every 12 hours
- Neonate 0 to 7 days (≥ 2 kg): 5 mg/kg every 8 hours
- Neonate 8 days to < 1 month (< 2 kg): 5 mg/kg every 8 hours
- Neonate 8 days to < 1 month (≥ 2 kg): 10 mg/kg every 8 hours
- Child 1 month and over: 10 mg/kg (max. 600 mg) every 8 hours
- Adult: 600 to 900 mg every 8 hours

Necrotizing infections, severe cutaneous anthrax

- Neonate: as above
- Child 1 month and over: 10 to 13 mg/kg (max. 900 mg) every 8 hours
- Adult: 900 mg every 8 hours

Dilute each dose of clindamycin in 5 ml/kg of 0.9% sodium chloride or 5% glucose in children less than 20 kg and in a bag of 100 ml of 0.9% sodium chloride or 5% glucose in children 20 kg and over and in adults.

Duration

- Cellulitis, erysipelas: 7 to 10 days
- Pneumonia: 10 to 14 days
- Severe cutaneous anthrax: 14 days
- Other infections: according to clinical evolution

Change to oral route as soon as possible.

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to lincosamides or history of pseudomembranous colitis.
- Reduce dosage in patients with hepatic impairment.
- May cause: pseudomembranous colitis, rash, jaundice, severe allergic reactions. In these cases, stop treatment.
- In the event of pseudomembranous colitis, treat for *Clostridium difficile* infection (oral metronidazole).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: use only when there are no therapeutic alternative. Check child's stools (risk of pseudomembranous colitis).

Remarks

- Do not mix with other drugs in the same infusion.
- Some formulations contain benzyl alcohol and should not be used in neonates.

Storage

– Below 25 °C

CLOXACILLIN injectable

Last updated: September 2023

Prescription under medical supervision

Therapeutic action

- Penicillin antibacterial

Indications

- Severe infections due to streptococci and/or staphylococci: meningitis, pneumonia, omphalitis, septicaemia of cutaneous origin, endocarditis, osteomyelitis, necrotizing skin and soft tissues infections, etc.
- Erysipelas, cellulitis

Forms and strengths, route of administration

- Powder for injection, in 500 mg vial, to be dissolved in 4 ml of water for injection, for IV infusion in 0.9% sodium chloride or 5% glucose, to be administered in 60 minutes

Dosage

Severe infections

- Neonate:
  - 0 to 7 days (< 2 kg): 50 mg/kg every 12 hours
  - 0 to 7 days (≥ 2 kg): 50 mg/kg every 8 hours
  - 8 days to < 1 month (< 2 kg): 50 mg/kg every 8 hours
  - 8 days to < 1 month (≥ 2 kg): 50 mg/kg every 6 hours
- Child 1 month and over: 25 to 50 mg/kg (max. 2 g) every 6 hours
- Adult: 2 g every 6 hours

Age	Weight	500 mg vial (diluted in 4 ml, 125 mg/ml)	
1 to < 3 months	4 to < 6 kg	1 ml x 4	
3 months to < 1 year	6 to < 10 kg	2 ml x 4	
1 to < 5 years	10 to < 20 kg	4 ml x 4	(1 vial x 4)
5 to < 8 years	20 to < 28 kg	8 ml x 4	(2 vials x 4)
8 to < 12 years	28 to < 38 kg	12 ml x 4	(3 vials x 4)
≥ 12 years and adult	≥ 38 kg	16 ml x 4	(4 vials x 4)

Dilute each dose of cloxacillin in 5 ml/kg of 0.9% sodium chloride or 5% glucose in children less than 20 kg and in a bag of 100 ml of 0.9% sodium chloride or 5% glucose in children 20 kg and over and in adults.

Erysipelas, cellulitis
Neonate, child and adult: half of above dose

Duration

- Change to oral route as soon as possible with amoxicillin/clavulanic acid or cefalexin depending on the indication. Do not use oral cloxacillin for completion treatment following parenteral therapy.

Contra-indications, adverse effects, precautions

- Do not administer to penicillin-allergic patients.
- Administer with caution to patients with allergy to cephalosporins (cross-sensitivity may occur) or with renal impairment (reduce the dose).
- May cause: gastrointestinal disturbances (particularly diarrhoea), allergic reactions sometimes severe; rarely, haematological disorders.
- Do not combine with methotrexate (increased methotrexate toxicity).
- **Pregnancy and breast-feeding**: no contra-indication

Remarks

- Dicloxacillin, flucloxacillin and oxacillin are used for the same indications.
- Do not mix with other drugs in the same infusion.

Storage

– Below 25 °C

Reconstituted solution must be used immediately.

CO-AMOXICLAV injectable

See AMOXICILLIN/CLAVULANIC ACID injectable

DEXAMETHASONE injectable

Last updated: September 2023

Prescription under medical supervision

Therapeutic action

- Long-acting steroidal anti-inflammatory drug (corticosteroid)

Indications

- Symptomatic treatment of severe allergic and inflammatory reactions, when oral administration is not possible
- Foetal lung maturation, in the event of threatened premature delivery before 34 weeks of gestation

Forms and strengths, route of administration

- 4 mg dexamethasone phosphate in 1 ml ampoule (4 mg/ml) for IM or IV injection or infusion

Dosage and duration

Symptomatic treatment of severe allergic and inflammatory reactions

- Dosage varies according to indication, reaction severity and clinical response:
  - Child: 0.15 to 0.6 mg/kg (max. 16 mg) by IM or IV injection once daily
  - Adult: 0.5 to 24 mg by IM or IV injection once daily
- Duration varies according to indication. Due to dexamethasone's long half-life, a treatment of 1 or 2 days is usually sufficient in asthma or croup. For longer treatments, change to oral route as soon as possible. In the event of treatment longer than 10 days, decrease doses gradually to avoid adrenal suppression.

Foetal lung maturation

- Administer to the mother: 6 mg by IM injection every 12 hours for 2 days (total dose: 24 mg)

Contra-indications, adverse effects, precautions

- In case of systemic infections, only administer if patient is under antimicrobial treatment.
- May cause (if prolonged treatment with high doses): adrenal suppression, muscle atrophy, growth retardation, increased susceptibility to infections, sodium and water retention (oedema and hypertension), osteoporosis, hypokalaemia, digitalis toxicity due to potassium loss in patients taking digitalis glycosides.
- **Pregnancy and breast-feeding**: no contra-indication; for symptomatic treatment of severe allergic and inflammatory reactions, use the lowest effective dose.

Remarks

- Foetal lung maturation:
  - after 34 weeks of gestation, corticosteroid treatment is not indicated;
  - dexamethasone may be replaced by betamethasone: 2 doses of 12 mg by IM injection at 24-hour interval (total dose: 24 mg).
- 0.75 mg of dexamethasone has the same anti-inflammatory activity as 5 mg of prednisolone or prednisone and 20 mg of hydrocortisone.
- Dexamethasone acetate, insoluble in water, is a suspension used only for local treatment: intra-articular or peri-articular injection, epidural injection (sciatica).

Storage

– Below 25 °C

The solution precipitates at 0 °C, it must not be exposed to cold temperatures.

DIAZEPAM injectable

Last updated: October 2024

Prescription under medical supervision

- During and after administration, have ventilation equipment (Ambu and mask) and solutions for fluid replacement ready for use.
- For seizures, preferably use the rectal route in children.

Therapeutic action

- Antiseizure (anticonvulsant), muscle relaxant, sedative, anxiolytic

Indications

- First-line treatment of convulsive status epilepticus
- Muscle spasms due to tetanus
- Severe agitation in adults

Forms and strengths, route of administration

- 10 mg in 2 ml ampoule (5 mg/ml) for IM injection, slow IV injection (3 to 5 minutes) or IV infusion in 0.9% sodium chloride or 5% glucose
- The injectable solution may be used rectally.

Dosage and duration

Convulsive status epilepticus

- Child 1 month to 11 years:
  - Rectal route: one dose of 0.5 mg/kg (0.1 ml/kg); max. 10 mg (2 ml)
  - Slow IV injection: one dose of 0.2 to 0.3 mg/kg (0.04 to 0.06 ml/kg); max. 10 mg (2 ml)

Age	Weight	10 mg/2 ml solution	
		Rectal route	IV injection
1 to < 4 months	3 to < 6 kg	0.4 ml	0.25 ml
4 to < 12 months	6 to < 10 kg	0.7 ml	0.4 ml
1 to < 3 years	10 to < 15 kg	1.2 ml	0.6 ml
3 to < 5 years	15 to < 20 kg	1.5 ml	1 ml
5 to < 9 years	20 to < 30 kg	2 ml	1.2 ml
9 to < 12 years	30 to < 40 kg	2 ml	2 ml

- Child 12 years and over and adult:
  - Rectal route: one dose of 10 to 20 mg (2 to 4 ml); one dose of 10 mg (2 ml) in older patients
  - Slow IV injection: one dose of 10 mg (2 ml); one dose of 5 mg (1 ml) in older patients

In children and adults, if seizures do not stop 5 minutes after the first dose, readminister the same dose, regardless of the route of administration. Do not administer more than 2 doses in total.

Muscle spasms due to tetanus

The dosage range is variable, depending on the severity of symptoms and clinical response. For information:

- Child 1 month and over and adult: 0.1 to 0.3 mg/kg by slow IV injection every 1 to 4 hours or 0.1 to 0.5 mg/kg/hour by IV infusion over 24 hours

Severe agitation

- Adult: 10 mg (2 ml) by IM injection, to be repeated once after 30 to 60 minutes if necessary

Rectal administration technique

- Lay the patient on their side.
- For volumes up to 1 ml, use a 1 ml syringe. Withdraw the required dose. Remove the needle. Insert the syringe into the rectum for a length of 1 to 3 cm (depending on age) to administer the dose. For volumes greater than 1 ml, use a 2 ml syringe and attach to the tip of the syringe a nasogastric tube n°8 cut to a length of 2 to 3 cm to administer the dose.
- After administration, hold the buttocks together for at least one minute.

Contra-indications, adverse effects, precautions

- Do not administer to neonates (contains benzyl alcohol) and to patients with severe respiratory insufficiency or severe hepatic impairment.
- Administer with caution:
  - to older patients and patients with renal or hepatic impairment (reduce the dose by half);
  - to patients with history of substance abuse or mental disorders.
- May cause:
  - pain at injection site;
  - hypotension, muscle weakness, ataxia, hypotonia, drowsiness, lethargy, confusional state;
  - respiratory depression, especially if injected rapidly by IV route and if large doses are administered;
  - coma in the event of overdose.
- Avoid or monitor in combination with:
  - opioid analgesics, antipsychotics, first-generation antihistamines (hydroxyzine, promethazine), antidepressants, other antiseizure medications, etc. (increased sedation);
  - enzyme inducers such as rifampicin, rifabutin, nevirapine, phenobarbital, phenytoin, carbamazepine, etc. (reduced effect of diazepam);
  - omeprazole, macrolides, ritonavir, isoniazid, fluconazole, itraconazole, etc. (increased diazepam toxicity);
  - phenytoin (increased phenytoin toxicity).
- **Pregnancy and breast-feeding**: avoid, except if vital (passage through the placenta and breast milk)

Remarks

- Diazepam is subject to international controls: follow national regulations.
- For administration by IV infusion, the concentration of diazepam in the solution should not exceed 0.25 mg/ml (e.g. 1 mg in at least 4 ml).
- Diazepam slow IV is also used in delirium tremens (alcohol withdrawal) in adults: 10 to 20 mg every 4 to 6 hours under close supervision in intensive care unit.
- Do not mix with other drugs in the same syringe or infusion.

Storage

– Below 25 °C

DICLOFENAC injectable

Last updated: October 2024

Prescription under medical supervision

Do not exceed the recommended duration of treatment.

Therapeutic action

- Non-steroidal anti-inflammatory drug (NSAID), analgesic

Indications

- Moderate pain due to inflammation (acute sciatic neuralgia, renal colic, postoperative pain, etc.)

Forms and strengths, route of administration

- 75 mg in 3 ml ampoule (25 mg/ml) for deep IM injection or IV infusion

Dosage

- Adult : 75 mg by deep IM injection, to be repeated after 6 hours if necessary
- For postoperative pain, may be administered by infusion: 75 mg over 30 to 120 minutes, to be repeated after 4 to 6 hours if necessary.
- Do not exceed 150 mg in 24 hours.

Duration

- Maximum 2 days

Change to oral treatment with an analgesic, e.g. ibuprofen or paracetamol, as soon as possible.

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to NSAID (aspirin, ibuprofen, etc.), peptic ulcer, coagulation defects, haemorrhage, surgery with risk of major blood loss, severe renal, hepatic or cardiac impairment, severe malnutrition, uncorrected dehydration or hypovolaemia, asthma, severe infection.
- May cause: local reactions at the injection site, renal impairment, gastrointestinal disturbances, allergic reactions (skin rash, bronchospasm).

- Administer with caution and carefully monitor use in older patients or patients with cardiovascular disorders (hypertension, diabetes, etc.).
- Do not combine with other NSAID (aspirin, ibuprofen, etc.), diuretics, anticoagulants.
- **Pregnancy**: CONTRA-INDICATED
- **Breast-feeding**: CONTRA-INDICATED

Remarks

- For infusion, use a solution of 5% glucose or 0.9% sodium chloride and add 0.5 ml of 8.4% sodium bicarbonate per 500 ml.
- Diclofenac is not included in the WHO list of essential medicines.

Storage

– Below 25 °C

DIGOXIN injectable

Last updated: October 2024

Prescription under medical supervision

Due to narrow margin between therapeutic and toxic dose, patients should be kept under close surveillance.

Therapeutic action

- Cardiotonic

Indications

- Supraventricular arrhythmias (fibrillation, flutter, paroxysmal tachycardia)
- Heart failure

Forms and strengths, route of administration

- 500 micrograms ampoule (250 micrograms/ml, 2 ml) for slow IV injection or infusion in 5% glucose or 0.9% sodium chloride

Dosage

- Adult:
  - Loading dose: 500 to 1000 micrograms
    The loading dose can be administered either by intravenous infusion as a single dose given over 2 hours minimum or in divided doses, by slow IV injections over 5 minutes minimum.
  - Maintenance dose: change to oral treatment
- Reduce the dose by one half in older patients and in patients with renal impairment.

Contra-indications, adverse effects, precautions

- Do not administer to patients with bradycardia, ill defined arrhythmia, coronary artery disease.
- It is essential to monitor heart rate in the initial stage of treatment.
- Narrow margin between therapeutic and toxic dose.
- May cause in the event of overdose: gastrointestinal disturbances (nausea, vomiting, diarrhoea), blurred vision, headache, confusion, conduction and rhythm disorders. If so, reduce dose or stop treatment.

- Do not combine with calcium, particularly by IV injection (serious arrhythmias).
- Monitor combination with:
  - amiodarone, macrolides, itraconazole, quinine, chloroquine (increased digoxin concentration);
  - potassium-depleting drugs: diuretics, corticoids, amphotericin B (increased risk of digoxin toxicity).
- Monitor if possible serum potassium level in patients taking potassium-depleting drugs and serum creatinine level in patients with renal impairment.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- A loading dose may be administered in arrhythmias if a rapid digitalisation is required. It is usually not required for heart failure.

Storage

– Below 25 °C

EFLORNITHINE injectable

Last updated: October 2024

Prescription under medical supervision

Therapeutic action

- Trypanocide

Indications

- Meningoencephalitic stage of African trypanosomiasis due to *T.b. gambiense*, in combination with nifurtimox (first choice treatment) or in monotherapy if nifurtimox is not available or is contra-indicated

Forms and strengths, route of administration

- 10 g in 50 ml ampoule (200 mg/ml) to be diluted in 250 ml bag of water for injection (or, if not available, 0.9% sodium chloride), for IV infusion administered over 2 hours

Dosage and duration

In combination with nifurtimox

- Child and adult: 200 mg/kg every 12 hours for 7 days

In monotherapy

- Child under 12 years: 150 mg/kg every 6 hours for 14 days
- Child 12 years and over and adult: 100 mg/kg every 6 hours for 14 days

Contra-indications, adverse effects, precautions

- May cause: haematological disorders (anaemia, leucopenia, thrombocytopenia), gastrointestinal disturbances (diarrhoea, abdominal pain, vomiting), seizures, tremor, fever, deep tissue infection, headache, alopecia, dizziness.
- The catheter must be handled with great attention to avoid local or general bacterial superinfections: thoroughly disinfect the insertion site, protect the site with a sterile dressing, ensure secure catheter fixation and change the catheter every 48 hours or earlier in the event of phlebitis.
- **Pregnancy**: CONTRA-INDICATED unless, due to the mother's general condition, treatment cannot be delayed until after delivery.

Remarks

- When administering nifurtimox-eflornithine combined therapy, the dosage of nifurtimox in children and adults is 5 mg/kg every 8 hours for 10 days.
- Eflornithine is also called difluoromethylornithine or DFMO.

Storage

– Below 25 °C

Diluted solution must be kept refrigerated (2 °C to 8 °C) and used within 24 hours.

EPINEPHRINE = EPN = ADRENALINE injectable

Last updated: June 2025

Prescription under medical supervision

- Check the route of administration indicated on the ampoule.
- IV route should only be used by well trained personnel in well-equipped hospitals.

Therapeutic action

- Sympathomimetic

Indications

- Severe anaphylactic reaction
- Acute hypotension despite fluid therapy in shock

Forms and strengths, route of administration

- 1 mg in 1 ml ampoule (1 mg/ml) for **IM injection only**
- 1 mg in 1 ml ampoule (1 mg/ml) for **IV injection or infusion only**

Dosage

Severe anaphylactic reaction

- Administer undiluted solution by IM route (anterolateral part of the thigh) using a 1 ml syringe graduated in 0.01 ml:
  - Child under 6 months: 0.1 to 0.15 ml
  - Child 6 months to 5 years: 0.15 ml
  - Child 6 to 12 years: 0.3 ml
  - Child over 12 years and adult: 0.5 ml (0.3 ml if small or prepubertal child)
- Repeat after 5 minutes if no or poor clinical improvement (up to a total of 3 IM injections).

Acute hypotension despite fluid therapy or anaphylactic reaction unresponsive to epinephrine IM

- Use diluted solution in 0.9% sodium chloride (NaCl 0.9%) or 5% glucose (G5%) or Ringer lactate (RL):

    - Child under 40 kg: add 2 ml of EPN (2 amp. of 1 mg/ml for IV route) to 38 ml of NaCl 0.9%, G5% or RL to obtain a 0.05 mg/ml (50 micrograms/ml) solution.
    - Child 40 kg and over and adult: add 4 ml of EPN (4 amp. of 1 mg/ml for IV route) to 36 ml of NaCl 0.9%, G5% or RL to obtain a 0.1 mg/ml (100 micrograms/ml) solution.
- Administer by continuous IV infusion using an infusion or syringe pump:
    - Child and adult: 0.1 microgram/kg/min, increase if necessary by 0.05 micrograms/kg/min every 10 min for the first hour, then every hour (max. 1 microgram/kg/min)
    - Once desired response is achieved, discontinue gradually, in decrements of 0.05 micrograms/kg/min every hour. Do not discontinue abruptly.
- The infusion rate is calculated as follows: [desired dose (microgram/kg/min) x weight (kg) x 60 min]/concentration (microgram/ml).
  Example, for a child 20 kg, dose 0.1 microgram/kg/min, solution concentration 50 micrograms/ml:

EPN dose (microgram/kg/min)	**0.1**	**0.15**	**0.2**	**0.25**	**0.3**	**0.35**	**0.4**	**0.45**	**0.5**
Infusion rate (ml/hour)	2.4	3.6	4.8	6	7.2	8.4	9.6	10.8	12

Contra-indications, adverse effects, precautions

- Administer with caution to patients with hypertension, angina, ischaemic heart disease, hyperthyroidism and to older patients.
- May cause: arrhythmia, hypertension, agitation, headache; tissue necrosis following extravasation (use a large vein for IV administration).
- **Pregnancy and breast-feeding**: no contra-indication

Remarks

- In anaphylaxis, use IV treatment only if no or poor improvement after 3 IM injections or if there is a circulatory collapse.
- Epinephrine can be used via nebulizer in the management of airway obstruction due to certain respiratory diseases (e.g. croup, diphtheria): 0.5 mg/kg (max. 5 mg) to be repeated every 20 minutes if necessary.
- Epinephrine is colourless: discard any ampoules with a pink or brownish colour.
- Also comes in 0.15 mg/0.3 ml and 0.3 mg/0.3 ml pre-filled auto-injector.

Storage

☼ – Below 25 °C

ETONOGESTREL subdermal implant

Prescription under medical supervision

Therapeutic action

- Hormonal contraceptive, progestogen

Indications

- Long-acting contraception

Forms and strengths, route of administration

- Flexible rod containing 68 mg of etonogestrel, in a sterile disposable applicator, to be inserted subdermally into the inner side of the non-dominant arm, 6 to 8 cm above the elbow crease, under local anaesthesia and aseptic conditions

Dosage

- The implant may be inserted at any moment of the cycle if it is reasonably certain the woman is not pregnant, including when switching from another form of contraception.
- Use condoms for 7 days after insertion of the implant if it is inserted:
  - more than 7 days after the start of menstruation;
  - more than 28 days postpartum if not breastfeeding;
  - more than 7 days after an abortion.

Duration

- As long as this method of contraception is desired and it is well tolerated, for max. 3 years after which it no longer provides contraception and must be changed.

Contra-indications, adverse effects, precautions

- Do not administer to patients with breast cancer, severe or recent liver disease, unexplained vaginal bleeding, active thromboembolic disorders.
- May cause: menstrual irregularities, amenorrhoea, menometrorrhagia, breast tenderness, headache, weight gain, itching, acne, mood changes, abdominal pain, gastrointestinal disturbances, allergic reactions.
- Enzyme-inducing drugs (rifampicin, rifabutin, efavirenz, nevirapine, lopinavir, ritonavir, phenobarbital, phenytoin, carbamazepine, griseofulvin, etc.) reduce the effectiveness of the contraceptive.

- **Pregnancy**: CONTRA-INDICATED
- **Breast-feeding**: no contra-indication

Remarks

- Fertility returns rapidly after removal of the implant.
- For the conditions for insertion or removal the implant, follow manufacturer's instructions.

Storage

– Below 25 °C

FLUCONAZOLE injectable

Last updated: November 2022

Prescription under medical supervision

Therapeutic action

- Antifungal

Indications

- Severe fungal infections, when oral administration is not possible:
  - Cryptococcal meningitis, in combination with amphotericin B or flucytosine
  - Severe oesophageal candidiasis

Forms and strengths, route of administration

- 200 mg in 100 ml bottle or bag (2 mg/ml), for IV infusion

Dosage

Cryptococcal meningitis, in combination with amphotericin B or flucytosine

- Child 1 month and over: 12 mg/kg (max. 800 mg) once daily administered over 20 minutes minimum (max. 5 ml/minute)
- Adult: 1200 mg once daily, administered over 10 minutes minimum (max. 10 ml/minute)

Severe oesophageal candidiasis

- Child 1 month and over: 3 to 6 mg/kg (max. 200 mg) once daily
- Adult: 200 mg (max. 400 mg) once daily

Duration

Change to oral treatment as soon as possible.

Contra-indications, adverse effects, precautions

- Administer with caution to patients with hepatic or renal impairment, cardiac disorders (bradycardia, heart rhythm disorders, etc.).
- Reduce the dose by half in patients with renal impairment.
- May cause: gastrointestinal disturbances, headache, skin reactions sometimes severe, anaphylactic reactions; severe hepatic disorders, haematological (leukopenia, thrombocytopenia)

and cardiac disorders (QT-prolongation). Stop treatment in the event of anaphylactic reaction, hepatic disorders or severe skin reaction.

- Avoid or monitor combination with:
  - drugs that prolong the QT interval (amiodarone, chloroquine, erythromycin, haloperidol, mefloquine, pentamidine, quinine);
  - warfarin, carbamazepine, phenytoin, rifabutin, benzodiazepines, calcium-channel blockers, certain antiretrovirals (e.g. nevirapine, zidovudine): increased plasma concentrations of these drugs;
  - rifampicin: decreased plasma concentrations of fluconazole.
- **Pregnancy and breast-feeding**: use only in severe or life-threatening infections, particularly during the first trimester of pregnancy (risk of foetal malformations).

Remarks

- As in neonates the half-life of fluconazole is prolonged, fluconazole should be administered every 72 hours (neonates < 14 days) or every 48 hours (neonates ≥ 14 days).
- For cryptococcocal meningitis, when amphotericin B is not available or not tolerated, fluconazole may be administered alone during the induction phase (same doses as the oral route).
- Do not add any drug in the infusion bottle or bag.

Storage

Below 25 °C. Do not store in a refrigerator.

FUROSEMIDE injectable

Prescription under medical supervision

Therapeutic action

- Diuretic

Indications

- Emergency treatment of:
  - Oedema caused by renal, hepatic or congestive heart failure
  - Hypertensive crisis (except that of pregnancy)
  - Pulmonary oedema

Forms and strengths, route of administration

- 20 mg in 2 ml ampoule (10 mg/ml) for IM or slow IV injection

Dosage

- Child: 0.5 to 1 mg/kg/injection
- Adult: 20 to 40 mg/injection

Repeat after 2 hours if necessary.

For **pulmonary oedema**: if an initial IV injection of 40 mg does not produce a satisfactory response within one hour, the dose may be increased to 80 mg by slow IV injection.

Duration

- According to clinical response;
- If prolonged use is required, change to oral treatment 3 hours after the last injection.

Contra-indications, adverse effects, precautions

- Do not administer in other types of oedema, especially those due to kwashiorkor.
- Do not administer in case of hepatic encephalopathy.
- May cause: hypokalaemia, especially in cases of cirrhosis, denutrition, congestive heart failure.
- Closely monitor combination with digoxin (furosemide enhances toxicity of digoxin).
- **Pregnancy**: CONTRA-INDICATED to treat hypertension in pregnancy
- **Breast-feeding**: avoid (excreted in milk and may reduce milk production)

Remarks

- If doses greater than 50 mg are required, it is recommended that they be given by IV infusion.

Storage

– Below 25 °C

GENTAMICIN injectable

Last updated: September 2023

Prescription under medical supervision

Given the risk of renal and auditory toxicity, do not prolong treatment unnecessarily.

Therapeutic action

- Aminoglycoside antibacterial

Indications

- Severe bacterial infections: plague, septicaemia, meningitis, pneumonia, pyelonephritis, postpartum upper genital tract infections, brucellosis, etc., in combination with other antibacterials

Forms and strengths, route of administration

- 10 mg in 1 ml ampoule (10 mg/ml) and 80 mg in 2 ml ampoule (40 mg/ml) for IM or slow IV injection (3 minutes) or IV infusion (30 minutes) in 0.9% sodium chloride or 5% glucose

Dosage

Meningitis in young children, in combination with ampicillin or cloxacillin

- Neonate:
  - 0 to 7 days (< 2 kg): 3 mg/kg once daily by IV injection or infusion
  - 0 to 7 days (≥ 2 kg): 5 mg/kg once daily by IV injection or infusion
  - 8 days to < 1 month: 5 mg/kg once daily by IV injection or infusion
- Child 1 to 3 months: 2.5 mg/kg every 8 hours by IV injection or infusion

Other severe bacterial infections

- Neonate : as above
- Child 1 month and over: 4.5 to 7.5 mg/kg once daily
- Adult: 5 to 6 mg/kg once daily

For administration by IV infusion, dilute each dose of gentamicin in 5 ml/kg of 0.9% sodium chloride or 5% glucose in children less than 20 kg and in a bag of 100 ml of 0.9% sodium chloride or 5% glucose in children 20 kg and over and in adults.

Duration

- Plague: 10 to 14 days
- Other infections: according to indication and clinical response

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to aminoglycosides.
- Administer with caution to patients with history of renal, vestibular or auditory problems.
- Reduce dosage in patients with renal impairment.
- May cause: irreversible ototoxicity (vestibular and auditory damage), nephrotoxicity, neuropathy, paraesthesia, neuromuscular blockade; rarely, allergic reactions.
- Stop treatment in the event of dizziness, tinnitus or hearing loss (ototoxicity).
- Do not combine with another aminoglycoside.
- Avoid or monitor combination with: furosemide, amphotericin B, vancomycin (enhanced renal and/or auditory toxicity); neuromuscular blockers (increased neuromuscular blockage).
- **Pregnancy**: administer only if clearly needed (risk of fetal ototoxicity).
- **Breast-feeding**: no contra-indication

Remarks

- Do not mix with other drugs in the same syringe or infusion.

Storage

– Below 25 °C

GLUCOSE 50% = DEXTROSE 50% injectable

Prescription under medical supervision

Indications

- Treatment of severe hypoglycaemia

Forms and strengths, route of administration

- 50% hypertonic glucose solution in 50 ml vial (500 mg/ml), for slow IV injection (3 to 5 minutes). NEVER BY IM OR SC INJECTION.

Dosage and duration

- Adult: 1 ml/kg by slow IV injection
- Check blood glucose level 15 minutes after injection. If blood glucose level is still < 3.3 mmol/litre or < 60 mg/dl, administer a second dose or give oral glucose, according to the patient's clinical condition.

Contra-indications, adverse effects, precautions

- May cause:
  - vein irritation;
  - severe tissue damage (necrosis) in the event of extravasation.
- The solution is viscous: use a large vein and a large calibre needle.

Remarks

- 50% glucose solution is too viscous, concentrated and irritant to be used in children.
- In children use 10% glucose solution. If ready-made 10% glucose solution is not available: add 10 ml of 50% glucose per 100 ml of 5% glucose to obtain a 10% glucose solution. The dose of 10% glucose to be administered is 2 ml/kg by slow IV injection.

Storage

Below 25° C

HALOPERIDOL injectable

Last updated: February 2024

Prescription under medical supervision

Due to the numerous and potentially severe adverse effects of haloperidol, patients should be kept under close surveillance.

Therapeutic action

- Antipsychotic

Indications

- Acute confusional state (delirium) and acute alcohol intoxication
- Agitation or aggressive behaviour in patients with acute or chronic psychosis, in combination with promethazine

Forms and strengths, route of administration

- 5 mg in 1 ml ampoule (5 mg/ml) for IM injection

Dosage and duration

Acute confusional state (delirium) and acute alcohol intoxication

- Adult: 0.5 to 1 mg, to be repeated after 30 to 60 minutes if necessary. If needed, administer additional doses every 4 hours (max. 5 mg) for 7 days max.

Agitation or aggressive behaviour in patients with acute or chronic psychosis, with promethazine

- Adult: 5 mg, to be repeated after 30 minutes if necessary

Change to oral treatment as soon as possible.
Reduce the dose by half in older patients (max. 5 mg daily).

Contra-indications, adverse effects, precautions

- Do not administer to patients with cardiac disorders (cardiac failure, recent myocardial infarction, conduction disorders, bradycardia, etc.), dementia (e.g. Alzheimer's disease), Parkinson's disease and history of neuroleptic malignant syndrome.

- Administer with caution and carefully monitor use in older patients and patients with hypokalaemia, hypotension, hyperthyroidism, renal or hepatic impairment, history of seizures.
- May cause: drowsiness, extrapyramidal syndrome, dyskinesia, anticholinergic effects (constipation, dry mouth), sexual dysfunction, QT-prolongation, ventricular arrhythmia, orthostatic hypotension; neuroleptic malignant syndrome (unexplained hyperthermia with neuromuscular disorders), rare but requiring immediate treatment discontinuation.
- Avoid or monitor combination with:
  - central nervous system depressants (opioid analgesics, sedatives, H1 antihistamines, etc.);
  - fluoxetine, paroxetine, sertraline, ritonavir (increased plasma concentrations of haloperidol);
  - carbamazepine, rifampicin, phenobarbital, phenytoin (decreased plasma concentrations of haloperidol);
  - antihypertensive drugs (risk of hypotension); drugs that prolong the QT interval (amiodarone, chloroquine, erythromycin, fluconazole, mefloquine, pentamidine, quinine, etc.).
- Keep the patient in the supine position for 30 minutes after injection (risk of orthostatic hypotension):
- **Pregnancy**: re-evaluate whether the treatment is still necessary; if it is continued, administer at the lowest effective dose. Observe the neonate the first few days (risk of agitation, tremors, hypertonia/hypotonia, respiratory difficulties, sleeping disorders, etc.) if the mother was under treatment in the 3rd trimester.
- **Breast-feeding**: if absolutely necessary, do not exceed 10 mg daily.

Remarks

- Haloperidol decanoate is a long-acting form used as maintenance therapy of chronic psychotic disorders after stablisation with oral treatment.

Storage

– Below 25 °C

HALOPERIDOL decanoate injectable

Last updated: February 2024

Prescription under medical supervision

Due to the numerous and potentially severe adverse effects of haloperidol, patients should be kept under close surveillance.

Therapeutic action

- Long-acting antipsychotic

Indications

- Chronic psychosis, maintenance therapy after stabilisation with oral haloperidol

Forms and strengths, route of administration

- 50 mg in 1 ml ampoule (50 mg/ml) for IM injection
- DO NOT ADMINISTER BY IV INJECTION.

Dosage and duration

- Adult: one injection every 3 to 4 weeks
  The initial dose of haloperidol decanoate corresponds to approximately 10 times the daily dose of oral haloperidol.

Daily dose oral haloperidol	Monthly dose haloperidol decanoate IM	50 mg solution haloperidol decanoate IM
2.5 mg	25 mg	½ amp
5 mg	50 mg	1 amp
10 mg	100 mg	2 amp
15 mg	150 mg	3 amp

Contra-indications, adverse effects, precautions

- Do not administer to patients with cardiac disorders (cardiac failure, recent myocardial infarction, conduction disorders, bradycardia, etc.), dementia (e.g. Alzheimer's disease), Parkinson's disease and history of neuroleptic malignant syndrome.
- Administer with caution and carefully monitor use in older patients and patients with hypokalaemia, hypotension, hyperthyroidism, renal or hepatic impairment, history of seizures.
- May cause: drowsiness (caution when driving/operating machinery), extrapyramidal syndrome, early or tardive dyskinesia, constipation, dry mouth, sexual dysfunction, QT-prolongation, ventricular arrhythmia, orthostatic hypotension.
- In case of extrapyramidal symptoms, try reducing the dose of haloperidol decanoate or, if the extrapyramidal symptoms are severe, add biperiden or trihexyphenidyl.
- Avoid or monitor combination with:
  - fluoxetine, paroxetine, sertraline, promethazine, ritonavir (increased plasma concentrations of haloperidol);
  - carbamazepine, rifampicin, phenobarbital, phenytoin (decreased plasma concentrations of haloperidol);
  - drugs that prolong the QT interval (amiodarone, chloroquine, erythromycin, fluconazole, mefloquine, pentamidine, quinine, etc.).
- Avoid alcohol during treatment (increased risk of adverse effects).
- Avoid in women of childbearing age or offer effective contraception.
- **Pregnancy and breastfeeding**: avoid

Remarks

- Change buttock for each injection.

Storage

– Below 25 °C

HEPARIN sodium injectable

Prescription under medical supervision

- This drug should only be used by well trained personnel in well-equipped hospitals. During treatment, have protamine ready for use.
- Due to narrow margin between therapeutic and toxic dose, coagulation parameters should be monitored.

Therapeutic action

- Anticoagulant
  - By IV injection: acts immediately for about 2 to 4 hours
  - SC injection: acts within 1 hour for about 8 to 12 hours

Indications

- Venous and arterial thrombosis: pulmonary embolism, myocardial infarction, thrombophlebitis
- Prevention of venous and arterial thrombosis, especially in pre-operative and postoperative period and in patients on bedrest

~~Prescription of heparin requires systematic monitoring of coagulation parameters.~~

Forms and strengths, route of administration

- 1000 IU in 1 ml ampoule (1000 IU/ml) and 5000 IU in 1 ml ampoule (5000 IU/ml) for IV injection or infusion, diluted in an isotonic solution of glucose or sodium chloride
- 25 000 IU in 1 ml ampoule (25 000 IU/ml) for SC injection
- Also comes in various concentrations (500 IU, 12 500 IU, 20 000 IU/ml) and volumes (0.5 ml, 2 ml, 5 ml). Check label before use.

