

Essential drugs

Practical guidelines

intended for physicians, pharmacists,
nurses and medical auxiliaries

2006 – THIRD EDITION

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Essential drugs

Practical guidelines

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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
World Health Organization*

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 (see *References*, page 333).

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, 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. For example, among opioid analgesics, the specific drugs to be used are chosen depending on cost, local availability and local practice.

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*, page 273).

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.

The authors would be grateful for any comments or criticisms to ensure that this manual continues to evolve and remains adapted to the reality of the field.

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This manual is also available on the internet at www.msf.org. As treatment protocols are constantly changing, medical staff are encouraged to check this website for updates of this edition.

Use of the guide

General organisation

There are two easy ways to find information in this manual:

- *A summary* at the beginning of the manual lists the chapters and their corresponding pages.
- *A double-entry alphabetical index* at the end of the manual with international non-proprietary and proprietary names.

Nomenclature of drugs

The International Non-proprietary Names (INN) of drugs is used in this manual. Some frequently used proprietary names, followed by the symbol ®, are also given.

E.g.: amoxicillin (Amoxyl®, Clamoxyll®...)

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.

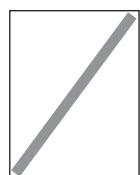
Dosage for children are expressed in milligrams per kilogram per day (mg/kg/day) for most drugs. For certain symptomatic drugs, dosage is expressed in milligrams per kilogram per dose (mg/kg/dose). For certain antiretrovirals, dosage is expressed in milligrams per square meter (mg/m²).

Dosage for adults is expressed in grams or milligrams per day for most drugs. For certain drugs requiring a more precise dosage, doses are expressed in mg/kg/day. In malnourished patients, prescriptions should always be adapted to the patient's weight.

Symbols

Prescription under medical supervision

This box indicates potentially toxic drugs, administered under medical prescription only in many European countries (e.g. Belgium, France, Spain, UK).



This symbol is used to draw attention to drugs whose toxic potential is greater, or for which experience has shown they are frequently misused.

Drugs marked with a grey diagonal line are either potentially dangerous and forbidden in certain countries, or obsolete, ineffective, or capable of selecting resistant strains of bacteria. These drugs are still widely used, attention is therefore drawn to the risk and/or unnecessary cost of their prescription.

Practical recommendations for drug storage:

drug very sensitive to light

drug very sensitive to humidity

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

Abbreviations

Units	Administration route	Others
kg = kilogram	IM = intramuscular	v / v = volume in volume
g = gram	IV = intravenous	
mg = milligram (1 g = 1000 mg)	SC = subcutaneous	
μ g = microgram		
m ² = square meter		
IU = international unit		
M = million		
mEq = milliequivalent		
mmol = millimole		
ml = millilitre (1 cc = 1 ml)		
tsp = teaspoon (= 5 ml)		
Presentation		
	tab = tablet	
	cap = capsule	
	vl = vial	
	amp = ampoule	
	susp = suspension	

Summary

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Oral drugs

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ABACAVIR = ABC

(Ziagen®...)

Prescription under medical supervision

1

Therapeutic action

- Antiretroviral, HIV-1 and HIV-2 nucleoside reverse transcriptase inhibitor

Indications

- HIV-1 or HIV-2 infection, in combination with other antiretroviral drugs

Presentation

- 300 mg tablet
- 100 mg/5 ml oral solution, with oral dosing syringe

Dosage

- Child from 3 months to 12 years:
 - Tablets: 16 mg/kg/day in 2 divided doses, without exceeding 600 mg/day
 - Oral solution: 0.8 ml/kg/day in 2 divided doses, without exceeding 600 mg/day
- Adult:
 - Tablets: 600 mg/day in 2 divided doses
 - Oral solution: 30 ml/day in 2 divided doses

Weight	20 mg/ml oral solution	300 mg tablet
5 to 6 kg	2.5 ml x 2	–
7 to 9 kg	3 ml x 2	–
10 to 14 kg	5 ml x 2	–
15 to 19 kg	7 ml x 2	1/2 tab x 2
20 to 24 kg	9 ml x 2	1/2 tab x 2
25 to 29 kg	11 ml x 2	1 tab AM and 1/2 tab PM
30 to 39 kg	13 ml x 2	1 tab x 2
≥ 40 kg	15 ml x 2	1 tab x 2

Duration

- The duration of treatment depends on the efficacy and tolerance of abacavir.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe hepatic impairment or history of severe intolerance to abacavir that led to permanent discontinuation of treatment.
- May cause:
 - hypersensitivity reactions: skin rash, gastrointestinal disturbances (nausea, vomiting, diarrhoea, abdominal pain), cough, dyspnoea, malaise, headache, lethargy, oedema, lymphadenopathy, hypotension, myalgia, arthralgia, renal impairment,
 - hepatic disorders and lactic acidosis.

In all these cases, stop taking abacavir immediately and permanently.
- Pregnancy: avoid, except if there is no therapeutic alternative
- Breast-feeding: not recommended

Remarks

- Tablets are not scored. When half a tablet is required, use a cutter to cut the tablet into two equal parts.
- Also comes in fixed-dose combination tablets incorporating abacavir-zidovudine-lamivudine (Trizivir®...).
- Storage: below 30°C
Once opened, oral solution kept below 30°C may be stored for a maximum of 2 months.

ACETYLSALICYLIC ACID = ASPIRIN = ASA

Therapeutic action

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

Indications

- Mild to moderate pain
- Fever
- Rheumatic diseases (except gout)

Presentation

- 100 mg and 500 mg tablets
- Also comes in 75 mg and 300 mg tablets.

Dosage

- *Pain, fever*
Child: 60 mg/kg/day in 3 or 4 divided doses
Adult: 1 to 3 g/day in 3 or 4 divided doses

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
100 mg tablet	–	–	1 1/2 tab x 3	3 tab x 3	–	
500 mg tablet	–	–	1/4 tab x 3	1/2 tab x 3	1 tab x 3	

- *Rheumatic diseases*
Child: 50 to 100 mg/kg/day in 4 divided doses
Adult: 3 to 6 g/day in 4 divided doses
- Maximum dose: child: 100 mg/kg/day; adult: 6 g/day

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to aspirin and NSAID, peptic ulcer, coagulation disorders, haemorrhage; severe renal, hepatic or cardiac insufficiency.
- Do not administer to children under one year (use paracetamol).
- Administer with caution to elderly patients or patients with asthma.
- Do not exceed indicated doses, particularly in children and elderly patients. Intoxications are severe, possibly fatal.
- May cause:
 - allergic reactions sometimes severe, epigastric pain, peptic ulcer, haemorrhage,
 - dizziness, tinnitus (early signs of overdose).For all cases above, stop aspirin and use paracetamol.
- Do not combine with methotrexate, anticoagulants and NSAID.
- Monitor combination with insulin (increased hypoglycaemia) and corticosteroids.
- Pregnancy: not recommended during the first 5 months. CONTRA-INDICATED from the beginning of the 6th month (use paracetamol)
- Breast-feeding: not recommended (use paracetamol)

Remarks

- In children under 16 years, preferably use paracetamol.
- Take during meals, preferably with a lot of water.
- For the treatment of moderate pain, it is recommended to combine aspirin with codeine.
- Aspirin may also be administered for its antiplatelet effects in secondary prevention of atherothrombosis, at a dose of 75 to 300 mg daily.
- Storage: below 25°C – ☀
Do not use if tablets have a strong smell of vinegar. A slight vinegar smell is always present.

ACICLOVIR (Viratop®, Zovirax®...)

Prescription under medical supervision

1

Therapeutic action

- Antiviral active against herpes simplex virus and varicella zoster virus

Indications

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

Presentation

- 200 mg tablet

Also comes in 400 mg and 800 mg tablets and 200 mg / 5 ml and 800 mg / 10 ml oral suspension.

Dosage and duration

- *Treatment of recurrent or extensive oral herpes in immunocompromised patients*

Child under 2 years: 200 mg 5 times per day for 7 days

Child over 2 years and adult: 400 mg 5 times per day for 7 days

- *Treatment of genital herpes*

Child over 2 years and adult: 400 mg 5 times per day for 7 days; double the dose in immunocompromised patients

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

Child under 2 years: 200 mg 2 times per day

Child over 2 years and adult: 400 mg 2 times per day

- *Treatment of herpetic kerato-uveitis*

Child under 2 years: 200 mg 5 times per day for 7 days

Child over 2 years and adult: 400 mg 5 times per day for 7 days

- *Treatment of severe forms of zoster*

Adult: 800 mg 5 times per day for 7 days

Contra-indications, adverse effects, precautions

- Do not administer to patients with hypersensitivity to aciclovir.
- May cause: headache, skin rash, gastrointestinal disturbances, raised transaminases, neurologic disorders in patients with renal impairment.
- May (rarely) cause in immunocompromised patients: thrombocytopenic purpura, haemolytic uraemic syndrome.
- 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 within 24-48 hours after the appearance of lesions to reduce severity and duration of infection.
- For the treatment of herpes zoster, aciclovir should be started as soon as possible, preferably within 72 hours after the appearance of lesions. Aciclovir administration does not reduce the likelihood of developing zoster-associated pain but reduces the overall duration of this pain.
- Storage: below 30°C - 

ALBENDAZOLE (Eskazole®, Zentel®...)

Prescription under medical supervision

Therapeutic action

- Anthelminthic

Indications

- Ascariasis, hookworm infections, enterobiasis, trichuriasis, strongyloidiasis
- Trichinellosis
- Cysticercosis
- Lymphatic filariasis, in combination with ivermectin

Presentation

- 400 mg tablet

Dosage and duration

- *Ascariasis, hookworm infections, enterobiasis*
Child from 1 to 2 years: 200 mg as a single dose
Child over 2 years and adult: 400 mg as a single dose
In the event of enterobiasis, give a second dose 2 to 4 weeks later if possible.
- *Trichuriasis*
Child from 1 to 2 years: 200 mg as a single dose; for severe infections: 200 mg/day for 3 days
Child over 2 years and adult: 400 mg as a single dose; for severe infections: 400 mg/day for 3 days
- *Strongyloidiasis*
Child over 2 years and adult: 400 mg once daily for 3 days
- *Trichinellosis*
Child over 2 years and adult: 800 mg/day in 2 divided doses for 8 to 14 days
- *Cysticercosis*
Child over 2 years: 15 mg/kg/day in 2 divided doses for 8 to 30 days (do not exceed 800 mg/day), to be repeated if necessary
Adult: 800 mg/day in 2 divided doses for 8 to 30 days, to be repeated if necessary
- *Lymphatic filariasis* (in combination with a single dose of ivermectin)
Child over 5 years and adult: 400 mg as a single dose

Contra-indications, adverse effects, precautions

- May cause: gastrointestinal disturbances, headache, dizziness.
- Pregnancy: CONTRA-INDICATED during the first trimester
- Breast-feeding: avoid

Remarks

- Tablets must be chewed: follow manufacturer's recommendations.
- In the event of enterobiasis, treat all household members over 1 year of age simultaneously.
- Storage:  - 

ALUMINIUM HYDROXIDE

1

Therapeutic action

- Antacid

Indications

- Stomach pain associated with gastritis and peptic ulcer

Presentation

- 500 mg tablet

There are numerous preparations of aluminium and/or magnesium hydroxide and different dosages.