Dosage

Curative treatment

- By IV route
  Child and adult: initial dose of 50 to 100 IU/kg followed by 400 to 600 IU/kg daily, by continuous infusion over 24 hours or by IV injection every 2 to 4 hours. Adjust dosage according to coagulation tests.
- By SC route
  Child and adult: 1 SC injection every 12 hours. Start with an initial dose of 250 IU/kg and adjust dosage according to coagulation tests.

Preventive treatment

- Usually: 5000 IU by SC injection 2 hours before surgery, repeated every 8 to 12 hours.
- Dosage depends on patient's weight and risk of thrombo-embolic complications: 75 IU/kg 2 times daily or 50 UI/kg 3 times daily.

Duration

- About 7 to 10 days or more according to clinical response.
- In postoperative period, administer until fully ambulatory.
- For long-term therapy, administer heparin simultaneously with oral anticoagulants for 2 to 3 days before stopping heparin.

Contra-indications, adverse effects, precautions

- Do not administer if:
  - haemorrhage or risk of haemorrhage: haemophilia, active peptic ulcer, acute bacterial endocarditis, severe hypertension; in postoperative period after neurosurgery or ophtalmic surgery;
  - thrombocytopenia or history of heparin-induced thrombocytopenia.
- Do not administer by IM route. SC injections must be made deep into abdominal fat, between umbilicus and iliac crest.
- Intramuscular or intra-arterial injections and infiltrations are contra-indicated during heparin therapy.
- May cause:
  - severe thrombocytopenia, usually after 5 days of heparin, with thrombo-embolic complications requiring discontinuation of treatment;
  - localised reactions at the injection site, rarely, necrosis;
  - allergic reactions, osteoporosis after prolonged use, alopecia;
  - haemorrhage in case of overdosage, pre-existing lesions, trauma.
- Use with caution and reduce dosage in elderly patients and in hepatic or renal failure.
- Overdosage: neutralise heparin by slow IV injection of protamine. 1 mg protamine neutralises 100 IU of heparin.
- Reduce doses of protamine if more than 15 minutes has elapsed since heparin administration.
- Laboratory tests:
  - Monitor coagulation parameters in order to adjust dose. Partial thromboplastin time should be maintained at 1.5 to 2 times the control value (Howell's test at 2 to 3 times the control value).
  - Monitor platelet count prior to initiation of treatment and then 2 times per week.
- Avoid combination with aspirin, non-steroidal anti-inflammatory drugs: increased risk of haemorrhage.
- Closely monitor clinical and biological parameters in case of combination with corticosteroids, dextran, and transition to an oral anticoagulant.
- **Pregnancy**: CONTRA-INDICATED at the end of pregnancy (risk of haemorrhage during delivery)
- **Breast-feeding**: no contra-indication

Remarks

- Preparations containing calcium salt of heparin are also available. Check label before use.
- Do not mix with other drugs in the same syringe.

Storage

– Below 25 °C

HYDRALAZINE injectable

Last updated: October 2024

Prescription under medical supervision

This drug should only be used by well trained personnel in well-equipped hospitals.

Therapeutic action

- Antihypertensive vasodilatator

Indications

- Hypertension in pregnancy, in case of severe symptoms or when oral treatment is not possible

Forms and strengths, route of administration

- Powder for injection, in 20 mg vial, to be dissolved in 1 ml of water for injection, for IV infusion or slow diluted IV injection

Dosage

Dosage should be adjusted according to blood pressure (BP). The goal is to reduce the blood pressure to 140/90 mmHg. Diastolic BP must not fall below 90 mmHg.

By IV infusion

- Dilute 100 mg (5 vials of reconstituted hydralazine solution) in 500 ml of 0.9% sodium chloride or Ringer lactate, to obtain a solution containing 200 micrograms/ml.
- Initial dose: 200 to 300 micrograms/minute
- Maintenance dose: 50 to 150 micrograms/minute
- Administer by increasing the rate up to 20 drops/minute (max. 30 drops/minute), check BP every 5 minutes.
- As soon as hypertension is controlled, decrease progressively the rate (15 drops/minute, then 10, then 5) until stopping infusion. An abrupt discontinuation may provoke a hypertensive crisis.

By slow diluted IV injection

- Dilute 20 mg (1 vial of reconstituted hydralazine solution in 1 ml of water for injection) in 9 ml of 0.9% sodium chloride, to obtain 10 ml of solution containing 2 mg/ml.

- Administer 5 mg (2.5 ml of the diluted solution) over 2 to 4 minutes. Check BP for 20 minutes. If BP remains uncontrolled, repeat injection. Continue repeating if necessary, waiting 20 minutes between each injection (max. 20 mg total dose).

Duration

- According to clinical response.

Change to oral treatment as soon possible with labetalol or methyldopa.

Contra-indications, adverse effects, precautions

- Administer with caution to patients with heart failure, coronary insufficiency, recent myocardial infarction, severe tachycardia, history of stroke.
- May cause:
  - hypotension, tachycardia, headache, gastrointestinal disturbances;
  - abrupt fall in maternal blood pressure with placental hypoperfusion and foetal death when administered too rapidly by IV injection or in case of overdose.
- Reduce doses in patients with renal or hepatic impairment.
- Do not exceed recommended dosage and administration rate. During administration, monitor maternal BP and heart rate, as well as foetal heart rate.
- In the event of hypotension, administer Ringer lactate to maintain diastolic BP ≥ 90 mmHg.
- **Breast-feeding**: no contra-indication

Remarks

- For administration, only use sodium chloride 0.9% or Ringer lactate (incompatibility with glucose and other solutions).
- Do not mix with other drugs in the same syringe or infusion bottle.

Storage

– Below 25 °C

Reconstituted solution must be used immediately.

HYDROCORTISONE injectable

Last updated: September 2023

Prescription under medical supervision

Therapeutic action

- Short-acting steroidal anti-inflammatory drug (corticosteroid)

Indications

- Symptomatic treatment of severe allergic and inflammatory reactions, when oral administration is not possible

Forms and strengths, route of administration

- Powder for injection, 100 mg hydrocortisone (hemisuccinate, succinate or phosphate) in vial, to be dissolved in 2 ml water for injection, for IM or slow IV injection or infusion

Dosage and duration

- Child one month to 11 years: 4 mg/kg (max. 100 mg)
- Child 12 years and over and adult: 100 to 200 mg

Doses may be repeated at 6 or 8 hour-intervals up to 3 or 4 times according to reaction severity and clinical response. Change to oral route with prednisolone as soon as possible.

Contra-indications, adverse effects, precautions

- In case of systemic infection, only administer if patient is under antimicrobial treatment.
- Avoid prolonged administration in patients with peptic ulcer, diabetes mellitus or cirrhosis.
- May cause (if prolonged treatment with high doses): adrenal suppression, muscle atrophy, growth retardation, increased susceptibility to infections, sodium and water retention (oedema and hypertension), osteoporosis, hypokalaemia, digitalis toxicity due to potassium loss in patients taking digitalis glycosides.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- 20 mg of hydrocortisone has the same anti-inflammatory activity as 5 mg of prednisolone or prednisone and 0.75 mg of dexamethasone.

- Hydrocortisone acetate is a suspension insoluble in water, used as a local treatment only: intra- or periarticular injection, epidural (sciatic neuralgia).

Storage

– Below 25 °C

HYOSCINE BUTYLBROMIDE = BUTYLSCOPOLAMINE injectable

Last updated: November 2024

Prescription under medical supervision

Do not exceed recommended doses, especially in children and older patients (risk of severe anticholinergic effects).

Therapeutic action

- Antispasmodic, anticholinergic drug

Indications

- Spasms of the gastrointestinal tract and genitourinary tract

Forms and strengths, route of administration

- 20 mg in 1 ml ampoule (20 mg/ml) for IM, SC or slow IV injection

Dosage

- Adult: 20 to 40 mg to be repeated if necessary (max. 100 mg daily)

Duration

- According to clinical response; no prolonged treatment.

Contra-indications, adverse effects, precautions

- Do not administer to patients with benign prostatic hyperplasia, urinary retention, closed-angle glaucoma, tachycardia.
- May cause: urinary retention, dryness of the mouth, constipation, blurred vision, tachycardia (anticholinergic effects).
- Administer with caution and under close supervision:
  - in the event of heart failure, coronary insufficiency, cardiac rhythm disorders, hypertension;

    - to patients taking other anticholinergic drugs (antidepressants, antipsychotics, H-1 antihistamines, antiparkinsonians, etc.).
- Administer with caution to patients with fever (may affect thermoregulation).
- **Pregnancy**: no contra-indication; NO PROLONGED TREATMENT
- **Breast-feeding**: no contra-indication; NO PROLONGED TREATMENT

Storage

– Below 25 °C

INSULIN injectable

Prescription under medical supervision

General information on use of insulin by SC route

Therapeutic action

- Pancreatic hormone, antidiabetic

Types of insulin

SC administration	Short-acting human insulin [a] (Actrapid®)	Intermediate-acting human insulin (Insulatard®)	Biphasic insulin	
			human	analogue
Onset	30 minutes to 1 hour	1 to 2 hours	30 minutes	10 to 20 minutes
Peak time	2 to 4 hours	4 to 12 hours	2 to 8 hours	2 to 8 hours
Duration	7 to 8 hours	around 24 hours	around 24 hours	around 24 hours
Dosage form	solution	suspension	suspension	suspension
Aspect	clear	cloudy	cloudy	cloudy

a Short-acting insulin is also known as regular insulin.

- For each preparation, onset and duration of activity are indicated by the manufacturer. Nevertheless, for the same preparation, onset and duration vary from one patient to another.
- In one same patient, duration of activity varies depending on the dose, site of injection, blood flow, body temperature and exercise.
- The type of insulin used depends of several factors: type of diabetes, patient's age, patient's response (blood glucose levels).

- Analogue insulins have a different chemical structure to human insulin that modifies their onset and duration of activity after SC injection.

Indications

- Type 1 and type 2 diabetes
- Diabetes during pregnancy
- Transient therapy of type 2 diabetes during periods of severe infection, trauma, surgery

Dosage

- Dosage must be individualised. Frequency of administration depends on the type of insulin and the patient's response.

Duration

- Type 1 diabetes: life-time treatment
- Other indications: according to clinical response and laboratory tests

Contra-indications, adverse effects, precautions

- Do not administer in patients with allergy to insulin (rare).
- May cause :
  - hypoglycaemia due to overdosage or inadequate diet;
  - local reactions: pain, erythema at the injection site, lipodystrophy. Rotate injection sites systematically and use all available sites (abdomen, thigh, buttock or arm);
  - weight gain.
- Monitor combination with:
  - drugs enhancing hypoglycaemic effect of insulin: acetylsalicylic acid, angiotensin-converting enzyme inhibitors, beta-blockers (which in addition, may mask symptoms of hypoglycaemia);
  - drugs increasing blood glucose levels: corticosteroids, hydrochlorothiazide, salbutamol, chlorpromazine.
- Avoid alcohol (enhances and prolongs hypoglycaemic effect of insulin).
- In the event of renal or hepatic impairment and during the first trimester of pregnancy, reduce insulin doses.
- In the event of infection, emotional stress, accident or surgical intervention and during the last 2 trimesters of pregnancy, increase insulin doses.
- Use sterile technique.
- **Pregnancy and breast-feeding**: no contra-indication

Remarks

- Insulin cannot be administered by mouth since it is inactivated in the gastrointestinal tract.
- After SC injection, insulin absorption is rapid in the abdomen, slower in thighs, buttocks and arms.

- When using an insulin pen, hold the needle in the skin at least six seconds to ensure the entire dose is injected.

INSULIN, INTERMEDIATE-ACTING injectable

Prescription under medical supervision

Therapeutic action

- Intermediate-acting pancreatic antidiabetic hormone mixed with protamine, in order to prolong the duration of activity

Indications

- Diabetes

Forms and strengths, route of administration

- 1000 IU of insulin suspension in 10 ml vial (100 IU/ml) for deep SC injection (abdomen, thigh, buttock or arm), administered with a syringe calibrated in insulin units for U-100 insulin (100 IU/ml).
  NEVER ADMINISTER BY IV INJECTION.

Dosage

- Child and adult: one to 2 injections daily in combination with short-acting insulin or metformine

Dosage must be individualised according to need. Adapt dose in the event of physical activity, change in diet or infection.

Contra-indications, adverse effects, precautions

- See "insulin: general information".
- Do not administer if known allergy to protamine.
- In the event of combination with short-acting insulin, always prepare the mix in the syringe immediately before administration and in the following order: first draw the short-acting insulin then the intermediate-acting insulin.

Remarks

- After removing vial from the refigerator, leave to reach room temperature.
- Shake the vial gently before use.

Storage

– Do not freeze.

- Unopened vial: to be kept refrigerated (2 °C to 8 °C)
- Opened vial: max. 4 weeks at below 25 °C and protected from light.

INSULIN, LONG-ACTING injectable

See INSULIN, INTERMEDIATE-ACTING injectable

INSULIN, SHORT-ACTING injectable

Last updated: October 2024

Prescription under medical supervision

Therapeutic action

- Rapid-acting pancreatic antidiabetic hormone

Indications

- Diabetes
- Emergency treatment of hyperglycaemia (diabetic ketoacidosis and hyperosmolar hyperglycaemic state)

Forms and strengths, route of administration

- Solution of 100 IU of insulin/ml in:
  - 3 ml pre-filled pen (300 IU/3 ml), for deep SC injection only (abdomen, thigh, buttock or arm)
  - 10 ml vial (1000 IU/10 ml), for deep SC injection or IV injection (administered with a syringe calibrated in insulin units) or for IV infusion

Dosage

Diabetes

- Child and adult: one SC injection 15 to 30 minutes before a meal, in combination with intermediate-acting insulin
- Dosage must be individualised according to need. Adapt dose in the event of physical activity, change in diet or infection.

Emergency treatment of hyperglycaemia

- Adult: initial dose of 0.1 IU/kg by IV injection then 0.1 IU/kg/hour by continuous IV infusion. Adapt the protocol to blood glucose levels.

Contra-indications, adverse effects, precautions

- See "Insulin: general information".
- In the event of combination with intermediate-acting insulin, always prepare the mix in the syringe immediately before administration and in the following order: first draw the short-acting insulin then the intermediate-acting insulin.

Remarks

- By IV route, insulin has a very short half-life of around 5 minutes and the effect disappears within 30 minutes of injection.

Storage

– Do not freeze.

- Unopened vial: to be kept refrigerated (2 °C to 8 °C)
- Opened vial: max. 4 weeks at below 25 °C and protected from light.

INSULIN, BIPHASIC injectable

Prescription under medical supervision

Therapeutic action

- Pancreatic antidiabetic hormone: combination of short-acting + intermediate acting insulin

Indications

- Diabetes

Forms and strengths, route of administration

- 1000 IU vial containing a combination of 30% short-acting insulin + 70% intermediate-acting insulin in suspension (100 IU/ml with a ratio of 30:70, 10 ml), for deep SC injection (abdomen, thigh, buttock or arm), administered with a syringe calibrated in insulin units for U-100 insulin (100 IU/ml). NEVER ADMINISTER BY IV INJECTION.

Dosage

- Child and adult: one to 2 injections daily
- Dosage must be individualised according to need. Adapt dose in the event of physical activity, change in diet or infection.

Contra-indications, adverse effects, precautions

- See "Insulin: general information".
- Do not administer if known allergy to protamine.

Remarks

- After removing vial from the refrigerator, leave to reach room temperature.
- Shake the vial gently before use.
- Also comes in biphasic human insulin 30/70 pens and biphasic analogue insulin 30/70 (aspart) and 25/75 (lispro) pens.

Storage

☼ – Do not freeze.

- Unopened vial: to be kept refrigerated (2 °C to 8 °C)

- Opened vial: max. 4 weeks at below 25 °C and protected from light. Follow manufacturer's instructions

ISOSORBIDE DINITRATE injectable

Last updated: August 2021

Prescription under medical supervision

Therapeutic action

- Vasodilator, antianginal

Indications

- Adjunctive therapy in acute heart failure (acute pulmonary oedema)

Forms and strengths, route of administration

- 10 mg in 10 ml ampoule (1 mg/ml), for slow IV injection or IV infusion in 5% glucose or 0.9% sodium chloride

Dosage

- Adult: 2 mg (= 2 ml) by slow IV injection (2 minutes) then, if necessary, 2 to 10 mg/hour by continuous infusion with an electric syringe pump
- Monitor blood pressure during administration. The objective is to lower the systolic pressure to 120-150 mmHg and the diastolic pressure to under 110 mmHg.

Contra-indications, adverse effects, precautions

- Do not administer to patients with obstructive cardiomyopathy, hypotension, shock, intracranial hypertension or neurologic injury.
- May cause:
  - orthostatic hypotension (especially in older patients), headache, nausea, flushing of the face, haemolytic anaemia in patients with G6PD deficiency;
  - severe hypotension with risk of circulatory collapse in the event of overdose.
- Avoid combination or use the lowest effective dose in patients taking another nitrate derivative, a vasodilator, a diuretic or an antihypertensive drug (enhances hypotensive effects), and in older patients.
- Do not combine with sildenafil or other drugs used for erectile dysfunction (risk of severe hypotension, syncope and acute coronary syndrome).
- **Pregnancy and breast-feeding**: avoid, use only if clearly needed (safety not established)

Remarks

- Injectable isosorbide dinitrate is not included in the WHO list of essential medicines.

Storage

Below 25 °C

KETAMINE injectable

Prescription under medical supervision

Therapeutic action

- General anaesthetic

Indications

- Induction and maintenance of general anaesthesia

Forms and strengths, route of administration

- 250 mg in 5 ml ampoule (50 mg/ml) for IM, IV injection or infusion

Dosage

Child and adult:

- Induction
  - IV: 2 mg/kg to be injected slowly. Anaesthesia is produced within one minute and lasts 10 to 15 minutes.
  - IM: 8 to 10 mg/kg. Anaesthesia is produced within 5 minutes and lasts 15 to 30 minutes.
- Maintenance
  - IV: 0.5 to 1 mg/kg depending on recovery signs (approximately every 15 minutes)
  - IM: 5 mg/kg approximately every 20 to 30 minutes

Duration

- Depending on duration of the operation

Contra-indications, adverse effects, precautions

- Do not administer to patients with intraocular hypertension, pre-eclampsia.
- Administer with caution to patients with arterial or intracranial hypertension, coronary insufficiency, psychiatric disorders.
- May cause: hypertension, hypersalivation, hallucinations during recovery (less frequent in children or when injected IM), apnoea following rapid IV injection.
- Premedication to prevent hypersalivation and hallucinations:
  - atropine IV: 0.01 to 0.015 mg/kg + diazepam slow IV: 0.1 mg/kg, during induction

  or

    - atropine IM: 0.01 to 0.015 mg/kg + diazepam IM: 0.1 mg/kg, 30 minutes before induction
- Technical equipment for intubation and ventilation must be available and ready for use.
- **Pregnancy**: no contra-indication, except in pre-eclampsia. For ceaserean sections, do not exceed 1 mg/kg by IV injection (risk of neonatal respiratory depression at higher doses).
- **Breast-feeding**: no contra-indication

Remarks

- Ketamine has no muscle relaxant properties.
- In some countries, ketamine is on the list of narcotics: follow national regulations.
- Also comes in 10 ml ampoule containing 500 mg (50 mg/ml).

Storage

– Below 25 °C

LABETALOL injectable

Last updated: October 2024

Prescription under medical supervision

This drug should only be used by well trained personnel in well-equipped hospitals.

Therapeutic action

- Non cardioselective beta-blocker

Indications

- Hypertension in pregnancy, in case of severe symptoms or when oral treatment is not possible

Forms and strengths, route of administration

- 100 mg ampoule (5 mg/ml, 20 ml) for IV injection

Dosage

Dosage should be adjusted according to blood pressure (BP). The goal is to reduce the blood pressure to 140/90 mmHg. Diastolic BP must not fall below 90 mmHg.

- One dose of 20 mg (4 ml) over at least one minute. If hypertension remains uncontrolled 5 and 10 minutes after injection, administer another dose of 20 mg (4 ml). Administer additional doses of 40 mg (8 ml) then 80 mg (16 ml) at 10 minute intervals as long as hypertension is not controlled (max. 300 mg total dose).

Duration

- According to clinical response.

Change to oral treatment as soon as possible.

Contra-indications, adverse effects, precautions

- Do not administer to patients with asthma, chronic obstructive bronchopneumonia, heart failure, severe hypotension, bradycardia < 50/minute, atrio-ventricular heart blocks, Raynaud's syndrome, hepatic impairment.
- May cause:

    - bradycardia, orthostatic hypotension, heart failure, bronchospasm, hypoglycaemia, gastrointestinal disturbances, dizziness, headache, weakness, urinary retention;
    - abrupt fall in maternal blood pressure with placental hypoperfusion and foetal death when administered too rapidly by IV injection or in case of overdose.
- Administer with caution to patients with diabetes (risk of hypoglycaemia).
- Reduce dosage in patients with renal impairment.
- Do not exceed recommended dosage and administration rate. During administration, monitor maternal BP and heart rate, as well as foetal heart rate.
- In the event of anaphylactic shock, risk of resistance to epinephrine.
- Avoid or monitor combination with: mefloquine, digoxin, amiodarone, diltiazem, verapamil (risk of bradycardia); tricyclic antidepressants, neuroleptics, other anti- hypertensive drugs (risk of hypotension).
- Monitor the newborn: risk of hypoglycaemia, bradycardia, respiratory distress occurring most often during the first 24 hours and until 72 hours after the birth.
- In the event of hypotension, administer Ringer lactate to maintain diastolic BP ≥ 90 mmHg.
- **Breast-feeding**: no contra-indication

Remarks

- Labetalol IV is also used in the treatment of hypertensive crises with serious end-organ damage.

Storage

– Below 25 °C

LEVETIRACETAM = LEV injectable

Last updated: October 2024

Prescription under medical supervision

During and after administration, have ventilation equipment (Ambu and mask) and solutions for fluid replacement ready for use.

Therapeutic action

- Antiseizure (anticonvulsant)

Indications

- Second-line treatment of convulsive status epilepticus

Forms and strengths, route of administration

- 500 mg in 5 ml vial (100 mg/ml) for slow IV injection or IV infusion in 0.9% sodium chloride or 5% glucose
- DO NOT ADMINISTER THE SOLUTION UNDILUTED BY IV INJECTION. DO NOT ADMINISTER BY SC INJECTION.

Dosage and duration

- Loading dose:
  - Child 1 month and over:
    - Use diluted solution: add 3 ml (300 mg) of LEV to 17 ml of 0.9% NaCl to obtain 20 ml of solution containing 15 mg of LEV per ml.
    - Administer 40 mg/kg (max. 3 g) over 10 minutes by IV infusion using a syringe pump or by very slow IV injection.
    - If seizures do not stop after the end of the first dose, readminister half-dose: 20 mg/kg (max. 1.5 g) as above.
    - Do not exceed the total dose of 60 mg/kg or 4.5 g.
  - Adult:
    - 60 mg/kg (max. 4.5 g) single dose over 15 minutes
    - Use diluted solution as above (15 mg/ml) if administered by IV infusion using a syringe pump.
    - Use undiluted solution if administered by IV infusion in a bag of 100 ml of 0.9% NaCl.

  In children and adult, do not exceed an infusion rate of 5 mg/kg/minute.

- If maintenance treatment is indicated after the loading dose: change to oral route as soon as possible.

Contra-indications, adverse effects, precautions

- Administer with caution to patients with renal impairment (reduce dosage) or heart disorders.
- May cause:
  - drowsiness, headache, asthenia, dizziness, behavioural disturbances;
  - haematologic disorders, gastrointestinal disturbances, cough, nasopharyngitis;
  - rarely: QT prolongation, hypersensitivity reactions sometimes severe;
  - respiratory depression and coma in the event of overdose.
- Avoid or monitor the combination with:
  - mefloquine (reduced effect of LEV);
  - drugs that prolong the QT interval (antimalarials, antipsychotics, fluconazole, fluoroquinolones, hydroxyzine, macrolides, ondansetron, etc.);
  - benzodiazepines, opioid analgesics, antipsychotics, first-generation antihistamines (hydroxyzine, promethazine), antidepressants, other antiseizure medications, etc. (increased sedation).
- **Pregnancy and breast-feeding**: the risks linked to status epilepticus appear greater than risks linked to LEV.

Remarks

- Do not mix with other drugs in the same syringe or infusion.

Storage

– Below 25 °C

LEVONORGESTREL subdermal implant

Prescription under medical supervision

Therapeutic action

- Hormonal contraceptive, progestogen

Indications

- Long-acting contraception

Forms and strengths, route of administration

- Set of two flexible rods containing 75 mg of levonorgestrel, with a sterile applicator, to be inserted subdermally into the inner side of the non-dominant arm, 6 to 8 cm above the elbow crease, under local anaesthesia and aseptic conditions

Dosage

- The implant may be inserted at any moment of the cycle if it is reasonably certain the woman is not pregnant, including when switching from another form of contraception.
  Use condoms for 7 days following the insertion of the implant if it is inserted:
  - more than 7 days after the start of menstruation;
  - more than 28 days postpartum if not breastfeeding;
  - more than 7 days after an abortion.

Duration

- As long as this method of contraception is desired and it is well tolerated, for max. 5 years (4 years in obese women) after which it no longer provides contraception and must be changed.

Contra-indications, adverse effects, precautions

- Do not administer to patients with breast cancer, severe or recent liver disease, unexplained vaginal bleeding, active thromboembolic disorders.
- May cause: menstrual irregularities, amenorrhoea, menometrorrhagia, breast tenderness, headache, weight gain, itching, acne, mood changes, abdominal pain, gastrointestinal disturbances, allergic reactions.
- Enzyme-inducing drugs (rifampicin, rifabutin, efavirenz, nevirapine, lopinavir, ritonavir, phenobarbital, phenytoin, carbamazepine, griseofulvin, etc.) reduce the effectiveness of the contraceptive.

- **Pregnancy**: CONTRA-INDICATED
- **Breast-feeding**: no contra-indication

Remarks

- Fertility returns rapidly after removal of the implant.
- The duration of action of the levonorgestrel implant (5 years) is longer than that of the etonogestrel implant (3 years). However, the etonogestrel implant (one rod) is easier to insert and remove than the levonorgestrel implant (2 rods).
- For the conditions for insertion or removal the implant, follow manufacturer's instructions.

Storage

– Below 25 °C

LIDOCAINE = LIGNOCAINE injectable

Prescription under medical supervision

Therapeutic action

- Local anaesthetic

Indications

- Local anaesthesia:
  - minor operations: 1% lidocaine
  - dental surgery: 2% lidocaine (plain or with epinephrine)

Forms and strengths, route of administration

- 1% solution in 20 and 50 ml vials (10 mg/ml), for SC infiltration
- 2% solution in 20 and 50 ml vials (20 mg/ml), for SC infiltration

Dosage

- The volume to be injected depends on the surface area to be anesthetised.
- Do not exceed:
  - Child: 5 mg/kg/injection
  - Adult: 200 mg = 20 ml of lidocaine 1% or 10 ml of lidocaine 2%

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
1% solution, 10 mg/ml		2 to 3 ml	4 to 8 ml	9 to 15 ml	15 to 20 ml	
2% solution, 20 mg/ml		1 to 1½ ml	2 to 4 ml	4 to 7 ml	7 to 10 ml	

Duration

- One injection, repeated if necessary.

Contra-indications, adverse effects, precautions

- Do not administer if known allergy to lidocaine, impaired cardiac conduction.

- When anaesthetising the extremities, inject distally (at the base), in circle, without tourniquet and without epinephrine (adrenaline).
- Do not use lidocaine for the incision of abscesses: risk of spreading the infection.
- **Lidocaine with epinephrine (adrenaline)**:
  - in dental surgery, epinephrine added to lidocaine prolongs anaesthesia;
  - never use solutions with epinephrine for the anaesthesia of extremities (fingers, penile nerve block): risk of ischemia and necrosis.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Anaesthesia is produced within 2 to 5 minutes and lasts 1 to 1.5 hours.
- Do not confuse with lidocaine 5% hyperbaric which is reserved for spinal anaesthesia.
- The more concentrated the lidocaine, the more localised the anaesthetic effect.
- To simplify protocols, use lidocaine 2% with epinephrine for dental anaesthesia and lidocaine 1% without epinephrine for cutaneous anaesthesia.

Storage

 – Below 25 °C

MAGNESIUM SULFATE = MgSO4 injectable

Last updated: October 2024

Prescription under medical supervision

This drug should only be used by well trained personnel in well-equipped hospitals. During and after administration, have ventilation equipment (Ambu and mask), calcium gluconate and solutions for fluid replacement ready for use.

Therapeutic action

- Calcium antagonist, anticonvulsant

Indications

- Severe pre-eclampsia: prevention of eclamptic seizures
- Eclampsia: treatment of eclamptic seizures and prevention of recurrence

Forms and strengths, route of administration

- 5 g ampoule (0,5 g/ml, 10 ml) for IM injection or IV infusion

Dosage and duration

IV/IM protocol
4 g by IV infusion in 100 ml of 0.9% sodium chloride over 15 to 20 minutes then, 10 g by IM route (5 g in each buttock) then, 5 g by IM route every 4 hours (changing buttock for each injection)

IV protocol
4 g by IV infusion in 100 ml of 0.9% sodium chloride over 15 to 20 minutes then 1 g per hour by continuous IV infusion

Regardless of the protocol chosen:
- Continue the treatment for 24 hours after the delivery or the last seizure.
- If seizures persist or recur, administer a further 2 g (patients less than 70 kg) to 4 g by IV infusion, without exceeding 8 g total dose during the first hour.

Contra-indications, adverse effects, precautions

- Reduce the dose in patients with renal impairment; do not administer to patients with severe renal impairment.

- May cause:
  - pain at the injection site, warm flushes; decreased fetal heart rate;
  - in case of overdosage (hypermagnesaemia):
    - For the mother: diminished then absent patellar reflex (early sign), hypotension, drowsiness, confusion, difficulty in speaking, bradycardia, respiratory depression (respiratory rate < 12/minute).
    - For the neonate (if the mother is treated for pre-eclampsia or eclampsia): hypotonia, neurobehavioural impairment, apnoea, respiratory depression.
- Do not combine with nifedipine.
- Check urine output every hour. In the event of decreased urine output (< 30 ml/hour or 100 ml/4 hour), stop magnesium sulfate and perform delivery as soon as possible. If delivery cannot be performed immediately in a woman with eclampsia, stop magnesium sulfate for one hour then resume magnesium sulfate perfusion until delivery.
- Check patellar reflex, blood pressure, heart and respiratory rate every 15 minutes during the first hour of treatment. If no signs of overdosage are observed, continue this surveillance every hour. If signs of overdosage are observed: stop magnesium sulfate and give 1 g calcium gluconate by slow IV route as an antidote (in this event, seizures may recur).
- **Breast-feeding**: no contra-indication

Remarks

- Magnesium sulfate is also used as an adjunctive treatment in severe asthma attack in children and adults: 40 mg/kg (max. 2 g) by IV infusion in 5 ml/kg of 0.9% of sodium chloride in children less than 20 kg and in 100 ml of 0.9% sodium chloride in children 20 kg and over and in adults, to be administered over 20 minutes, using an infusion or a syringe pump.
- Also comes in ampoules containing 1 g (0.5 mg/ml, 2 ml) and many other dosages. Check the strength of the ampoule carefully before use.
- 1 g magnesium sulfate contains approximately 4 mmol (8 mEq) of magnesium.
- Do not mix with other drugs in the same syringe or infusion fluid.

Storage

☼ – Below 25 °C

MEDROXYPROGESTERONE acetate injectable

Last updated: October 2024

Prescription under medical supervision

Therapeutic action

- Hormonal contraceptive, progestogen

Indications

- Long-acting contraception
- Long-term treatment of functional uterine bleeding

Forms and strengths, route of administration

- 150 mg in 1 ml vial (150 mg/ml) for IM injection

Dosage

- Adolescent and adult: 150 mg every 3 months (13 weeks). Subsequent injections may be administered up to 2 weeks before or 4 weeks after the scheduled date.
- The injection may be administered at any moment of the cycle if it is reasonably certain the woman is not pregnant, including when switching from another form of contraception.
  For contraception, use condoms for 7 days after the injection if it is administered:
  - more than 7 days after the start of menstruation;
  - more than 28 days postpartum if not breastfeeding;
  - more than 7 days after an abortion.

Duration

- Contraception: as long as this method of contraception is desired and well tolerated.
- Long-term treatment of functional uterine bleeding: according to clinical response.

Contra-indications, adverse effects, precautions

- Do not administer to patients with breast cancer, severe hypertension (≥ 160/100), active thromboembolic disorders, uncontrolled or complicated diabetes, severe or recent

hepatic disease.

- May cause: menstrual irregularities, amenorrhoea, menometrorrhagia, breast tenderness, headache, weight gain, acne, mood change, abdominal pain, gastrointestinal disturbances.
- The contraceptive efficacy of medroxyprogesterone does not seem to be reduced in women taking enzyme-inducing drugs.
- **Pregnancy**: CONTRA-INDICATED
- **Breast-feeding**: no contra-indication

Remarks

- Shake the vial vigorously before use to homogenise the suspension.
- Return to fertility is delayed for 3 to 12 months after stopping injections.
- Also comes in prefilled single-use injection system (104 mg/0.65 ml) for SC self-administration in the abdomen or anterior thigh.

Storage

– Below 25 °C

MELARSOPROL injectable

Last updated: December 2023

Prescription under medical supervision

Due to high toxicity and numerous adverse effects of melarsoprol, patients must be treated in hospital, under close medical supervision.

Therapeutic action

- Trypanocide (arsenical derivative)

Indications

- Meningoencephalitic stage of African trypanosomiasis due to *T. b. gambiense* and *T. b. rhodesiense*

Forms and strengths, route of administration

- 180 mg in 5 ml ampoule (36 mg/ml), 3.6 % solution in propylene glycol, for slow IV injection
- DO NOT ADMINISTER BY IM or SC INJECTION.

Dosage and duration

- Child and adult: 2.2 mg/kg (max. 5 ml) once daily for 10 days

Contra-indications, adverse effects, precautions

- May cause:
  - reactive encephalopathy (5-10% of cases): repeated or prolonged seizures, coma, mental disorders, usually between the 5th and the 8th day of treatment (but sometimes later, even after the patient has been discharged);
  - arsenical reactions: headache, fever, tachycardia, hypertension, jaw pain, neurological disorders (hyperreflexia);
  - gastrointestinal disturbances, skin reactions (exfoliative dermatitis, urticaria), peripheral neuropathy, haematological disorders (haemolytic anaemia in patients with G6PD deficiency, agranulocytosis), hepatic or renal impairment, myocardial damage;
  - swelling, pain, phlebitis, venous sclerosis, necrosis at injection site in the event of extravasation during IV administration.
- As propylene glycol can dissolve plastic, syringes should be prepared just before injections.

- **Pregnancy**: CONTRA-INDICATED

Remarks

- Oral prednisolone is frequently associated during the course of treatment.
- For the meningoencephalitic stage of gambiense trypanosomiasis, the treatment of choice is nifurtimox + eflornithine (NECT).

Storage

- Below 25 °C

METHYLERGOMETRINE injectable

Prescription under medical supervision

Therapeutic action

- Uterotonic, oxytocic

Indications

- Postpartum haemorrhage due to uterine atony (preferably use oxytocin for this indication)

Forms and strengths, route of administration

- 0,2 mg in 1 ml ampoule (0,2 mg/ml), for IM injection

Dosage

- Adult: 0,2 mg every 2 to 4 hours if necessary (max. 1 g)

Contra-indications, adverse effects, precautions

- Do not administer during delivery or labour.
- Do not administer in case of allergy to ergot alkaloids (cabergoline, bromocriptine, ergotamine, etc.), severe hypertension, pre-eclampsia, eclampsia, and septicaemia.
- Do not combine with another ergot alkaloid.
- Administer with caution to patients with hepatic or renal impairment, ischemic disorders.
- Do not administer simultaneously with prostaglandins or oxytocin (addition of uterotonic activity).
- May cause: gastrointestinal disturbances, headache, paraesthesia, confusion, dizziness, tinnitus, hypertension, peripheral vasoconstriction, chest pain.
- Monitor combination with: metronidazole, azole antifungals, macrolides, protease inhibitors, efavirenz, fluoxetine (risk of ergotism).
- **Pregnancy**: CONTRA-INDICATED
- **Breast-feeding**: avoid

Remarks

- Do not confuse with dihydroergotamine, another ergot alkaloid used for totally different indications.
- Methylergometrine is also called methylergonovine or methylergobasine.
- Ergometrine is another uterotonic used for the same indications.