Dosage

- Child over 5 years: rarely indicated. When necessary: half a tablet 3 times / day
- Adult: 3 to 6 tablets / day after meals or 1 tablet during painful attacks

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- May cause: constipation (except when tablets contain magnesium salts or magnesium hydroxide).
- Decreases intestinal absorption of many drugs such as tetracycline, iron salts, isoniazid, ethambutol, chloroquine, atenolol, digoxin, fluoroquinolones, corticosteroids, indometacin, ketoconazole, thyroxine, etc. Do not administer simultaneously with these drugs, administer 2 hours apart.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Chew tablets.
- Storage: no special temperature requirements

AMINOPHYLLINE and THEOPHYLLINE

Prescription under medical supervision

Therapeutic action

- Bronchodilator

Indications

- Treatment of persistent asthma not controlled by inhaled corticosteroids (beclometasone) and beta₂-adrenoceptor agonists (salbutamol, salmeterol, etc.)

Presentation

- 100 mg tablet

Dosage

There is a narrow margin between the therapeutic and toxic dose. Always try to administer the lowest effective dose, which varies from one person to another. As serum-theophylline concentrations can rarely be monitored, close clinical monitoring, especially at the start of therapy, is essential to establishing optimal dosage. For information:

- Child over one year and adult:
Initially 10 mg/kg/day in 3 divided doses for 3 days and evaluate efficacy of treatment. If the dose is not sufficient, increase to 13 mg/kg/day for 3 days and evaluate. If the dose is not sufficient, increase to 16 mg/kg/day.
- Do not exceed 400 mg/day in children and 800 mg/day in adults.

AGE	0 months	1 year	5 years	15 years	ADULT
WEIGHT	4 kg	8 kg	15 kg	35 kg	
100 mg tablet	–	–	1/4 to 1/2 tab x 3	1/2 to 1 tab x 3	1 to 2 tab x 3

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Administer with caution to children under 30 months.
- May cause:
 - nausea, irritability, insomnia,
 - rarely, allergic reactions (sometimes severe) to aminophylline.
- Signs of overdose:
 - early signs: vomiting, headache, tachycardia, hyperthermia, hypotension,
 - signs of toxicity: seizures.If these symptoms appear, stop treatment immediately.
- Reduce dosage in patients with hepatic impairment or heart failure, and in elderly patients.
- Reduce the dose by half in the event of fever, especially in children (risk of overdose).
- Avoid combination with:
 - erythromycin, cimetidine, fluconazole, ciprofloxacin, ritonavir (risk of aminophylline and theophylline overdose),
 - phenobarbital, carbamazepine, phenytoin, rifampicin (decreased concentrations of aminophylline and theophylline).
- Pregnancy: avoid, especially during the third trimester (risk of toxicity in the newborn infant)
- Breast-feeding: avoid

Remarks

- Aminophylline and theophylline are not included in the WHO list of essential medicines.
- Storage: below 30°C – 

AMITRIPTYLINE (Elavil®, Laroxyl®, Triptyzol®...)



Prescription under medical supervision

1

Therapeutic action

- Sedating tricyclic antidepressant

Indications

- Depression in adults, especially when a sedative effect is required (anxiety, agitation, insomnia)
- Neuropathic pain in adults

Presentation

- 10 mg, 25 mg and 50 mg tablets

Dosage

- *Depression*
Initial dose of 75 mg/day in 2 to 3 divided doses, or once daily at night, gradually increased, if necessary, to a maximum dose of 150 mg/day
- *Neuropathic pain*
Initial dose of 25 mg/day at night for one week, followed by 50 mg/day at night for one week then 75 mg/day at night
- Reduce the dose by one-half in elderly patients.

Duration

- *Depression*: minimum 3 months. The treatment should be withdrawn gradually ; if signs of relapse occur, increase the dose.
- *Neuropathic pain*: continue several months after pain relief is obtained, then attempt to stop treatment.

Contra-indications, adverse effects, precautions

- Do not administer if: recent myocardial infarction, arrhythmia, impaired liver function, acute mania. Do not administer to children.
- May cause:
 - antimuscarinic effects: dry mouth, urinary retention, disturbance of accommodation, constipation, tachycardia
 - orthostatic hypotension, arrhythmia, cutaneous reactions, endocrine disorders, weight gain, sweating
 - frequent drowsiness, tremor, insomnia, transient mental confusion
 - effects linked to depressive illness: may exacerbate suicidal tendencies and psychotic symptoms
- Adverse effects occur particularly in the elderly and in the event of overdosage.
- Do not combine with another antidepressant, especially an MAOI.
- Avoid combination with atropine, epinephrine (adrenaline), clonidine (decreased anti-hypertensive effect).
- Use with caution when driving or operating machinery: risk of drowsiness.
- Do not drink alcohol during treatment.
- Administer with caution, under medical supervision, in epilepsy, cardiovascular disease, hepatic or renal failure, prostatic hyperplasia, thyroid disease.
- Closely monitor patients with suicidal tendencies, especially in the initial stage of treatment.
- Pregnancy: avoid, especially at the end of pregnancy (antimuscarinic effects in neonates)
- Breast-feeding: avoid

Remarks

- In the treatment of neuropathic pain, amitriptyline is often combined with carbamazepine (except in pregnant women).
- Sedative action occurs following initial doses. Antidepressant and analgesic effects are delayed for 10 to 20 days. Wait for several weeks before assessment of efficacy. This must be explained to the patient to encourage compliance.
- Combination with an anxiolytic or a neuroleptic may be useful in anxious or agitated patients.
- Storage: -

AMODIAQUINE = AQ (Camoquin®, Flavoquine®...)

Prescription under medical supervision

Therapeutic action

- Antimalarial

Indications

- Treatment of uncomplicated falciparum malaria, in combination with artesunate

Presentation

The dose written on the labels is sometimes in amodiaquine salt and sometimes in amodiaquine base which leads to frequent confusion:

- 200 mg amodiaquine hydrochloride tablet, containing 153 mg amodiaquine base
- 260 mg amodiaquine hydrochloride tablet, containing 200 mg amodiaquine base

Dosage and duration

- Child over 2 months and adult: 10 mg base/kg once daily for 3 days

Age/weight	< 1 year < 10 kg	1 to 6 years 10 to 20 kg	7 to 13 years 21 to 40 kg	14 years and over > 40 kg
153 mg base tablet	1/2 tab	1 tab	2 tab	4 tab
200 mg base tablet	1/4 tab	3/4 tab	1 1/2 tab	3 tab

Contra-indications, adverse effects, precautions

- Do not administer to patients with hypersensitivity to amodiaquine, hepatic impairment, retinopathy.
- May cause: gastrointestinal and visual disturbances, pruritus.
- Pregnancy: do not administer during the first trimester, except if there is no therapeutic alternative
- Breast-feeding: avoid, except if there is no therapeutic alternative

Remarks

- Take tablets after a meal.
- The combination artesunate-amodiaquine exists in co-blister (Arsucam®, Falcimon®, Larimal®, etc.). The two active ingredients are not combined in the same tablet but are presented in the same blister to facilitate compliance. There are three presentations: adult, child and infant.
- There is also a fixed dose combination tablets incorporating artesunate-amodiaquine (Coarsucam®): 100 mg artesunate + 270 mg amodiaquine tablets (2 tab/day for 3 days for adults; 1 tab/day for 3 days for adolescents) and 25 mg artesunate + 67.5 mg amodiaquine paediatric tablets (1 or 2 tab/day for 3 days according to age).
- Amodiaquine should not be used for prophylaxis.
- Storage: below 25°C -  - 

AMOXICILLIN (Amoxil®, Clamoxyl®...)

Prescription under medical supervision

1

Therapeutic action

- Penicillin antibacterial

Indications

- Respiratory and ENT infections (pneumonia, sinusitis, otitis media, streptococcal tonsillitis), stomatologic infections, urinary infections (cystitis), gastrointestinal and biliary infections, infection due to *Helicobacter pylori* (in combination with omeprazole and metronidazole or tinidazole), leptospirosis, etc.
- Parenteral to oral switch therapy

Presentation

- 250 mg and 500 mg tablets or capsules
- Powder for oral suspension, 125 mg/5 ml

Dosage

- Child: 50 mg/kg/day in 2 to 3 divided dose
- Adult: 1.5 g/day in 3 divided doses or 2 g/day in 2 divided doses

Age	Weight	250 mg tablet	500 mg tablet	Oral suspension 125 mg/5 ml
< 2 months	< 4 kg	1/2 tab x 2	-	1 tsp x 2
2 months to 1 year	4 to 8 kg	1/2 to 1 tab x 2	-	1 to 2 tsp x 2
1 to 5 years	8 to 15 kg	1 1/2 tab x 2	1/2 tab x 2	3 tsp x 2
5 to 10 years	15 to 25 kg	2 tab x 2	1 tab x 2	4 tsp x 2
10 to 15 years	25 to 35 kg	3 tab x 2	1 1/2 tab x 2	-
Adult	> 35 kg	4 tab x 2	2 tab x 2	-

- In severe infections, double the dose.

Duration

- *Otitis media and cystitis*: 5 days; *tonsillitis*: 6 days; *leptospirosis*: 7 days; *pneumonia and sinusitis*: 7 to 10 days; *H. pylori infection*: 10 to 14 days; *typhoid fever*: 14 days

Contra-indications, adverse effects, precautions

- Do not administer to penicillin-allergic patients, patients with infectious 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: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Use amoxicillin rather than ampicillin: as it is absorbed better, only half the dose is required.
- Storage: below 25°C

Once reconstituted, the oral suspension keeps for 7 days maximum, below 25°C.

ARTEMETHER + LUMEFANTRINE = COARTEMETHER (Coartem®, Riamet®...)

Prescription under medical supervision

Therapeutic action

- Antimalarial

Indications

- Treatment of uncomplicated falciparum malaria

Presentation

- 20 mg artemether + 120 mg lumefantrine tablet

Dosage and duration

Weight	20 mg + 120 mg tablet
< 10 kg	Do not administer
10 to 14 kg	2 tablets/day in 2 divided doses for 3 days
15 to 24 kg	4 tablets/day in 2 divided doses for 3 days
25 to 34 kg	6 tablets/day in 2 divided doses for 3 days
≥ 35 kg	8 tablets/day in 2 divided doses for 3 days

Contra-indications, adverse effects, precautions

- Do not administer to patients with cardiac disease, family history of QT interval prolongation or sudden death, personal history of congenital or acquired QT interval prolongation.
- Do not combine with: azole antifungals (fluconazole, itraconazole, ketoconazole, miconazole, etc.), tricyclic antidepressants, neuroleptics (chlorpromazine, haloperidol, etc.), macrolides, quinolones, other antimalarials, beta-blockers, protease inhibitors.
- May cause: sleep disorders, headache, dizziness, gastrointestinal disturbances, cough, palpitations, rash, pruritus, arthralgia, myalgia.
- If the patient vomits within one hour after administration: repeat the full dose.
- Pregnancy: CONTRA-INDICATED during the first trimester, avoid during the 2nd and 3rd trimesters, except if there is no therapeutic alternative
- Breast-feeding: not recommended

Remarks

- Take with meals.
- Coartemether should not be used for prophylaxis.
- Lumefantrine is also called benflumetol.
- Storage: below 30°C -  - 

ARTESUNATE = AS (Arsumax®, Plasmotrim®...)

Prescription under medical supervision

1

Therapeutic action

- Antimalarial

Indications

- Treatment of uncomplicated falciparum malaria, in combination with another antimalarial

Presentation

- 50 mg tablet
Also comes in 100 mg and 200 mg tablets.

Dosage and duration

- Child and adult: 4 mg/kg once daily for 3 days

Age/weight	< 1 year < 10 kg	1 to 6 years 10 to 20 kg	7 to 13 years 21 to 40 kg	14 years and over > 40 kg
50 mg tablet	1/2 tab	1 tab	2 tab	4 tab
100 mg tablet	-	1/2 tab	1 tab	2 tab
200 mg tablet	-	-	1/2 tab	1 tab

- Artesunate must always be combined with another antimalarial: amodiaquine, sulfadoxine-pyrimethamine or mefloquine. The choice of the second antimalarial depends on the known resistance level in the area concerned.

Contra-indications, adverse effects, precautions

- Do not administer to patients with hypersensitivity to artemisinin derivatives.
- May cause: gastrointestinal disturbances, headache, dizziness, pruritus.
- Pregnancy: avoid during the first trimester
- Breast-feeding: no contra-indication

Remarks

- The combinations artesunate-amodiaquine (Arsucam®, Falcimon®, Larimal®, etc.), artesunate-sulfadoxine / pyrimethamine (Arsudar®), artesunate-mefloquine (Artequin®) exist in co-blisters. The active ingredients are not combined in the same tablet but are presented in the same blister to facilitate compliance.
- Also comes in fixed dose combinations artesunate-amodiaquine (Coarsucam® 100 mg artesunate + 270 mg amodiaquine tablets and 25 mg artesunate + 67.5 mg amodiaquine paediatric tablets) and artesunate-mefloquine (100 mg artesunate + 200 mg mefloquine tablets and 25 mg artesunate + 50 mg mefloquine tablets).
- For the treatment of severe falciparum malaria, use either injectable route (artemether or artesunate) or rectal route (50 mg or 200 mg artesunate rectocaps).
- Artesunate should not be used for prophylaxis.
- Storage: below 25°C -  - 

ASCORBIC ACID = VITAMIN C (Laroscorbine®, Redoxon®, Vitascorbol®...)

Therapeutic action

- Vitamin: vitamin C deficiency leads to scurvy

Indications

- Prevention and treatment of scurvy

Presentation

- 50 mg and 250 mg tablets
- Also comes in 500 mg and 1 g tablets. Adjust dosage accordingly.

Dosage

- *Prevention:* child: 50 to 100 mg/day
adult: 50 to 100 mg/day
- *Treatment:* child: 100 to 300 mg/day in 3 divided doses
adult: 500 mg to 1 g/day in 3 divided doses

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
<i>Prevention</i>						
50 mg tablet	1 tab	1 tab	1 tab	1 tab	2 tab	
<i>Treatment</i>						
50 mg tablet	1 tab x 3	1 tab x 3	2 tab x 3	2 tab x 3		
250 mg tablet						1 to 2 tab x 3

Duration

- *Prevention:* as long as the situation requires (e.g. unbalanced food rations for displaced population).
- *Treatment:* 1 to 2 weeks until symptoms improve, followed by a maintenance dose for 2 weeks (preventive dose).

Contra-indications, adverse effects, precautions

- Well tolerated at indicated dose.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- High doses of vitamin C may interfere with the measurement of glucose in urine.
- Vitamin supplementation is rarely necessary when the food intake contains enough fruit and vegetables.
- Storage: below 30°C –  – 

ATENOLOL (Tenormin®...)



Prescription under medical supervision

Therapeutic action

- Cardioselective beta-blocker

Indications

- Hypertension (including hypertension in pregnancy)
- Prophylaxis of angina pectoris
- Arrhythmia

Presentation

- 50 mg and 100 mg tablets

Dosage

- *Hypertension*
Adult: 50 to 100 mg once daily, preferably in the morning
- *Prophylaxis of angina pectoris*
Adult: 100 mg once daily
- *Arrhythmia*
Adult: 50 to 100 mg once 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, bradycardia < 50/minute, atrio-ventricular heart blocks, Raynaud's syndrome, severe hypotension, severe depression.
- May cause: bradycardia, hypotension, heart failure, asthma attack, gastrointestinal disturbances, hypoglycaemia, dizziness.
- In the event of anaphylactic shock: risk of resistance to epinephrine.
- Reduce dosage in patients with renal impairment.
- Administer with caution to patients with diabetes (induces hypoglycaemia, masks the symptoms of hypoglycaemia) or to patients treated with digitalis glycosides (risk of bradycardia).
- Do not administer simultaneously with antacids such as aluminium hydroxide, etc. (decreased intestinal absorption), administer 2 hours apart.
- Monitor combination with epinephrine (hypertension); tricyclic antidepressants, other anti-hypertensive drugs, nitrates, acetazolamide, ketamine (hypotension); mefloquine, digoxin, amiodarone, verapamil, diltiazem (bradycardia).
- *Pregnancy:* no contra-indication. After delivery monitor the newborn for at least 72 hours (risk of hypoglycaemia, bradycardia, respiratory distress).
- *Breast-feeding:* avoid

Remarks

- Atenolol is also used for the secondary prophylaxis of myocardial infarction (50 mg once daily).
- *Storage:* below 25°C –

AZITHROMYCIN (Zithromax®...)

Prescription under medical supervision

Therapeutic action

- Macrolide antibacterial

Indications

- Trachoma
- Genital infections due to *Chlamydia trachomatis* (urethritis, cervicitis,)
- Donovanosis (granuloma inguinale), chancroid
- Streptococcal tonsillitis in penicillin-allergic patients

Presentation

- 250 mg and 500 mg capsule or tablet
- 200 mg/5 ml paediatric oral suspension

Dosage and duration

- *Trachoma, genital infections due to C. trachomatis, chancroid*
Child: 20 mg/kg as a single dose
Adult: 1 g as a single dose
- *Donovanosis (granuloma inguinale)*
Adult: 1 g on first day then 500 mg/day until healing of lesions (at least 14 days)
- *Streptococcal tonsillitis in penicillin-allergic patients*
Child: 20 mg/kg once daily for 3 days, without exceeding 500 mg/day
Adult: 500 mg once daily for 3 days

Contra-indications, adverse effects, precautions

- Do not administer in patients with allergy to azithromycin or another macrolide.
- May cause: gastrointestinal disorders, allergic reactions.
- Do not administer simultaneously with antacids (aluminium hydroxide, etc.). Administer 2 hours apart.
- Avoid combination with co-artemether.
- Administer with caution and reduce doses in patients with severe hepatic impairment.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Patients infected with *C. trachomatis* are often coinfected with *N. gonorrhoeae*. Therefore, all patients with chlamydia should receive an effective treatment for gonorrhoea.
- For the treatment of tonsillitis, the use of azithromycin should be restricted to penicillin-allergic patients as:
 - there are streptococci resistant to macrolides,
 - its efficacy in the prevention of rheumatic fever has not been studied.
- Storage: below 30°C – 

BECLOMETASONE aerosol (Beclazone®, Becotide®...)

Prescription under medical supervision

1

Therapeutic action

- Anti-inflammatory drug (corticosteroid)

Indications

- Long term treatment of persistent asthma

Presentation

- Pressurized inhalation solution of beclomethasone dipropionate, 50 micrograms and 250 micrograms /inhalation

Also comes in aerosol inhaler delivering 100 micrograms and 200 micrograms/inhalation.

Dosage and administration

The dosage varies from one person to another. The initial dose depends on the severity of symptoms. It may be increased or reduced over time. Always try to administer the lowest effective dose. For information:

- *Mild to moderate persistent asthma*

Child: 100 to 400 micrograms/day in 2 or 4 divided doses
Adult: 500 to 1000 micrograms/day in 2 or 4 divided doses

- *Severe persistent asthma*

Child: up to 800 micrograms/day in 2 or 4 divided doses
Adult: up to 1500 micrograms/day in 2 or 4 divided doses

Shake the inhaler. 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. Verify that the inhalation technique is correct.

Co-ordination between the hand and inhalation is very difficult in certain patients (children under 6 years, elderly patients, etc.). Use a spacer to facilitate administration and improve the efficacy of treatment.

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not administer to patients with untreated active tuberculosis.
- May cause: throat irritation, hoarseness at the beginning of treatment, oro-pharyngeal candidiasis.
- In the event of cough and/or bronchospasm following inhalation of beclomethasone: administer salbutamol if necessary, stop inhalation of beclomethasone and replace with an oral corticoid.
- In the event of bronchial infection, administer appropriate antibiotic treatment in order to optimise the diffusion of beclomethasone in the respiratory tract.
- If the maximum dosage becomes insufficient, re-evaluate the severity of asthma and combine with a short oral anti-inflammatory treatment.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Beclomethasone is not a bronchodilator. For asthma attack, use inhaled salbutamol.
- Aerosol inhalers delivering 200 and 250 micrograms/inhalation are not suitable for children. They should only be used in adults. Only inhalers delivering 50 and 100 micrograms/inhalation can be used in children.
- 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. Empty all residual gas, then bury.
- Storage: below 25°C - 

BISACODYL (Dulco-lax®...)

Prescription under medical supervision

Therapeutic action

- Stimulant laxative

Indications

- Symptomatic treatment of constipation in patients taking opioid analgesics (tramadol, codeine, morphine, etc.)

Presentation

- 5 mg enteric-coated tablet

Dosage and duration

- Adult: 10 to 20 mg once daily, for the duration of the opioid treatment. Tablets should be taken at a set time, preferably at night (oral bisacodyl is effective 10 hours after administration).

Contra-indications, adverse effects, precautions

- Do not administer to patients with hypersensitivity to bisacodyl, inflammatory bowel disease (Crohn's disease, ulcerative colitis), intestinal obstruction, undiagnosed abdominal pain, dehydration.
- May cause: diarrhoea, abdominal pain, 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 pain: 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: not recommended
- Breast-feeding: not recommended

Remarks

- Swallow tablets whole; do not crush or chew.
- Also comes in 5 mg and 10 mg suppositories.
- Bisacodyl may be used in children over 3 years taking opioid analgesics:
 - between 3 and 6 years of age : 5 to 10 mg once daily (use only suppositories),
 - from the age of 6 years: 5 to 10 mg once daily (enteric-coated tablets may be used).
- 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 30°C

CABERGOLINE (Dostinex®...)