Storage

– To be kept refrigerated (2 °C to 8 °C). Do not freeze.

- Expiry date indicated on the label is only valid if stored under refrigeration and protected from light. Exposure to heat and especially light causes the deterioration of the active ingredient and thus loss of efficacy.
- The solution must be colourless. Discolouration indicated a deterioration of the active ingredient. Never use a coloured solution.
- If refrigeration is not available, vials can be kept for one month on condition that they are protected from light and the temperature remains under 25 °C.

METOCLOPRAMIDE injectable

Last updated: February 2024

Prescription under medical supervision

Do not exceed the recommended dose and duration of treatment (risk of serious neurological adverse effects).

Therapeutic action

- Antiemetic (dopamine antagonist)

Indications

- Prevention or symptomatic treatment of nausea and vomiting in adults

Forms and strengths, route of administration

- 10 mg in 2 ml ampoule (5 mg/ml) for IM or slow IV injection (3 to 5 minutes)

Dosage

- Adult: 10 mg every 8 hours if necessary

Duration

- Change to oral treatment as soon as possible.

Contra-indications, adverse effects, precautions

- Do not administer to children < 18 years or to patients with gastrointestinal haemorrhage, obstruction or perforation.
- Reduce the dose by half in patients with severe renal impairment.
- Administer with caution and monitor use in patients > 60 years and patients with epilepsy or Parkinson's disease.
- May cause: drowsiness, dizziness, confusion, extrapyramidal symptoms, seizures (especially in patients with epilepsy), allergic reactions, cardiac disorders (hypotension, bradycardia, cardiac arrest); neuroleptic malignant syndrome (unexplained hyperthermia with neuromuscular disorders), rare but requiring immediate treatment discontinuation.
- Do not combine with levodopa (antagonism).

- Avoid combination with CNS depressants (opioid analgesics, antipsychotics, sedatives, antidepressants, antihistamines, etc.) and antihypertensive drugs (increased risk of hypotension).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- For postoperative nausea and vomiting in adults, efficacy of metoclopramide is limited: ondansetron is preferred.

Storage

– Below 25 °C

METRONIDAZOLE injectable

Prescription under medical supervision

Therapeutic action

- Antiprotozoal, antibacterial

Indications

- Severe infections due to anaerobic bacteria (*Bacteroides* sp, *Clostridium* sp, etc.)

Forms and strengths, route of administration

- 500 mg in 100 ml vial or bag (5 mg/ml), for infusion, to be administered over 30 minutes

Dosage

- Child 1 month and over: 10 mg/kg every 8 hours (max. 1500 mg daily)
- Adult: 500 mg every 8 hours

Duration

- According to indication.

Change to oral treatment as soon as possible.

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to metronidazole or another nitroimidazole (tinidazole, secnidazole, etc.).
- Do not drink alcohol during treatment (antabuse reaction).
- May cause: gastrointestinal disturbances, brownish urine, allergic reactions, headache, dizziness.
- Monitor combination with anticoagulants (increased risk of haemorrhage), lithium, phenytoin and ergometrine (increased plasma concentrations of these drugs).
- Administer with caution, reduce total daily dose to ⅓ and give once daily to patients with severe hepatic impairment.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: avoid (significantly excreted in milk)

Remarks

- Metronidazole is as effective by oral route as by parenteral route.

- Do not add any drug in the infusion vial.

Storage

– Below 25 °C

MIDAZOLAM injectable

Last updated: October 2024

Prescription under medical supervision

- During and after administration, have ventilation equipment (Ambu and mask) and solutions for fluid replacement ready for use.
- For seizures, preferably use the buccal or intranasal route, especially in children.

Therapeutic action

- Short-acting antiseizure (anticonvulsant), muscle relaxant, sedative-hypnotic, anxiolytic

Indications

- First-line treatment of convulsive status epilepticus

Forms and strengths, route of administration

- 5 mg in 5 ml ampoule (1 mg/ml) and 50 mg in 10 ml ampoule (5 mg/ml), for administration by buccal or intranasal route or IM injection
- For buccal or intranasal administration, preferably use the 50 mg in 10 ml ampoule (5 mg/ml).
- For IM injection, use only the 5 mg in 5 ml ampoule (1 mg/ml).

Dosage and duration

- Child 1 month to 11 years:
  - Buccal or intranasal route: one dose of 0.2 to 0.3 mg/kg (0.04 to 0.06 ml/kg of the 5 mg/ml solution or 0.2 to 0.3 ml/kg of the 1 mg/ml solution); max. 10 mg
  - IM injection: one dose of 0.15 to 0.2 mg/kg (0.15 to 0.2 ml/kg of the 1 mg/ml solution); max. 10 mg

Age	Weight	5 mg/ml solution	1 mg/ml solution	
		Buccal/ intranasal route	Buccal/ intranasal route	IM injection
1 to < 4 months	3 to < 6 kg	0.25 ml	1 ml	0.6 ml
4 to < 12 months	6 to < 10 kg	0.4 ml	1.8 ml (max. 2 ml)	1.2 ml
1 to < 3 years	10 to < 15 kg	0.6 ml	–	2 ml
3 to < 5 years	15 to < 20 kg	1 ml	–	3 ml
5 to < 9 years	20 to < 30 kg	1.2 ml	–	4 ml
9 to < 12 years	30 to < 40 kg	2 ml	–	6 ml

- Child 12 years and over and adult:
  - Buccal or intranasal route: one dose of 10 mg (2 ml of the 5 mg/ml solution)
  - IM injection*:* one dose of 10 mg (10 ml of the 1 mg/ml solution)

In children and adults, if seizures do not stop 5 minutes after the first dose, readminister the same dose, regardless of the route of administration. Do not administer more than 2 doses in total.

Buccal/intranasal administration technique

Buccal route:
Lay the patient on their side. Withdraw the required dose using a 1 ml or 2 ml syringe. Remove the needle. Insert the tip of the syringe into the space between the gum and cheek. Administer the dose by slowly pushing the syringe plunger.

Intranasal route:
Lay the patient on their back or side. Withdraw the required dose using a 1 ml or 2 ml syringe (add an additional 0.1 ml to the calculated dose to account for the remaining liquid in the atomising device). Remove the needle. Attach the intranasal atomisation device to the syringe. Briskly push the syringe plunger to spray the dose into the nostril. The dose can be split in both nostrils to reduce irritation.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe respiratory insufficiency or severe hepatic impairment.
- Administer with caution to older patients and patients with renal or hepatic impairment.
- May cause:
  - pain at injection site; nasal irritation (if used intranasally);

    - hypotension, muscle weakness, ataxia, hypotonia, drowsiness, lethargy, confusional state;
    - respiratory depression and coma in the event of overdose.
- Avoid or monitor in combination with:
    - opioid analgesics, antipsychotics, first-generation antihistamines (hydroxyzine, promethazine), antidepressants, other antiseizure medications, etc. (increased sedation);
    - enzyme inducers such as rifampicin, rifabutin, nevirapine, phenobarbital, phenytoin, carbamazepine, etc. (reduced effect of midazolam);
    - omeprazole, macrolides, ritonavir, isoniazid, fluconazole, itraconazole, etc. (increased midazolam toxicity);
    - phenytoin (increased phenytoin toxicity).
- **Pregnancy and breast-feeding**: avoid, except if vital (passage through the placenta and breast milk)

Remarks

- Midazolam is subject to international controls: follow national regulations.
- Midazolam is also used as premedication prior to surgical procedures, for sedation in medical procedures and intensive care, for induction of general anaesthesia, etc.
- Do not mix with other drugs in the same syringe.

Storage

– Below 25 °C

MORPHINE injectable

Last updated: October 2024

Prescription under medical supervision

During and after administration, have ventilation equipment (Ambu and mask), naloxone and solutions for fluid replacement ready for use.

Therapeutic action

- Centrally acting opioid analgesic

Indications

- Severe pain, especially in surgery, trauma and neoplastic disease

Forms and strengths, route of administration

- 10 mg ampoule (10 mg/ml, 1 ml) for SC, IM or IV injection

Dosage

SC and IM route

- Child over 6 months and adult: 0.1 to 0.2 mg/kg every 4 hours if necessary

IV route

- Child over 6 months and adult: 0.1 mg/kg administered in fractionated doses (0.05 mg/kg every 10 minutes) every 4 hours if necessary

Duration

Change to oral treatment as soon as possible.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe respiratory impairment or decompensated hepatic impairment.
- May cause:
  - dose-related sedation and respiratory depression, nausea, vomiting, constipation, urinary retention, confusion, raised intracranial pressure, pruritus;

    - in the event of overdose: excessive sedation, respiratory depression, coma.
- Monitor patient closely for several hours after administration.
- Administer with caution to patients with respiratory impairment, head injury, raised intracranial pressure, uncontrolled epilepsy or urethroprostatic disorders.
- In older patients and in patients with severe renal or hepatic impairment: reduce doses by half and administer less frequently, according to clinical response (risk of accumulation).
- Do not combine with opioid analgesics with mixed agonist-antagonist activity such as buprenorphine, nalbuphine, pentazocine (competitive action).
- Increased risk of sedation and respiratory depression, when combined with alcohol and drugs acting on the central nervous system: benzodiazepines (diazepam, etc.), antipsychotics (chlorpromazine, haloperidol, etc.), antihistamines (chlorphenamine, promethazine), phenobarbital, etc.
- **Pregnancy and breast-feeding**: no contra-indication. The child may develop withdrawal symptoms, respiratory depression and drowsiness when the mother receives morphine at the end of the 3rd trimester and during breast-feeding. In these situations, administer with caution, for a short period, at the lowest effective dose, and monitor the child.

Remarks

- Administer an appropriate laxative (e.g. lactulose) if analgesic treatment continues more than 48 hours.
- Morphine is on the list of narcotics: follow national regulations

Storage

NALOXONE injectable

Last updated: November 2024

Prescription under medical supervision

Naloxone should be used in addition to assisted ventilation and by well trained personnel. Closely monitor vital signs, in particular respiratory rate, during administration and for at least 12 hours after respiratory function is restored.

Therapeutic action

- Specific opioid antagonist

Indications

- Respiratory depression induced by opioids (analgesia, anaesthesia, intoxication)

Forms and strengths, route of administration

- 0.4 mg in 1 ml ampoule (0.4 mg/ml) for IV, IM injection or infusion in sodium chloride 0.9% or glucose 5%

Dosage

IV route is preferred, use IM route if IV route is not feasible:

- Child: 5 to 10 micrograms/kg by IV injection, repeated if necessary after 2 to 3 minutes, until adequate spontaneous ventilation is restored, followed by a continuous infusion of 1 to 5 micrograms/kg/hour, or by 5 to 10 micrograms/kg by IM injection every 90 minutes
- Adult: 1 to 3 micrograms/kg by IV injection, repeated if necessary after 2 to 3 minutes, until adequate spontaneous ventilation is restored, followed by a continuous infusion of 1 to 5 micrograms/kg/hour, or by 5 to 10 micrograms/kg by IM injection every 90 minutes

Duration

- The duration of action of naloxone (20 to 30 minutes by IV route) is shorter than that of opioids: administration must be maintained several hours even if breathing improves.

Contra-indications, adverse effects, precautions

- May cause:

    - tachycardia, fibrillation, hypertension, pulmonary oedema when given postoperatively, due to a sudden reversal of analgesia;
    - nausea, vomiting;
    - acute withdrawal syndrome in opioid-dependent patients.
- Administer with caution and reduce dosage in case of heart failure or coronary artery disease.
- Naloxone is used in addition to assisted ventilation and must be administered under close medical supervision.
- **Pregnancy**: risks linked to respiratory depression appear greater than risks linked to naloxone.
- **Breast-feeding**: no contra-indication

Remarks

- Naloxone is a specific opioid antidote. It cannot be used to antagonise the effects of other drugs producing CNS or respiratory depression.
- Efficacy in antagonising opioid effects depends not only on the dose of naloxone but also on the dose and potency of the specific opioid involved.

Storage

– Below 25 °C

NOREPINEPHRINE tartrate = NEP = NORADRENALINE tartrate injectable

Last updated: September 2023

Prescription under medical supervision

This drug should only be used by well trained personnel in well-equipped hospitals.

Therapeutic action

- Sympathomimetic

Indications

- Acute hypotension despite fluid therapy in shock (in children, preferably use epinephrine for this indication)

Forms and strengths, route of administration

- 8 mg of norepinephrine tartrate in 4 ml ampoule (2 mg/ml), equivalent to 4 mg of norepinephrine base in 4 ml (1 mg/ml), for IV infusion

Dosage

The doses are expressed as norepinephrine tartrate and intended for peripheral IV administration only.

- Use diluted solution in 0.9% sodium chloride (NaCl 0.9%) or 5% glucose (G5%) or Ringer lactate (RL):
  - Child under 40 kg: add 1 ml (2 mg of NEP tartrate) to 39 ml of NaCl 0.9%, G5% or RL to obtain a 0.05 mg/ml (50 micrograms/ml) solution
  - Child 40 kg and over and adult: add 2 ml (4 mg of NEP tartrate) to 38 ml of NaCl 0.9%, G5% or RL to obtain a 0.1 mg/ml (100 micrograms/ml) solution
- Administer by continuous IV infusion using an infusion or syringe pump:
  - Child and adult: 0.1 microgram/kg/min, increase if necessary by 0.05 micrograms/kg/min every 10 minutes for the first hour, then every hour (max. 1 microgram/kg/min)
  - Once desired response is achieved, discontinue gradually, in decrements of 0.05 micrograms/kg/min every hour. Do not discontinue abruptly.
- The infusion rate is calculated as follows: [desired dose (microgram/kg/min) x weight (kg) x 60 min] ÷ concentration (microgram/ml).

Example, for a child 20 kg, dose 0.1 microgram/kg/min, solution concentration 50 micrograms/ml:

NEP dose (microgram/kg/min)	**0.1**	**0.15**	**0.2**	**0.25**	**0.3**	**0.35**	**0.4**	**0.45**	**0.5**
Infusion rate (ml/hour)	2.4	3.6	4.8	6	7.2	8.4	9.6	10.8	12

Contra-indications, adverse effects, precautions

- Administer with caution to patients with hypertension, hypotension due to volume depletion (except as an emergency measure), thrombosis, hyperthyroidism and to older patients.
- May cause: arrhythmia, hypertension, agitation, headache; tissue necrosis following extravasation (use a large vein for IV administration).
- **Pregnancy and breast-feeding**: no contra-indication

Remarks

- Norepinephrine is colourless: discard any ampoules with a pink or brownish colour.

Storage

– Below 25 °C

OMEPRAZOLE injectable

Prescription under medical supervision

Therapeutic action

- Antiulcer drug (proton pump inhibitor)

Indications

- Peptic ulcer perforation

Forms and strengths, route of administration

- Powder for injection, 40 mg vial, to be dissolved in 100 ml of 0.9% sodium chloride or 5% glucose, for IV infusion

Dosage

- Adult: 40 mg once daily to be administered over 20 to 30 minutes

Duration

- Change to oral treatment as soon as the patient can eat.

Contra-indications, adverse effects, precautions

- May cause: headache, diarrhoea, skin rash, nausea, abdominal pain, dizziness.
- Avoid combination with itraconazole and ketoconazole (decreases efficacy of these drugs).
- Monitor combination with warfarin, digoxin, phenytoin.
- Do not exceed 20 mg daily in patients with severe hepatic impairment.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: avoid, administer only if clearly need

Remarks

- Only use 0.9% sodium chloride or 5% glucose for dilution.
- Injectable omeprazole is not included in the WHO list of essential medicines.

Storage

– Below 25 °C

ONDANSETRON injectable

Prescription under medical supervision

Therapeutic action

- Antiemetic (serotonin 5-HT3 receptor antagonist)

Indications

- Prevention of post-operative nausea and vomiting in children
- Treatment of post-operative nausea and vomiting

Forms and strengths, route of administration

- 4 mg ampoule (2 mg/ml, 2 ml) for slow IV injection (3 to 5 minutes)

Dosage and duration

Prevention of post-operative nausea and vomiting

- Child over 1 month: 0.1 mg/kg at the end of surgery (max. 4 mg per injection)

Treatment of nausea and vomiting

- Child over 1 month:
  - No prophylactic dose of ondansetron received: 0.1 mg/kg every 8 hours if necessary
  - Prophylactic dose of ondansetron received and late postoperative vomiting (≥ 6 hours after surgery): 0.1 mg/kg every 6 hours if necessary

  Do not exceed 4 mg per injection and 3 injections per 24 hours.
- Adult: 4 mg every 8 hours if necessary (max. 3 injections per 24 hours)

Contra-indications, adverse effects, precautions

- Do not administer to children less than 1 month of age.
- Administer with caution and monitor use in patients with congenital long QT syndrome, cardiac insufficiency and bradycardia.
- Reduce the dose in patients with hepatic failure (max. 8 mg daily).
- May cause: headache, sensation of flushing or warmth, hiccups, constipation, heart rhythm disorders, QT interval prolongation, extrapyramidal reactions, seizures, cutaneous allergic reactions (Lyell's and Stevens-johnson syndromes).
- Avoid or monitor combination with:

    - drugs that prolong the QT interval: amiodarone, bedaquilline, chloroquine, co-artemether, erythromycin, fluconazole, haloperidol, moxifloxacin, mefloquine, pentamidine, quinine, etc.;
    - serotonergics: fluoxetine, paroxetine, tricyclic antidepressants, etc.;
    - enzyme inducers: rifampicin, rifabutin, nevirapine, ritonavir, phenobarbital, phenytoin, carbamazepine, griseofulvin, etc. (efficacy of ondansetron reduced);
    - tramadol (antalgic effect reduced).
- **Pregnancy**: avoid during the first trimester; not recommended for nausea and vomiting of pregnancy
- **Breast-feeding**: not recommended

Storage

– Below 25 °C

OXYTOCIN injectable

Prescription under medical supervision

Therapeutic action

- Synthetic oxytocic

Indications

- Induction and augmentation of labour in the event of dynamic dystocia
- Postpartum haemorrhage due to uterine atony
- Prevention of postpartum haemorrhage, after vaginal delivery or caesarean section

Forms and strengths, route of administration

- 10 IU in 1 ml ampoule (10 IU/ml) for IM or slow IV injection or infusion

Dosage

Induction and augmentation of labour
Dilute 5 IU in 500 ml or 10 IU in 1 litre of Ringer lactate or 0.9% sodium chloride to obtain a solution of 10 milliunits per ml. Start an infusion of 5 drops/minute, then increase by 5 drops/minute every 30 minutes (max. 60 drops/minute) until efficient contractions are obtained (3 to 4 contractions lasting 40 seconds over 10 minutes).

Treatment of postpartum haemorrhage due to uterine atony
20 IU in 1 litre of Ringer lactate or 0.9% sodium chloride, administered over 2 hours (160 drops/minute). Simultaneously, 5 to 10 IU by slow IV injection, to be repeated if necessary until the uterus is retracted (max. total dose 60 IU).

Prevention of postpartum haemorrhage (vaginal delivery)
5 to 10 IU by slow IV or IM injection before or after the delivery of placenta

Prevention of postpartum haemorrhage (caesarean section)
10 IU by slow IV injection after cord clamping, then 20 UI in 1 litre of Ringer lactate or 0.9% sodium chloride, administered over 2 hours (160 drops/minute).

Duration

- According to clinical response

Contra-indications, adverse effects, precautions

- Do not administer by rapid IV injection (risk of hypotension with flushing and reflex tachycardia, uterine hypertonia and/or rupture, foetal distress).
- During labour:
  - Do not administer to patients with history of two caesarean sections or more.
  - Administer with caution and do not exceed 30 drops/minute in patients with history of single caesarean section and in grand multipara (risk of uterine rupture).
  - Respect the dosage and rate of administration, monitor uterine contractility and foetal heart rate.
- May cause: nausea, vomiting, heart rhythm disorders.
- Do not administer simultaneously with prostaglandins. Only administer oxytocin 6 hours after the last administration of prostaglandins.

Storage

– To be kept refrigerated (2 °C to 8 °C). Do not freeze.

- Expiry date indicated on the label is only valid if stored under refrigeration and protected from light. Exposure to light and heat causes the deterioration of the active ingredient and thus loss of efficacy.
- If refrigeration is not available, ampoules kept below 25 °C and protected from light may be s tored for a maximum of one month.

PARACETAMOL = ACETAMINOPHEN injectable

Last updated: February 2024

Prescription under medical supervision

Do not exceed indicated doses, especially in children and older patients. Paracetamol intoxications are severe (hepatic cytolysis).

Therapeutic action

- Analgesic, antipyretic

Indications

- Very high fever, only when oral administration is not possible
- Mild pain, only when oral administration is not possible

Forms and strengths, route of administration

- 500 mg (10 mg/ml, 50 ml) and 1 g (10 mg/ml, 100 ml) vials, for infusion

Dosage

- Neonate: 7.5 mg/kg (0.75 ml/kg) every 6 hours, to be administered over 15 minutes (max. 30 mg/kg daily)
- Child ≥ 1 month and < 10 kg: 10 mg/kg (1 ml/kg) every 6 hours, to be administered over 15 minutes (max. 30 mg/kg daily)
- Patient ≥ 10 kg and < 50 kg: 15 mg/kg (1.5 ml/kg) every 6 hours, to be administered over 15 minutes (max. 60 mg/kg daily)
- Patient ≥ 50 kg: 1 g (100 ml) every 6 hours, to be administered over 15 minutes (max. 4 g daily)

Duration

- According to clinical response.

Change to oral route as soon as possible.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe hepatic impairment.
- Administer with caution to patients with moderate hepatic impairment, severe renal impairment, chronic alcoholism, malnutrition, dehydration.
- May cause (very rarely): malaise, hypotension and rash.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- As the efficacy of IV paracetamol is not superior to the efficacy of oral paracetamol, the IV route is restricted to situations where oral administration is not possible.
- For mild pain, IV paracetamol is used alone or in combination with an NSAID administered parenterally.
- For moderate pain, IV paracetamol is used in combination with an NSAID and tramadol administered parenterally.
- For severe pain, IV paracetamol is used in combination with an NSAID and morphine administered parenterally.
- Paracetamol has no anti-inflammatory properties.
- Do not mix with other drugs in the same infusion bottle.

Storage

– Below 25 °C

PENICILLIN G injectable

See BENZYLPENICILLIN injectable

PENTAMIDINE injectable

Last updated: November 2024

Prescription under medical supervision

Due to the numerous and potentially severe adverse effects of pentamidine, patients should be kept under close surveillance.

Therapeutic action

- Antiprotozoal active against *Pneumocystis jiroveci* (*carinii*)

Indications

- Second-line treatment of pneumocystosis, in the event of contra-indication, intolerance or unresponsiveness to co-trimoxazole

Forms and strengths, route of administration

- Powder for injection, 200 mg and 300 mg vials, to be dissolved in 10 ml water for injection, for IM injection or infusion in 250 ml of 5% glucose

Dosage and duration

- Child and adult: 4 mg/kg once daily by IM injection or infusion (60 minutes minimum) for 14 to 21 days

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe renal impairment.
- Reduce dosage in patients with renal impairment.
- May cause:
  - aseptic abscess by IM route; venous thrombosis by IV route;
  - malaise, hypotension, particularly if administered too rapidly by IV route;
  - gastrointestinal disturbances; renal, hepatic and haematologic disorders; pancreatitis, arrhythmia, *torsades de pointes*, hypoglycaemia followed by hyperglycaemia.
- Do not combine with drugs inducing *torsades de pointes*: anti-arrhythmics, neuroleptics, tricyclic antidepressants, IV erythromycin, halofantrine, etc.

- Avoid combination with: mefloquine, cardiac glycosides, azole antifungals, drugs inducing hypokalaemia (diuretics, glucocorticoids, injectable amphotericin B, etc.).
- Administer on a empty stomach, keep the patient supine during injection and 30 minutes after.
- Monitor blood pressure, blood glucose level, serum creatinine level, blood counts.
- **Pregnancy and breast-feeding**: CONTRA-INDICATED, except if vital and there is no therapeutic alternative.

Remarks

- For the prophylaxis of pneumocystosis, pentamidine may be used by inhalation of nebulised solution using suitable equipment.
- Pentamidine is also used in the treatment of African trypanosomiasis and leishmaniasis.

Storage

☼ – Below 25 °C
Once reconstituted, solution keeps for 24 hours maximum, between 2 °C to 8 °C.

PHENOBARBITAL = PB injectable

Last updated : October 2024

Prescription under medical supervision

During and after administration, have ventilation equipment (Ambu and mask) and solutions for fluid replacement ready for use.

Therapeutic action

- Antiseizure (anticonvulsant), sedative

Indications

- Second-line treatment of convulsive status epilepticus

Forms and strengths, route of administration

- 200 mg in 1 ml ampoule (200 mg/ml) for IV infusion in 0.9% sodium chloride
- DO NOT ADMINISTER BY DIRECT IV INJECTION. DO NOT ADMINISTER THE SOLUTION UNDILUTED.
- DO NOT ADMINISTER BY SC INJECTION (risk of necrosis).

Dosage and duration

- Loading dose:
  - Child 1 month and over:
    - Use diluted solution: add 1 ml (200 mg) of PB to 9 ml of 0.9% NaCl to obtain 10 ml of solution containing 20 mg of PB per ml.
    - Administer 20 mg/kg (max. 1 g) over 20 minutes by IV infusion using a syringe pump (or only if not available, using a pediatric infusion set).
    - If seizures do not stop after the end of the first dose, readminister half dose: 10 mg/kg as above.
  - Adult:
    - 15 mg/kg (max. 1 g) single dose over 15 minutes
    - Use diluted solution as above (20 mg/ml) if administered by IV infusion using a syringe pump.
    - Use undiluted solution if administered by IV infusion in a bag of 100 ml of 0.9% NaCl.

  Do not exceed an infusion rate of 1 mg/kg/minute in children and 100 mg/minute in adults.

- If maintenance treatment is indicated after the loading dose: change to oral route as soon as possible.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe impairment of respiratory, renal or hepatic function (risk of accumulation).
- Administer with caution in children, older patients and patients with mild to moderate impairment of respiratory, renal or hepatic function.
- May cause :
  - drowsiness, dizziness, headache, behavioural disturbances;
  - dose-dependant respiratory depression;
  - hypotension, apnoea, laryngospasm, shock, especially if administered rapidly by IV route and if large doses are administered;
  - haematologic disorders, gastrointestinal disturbances;
  - hypersensitivity reactions sometimes severe;
  - coma in the event of overdose.
- Monitor closely respiratory rate and blood pressure during and after administration.
- Avoid or monitor the combination with:
  - mefloquine (reduced effect of PB);
  - benzodiazepines, opioid analgesics, antipsychotics, first-generation antihistamines (hydroxyzine, promethazine), antidepressants, other antiseizure medications, etc. (increased sedation).
- Use with extreme caution with benzodiazepines and opioids analgesics (increased risk of respiratory depression).
- PB may reduce the effect of many drugs:
  - diazepam, midazolam, antimicrobials, some antiretrovirals, corticosteroids, tricyclic antidepressants, itraconazole, direct-acting antivirals for chronic hepatitis C, warfarin, etc. Adjust dosage if necessary.
  - implants and oral contraceptives: use condoms until next menstruation.
- **Pregnancy and breast-feeding**: prefer a safer drug (levetiracetam). If PB is the only option, the risks linked to status epilepticus appear greater than risks linked to PB.

Remarks

- PB is subject to international controls: follow national regulations.
- Do not mix with other drugs in the same syringe or infusion.

Storage

☼ – Below 25 °C

PHENYTOIN = PHT injectable

Last updated: October 2024

Prescription under medical supervision

- This drug should only be used by well-trained personnel in well-equipped hospitals.
- During and after administration have ventilation equipment (Ambu and mask) and solutions for fluid replacement ready for use.

Therapeutic action

- Antiseizure (anticonvulsant)

Indications

- Second-line treatment of convulsive status epilepticus

Forms and strengths, route of administration

- 250 mg in 5 ml ampoule or vial (50 mg/ml), for IV route only, to be administered through a large central or peripheral vein.
- Dilute the solution in 0.9% sodium chloride only. DO NOT DILUTE IN GLUCOSE.
- For administration use a infusion set or line with a 0.2 micron filter.
- DO NOT ADMINISTER BY RAPID IV INJECTION.

Dosage and duration

- Loading dose:
  Child and adult: 20 mg/kg (max. 2 g) single dose

Patients	Mode of administration	Duration of infusion	Max. rate
Children ≥ 1 month and ≤ 25 kg	Use diluted solution: add 1 ml (50 mg) of PHT to 9 ml of 0.9% NaCl to obtain 10 ml of solution containing 5 mg of PHT per ml. Administer by IV infusion using a syringe pump [(a)] .	20 min	1 mg/kg/min
Children > 25 kg and adults	Add undiluted solution to a 100 ml bag of 0.9% NaCl. Administer by IV infusion.	≤ 1 g or ≤ 50 kg: 20 min	50 mg/min
		> 1 g and ≤ 1.5 g or > 50 kg and ≤ 75 kg: 30 min	
		> 1.5 g and ≤ 2 g or > 75 kg and ≤ 100 kg: 40 min	
Older patients (≥ 65 years) and adults with cardiac disorders	Add undiluted solution to a 100 ml bag of 0.9% NaCl. Administer by IV infusion.	≤ 1 g or ≤ 50 kg: 40 min	25 mg/min
		> 1 g and ≤ 1.5 g or > 50 kg and ≤ 75 kg: 60 min	
		> 1.5 g and ≤ 2 g or > 75 kg and ≤ 100 kg: 80 min	

a Or only if syringe pump is not available, use a paediatric infusion set.

- If maintenance treatment is indicated after the loading dose: change to oral route as soon as possible.

Contra-indications, adverse effects, precautions

- Do not administer to patients with bradycardia or atrioventricular block.
- Administer with caution in patients with hepatic impairment (reduce dosage), heart failure, cardiac rhythm disorders, hypotension.
- May cause:
  - irritation or swelling at injection site; necrosis in the event of extravasation;
  - drowsiness, dizziness, headache, behavioural disturbances;
  - hypotension, bradycardia, conduction disorders, when injected too rapidly;
  - gastrointestinal disturbances (nausea, vomiting), hepatotoxicity;
  - haematologic disorders and hypersensitivity reactions sometimes severe;
  - cardiac complications and coma in the event of overdose.

- Closely monitor heart rate and blood pressure during and after administration. Reduce the infusion rate in the event of bradycardia or drop in blood pressure.
- Avoid IV placement in the hand, foot or wrist. Closely monitor injection site, during and after administration, in particular in:
  - older or very young patients (fragile veins),
  - patients with cardiovascular disease.
- Before and after infusion, flush the catheter with 0.9% NaCl to limit venous irritation and potential incompatibility with other drugs.
- Avoid or monitor the combination with:
  - rifampicin, mefloquine (reduced effect of PHT);
  - sulfonamides, chloramphenicol, fluconazole, isoniazid, fluoxetine, omeprazole (increased PHT toxicity);
  - benzodiazepines, opioid analgesics, antipsychotics, first-generation antihistamines (hydroxyzine, promethazine), antidepressants, other antiseizure medications, etc. (increased sedation).
- PHT may reduce the effect of many drugs:
  - diazepam, midazolam, digoxin, corticosteroids, antimicrobials, some antiretrovirals, itraconazole, warfarin, etc. Adjust dosage if necessary.
  - implants and oral contraceptives: use condoms until next menstruation.
- **Pregnancy and breast-feeding**: prefer a safer drug (levetiracetam). If PHT is the only option, the risks linked to status epilepticus appear greater than risks linked to PHT.

Remarks

- Do not mix with other drugs in the same syringe or infusion.

Storage

– Below 25 °C

PHYTOMENADIONE = VITAMIN K1 injectable

Last updated: March 2024

Prescription under medical supervision

Therapeutic action

- Vitamin, anti-haemorrhagic

Indications

- Prophylaxis and treatment of haemorrhagic disease of the newborn

Forms and strengths, route of administration

- 2 mg ampoule (10 mg/ml, 0.2 ml), for oral administration, IM or slow IV injection

Dosage

Prophylaxis of haemorrhagic disease of the newborn
By IM route, the day of birth:
- Neonate < 1.5 kg: 0.5 mg single dose
- Neonate ≥ 1.5 kg: 1 mg single dose

Treatment of haemorrhagic disease of the newborn
By IM or slow IV route:
1 mg every 8 hours if necessary, depending on clinical evolution and coagulation tests results

Contra-indications, adverse effects, precautions

- May cause: allergic reactions, especially by IV route; haematoma at IM injection site.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Also comes in 10 mg ampoules (10 mg/ml, 1 ml) for use in adults only (treatment of haemorrhage due to antivitamin K agents, etc.) .
- Vitamin K_1 is also used as prophylaxis for neonatal hypoprothrombinemia in mothers treated with enzyme-inducing antituberculosis drugs (rifampicin, rifabutin) during pregnancy. Use 10 mg ampoules (10 mg/ml, 1 ml): administer 10 mg/day of vitamin K_1 by oral route for 15 days before

birth. This maternal prevention does not change the need for IM administration of vitamin K_1 in neonates.

- Do not dilute or mix with other drugs in the same syringe.

Storag

– Below 25 °C

POTASSIUM CHLORIDE 15% = KCl 15% injectable

Last updated: February 2024

Prescription under medical supervision

This drug should only be used by well-trained personnel in well-equipped hospitals.

Indications

- Treatment of severe hypokalaemia (arrhythmia, marked muscular weakness and/or serum potassium level ≤ 2.5 mmol/litre)

Forms and strengths, route of administration

- Ampoule containing 15% potassium chloride hypertonic solution (150 mg/ml, 10 ml = 2 mmol/ml), i.e. 1.5 g of potassium chloride (KCl) per 10 ml ampoule
- Ionic composition:
  - potassium (K^+): 20 mmol per 10 ml ampoule (*20 mEq*)
  - chloride (Cl^-): 20 mmol per 10 ml ampoule (*20 mEq*)
- Check concentration before use: potassium chloride also comes in ampoules containing 7.5%, 10%, 11.2% and 20% solutions.
- Potassium chloride must always be administered by slow IV infusion, diluted in 0.9% sodium chloride.
- For dilution:
  - The potassium concentration in the infusion fluid should not exceed 40 mmol/litre.
  - Mix thoroughly the potassium and the 0.9% sodium chloride solution by inverting at least 5 times the infusion bottle or bag.
- NEVER USE BY DIRECT UNDILUTED IV OR IM OR SC INJECTION.

Dosage and duration

Dosage depends on the severity of hypokalaemia and the patient's underlying condition. For information:

- Child over one month: 0.2 mmol/kg/hour for 3 hours
  Each mmol of potassium is diluted in 25 ml of 0.9% sodium chloride.
  Examples:

10 kg	0.2 (mmol) x 10 (kg) = 2 mmol/hour x 3 hours = 6 mmol 6 mmol (= 3 ml of 15% KCl solution) diluted in 150 ml of NaCl 0.9% and administered over 3 hours
15 kg	0.2 (mmol) x 15 (kg) = 3 mmol/hour x 3 hours = 9 mmol 9 mmol (= 4.5 ml of 15% KCl solution) diluted in 225 ml of NaCl 0.9% and administered over 3 hours

- Adult: 40 mmol (= 2 ampoules of 10 ml of 15% KCl) in one litre of 0.9% sodium chloride, to be administered over 4 hours

Do not exceed 10 mmol/hour. The infusion may be repeated if severe symptoms persist or if the serum potassium level remains < 3 mmol/litre.

Contra-indications, adverse effects, precautions

- Administer with caution to older adults.
- Administer with caution and reduce the dose in patients with renal impairment (increased risk of hyperkalaemia).
- May cause:
  - pain at infusion site, venous irritation and phlebitis (use a large peripheral vein to reduce these risks);
  - in the event of too rapid administration or overdose: hyperkalaemia, cardiac conduction and rhythm disorders, potentially fatal;
  - in the event of extravasation: necrosis.
- Monitor closely:
  - infusion rate; use an infusion pump or syringe pump if possible to prevent unintentional bolus;
  - infusion site for redness and inflammation.
- Monitor electrolytes if possible to determine the need for further infusions and to avoid hyperkalaemia.

Remarks

- Higher dose or infusion rate requires continuous electrocardiogram monitoring.
- Potassium chloride is also used to prevent hypokalaemia in patients unable to meet their daily requirements by oral route : daily K^+ requirements are 2 to 3 mmol/kg daily in children and 1 to 2 mmol/kg daily in adults.
- A 7.5% potassium solution contains 1 mmol of K^+/ml; a 10% solution contains 1.34 mmol/ml ; a 11.2% solution contains 1.5 mmol of K^+/ml; a 20% solution contains 2.68 mmol of K^+/ml.

Storage

Below 25 °C

PROMETHAZINE injectable

Last updated: April 2024

Prescription under medical supervision

Therapeutic action

- Sedating H1 antihistamine

Indications

- Agitation or aggressive behaviour in patients with acute or chronic psychosis, in combination with haloperidol

Forms and strengths, route of administration

- 50 mg in 2 ml ampoule (25 mg/ml) for deep IM injection.
- NEVER ADMINISTER BY SC INJECTION.

Dosage and duration

- Adult: 25 mg, to be repeated after 30 minutes if necessary. If no response 30 minutes after the second dose, administer 50 mg (total dose max. 100 mg).

Contra-indications, adverse effects, precautions

- Administer with caution and monitor use:
  - in older patients;
  - in patients with prostate disorders, closed-angle glaucoma, epilepsy, orthostatic hypotension, severe renal or hepatic impairment;
  - in patients taking central nervous system depressants (opioid analgesics, antipsychotics, sedatives, antidepressants, etc.) or drugs known to have an anticholinergic effect (atropine, amitriptyline, chlorpromazine, etc.).
- May cause:
  - drowsiness, dizziness, headache, confusional state, hypotension, photosensitivity (protect skin from sun exposure);
  - anticholinergic effects (dry mouth, constipation, blurred vision, tachycardia, disorders of micturition);
  - tissue damage, including necrosis;
  - rarely: seizures, extrapyramidal syndrome, neuroleptic malignant syndrome (unexplained hyperthermia with neuromuscular disorders), allergic reactions.

- **Pregnancy and breast-feeding**: avoid

Remarks

- Promethazine by IV route should only be used in intensive care unit, at a max. concentration of 1 mg/ml by infusion over 20 minutes using a central catheter or a large bore peripheral catheter (risk of necrosis and peripheral gangrene).
- Promethazine is not included in the WHO list of essential medicines.

Storage

☼ – Below 25 °C

PROTAMINE injectable

Last updated: August 2022

Prescription under medical supervision

Therapeutic action

- Neutralisation of the anticoagulant action of unfractionated heparin
- Partial neutralisation of the anticoagulant action of low molecular weight heparin

Indications

- Haemorrhagic syndromes resulting from accidental heparin overdosage

Forms and strengths, route of administration

- 50 mg protamine sulfate in 5 ml ampoule (10 mg/ml) for slow IV injection

Concentration may be expressed in antiheparin units (AHU): 1000 AHU = 10 mg.

Dosage

Depends on the amount of heparin to be neutralised.

Heparin overdosage

- If administered between 0 and 30 minutes after the heparin injection, 1 mg of protamine sulfate (100 AHU) neutralises 100 units of heparin.
- If more than 30 minutes have elapsed since the heparin injection, the dose of protamine to be given should be one half the dose of heparin injected.
- Do not administer more than 50 mg per dose

Enoxaparin overdosage

Time since last enoxaparin dose	Protamine dose
< 8 hours	1 mg per 1 mg enoxaparin
> 8 hours and < 12 hours	0.5 mg per 1 mg enoxaparin
> 12 hours	May not be required

- Do not administer more than 50 mg per dose.

Duration

- According to clinical response. Monitor coagulation parameters.

Contra-indications, adverse effects, precautions

- May cause: hypotension, bradycardia and dyspnoea; allergic reactions, notably in diabetics treated by protamine-insulin.
- If excessive doses are used, haemorrhage may persist or reappear, as protamine sulfate itself has some anticoagulant activity.
- Administer by very slow IV (over 10 minutes) in order to reduce risks of hypotension and bradycardia.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Anticoagulant effect of protamine may vary according to the origin of the heparin: follow manufacturer's recommendations.
- Protamine sulfate may be used to neutralize the effect of heparin before surgery.

Storage

– To be kept refrigerated (2 °C to 8 °C)

SODIUM BICARBONATE 8.4% injectable

Last updated: October 2024

Prescription under medical supervision

Indications

- Severe metabolic acidosis

Forms and strengths

- 10 ml ampoule

Composition

- Sodium bicarbonate: 8.4 g per 100 ml
  - Hypertonic solution
  - Ionic composition:
    - sodium (Na^+): 10 mmol *(10 mEq)* per 10 ml ampoule
    - bicarbonate: 10 mmol (*10 mEq*) per 10 ml ampoule

Contra-indications, adverse effects, precautions

- Do not use in case of alkalosis or respiratory acidosis.
- Do not administer hypertonic solutions by IM or SC route. Administer under close medical supervision, by slow direct IV injection diluted in 5% glucose or by continuous infusion in 5% glucose.
- Do not add: penicillins, chloramphenicol, aspirin, atropine, calcium, insulin, vitamins, etc. to sodium bicarbonate solution.

Remarks

- Contains a high concentration of bicarbonate and sodium ions. Its use is rarely justified in case of metabolic acidosis caused by dehydration. Inaccurate administration may induce hypernatraemia and hypokalaemia.

Storage

Below 25 °C

STREPTOMYCIN injectable

Last updated: September 2022

Prescription under medical supervision

Given the risk of renal and auditory toxicity, do not prolong treatment unnecessarily.

Therapeutic action

- Antibacterial (group of aminoglycosides)

Indications

- Alternative to gentamicin in plague
- Brucellosis, in combination with doxycycline

Forms and strengths, route of administration

- Powder for injection, vial containing 1 g of streptomycin base, to be dissolved in 3.2 ml of water for injection to obtain a 250 mg/ml solution, for IM injection.
- **DO NOT ADMINISTER BY IV INJECTION**.

Dosage

Plague

- Child: 15 mg/kg (max. 1 g) every 12 hours
- Adult: 1 g every 12 hours

Brucellosis

- Adult: 1 g once daily

Duration

- Plague: 10 to 14 days
- Brucellosis: 2 weeks

Contra-indications, adverse effects, precautions

- Do not administer in patients with allergy to aminoglycosides.
- Administer with caution to patients with history of renal, vestibular or auditory problems.
- Reduce the dose in patients with renal impairment.

- May cause: irreversible ototoxicity (vestibular and auditory damage), nephrotoxicity, neuropathy, paraesthesia, neuromuscular blockade; rarely, allergic reactions.
- Stop treatment in the event of dizziness, tinnitus or hearing loss (ototoxicity).
- Drink sufficient liquid to limit the risk of renal toxicity.
- Do not combine with another aminoglycoside.
- Avoid or monitor combination with: furosemide, amphotericin B, vancomycin (enhanced renal and/or auditory toxicity); neuromuscular blockers (increased neuromuscular blockage).
- **Pregnancy**: CONTRA-INDICATED
- **Breast-feeding**: no contra-indication

Storage

– Below 25 °C

SURAMIN injectable

Last updated: December 2023

Prescription under medical supervision

Due to high toxicity and numerous adverse effects of suramin, patients must be treated in hospital, under close medical supervision.

Therapeutic action

- Trypanocide

Indications

- Haemolymphatic stage of African trypanosomiasis due to *T. b. rhodesiense*

Forms and strengths, route of administration

- Powder for injection in 1 g vial, to be dissolved in 10 ml of water for injection to obtain a 10% solution, for slow IV injection (or slow infusion in 500 ml of 0.9% NaCl).
- DO NOT ADMINISTER BY IM or SC INJECTION.

Dosage and duration

- Child and adult: 4 to 5 mg/kg by slow IV at D1 (test dose) then, in the absence of reaction after the test dose, 20 mg/kg by slow IV at D3, D10, D17, D24 and D31 (max. 1 g per injection)

Contra-indications, adverse effects, precautions

- Do not administer in patients with severe renal or hepatic disease.
- May cause:
  - anaphylactic reaction: administer a test dose before starting treatment. In the event of anaphylactic reaction, the patient should never receive suramin again;
  - proteinuria (renal toxicity), diarrhoea, haematological disorders (haemolytic anaemia, agranulocytosis, etc.), eye disorders (photophobia, lachrymation), neurological disorders (paraesthesia, hyperaesthesia of the palms and soles, polyneuropathy), high fever, skin eruption, malaise, intense thirst, polyuria;
  - local inflammation and necrosis when administered by IM or SC injection.
- Before each injection, check for proteinuria: moderate proteinuria is common at the start of treatment, heavy proteinuria calls for dose reduction and modification of treatment schedule; in the

event of persisting heavy proteinuria, treatment should be discontinued.
- Ensure that the patient is well hydrated.
- **Pregnancy**: although suramin is toxic, it is recommended to treat pregnant women with rhodesiense trypanosomiasis at the haemolymphatic stage. Suramin is also used at the meningoencephalitic stage until the woman can be given melarsoprol after delivery, as melarsoprol is contra-indicated during pregnancy.

Remarks

- Suramin is not administered at the meningoencephalitic stage (except in pregnant women) as it poorly penetrates into the cerebrospinal fluid.
- Due to its toxicity, suramin is no longer used for the treatment of onchocerciasis.

Storage

 – Below 25 °C

THIAMINE = VITAMIN B1 injectable

Last updated: August 2021

Prescription under medical supervision

Therapeutic action

- Vitamin

Indications

- Initial treatment of severe thiamine (vitamin B_1) deficiency: severe acute forms of beriberi, neurological complications of chronic alcoholism (delirium tremens, Wernicke's encephalopathy)

Forms and strengths, route of administration

- 100 mg thiamine hydrochloride in 2 ml ampoule (50 mg/ml) for IM or very slow IV route (30 minutes)

Dosage and duration

Infantile beriberi
25 mg by IV route then, 25 mg by IM route once or 2 times daily then, change to oral route (10 mg once daily) as soon as symptoms have improved.

Acute beriberi
50 mg by IM route then change to oral route (50 mg 3 times daily until symptoms improve then, 10 mg once daily)
or, depending on severity, 50 mg by IM route every 8 hours for a few days then change to oral route (10 mg once daily).

Delirium tremens, Wernicke's encephalopathy
100 mg by IM or IV route 3 times daily for 3 to 5 days

Contra-indications, adverse effects, precautions

- May cause: hypotension; anaphylactic reaction, especially when injected IV (inject very slowly over 30 minutes).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Thiamine is also called aneurine.
- Injectable thiamine is not included in the WHO list of essential medicines.

Storage

– Below 25 °C

TRAMADOL injectable

Prescription under medical supervision

Therapeutic action

- Opioid analgesic

Indications

- Moderate pain

Forms and strengths, route of administration

- 100 mg ampoule (50 mg/ml, 2 ml) for IM, slow IV injection or infusion

Dosage

- Child over 12 years and adult: 50 to 100 mg every 4 to 6 hours (max. 600 mg daily)

Duration

Change to oral route as soon as possible.

Contra-indications, adverse effects, precautions

- Do not administer in the event of severe respiratory depression and to patients that risk seizures (e.g. epilepsy, head injury, meningitis).
- May cause:
  - dizziness, nausea, vomiting, drowsiness, dry mouth, sweating;
  - rarely: allergic reactions, seizures, confusion; withdrawal symptoms; respiratory depression in the event of overdosage.
- Do not combine with opioid analgesics, including codeine.
- Avoid combination with carbamazepine, fluoxetine, chlorpromazine, promethazine, clomipramine, haloperidol, digoxin.
- Reduce doses by half and administer every 12 hours in elderly patients and in patients with severe renal or hepatic impairment (risk of accumulation).
- Use tramadol by infusion over 20-30 minutes rather than by IV injection.
- **Pregnancy**: no contra-indication. The neonate may develop withdrawal symptoms, respiratory depression and drowsiness in the event of prolonged administration of large doses at the end of the 3rd trimester. In this event, closely monitor the neonate.

- **Breast-feeding**: use with caution, for a short period (2-3 days), at the lowest effective dose. Monitor the mother and the child: in the event of excessive drowsiness, stop treatment.

Remarks

- Tramadol is approximately 10 times less potent than morphine.
- In some countries, tramadol is on the list of narcotics: follow national regulations.
- Tramadol is not included in the WHO list of essential medicines.

Storage

– Below 25 °C

TRANEXAMIC acid injectable

Last updated: September 2023

Prescription under medical supervision

Therapeutic action

- Antifibrinolytic

Indications

- Postpartum haemorrhage
- Heavy abnormal uterine bleeding unrelated to pregnancy
- Trauma-associated haemorrhage

Forms and strengths, route of administration

- 500 mg in 5 ml ampoule (100 mg/ml) for slow IV injection or infusion in 0.9% sodium chloride or 5% glucose
- DO NOT ADMINISTER BY IM ROUTE.

Dosage and duration

Postpartum haemorrhage

- Adolescent under 15 years: 15 mg/kg (max. 1 g)
- Adult: 1 g

Administer the dose over 15 minutes, in the first litre used for fluid resuscitation or in a bag of 100 ml of 0.9% sodium chloride, within 3 hours of delivery.
If haemorrhage persists 15 minutes after the end of first dose or restarts within 24 hours, administer a second dose in 100 ml of 0.9% sodium chloride over 15 minutes (max. total dose 2 g).

Heavy abnormal uterine bleeding unrelated to pregnancy

- Adolescent and adult: 10 mg/kg every 8 hours until bleeding is reduced (max. 600 mg/dose) then, change to oral route.

Trauma-associated haemorrhage

- Child: 15 mg/kg (max. 1 g)
- Adult: 1 g

Administer the dose over 10 minutes, in 5 ml/kg of 0.9% sodium chloride in children less than 20 kg and in 100 ml of 0.9% sodium chloride in children 20 kg and over and adults, within 3 hours of injury. Then, administer a second dose by continuous IV infusion over 8 hours.

Contra-indications, adverse effects, precautions

- Do not administer to patients with (or with history of) venous or arterial thromboembolic disorders, severe renal impairment, history of seizures.
- Reduce dosage in patients with mild to moderate renal impairment (risk of accumulation).
- May cause: gastrointestinal disturbances, hypotension and malaise if injected rapidly (rate > 1 ml/minute), seizures with high doses, visual disturbances, allergic reactions.
- Avoid combination with drugs that increase the risk of thromboembolism (e.g. oestrogenes).
- **Pregnancy**: this drug is not indicated in the event of bleeding during pregnancy.
- **Breast-feeding**: no contra-indication

Remarks

- Do not mix with benzylpenicillin (incompatibility).
- Tranexamic acid can also be administered undiluted or diluted in smaller volumes of 0.9% sodium chloride (e.g. 10 ml) in case of fluid restriction (max. 100 mg/minute or 1 ml/minute).

Storage

– Below 25 °C

VALPROIC acid = VPA = SODIUM VALPROATE injectable

Last updated: October 2024

Prescription under medical supervision

- VPA must not be used in pregnancy or in women and girls of childbearing age. The risk of foetal harm is higher than with other antiseizure medications.
- During and after administration, have ventilation equipment (Ambu and mask) and solutions for fluid replacement ready for use.

Therapeutic action

- Antiseizure (anticonvulsant)

Indications

- Second-line treatment of convulsive status epilepticus

Forms and strengths, route of administration

- 400 mg in 4 ml ampoule (100 mg/ml) for slow IV injection or IV infusion in 0.9% sodium chloride or 5% glucose
- DO NOT ADMINISTER BY IM INJECTION (risk of necrosis).

Dosage and duration

- Loading dose:
  - Child 2 years and over:
    - Use diluted solution: add 4 ml (400 mg) of VPA to 6 ml of 0.9% NaCl to obtain 10 ml of solution containing 40 mg of VPA per ml.
    - Administer 20 mg/kg (max. 1.5 g) over 5 minutes by IV infusion using a syringe pump or by slow IV injection.
    - If seizures do not stop after the end of the first dose, readminister the same dose: 20 mg/kg (max. 1.5 g) as above.
    - Do not exceed the total dose of 40 mg/kg or 3 g.
  - Adult:
    - 40 mg/kg (max. 3 g) single dose over 10 minutes

    - Use diluted solution as above (40 mg/ml) if administered by IV infusion using a syringe pump.
    - Use undiluted solution if administered by IV infusion in a bag of 100 ml of 0.9% NaCl.

  In children and adults, do not exceed an infusion rate of 6 mg/kg/minute.

- If maintenance treatment is indicated after the loading dose: change to oral route as soon as possible.

Contra-indications, adverse effects, precautions

- Do not administer:
  - to women and girls of childbearing age;
  - to children under 2 years (increased risk of hepatotoxicity);
  - to patients with pancreatitis, hepatic disease or history of hepatic disease.
- Reduce dosage in patients with renal impairment.
- May cause:
  - drowsiness, extrapyramidal symptoms, behavioural disturbances, confusional state;
  - menstrual irregularities, gastrointestinal disturbances, thrombocytopenia;
  - rarely: pancreatitis, hepatic disorders (e.g. elevated liver enzymes), prolonged bleeding time, hypersensitivity reactions sometimes severe, hyperammonemic encephalopathy. In these cases, stop treatment.
  - respiratory depression and coma in the event of overdose.
- Avoid or monitor the combination with:
  - mefloquine, carbapenems, tricyclic antidepressants, rifampicin, protease inhibitors, other antiseizure medications (reduced effect of VPA);
  - acetylsalicylic acid, erythromycin, isoniazid (increased VPA toxicity);
  - benzodiazepines, opioid analgesics, antipsychotics, first-generation antihistamines (hydroxyzine, promethazine), antidepressants, other antiseizure medications, etc. (increased sedation).
- **Pregnancy**: do not use except if vital and no alternative is available (risk of neural tube defects; urogenital, limb and facial malformations; neurodevelopmental disorders). Use a safer drug if possible (levetiracetam).
- **Breast-feeding**: administer with caution (excreted in milk); monitor the child (risk of hepatotoxicity and bleeding).

Remarks

- Do not mix with other drugs in the same syringe or infusion.

Storage

☼ – Below 25 °C

VITAMIN B1 injectable

See THIAMINE injectable

VITAMIN K1 injectable

See PHYTOMENADIONE injectable

Infusion fluids

Precautions for the use of infusion fluids

Last updated: November 2023

- Carefully read the labels on the infusion bottle to avoid mistakes.
- Indicate on the label any drugs added to the infusion as well as the patient's name and/or bed number.
- If drugs are added to the intravenous fluid, think of the risks of:
  - physical and chemical incompatibilities,
  - microbial contamination: aseptic technique.
- Examine each bottle against the light to check clearness. Discard any bottles that show particles in suspension or cloudiness.

GLUCOSE 5% = DEXTROSE 5%

Last updated: November 2023

Indications

- Vehicle for the administration of drugs by IV infusion

Forms and strengths

- 500 ml and 1000 ml bottles or bags

Composition

- 5% isotonic glucose solution (50 mg of glucose/ml) for infusion

Contra-indications, adverse effects, precautions

- Do not use 5% glucose solution for the administration of: hydralazine (incompatibility, rapid degradation of hydralazine), amoxicillin/clavulanic acid, aciclovir, phenytoin, or bleomycin.
- Amoxicillin diluted in 5% glucose must be administered in less than one hour. If infusion over more than one hour is required, use 0.9% sodium chloride.

Remarks

- This solution does not contain electrolytes or lactate. Its use is not recommended for the IV treatment of dehydration. Use Ringer lactate or 0.9% sodium chloride solutions.
- Low nutritional value: 200 kcal/litre.
- Also comes in a premixed solution of 5% glucose/Ringer lactate, which is the preferred infusion solution for maintenance fluids in children.

Storage

Below 25 °C

GLUCOSE 10% = DEXTROSE 10%

Last updated: November 2023

Prescription under medical supervision

Indications

- Treatment of hypoglycaemia

Forms and strengths

- 250 ml and 500 ml bottles or bags

Composition

- 10% hypertonic glucose solution (100 mg of glucose/ml) for slow IV injection or IV infusion

Dosage and duration

- Conscious child:10 ml/kg by oral route or nasogastric tube
- Child with impaired consciousness: 2 ml/kg by slow IV injection (2 to 3 minutes)
  Check blood glucose level 15 minutes after injection. If blood glucose level is still < 3.3 mmol/l or < 60 mg/dl, administer a second dose or give oral glucose, according to the patient's clinical condition.

Contra-indications, adverse effects, precautions

- Do not administer by IM or SC route.

Remarks

- If ready-made 10% glucose solution is not available: remove 100 ml of 5% glucose from a 500 ml bottle or bag, then add 50 ml of 50% glucose to the remaining 400 ml of 5% glucose to obtain 450 ml of 10% glucose solution.
- Nutritional value: 400 kcal/litre.
- Also comes in premixed solution of 10% glucose/0.18% sodium chloride, for maintenance IV fluid therapy in sick neonates.

Storage

Below 25 °C

RINGER LACTATE

Last updated: November 2023

Indications

- Severe dehydration
- Fluid replacement in trauma, surgery, anaesthesia)

Forms and strengths

- 500 ml and 1000 ml bottles or bags

Composition

- Varies with manufacturer.
- Most frequent ionic composition per litre:
  sodium (Na^+) 130.50 mmol (*130.50 mEq*)
  potassium (K^+) 4.02 mmol (*4.02 mEq*)
  calcium (Ca^{++}) 0.67 mmol (*1.35 mEq*)
  chloride (Cl^-) 109.60 mmol (*109.60 mEq*)
  lactate 28.00 mmol (*28.00 mEq*)
- Isotonic solution. Does not contain glucose.

Ringer Lactate provides appropriate amounts of sodium and calcium and 4 mEq of potassium/litre, which is sufficient for short-term use. It contains lactate which is converted to bicarbonate for correction of metabolic acidosis when it exists (if haemodynamic and liver function are normal). **Warning, some commercially available solutions do not contain lactate.**

Contra-indications, adverse effects, precautions

- In cases of metabolic alkalosis, diabetes, severe renal or hepatic failure, hyperkalemia, head injury: isotonic solution of NaCl 0.9% is preferred.

Remarks

- After infusion, Ringer lactate remains in the intravascular compartment for 1 to 2 hours.
- For correction of hypovolaemia due to haemorrhage; administer 3 times the lost volume only if:
  - blood loss does not exceed 1500 ml in adults;
  - cardiac and renal function are not impaired.
- Ringer lactate may also be used to prevent hypotension induced by spinal anaesthesia.
- Also comes in a premixed solution of 5% glucose/Ringer lactate, which is the preferred infusion solution for maintenance fluids in children.

- For moderate and mild dehydration, administer oral rehydration salts (ORS).

Storage

Below 25 °C

SODIUM CHLORIDE 0.9% = NaCl 0.9%

Last updated: February 2025

Indications

- Vehicle for the administration of drugs by IV infusion
- Severe dehydration, fluid replacement in trauma, surgery, anaesthesia (preferably use of Ringer lactate for these indications)

Forms and strengths

- 100 ml, 250 ml, 500 ml and 1000 ml bottles or bags

Composition

- Isotonic solution of sodium chloride (0.9 g per 100 ml) for infusion
- Ionic composition:
  sodium (Na^+) 150 mmol (*150 mEq*) per litre
  chloride (Cl^-) 150 mmol (*150 mEq*) per litre

Contra-indications, adverse effects, precautions

- Administer with caution to patients with conditions associated with sodium or fluid retention (hypertension, heart failure, peripheral or pulmonary oedema, renal impairment, hepatic impairment with cirrhosis, pre-eclampsia, etc.) or to taking drugs that increase the risk of sodium or fluid retention (e.g. corticosteroids).
- May cause: pulmonary oedema in the event of too rapid infusion or infusion of excessive amounts.
- Do not use as vehicle for the administration of amphotericin B (incompatibility): use only 5% glucose solution.

Remarks

- After infusion, NaCl 0.9% remains in the intravascular compartment for 1 to 2 hours.
- For correction of hypovolaemia due to haemorrhage, administer 3 times the lost volume only if:
  - blood loss does not exceed 1500 ml in adults;
  - cardiac and renal function are not impaired.
- 0.9% sodium chloride solution may be used to prevent hypotension induced by spinal anaesthesia.
- For external use: sterile 0.9% sodium chloride solution is used for cleansing of non-infected wounds, wound irrigation, eye cleansing (conjunctivitis, eye irrigations), nasal lavage in the event of obstruction, etc.

Storage

Below 25 °C

SODIUM CHLORIDE 3% = NaCl 3%

Prescription under medical supervision

- This drug should only be used by well trained personnel in well-equipped hospitals.
- Do not exceed the recommended rate of hyponatraemia correction to minimise the risk of neurologic complications.

Indications

- Severe symptomatic hyponatraemia: serum sodium level < 120 mmol/litre with neurologic involvement (e. g. seizures, confusional state, coma)
- Increased intracranial pressure in traumatic brain injury
- Cerebral oedema

Forms and strengths, route of administration

- 500 ml bag, for IV infusion on central line or large peripheral vein, preferably using an infusion pump.
- DO NOT ADMINISTER BY IV, IM or SC INJECTION.

Composition

- Hypertonic solution of sodium chloride (3 g per 100 ml, 15 g in 500 ml)
- Ionic composition:
  - sodium (Na^+) 513 mmol (*513 mEq*) per litre
  - chloride (Cl^-) 513 mmol (*513 mEq*) per litre
- Osmolarity: 1027 mOsmol per litre

Dosage and duration

Dosage varies according to patient's underlying condition, severity of symptoms, clinical response and serum sodium level. For information:

Severe symptomatic hyponatraemia

- Child under 50 kg: 3 ml/kg over 20 minutes
- Child 50 kg and over and adult: 150 ml over 20 minutes

Check clinical response and serum sodium level. Repeat infusion up to 2 times if necessary during the first hour, until symptoms improve or serum sodium increases by 5 mmol/litre.
Further correction of hyponatremia is based on serum sodium deficit calculation, to reach 130 mmol/litre.

Do not increase serum sodium by more than 10 mmol/litre in the first 24 hours and 8 mmol/litre per 24 hours thereafter.

Increased intracranial pressure in traumatic brain injury, cerebral oedema

- Child and adult: 3 ml/kg over 10 to 20 minutes

Repeat infusion up to 2 times if necessary, according to clinical response.

Contra-indications, adverse effects, precautions

- Administer with caution and under close supervision:
  - to infants and older patients;
  - to patients with conditions associated with sodium or fluid retention (hypertension, heart failure, peripheral or pulmonary oedema, renal impairment, hepatic impairment with cirrhosis, pre-eclampsia, etc.) or taking drugs that increase the risk of sodium or fluid retention (e.g. corticosteroids);
  - if serum sodium > 160 mmol/litre or serum osmolarity > 320 mOsm/litre.
- May cause:
  - pain at infusion site, venous irritation, phlebitis, necrosis in the event of extravasation;
  - nausea, vomiting, diarrhoea, dry eyes and mouth, thirst, headache;
  - electrolytes disturbances (hypernatraemia, hypokalaemia, hyperchloraemia) and acid-base imbalance;
  - in the event of too rapid infusion and/or overcorrection of hyponatraemia:
    - peripheral or pulmonary oedema;
    - osmotic demyelination syndrome (signs and symptoms include dysphagia, confusional state, slurred speech, movement disorders, lethargy, muscle weakness and coma).
- Closely monitor:
  - infusion rate; use an infusion pump to prevent unintentional bolus;
  - infusion site for redness and inflammation;
  - clinical and neurologic state, serum sodium level (and other electrolytes if possible);
  - urine output: a sudden increase to more than 100 ml/hour may be an early sign of hyponatraemia overcorrection.
- **Pregnancy and breast-feeding**: administer only if clearly needed.

Remarks

- Do not use as a vehicle for administering injectable drugs, use 0.9% sodium chloride.
- 3% sodium chloride is not included in the WHO list of essential medicines.

Storage

Below 25 °C

Vaccines, immunoglobulins and antisera

ORAL CHOLERA VACCINE O1 and O139

Indications

- Prevention of cholera in epidemic, endemic or humanitarian emergency contexts

Composition, forms, route of administration

- Inactivated whole cell bivalent vaccine containing *Vibrio cholerae* O1 (serotypes Inaba and Ogawa, and biotypes classical and El Tor) and *Vibrio cholerae* O139
- Oral suspension, 1.5 ml in monodose plastic tube. DO NOT ADMINISTER BY PARENTERAL ROUTE.

Dosage and vaccination schedule

- Child 1 year and over and adult: 2 doses of 1.5 ml administered at least 14 days apart
- In certain contexts (e.g. outbreak and limited number of vaccines), a single dose of 1.5 ml is administered.
- Shake the vial, squirt the entire contents of the vial into the mouth.

For young children, the contents of the vial can be drawn up in a syringe and squirted into the mouth.

Contra-indications, adverse effects, precautions

- Do not administer to children less than one year.
- Do not administer in the event of hypersensitivity to any component of the vaccine or history of an allergic reaction to a previous dose.
- Vaccination should be postponed in the event of severe acute febrile illness; minor infections are not contra-indications.
- May cause: nausea, vomiting, abdominal cramping, diarrhoea.
- Drinking water after swallowing the vaccine may reduce its unpleasant taste and prevent vomiting. If the patient vomits the dose of vaccine, wait for 10 minutes and re-administer the same dose and follow with a larger volume of water.
- **Pregnancy**: can be administered (the benefits outweigh the risks).
- **Breast-feeding**: no contra-indication

Remarks

- Immunity develops one week after administration and lasts up to 6 months after a single dose and at least 3 years after 2 doses.

Storage

– Between 2 °C and 8 °C. Do not freeze; discard if vaccine has been frozen.
Shanchol® vaccines used in controlled temperature chain (CTC) can be stored at temperatures of up to 40 °C for 14 days maximum. All vaccines removed from the cold chain and not used within 14 days or exposed to temperatures > 40 °C must be discarded.

DIPHTHERIA, TETANUS, PERTUSSIS, HEPATITIS B, Hib VACCINE (DTwP-HepB-Hib)

Last updated: December 2024

Indications

- Prevention of diphtheria, tetanus, pertussis, hepatitis B and severe *Haemophilus influenzae* type B (Hib) infections in children from 6 weeks to 7 years of age (primary vaccination)

Composition, forms, route of administration

- Pentavalent vaccine combining diphtheria toxoid, tetanus toxoid, pertussis antigens (whole-cell), hepatitis B surface antigen and Hib polysaccharide
- Suspension for injection in multidose vial, for IM injection into the anterolateral part of the thigh in children < 2 years and into the deltoid muscle in children ≥ 2 years.
  DO NOT ADMINISTER INTO THE GLUTEAL MUSCLE.
- Shake before use to homogenise the vaccine.

Dosage and vaccination schedule

- Three-dose primary series:
  - Child: 3 doses 4 weeks apart, preferably before the age of 6 months. It is recommended to administer the 1st dose at 6 weeks of age, the 2nd dose at 10 weeks of age and the 3rd dose at 14 weeks of age.
  - If a child has not received the 1st dose by the age of 1 year, start vaccination as soon as possible according to the 0-1-6 schedule: 2 doses 4 weeks apart, then a 3rd dose 6 months after the 1st dose
- If vaccine schedule has been interrupted, the missing doses should be completed and not restarted from the beginning.

Contra-indications, adverse effects, precautions

- Do not administer in the event of allergic reactions to a previous dose of vaccine containing these strains.
- Do not administer at birth to vaccinate against hepatitis B.
- Vaccination should be postponed in the event of severe acute febrile illness; minor infections are not contra-indications.

- May cause: mild local reactions (redness, pain at the injection site), fever, pain, malaise, headache, myalgia; rarely: anaphylactic reactions.
- If administered simultaneously with other vaccines, use different syringes and injection sites.

Remarks

- Depending on national recommendations, primary vaccination can be done with a trivalent vaccine (diphtheria, tetanus, pertussis), tetravalent vaccine (diphtheria, tetanus, pertussis, hepatitis B), pentavalent vaccine (diphtheria, tetanus, pertussis, Hib, poliomyelitis) or hexavalent vaccine (diphtheria, tetanus, pertussis, hepatitis B, Hib, poliomyelitis).
- A booster dose with a vaccine containing at least diphtheria toxoid, tetanus toxoid and pertussis antigen is recommended between 12 to 23 months of age. Other boosters are recommended between 4 to 7 years of age and 9 to 15 years of age with a bivalent vaccine containing diphtheria and tetanus toxoids.

Storage

– Between 2 °C and 8 °C. Do not freeze.

HEPATITIS B VACCINE

Indications

- Prevention of hepatitis B

Composition, forms, route of administration

- Recombinant hepatitis B vaccine
- Suspension for injection in monodose or multidose vial, for IM injection into the anterolateral part of the thigh in children < 2 years and into the deltoid muscle in children ≥ 2 years.
  DO NOT ADMINISTER INTO THE GLUTEAL MUSCLE.

Dosage and vaccination schedule

Dosage varies according to age and type of vaccine used: follow manufacturer's instructions.
Child: one dose = 5 to 10 micrograms
Adult: one dose = 10 to 20 micrograms

- **Standard schedule**
  - Neonate and infant:
    - One dose as soon as possible after birth (preferably within the first 24 hours of life) then a 2nd dose at 6 weeks and a 3rd dose at 14 weeks

    or
    - One dose as soon as possible after birth (preferably within the first 24 hours of life) then 3 doses administered 4 weeks apart with the 1st at 6 weeks, the 2nd at 10 weeks and the 3rd at 14 weeks
  - Child, adolescent, adult: schedule 0-1-6
    2 doses 4 weeks apart, then a 3rd dose 6 months after the 1st dose
- **Accelerated schedule**, when rapid protection is required in the event of post-exposure prophylaxis
  3 doses administered during the same month on D0-D7-D21, then a 4th dose one year after the 1st dose

Contra-indications, adverse effects, precautions

- Do not administer in the event of allergic reactions to a previous dose of hepatitis B vaccine.
- Vaccination should be postponed in the event of severe acute febrile illness; minor infections are not contra-indications.
- May cause: minor local reactions (pain or redness at injection site), fever, headache, myalgia; rarely: anaphylactic reaction.
- If administered simultaneously with other vaccines, use different syringes and injection sites.
- **Pregnancy and breast-feeding**: no contra-indication

Remarks

- At birth, use only the monovalent hepatitis B vaccine. For the following doses, administer a monovalent or tetravalent (diphtheria, tetanus, pertussis, hepatitis B) or pentavalent (diphtheria, tetanus, pertussis, hepatitis B and *Haemophilus influenzae*) vaccine.
- If an infant was not administered the birth dose, this dose can be administered at anytime during the first contact with health-care providers, up to the time of the next dose of the primary schedule.
- If the vaccination schedule is interrupted before the complete series has been administered, it is not necessary to start again from the beginning. Continue the vaccination schedule from where it was interrupted and complete the series as normal.
- SC route may be used, only if IM route is contra-indicated.
- Shake before use to homogenise the vaccine.

Storage

– Between 2 °C and 8 °C. Do not freeze.

JAPANESE ENCEPHALITIS VACCINE

Indications

- Prevention of Japanese encephalitis:
  - in children from 1 year and adults in endemic countries (rural areas of Southeast and Southwest Asia and Western Pacific countries)
  - in travellers spending more than 1 month in endemic countries, in rural areas and during the wet season

Composition, forms, route of administration

- Inactivated virus vaccine
- Powder for injection in single-dose vial, to be dissolved with the entire vial of the diluent supplied by the manufacturer, for SC injection

Dosage

- Child from 1 to 3 years: 0.5 ml per dose
- Child over 3 years and adult: 1 ml per dose

There are several vaccination schedules. For information, for travellers:
3 doses on Day 0, Day 7 and Day 28; a booster dose every 3 years if risk persists.