Prescription under medical supervision

1

Therapeutic action

- Lactation inhibitor

Indications

- Inhibition of physiological lactation
- Suppression of established lactation

Presentation

- 0.5 mg tablet

Dosage and duration

- Lactation inhibition: 1 mg as a 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 hypersensitivity to cabergoline, post-partum hypertension.
- May cause: nausea, vomiting, headache, dizziness, hypotension, drowsiness.
- Stop treatment in the event of dyspnoea, persistent cough, chest pain, abdominal pain.
- Do not combine with: neuroleptics (chlorpromazine, haloperidol, etc.), metoclopramide, promethazine and methylergometrine.
- Pregnancy: CONTRA-INDICATED

Remarks

- Cabergoline is a dopamine agonist also used in the treatment of Parkinson's disease.
- Cabergoline is not included in the WHO list of essential medicines.
- Storage: below 30°C – 

CALCIUM FOLINATE = FOLINIC ACID (Refolinon®...)

Prescription under medical supervision

Therapeutic action

- Antidote to folate antagonists

Indications

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

Presentation

- 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 30°C – 

CARBAMAZEPINE (Tegretal®, Tegretol®...)



Prescription under medical supervision

1

Therapeutic action

- Antiepileptic

Indications

- Epilepsy (except absence seizures)
- Neuropathic pain (alone or combined with amitriptyline)

Presentation

- 100 mg and 200 mg tablets
- Also comes in 100 mg / 5 ml oral solution.

Dosage

- *Epilepsy*
Child: initially 5 mg/kg once daily or in 2 divided doses, then increase every 2 weeks up to 10 to 20 mg/kg/day in 2 to 4 divided doses
Adult: initially 100 to 200 mg once daily or in 2 divided doses, then increase by 100 to 200 mg increments every 2 weeks up to 800 to 1200 mg/day in 2 to 4 divided doses
- *Neuropathic pain*
Adult: initially 200 mg once daily at night for one week, then 400 mg/day in 2 divided doses (morning and night) for one week, then 600 mg/day in 3 divided doses

Duration

- *Epilepsy*: lifetime treatment. Do not stop treatment abruptly, even if changing treatment to another antiepileptic.
- *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 elderly patients.
- May cause:
 - headache, dizziness, gastrointestinal and visual disturbances, rash, leucopenia, confusion and agitation in elderly patients, drowsiness (use with caution when driving or operating machinery),
 - exceptionally: Lyell's and Stevens-Johnson syndromes, agranulocytosis, anaemia, bone marrow depression, pancreatitis, hepatitis, cardiac conduction defect. If so, stop treatment.
- Do not drink alcohol during treatment.
- Do not combine with: erythromycin, isoniazid, valproic acid (increased carbamazepine plasma concentrations), oestropregestogens (reduced contraceptive efficacy), saquinavir (reduced efficacy of saquinavir).
- Monitor combination with: oral anticoagulants, corticosteroids, antidepressants, haloperidol, protease inhibitors, aminophylline, rifampicin, itraconazole, etc.
- Pregnancy:
 - *Epilepsy*: do not start treatment during the first trimester, except if vital and there is no alternative (risk of neural tube defect). However, if treatment has been started before a pregnancy, do not stop treatment. The administration of folic acid before conception and during the first trimester seems to reduce the risk of neural tube defect.
Due to the risk of haemorrhagic disease of the newborn, administer vitamin K to the mother and the newborn infant.
 - *Neuropathic pain*: not recommended
- Breast-feeding: no contra-indication

Remarks

- Storage:

CEFIXIME (Suprax®...)

Prescription under medical supervision

Therapeutic action

- Third-generation cephalosporin antibacterial

Indications

- Uncomplicated gonorrhoea
- Acute cystitis, when quinolones are contra-indicated
- Acute pyelonephritis, after initial therapy with injectable ceftriaxone
- Typhoid fever in children

Presentation

- 200 mg tablet or capsule

Also comes in 40 mg / 5 ml and 100 mg / 5 ml powder for oral suspension.

Dosage

- *Uncomplicated gonorrhoea*

Adult: 400 mg

- *Urinary tract infections*

Child over 6 months: 8 mg/kg/day in 2 divided doses

Adult: 400 mg/day in 2 divided doses

- *Typhoid fever*

Child over 6 months: 15 to 20 mg/kg/day in 2 divided doses

Duration

- *Gonorrhoea*: single dose

- *Cystitis*: 5 days

- *Pyelonephritis*: 10 to 14 days depending on severity

- *Typhoid fever*: 7 to 14 days depending on severity

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).
- May cause: gastrointestinal disturbances; rarely: headache, dizziness, allergic reactions (rash, pruritus, fever).
- In the event of allergic reactions, stop treatment immediately.
- Reduce dosage in patients with severe renal impairment.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Patients infected with *N. gonorrhoeae* are often coinfected with *C. trachomatis*. Therefore, all patients with gonorrhoea should receive an effective treatment for chlamydia.
- Storage: below 25°C

Once reconstituted, the oral suspension keeps for 10 days maximum.

CHLORAMPHENICOL (Chloromycetin®, Kemicetine®...)



Prescription under medical supervision

1

Therapeutic action

- Antibacterial

Indications

- Typhoid fever, plague, rickettsial infections, relapsing fevers
- Parenteral to oral switch therapy (meningitis, severe pneumonia, etc.)

Presentation

- 250 mg capsule
- Powder for oral suspension, 125 mg/5 ml

Dosage

- Relapsing fevers

Child: 25 mg/kg as a single dose (without exceeding 750 mg)
Adult: 500 mg as a single dose

- Other indications

Child from 2 months to 1 year: 50 mg/kg/day in 3 to 4 divided doses

Child over 1 year: 50 mg/kg/day in 3 to 4 divided doses; 100 mg/kg/day in severe infection
Adult: 3 to 4 g/day in 3 to 4 divided doses

Age	Weight	150 mg/5 ml oral suspension	250 mg capsule
< 2 weeks	—	1 ml x 3	—
< 1 year	< 8 kg	2 to 4 ml x 3	—
1 to 5 years	8 to 15 kg	5 to 8 ml x 3	—
5 to 10 years	15 to 25 kg	—	1 to 2 caps x 3
10 to 15 years	25 to 35 kg	—	2 to 4 caps x 3
Adult	> 35 kg	—	4 caps x 3

Duration

- *Typhoid fever*: 10 to 14 days; *plague*: 10 days; *rickettsiosis*: continue for 48 hours after the resolution of fever; *pneumonia*: 5 to 10 days

Contra-indications, adverse effects, precautions

- Do not administer to premature infants; avoid in newborns and children under 2 months of age (if there is no alternative, dosage is 25 mg/kg/day in 3 divided doses).
- Do not administer to patients with a history of previous allergic and/or toxic reaction to chloramphenicol, G6PD deficiency.
- Reduce dosage in patients with hepatic or renal impairment.
- May cause:
 - gastrointestinal disorders,
 - allergic reactions, dose-related and reversible marrow depression (anaemia, leucopenia, thrombocytopenia): if so, stop treatment.
 - grey syndrome in premature infants and neonates (vomiting, hypothermia, blue-grey skin colour and cardiovascular depression), irreversible aplastic anaemia.
- Pregnancy: CONTRA-INDICATED, except if vital, if there is no therapeutic alternative. If used during the 3rd trimester, risk of grey syndrome in the newborn infant.
- Breast-feeding: CONTRA-INDICATED

Remarks

- Due to its potential haematotoxicity, the use of chloramphenicol should be restricted to severe infections when other less toxic antibiotics are not effective or are contra-indicated.
- Oral treatment is more effective than parenteral treatment: blood and tissue concentrations are higher when chloramphenicol is given orally.
- Storage: below 30°C -

CHLOROQUINE sulfate or phosphate (Nivaquine®...)



Given that resistance of *P. falciparum* to chloroquine is widespread, this drug must not be used for the treatment of falciparum malaria in Africa, South America, Asia and Oceania.

Therapeutic action

- Antimalarial

Indications

- Treatment of malaria due to *P. vivax*, *P. ovale* and *P. malariae*
- Treatment of uncomplicated falciparum malaria, only in areas where *P. falciparum* is still sensitive to chloroquine (Central America, Haiti and Dominican Republic)
- Prophylaxis of falciparum malaria for non-immune individuals, only in areas where resistance to chloroquine is moderate and always in combination with proguanil

Presentation

- 100 mg and 150 mg chloroquine base tablets
- 50 mg chloroquine base/5 ml syrup

The dose written on the labels is sometimes in chloroquine salt and sometimes in chloroquine base which leads to frequent confusion. The WHO recommends prescriptions and labels in chloroquine base.

100 mg base = approx. 130 mg sulfate = approx. 160 mg phosphate or diphosphate
150 mg base = approx. 200 mg sulfate = approx. 250 mg phosphate or diphosphate

Dosage and duration

- *Treatment of malaria*
Child and adult:
Day 1 and Day 2: 10 mg base/kg once daily
Day 3: 5 mg base/kg

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
100 mg base tablet						
Day 1 and Day 2		1/2 tab	1 tab	2 1/2 tab	6 tab	
Day 3		1/4 tab	1/2 tab	1 tab	3 tab	
150 mg base tablet						
Day 1 and Day 2		1/4 tab	1/2 tab	1 1/2 tab	4 tab	
Day 3		1/8 tab	1/4 tab	3/4 tab	2 tab	

- *Prophylaxis of falciparum malaria in areas where resistance to chloroquine is moderate*
 Child: 1.7 mg chloroquine base/kg once daily (always combined with proguanil)
 Adult: 100 mg chloroquine base once daily (always combined with proguanil)
 Travellers should start prophylaxis 24 hours before departure, continue throughout the stay and for at least 4 weeks after return.

In areas where resistance to chloroquine is high, chloroquine must be replaced by another effective antimalarial suitable for prophylactic use.

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 one hour after administration:
 - during the first 30 minutes : repeat the full dose
 - after 30 minutes : give half 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.
- Do not combine with: coartemether, quinine, mefloquine, halofantrine.
- Do not administer simultaneously with antacids (aluminium hydroxide, etc.): administer 2 hours apart.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Chloroquine alone (without proguanil) is used as a prophylactic drug in certain areas where only *P. vivax* is present.
- Resistance of *P. vivax* to chloroquine exists in Papua New Guinea, Indonesia and Myanmar.
- Storage: below 30°C – 

CHLORPHENAMINE = CHLORPHENIRAMINE

(Teldrin®, Trimeton®...)

Therapeutic action

- Sedating antihistaminic

Indications

- Allergic reactions (contact dermatitis, seasonal allergy; allergy to drugs, insect bites, food, etc.)