An accelerated schedule is possible (3 doses on Day 0, Day 7 and Day 14) but this is likely to result in lower antibody levels than the standard schedule.
The 3rd dose should be given at least 10 days before departure to ensure an adequate immune response and access to medical care in the event of adverse reactions.

Contra-indications, adverse effects, precautions

- Do not administer to patients with history of an allergic reaction to a previous injection of Japanese encephalitis vaccine.
- Vaccination should be postponed in the event of severe acute febrile illness; minor infections are not contra-indications.
- May cause:
  - redness and swelling at the injection site;
  - fever, headache, chills, asthenia;
  - hypersensitivity reactions (urticaria, angioedema), immediate or delayed (up to 2 weeks after injection);
  - rarely: encephalitis, encephalopathy.
- Do not mix with other vaccines in the same syringe (inactivation of vaccines).

- If administered simultaneously with EPI vaccines, use different syringes and injection sites.
- **Pregnancy**: only administer if there is a high risk of contamination.
- **Breast-feeding**: no contra-indication

Remarks

- Protection lasts at least 2 years after 3 doses.
- Caution: there are different vaccines against EJ, with different dosages and administration schedules (e.g. suspension for injection in pre-filled syringe, administered in 2 doses (0.5 ml on D0 and D28) in adults, by IM route). For each vaccine, follow manufacturer's instructions.

Storage

- Powder: between 2 °C and 8 °C. Do not freeze.
- Diluent: a cold chain is not required for storage. However, at least 12 hours before reconstitution of the vaccine, the diluent must be refrigerated between 2 °C and 8 °C so that the diluent and lyophilised powder are at the same temperature: a temperature difference during reconstitution may reduce vaccine efficacy. Do not freeze.
- Reconstituted vaccine: between 2 °C and 8 °C, for 6 hours maximum.

MEASLES VACCINE

Indications

- Prevention of measles

Composition, forms, route of administration

- Live-attenuated virus vaccine, derived from different viral strains (Schwarz, Edmonston, CAM70, Moraten, etc.)
- Powder for injection in single multidose vial, to be dissolved with the diluent supplied by the manufacturer, for SC or IM injection into the anterolateral part of the thigh in children < 2 years and into the deltoid muscle in children ≥ 2 years

Dosage and vaccination schedule

Routine vaccination

- Child between 9 and 12 months: one dose of 0.5 ml. The WHO recommends a 2nd dose between 15 and 18 months. Respect an interval of at least 4 weeks between doses.
- Where there is high risk of infection (overcrowding, epidemics, malnutrition, infants born to a mother with HIV infection, etc.), administer a supplementary dose from 6 months of age then continue vaccination schedule.

Catch-up vaccination

Children under 15 years who have missed either one or both doses of routine vaccination should be vaccinated when they come in contact with health services. Check national recommendations.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe immune depression or history of an allergic reaction to a previous injection of measles vaccine.
- Vaccination should be postponed in the event of severe acute febrile illness; minor infections are not contra-indications.
- May cause: mild local reaction (pain, redness at the injection site), fever, skin rash; rarely: seizures, encephalitis, anaphylactic reaction.
- If administered simultaneously with other vaccines, use different syringes and injection sites.
- **Pregnancy and breast-feeding**: avoid

Remarks

- Combination vaccines that include measles and rubella (MR) or measles, mumps and rubella (MMR) are also available in countries where these vaccines are included in the national

immunization programme.

Storage

- Powder: between 2 °C and 8 °C.
- Diluent: a cold chain is not required for storage. However, at least 12 hours before reconstitution of the vaccine, the diluent must be refrigerated between 2 °C and 8 °C so that the diluent and lyophilised powder are at the same temperature: a temperature difference during reconstitution may reduce vaccine efficacy. Do not freeze.
- Reconstituted vaccine: between 2 °C and 8 °C for 6 hours maximum.

MENINGOCOCCAL A CONJUGATE VACCINE

Indications

- Prevention of meningitis due to meningococcus A in countries of the African meningitis belt

Composition, forms, route of administration

- Inactivated bacterial vaccine, conjugated (*Neisseria meningitidis* group A)
- Powder for injection, to be dissolved with the entire vial of the diluent supplied by the manufacturer
- Vials of 10 doses of:
  - 5 micrograms of meningococcal A antigen per 0.5 ml dose for children aged 3 to 24 months
  - 10 micrograms of meningococcal A antigen per 0.5 ml dose for children from 1 year and adults up to 29 years
- For deep IM injection, into the anterolateral part of the thigh in children < 2 years or into the deltoid muscle in children ≥ 2 years and adults

Dosage and vaccination schedule

- Child 3 to < 9 months: 2 doses of 0.5 ml, to be administered at least 8 weeks apart
- Child 9 months and over: 0.5 ml single dose
- Adult: 0.5 ml single dose

Contra-indications, adverse effects, precautions

- Do not administer to patients with history of an allergic reaction to a previous injection of meningococcal vaccine.
- Vaccination should be postponed in the event of severe acute febrile illness (minor infections are not contra-indications).
- May cause: mild local reaction, mild fever.
- Do not mix with other vaccines in the same syringe (inactivation of vaccines).
- If administered simultaneously with other vaccines, use different syringes and injection sites.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Immunity lasts at least 27 months.
- The WHO recommends this vaccine for routine vaccination in children aged 9 to 18 months, in catch-up or periodic campaigns in children from 1 year and in mass vaccination campaigns during outbreaks due to meningococcus A in children from 1 year and adults up to 29 years.

Storage

– Do not freeze.

- Powder: between 2 °C and 8 °C.
- Diluent: a cold chain is not required for storage. However, at least 12 hours before reconstitution of the vaccine, the diluent must be refrigerated between 2 °C and 8 °C so that the diluent and lyophilised powder are at the same temperature: a temperature difference during reconstitution may reduce vaccine efficacy.
- Reconstituted vaccine: up to 40 °C for 6 hours maximum.
- Controlled temperature chain (CTC): during mass vaccination campaigns only, the 10 microgram vaccine can be stored in temperatures of up to 40 °C for a period of 4 days maximum. Any vaccine removed from the cold chain and not used within 4 days or exposed to temperatures > 40 °C must be discarded.

MENINGOCOCCAL A+C VACCINE

Indications

- Prevention of meningitis due to meningococci groups A and C:
  - in mass immunisation campaigns in the event of an outbreak due to meningococcus A or C
  - in travellers spending more than 1 month in hyperendemic areas

Composition, forms, route of administration

- Inactivated bacterial vaccine, polysaccharide
- Powder for injection in monodose or multidose vial, to be dissolved with the entire vial of the diluent supplied by the manufacturer, for deep SC or IM injection, into the deltoid muscle or the anterolateral part of the thigh in children (follow manufacturer's instructions)

Dosage and vaccination schedule

- Child from 2 years and adult: 0.5 ml single dose

Contra-indications, adverse effects, precautions

- Do not administer to patients with history of an allergic reaction to a previous injection of meningococcal vaccine.
- Vaccination should be postponed in the event of severe acute febrile illness; minor infections are not contra-indications.
- May cause: mild local reaction, mild fever.
- Do not mix with other vaccines in the same syringe (inactivation of vaccines).
- If administered simultaneously with EPI vaccines, use different syringes and injection sites.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Immunity develops 7 to 10 days after injection, and lasts for approximately 3 years.

Storage

- Powder: between 2 °C and 8 °C.
- Diluent: a cold chain is not required for storage. However, at least 12 hours before reconstitution of the vaccine, the diluent must be refrigerated between 2 °C and 8 °C so that the diluent and

lyophilised powder are at the same temperature: a temperature difference during reconstitution may reduce vaccine efficacy. Do not freeze.

- Reconstituted vaccine: between 2 °C and 8 °C, for 6 hours maximum.

MENINGOCOCCAL A+C+W135 VACCINE

Indications

- Prevention of meningitis due to meningococci groups A, C and W135:
  - in mass immunisation campaigns in the event of an outbreak due to meningococcus A, C or W135
  - in travellers spending more than 1 month in hyperendemic areas

Composition, forms, route of administration

- Inactivated bacterial vaccine, polysaccharide
- Powder for injection in multidose vial, to be dissolved with the entire vial of the diluent supplied by the manufacturer, for SC injection only

Dosage and vaccination schedule

- Child from 2 years and adult: 0.5 ml single dose

Contra-indications, adverse effects, precautions

- Do not administer to patients with history of an allergic reaction to a previous injection of meningococcal vaccine.
- Vaccination should be postponed in the event of severe acute febrile illness; minor infections are not contra-indications.
- May cause: mild local reaction, mild fever.
- Do not mix with other vaccines in the same syringe (inactivation of vaccines).
- If administered simultaneously with EPI vaccines, use different syringes and injection sites.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Immunity develops 7 to 10 days after injection, and lasts for approximately 3 years.

Storage

- Powder: between 2 °C and 8 °C.
- Diluent: a cold chain is not required for storage. However, at least 12 hours before reconstitution of the vaccine, the diluent must be refrigerated between 2 °C and 8 °C so that the diluent and

lyophilised powder are at the same temperature: a temperature difference during reconstitution may reduce vaccine efficacy. Do not freeze.

- Reconstituted vaccine: between 2 °C and 8 °C, for 6 hours maximum.

HUMAN PAPILLOMAVIRUS VACCINE (HPV)

Indications

- Prevention of premalignant anogenital lesions, mainly of the cervix, and of cervical cancer, due to certain types of papilloma viruses
- Prevention of anogenital warts due to certain types of papilloma viruses (particularly types 6 and 11) for the quadrivalent vaccine

Composition, forms, route of administration

- Recombinant bivalent (HPV type 16 and 18) or quadrivalent (HPV type 6, 11, 16 and 18) vaccine
- Suspension for injection in monodose or multidose (only for bivalent vaccine) vials, for IM injection into the deltoid muscle

Dosage and vaccination schedule

- Child from 9 to 14 years:
  2 doses of 0.5 ml at least 6 months apart
  If the 2 doses are administered less than 5 months apart, a 3rd dose is administered at least 6 months and up to 12 months maximum after the 1st dose.
- Immunocompromised or HIV-infected individuals (under treatment or not):
  2 doses of 0.5 ml 1 or 2 months apart then a 3rd dose 6 months after the 1st dose

Most vaccination programmes only target young females, the population group most at risk of papillomavirus infection complications. Acheiving high vaccination coverage in girls reduces the risk of infection for boys. For vaccination of boys, follow national recommendations.

Contra-indications, adverse effects, precautions

- Do not administer in the event of allergic reactions to a previous dose of papillomavirus vaccine.
- Vaccination should be postponed in the event of severe acute febrile illness; minor infections are not contra-indications.
- May cause: mild reactions at the injection site (pain, redness at the injection site), fever, headache, myalgia; rarely: post-vaccination syncope, anaphylactic reactions.
- If administered simultaneously with other vaccines, use different syringes and injection sites.
- **Pregnancy**: avoid
- **Breast-feeding**: no contra-indication

Remarks

- In individuals 15 years or over, the vaccine is administered in 3 doses (as in immunocompromised individuals).
- Shake before use to homogenise the vaccine.

Storage

– Between 2 °C and 8 °C. Do not freeze.
Once opened, the multidose bivalent (Cervarix®) vaccine vials can be stored between 2 °C and 8 °C for 6 hours maximum.
Controlled temperature chain (CTC): the quadrivalent vaccine (Gardasil®) can be stored at temperatures of up to 42 °C for 3 days maximum. All vaccines removed from the cold chain and not used within 3 days or exposed to temperatures > 42 °C must be discarded.

PNEUMOCOCCAL CONJUGATE VACCINE (PCV)

Indications

- Prevention of invasive infections, pneumonia and acute otitis media due to *Streptococcus pneumoniae*, in children from 6 weeks of age

Composition, forms, route of administration

- 10 or 13 valent pneumococcal polysaccharide conjugate vaccine
- Suspension for injection:
  - 10 valent vaccine: in multidose vials
  - 13 valent vaccine: in monodose and multidose vials
- For IM injection into the anterolateral part of the thigh in children < 2 years and into the deltoid muscle in children ≥ 2 years.
  DO NOT ADMINISTER INTO THE GLUTEAL MUSCLE.

Dosage and vaccination schedule

- Child: 0.5 ml per dose
- Child from 6 weeks to < 12 months:
  - **3p+0 schedule**
    3 doses 4 weeks apart at 6, 10 and 14 weeks of age
  - **2p+1 schedule**
    2 doses 8 weeks apart and a booster dose between 9 and 15 months
- Child from 12 months to < 2 years: 2 doses 8 weeks apart
- Child from 2 to 5 years: a single dose

Contra-indications, adverse effects, precautions

- Do not administer in the event of allergic reactions to a previous dose of vaccine.
- Vaccination should be postponed in the event of severe acute febrile illness; minor infections are not contra-indications.
- May cause: mild local reactions (redness and pain at the injection site), fever, irritability, drowsiness, loss of appetite; rarely: seizures, anaphylactic reactions.
- If administered simultaneously with other vaccines, use different syringes and injection sites.

Remarks

- If the vaccination is interrupted before the complete series has been administered, continue the vaccination schedule from where it was interrupted, do not repeat administration of the previous dose.
- Choice of vaccines and vaccination schedule: follow national recommendations.
- Shake before use to homogenise the vaccine.

Storage

– Between 2 °C and 8 °C. Do not freeze.

- 10 valent vaccine, 2 dose vial: if open vial is not used entirely within 6 hours it should be discarded.
- 10 and 13 valent vaccine, 4 dose vial: if open vial is not entirely used it can be stored for 28 days, providing the cold chain is respected.

INACTIVATED POLIOMYELITIS VACCINE (IPV)

Indications

- Prevention of poliomyelitis, alone or in combination with the oral poliomyelitis vaccine (bOPV)

Composition, forms, route of administration

- Inactivated virus vaccine, trivalent (poliovirus types 1, 2 and 3)
- Suspension for injection in multidose vial, for IM injection into the anterolateral part of the thigh in children < 2 years or deep SC injection into the deltoid muscle in children ≥ 2 years and adults

Dosage and vaccination schedule

- **bOPV + IPV schedule**
  Child: 0.5 ml single dose at 14 weeks, in combination with a dose of bOPV
- **IPV only schedule**
  Child: 3 doses of 0.5 ml approximately 4 weeks apart, at 6, 10 and 14 weeks of age and a booster dose at least 6 months after the 3rd dose

Contra-indications, adverse effects, precautions

- Vaccination should be postponed in the event of severe acute febrile illness (minor infections are not contra-indications).
- May cause: mild local reaction (pain, redness at the injection site), fever; exceptionally, anaphylactic reaction.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Protection against poliomyelitis lasts for life after 4 doses.
- In children who start routine vaccination late (after the age of 3 months), the dose of IPV is administered together with the 1st dose of bOPV, followed by 2 doses of bOPV alone administered 4 weeks apart.
- If there is a shortage of IPV the intradermal route is an alternative, if the operator is experienced in this administration technique. The vaccination schedule is: 2 doses of 0.1 ml at 6 and 14 weeks of age (the 2 doses must be administered at least 4 weeks apart).
- Certain countries have vaccination schedules for children and adults that use only the injectable vaccine and include booster doses: follow national recommendations.

Storage

 – Between 2 °C and 8 °C. Do not freeze.

ORAL POLIOMYELITIS VACCINE (OPV)

Indications

- Prevention of poliomyelitis, in combination with the inactivated poliomyelitis vaccine (IPV)

Composition, forms, route of administration

- Live-attenuated virus vaccine, bivalent (poliovirus types 1 and 3)
- Oral suspension in multidose vial, to be administered on the tongue, with dropper

Dosage and vaccination schedule

One dose = 2 drops (approximately 0.1 ml)

In endemic areas or areas at risk of poliovirus importation, according to WHO recommendations

- Child: 4 doses approximately 4 weeks apart, at birth then at 6, 10 and 14 weeks of age
  The 4th dose at 14 weeks is administered in combination with a dose of the inactivated poliomyelitis vaccine (IPV).

Other areas

- Child: 3 doses approximately 4 weeks apart, at 6, 10 and 14 weeks of age
  The 3rd dose at 14 weeks is administered in combination with a dose of the inactivated poliomyelitis vaccine (IPV).

Contra-indications, adverse effects, precautions

- Do not administer in the event of severe immunodepression (risk of paralytic poliomyelitis): use the injectable vaccine IPV (asymptomatic HIV infection is not a contra-indication).
- Vaccination should be postponed in the event of severe acute febrile illness (minor infections are not contra-indications).
- May cause (exceptionally): paralytic poliomyelitis.
- In the event of vomiting or diarrhoea when the vaccine is administered, give the usual dose followed by an extra dose once gastrointestinal symptoms have improved.
- Respect an interval of at least 4 weeks between each dose.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Protection against poliomyelitis lasts for life after 3 doses.
- In children who start routine vaccination late (after the age of 3 months), the dose of IPV is administered together with the 1st dose of bOPV, followed by 2 doses of bOPV alone administered

4 weeks apart.

- For the vaccination schedule, follow national recommendations.
- Monovalent oral type 2 vaccines (mOPV and nOPV) are also available but are exclusively used for responding to epidemics.

Storage

- For prolonged storage: freeze (– 20 °C).
- After defrosting: between 2 °C and 8 °C for 6 months maximum.

HUMAN RABIES IMMUNOGLOBULIN (HRIG)

Therapeutic action

- Neutralisation of rabies virus at wound sites

Indications

- Prevention of rabies after category III exposure (except in patients who have received a full course of pre-exposure prophylaxis against rabies), in combination with rabies vaccine
- Prevention of rabies after category II and III exposures in immunocompromised patients (even in patients who have received a full course of pre-exposure prophylaxis against rabies), in combination with rabies vaccine

Forms and strengths, route of administration

- Solution for injection, 300 IU in 1 ml ampoule (300 IU/ml) and 1500 IU in 5 ml ampoule (300 IU/ml) for infiltration into and around the wound

Dosage and duration

- Child and adult: 20 IU/kg single dose on D0, along with the first dose of rabies vaccine.
- Infiltrate as much of the dose as possible into and around the wound(s), which has been cleaned beforehand.
- In the event of multiple wounds, dilute the dose 2 to 3-fold with sterile 0.9% sodium chloride to obtain a sufficient quantity to infiltrate all the sites.
- If HRIG is not available on D0, administer the first dose of rabies vaccine alone. Administer HRIG as soon as possible between D0 and D7; from D8, it is not necessary to administer rabies immunoglobulin as vaccine-induced antibodies begin to appear.

Contra-indications, adverse effects, precautions

- May cause: fever, headache, gastrointestinal disturbances, joint pain, local reactions at the injection site (pain, inflammation); rarely: anaphylactic reactions.
- Aspirate prior to injection to confirm that the needle is not in a vein and ensure that the HRIG does not enter a blood vessel (risk of shock).
- For finger wounds, infiltrate with caution to avoid increased pressure in the tissue compartment.
- If administered simultaneously with rabies immunoglobulin and other vaccines, use different syringes and injection sites.
- **Pregnancy and breast-feeding**: no contra-indication

Remarks

- Purified equine rabies immunoglobulin F(ab')2 fragments may replace HRIG if unavailable. The method of administration is the same but the dose is 40 IU/kg.

Storage

– Between 2 °C and 8 °C. Do not freeze.

RABIES VACCINE

Indications

- Prevention of rabies after category II and III exposures

Composition, forms, route of administration

- Inactivated virus vaccine, prepared from cell cultures (CCEEV): in embryonated egg or purified cells (chick embryo-cells, Vero-cells or human diploid-cells)
- Powder for injection in monodose vial, to be dissolved with the entire vial of the diluent (0.5 ml or 1 ml, supplied by the manufacturer)
- IM route:
  DO NOT ADMINISTER INTO THE GLUTEAL MUSCLE.
  - Child < 2 years: inject into the anterolateral part of the thigh
  - Child ≥ 2 years and adult: inject into the deltoid muscle
- ID route:
  - Child and adult: inject into the deltoid muscle (or the anterolateral part of the thigh or the suprascapular region)

Dosage and vaccination schedule

- Child and adult: one IM dose = 0.5 or 1 ml, depending on the vaccine used; one ID dose = 0.1 ml, whichever vaccine used
- Vaccination schedules may vary from country to country, check national recommendations. The schedule depends on the patient's vaccination status at the moment of exposure and the route of administration used (follow manufacturer's instructions).
- The first dose of vaccine should be administered as soon as possible after exposure, even if the patient seeks medical attention long after exposure (rabies incubation period may last several months). The patient must receive all the recommended doses.
- If a vaccine dose is delayed or the route of administration is changed, continue vaccination according to the chosen route of administration and do not recommence the schedule.

The simplest vaccination schedules endorsed by the WHO are the following:

	***No* rabies vaccination or *incomplete* vaccination or *complete* vaccination *with an NTV* or *unknown* vaccination status**			***Complete* vaccination *with a CCEEV***
	IM route [a]		**ID route**	**IM or ID route [b]**
D0	2 doses [c] (1 dose in each arm or thigh)	1 dose [c]	2 doses [c] (1 dose in each arm)	1 dose
D3		1 dose	2 doses (1 dose in each arm)	1 dose
D7	1 dose	1 dose	2 doses (1 dose in each arm)	
D14		1 dose [d]		
D21	1 dose			

a There are two possible schedules for the IM route: the Zagreb regimen (2-0-1-0-1) over 21 days or the 4-dose Essen regimen (1-1-1-1-0) over 14 to 28 days.

b Another possible ID schedule: 4 ID doses (1 dose in each arm and 1 dose in each thigh) on D0.

c As well as a single dose of rabies immunoglobulin into the wound in the event of category III exposure on D0.

d The last injection can be administered between D14 and D28.

- Immunocompromised patient: 1 dose on D0, D7 and between D21 and D28 by IM or ID route (as well as a single dose of rabies immunoglobulin)

Contra-indications, adverse effects, precautions

- Do not administer corticoids concomitantly (vaccine efficacy diminished).
- May cause: benign local reactions at the injection site (pain, induration), fever, malaise, headache, fatigue, gastrointestinal disturbances; rarely: anaphylactic reaction.
- Ensure that the vaccine does not enter a blood vessel (risk of shock): aspirate prior to injection to confirm that the needle is not in a vein.
- ID vaccination: incorrect ID technique results in treatment failure. If correct ID technique cannot be assured, use IM route.
- If administered simultaneously with rabies immunoglobulin and other vaccines, use different syringes and injection sites.

- **Pregnancy and breast-feeding**: no contra-indication

Remarks

- Rabies vaccine is also used for pre-exposure vaccination in persons at high risk of infection (prolonged stay in rabies endemic areas, professionals in contact with animals susceptible of carrying the virus).
- Avoid the use of vaccines prepared from animal nerve tissue (NTVs): they are less immunogenic than CCEEV vaccines and more likely to cause severe adverse effects.

Storage

- Powder: between 2 °C and 8 °C. Do not freeze.
- Diluent: a cold chain is not required for storage. However, at least 12 hours before reconstitution of the vaccine, the diluent must be refrigerated between 2 °C and 8 °C so that the diluent and lyophilised powder are at the same temperature: a temperature difference during reconstitution may reduce vaccine efficacy. Do not freeze.
- Reconstituted vaccine: use immediately.

ORAL ROTAVIRUS VACCINE

Last updated: March 2025

Indications

- Prevention of rotavirus gastroenteritis in children up to 24 months of age

Composition, forms, route of administration

- Oral suspension, in monodose plastic tube:
  - **Rotarix®**, 1.5 ml tube, live-attenuated monovalent human rotavirus vaccine (RV1, strain RIX4414)
  - **Rotasiil®**, 2 ml tube, live-attenuated pentavalent human-bovine reassortant rotavirus vaccine (RV5, G1, G2, G3, G4 and G9)
  - **Rotateq®**, 2 ml tube, live-attenuated pentavalent human-bovine reassortant rotavirus vaccine (RV5, G1, G2, G3, G4 and P1A[8])
- DO NOT ADMINISTER BY PARENTERAL ROUTE.

Dosage and vaccination schedule

Child 6 weeks to 24 months:

- Depending on the available vaccine, 2 to 3 doses at least 4 weeks apart
- Shake the plastic tube, squeeze the entire content of the tube into the mouth.
- Recommended schedule:

Vaccine	Age		
	6 weeks	**10 weeks**	**14 weeks**
Rotarix®	Dose 1	Dose 2	✕
Rotasiil®, Rotateq®	Dose 1	Dose 2	Dose 3

Contra-indications, adverse effects, precautions

- Do not administer in case of:
  - acute gastroenteritis, history of intussusception, severe immunodeficiency;
  - allergic reactions to a previous dose of vaccine.
- Vaccination should be postponed in the event of severe acute febrile illness; minor infections are not contra-indications.
- May cause:
  - diarrhoea, abdominal pain, irritability;

    - rarely: intussusception, anaphylactic reactions.
- If the child regurgitates/spits out/vomits the vaccine immediately after administration, wait a few minutes and re-administer the same dose.

Remarks

- Other rotavirus vaccines may be available (e.g. Rotavac®). The vaccination should be completed with the same vaccine when feasible. If not possible, follow national and manufacturer recommendations.
- Rotavirus vaccine can be administered concomitantly with other vaccines recommended in childhood.

Storage

☼ – Between 2 °C and 8 °C. Do not freeze.
Once opened, the content must be administered immediately; discard any unused open tube.

HUMAN TETANUS IMMUNOGLOBULIN (HTIG)

Therapeutic action

- Neutralisation of tetanus toxin. HTIG provides passive immunization against tetanus for 3 to 4 weeks.

Indications

- Prevention of tetanus in wound management, in patients non immunised or incompletely immunised or in patients whose immunisation status is unknown, in combination with tetanus vaccine
- Treatment of clinical tetanus

Forms and strengths, route of administration

- Solution for injection, in 250 IU (250 IU/ml, 1 ml) or 500 IU (250 IU/ml, 2 ml) ampoule or single-dose syringe, for IM injection.
  DO NOT ADMINISTER BY IV ROUTE.

Dosage and duration

Prevention of tetanus

- HTIG is administered in the event of tetanus-prone wounds, e.g. wounds with fracture, deep penetrating wounds, bite wounds, wounds containing foreign bodies, wounds contaminated with soil, infected wounds, extensive tissue damage (contusions, burns).
  Child and adult: 250 IU single dose; 500 IU if more than 24 hours has elapsed
- HTIG should be administered as soon as possible after injury, along with the tetanus vaccine, in a separate syringe and injection site.

Treatment of tetanus

- Neonate, child and adult: 500 IU single dose, to be injected into 2 different sites

Contra-indications, adverse effects, precautions

- Do not administer to patients with known allergy to HTIG.
- May cause (very rarely): allergic reactions.
- Ensure that the HTIG does not enter a blood vessel (risk of shock): aspirate prior to injection to confirm that the needle is not in a vein.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- For minor clean wounds, tetanus vaccine is administered alone.
- SC route may be used but only if IM route is contra-indicated.

Storage

– Between 2 °C and 8 °C. Do not freeze.

TETANUS-DIPHTHERIA VACCINE (Td)

Indications

- Prevention of tetanus in wound management
- Prevention of tetanus and diphtheria in pregnant women or women of childbearing age
- Prevention of tetanus and diphtheria in children over 4 years and adolescents (booster dose after complete primary vaccination)

Composition, forms, route of administration

- Bivalent vaccine combining tetanus toxoid and diphtheria toxoid (containing reduced dose of diphtheria toxoid)
- Suspension for injection in multidose vial, for IM injection into the deltoid muscle

Dosage and vaccination schedule

Child and adult: 0.5 ml per dose

Prevention of tetanus in wound management

Type of wound	Complete vaccination (3 or more doses) Time since administration of last dose			Incomplete vaccination (less than 3 doses) or no vaccination or unknown status
	< 5 years	5-10 years	> 10 years	
Minor, clean	None	None	Td 1 booster dose	Initiate [(a)] or complete tetanus vaccination
Other	None	Td 1 booster dose	Td 1 booster dose	Initiate [(a)] or complete tetanus vaccination and administer tetanus immunoglobulin

a 2 doses 4 weeks apart then 3 additional doses administered according to the vaccination schedule below.

Prevention of tetanus in pregnant women and women of childbearing age
5 doses administered according to the schedule below:

Td1	On first contact with the health care system or as soon as possible during pregnancy
Td2	At least 4 weeks after Td1
Td3	6 months to 1 year after Td2 or during the following pregnancy
Td4	1 to 5 years after Td3 or during the following pregnancy
Td5	1 to 10 years after Td4 or during the following pregnancy

In pregnant women, administer at least 2 doses before delivery: the 1st dose as soon as possible during pregnancy and the 2nd dose at least 4 weeks after the 1st and at least 2 weeks before due date. After delivery, continue vaccination as described in the table above until the required 5 doses have been administered.

Prevention of tetanus in children over 4 years (after complete primary vaccination and 1st booster between 12 and 23 months)
Booster dose between 4 and 7 years then between 9 and 15 years

Contra-indications, adverse effects, precautions

- Do not administer in the event of allergic reactions after a previous dose of tetanus or diphtheria vaccine.
- Vaccination should be postponed in the event of severe acute febrile illness; minor infections are not contra-indications.
- May cause: mild local reactions (redness, pain at the injection site), fever, pain, malaise; rarely: anaphylactic reactions.
- If administered simultaneously with other vaccines, use different syringes and injection sites.
- **Pregnancy and breast-feeding**: no contra-indication

Remarks

- The monovalent tetanus (TT) vaccine is used in certain national protocols. Use perferably the conjugate tetanus-diphtheria (Td) vaccine for the prevention of tetanus in children over 7 years, adolescents and adults.
- Tetanus vaccination in pregnant women and women of child bearing age protects neonates from tetanus.

Storage

– Between 2 °C and 8 °C. Do not freeze.

TUBERCULOSIS VACCINE = BCG VACCINE

Indications

- Prevention of tuberculosis

Composition, forms, route of administration

- Live attenuated bacterial vaccine
- Powder for injection in multidose vial, to be dissolved with the entire vial of the diluent supplied by the manufacturer, for intradermal injection into the external face of the left upper arm

Dosage and vaccination schedule

- Child: 0.05 ml single dose as soon after birth as possible
- If child is over one year old: 0.1 ml single dose

Contra-indications, adverse effects, precautions

- Do not administer to patients with immunodeficiency (symptomatic HIV infection, immunosuppressive therapy, etc.) and malignant haemopathy.
- Vaccination should be postponed in the event of evolutive extensive dermatosis, acute complicated malnutrition (vaccine should be given just before the child is discharged from the nutrition centre) and severe acute febrile illness (minor infections are not contra indications).
- May cause:
  - normal local reaction 2 to 4 weeks after injection: papule which changes to an ulcer, that usually heals spontaneously (dry dressing only), leaving a permanent scar;
  - occasionally: persistent ulcer with serous discharge up to 4 months after injection, non-suppurative adenitis, keloid formation, abscess at the injection site;
  - exceptionally: suppurative lymphadenitis, osteitis.
- Clean the injection site with boiled and cooled water and allow drying. Do not use antiseptics (risk of inactivation of live vaccine).
- Do not mix with other vaccines in the same syringe (inactivation of vaccines).
- If administered simultaneously with EPI vaccines, use different syringes and injection sites.
- **Pregnancy**: CONTRA-INDICATED
- **Breast-feeding**: no contra-indication

Remarks

- Inject the vaccine in the same place for each child to make it easy to find the BCG scar subsequently.

- If the injection is correctly performed an “orange-skin” papule, measuring 5-8 mm in diameter, should appear at the injection site.
- Duration of protection is not known, and decreases over time.

Storage

- Powder: between 2 °C and 8 °C. Freezing is possible but unnecessary
- Diluent: a cold chain is not required for storage. However, at least 12 hours before reconstitution of the vaccine, the diluent must be refrigerated between 2 °C and 8 °C so that the diluent and lyophilised powder are at the same temperature: a temperature difference during reconstitution may reduce vaccine efficacy. Do not freeze.
- Reconstituted vaccine: between 2 °C and 8 °C for 6 hours maximum.

TYPHOID CONJUGATE VACCINE (TCV)

Indications

- Prevention of typhoid fever in children as of 6 months and adults up to 45 years of age:
  - in endemic areas
  - in mass immunisation campaigns in the event of an outbreak or humanitarian emergency context, based on risk assessment

Composition, forms, route of administration

- Typhoid (polysaccharide) conjugate vaccine
- Suspension for injection in multidose vial, for IM injection into the anterolateral part of the thigh in children < 2 years and into the deltoid muscle in children ≥ 2 years.
  DO NOT ADMINISTER INTO THE GLUTEAL MUSCLE.

Dosage and vaccination schedule

Child and adult: 0.5 ml single dose

Routine vaccination

- Child at 9 months or during the 2nd year of life:
  one single dose at the same time as other recommended vaccines. Follow national recommendations.

Catch-up vaccination

- Child up to 15 years:
  one single dose. Follow national recommendations.

Contra-indications, adverse effects, precautions

- Do not administer in case of allergic reactions to any component of the vaccine.
- Vaccination should be postponed in the event of severe acute febrile illness; minor infections are not contra-indications.
- May cause: mild reactions at the injection site (pain, redness at the injection site), fever, headache, myalgia; rarely: anaphylactic reactions.
- If administered simultaneously with other vaccines, use different syringes and injection sites.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Typhoid conjugate vaccine does not protect against *Salmonella* Paratyphi or other types of non-typhi salmonella.
- Shake before use to homogenise the vaccine.

Storage

– Between 2 °C and 8 °C. Do not freeze.
Once opened, store vial between 2 °C and 8 °C for 6 hours maximum.

YELLOW FEVER VACCINE

Indications

- Prevention of yellow fever:
  - in children from 9 months of age and adults living in or travelling to or from endemic areas
  - in mass immunisation campaigns in the event of an outbreak

Composition, forms, route of administration

- Live-attenuated virus vaccine, prepared by culturing the virus in embryonated chicken eggs
- Powder for injection in monodose and multidose vials, to be dissolved with the entire vial of diluent supplied by the manufacturer, for IM injection into the anterolateral part of the thigh in children < 2 years and into the deltoid muscle in children ≥ 2 years and adults

Dosage and vaccination schedule

- Child and adult: 0.5 ml single dose
- In routine immunisation (EPI), the vaccine is usually administered between 9 and 12 months of age, along with the measles vaccine.
- Vaccination is contra-indicated in children less than 6 months. In children between 6 and 9 months, vaccination is only recommended in epidemics, as the risk of virus transmission may be very high.

Contra-indications, adverse effects, precautions

- Do not administer to patients with history of allergy to egg; to immunocompromised patients or patients with symptomatic HIV infection or under immunosuppressive treatment.
- Vaccination should be postponed in the event of severe acute febrile illness; minor infections are not contra-indications.
- May cause: mild reactions at the injection site (redness, pain at the injection site), mild fever, headache, myalgia; rarely: hypersensitivity reactions, neurological disorders (especially in children < 9 months and adults > 60 years), multiple organ failure (especially in adults > 60 years).
- If administered simultaneously with other vaccines, use different syringes and injection sites.
- **Pregnancy**: not recommended. However, given the severity of yellow fever, the vaccine is administered when the risk of contamination is very high (epidemics, unavoidable travel to regions of high endemicity).
- **Breast-feeding**: no contra-indication

Remarks

- A standard 0.5 ml single dose by IM injection is sufficient to confer life-long immunity. A booster dose is no longer recommended.

- Only in the event of limited vaccine supply during yellow fever outbreaks and according to national recommendations, vaccination may be administered by SC or IM injection in children over 2 years and adults with a fractional dose of 1/2 or 1/5 of the standard dose (minimum 0.1 ml) using vials containing a maximum of 10 standard doses. Children < 2 years, pregnant women and HIV positive individuals are administered a standard 0.5 ml dose by IM injection.

Storage

- Powder: between 2 °C and 8 °C.
- Diluent: a cold chain is not required for storage. However, at least 12 hours before reconstitution of the vaccine, the diluent must be refrigerated between 2 °C and 8 °C so that the diluent and lyophilised powder are at the same temperature: a temperature difference during reconstitution may reduce vaccine efficacy. Do not freeze.
- Reconstituted vaccine: between 2 °C and 8 °C, for 6 hours maximum.