Presentation

- 4 mg tablet

Dosage

- Child from 1 to 2 years: 1 mg 2 times per day
- Child from 2 to 5 years: 1 mg every 4 to 6 hours, without exceeding 6 mg/day
- Child from 6 to 12 years: 2 mg every 4 to 6 hours, without exceeding 12 mg/day
- Adult: 4 mg every 4 to 6 hours, without exceeding 24 mg/day

AGE	0	1 year	2 years	6 years	12 years	ADULT
WEIGHT		8 kg	10 kg	20 kg	30 kg	
4 mg tablet	Do not administer	1/4 tab x 2	1/4 tab x 4	1/2 tab x 4	1 tab x 4	

Duration: according to clinical response; as short as possible

Contra-indications, adverse effects, precautions

- Do not administer to patients with urethro-prostatic disorders, glaucoma.
- Do not administer to children under one year.
- Do not drink alcohol during treatment.
- May cause: drowsiness (administer preferably once daily at night), dryness of the mouth, constipation, urinary retention, blurred vision.
- Risk of increased sedation when combined with alcohol and drugs acting on the central nervous system: opioid analgesics, neuroleptics (chlorpromazine, haloperidol, etc.), other antihistamines (chlorphenamine), antidepressants (clomipramine, fluoxetine, etc.), phenobarbital, etc.
- Pregnancy: no contra-indication; no prolonged treatment
- Breast-feeding: avoid

Remarks

- Chlorphenamine has no anti-emetic effect. It is less sedating than promethazine.
- Dexchlorpheniramine (Polaramine®) has the same indications:
 - child from 1 to 2 years: 0.25 mg to be repeated 2 to 3 times daily
 - child from 2 to 5 years: 0.5 mg to be repeated 4 to 6 times daily, without exceeding 3 mg/day
 - child from 6 to 12 years: 1 mg to be repeated 4 to 6 times daily, without exceeding 6 mg/day
 - adult: 2 mg to be repeated 4 to 6 times daily, without exceeding 12 mg/day
- Storage: below 30°C - 

CHLORPROMAZINE (Largactil®, Megaphen®, Thorazine®...)



Prescription under medical supervision

Therapeutic action

- Sedative neuroleptic

Indications

- Acute and chronic psychoses
- Agitation
- Anxiety, not controlled by other anxiolytics

Presentation

- 25 mg tablet

Also comes in 50 and 100 mg tablets. Adjust dosage accordingly.

Dosage

Varies from one person to another, doses should be increased gradually.

- Child: 1 to 1.5 mg/kg/day in 2 to 3 divided doses
- Adult: 25 to 150 mg/day in 2 to 3 divided doses

AGE	0 months	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
25 mg tablet					1/2 tab x 3	1 to 2 tab x 3

- Do not exceed indicated doses.
- Reduce dose by one-third or one-half for elderly patients.

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not administer if:
 - delirium tremens,
 - Parkinson's disease,
 - renal or hepatic failure (risk of overdosage).
- Stop treatment if patient becomes febrile: possible neuroleptic malignant syndrome.
- May cause: extrapyramidal disorders, orthostatic hypotension and photosensitisation.
- If prolonged treatment, check blood counts regularly (risk of agranulocytosis).
- Risk of increased sedation when combined with alcohol and drugs acting on the central nervous system such as diazepam, phenobarbital and chlorphenamine.
- Pregnancy: CONTRA-INDICATED (when used in the treatment of psychosis, stop treatment one week before the expected time of delivery if possible)
- Breast-feeding: avoid

Remarks

- Storage: below 30°C -

CIMETIDINE

(Tagamet®...)

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

Presentation

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

Dosage and duration

- Adult: 200 to 400 mg as a 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 (Zantac®), 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 (Mopral®), another antiulcer agent (proton pump inhibitor), is not compatible with emergency situations as it must be administered at least 4 hours before surgery.
- Cimetidine is also used in the treatment of gastro-oesophageal reflux and peptic ulcer. Use by preference ranitidine (Azantac®) or omeprazole (Mopral®) for these indications.
- Storage: below 30°C -  - 

CIPROFLOXACIN (Ciflox®...)

Prescription under medical supervision

1

Therapeutic action

- Fluoroquinolone antibacterial

Indications

- Severe infections due to Gram-negative bacteria: shigellosis, typhoid fever, pyelonephritis, prostatitis, septicaemia, etc.

Presentation

- 250 mg tablet
Also comes in 100 mg, 500 mg and 750 mg tablets.

Dosage and duration

Ciprofloxacin is not recommended in children under 15 years. It is however administered if considered essential:

- *Shigellosis*
Child: 30 mg/kg/day in 2 divided doses for 3 days
Adult: 1 g/day in 2 divided doses for 3 days
- *Typhoid fever*
Child: 30 mg/kg/day in 2 divided doses for 5 to 7 days
Adult: 1 g/day in 2 divided doses for 5 to 7 days
In severe cases, continue treatment for 10 to 14 days.
- *Acute pyelonephritis*
Adult: 1 to 1.5 g/day in 2 to 3 divided doses for 10 to 14 days (up to 21 days if necessary)
- *Acute prostatitis*
Adult: 1 g/day in 2 divided doses for 28 days
- *Acute cystitis (only if first-line treatments fail)*
Adult: 500 mg/day in 2 divided doses for 3 days
- *Other indications*
Child: 10 to 30 mg/kg/day (depending on severity) in 2 divided doses
Adult: 1 to 1.5 g/day (depending on severity) in 2 divided doses

Contra-indications, adverse effects, precautions

- Do not administer to patients with history of tendinitis due to fluoroquinolones.
- May cause: gastrointestinal disturbances (nausea, vomiting, diarrhoea), neurological disorders (headache, dizziness, insomnia, hallucinations, seizures), renal disorders (crystalluria, etc.), arthralgia, myalgia, tendon damage (especially Achilles tendinitis), photosensitivity (avoid exposure to sunlight), haemolytic anaemia in patients with G6PD deficiency.
- Stop treatment in the event of tendinitis.
- Administer with caution to epileptic patients.
- Reduce the dose by half in patients with renal impairment.
- Do not combine with theophylline (risk of theophylline overdose) or co-artemether.
- Do not administer simultaneously with antacids, iron salts and didanosine. Administer 2 hours apart.
- Drink a lot of liquid during treatment.
- Pregnancy: CONTRA-INDICATED except if vital
- Breast-feeding: CONTRA-INDICATED except if vital

Remarks

- Other fluoroquinolones (enoxacin, norfloxacin, ofloxacin, pefloxacin, etc.) have a similar spectrum of activity and indications to ciprofloxacin: see relevant literature.
- Storage:

CLINDAMYCIN (Dalacin®...)



Prescription under medical supervision

Therapeutic action

- Lincosamide antibacterial

Indications

- Second-line treatment of pneumocystosis, in combination with primaquine
- Second-line treatment and secondary prophylaxis of cerebral toxoplasmosis, in combination with pyrimethamine

Presentation

- 150 mg capsule
- Also comes in 75 mg and 300 mg capsules.

Dosage

- *Treatment of pneumocystosis and toxoplasmosis*
Adult: 2400 mg/day in 4 divided doses
- *Secondary prophylaxis of toxoplasmosis*
Adult: 1800 mg/day in 3 divided doses

Duration

- *Treatment of pneumocystosis:* 21 days
- *Treatment of toxoplasmosis:* 6 weeks
- *Secondary prophylaxis of toxoplasmosis:* as long as required

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to lincosamides, history of pseudomembranous colitis.
- Reduce dosage in patients with hepatic impairment.
- May cause: abdominal pain, diarrhoea (possibly severe: pseudomembranous colitis), nausea, rash, jaundice, allergic reactions sometimes severe.
- In the event of allergic reactions, stop treatment immediately.
- If pseudomembranous colitis develops (diarrhoea with mucus and false membranes), stop clindamycin and treat for *C. difficile* disease (oral metronidazole).
- Do not administer simultaneously with antacids such as aluminium hydroxide, etc.; administer 2 hours apart.
- Do not combine with: erythromycin and neuromuscular blocking drugs.
- Pregnancy: no contra-indication
- Breast-feeding: administer only if there is no therapeutic alternative. Check child's stools (risk of colitis).

Remarks

- Storage: below 25°C

CLOMIPRAMINE (Anafranil®...)



Prescription under medical supervision

1

Therapeutic action

- Tricyclic antidepressant

Indications

- Depression
- Severe post-traumatic stress disorder
- Panic disorder

Presentation

- 10 mg and 25 mg tablets and capsules
Also comes in 50 mg and 75 mg tablets.

Dosage

- Adult: initially 25 mg once daily at bedtime, then increase the dose gradually up to 75 to 150 mg once daily
- Reduce doses in elderly patients and in patients with impaired renal or hepatic function: initially 10 mg/day, increased to 50 mg/day.

Duration

- 6 to 8 months minimum. The treatment should be withdrawn gradually; if signs of relapse occur, increase the dose.

Contra-indications, adverse effects, precautions

- Do not administer to patients with recent myocardial infarction, arrhythmia, severe hepatic impairment, urethro-prostatic disorders, glaucoma.
- May cause: drowsiness, dry mouth, constipation, tachycardia, orthostatic hypotension, blurred vision, urinary retention, weight gain, skin allergy, confusion in elderly patients, suicidal tendencies due to the suppression of psychomotor inhibition, exacerbation of anxiety or delusional symptoms.
- Administer with caution to patients with epilepsy, cardiovascular disease, renal or hepatic impairment.
- Do not combine with: sultopride (Barnetil®), MAO inhibitors; do not drink alcohol during treatment.
- Avoid combination with: clonidine and methyldopa (reduced antihypertensive effect), co-artemether.
- Monitor combination with: epinephrine and dopamine (risk of hypertensive crisis and arrhythmia), valproic acid and selective serotonin re-uptake inhibitors (increased plasma concentration of clomipramine), carbamazepine, phenytoin and rifampicin (decreased plasma concentration of clomipramine), antihypertensives, atropinic drugs.
- Closely monitor patients with suicidal tendencies, especially at the beginning of therapy.
- Advise patients that clomipramine may cause drowsiness and to be cautious when driving or operating machinery.
- Pregnancy: avoid. However, if treatment has been started before a pregnancy, do not stop treatment; reduce dosage at the end of pregnancy (risk of withdrawal syndrome in the newborn infant).
- Breast-feeding: avoid

Remarks

- The use of clomipramine is not recommended in patients aged less than 15 years.
- It takes 10 to 20 days for the patient to feel the antidepressant effect. The therapeutic efficacy can only be assessed after 3 weeks of treatment. This must be explained to the patient to encourage compliance.
- Anxiolytic or sedative treatment may be necessary during the first weeks of treatment in anxious or agitated patients.
- Storage: -

CLOXACILLIN (Cloxapen®, Orbenin®...)

Prescription under medical supervision

Therapeutic action

- Penicillin antibacterial active against penicillinase-producing staphylococci

Indications

- Infections due to staphylococci resistant to penicillin: staphylococcal pneumonia, skin infections (impetigo, furunculosis), etc.
- Parenteral to oral switch therapy (pyomyositis, septicaemia, etc.)

Presentation

- 250 mg, 500 mg and 1 g capsules
- Powder for oral solution, 125 mg/5 ml

Dosage

- Child: 50 to 100 mg/kg/day depending on severity, in 2 to 4 divided doses, without exceeding 2 g/day
- Adult: 1 to 2 g/day depending on severity, in 2 to 4 divided doses

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
250 mg capsule	–	–	1 to 2 cap x 2	2 to 3 cap x 2	4 cap x 2	
500 mg capsule	–	–		1 to 2 cap x 2	2 cap x 2	
Suspension 125 mg/5 ml	1 tsp x 2	1 to 2 tsp x 2	2 to 3 tsp x 2		–	–

Duration

- Skin infections: 8 to 10 days; staphylococcal pneumonia: 10 to 14 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).
- May cause: gastrointestinal disturbances, allergic reactions sometimes severe. In the event of allergic reactions, stop treatment immediately.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Take between meals.
- Dicloxacillin (Diclocil®, etc.), flucloxacillin (Floxpén®, etc.) and oxacillin (Bristopen®, etc.) are used for the same indications and at the same dosage.
- Storage: below 25°C

CODEINE



Prescription under medical supervision

1

Therapeutic action

- Opioid analgesic and sedative

Indications

- Moderate pain
- Diarrhoea: in adults, for short-term symptomatic treatment
- Dry, unproductive cough

Presentation

- 30 mg codeine phosphate tablet

Dosage

- *Moderate pain*
 - Child from 1 to 12 years: 0.5 mg/kg, 3 to 6 times daily if necessary ; maximum dose: 3 mg/kg/day
 - Child over 12 years and adult: 30 to 60 mg every 4 hours ; maximum dose: 240 mg/day
- *Diarrhoea*
 - Adult: 30 mg, 3 to 4 times daily
- *Unproductive cough*
 - Child from 5 to 12 years: 5 to 15 mg, 3 to 4 times daily
 - Child over 12 years and adult: 15 to 30 mg, 3 to 4 times daily
- Children are sensitive to codeine toxicity: do not exceed indicated doses.
- Reduce dosage in elderly patients and in patients with hepatic impairment.

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not administer to children in the treatment of diarrhoea; to children under one year in the treatment of pain; to children under 5 years in the treatment of cough.
- Do not administer to patients with respiratory depression or asthma.
- May cause: constipation, drowsiness, nausea, vomiting, respiratory depression.
- Do not combine with mixed agonist-antagonist opioid analgesics such as buprenorphine, nalbuphine, pentazocine (competitive action).
- In case of overdosage and respiratory depression, use naloxone as antagonist.
- Prolonged use may produce dependence.
- *Pregnancy: no contra-indication during the first and second trimesters. Administer with caution during the third trimester and do not exceed a treatment period of 10 days (risk of respiratory depression and neonate withdrawal syndrome).*
- *Breast-feeding: avoid (excreted in milk)*

Remarks

- In some countries, drugs containing codeine are on the list of narcotics: follow national regulations.
- Codeine is often used in combination with non-opioid analgesics (synergistic effect).
- Dextropropoxyphene may be used as an alternative in the treatment of pain.
- *Storage: below 30°C -*

COTRIMOXAZOLE
= SULFAMETHOXAZOLE (SMX) + TRIMETHOPRIM (TMP)
(Bactrim®...)

Prescription under medical supervision

Therapeutic action

- Combination of a sulfonamide with another antibacterial

Indications

- First-line treatment of pneumocystosis and isosporiasis
- Prophylaxis of pneumocystosis, toxoplasmosis and isosporiasis
- Brucellosis (when doxycycline is contra-indicated)

Presentation

- 400 mg SMX + 80 mg TMP and 800 mg SMX + 160 mg TMP tablets
- 100 mg SMX + 20 mg TMP tablet for paediatric use
- 200 mg SMX + 40 mg TMP/5 ml oral suspension

Dosage and duration

- *Treatment of pneumocystosis*
Child and adult: 100 mg SMX + 20 mg TMP/kg/day in 2 divided doses
- *Treatment of isosporiasis*
Adult: 3200 mg SMX + 640 mg TMP/day in 2 divided doses
- *Prophylaxis of pneumocystosis, toxoplasmosis and isosporiasis*
Child: 50 mg SMX + 10 mg TMP/kg once daily, as long as necessary
Adult: 800 mg SMX + 160 mg TMP once daily, as long as necessary
- *Brucellosis*
Child: 40 mg SMX + 8 mg TMP/kg/day in 2 divided doses
Adult: 1600 mg SMX + 320 mg TMP/day in 2 divided doses

Duration

- *Pneumocystosis*: 14 to 21 days depending on severity; *isosporiasis*: 10 days; *brucellosis*: 6 weeks

Contra-indications, adverse effects, precautions

- Do not administer to children under one month.
- Do not administer to sulfonamide-allergic patients; patients with severe renal or hepatic impairment.
- May cause:
 - gastrointestinal disturbances, hepatic or renal disorders (crystalluria, etc.), metabolic disorders (hyperkalaemia); neuropathy, photosensitivity, 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.
 - megaloblastic anaemia due to folic acid deficiency in patients receiving prolonged treatment (in this event, administer calcium folinate).
- Adverse effects occur more frequently in patients with HIV infection.
- In the event of prolonged treatment, monitor blood count if possible.
- Do not combine with methotrexate and phenytoin.
- Avoid combination with drugs inducing hyperkalaemia: potassium, spironolactone, enalapril, NSAIDs, heparin (increased risk of hyperkalaemia).
- Monitor combination with zidovudine (increased haematotoxicity).
- 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 premature infant, jaundice, low-birth weight, infant under one month of age. If cotrimoxazole is used, observe the infant for signs of jaundice.

Remarks

- Storage: below 30°C
Once opened, oral suspension keeps for 7 days maximum.

DAPSONE (Avlosulfon®, Disulone®...)



Prescription under medical supervision

1

Therapeutic action

- Sulfone antibacterial

Indications

- Prophylaxis of toxoplasmosis and pneumocystosis
- Treatment of pneumocystosis
- Paucibacillary and multibacillary leprosy, in combination with other antileprotics

Presentation

- 25 mg, 50 mg and 100 mg tablets

Dosage

- *Prophylaxis of pneumocystosis*
Child: 2 mg/kg once daily, without exceeding 100 mg/day
Adult: 100 mg once daily
- *Prophylaxis of toxoplasmosis and pneumocystosis*
Child: 2 mg/kg once daily, without exceeding 25 mg/day (in combination with pyrimethamine 1 mg/kg once daily + folinic acid 10 mg/week)
Adult:
 - 50 mg once daily (in combination with pyrimethamine 50 mg/week + folinic acid 25 to 30 mg/week)
 - or 200 mg once weekly (in combination with pyrimethamine 75 mg/week + folinic acid 25 to 30 mg/week)
- *Treatment of pneumocystosis* (in combination with 15 mg/kg/day of trimethoprim)
Child: 2 mg/kg once daily, without exceeding 100 mg/day
Adult: 100 mg once daily
- *Paucibacillary and multibacillary leprosy*
Child under 10 years: 25 mg once daily
Child from 10 to 14 years: 50 mg once daily
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, methaemoglobinemia, 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.
- Do not administer simultaneously with didanosine: administer each drug 2 hours apart.
- Monitor combination with zidovudine (increased haematological toxicity).
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- For the treatment of leprosy, dapsone must always be used in combination with rifampicin (paucibacillary leprosy) or rifampicin + clofazimine (multibacillary leprosy) in order to avoid the emergence of resistance.
- Storage: below 25°C - -

DIAZEPAM (Valium®...)



Prescription under medical supervision

Therapeutic action

- Anxiolytic, sedative, anticonvulsant, muscle relaxant

Indications

- Agitation and anxiety
- Muscle spasms

Presentation

- 5 mg tablet

Also comes in 2 mg and 10 mg tablets and 1% oral solution.

Dosage

- Child: 0.5 mg/kg/day in 3 divided doses
- Adult: 5 to 15 mg/day in 3 divided doses
- Do not exceed indicated doses.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
5 mg tablet	-	-		1/4 tab x 3	1/2 tab x 3	1 tab x 3

Duration: according to clinical response ; the shortest duration possible.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe respiratory insufficiency or severe hepatic impairment.
- Administer only in exceptions and with caution to children.
- May cause:
 - feeling of inebriation, drowsiness (administer with caution when driving or operating machinery),
 - dependence and tolerance when used for more than 10-15 days. At the end of treatment, reduce doses gradually to avoid withdrawal syndrome or rebound effect.
 - in the event of overdose: ataxia, muscular weakness, hypotension, confusion, lethargy, respiratory depression, coma.
- Reduce the dose by one half in elderly patients and in patients with renal or hepatic impairment.
- Risk of increased sedation when combined with alcohol and drugs acting on the central nervous system: opioid analgesics, neuroleptics (chlorpromazine, haloperidol, etc.), anti-histamines (chlorphenamine, promethazine), antidepressants (clomipramine, fluoxetine, etc.), phenobarbital, etc.
- Pregnancy: avoid
- Breast-feeding: avoid

Remarks

- Diazepam is subject to international controls: follow national regulations.
- Diazepam is not a treatment for depression, chronic anxiety, or post-traumatic stress syndrome.
- Storage: below 30°C -

DIDANOSINE = ddI (Videx®)

Prescription under medical supervision

1

Therapeutic action

- Antiretroviral, HIV-1 and HIV-2 nucleoside reverse transcriptase inhibitor

Indications

- HIV-1 or HIV-2 infection, in combination with other antiretroviral drugs

Presentation

- 25 mg, 50 mg, 100 mg, 150 mg and 200 mg buffered tablets, to be chewed or dispersed in at least 30 ml water
- 125 mg, 200 mg, 250 mg and 400 mg enteric-coated capsules

Dosage

- Child under 3 months: 100 mg / m² / day in 2 divided doses
- Child from 3 months to 12 years (or over 5 kg): 240 mg / m² once daily or in 2 divided doses
- Adult under 60 kg: 250 mg once daily or in 2 divided doses
- Adult 60 kg and over: 400 mg once daily or in 2 divided doses

Weight	Daily dose	Tablets	Capsules
5 to 9 kg	100 mg	Two 50 mg tab	—
10 to 14 kg	100 mg	Two 50 mg tab	—
15 to 19 kg	150 mg	One 100 mg tab + one 50 mg tab	—
20 to 24 kg	200 mg	Two 100 mg tab	—
25 to 59 kg	250 mg	Two 100 mg tab + one 50 mg tab	One 250 mg cap
≥ 60 kg	400 mg	Two 200 mg tab	One 400 mg cap

Duration

- The duration of treatment depends on the efficacy and tolerance of didanosine.

Contra-indications, adverse effects, precautions

- Administer with caution to patients with history of pancreatitis or hepatic disorders.
- May cause:
 - peripheral neuropathy, gastrointestinal disturbances (nausea, vomiting, diarrhoea, etc.), and rarely ophthalmic disorders (particularly in children),
 - pancreatic and hepatic disorders, lactic acidosis (in this event, stop taking didanosine).
- Reduce dosage in patients with renal impairment.
- Do not combine with tenofovir.
- Do not administer simultaneously with tetracyclines, fluoroquinolones and medications that need stomach acid for absorption such as itraconazole, etc. Wait 2 hours between the administration of didanosine and these medications.
- When patients receive didanosine and indinavir, administer first indinavir (as it requires acid for absorption), wait one hour, then administer didanosine.
- Pregnancy: no contra-indication. Do not combine with stavudine, except if there is no alternative.
- Breast-feeding: not recommended

Remarks

- Didanosine should be taken at least 2 hours before (or 2 hours after) a meal.
- Do not open capsules. For buffered tablets: patients must always take at least two tablets at a time to provide sufficient antacid.
- Also comes in powder for oral solution, 2 and 4 g vials. Pour 100 ml of water into 2 g vial (200 ml into 4 g vial), then dilute in an equal volume of aluminium and magnesium hydroxide suspension. This form is used in children when the daily dose is under 50 mg.
- Storage: buffered tablets: between 15°C and 30°C; enteric-coated capsules: below 25°C – 
The didanosine/antacid mixture must be stored in a tightly closed container, in the refrigerator (between 2°C and 8°C), and may be used for up to 30 days.