Drugs for external use, antiseptics and disinfectants

ACICLOVIR, eye ointment

ALCOHOL-BASED solution or gel

ARTESUNATE rectal

BENZOIC acid + SALICYLIC acid ointment = Whitfield's ointment

BENZYL BENZOATE, lotion

CALAMINE lotion

CHLORHEXIDINE 5% solution

CHLORHEXIDINE 7.1% dermal gel

CHLORHEXIDINE 0.2% mouthwash

CHLORINE-RELEASING COMPOUNDS (NaDCC, HTH, bleach, chlorinated lime)

CIPROFLOXACIN, ear drops

CLOTRIMAZOLE, vaginal tablet

DIMETICONE, lotion

ETHANOL

ETHYL ALCOHOL = ETHANOL

FLUORESCEIN, eye drops

HYDROCORTISONE, cream and ointment

LEVONORGESTREL intrauterine device

MICONAZOLE, cream

MUPIROCIN, ointment

NaDCC

NYSTATIN, vaginal tablet

OXYBUPROCAINE, eye drops

PERMETHRIN 1%, lotion

PERMETHRIN 5%, cream

PILOCARPINE, eye drops

PODOPHYLLOTOXIN 0.5%, solution or gel

PODOPHYLLUM resin, solution

POVIDONE IODINE = POLYVIDONE IODINE = PVI, aqueous solution

POVIDONE IODINE = POLYVIDONE IODINE = PVI, scrub solution

SILVER SULFADIAZINE, cream

SODIUM DICHLOROISOCYANURATE = NaDCC

TETRACYCLINE, eye ointment

ZINC OXIDE, ointment

ACICLOVIR, eye ointment

Prescription under medical supervision

Therapeutic action

- Antiviral active against herpes virus

Indications

- Treatment of herpes keratitis
- Prevention of herpes keratitis in neonate born to a mother suffering from genital herpes at the moment of childbirth

Forms and strengths

- 3% ointment, tube

Dosage and duration

Treatment of herpes keratitis

- Child and adult: one application 5 times daily into the conjunctival sac of both eyes for 14 days or for 3 days after lesions have healed

Prevention of herpes keratitis in neonate

- Immediately after birth: one single application of aciclovir into the conjunctival sac of both eyes (after washing eyes with sterile 0.9% sodium chloride)

Contra-indications, adverse effects, precautions

- In neonates, wait 12 hours after application of aciclovir 3% then apply tetracycline eye ointment 1% to prevent gonococcal neonatal conjunctivitis.

Storage

Below 25 °C
Use within 30 days after first opening.

ALCOHOL-BASED solution or gel

Therapeutic action

- Antiseptic

Indications

- Antiseptic hand rub, before and after procedures, whether gloves are used or not

Forms and strengths

- Ready to use alcohol-based hand rub solution or gel

Use

- Alcohol-based hand rubs can only be used if hands are not visibly dirty or soiled with organic matter. There must be no residual powder on hands (use powder-free gloves) and hands must be dry.
- Apply 3 ml of solution or gel in a cupped hand and spread to cover the entire surface of hands. Rub hands for 20-30 seconds, palm to palm, palm over dorsum, between fingers (fingers interlaced), around the thumbs and nails, until hands are completely dry. Do not dilute the product. Do not rinse off or dry hands.
- As long as hands are not visibly soiled, the product may be reapplied as many times as necessary without handwashing before or after applying the product.

Contra-indications, adverse effects, precautions

- Do not use if:
  - hands are visibly dirty or soiled with organic matter (wash hands);
  - there is residual powder on hands (wash hands);
  - hands are wet (water dilutes alcohol and impedes drying).
- Do not use after direct contact with a patient with a parasitic skin infection (scabies, lice): wash hands.
- Do not use simultaneously with soap or another antiseptic (antagonism, inactivation, etc.).
- Do not use for disinfection of material, patient's skin or mucous membranes.
- May cause: stinging sensation on broken skin.
- In case of eye contact flush immediately with plenty of water.

Remarks

- Dose required and duration of handrubbing may vary depending on the product used. Read the manufacturer's instructions carefully.

- To avoid difficulty in putting on gloves, rub hands until the product is completely dry.
- Use of alcohol-based hand rubs may result in a sticky residue on hands after several applications. In this event, wash hands.
- Some alcohol-based hand rubs can be used for surgical hand antisepsis, however the technique is not the same as for antiseptic hand rub.

Storage

– Below 25 °C

Close bottles tightly to avoid evaporation. Keep away from sources of ignition (flame, spark, incandescent material).

ARTESUNATE rectal

Prescription under medical supervision

Therapeutic action

- Antimalarial

Indications

- Pre-referral treatment of suspected or confirmed severe malaria, in children less than 6 years, before transfer to a facility where parenteral antimalarial treatment can be administered

Forms and strengths, route of administration

- 100 mg rectal capsule

Dosage and duration

- 10 mg/kg as a single dose before transferring the patient
- Child 2 months to < 3 years (≤ 10 kg): 1 rectal capsule single dose (100 mg)
- Child 3 to < 6 years (≤ 20 kg): 2 rectal capsules single dose (200 mg)

Contra-indications, adverse effects, precautions

- May cause: gastrointestinal disturbances, headache.
- Buttocks should be held together for at least 1 minute to ensure retention. If capsules are expelled from the rectum within 30 minutes of insertion, re-administer the treatment.

Remarks

- Up to 2 capsules can be administered simultaneously.

Storage

– Between 15 °C and 25 °C

Avoid temperature excursions above 30 °C. Do not refrigerate. Do not freeze.

BENZOIC acid + SALICYLIC acid ointment = Whitfield's ointment

Therapeutic action

- Fungistatic and keratolytic agent

Indications

- Dermatophyte infection of the scalp (tinea capitis), in combination with a systemic antifungal
- Dermatophyte infection of the glabrous skin and skin folds:
  - alone, if lesions are localised, non-extensive
  - in combination with a systemic antifungal, if the lesions are extensive

Forms and strengths

- Benzoic acid 6% + salicylic acid 3% ointment, tube or jar

Dosage

- Child and adult: one application 2 times daily, in a thin layer, to clean and dry skin

Duration

- 3 to 6 weeks, depending on clinical response

Contra-indications, adverse effects, precautions

- Do not apply to exudative lesions, mucous membranes or eyes.
- May cause: skin irritation, local benign inflammation.
- In case of secondary bacterial infection, start appropriate local or systemic treatment before applying Whitfield's ointment.
- In case of contact with eyes or mucous membranes, flush immediately with plenty of water.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Whitfield's ointment is not included in the WHO list of essential medicines.

Storage

 – Below 25 °C

Once the ointment has been exposed to a high temperature, the active ingredients are no longer evenly distributed: the ointment must be homogenized before using.

BENZYL BENZOATE, lotion

Therapeutic action

- Scabicide

Indications

- Scabies (preferably use 5% permethrin cream for this indication)

Forms and strengths

- 25% lotion

Preparation and use

- Shake the bottle before application or dilution.
- Dilute the lotion, as required, according to age. Use drinking or boiled water.
- Apply the lotion to the whole body, including scalp, postauricular areas, palms of the hands and soles of the feet, paying particular attention to skin creases and interdigital web spaces. Leave on for recommended contact time, then rinse thoroughly with water.
- In children under 2 years: wrap hands to avoid accidental ingestion and contact with eyes.

	Child < 2 years	**Child 2 to 12 years**	**Child > 12 years and adult**	**Pregnant woman**
Preparation	1 part of 25% lotion + 3 parts of water	1 part of 25% lotion + 1 part of water	Undiluted 25% lotion	Undiluted 25% lotion
Contact time	12 hours (6 hours in children < 6 months)	24 hours	24 hours	12 hours
Number of applications	One application only	Two applications (e.g. 24 hours apart, with a rinse between the two applications; or two successive applications 10 minutes apart, when the first application has dried, then rinse after 24 hours)		One application only

Contra-indications, adverse effects, precautions

- Do not apply to broken skin (risk of systemic absorption), the face or mucous membranes.
- May cause: burning sensation; contact dermatitis in case of repeated applications; seizures in the event of marked transcutaneous absorption; rarely: hypersensitivity reactions.
- Avoid contact with eyes. In case of accidental contact, flush immediately with plenty of water.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication. Do not apply to the breasts.

Remarks

- Close contacts should be treated at the same time regardless of whether they have symptoms or not. Decontaminate, after each treatment, the clothes and bed linen of patients and close contacts: wash ≥ 60 °C and dry in the sun, or leave in direct sunlight or seal in a plastic bag for 72 hours.
- Itching may persist for up to 4 weeks after the end of treatment (allergic reaction to dead parasites). Do not re-treat during this period. The treatment may be repeated if specific scabies lesions (scabious burrows) are still present after this period.
- Prepare dilution in a glass container. The lotion may damage certain plastics.

Storage

 – Below 25 °C

CALAMINE lotion

Therapeutic action

- Antipruritic drug

Indications

- Symptomatic treatment of pruritus

Forms and strengths

- Calamine 8% or 15% lotion, bottle

Dosage

- Child and adult: one application 3 to 4 times daily in a thin layer

Duration

- According to clinical response

Contra-indications, adverse effects, precautions

- Clean the skin before applying the lotion.
- Do not apply to exudative and/or superinfected lesions, mucous membranes or eyes.
- In case of contact with eyes or mucous membranes, flush immediately with plenty of water.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication. Do not apply to the breasts.

Remarks

- Shake the lotion well before using.

Storage

– Below 25 °C

CHLORHEXIDINE 5% solution

Therapeutic action

- Antiseptic

Indications

- Antisepsis of minor and superficial wounds and burns

Forms and strengths

- 5% concentrated solution of chlorhexidine gluconate, corresponding to 2.8% chlorhexidine, to be diluted before use

Preparation

- Use as a 0.05% aqueous solution:
  For one litre: 10 ml of 5% concentrated solution + 990 ml of clear water, boiled a few minutes and cooled

Dosage

- Apply diluted solution to minor and superficial wounds and burns.

Contra-indications, adverse effects, precautions

- Do not use undiluted solution.
- Do not bring into contact with body cavities, eyes (risk of corneal damage), brain and meninges, middle ear (risk of deafness if ear drum is perforated).
- Do not use with soap or a different type of antiseptic, e.g. povidone iodine (incompatibility).
- May cause: skin and mucous membrane irritation; rarely allergic reactions.
- Avoid applications to mucous membranes, especially to genital mucous membranes.
- Do not use cork stoppers (decreases the antibacterial activity of chlorhexidine).

Storage

– Below 25 °C
Once diluted, the solution must be used immediately; do not store the diluted solution (risk of contamination).

CHLORHEXIDINE 7.1% dermal gel

Therapeutic action

- Antiseptic

Indications

- Antisepsis of umbilical cord

Forms and strengths

- 7.1 % chlorhexidine digluconate dermal gel, delivering 4% chlorhexidine, in 3 g sachet and 20 g tube

Dosage and duration

- One application of 3 g of gel to the umbilical cord stump immediately after cutting the cord or during the first post-natal visit within the first 7 days of life if the neonate was born at home
- In settings where traditional unhygienic practices are common: one application daily for the first 7 days of life

Contra-indications, adverse effects, precautions

- Do not bring into contact with body cavities, eyes (risk of corneal damage), brain and meninges, middle ear (risk of deafness if ear drum is perforated).
- Do not use with soap or a different type of antiseptic, e.g. povidone iodine (incompatibility).
- May cause: skin and mucous membrane irritation; rarely allergic reactions.
- Avoid applications to mucous membranes, especially to genital mucous membranes.

Storage

– Below 25 °C

CHLORHEXIDINE 0.2% mouthwash

Therapeutic action

- Antiseptic

Indications

- Antisepsis of noma mouth ulcers

Forms and strengths

- 0.2% mouthwash solution of chlorhexidine digluconate, ready to use

Dosage

- Child: one application 4 to 6 times daily to oral mucosa, using a clean gauze swab wrapped around a tongue depressor

Duration

- According to clinical response

Contra-indications, adverse effects, precautions

- Do not swallow.
- Do not bring into contact with eyes (risk of corneal damage), middle ear (risk of deafness if ear drum is perforated).
- May cause: reversible brown discoloration of the tongue and teeth, taste disturbances; rarely allergic reactions.

Storage

– Below 25 °C
Once open, the mouthwash solution keeps for 4 weeks maximum.

CHLORINE-RELEASING COMPOUNDS (NaDCC, HTH, bleach, chlorinated lime)

Therapeutic action

- Disinfectants

Indications

- Disinfection of medical devices, instruments, linen, floors and surfaces

Forms and strengths

The potency of chlorine disinfectants is expressed in terms of active chlorine in either:

- percentage (%)
- g/litre or mg/litre
- parts per million (ppm)
- chlorometric degree (1°chl. = approximately 0.3% active chorine)
  1% = 10 g/litre = 10 000 ppm
  1 mg/litre = 1 ppm = 0.0001%

The most widely used chlorine disinfectants are:

- Sodium dichloroisocyanurate (NaDCC), 1,67 g tab.....1 g active chlorine/tab
- Calcium hypochlorite (HTH), granules.....65-70% active chlorine
- Sodium hypochlorite solutions (liquid bleach):
  - concentrated bleach .....36°chl. = 9.6% active chlorine
  - bleach .....9°chl or 12°chl. = 2.6% or 3.6% active chlorine
- Chlorinated lime, powder .....25-35% active chlorine

Preparation and use

- The concentration required depends on the amount of organic material present (how clean/unclean the surface is).
- The active chlorine content must always be checked on the product packaging in order to adjust the dilution if necessary.
- Prepare solutions with cold water in non-metallic containers.
- A deposit in HTH solutions and chlorinated lime solutions is normal (use only the supernatant).

	Clean medical devices, equipment, surfaces and linen (after cleaning)	Surfaces, beds, utensils in case of cholera (after cleaning)	Surfaces, equipment contaminated with blood and other body fluid spills (before cleaning)	Corpses, excreta, boots in case of cholera
Concentration required, expressed in active chlorine	**0.1%** = 1000 ppm	**0.2%** = 2000 ppm	**0.5%** = 5000 ppm	**2%** = 20 000 ppm
NaDCC (1 g active chlorine/tablet	1 tab/litre water	2 tab/litre water	5 tab/litre water	20 tab/litre water
Calcium hypochlorite (70% active chlorine)	15 g/10 litres = 1 level tablespoon for 10 litres water	30 g/10 litres = 2 level tablespoons for 10 litres water	7.5 g/litre = ½ tablespoon for 1 litre water	300 g/10 litres = 20 level tablespoons for 10 litres water
Bleach (2.6% active chlorine)	For 5 litres: 200 ml + 4800 ml water	For 5 litres: 400 ml + 4600 ml water	For 1 litre: 200 ml + 800 ml water	For 5 litres: 4000 ml + 1000 ml water

For more information, see Antiseptics and disinfectants, Part two.

Precautions

- Handle concentrated products with caution (avoid jolts and exposure to high temperatures or flames).
- Do not bring dry products, particularly HTH and chlorinated lime, in contact with organic materials (e.g. corpses): risk of explosion.
- Avoid inhaling vapours and dust when opening or handling the containers.

Remarks

- Sodium dichloroisocyanurate (NaDCC) is less corrosive than the other products.
- Bleach or concentrated bleach, or if not available HTH, may be used to prepare an antiseptic solution at 0.5% active chlorine (as substitute to Dakin's solution), provided sodium bicarbonate (one tablespoon per litre) is added to the final solution to neutralise the alkalinity (e.g. for one litre:

200 ml of bleach 2.6% + 800 ml distilled or filtered water, or if not available, boiled and cooled water + 1 tablespoon of sodium bicarbonate).

- Chloramine T (powder or tablet, 25% active chlorine) is another chlorine-releasing compound used above all as an antiseptic.
- Trichloro-isocyanuric acid (TCCA), in powder or granules (90% active chlorine), is very similar to NaDCC, but its use is limited due to its poor solubility.

Storage

☼ – ☂ – In airtight, non-metallic containers, protected from light, heat (and humidity for dry products).
Chlorinated lime, bleach and concentrated bleach are unstable. HTH is more stable. NaDCC is by far the most stable.

CIPROFLOXACIN, ear drops

Prescription under medical supervision

Therapeutic action

- Fluoroquinolone antibacterial

Indications

- Acute otitis externa
- Chronic suppurative otitis media

Forms and strengths

- 0.3% ear drops

Dosage

- Child ≥ 1 year: 3 drops 2 times daily
- Adult: 4 drops 2 times daily

To administer drops in the affected ear(s), pull back the auricle and maintain the head to one side for a few minutes.

Duration

- Acute otitis externa: 7 days
- Chronic suppurative otitis media: until no more drainage is obtained (approximately 2 weeks, max.4 weeks)

Contra-indications, adverse effects, precautions

- May cause: headache, local skin eruption or pruritus.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Do not touch let the dropper touch either hands or the ear.

Storage

Below 25 °C
Once the bottle has been opened, solution keeps for 4 weeks.

CLOTRIMAZOLE, vaginal tablet

Therapeutic action

- Antifungal

Indications

- Vaginal candidiasis

Forms and strengths, route of administration

- 500 mg vaginal tablet, with applicator

Dosage and duration

- Adult: one vaginal tablet single dose, at bedtime, preferably lying down

Place the tablet on the applicator. Insert the applicator high into the vagina. Push the plunger then remove the applicator.

Contra-indications, adverse effects, precautions

- May cause: local irritation; allergic reactions.
- Inform patients that the oil-based vaginal tablet may damage the latex in condoms and diaphragms and reduce their effectiveness.
- **Pregnancy**: no contra-indication (do not use the applicator to avoid damage to the cervix)
- **Breast-feeding**: no contra-indication

Remarks

- Also comes in 100 mg vaginal tablets, applied once daily at bedtime for 6 days. Do not interrupt treatment during menstruation. Clean the applicator with water after each use.

Storage

– Below 25 °C

DIMETICONE, lotion

Therapeutic action

- Pediculicide by physical mode of action

Indications

- Head pediculosis (lice)

Forms and strengths

- 4% lotion

Use

- Child 6 months and over and adult: apply lotion to scalp and entire length of the hair shaft, paying particular attention to the areas behind the ears and around the nape of the neck. Leave on hair for 8 hours (e.g. overnight), then rinse throughly with water.
- Repeat the application after 7 days.

Contra-indications, adverse effects, precautions

- May cause: scalp and eye irritation.
- Keep away from flames and/or heat sources during application and until rinsing (risk of ignition).
- Avoid contact with eyes. In case of accidental contact, flush immediately with plenty of water.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Examine everyone in contact with a patient and only treat those with live lice and/or live nits. Preventive treatment of noninfected persons is ineffective.
- Wash combs and decontaminate headwear, bedding: wash ≥ 60 °C, iron or dry in the sun or, if not feasible, seal in a plastic bag for 2 weeks.

Storage

– Below 25 °C

ETHANOL

See ETHYL ALCOHOL

ETHYL ALCOHOL = ETHANOL

Therapeutic action

- Antiseptic and disinfectant

Indications

- Antisepsis of intact skin prior to injections and venopunctures
- Disinfection of latex stopper of infusion bottles and drug vials (except vaccines), latex injection sites of infusion sets

Forms and strengths

- Mixtures of alcohol (ethanol) and water in different concentrations (e.g. 95% v/v ethanol), sometimes containing additives to avoid their ingestion.
- Alcoholic strength is expressed:
  - preferably as a percentage by **volume** of alcohol (% v/v); e.g. 1000 ml of 95% v/v alcohol contains 950 ml of absolute alcohol.
  - sometimes as a percentage by **weight** of alcohol (% w/w). The % w/w is not equal to the % v/v because the mixture of water and alcohol produces a reduction in volume.
  - sometimes in **degrees** (°) but this should be discouraged as it is a source of error. There are at least 3 different definitions of degrees: the old UK definition (° British proof), the American (° proof) and the one used in French speaking countries (1° = 1% v/v). For example: 40% v/v = 70° proof (British system) = 80° proof (American system) = 40° in French speaking countries.

Preparation

Use 70% v/v ethanol, which is more effective than higher concentrations.

- To obtain 1 litre of 70% v/v ethanol:
  - take 785 ml of 90% v/v ethanol, or 730 ml of 95% v/v ethanol, or 707 ml of 99% v/v ethanol;
  - add distilled or filtered water to make up a volume of 1 litre;
  - leave to cool and top up with water again to bring the volume back to 1 litre (mixing water and ethanol together produces a reaction whereby volume is reduced).

Precautions

- Do not apply to mucous membranes, wounds or burns: it is painful, irritating and slows the healing process.
- Do not apply on neonatal skin.

Remarks

- Ethanol can be used for disinfection of non-critical medical items (items that are in contact with intact skin only) that are not soiled by blood or other body fluids.
- Critical medical items (surgical instruments, etc.) cannot, under any circumstances, be “sterilized” by alcohol flaming, immersion in ethanol or wiping with ethanol.

Storage

– Below 25 °C

Close bottles tightly to avoid evaporation. Keep away from sources of ignition (flame, spark, incandescent material).

FLUORESCEIN, eye drops

Last updated: September 2023

Therapeutic action

- Ophthalmic diagnostic staining agent

Indications

- Detection of corneal or conjunctival epithelial damage

Forms and strengths

- 0.5% eye drops in single use vial

Dosage and duration

- Instill 1 or 2 drops into the conjunctival sac.
- Ask patient to blink a few times to spread the dye around; remove excess fluorescein and proceed with the examination.

Contra-indications, adverse effects, precautions

- May cause: local allergic reaction (rare).
- Wait 15 minutes before administering any other kind of eye drops.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- To facilitate the examination, use an ophthalmoscope with a blue filter (increases fluorescence).
- Under normal light, large lesions are visible but small lesions cannot be detected.

Storage

– Below 25 °C
Vials are designed for single use only; they must be discarded after use.

HYDROCORTISONE, cream and ointment

Prescription under medical supervision

Therapeutic action

- Topical corticosteroid

Indications

- Atopic eczema, contact eczema, seborrhoeic dermatitis
- Reactions to insect bites

Forms and strengths

- 1% cream and ointment

Dosage and duration

- Child and adult: one application once daily or 2 times daily to the affected area only, in thin layer, for 7 days maximum

Contra-indications, adverse effects, precautions

- Do not use:
  - for more than 7 days;
  - in case of acne, rosacea, perioral dermatoses, untreated bacterial (impetigo, etc.), fungal (candidiasis and dermatophytosis) and viral (herpes) skin infections;
  - under occlusive dressing, on large areas of skin or on wounds, especially in infants and children (increased local and systemic adverse effects).
- May cause:
  - irritations, pruritus, burning sensations, skin eruptions, hypopigmentation, contact eczema and urticaria;
  - skin atrophy, dilation of small blood vessels (telangiectasia), stretch marks, skin fragility, delayed wound healing in case of prolonged treatment.
- Apply with precaution to:
  - the eyelids and around the eyes (risk of glaucoma and cataract);
  - the face (risk of rosacea and thinning of the skin);
  - the skin folds (increased adverse effects).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication. Do not apply to the breasts.

Remarks

- The cream and ointment are interchangeable. However, preferably use the cream on moist lesions and the ointment on dry and scaly lesions.

Storage

– Below 25 °C

LEVONORGESTREL intrauterine device

Last updated: October 2021

Prescription under medical supervision

Therapeutic action

- Hormonal contraceptive, progestogen

Indications

- Long-acting contraception
- Long-term treatment of functional uterine bleeding

Forms and strengths

- Intrauterine device (IUD) containing 52 mg of levonorgestrel and releasing 20 micrograms daily on insertion

Dosage

The IUD may be inserted at any moment of the cycle if it is reasonably certain the woman is not pregnant, including when switching from another form of contraception.

- For contraception, use condoms for 7 days after the insertion of the IUD if it is inserted:
  - over 7 days after the start of menstrual period;
  - over 28 days postpartum if not breastfeeding;
  - over 7 days after an abortion.

Duration

- Contraception: as long as this method of contraception is desired and well tolerated, for max. 5 years, after which the IUD must be changed.
- Long-term treatment of functional uterine bleeding: according to clinical response.

Contra-indications, adverse effects, precautions

- Do not use in patients with breast cancer, cervical cancer, severe or recent hepatic disease, genital infection, active thromboembolic disorders, hydatidiform mole or other gestational trophoblastic disease.
- May cause:

    - changes in bleeding patterns: amenorrhoea, irregular lighter bleeding; rarely: heavy prolonged bleeding;
    - abdominal pain, headache, nausea, breast tenderness, acne, weight gain, mood change.
- IUD insertion-related complications: expulsion of IUD, pelvic infection, risk of uterine perforation during insertion.
- The contraceptive efficacy of levonorgestrel-releasing IUD does not seem to be reduced in women taking enzyme-inducing drugs.
- **Pregnancy**: CONTRA-INDICATED
- **Breast-feeding**: no contra-indication

Remarks

- Fertility returns rapidly after removal of the IUD.
- The IUD can be inserted into the uterus within 48 hours after childbirth. If not inserted within 48 hours, delay insertion until after 28 days postpartum.
- For details on insertion and removal of IUD, read manufacturer's instructions carefully.

Storage

– Below 25 °C

MICONAZOLE, cream

Therapeutic action

- Antifungal

Indications

- Cutaneous candidiasis (groin, abdominal folds, intergluteal fold, sub-mammary folds, interdigital spaces of the toes or fingers)
- Candidal balanitis
- Mild dermatophyte infection of the glabrous skin and skin folds

Forms and strengths

- 2% cream, tube

Dosage

- Child and adult: one application 2 times daily, in a thin layer, to clean and dry skin

Duration

- Cutaneous candidiasis: 2 to 4 weeks
- Candidal balanitis: one week
- Dermatophyte infection: 2 to 3 weeks

Contra-indications, adverse effects, precautions

- May cause: local irritation; allergic reactions.
- In the event of genital candidiasis, inform patients that the oil-based cream may damage the latex in condoms and diaphragms and reduce their effectiveness.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication. In the event of mammary candidiasis, clean the breast before nursing and apply cream after nursing.

Remarks

- For the treatment of vulvovaginal candidiasis, miconazole cream may complement, but does not replace, treatment with clotrimazole vaginal tablets.

Storage

 – Below 25 °C

MUPIROCIN, ointment

Prescription under medical supervision

Mupirocin should not be used in patients with extended impetigo (more than 5 lesions or more than one skin area involved), bullous impetigo, ecthyma, impetigo with abscess, and in immunodeficient patients: in such cases, oral antibiotic therapy is required.

Therapeutic action

- Antibacterial

Indications

- Localized non bullous impetigo (less than 5 lesions in a single area)

Forms and strengths

- 2% ointment, tube

Dosage and duration

- Child and adult: one application 3 times daily, to clean and dry skin, for 7 days
  The patient should be reassessed after 3 days. If there is no response, switch to oral antibiotic therapy.

Contra-indications, adverse effects, precautions

- May cause: pruritus and burning sensation; allergic reactions.
- If applying to the face, avoid contact with eyes.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication. Do not apply to the breasts.

Remarks

- Do not mix with other ointments (effect of mupirocin decreased).
- Avoid touching the lesions; keep them covered with gauze if possible.

Storage

– Below 25 °C

NaDCC

See SODIUM DICHLOROISOCYANURATE

NYSTATIN, vaginal tablet

Therapeutic action

- Antifungal

Indications

- Vaginal candidiasis

Forms and strengths, route of administration

- 100 000 IU vaginal tablet

Dosage and duration

- Adult: one tablet once daily at bedtime for 14 days

Tablets must be moistened and inserted high into the vagina.

Contra-indications, adverse effects, precautions

- May cause (rarely): local irritation, allergic reactions.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Do not interrupt treatment during menstruation.
- Prefer clotrimazole 500 mg vaginal tablet as a single dose for this indication.

Storage

– Below 25 °C

Once a tablet is removed from the packaging, it must be used immediately.

OXYBUPROCAINE, eye drops

Prescription under medical supervision

Therapeutic action

- Local anaesthetic

Indications

- Short-term anaesthesia of conjunctiva and cornea

Forms and strengths

- 0.4% eye drops in single use vial

Dosage and duration

Removal of foreign bodies

- Up to 3 drops into the conjunctival sac, administered one to two minutes apart

Measurement of intraocular pressure

- 1 drop into the conjunctival sac

Contra-indications, adverse effects, precautions

- Do not use repeatedly (risk of severe and permanent corneal damage).
- May cause: stinging on instillation.
- Wait 15 minutes before administering any other kind of eye drops.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Anaesthesia is produced within one minute and lasts 10 to 20 minutes.
- Anaesthetic eye drops (oxybuprocaine, tetracaine, etc.) are intended for specific therapeutic or diagnostic procedures. They must not be given to the patient for home use. In the event of intense ocular pain, prescribe an appropriate oral analgesic.

Storage

Below 25 °C

Vials are designed for single use only; they must be discarded after use.

PERMETHRIN 1%, lotion

Therapeutic action

- Pediculicide (pyrethroid insecticide)

Indications

- Head pediculosis (lice)

Forms and strengths

- 1% lotion

Use

- Child 2 months and over and adult: apply lotion to scalp and entire length of the hair shaft, paying particular attention to the areas behind the ears and around the nape of the neck. Leave on hair for 10 minutes, then rinse throughly with water.
- Repeat the application after 7 days.

Contra-indications, adverse effects, precautions

- Use with caution and under medical supervision in children under 6 months.
- May cause: scalp irritation, pruritus, skin rash and redness; rarely: oedema, hypersensitivity reactions.
- Avoid contact with eyes. In case of accidental contact, flush immediately with plenty of water.
- **Pregnancy and breast-feeding**: prefer dimeticone

Remarks

- Examine everyone in contact with a patient and only treat those with live lice and/or live nits. Preventive treatment of noninfected persons is ineffective and increases the risk of resistance.
- Wash combs and decontaminate headwear and bedding: wash ≥ 60 °C, iron or dry in the sun or, if not feasible, seal in a plastic bag for 2 weeks.
- Use the lotion rather than the shampoo that is less effective as the contact time is usually shorter.
- Permethrin 5% cream is used for the treatment of scabies in children 2 months and over and adults.

Remarks Storage

– Below 25 °C

PERMETHRIN 5%, cream

Therapeutic action

- Scabicide (pyrethroid insecticide)

Indications

- Scabies

Forms and strengths

- 5% cream

Use

- Child 2 months and over and adult: apply the cream to the whole body, including scalp, postauricular areas, palms of the hands and soles of the feet, paying particular attention to skin creases and interdigital web spaces. Leave on for at least 8 hours (e.g. overnight) then rinse thoroughly with water.
- In child under 2 years: wrap hands to avoid accidental ingestion and contact with eyes.
- Repeat the application after 7 days.

Contra-indications, adverse effects, precautions

- Do not use in children under 2 months.
- Do not apply to the face and mucous membranes, nor on broken skin.
- May cause: paraesthesia, pruritus, redness, burning sensation, skin dryness; rarely: oedema, hypersensitivity reactions.
- Avoid contact with eyes. In case of accidental contact, flush immediately with plenty of water.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication. Do not apply to the breasts.

Remarks

- Close contacts should be treated at the same time regardless of whether there have symptoms or not. Decontaminate, after each treatment, clothes and bed linen of patients and close contacts: wash ≥ 60 °C and dry in the sun, or expose to sunlight or seal in a plastic bag for 72 hours.
- Itching may persist for up to 4 weeks after the end of treatment (allergic reaction to dead parasites): do not re-treat during this period. The treatment may be repeated if specific scabies lesions (scabious burrows) are still present after this period.

- 1% permethrin lotion is used for the treatment of head lice in children 2 months and over and adults.

Storage

– Below 25 °C

PILOCARPINE, eye drops

Prescription under medical supervision

Therapeutic action

- Cholinergic anti-glaucoma agent, miotic

Indications

- Chronic open-angle glaucoma

Forms and strengths

- 2% eye drops

Also comes in 4% eye drops.

Dosage

- Adult: 1 drop into the conjunctival sac 4 times daily

Duration

- Life-long treatment

Contra-indications, adverse effects, precautions

- Do not administer to children.
- Do not administer to patients with iridocyclitis and some forms of secondary glaucoma.
- Do not administer to patients with history of retinal detachment (trauma or family history) nor to myopic patients, except if it is possible to examine the peripheral retina (fundus examination) prior to the initiation of therapy and routinely thereafter.
- May cause:
  - transient blurred vision, visual field modification, difficulty with dark adaptation (inform patients, especially drivers);
  - retinal detachment in patients with myopia;
  - ocular irritation, headache (decreasing after 2 to 4 weeks); rarely, allergic reactions.
- In case of treatment with another eye drop, wait 5 minutes before instilling the second eye drop treatment.
- Patients should have regular monitoring of intraocular pressure during therapy.
- **Pregnancy**: no contra-indication
- **Breastfeeding**: no contra-indication

Remarks

- Do not touch the dropper with the hands.

Storage

Below 25 °C
Once the bottle has been opened, solution keeps for 2 weeks.

PODOPHYLLOTOXIN 0.5%, solution or gel

Prescription under medical supervision

Therapeutic action

- Antiviral, antimitotic, cytolytic agent active against human papillomaviruses (HPVs)

Indications

- External genital warts, perianal warts and vaginal warts

Forms and strengths

- 0.5% solution or gel, with applicator tips

Dosage

- One application to warts 2 times daily
- For vaginal warts, allow to dry before removing the speculum.

Duration

- 3 consecutive days per week, for a maximum of 4 weeks

Contra-indications, adverse effects, precautions

- Do not use to treat genital warts in children.
- Do not apply to warts > 3 cm.
- Do not apply to cervical, urethral, anorectal or oral warts.
- Do not apply to healthy skin.
- May cause local reactions: erythema, ulceration, pain in area where applied.
- Use a new applicator tip for each application.
- Avoid contact with eyes. In case of eye contact flush immediately with plenty of water.
- **Pregnancy**: CONTRA-INDICATED
- **Breast-feeding**: CONTRA-INDICATED

Remarks

- When treatment is contra-indicated or has failed after 4 weeks, change treatment method (cryosurgery, electrosurgery, surgical removal).

Storage

– Below 25 °C

PODOPHYLLUM resin, solution

Prescription under medical supervision

Therapeutic action

- Antiviral, antimitotic, cytolytic agent active against human papillomaviruses (HPVs)

Indications

- External genital warts, perianal warts and vaginal warts

Forms and strengths

- Podophyllum resin in alcohol or compound benzoin tincture, 10%, 15% and 25% solution for topical application

Use

- Always apply a protective layer of vaseline or zinc oxide ointment on the surrounding skin prior to treatment.
- Apply podophyllum resin to warts:
  - For external warts, leave on the warts for 1 to 4 hours then wash with soap and water.
  - For vaginal warts, allow to dry before removing the speculum.

Duration

- Apply once weekly if necessary, for a maximum of 4 weeks.

Contra-indications, adverse effects, precautions

- Do not use to treat genital warts in children.
- Do not apply to healthy skin or mucous membranes, or to warts > 3 cm, or to cervical, urethral, anorectal or oral warts.
- May cause:
  - local reactions: erythema, ulceration, pain in area where applied;
  - systemic adverse effects: gastrointestinal disturbances, haematological and neurological disorders (possibly severe) in the event of prolonged or excessive application, or when applied to bleeding lesions.
- Avoid contact with eyes. In case of eye contact flush immediately with plenty of water.
- **Pregnancy**: CONTRA-INDICATED

- **Breast-feeding**: CONTRA-INDICATED

Remarks

- Use by preference 0.5% podophyllotoxin solution: it is as effective as podophyllum resin, but less irritant and toxic. Another advantage is that the patient may apply the solution to the warts himself; whereas the resin must always be applied by medical staff.
- When treatment is contra-indicated or has failed after 4 weeks, change treatment method (cryosurgery, electrosurgery, surgical removal).