**DIETHYLCARBAMAZINE
(Banocide®, Hетразан®, Notezine®...)**



Prescription under medical supervision

Therapeutic action

- Anthelminthic, antifilarial

Indications

- Lymphatic filariases (*Wuchereria bancrofti*, *Brugia malayi*, *Brugia timori*), except in areas where onchocerciasis and/or loiasis co-exist

Presentation

- 50 mg and 100 mg tablets

Dosage

- Child under 10 years: 3 mg/kg/day in 3 divided doses
- Child over 10 years and adult: 6 mg/kg/day in 3 divided doses

Duration

- *Bancroftian filariasis*: 12 days
- *Malayan and Timorian filariasis*: 6 to 12 days

Contra-indications, adverse effects, precautions

- Do not administer in geographical regions where there is onchocerciasis and/or loiasis.
- Do not administer during an acute attack.
- Administer with caution in patients with history of seizures.
- May cause:
 - headache, dizziness, drowsiness, nausea, vomiting,
 - immunological reactions due to the destruction of microfilariae: subcutaneous nodules, lymphangitis, oedema; fever, joint pain, urticaria,
 - in patients with onchocerciasis: local reactions, severe ocular inflammatory reactions (optic nerve lesions, retinal lesions) and systemic reactions (fever, joint pain, muscle weakness, hypotension, collapse, respiratory distress),
 - in patients with loiasis: encephalitis, coma.
- 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 co-endemic infections with *Onchocerca volvulus* or *Loa loa*.
- Storage: between 15°C and 30°C -

DIGOXIN (Coragoxine®, Lanoxin®...)

Prescription under medical supervision

1

Therapeutic action

- Cardiotonic

Indications

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

Presentation

- 62.5 µg (0.0625 mg) and 250 µg (0.25 mg) tablets
- Also comes in 50 µg/ml oral solution (0.05 mg/ml).

Dosage

- Adult:
 - loading dose: 750 to 1500 µg (0.75 to 1.5 mg) in 3 to 4 divided doses. Do not exceed 1500 µg during the first 24 hours.
 - maintenance dose: 125 to 250 µg/day (0.125 to 0.25 mg) once daily or in 2 divided doses
- Reduce the dose by one half in elderly 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 pulse 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 route (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.
- Do not administer simultaneously with antacids such as aluminium hydroxide, etc., administer 2 hours apart.
- 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 necessary for heart failure.
- Storage: below 30°C - 

DOXYCYCLINE (Vibramycin®...)

Prescription under medical supervision

Therapeutic action

- Tetracycline antibacterial

Indications

- Cholera, bubonic plague, leptospirosis, relapsing fevers, rickettsioses
- Brucellosis (in combination with streptomycin)
- Anthrax, endemic treponematoses and syphilis (in penicillin-allergic patients)
- Donovanosis, genital infections due to *Chlamydia trachomatis* (in combination with other antibacterials)
- Atypical pneumonia
- Simple falciparum malaria (in combination with quinine)

Presentation

- 100 mg tablet or capsule

Dosage

- *Treatment of relapsing fevers, epidemic typhus and cholera*
Child: 100 mg as a single dose
Adult: 200 mg as a single dose (for cholera: 300 mg as a single dose)
- *Other indications*
Child over 8 years: 100 mg once daily or in 2 divided doses, up to 200 mg / day maximum in severe infections
Adult: 200 mg once daily or in 2 divided doses

Duration

- *Bubonic plague: 10 days; brucellosis: 6 weeks; leptospirosis, chlamydial cervicitis and malaria: 7 days; endemic treponematoses, pelvic inflammatory disease, donovanosis and syphilis: 14 days; anthrax and atypical pneumonia: 7-10 days*

Contra-indications, adverse effects, precautions

- Do not administer to children under 8 years (may damage teeth); to patients allergic to tetracycline.
- Administer with caution to patients with hepatic or renal impairment.
- May cause: gastrointestinal disturbances, oesophageal ulcerations, allergic reactions, photosensitivity.
- To avoid oesophageal ulceration, take tablets or capsules during meals, with a large glass of water, in a sitting position.
- Do not give simultaneously with ferrous salts, zinc, calcium, aluminium or magnesium hydroxide, didanosine, milk: administer at least 2 hours apart.
- Pregnancy: CONTRA-INDICATED
- Breast-feeding: avoid, except if there is no therapeutic alternative, do not exceed a treatment period of 10 days

Remarks

- Doxycycline should not be used in children under 8 years or pregnant women, except for the specific situations where it is used as a single dose (treatment of cholera, relapsing fevers and epidemic typhus).
- Patients infected with *C. trachomatis* are often coinfected with *N. gonorrhoeae*. Therefore, all patients with chlamydia should receive an effective treatment for gonorrhoea.
- In some regions of South-East Asia, doxycycline is given in combination with quinine, due to a reduction in quinine sensitivity of *P. falciparum*.
- Storage: below 30°C – 
Never use out-of-date tetracyclines (risk of renal acidosis).

EFAVIRENZ = EFV = EFZ (Stocrin®, Sustiva®)

Prescription under medical supervision

1

Therapeutic action

- Antiretroviral, HIV-1 non nucleoside reverse transcriptase inhibitor

Indications

- HIV-1 infection, in combination with other antiretroviral drugs

Presentation

- 50 mg, 100 mg and 200 mg capsules and 600 mg tablet
- 150 mg/5 ml oral solution

Dosage

- The dose is given once daily at bedtime:

Weight	Oral solution 30 mg/ml	Capsules/tablets
10 to 14 kg	9 ml	one 200 mg caps
15 to 19 kg	10 ml	one 50 mg caps + one 200 mg caps
20 to 24 kg	12 ml	one 100 mg caps + one 200 mg caps
25 to 29 kg	15 ml	one 50 mg caps + one 100 mg caps + one 200 mg caps
30 to 39 kg	–	two 200 mg caps
≥ 40 kg	–	one 600 mg tab or three 200 mg caps

Duration

- The duration of treatment depends on the efficacy and tolerance of efavirenz.

Contra-indications, adverse effects, precautions

- Avoid administration in patients with severe hepatic impairment.
- Administer with caution to patients with psychiatric disorders (or history of) or epilepsy.
- May cause:
 - neurological disorders (dizziness, insomnia, drowsiness, abnormal dreaming, impaired concentration, seizures),
 - psychiatric disorders (severe depression, suicidal ideation),
 - raised liver enzymes (ALAT),
 - skin reactions, possibly severe (Stevens-Johnson syndrome).
- When efavirenz is used concomitantly with:
 - rifampicin: efavirenz dose must be increased to 800 mg/day in adult,
 - oestrogen-progestogen oral contraceptives: increased risk of thromboembolism.
- Pregnancy: CONTRA-INDICATED. Effective contraception must be used during treatment.
- Breast-feeding: not recommended

Remarks

- Oral solution requires higher doses than capsules.
- Storage: below 30°C
Once opened, oral solution keeps for 30 days maximum.

ENALAPRIL (Renitec®...)

Prescription under medical supervision

Therapeutic action

- Antihypertensive, vasodilator (angiotensin-converting enzyme inhibitor)

Indications

- Hypertension
- Congestive heart failure

Presentation

- 2.5 mg, 5 mg and 20 mg tablets

Dosage and duration

- Hypertension

Adult: initially 5 mg once daily, then increase the dose every 1 to 2 weeks, according to blood pressure, up to 10 to 40 mg once daily or in 2 divided doses

In elderly patients, patients taking a diuretic or patients with renal impairment: start with 2.5 mg once daily as there is a risk of hypotension and/or acute renal impairment.

- Congestive heart failure

Adult: 2.5 mg once daily, then increase the dose over 2 to 4 weeks, up to 10 to 20 mg once daily or in 2 divided doses

Contra-indications, adverse effects, precautions

- Do not administer to patients with history of hypersensitivity to enalapril.
- May cause:
 - hypotension; dry cough at night; hyperkalaemia, headache, dizziness, nausea, renal impairment,
 - allergic reactions, angioedema,
 - rarely: hepatitis, neutropenia and agranulocytosis in immunodeficient patients, anaemia in patients with chronic renal impairment.
- Reduce dosage in patients with renal impairment.
- Do not combine with potassium-sparing diuretics (spironolactone) or potassium.
- Monitor, if possible, serum creatinine and potassium levels (hyperkalaemia is frequent but of no concern if it remains below 5.5 mEq/litre).
- In patients taking a diuretic, reduce the dose of the diuretic when adding enalapril.
- Pregnancy: CONTRA-INDICATED
- Breast-feeding: no contra-indication at recommended doses

Remarks

- Captopril (Lopril®, etc.) has the same indications as enalapril, however its dosage differs and it must be taken 2 to 3 times daily.
- Storage: below 30°C - 

ERGOCALCIFEROL = VITAMIN D2 and COLECALCIFEROL = VITAMIN D3

Prescription under medical supervision

1

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)

Presentation

- 1.25 mg tablet or capsule (50 000 IU)
 - 250 µg/ml oral suspension (10 000 IU/ml)
- Also comes in different strengths, depending on the manufacturers.

Dosage

Ergocalciferol and colecalciferol are used at the same doses:

- *Prevention of vitamin D deficiencies*
 - 50 000 IU tablet or capsule:
Child under 5 years: 100 000 IU every 3 months, during periods of limited sunlight
Child over 5 years and adult: 100 000 IU every 3 months or 200 000 IU every 6 months
Pregnant woman: 100 000 IU around the 6th-7th month of pregnancy
 - 10 000 IU/ml oral suspension:
Child and adult: 400 IU once daily (10 µg daily) during periods of limited sunlight
For children rarely exposed to sunlight or dark-skinned children, doses may be doubled.
- *Treatment of vitamin D deficiencies*
Child and adult: 800 to 4000 IU once daily (20 µg to 100 µg daily) for 6 to 12 weeks, then continue with preventive dose
 - Do not exceed 600 000 IU/year.

Contra-indications, adverse effects, precautions

- Do not administer to patients with hypercalcaemia, hypercalciuria, calcic lithiasis.
- Stop treatment if signs of overdosage occur: headache, anorexia, nausea, vomiting, increased thirst, polyuria.
- Avoid combination with thiazide diuretics (hydrochlorothiazide, etc.).
- Monitor, if possible, calcaemia and calciuria during curative treatment.
- Combine with a calcium supplementation at the start of curative treatment (500 mg to 1 g/day).
- 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.
- Vitamin D2 and D3 also come in ampoules for oral and / or parenteral use.
- Storage: below 25°C – 
Once opened, oral solution keeps 3 months.

ERGOMETRINE (Ergotrate®...) and METHYLERGOMETRINE (Methergin®...)