Storage

– Below 25 °C

POVIDONE IODINE = POLYVIDONE IODINE = PVI, aqueous solution

Therapeutic action

- Antiseptic and disinfectant

Indications

- Antisepsis of intact or broken skin and mucous membranes
- Disinfection of latex stopper of infusion bottles and drug vials (except vaccines), latex injection sites of infusion sets

Forms and strengths

- 10% aqueous solution

Use

Antisepsis of intact skin (injections, punctures)

- Apply 10% solution to the puncture/injection site and allow to dry before inserting the needle. The skin should be cleaned beforehand if soiled or if the procedure is invasive (lumbar puncture, epidural/spinal anaesthesia, etc.).

Preoperative skin antisepsis

- Apply 10% solution twice. Allow to dry between each application (do not dab to accelerate drying). Incise once the 2nd application has dried. The surgical site should be cleaned beforehand with PVI scrub solution.

Wound antisepsis

- Apply 10% solution to small superficial wounds.
- For large wounds and burns, wound irrigation, etc., dilute PVI (¼ of 10% PVI and ¾ of 0.9% NaCl or sterile water) then rinse with 0.9% NaCl or sterile water.

Contra-indications, adverse effects, precautions

- Do not use with other antiseptics such as chlorhexidine (incompatibility) or mercury compounds (risk of necrosis).
- Do not use in preterm neonates and neonates < 1.5 kg.

- Due to the risk of transcutaneous resorption of iodine, do not use repeatedly nor on large areas, especially in pregnant and lactating women and infants < 1 month.
- May cause: local skin reactions; exceptionally, allergic reactions.

Remarks

- The antiseptic effect of PVI begins after 30 seconds of contact. However, a minimum contact time of 1 minute is recommended to eliminate bacteria.

Storage

– Below 25 °C
Once the bottle has been opened, solution keeps 30 days.

POVIDONE IODINE = POLYVIDONE IODINE = PVI, scrub solution

Therapeutic action

- Antiseptic

Indications

- Antiseptic hand wash and surgical hand antisepsis
- Preoperative skin preparation (patient preoperative showering, antiseptic cleansing of the surgical site)
- Cleansing of contaminated wounds

Forms and strengths

- 7.5% scrub solution

Also comes in 4% scrub solution.

Use

Antiseptic hand wash

- Wet hands; pour 5 ml of solution, rub hands for 1 min; rinse thoroughly; dry with a clean towel.

Surgical hand antisepsis

- There are different protocols, for information:
  - Wet hands and forearms; spread 5 ml of solution on hands and forearms and rub for 1 or 2 min (i.e. 30 seconds or 1 min for each side); brush the nails of each hand for 30 seconds; rinse.
  - Spread again 5 ml of solution on hands and forearms and rub for 2 min; rinse thoroughly; dry with a sterile towel.

Patient preoperative showering

- Wet the whole body including hair; apply the solution and rub until the foam is white, start at the head and move down, finishing with the feet. Pay special attention to hair, armpit, hands, perineum, genitals and toes. Leave in contact a few minutes and rinse; dry with a clean towel; put on clean clothes.

Antiseptic cleansing of surgical site

- Rub for 1 min the surgical site, using sterile gauze soaked with sterile water and solution; rinse with sterile water; dry with sterile gauze.

Cleansing of contaminated wounds

- Prepare a diluted solution:
  - With 7.5% solution: 1 part of solution + 4 parts of sterile 0.9% NaCl or water
  - With 4% solution: 1 part of solution + 2 parts of sterile 0.9% NaCl or water
- Clean the wound; rinse thoroughly.

Contra-indications, adverse effects, precautions

- Do not use with others antiseptics such as chlorhexidine (incompatibility) or mercury compounds (risk of necrosis). Given the possible interactions between different groups of antiseptics, PVI scrub solution must only be used with products of the same group (i.e. PVI aqueous or alcoholic solutions).
- Do not use in preterm neonates and neonates < 1.5 kg (use ordinary soap).
- May cause: local skin reactions (contact dermatitis); exceptionally: allergic reactions.
- **Pregnancy and breast-feeding**: no contra-indication for brief application; no prolonged use.

Remarks

- For preoperative skin preparation, cleansing of the surgical site is followed by the application of 10% PVI solution.

Storage

– Below 25 °C

SILVER SULFADIAZINE, cream

Prescription under medical supervision

Therapeutic action

- Antibacterial (sulfonamide group)

Indications

- Prophylaxis and treatment of infections ~~of~~ in severe burns
- Treatment of infections in leg ulcers

Forms and strengths

- 1% sterile cream, tube or jar

Use

- Child 2 months and over and adult: clean the wound then apply a 3 to 5 mm layer of silver sulfadiazine cream to the wound once daily and cover with sterile compresses.

Duration

- Until wound has healed or until skin graft, when required.

Contra-indications, adverse effects, precautions

- Do not use in patients with allergy to sulfonamides; in children under 2 months.
- Do not apply other topical treatments to wounds where silver sulfadiazine is applied.
- Use with caution in children under 2 years (risk of systemic absorption); in patients with severe renal or hepatic impairment.
- May cause:
  - skin reactions, grey skin discoloration, skin photosensitivity; rarely: allergic reactions, sometimes severe (Lyell's and Stevens-Johnson syndromes).
  - systemic adverse effects related to sulfonamides (haematological, renal, cutaneous disorders, etc.) when applied to a large surface area, mucous membranes or prolonged use.
- **Pregnancy**: avoid if possible during the 3rd trimester of pregnancy (risk of jaundice in the neonate)
- **Breast-feeding**: CONTRA-INDICATED if the child is under one month

Storage

– Between 8 °C and 25 °C

After use, keep the tube or jar tightly closed to avoid exposure to light.

SODIUM DICHLOROISOCYANURATE = NaDCC

Therapeutic action

- Disinfectant (chlorine-releasing compound)

Indications

- Disinfection of medical devices, instruments, linen, floors and surfaces

Forms and strengths

- 1.67 g NaDCC effervescent tablet, releasing 1 g active chlorine when dissolved in water.

Also comes in different strengths and in granules and powder.

Preparation and use

Pre-disinfection of soiled instruments

- 0.1% active chlorine solution (1000 ppm): 1 tablet of 1 g active chlorine per litre
  Immediately after use, soak instruments for 15 minutes, then clean instruments.

Disinfection of clean instruments

- 0.1% active chlorine solution (1000 ppm): 1 tablet of 1 g active chlorine per litre
  Soak previously cleaned instruments for 20 minutes, rinse thoroughly and dry.

Disinfection of linen

- 0.1% active chlorine solution (1000 ppm): 1 tablet of 1 g active chlorine per litre
  Soak for 15 minutes, rinse thoroughly (at least 3 times).

General disinfection (surfaces, floors, sinks, equipment, etc.)

See Chlorine-releasing compounds and Antiseptics and disinfectants, Part two.

Precautions

- Prepare solutions with cold water, in non metallic containers.
- NaDCC can corrode metal. The risk is limited for good quality stainless steel instruments if concentration, contact time (20 minutes maximum) and thorough rinsing recommendations are respected.
- For disinfection of linen: use only for white cotton or linen (risk of discolouration).

- Do not expose the product to flames. Do not incinerate.
- DO NOT SWALLOW. Do not store NaDCC tablets near oral tablets.
- Avoid inhaling vapours and dust when opening or handling the containers.
- Do not mix with acid solutions such as urine, etc. (release of toxic chlorine gas) and detergents.

Remarks

- NaDCC may be used for wound antisepsis but only if the formulation is intended for this purpose: 0.1% active chlorine solution (1000 ppm): 1 tablet of 1 g active chlorine per litre. For prolonged use, protect the healthy skin around the wound with vaseline.
  Caution: some formulations used for disinfecting floors contain additives (detergents, colouring, etc.) and cannot be used on wounds. Check label or leaflet.
- Some formulations can be used for the disinfection of drinking water (Aquatabs®, etc.). Follow manufacturer's instructions.
- NaDCC is also called sodium troclosene, sodium dichloro-s-triazinetrione.

Storage

 – – In airtight container, protected from light, heat and humidity, in a well ventilated room

TETRACYCLINE, eye ointment

Therapeutic action

- Antibacterial

Indications

- Treatment of bacterial conjunctivitis
- Treatment of trachoma (by preference use oral azithromycin for this indication)
- Prevention of neonatal conjunctivitis

Forms and strengths

- 1% ointment, tube

Dosage and duration

- Wash the eyes with boiled and cooled water before each application. Use sterile sodium chloride 0.9% for newborns.
- Apply tetracycline 1% into the conjunctival sac of both eyes:
  - Conjunctivitis: one application 2 times daily for 7 days
  - Trachoma: one application 2 times daily for 6 weeks
  - Prevention of neonatal conjunctivitis: one single application immediately after birth

Contra-indications, adverse effects, precautions

- Do not use in patients with hypersensitivity to tetracyclines.
- May cause allergic reactions; stop treatment in the event of serious reaction.

Remarks

- Neonatal conjunctivitis must be treated with systemic antibiotic therapy. When it is not immediately available, apply tetracycline eye ointment to both eyes every hour until systemic treatment is available.
- Oxytetracycline and chlortetracycline are used in the same way as tetracycline.
- In the event of eye infection, use only eye ointment; dermal ointment must never be applied to the eyes.

Storage

☼ – Below 25 °C
Do not use after expiry date.

ZINC OXIDE, ointment

Therapeutic action

- Skin protector

Indications

- Dermatosis of kwashiorkor
- Nappy rash
- Eczema
- First-degree burns
- Protection of healthy skin when caustic products such as podophyllum resin or podophyllotoxin are to be applied

Forms and strengths

- 10% zinc oxide ointment, tube or jar

Dosage

- Child and adult: one application 1 to 3 times daily

Duration

- According to clinical response

Contra-indications, adverse effects, precautions

- Clean the skin before applying the ointment.
- Do not apply to exudative and/or superinfected lesions.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication. Do not apply to the breasts.

Storage

– Below 25 °C

Once the ointment has been exposed to a high temperature the active ingredients are no longer evenly distributed: the ointment must be homogenized before using.

Drugs potentially dangerous or obsolete or ineffective

AMODIAQUINE = AQ oral

ARTEMETHER injectable

ARTESUNATE = AS oral

ARTESUNATE + SULFADOXINE/PYRIMETHAMINE = AS + SP oral

Long-acting oily CHLORAMPHENICOL injectable

MEFLOQUINE = MQ oral

METHYLROSANILINIUM CHLORIDE = GENTIAN VIOLET = GV = CRYSTAL VIOLET

METAMIZOLE = DIPYRONE = NORAMIDOPYRINE oral

METAMIZOLE = DIPYRONE = NORAMIDOPYRINE injectable

POTASSIUM CHLORIDE 10% = KCl 10% injectable

QUININE injectable

SALBUTAMOL injectable

TETANUS ANTITOXIN (EQUINE)

DIPHTERIA-TETANUS-PERTUSSIS VACCINE (DTP)

AMODIAQUINE = AQ oral

Prescription under medical supervision

Do not administer the combination artesunate-amodiaquine as separate tablets (i.e. artesunate tablets + amodiaquine tablets). Use co-formulated tablets.

Therapeutic action

- Antimalarial

Indications

- Treatment of uncomplicated falciparum malaria, in combination with artesunate
- Treatment of uncomplicated malaria due to other Plasmodium species, in combination with artesunate, when chloroquine cannot be used
- Completion treatment following parenteral therapy for severe malaria, in combination with artesunate

Forms and strengths

- 200 mg amodiaquine hydrochloride tablet, containing 153 mg amodiaquine base

Dosage and duration

- Child and adult: 10 mg base/kg once daily for 3 days, in combination with artesunate

Contra-indications, adverse effects, precautions

- Do not administer in the event of previous severe adverse reaction to treatment with amodiaquine (e.g. hypersensitivity reaction, hepatitis, leucopenia, agranulocytosis).
- Do not administer to patients taking efavirenz.
- May cause: gastrointestinal disturbances, pruritus, cough, insomnia.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Also comes as co-packaged dispersible tablets for seasonal malaria chemoprevention in children: amodiaquine 153 mg + sulfadoxine/pyrimethamine 500 mg/25 mg and amodiaquine 76.5 mg + sulfadoxine/pyrimethamine 250 mg/12.5mg.

Storage

– Below 25 °C

ARTEMETHER injectable

Prescription under medical supervision

Therapeutic action

- Antimalarial

Indications

- Alternative to injectable artesunate (when it is not available) in the:
  - Treatment of severe malaria
  - Initial treatment of uncomplicated malaria, when persistent vomiting precludes oral therapy

Forms and strengths, route of administration

- 80 mg in 1 ml ampoule (80 mg/ml), oily solution for IM injection. NEVER ADMINISTER BY IV ROUTE.
  When the dose required is less than 1 ml, use a 1 ml syringe graduated in 0.01 ml.

Dosage and duration

- Child and adult:
  3.2 mg/kg by IM injection on the first day followed by 1.6 mg/kg once daily

Weight	80 mg ampoule	
	Loading dose	Maintenance dose
3-4 kg	0.2 ml	0.1 ml
5-6 kg	0.3 ml	0.15 ml
7-9 kg	0.4 ml	0.2 ml
10-14 kg	0.6 ml	0.3 ml
15-19 kg	0.8 ml	0.4 ml
20-29 kg	1.2 ml	0.6 ml
30-39 kg	1.6 ml	0.8 ml
40-49 kg	2 ml	1 ml
50-59 kg	2.5 ml	1.2 ml

- Treat parenterally for at least 24 hours (2 doses), then, if the patient can tolerate the oral route, change to a complete 3-day course of an artemisinin-based combination. If not, continue parenteral treatment once daily until the patient can change to oral route (without exceeding 7 days of parenteral treatment).

Contra-indications, adverse effects, precautions

- May cause: gastrointestinal disturbances, dizziness.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Storage

– Below 25 °C

ARTESUNATE = AS oral

Prescription under medical supervision

Oral artesunate must always be administered in combination with another antimalarial in coformulated tablets: artesunate/amodiaquine or artesunate/mefloquine.

Therapeutic action

- Antimalarial

Indications

- Treatment of uncomplicated falciparum malaria, in combination with another antimalarial
- Treatment of uncomplicated malaria due to other Plasmodium species, in combination with another antimalarial, when chloroquine cannot be used
- Completion treatment following parenteral therapy for severe malaria, in combination with another antimalarial

Forms and strengths

- 50 mg tablet

Dosage and duration

- Child and adult: 4 mg/kg once daily for 3 days in combination with another antimalarial

Contra-indications, adverse effects, precautions

- May cause: gastrointestinal disturbances, dizziness.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Storage

– – Below 25 °C

ARTESUNATE + SULFADOXINE/PYRIMETHAMINE = AS + SP oral

Prescription under medical supervision

Therapeutic action

- Antimalarial

Indications

- Treatment of uncomplicated falciparum malaria
- Completion treatment following parenteral therapy for severe falciparum malaria

Forms and strengths

- Artesunate (AS) tablets and sulfadoxine/pyrimethamine (SP) tablets, in blister packs, for a complete treatment for one individual
- There are 4 different blister packs:
  - Child < 25 kg:
    blister pack with 3 tab AS 50 mg and 1 tab SP 500/25 mg
  - Child 25 to < 50 kg:
    blister pack with 6 tab AS 50 mg and 2 tab SP 500/25 mg
  - Child ≥ 50 kg and adult:
    blister pack with 12 tab AS 50 mg and 3 tab SP 500/25 mg
    or blister pack with 6 tab AS 100 mg and 3 tab SP 500/25 mg

Dosage and duration

- Artesunate is administered once daily for 3 days.
  Sulfadoxine/pyrimethamine is administered as a single dose on D1, with the first dose of artesunate.

Weight	Blister pack	D1	D2	D3
5 to < 10 kg	3 tab AS50 + 1 tab SP	½ tab AS + ½ tab SP	½ tab AS	½ tab AS
10 to < 25 kg	3 tab AS50 + 1 tab SP	1 tab AS + 1 tab SP	1 tab AS	1 tab AS
25 to < 50 kg	6 tab AS50 + 2 tab SP	2 tab AS + 2 tab SP	2 tab AS	2 tab AS
≥ 50 kg and adult	12 tab AS50 + 3 tab SP	4 tab AS + 3 tab SP	4 tab AS	4 tab AS
	6 tab AS100 + 3 tab SP	2 tab AS + 3 tab SP	2 tab AS	2 tab AS

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to sulfonamides.
- May cause: see artesunate and sulfadoxine/pyrimethamine.
- Do not use in combination with co-trimoxazole.
- Do not give folic acid on the same day SP is administered, or within 2 weeks thereafter.
- **Pregnancy**: CONTRA-INDICATED during the first trimester (risk of neural tube defects); no contra-indication during the 2nd and 3rd trimester
- **Breast-feeding**: no contra-indication

Storage

– – Below 30 °C

Leave tablets in blisters until use. Once a tablet is removed from its blister, it must be administered immediately.

If half tablets are used, remaining half tablets may be given to another patient if administered within 24 hours.

Long-acting oily CHLORAMPHENICOL injectable

Prescription under medical supervision

Therapeutic action

- Phenicol antibacterial, with prolonged effect

Indications

- Treatment of meningococcal meningitis during epidemics

Forms and strengths, route of administration

- 500 mg oily suspension in 2 ml ampoule (250 mg/ml) for IM injection only. NEVER FOR IV INJECTION.

Dosage

- Child over 2 years and adult: 100 mg/kg single dose (max. 3 g per dose)

Age	Weight	Dose	Volume
2 to < 6 years	13 to < 21 kg	1.5 g	6 ml
6 to < 10 years	21 to < 31 kg	2 g	8 ml
10 to < 15 years	31 to < 54 kg	2.5 g	10 ml
≥ 15 years and adult	≥ 54 kg	3 g	12 ml

- If necessary, administer half the dose into each buttock.

Duration

- Single dose. If there is no improvement after 24 hours, a second dose may be administered.

Contra-indications, adverse effects, precautions

- Do not administer to patients with:
  - history of allergic reaction or bone marrow depression during a previous treatment with chloramphenicol;
  - G6PD deficiency.
- May cause:
  - dose-related haematological toxicity (bone marrow depression, anaemia, leucopenia, thrombocytopenia), allergic reactions. In these events, stop treatment immediately;
  - gastrointestinal disturbances, peripheral and optic neuropathies.
- Avoid or monitor combination with potentially haematotoxic drugs (carbamazepine, co-trimoxazole, flucytocine, pyrimethamine, zidovudine, etc.).
- **Pregnancy**: CONTRA-INDICATED
- **Breast-feeding**: CONTRA-INDICATED

Remarks

- Oily chloramphenicol is not recommended as chemoprophylaxis for meningitis contacts during epidemics.
- Shake the injection suspension before administration.

Storage

– Below 25 °C

MEFLOQUINE = MQ oral

Prescription under medical supervision

Do not administer the combination artesunate-mefloquine as separate tablets (i.e. artesunate tablets + mefloquine tablets). Use co-formulated tablets.

Therapeutic action

- Antimalarial

Indications

- Treatment of uncomplicated falciparum malaria
- Treatment of uncomplicated malaria due to other Plasmodium species, when chloroquine cannot be used
- Completion treatment following parenteral therapy for severe malaria

Forms and strengths

- 250 mg scored tablet

Dosage and duration

- Child 6 months and over (≥ 5 kg) and adult: 8 mg/kg once daily for 3 days (in combination with artesunate)

Contra-indications, adverse effects, precautions

- Do not administer to patients with neuropsychiatric disorders (or history of), seizures, hypersensitivity to mefloquine or quinine; mefloquine treatment in the previous 4 weeks.
- For completion treatment following parenteral therapy for severe malaria: do not administer if the patient developed neurological signs during the acute phase.
- May cause:
  - gastrointestinal disturbances, dizziness, headache, sleeping disorders;
  - more rarely: neuropsychiatric reactions, heart rhythm disorders, hypo or hypertension, skin allergies.
- If the patient vomits less than 30 minutes after administration, repeat the full dose. If the patient vomits within 30 to 60 minutes, re-administer a half the dose.

- Do not combine with anti-epileptics (risk of seizures), co-artemether, chloroquine (risk of seizures, cardiac toxicity).
- Do not administer simultaneously with quinine (risk of seizures, cardiac toxicity). If mefloquine is used after quinine IV, administer mefloquine 12 hours after the last dose of quinine.
- Administer with caution to patients taking antiarrhythmics, beta-blockers, calcium-channel blockers or digitalis (risk of heart rhythm disorders).
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Also comes in co-formulated tablets containing artesunate 25 mg/mefloquine 50 mg and artesunate 100 mg/mefloquine 200 mg.

Storage

☂ – Below 25 °C

METHYLROSANILINIUM CHLORIDE = GENTIAN VIOLET = GV = CRYSTAL VIOLET

Carcinogenic effects have been demonstrated in animals. As a precaution, this product should not be used in humans if an alternative is available.

Therapeutic action

- Antifungal, weak antiseptic, drying agent

Indications

- Oropharyngeal candidiasis, mammary candidiasis in nursing mothers
- Certain wet skin lesions (impetigo, dermatophytosis oozing lesions)

Forms and strengths

- Powder to be dissolved

Preparation

- Dissolve 2.5 g of powder (= one half-teaspoon) in 1 litre of clear water (boiled a few minutes and cooled) to obtain a 0.25% solution.
- Shake well and leave to settle. Pour carefully into another bottle to eliminate any possible sediment.
- Before preparation, carefully wash both the bottle for dilution and the storage bottle with hot water and leave to dry.

Use

- One application 2 times daily for a few days

Contra-indications, adverse effects, precautions

- Do not apply to wounds or ulcerations.
- Do not apply to the face or genital mucous membranes.
- May cause:
  - irritation, ulcerations, allergic reactions;
  - persistent staining of the skin.
- The solution should not be swallowed.

- The use of cooking oil or vaseline around lips before swabbing can limit the risk of skin coloration.
- Stop treatment in the event of allergic reactions or if new ulcerations develop.
- In the event of product entering the eye, rinse with plenty of water.
- Avoid contact with clothes (causes permanent staining of fabrics).

Remarks

- Gentian violet is no longer included in the WHO list of essential medicines.

Storage

- Powder to be dissolved: unlimited
- Diluted solution: maximum 1 week

METAMIZOLE = DIPYRONE = NORAMIDOPYRINE oral

Prescription under medical supervision

Given the potentially serious adverse effects and that safer alternatives exist, this drug should not be prescribed as first choice treatment.

Therapeutic action

- Analgesic, antipyretic

Indications

- Pain, fever

Forms and strengths

- 500 mg tablet

Dosage

- Adult: 500 mg to 1 g 2 to 3 times daily

Duration

- As short as possible.

Contra-indications, adverse effects, precautions

- May cause:
  - severe agranulocytosis, potentially fatal, regardless of dose or duration of treatment;
  - allergic reactions, anaphylactic shock.
- **Pregnancy**: CONTRA-INDICATED
- **Breast-feeding**: CONTRA-INDICATED

Remarks

- Metamizole is not included in the WHO list of essential medicines.

Storage

Below 25 °C

METAMIZOLE = DIPYRONE = NORAMIDOPYRINE injectable

Prescription under medical supervision

Given the potentially serious adverse effects and that safer alternatives exist, this drug should not be prescribed as first choice treatment.

Therapeutic action

- Analgesic, antipyretic

Indications

- Pain, fever

Forms and strengths, route of administration

- 1 g in 2 ml ampoule (500 mg/ml) for IM, SC or slow IV injection or infusion

Dosage

- Adult: 500 mg every 8 hours if necessary

Duration

- As short as possible.

Contra-indications, adverse effects, precautions

- May cause:
  - severe agranulocytosis, potentially fatal, regardless of dose or duration of treatment;
  - allergic reactions, anaphylactic shock.
- **Pregnancy**: CONTRA-INDICATED
- **Breast-feeding**: CONTRA-INDICATED

Remarks

- Metamizole is not included in the WHO list of essential medicines.

Storage

Below 25 °C

POTASSIUM CHLORIDE 10% = KCl 10% injectable

Prescription under medical supervision

Indications

- Treatment of severe hypokalaemia (arrhythmia, marked muscular weakness, rhabdomyolysis or serum potassium level ≤ 2.5 mmol/litre)

Forms and strengths, route of administration

- Ampoule containing 10% potassium chloride hypertonic solution (100 mg/ml, 10 ml), i.e. 1 g of potassium chloride (KCl) per 10 ml ampoule
- Ionic composition:
  - potassium (K^+): 13.4 mmol per 10 ml ampoule (*13.4 mEq*)
  - chloride (Cl^-): 13.4 mmol per 10 ml ampoule (*13.4 mEq*)
- **Check concentration before use**: potassium chloride also comes in ampoules containing 7.5%, 11.2%, 15% and 20% solutions.
- NEVER USE BY IV OR IM OR SC INJECTION. Potassium chloride must always be administered by slow IV infusion, diluted in 0.9% sodium chloride.
- For dilution:
  - The potassium concentration in the infusion fluid should not exceed 40 mmol/litre.
  - Mix thoroughly the potassium and the 0.9% sodium chloride solution by inverting at least 5 times the infusion bottle or bag.

Dosage and duration

Dosage depends on the severity of hypokalaemia and the patient's underlying condition. For information:

- Child over 1 month: 0.2 mmol/kg/hour for 3 hours
  Each mmol of potassium is diluted in 25 ml of 0.9% sodium chloride.
  Examples:

10 kg	0.2 (mmol) x 10 (kg) = 2 mmol/hour x 3 hours = 6 mmol 6 mmol (= 4.5 ml of 10% KCl solution) diluted in 150 ml of NaCl 0.9% and administered over 3 hours
15 kg	0.2 (mmol) x 15 (kg) = 3 mmol/hour x 3 hours = 9 mmol 9 mmol (= 6.5 ml of 10% KCl solution) diluted in 225 ml of NaCl 0.9% and administered over 3 hours

- Adult: 40 mmol (= 3 ampoules of 10 ml of 10% KCl) in one litre of 0.9% sodium chloride, to be administered over 4 hours. Do not exceed 10 mmol/hour.

The infusion may be repeated if severe symptoms persist or if the serum potassium level remains < 3 mmol/litre.

Contra-indications, adverse effects, precautions

- Administer with caution to elderly patients.
- Administer with caution and reduce the dose in patients with renal impairment (increased risk of hyperkalaemia).
- May cause:
  - in the event of rapid or excessive administration: hyperkalaemia, cardiac conduction and rhythm disorders, potentially fatal;
  - in the event of extravasation: necrosis.
- Infusion must be constantly monitored.

Remarks

- A 7.5% potassium solution contains 1 mmol of K^+/ml; a 11.2% solution contains 1.5 mmol of K^+/ml; a 15% solution contains 2 mmol of K^+/ml; a 20% solution contains 2.68 mmol of K^+/ml.
- Moderate hypokalaemia is defined as a potassium level < 3.5 mmol/litre; severe hypo kalaemia as a potassium level ≤ 2.5 mmol/litre.

Storage

Below 25 °C

QUININE injectable

Prescription under medical supervision

Therapeutic action

- Antimalarial

Indications

- Alternative to injectable artesunate, when it is not available, in the treatment of severe malaria

Forms and strengths, route of administration

- 600 mg of quinine dihydrochloride in 2 ml ampoule (300 mg/ml), to be diluted in 5% glucose, for slow infusion.
  NEVER ADMINISTER BY IV INJECTION.

Dosage

The dosage is expressed in terms of salt:

- Child and adult:
  - loading dose: 20 mg/kg administered over 4 hours, then keep the vein open with an infusion of 5% glucose over 4 hours
  - maintenance dose: 8 hours after the start of the loading dose, 10 mg/kg every 8 hours (alternate quinine over 4 hours and 5% glucose over 4 hours)

For adults, administer each dose of quinine in 250 ml. For children under 20 kg, administer each dose of quinine in a volume of 10 ml/kg.

Do not administer a loading dose to patients who have received oral quinine or mefloquine within the previous 24 hours: start with maintenance dose.

Duration

- Treat parenterally for at least 24 hours, then, if the patient can tolerate the oral route, change to a complete 3-day course of an artemisinin-based combination (or if not available oral quinine to complete 7 days of quinine treatment).
  If not, continue parenteral treatment until the patient can change to oral route (without exceeding 7 days of parenteral treatment).

Contra-indications, adverse effects, precautions

- May cause: hypoglycaemia; auditory and visual disturbances, cardiac disorders (especially in the event of overdose), hypersensitivity reactions, cardiac depression if injected undiluted by IV route.
- In patients with acute renal failure, reduce the dose by one-third if the parenteral treatment lasts more than 48 hours.
- Monitor blood glucose (reagent strip test).
- Do not administer simultaneously with mefloquine (risk of seizures, cardiac toxicity). Administer mefloquine 12 hours after the last dose of quinine.
- **Pregnancy**: no contra-indication. The risk of quinine-related hypoglycaemia is very high in pregnant women.
- **Breast-feeding**: no contra-indication

Remarks

- 10 mg quinine dihydrochloride = 8 mg quinine base.
- Administration by IM deep injection (into the anterior thigh only) is possible when infusion cannot be performed (e.g. before transferring a patient). However this may cause numerous complications. Doses are the same as for the IV route. Quinine should be diluted (1/2 or 1/5). For the loading dose, administer half the dose into each thigh.

Storage

– Below 25 °C

SALBUTAMOL injectable

Prescription under medical supervision

Therapeutic action

- Uterine relaxant

Indications

- Threatened premature labour (preferably use nifedipine for this indication)

Forms and strengths, route of administration

- 0.5 mg in 1 ml ampoule (0.5 mg/ml) for IV infusion

Dosage

- Dilute 5 mg (10 ampoules of 0.5 mg) in 500 ml of 5% glucose or 0.9% sodium chloride to obtain a solution of 10 micrograms/ml.
- Start infusion at the rate of 15 to 20 micrograms/minute (30 to 40 drops/minute).
- If contractions persist, increase the rate by 10 to 20 drops/minute every 30 minutes until uterine contractions cease. Do not exceed 45 micrograms/minute (90 drops/minute).
- Continue for one hour after contractions have ceased, then reduce the rate by half every 6 hours.

Duration

- 48 hours maximum

Contra-indications, adverse effects, precautions

- Do not administer to patients with pre-eclampsia, eclampsia, uterine haemorrhage, intra-uterine infection, intra-uterine foetal death, placenta praevia, placental abruption, rupture of membranes, multiple pregnancy, severe cardiopathy.
- Administer with caution to patients with diabetes, hyperthyroidism.
- Do not combine with nifedipine.
- May cause: pulmonary oedema, myocardial ischemia, foetal and maternal tachycardia, hypotension, tremor, headache, hypokalaemia, hyperglycaemia.
- Monitor maternal pulse regularly. Reduce the infusion rate in the event of maternal tachycardia (> 120/minute).
- **Pregnancy**: no contra-indication

- **Breast-feeding**: avoid

Remarks

- Use salbutamol within 24 hours of mixing with infusion fluid.
- Do not mix with other drugs in the same infusion fluid.
- Also comes in 5 ml ampoule containing 0.25 mg (0.05 mg/ml).

Storage

– Below 25 °C

TETANUS ANTITOXIN (EQUINE)

Equine tetanus antitoxin should no longer be used, as there is a risk of hypersensitivity and serum sickness.
It should be replaced by human tetanus immunoglobulin.

Therapeutic action

- Neutralisation of tetanus toxin. Tetanus antiserum provides temporary passive immunity against tetanus for 2 weeks.

Indications

- Prevention of tetanus in wound management, in patients non immunised or incompletely immunised or in patients whose immunisation status is unknown, in combination with tetanus vaccine
- Treatment of clinical tetanus

Composition, forms and strengths, route of administration

- Solution prepared from the serum of horses immunised against tetanus toxin
- 1500 IU in 1 ml ampoule, for IM injection. DO NOT ADMINISTER BY IV ROUTE.

Dosage and duration

Prevention of tetanus

- Tetanus antiserum is administered in the event of tetanus-prone wounds, e.g. wounds with fracture, deep penetrating wounds, bite wounds, wounds containing foreign bodies, wounds contaminated with soil, infected wounds, extensive tissue damage (contusions, burns).
  Child and adult: 1500 IU single dose; 3000 IU if more than 24 hours has elapsed
- It is administered as soon as possible after injury, along with the tetanus vaccine, in a separate syringe and injection site.

Treatment of tetanus

- Neonate: 1500 IU single dose
- Child and adult: 10 000 IU single dose

Contra-indications, adverse effects, precautions

- Do not administer to patients with known allergy to tetanus antiserum.
- May cause: hypersensitivity reactions, anaphylactic shock, Quinke oedema; serum sickness up to 10 days after injection.

- Administer following Besredka's method: inject 0.1 ml by SC route and wait 15 minutes; if no local or general allergic reactions occur, inject 0.25 ml by SC route and wait 15 minutes; if no reactions, administer the injection by IM route.
- Ensure that the injection does not enter a blood vessel (risk of shock): aspirate prior to injection to confirm that the needle is not in a vein.
- **Pregnancy**: no contra-indication
- **Breast-feeding**: no contra-indication

Remarks

- Equine tetanus antitoxin is not included in the WHO list of essential medicines.

Storage

– Between 2 °C and 8 °C. Do not freeze.

DIPHTERIA-TETANUS-PERTUSSIS VACCINE (DTP)

Last updated: December 2024

This vaccine has been replaced by the pentavalent DTP/Hepatitis B/Hib vaccine.

Indications

- Prevention of diphtheria, tetanus and pertussis in children under 7 years (primary vaccination and booster dose)

Composition, forms, route of administration

- Trivalent vaccine combining diphtheria toxoid, tetanus toxoid and whole-cell (DTwP) or acellular (DTaP) pertussis vaccine
- Suspension for injection in multidose vial, for IM injection into the anterolateral part of the thigh in children < 2 years and in the deltoid muscle in children ≥ 2 years
  DO NOT ADMINISTER INTO THE GLUTEAL MUSCLE.

Dosage and vaccination schedule

- Child: 0.5 ml per dose
- Primary vaccination: 3 doses 4 weeks apart, preferably before the age of 6 months. It is recommended to administer the 1st dose at 6 weeks of age, the 2nd dose at 10 weeks of age and the 3rd dose at 14 weeks of age. If a child has not been vaccinated at 6 weeks of age, start vaccination as soon as possible.
- Booster: one dose between 12 and 23 months

Contra-indications, adverse effects, precautions

- Do not administer in the event of allergic reactions to a previous dose of DTP vaccine or evolving neurological disease (encephalopathy, uncontrolled epilepsy).
- Vaccination should be postponed in the event of severe acute febrile illness; minor infections are not contra-indications.
- May cause: mild local reactions (redness and pain at the injection site), fever, fatigue, malaise; rarely: anaphylactic reactions, seizures.
- Respect an interval of 4 weeks between each dose of primary vaccination.
- If administered simultaneously with other vaccines, use different syringes and injection sites.

Remarks

- If the vaccination is interrupted before the complete series has been administered, it is not necessary to start again from the beginning. Continue the vaccination schedule from where it was interrupted and complete the series as normal.
- Also comes in:
  - tetravalent vaccine (diphtheria, tetanus, pertussis, hepatitis B) and pentavalent vaccine (diphtheria, tetanus, pertussis, hepatitis B and *Haemophilus influenzae*) used for primary vaccination in children < 7 years;
  - bivalent Td vaccine containing a reduced dose of diphtheria toxoid (tetanus-diphtheria), used in children ≥ 4 years, adolescents and adults.
- Shake before use to homogenise the vaccine.

Storage

– Between 2 °C and 8 °C. Do not freeze.

Part two

Organization and management of a pharmacy

Organization and rigorous management of the pharmacy are crucial in all health facilities in order to:
- maintain a permanent stock of essential medicines and supplies of quality;
- reduce costs;
- save time and optimise the work of the staff;
- facilitate management and continuous consumption evaluation.

In any case, national pharmaceutical policies and regulations must be taken into account when implementing pharmaceutical activities.

Preliminary information

Drug designation

All active ingredients have an *international nonproprietary name* (INN). Drugs are designated by their INN in all standardised lists. The INN should also be used in standard therapeutic regimens and management documents, in order to avoid confusion, since drugs are sold under their INN or a variety of brand names, depending on the manufacturer (e.g. ampicillin may be sold as Britapen®, Penbritin®, Pentrexyl®, Totapen®, etc.).

Generic drugs are copies of drugs whose patents have expired. They can therefore be made by any pharmaceutical laboratory and are most often sold under their INN or occasionally under a new brand name.

Selection of essential medicines

Most countries have a national list of essential medicines. If there is no national list, refer to the latest WHO list.

The use of such a list presents several advantages:
- it simplifies supply and reduces costs: most drugs on the WHO list are available in generic forms at affordable prices;
- it facilitates co-ordination of international aid and obtains approval from organizations which subsidise projects (United Nations, European Union, etc.).

The list of selected drugs is drawn in accordance with pre-established standardised therapeutic regimens. This offers two major advantages:
- better treatments due to more rational use of a restricted number of essential drugs;

- economic and administrative improvements concerning purchasing, storage, distribution and control.

Proposing the same drug in many different strengths or forms should be avoided. In most cases, one form/strength for adults and one paediatric form/strength are sufficient. This facilitates management and avoids confusion in prescriptions.

At times, local prescription usages should be taken into account, e.g. in French-speaking Africa, 500 mg aspirin tablets are used; in English-speaking Africa, 300 mg tablets.

Note: medical supplies (dressing, injections, sutures, etc.) should be limited to essentials and the object of a standardised list.

Drug classification

In the WHO list, drugs are classified according to their therapeutic action. This classification presents a certain pedagogical advantage but cannot be used as the basis of a storage arrangement system (e.g. a drug may appear in several classes).

Médecins Sans Frontières recommends a storage arrangement system according to the route of administration and in alphabetical order.
Drugs are divided into 6 classes and listed in alphabetical order within each class:

- oral drugs
- injectable drugs
- infusion fluids
- vaccines, immunoglobulins and antisera
- drugs for external use and antiseptics
- disinfectants

This classification should be used at every level of a management system (order forms, stock cards, inventory lists, etc.) in order to facilitate all procedures.

Levels of use

More limited lists should be established according to the level of health structures and competencies of prescribers. Restricted lists and the designation of prescription and distribution levels should be adapted to the terminology and context of each country.

Quantitative evaluation of needs when launching a programme

Once standard therapeutic regimens and lists of drugs and supplies have been established, it is possible to calculate the respective quantities of each product needed from the expected number of patients and from a breakdown of diseases.

Several methods have been suggested (see *Estimating drug requirements*, WHO). Quantities calculated may differ from those corresponding to true needs or demands (this can be the case when the number of consultations increases or when prescribers do not respect proposed therapeutic regimens).

In an emergency situation (especially with displaced population), the *Emergency Health Kit*, developed in collaboration with the WHO, UNHCR, MSF, etc., is designed to meet the care needs of a displaced population of 10,000 people for 3 months. Afterwards, specific local needs should be evaluated in order to establish a suitable supply.

Routine evaluation of needs and consumption allows verification of how well prescription schemes are respected and prevents possible stock shortages.

Layout of a pharmacy

Whether constructing a building, converting an existing building, central pharmacy or health facility pharmacy, the objectives are the same only the means differ.

Premises

Functional premises should be designed in order to ensure:
- the safe keeping of stocks;
- correct storage of drugs and supplies;
- rational and easy management.

Characteristics of a warehouse

Dimensions of warehouse are determined by storage needs, which depend on:
- the number of drugs and supplies to be stocked;
- the number and activities of facilities;
- distribution and receiving frequency: the lesser the frequency the greater the volume needed, thus the greater the space needed.

It is better to have too much space than not enough: a cramped warehouse is difficult to work, and any increases in stock or activity are also difficult. For 1 m^2 of storage space count 3 m^2 of floor space.

Security of stocks requires solid doors, locks, windows and ceilings.

Correct preservation of drugs depends on temperatures and humidity, conditions that are very often difficult to control in tropical countries.
- Correct ventilation is necessary; fans mainly reduce humidity, air-conditioning reduces heat and humidity.
- A ceiling underneath the roof is essential in order to reduce the ambient temperature; the space between the ceiling and roof must be ventilated.
- Windows and openings should be shaded to avoid exposure of drugs to direct sunlight.

- Floors should be covered in cement (slightly inclined, if possible, to facilitate cleaning).

Interior layout of a warehouse

The organization should be logical and correspond to the circuit "reception, storage, distribution".

Shelves and pallets

Solid and stable shelves are indispensable. In tropical countries where termites attack wood, metal structures are preferred. As they can be dismantled, it is easy to adjust spaces between shelves and alleys to better accommodate goods to be stored.
Space between shelves and walls improves ventilation.
No products or packaging, even large-sized, should be stored on the floor, but on pallets which permit air circulation and protect against humidity.

Stocking areas

Within a warehouse, or close by, stocking areas should be provided.
- Receiving area: for stocking parcels before unpacking and checking freight and quality control.
- Distribution area: for stocking peripheral orders before distribution. Each destination should have a designated area where parcels may be stocked before distribution.

Receiving and distribution areas should be near access doors in order to facilitate handling.

It is also recommended to plan a stocking area for empty boxes, used to prepare orders for peripheral health facilities.

Workspace(s)

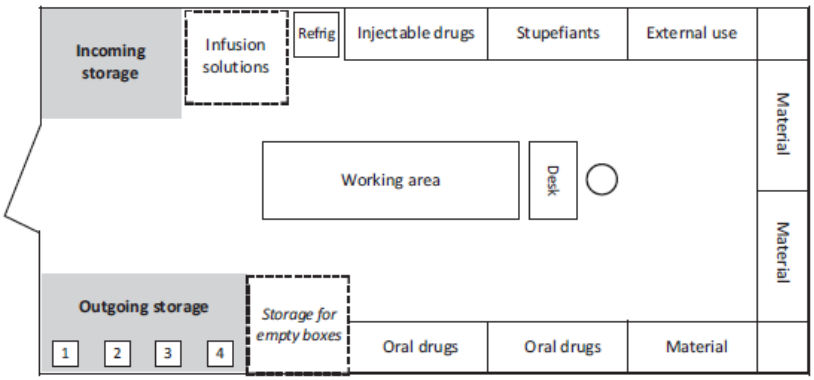
A workspace should be set up in the receiving area and in the distribution area to verify deliveries and prepare orders.

Desk

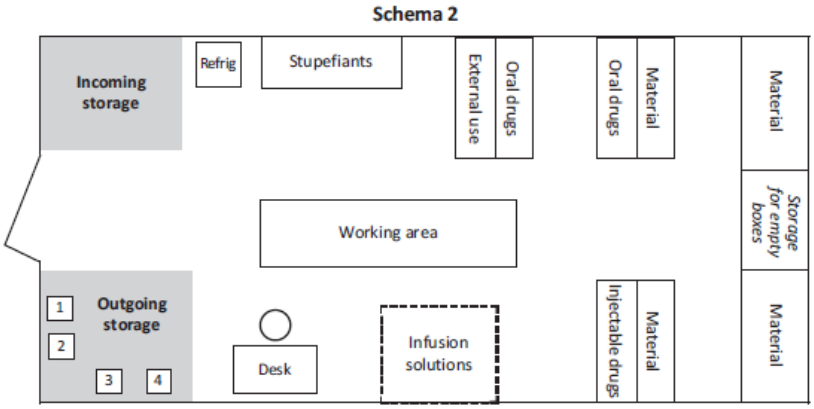
For the person in charge of the pharmacy, a desk near a light source should be set up for administrative work and for keeping documents.

Examples of pharmacy layout

Schema 1



Schema 2



The arrangement of shelves, tables or other furniture, varies according to the layout of the premises.

For larger stocks or central pharmacies, use several rooms and apply the same principles by adapting layouts to needs: administration, cold room, refrigerators, etc.

Arrangement of drugs and supplies

Storage of drugs not requiring a cold chain

Drugs are arranged according to the classification adopted:

- oral drugs
- injectable drugs
- infusions
- drugs for external use and antiseptics
- disinfectants

In each category of products (oral, injectable, etc.) are classified alphabetically.

Each product should have a designated place, well identified by a fixed label indicating the INN, form and strength. By attributing a specific place to each item it is possible to immediately see the quantity available and to react quickly to avoid stock shortages.

Provide for sufficient space between and for each product.

Clearly indicate expiry dates on boxes (large marker). Arrange products with the earliest expiry date at the front of the shelves and those with the latest at the back. This is essential to avoid drugs expiring during storage.

So that persons not familiar with the INN system can find their way around in case of emergency or replacement, a list of commercial names and the corresponding INN can be put up, e.g.:

Bactrim® see co-trimoxazole
Clamoxyl® see amoxicillin
Flagyl® see metronidazole
Valium® see diazepam

Storage of controlled substances

Narcotics and other controlled substances should be placed under lock and key.

Storage of products requiring a cold chain

Products needing a cold chain should be stored in a refrigerator (between 2-8 °C): vaccines, immunoglobulins, serums, insulin, ergometrine, oxytocin, dinoprostone, certain laboratory tests, etc.

Storing medical materials/supplies

Given the diversity of items, do not to use alphabetical ordering, but group articles by category: injections, dressings, sutures, reagents and laboratory material, etc.

Storing bulky materials

Put a few boxes in their normal place and, on a label, indicate where the rest of the stock is kept. Do not disperse the rest of the stock in several places.

- The storage arrangement should allow a 'visual stock check':
  - It should be possible to quickly count the number of boxes for each product and evaluate, in a few minutes, the number of weeks or months that can be covered with the stock available.
  - An empty space behind a label immediately shows that the product is out of stock.
- Only a few hours should be needed to perform a complete inventory.

Management of a pharmacy

Organization of activities

The management of the pharmacy should be entrusted to a single person having received adequate training. This person is the only person possessing keys to the pharmacy and narcotics cupboard and is helped by one or more assistants, depending on the workload.

Tasks and responsibilities should be clearly defined. One assistant should be able to replace the person in charge if necessary.

It is important to draw up a work calendar (orders, distributions, inventories, management of expired drugs, etc.) in order to spread out the workload.

Stock management

Stock cards

The stock card is the principle instrument for stock control. A stock card is established for each product (drugs and supplies) and updated at each movement. Stock cards are used to:

- identify all stock movements: in and out;
- determine at any moment the theoretical level of stocks;
- follow–up the consumption of different facilities;
- correctly plan and prepare orders;
- determine losses (differences between theoretical stock and actual stock).

Example of a stock card

Item: AMOXICILLIN		Dosage/Form: 250 mg, tab			
Code:		Packaging unit: box 1,000 tab			
AMC = 9,000					
Date	**Origin/Destination**	**IN**	**OUT**	**STOCK**	**Remarks/Signature**
01/06/19	Brought forward (previous stock card)			20,000	
01/06/19	Central warehouse	80,000		100,000	Exp. 12/2021
02/06/19	Health centre 1		5,000	95,000	
06/06/19	Health centre 2		2,000	93,000	
06/06/19	Health centre 3		2,000	91,000	
01/07/19	Inventory			91,000	10,000 (07/19) 11,000 (05/20) 70,000 (12/21)
02/07/19	Health centre 1		6,000	85,000	
05/07/19	Health centre 2		2,000	83,000	
05/07/19	Health centre 3		1,000	82,000	
31/07/19	Expired July 19		1,000	81,000	Exp. 07/2019
01/08/19	Health centre 1		6,000	75,000	
06/08/19	Health centre 2		1,000	74,000	
06/08/19	Health centre 3		2,000	72,000	

The following should be noted on stock cards:

- the INN, form and strength;
- all movements (in, out, origin, destination, loss due to expiration, damages) and dates;
- inventories and dates.

The following may also be included:

- average monthly consumption;
- stock levels: buffer stock, running stock;
- other stock areas for a product;
- unit price;
- current orders and dates.

Quantities in and out are always recorded in units (e.g. 5,000 tablets, 80 ampoules) and never in number of boxes.

Write a single operation per line, even if several operations take place the same day.

Note: stock cards are always equired, even when computer assisted stock management is used.

Quantities to retain and order (stock level)

Average monthly consumption (AMC)
Calculated from outgoing stock recorded on stock cards: add the quantities of several months (3, 6 or 12) in the out column and divide the total by the number of months considered.

Running stock = consumption between two supply deliveries
Running stock corresponds to the quantity of each drug consumed between two supply deliveries (e.g. if deliveries are quarterly, running stock = AMC x 3).

Buffer stock
This stock is planned to compensate for possible late deliveries, losses, and increases in consumption. It is calculated according to the delivery delay of orders.
Buffer stock quantities are generally evaluated as half of the consumption during the period between two deliveries. It depends on risks that a programme may run: stock shortages or drug expiration in specific situations (resources, seasonal supply problems, etc.).
For example, if the delivery delay is two months, the buffer stock corresponds to the quantity consumed in one month.

Quantities to be ordered
Quantities to order are based on data from stock cards:
- actual stock level (inventory) on the day of the order
- running stock
- buffer stock
- delay period between order and delivery
- orders not yet delivered

Order = (running stock + buffer stock + probable consumption during delivery delay) – (inventory + orders not yet delivered).

Order and delivery forms

Concerning orders from peripheral facilities to the central pharmacy, it is recommended to use pre-printed order forms which indicate the INN, form (tablet, capsule, vial, ampoule, etc.) and strength.

The following may also be included:

- stock levels,
- AMC.

Orders should be in triplicate, dated and countersigned by the person in charge of the health facility. Two copies are sent to the central pharmacy: one serves as a way bill and may also be used for invoicing, the second stays with the central pharmacy. The third copy stays at the health facility.

Example:
Health facility order form, 6-month supply period, minimum stock of 3 months (2 month delivery delay + 1 month buffer stock)

Health structure: *Bebora*
Head of structure: *Jacques Pinel, Ph*
Date: *26.06.19* Signature: *XXX*

ORAL DRUGS

NAME	PRESENTATION	Price	Stock	Monthly consump.	Qty ordered	Qty delivered
ACETYLSALICYLIC ACID	300 mg tab	0.01	55,000	10,000	5,000	
ASCORBIC ACID	250 mg tab	0.04	–	–	—	
ALUMINIUM HYDROXYDE	500 mg tab	0.03	15,000	6,000	21,000	
AMOXICILLIN	250 mg tab	0.18	16,000	4,000	8,000	

Receiving orders

All orders should be accompanied by a way bill or invoice and packing list.

On reception, the number of parcels should be checked, then their contents should be verified:

- ensure that products delivered correspond to products ordered, and that the quantities conform to those on the packing list;
- packaging, labelling and expiry dates of each product should be checked, as well as the aspect of the product;
- look for special storage conditions (cold chain).

The supplier should be notified of all irregularities.

Then, drugs and material are integrated into stocks at their designated places. Incoming quantities are recorded on stock cards.
Way bills, invoices and packing lists are to be classed with orders in an "orders" file and kept for 3 years or more according to current regulations.

Inventory

An inventory of current stock quantities and expiry dates should be done before each order.
Stock cards give a theoretical figure of stock quantities, but actual quantities of each product should be verified (physical stock). Differences may arise due to errors in recording or due theft. These differences should be clarified.
An inventory may only be easily done if the pharmacy is correctly arranged. It is an indispensable task.
During an inventory there should be no stock movements, i.e. incoming or outgoing stock.

Distribution

Distribution to health facilities
Each health facility sends the central pharmacy two copies of the order form.
On both copies, actual quantities supplied by the central pharmacy are recorded in the “Qty delivered” column.
One on these copies is sent with the delivery.
After verifying that all products have been correctly recorded on their respective stock cards, the second copy is placed in a file established for health facility. The exit date on the stock card should be the same as the date on the order form.

Dispensing drugs to patients
Drug packaging should be presentable. Use plastic bags that can be resealed by pressure (Minigrip®).
Prepare labels for each drug, clearly showing:
- the name of the drug (INN), form and strength;
- the dosage written out in full or in symbols.

Put the number of tablets corresponding to a complete treatment and the label into the bag.
In busy centres it is better to have two people responsible for dispensing drugs in order to double check prescription deliveries; the first collects the drugs prescribed, the second verifies and gives them to patients with all necessary explanations, slightly away from other patients.
So that patients correctly follow treatment, adequate explanations should be given:
- how to take the drug,
- for how long,
- possible adverse effects (e.g. drowsiness caused by anti-histamines),
- precautions to be taken (e.g. avoid alcohol with metronidazole).

Persons dispensing drugs should be able to give patients the information they need.
Interpreters are needed if several languages exist in the same region.

Donations of recuperated medicines and medical samples

It is not recommended to solicit or accept supplies coming from collections of drugs recuperated from consumers in industrialised countries, or free samples distributed by manufacturers.

They are very often specialised drugs unknown to prescribers and unsuitable for local pathologies. The multiplication of different drugs supplied interfere with the implementation of standardised therapeutic regimens and makes any form of management impossible.

Drug quality and storage

Drug quality influences treatment efficacy and safety. Quality depends on correct manufacturing and storage: high-quality drugs are available when using rational buying procedures and when suppliers are reliable. It is also essential to ensure optimum transportation and storage conditions.

Quality standards

Each drug is characterised by particular norms written in pharmacopoeia or files presented by manufacturers and recognised by competent authorities in each country. These norms concern aspects (colour, odour, etc.), physicochemical properties, analysis procedures, shelf life and storage conditions.

Analysis certificates guarantee that products from one batch (products from the same production cycle) conform to official quality standards in the country of manufacture. These certificates are provided for each product by manufacturers.

Every unit (box and bottle) should be clearly labelled; each label should clearly indicate the:

- INN,
- form and dosage,
- number of units (tablets, ampoule, etc.) or the volume (syrup, etc.),
- name and address of the manufacturer,
- batch number,
- expiry date.

Storage conditions

Stability of drugs depends on both environmental factors such as temperature, air, light and humidity, and drug-related factors such as the active ingredient itself, the dosage form (tablet, solution, etc.) and the manufacturing process. It is therefore necessary to respect storage instructions given in this guide or by manufacturers (on notices and labels) if the recommendations are not identical.

Temperature

The temperature in the store should not be above 25 °C.

Storage temperatures are defined by European pharmacopoeia as follows:

freezer	– 15 to 0 °C
refrigerator	+ 2 to + 8 °C
cool	+ 8 to + 15 °C
ambient temperature	+ 15 to + 25 °C

During transit and transportation temperatures may attain 50 to 60 °C inside vehicles, shipping containers or on docks and, in this case, shelf life and expiry dates may no longer be guaranteed.

Freezing may be detrimental, particularly for solutions, leading to the deterioration or precipitation of active ingredients as well as the breaking of ampoules and vials.

Vaccines, immunoglobulins and antisera are products that are sensitive to heat and light. Even though new techniques produce vaccines that are less sensitive to heat (called "thermostable"), they still have to be stored in the refrigerator between 2 °C and 8 °C, and the cold chain must be strictly respected during transport.

The vaccine vials may have a heat-sensitive monitor (VVM). The square on the monitor changes colour when exposed to heat over a period of time: if the square is lighter than the circle, the vaccine can be used. If the square is the same colour or darker than the circle, the vial must be destroyed. The monitor registers cumulative exposure to heat.

Controlled temperature chain (CTC)

In certain mass vaccination campaigns only, certain vaccines licensed for use in a CTC can be transported and used out of the cold chain within a specified time limit.

To qualify for use in a CTC the vaccine must be able, once out of the cold chain (2 °C to 8 °C), to tolerate temperatures of up to 40 °C for at least 3 days. The maximum temperature of 40 °C is monitored by a peak threshold indicator in each vaccine carrier used for transport and vaccination in the field.

Air and humidity

In a store, relative humidity should not be above 65% (there are several devices for humidity measurement).

Air is a factor of deterioration due to its content of oxygen and humidity. All containers should remain closed. In airtight and opaque containers (hospital type), drugs are protected against air and light. Opening containers long before the use of drugs should be avoided.

Patients should be informed that tablets should not be removed from blisters until immediately before administration.

Light

Drugs should be protected from light, particularly solutions. Parenteral forms should be preserved in their packaging. Coloured glass may give illusory protection against light.

Deterioration

It is important to be familiar with the normal aspects of each drug (colour, odour, solubility, consistency) in order to detect changes, which may indicate its deterioration. It is important to know that deterioration does not always lead to a detectable external modification.

The principal consequence of deterioration is a **reduction of therapeutic activity**, which leads to more or less grave consequences for the individual and/or community.
For example, the use of expired antibacterials does not cure an infection and also favours the emergence of resistant strains.
It is not recommended to compensate for a possible reduction of activity by a random increase in the usual dose, as there is a real danger of overdose when using toxic drugs.

Over time, certain drugs undergo a deterioration leading to the development of substances much more dangerous, thus an **increase in toxicity**. Tetracycline is the main example: the pale, yellow powder becomes brownish and viscous, its use therefore being dangerous even if before the expiry date.

An increase in allergen strength has been observed in certain drugs such as penicillins and cephalosporins.

Suppositories, pessaries, creams and ointments that have been melted under heat should not be used. The active ingredient is no longer distributed in a homogenous manner.

Oral rehydration salts may be used as long as they keep their aspect of white powder. Humidity transforms them into a compact mass, more or less brownish and insoluble. They are therefore unfit for consumption, whatever their expiry date.

Expiration

Drugs deteriorate progressively and according to various processes, even if stored in adequate conditions. In most countries, regulations impose an obligation on manufacturers to study the stability of their products in standardised conditions and to guarantee a minimum shelf life period. The expiry date indicated by manufacturers designates the date up to and including which the therapeutic effect remains unchanged (at least 90% of the active ingredient should be present and with no substantial increase in toxicity).
The expiry date indicated on the label is based on the stability of the drug in its original and closed container. Shelf life period currently usually guaranteed is 3 and 5 years. Less stable substances are only guaranteed for 1 or 2 years.

The expiry date should be indicated on the label with storage instructions.

Expired drugs

Expiry dates are to be respected due to legal obligations and considerations of therapeutic responsibility
In cases where the only available drugs have expired, a doctor may be led to take on the responsibility of using these drugs.

It is evident that a drug does not become unfit for consumption the day after its expiry date. If a product has been stored in adequate conditions (protected from humidity and light, packaging intact and at a medium temperature) and if modification of aspects or solubility have not been detected, it is often preferable to use the expired drug than to leave a gravely ill patient without treatment.

Expiry dates for drugs that require very precise dosage should be strictly respected due to a risk of under-dosage. This is the case for cardiotonic and antiepilectic drugs, and for drugs that risk becoming toxic, such as cyclines.

Destruction of expired or unusable drugs and material

It is dangerous to throw out expired or unusable drugs or to bury them without precaution. For more information about destruction of drugs and material see **Interagency Guidelines For Safe Disposal of Unwanted Pharmaceuticals in and after emergencies**, WHO/99.2.

Prescription, cost, compliance

SOME SUGGESTIONS FOR

Reducing risks - Reducing costs - Facilitating compliance

It is possible to promote a more rational use of medicines, as much for safety as for cost, by a judicious choice of therapeutic regimens and the resulting lists of medicines.

Limiting the use of injectable drugs

Numerous patients demand treatment with injectable drugs, which they imagine to be more effective. Certain prescribers also believe that injections and infusions are more technical acts and thus increase their credibility.

Parenteral treatment is always more costly than oral treatment. The price of the drug itself is higher for an equal dose of active ingredient. It requires costly disposable material. It exposes patients to complications due to poorly tolerated products (abscesses, necrosis due to IM quinine injections or antibacterials, etc.) or badly performed injection techniques (symptoms of overdose after a IV injection given too rapidly, sciatic nerve damage, etc.). If disposable injection supplies are re-used, there is a risk of bacterial or viral contamination (tetanus, hepatitis, HIV, etc.).

When both oral and injectable drugs are equally effective, parenteral administration is only justified in case of emergency, digestive intolerance or when a patient is unable to take oral medication. Oral drugs should replace injectable drugs as soon as possible during the course of treatment.

Limiting the use of syrups and oral suspensions

Taking liquid drugs is often easier, especially for young children and more so if they are sweetened or flavoured. It is, however, recommended to limit their use for numerous reasons:

Risk of incorrect usage
Outside of hospitals, determining the correct dosage is hazardous: spoons never contain standard volumes (soup spoons, dessert spoons, tea spoons). Oral suspensions should be prepared with a specified amount of clean water, and well shaken prior to administration. There is therefore a risk of overdose or giving an insufficient dosage.
Some oral suspensions must be kept refrigerated; their storage at room temperature is limited to a few days, and with syrups there is a risk of fermentation.
In numerous countries syrups are thought of as "cough medicine". Confusion between cough mixtures and antibacterial suspensions or syrups is common.

Economic considerations

Compared to the price of tablets or capsules, the price of syrups and oral suspensions is considerably higher. Even using a powder for subsequent reconstitution, the costs may be 2 to 7 times higher than an equivalent dose due to the cost of the bottle itself and higher transportation costs due to weight and volume.

Studying the choice of treatment regimens

The choice of a treatment regimen often influences compliance and cost. The shortest and least divided (1 to 2 doses per day) treatments are most often recommended. Single dose treatments are ideal, when indicated.

For the treatment of malaria, tuberculosis and HIV infection, fixed-dose combinations (coformulated tablets) should preferably be used in order to improve compliance.

Considering non-essential medicines and placebos

In developing countries as in industrialised countries, patients with psychosomatic complaints are numerous. The problems that motivate their consultations may not necessarily be remedied with a drug prescription. Is it always possible or desirable to send these patients home without a prescription for a symptomatic drugs or placebo? If so, what placebo should be prescribed?

When national drug policy is strict and allows neither the use of placebos nor non-essential symptomatic drugs, other products are often used in an abusive manner, such as chloroquine, aspirin, and even antibacterials.

Conversely, a placebo may take the place of an effective and needed drug. This risk is real, but seems less frequent, which makes the introduction of placebos on a list of essential drugs relevant. Multivitamins may present a type of harmless and inexpensive placebo. Their composition generally corresponds to preventive treatment of vitamin deficiency and they have no contra–indications.

Numerous non-prescription drug products (tonics, oral liver treatments presented in ampoules) have no therapeutic value and, due to their price, cannot be used as placebos.

Antiseptics and disinfectants

Definitions

Antiseptics are used to kill or eliminate microorganisms and/or inactivate viruses on living tissues (intact or broken skin and mucous membranes).
Disinfectants are used to kill or eliminate microorganisms and/or inactivate viruses on inanimate objects and surfaces (medical devices, instruments, equipment, walls, floors).
Certain products are used both as an antiseptic and as a disinfectant (see specific information for each product).

Selection

Recommended products

1) Core list

No single product can meet all needs with respect to cleaning, disinfection and antisepsis. However, use of a limited selection of products allows greater familiarity by users with the products in question and facilitates stock management:

- ordinary soap;
- a detergent and, if available, a detergent-disinfectant for instruments and a detergent-disinfectant for floors and surfaces;
- a disinfectant: chlorine-releasing compound (e.g. NaDCC);
- an antiseptic: 10% povidone iodine or chlorhexidine.

2) Complementary list

Other products can be used, according to the activities carried out, resources, and options for obtaining the product, locally or otherwise:

- **Ethanol** and **isopropanol**
  By virtue of its rapid action (< 30 seconds), alcohol, if available locally, is useful to disinfect:
  - intact skin, before taking a blood sample or performing an injection (except vaccines),
  - latex stoppers of injection vials.

  Alcohol acts faster than polyvidone iodine, but its duration of action is shorter.
  Application to mucous membranes or broken skin is contra-indicated, however, alcohol may be used on broken skin in the event of accidental exposure to blood.
  Alcohol is more effective at 60-70% concentration than at 90-95%.

- **Alcohol-based** hand rub solutions

Alcohol-based hand rubs (ABH) are used for standard hand antisepsis. Some, but not all, ABH may also be used for surgical hand antisepsis.
Not all ABH preparations are equivalent. For example, for antiseptic hand rub, depending on the product specifications:

- Bactericidal effect may be achieved with a single application of 30 seconds duration, or 2 consecutive applications of 30 seconds each, or a single application of 60 seconds duration.
- The volume of rub required per application may be 3 or 5 ml.

Thus, when purchasing locally, it is important to verify the quality of the product and specific instructions for use (number of applications, duration of application, and volume to be used per application).
For surgical activity, ensure that the product is suitable for use as a surgical hand rub. Follow manufacturer's instructions for use.
All alcohols and alcohol-based products are flammable. Precautions should be taken during storage and use to avoid contact with a heat source (flame, electrocautery, etc.).

- **Povidone iodine** (**PVI**) **scrub solution**
  7.5% or 4% PVI scrub solution is used for antiseptic cleansing of healthy skin, contaminated wounds and surgical site, as well as antiseptic hand wash and surgical hand wash.
  Given the possible interactions between different groups of antiseptics, antiseptic cleansing and antisepsis should only be carried out using products from the same class. For example, for pre-operative skin preparation, PVI scrub solution is used for cleansing, then PVI 10% dermal solution is used for antisepsis.

- **Glutaraldehyde** (2% solution)
  Glutaraldehyde is used for high-level disinfection of heat-sensitive items, which cannot withstand heat sterilisation, notably endoscopes/endoscopy equipment.
  Instructions for glutaraldehyde use must be followed scrupulously:
  1. two preliminary washes of the equipment through immersion in a detergent-disinfectant solution for instruments, followed each time by rinsing;
  2. complete immersion of the equipment in a 2% glutataldehyde solution for 20 minutes;
  3. thorough final rinsing, with filtered water (or sterile water for endoscopes introduced into a sterile cavity) to eliminate any residue;
  4. thorough drying with a sterile towel;
  5. sterile wrapping and use within 24 hours.
  Glutaraldehyde is available as 2% ready-to-use solution (e.g. Korsolex RTU®, Steranios 2%®); concentrated solution that must be diluted to obtain a 2% solution (e.g. 25% or 38.5% solutions); preparations requiring « activation » (alkalinisation) before use, through addition of the agent provided with the product (e.g. Cidex®, Glutrex®).
  Glutaraldehyde solution is irritating to skin and mucous membranes, and releases toxic vapours. Personnel exposed to glutaraldehyde should take precautions to protect skin and eyes and avoid inhalation of vapours (risk of nausea, headache, breathing disorders, rhinitis, eye irritation, dermatitis).
  Glutaraldehyde solutions are flammable. Precautions should be taken during storage and use to avoid contact with a heat source.

Non-recommended products

- Hydrogen peroxide (3% or 10 volumes) has limited efficacy as antiseptic agent but can be useful to clean contaminated wounds. In addition, concentrated solutions are dangerous to transport and handle.
- Mercury compounds such as phenylmercuric borate, merbromin (Mercurochrome®), mercurobutol (Mercryl®), thimerosal (Merthiolate®, Timerosal®) have limited efficacy, may cause serious adverse effects (toxic for kidneys, central nervous system and digestive tract; allergies) and pollute the environment. Their use must be abandoned.
- Hexachlorophene is toxic for the central nervous system and its efficacy is limited.
- Ether is often wrongly used as an antiseptic; it removes sticky residues of plaster.
- Eosin is often wrongly used as an antiseptic; it is a colouring agent used for staining as well as a drying agent.

None of these products is included in the WHO list of essential medicines.

Preparation and use of antiseptic solutions

Preparation

Aqueous solutions of many antiseptics can be contaminated by pathogens (especially *Pseudomonas aeruginosa*) during handling. To avoid this, the following precautions must be taken:

- Prepare all aqueous antiseptic solutions with clean water that has been boiled for a few minutes and cooled.
- Prepare solutions immediately before use.
- Only prepare small amounts at a time to avoid wastage and the temptation to keep expired and/or contaminated solutions.
- Wash bottles with hot water and leave to dry before each refill.
- Never use a cork stopper (it promotes contamination; cork inactivates certain antiseptics such as chlorhexidine).
- Mark on the bottles:
  - the name of the product,
  - its concentration,
  - the date and time of preparation.

Every medical facility should define a clear policy concerning the renewal of antiseptic solutions.

Use

- Do not use antiseptic solutions belonging to different classes for the same procedure: incompatibilities between different compounds exist.
- Antiseptics should be used when wounds are contaminated or infected. Clean, non-infected wounds may be cleaned with 0.9% sodium chloride; it is not necessary to apply an antiseptic.
- In case of accidental exposure to blood (needlestick or broken skin): the injured area should be washed well with soap and water. No evidence exists that antiseptics reduce the risk of

transmission, however, their use – after thorough cleaning – is not contraindicated. Use 2.6% bleach diluted 1/5 or 1/10, or 70% alcohol, or 10% povidone iodine solution and leave in contact for 5 minutes.

- Disinfection of skin when administrating a vaccine is not recommended; rather, simply clean the injection site with clean water. Certain vaccines (for example, BCG) may be inactivated in the presence of an antiseptic. If an antiseptic is used despite this recommendation, it must be allowed to dry before vaccine injection.

Preparation and use of disinfectant solutions

The effectiveness of disinfection can be impaired by error in preparation (concentration, temperature), failure to follow recommended contact times, or deterioration of the product due to poor storages conditions.

Personnel carrying out disinfection should wear protective clothing when preparing or using disinfectant solutions: gown, rubber apron, gloves with long cuffs, goggles and mask.

Preparation

Solutions should be prepared with clean water (chlorine solutions should be prepared with cold water only, in non-metal containers).

- Solution for disinfecting floors and surfaces: prepare just before use, and discard any unused solution.
- Solution for pre-disinfection of medical devices and instruments: replace daily. The solution may be used for a maximum of 24 hours; if visibly soiled, discard and replace with fresh soaking solution before 24 hours are up.
- Solution for disinfection of medical devices and instruments: prepare just before and discard after use.

Do not add any product (e.g. a detergent, descaling agent) to disinfectant solutions.

Disinfection of floors and surfaces

- Apply detergent-disinfectant intended for floors and surfaces [a] , without rinsing. Follow manufacturer's instructions for dilution and specific preparation procedures.

Or

- After cleaning with a detergent (cleaning product without an antimicrobial agent) and rinsing with water, apply a 0.1% active chlorine solution. Preliminary washing and rinsing are essential: the activity of chlorine is reduced in the presence of organic material (sputum, vomit, faeces, pus, blood and other body fluids), and the detergent used may be incompatible with chlorine. Contact time is 15 minutes. Stainless steel surfaces should be rinsed with water after disinfection with chlorine solution.

The use of detergent-disinfectant products reduces workload (cleaning and disinfection are carried out as a single procedure), but they have the disadvantage of being weak detergents and leaving a film, which causes dirt to build up on the floors. It is thus necessary to alternate their use with that of a detergent alone. Each medical facility should establish a clear policy addressing this issue.

Disinfection of linen

After hand washing, followed by rinsing: soak the clean linen in a solution of 0.1% active chlorine for 15 minutes and rinse thoroughly (3 rinses).

After machine-washing at 60 °C: soak the linen in a 0.1% active chlorine solution for 2 to 3 minutes and rinse thoroughly (3 rinses).

Pre-disinfection of reusable medical devices/instruments

- After use, soak medical devices (disassembled, forceps and scissors opened):
  - In a detergent-disinfectant solution intended for medical devices and instruments [a] . Use a syringe to irrigate the cavities of hollow devices with the same solution.
    For correct dilution and soak times, follow manufacturer 's instructions; use a timer.

  Or
  - In 0.1% available chlorine solution for 15 minutes (use a timer). Use a syringe to irrigate the cavities of hollow devices with the solution.
    Comply with recommended soaking times and concentrations (risk of corrosion of metal instruments). Soaking for too long (> 15 minutes) and/or in a solution that is too concentrated will increase the risk of corrosion.
- Rinse with clean water, using a syringe for hollow cavities.
- Dry with a clean, dry, lint-free cloth.

Washing-disinfection of reusable medical devices/instruments

After the pre-disinfection step:

- Immerse the material in a detergent-disinfectant solution intended for medical devices and instruments [a] (for correct dilution and soak times, follow manufacturer's directions). Scrub with a soft, non abrasive brush. Use a bottle brush for hollow devices, or irrigate with a syringe. Rinse with clean water, drain and dry with a clean, dry, lint-free cloth.

Or

- Wash (as above) with detergent and rinse with clean water. Then soak in 0.1% available chlorine solution for 20 minutes (use a timer). Comply with recommended soak times and concentrations (risk of corrosion of metal instruments). Rinse with clean water, drain and dry with a clean, dry, lint-free cloth.

Footnotes

(a) For example a quaternary ammonium detergent-disinfectant.

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