Prescription under medical supervision

Therapeutic action

- Uterine stimulant

Indications

- Haemorrhage due to uterine atony after delivery or abortion
- Heavy menorrhagia in non-pregnant women

Presentation

- Ergometrine maleate: 200 µg tablet
- Methylergometrine maleate: 125 µg tablet

Dosage

- Ergometrine: 200 to 400 µg, 3 times daily
- Methylergometrine: 125 to 250 µg, 3 times daily

Duration: according to clinical response, 2 to 3 days

Contra-indications, adverse effects, precautions

- Do not administer during delivery.
- Do not administer before complete delivery of placenta.
- Do not administer to patients with hypersensitivity to ergot derivatives (cabergoline, bromocriptine, ergotamine, etc.), severe hypertension, pre-eclampsia or eclampsia.
- May cause: gastrointestinal disturbances, headache, paraesthesia, confusion, dizziness, tinnitus, hypertension, peripheral vasoconstriction.
- Do not combine with another ergot derivative.
- Monitor combination with: metronidazole, azole antifungals, macrolides, protease inhibitors, efavirenz, fluoxetine (risk of ergotism).
- Pregnancy: CONTRA-INDICATED
- Breast-feeding: avoid, except if clearly needed and for less than 3 days (may inhibit lactation)

Remarks

- In emergencies, use injectable route; oral treatment is not suitable for the management of severe haemorrhage.
- Do not confuse ergometrine with ergotamine, another ergot derivative used in the treatment of migraine.
- Ergometrine is also called ergonovine or ergobasine.
- Storage: below 30°C – 

ERYTHROMYCIN

(Erythrocin®, Pantomicina®, Propiocine®...)

Prescription under medical supervision

1

Therapeutic action

- Macrolide antibacterial

Indications

- Treatment of relapsing fevers, leptospirosis, non-veneral treponematoses (pian, bejel, pinta), otitis media, tonsillitis, diphtheria, pneumonia, streptococcal skin infections (erysipela, impetigo), genital infections (chancroid, chlamydial infections, syphilis), etc., when first-line treatment cannot be used (allergy, contra-indication, etc.)
- Chlamydial neonatal conjunctivitis

Presentation

- 250 mg and 500 mg tablets or capsules
- Powder of oral suspension, 125 mg/5 ml

Dosage

- Child: 30 to 50 mg/kg/day in 2 to 3 divided doses
- Adult: 2 to 3 g/day in 2 to 3 divided doses

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
250 mg tablet	1/4 tab x 2	1/2 tab x 2	1 tab x 2	2 to 3 tab x 2	4 tab x 2	
500 mg tablet	–	1/4 tab x 2	1/2 tab x 2	1 to 2 tab x 2	2 tab x 2	
125 mg/5 ml oral susp.	1/2 tsp x 3	1/2 to 1 tsp x 3	1 to 2 tsp x 3	–	–	

Duration

- Relapsing fever: single dose (louse-borne); 10 days (tick-borne)
- Diphtheria, chancroid, genital chlamydiasis, leptospirosis, non-veneral treponematoses: 7 days
- Syphilis, lymphogranuloma venereum, chlamydial conjunctivitis: 14 days
- Other indications: 5 to 14 days, depending on pathology.

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to erythromycin or another macrolide.
- Do not combine with: ergot derivatives, aminophylline and theophylline (especially in paediatrics), lumefantrine, carbamazepine.
- Monitor combination with digoxin (increased plasma concentration of digoxin).
- May cause: allergic reactions, gastrointestinal disturbances.
- Administer with caution to patients with hepatic or renal impairment.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Take between meals.
- Storage: below 30°C – 

**ETHAMBUTOL
(Dexambutol®, Myambutol®...)**



Prescription under medical supervision

Therapeutic action

- Antituberculous antibacterial

Indications

- Tuberculosis

Presentation

- 100 mg and 400 mg tablets

Dosage

- Daily treatment:
Child and adult: 15 mg/kg once daily, on an empty stomach
Do not exceed 1200 mg/day
- Intermittent treatment:
Adult: 30 mg/kg 3 times weekly, on an empty stomach

Duration: according to protocol

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe renal impairment or visual defects.
- Not recommended for children as visual disturbances are difficult to identify.
- May cause: optic neuritis (decreased colour vision and reduced visual acuity). In this event, stop treatment until the signs resolve.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Before starting antituberculosis treatment the following conditions should be met: protocols conform to international recommendations; regular patient follow-up for the duration of treatment; regular, uninterrupted supply of drugs and laboratory reagents; active tracing of defaulting patients.
- Ethambutol should never be used alone, but in combination with other antituberculosis drugs in order to avoid emergence of resistance.
- Fixed-dose combination tablets incorporating ethambutol + one or 3 other antituberculosis drugs exist.
- Storage: below 30°C

ETHINYLESTRADIOL + LEVONORGESTREL (Minidril®...)

Prescription under medical supervision

1

Therapeutic action

- Estro-progestogen

Indications

- Oral contraception

Presentation

- 21-tablet pack: 30 µg ethinylestradiol + 150 µg levonorgestrel

Also comes in 28-tablet pack containing 21 active tablets + 7 inert tablets in order to facilitate compliance.

Dosage and duration

- 21-tablet pack: 1 tablet/day, each day at the same hour, for 21 days from the first day of the menstrual cycle, followed by a tablet-free interval of 7 days
- 28-tablet pack: 1 tablet/day, each day at the same hour

Contraceptive protection may be lost if a missed tablet is not taken within 12 hours. In this event, take 2 tablets at the proper time the next day, and continue the treatment so as not to perturb the menstrual cycle.

Continue as long as contraception is desired, provided that regular medical examinations do not show significant adverse effects.

Contra-indications, adverse effects, precautions

- Do not administer to patients with breast or genital cancer, hypertension, non equilibrated or complicated diabetes, history of thromboembolic disorders, coronary insufficiency, valvular disease, stroke, severe or recent liver disease, otosclerosis, undiagnosed vaginal bleeding, migraine with neurological signs, renal impairment, hyperlipidaemia or to women smokers over age 35.
- May cause:
 - frequently: nausea, weight gain, breast tenderness, tired legs, irritability, acne, oligomenorrhoea, headache, vaginal candidiasis,
 - rarely (requiring immediate discontinuation of treatment): hypertension, cardiovascular and thromboembolic disorders, jaundice, migraine, visual disturbances, hepatic adenoma.
- Clinical examinations must be carried before and during treatment (weight, BP, breasts).
- Concomitant administration of phenobarbital, phenytoin, carbamazepine, griseofulvin, rifampicin and certain antiretrovirals, reduces the contraceptive efficacy.
- Pregnancy: CONTRA-INDICATED
- Breast-feeding: CONTRA-INDICATED before 6 weeks; not recommended between 6 weeks and 6 months; no contra-indication after 6 months.

Remarks

- For emergency contraception, use levonorgestrel alone.
- Storage: below 30°C

FERROUS SALTS

Therapeutic action

- Antianæmia drug

Indications

- Prevention and treatment of iron-deficiency anaemia

Presentation

- 200 mg ferrous sulfate tablet containing 65 mg of elemental iron
Also comes in syrup and in different compositions and strengths.

Dosage (expressed in elemental iron)

- *Prevention of iron-deficiency anaemia*

Child under 5 years: 2 mg/kg once daily	= 1/4 tab/day
Child over 5 years: 30 to 60 mg once daily	= 1/2 to 1 tab/day
Pregnant woman: 60 to 120 mg once daily or in 2 divided doses	= 1 to 2 tab/day
- *Treatment of iron-deficiency anaemia*

Child under 2 years: 30 mg/day in 2 divided doses	= 1/2 tab/day
Child from 2 to 12 years: 120 mg/day in 2 divided doses	= 2 tab/day
Adult: 120 to 180 mg/day in 2 to 3 divided doses	= 2 to 3 tab/day
- Do not exceed indicated doses.

Duration

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

Contra-indications, adverse effects, precautions

- Do not administer to patients with sickle-cell anaemia.
- May cause: gastrointestinal disturbances (epigastric pain, diarrhoea or constipation, black stools).
- Do not exceed recommended doses, especially in children.
- Toxic dose: 30 mg/kg of elemental iron (100 mg/kg of ferrous sulfate).
- Signs of overdose: bloody diarrhoea, heart failure.
- *Pregnancy:* no contra-indication
- *Breast-feeding:* no contra-indication

Remarks

- Absorption of both ferrous salts and doxycycline or antacids is decreased when they are given concomitantly. Administer each drug at least 2 hours apart.
- Take during meals to reduce gastrointestinal disturbances.
- For treatment, preferably use tablets containing both ferrous salts and folic acid.
- Other ferrous salts may be used. Ensure the dose of elemental iron is the same as that indicated above (200 mg ferrous fumarate = 65 mg elemental iron; 300 mg ferrous gluconate = 35 mg elemental iron).
- *Storage:* below 30°C

FOLIC ACID = VITAMIN B9

Prescription under medical supervision

1

Therapeutic action

- Antianæmia drug

Indications

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

Presentation

- 1 mg and 5 mg tablets

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

AGE	0 months	1 year	5 years	15 years	ADULT
WEIGHT	4 kg	8 kg	15 kg	35 kg	
5 mg tablet	1/2 tab	1 tab	1 tab	1 tab	1 tab

Contra-indications, adverse effects, precautions

- Do not combine with sulfadiazine-pyrimethamine in patients with toxoplasmosis nor sulfadoxine-pyrimethamine (Fansidar®) 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 30°C -

FERROUS SALTS + FOLIC ACID

Indications

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

Presentation

- Tablet of 200 mg ferrous sulfate (65 mg of elemental iron) + 400 µg folic acid

Dosage

- See ferrous salts

Remarks

- This fixed-dose combination is not effective for the treatment of folic acid deficiency because of its low dose.
- Storage: below 30°C -

FLUCONAZOLE (Triflucan®...)

Prescription under medical supervision

Therapeutic action

- Antifungal

Indications

- Treatment of oesophageal candidiasis in immunocompromised patients
- Second line treatment of oropharyngeal and vaginal candidiasis, when local treatment fails
- Secondary prophylaxis of oropharyngeal and oesophageal candidiasis, in the event of severe and/or frequent recurrences
- Treatment of systemic candidiasis
- Treatment of cryptococcal infections, after induction therapy with amphotericin B
- Secondary prophylaxis of cryptococcal infections

Presentation

- 50 mg capsule
 - Powder for oral suspension, 50 mg/5 ml
- Also comes in 100 mg, 150 mg and 200 mg capsules, and 200 mg/5 ml oral suspension.

Dosage and duration

- *Treatment of oesophageal candidiasis*
Child: 3 mg/kg once daily (maximum 12 mg/kg/day) for 14 to 21 days
Adult: 100 to 200 mg once daily (maximum 400 mg/day) for 14 to 21 days
- *Treatment of oropharyngeal candidiasis*
Child: 3 mg/kg once daily for 7 to 14 days
Adult: 100 mg once daily for 7 to 14 days
- *Treatment of vaginal candidiasis*
Adult: 150 mg as a single dose (to be repeated after 72 hours if severe)
- *Secondary prophylaxis of oropharyngeal and oesophageal candidiasis*
Child: 3 to 6 mg/kg once daily, as long as necessary
Adult: 100 to 200 mg once daily (maximum 400 mg/day), as long as necessary
- *Treatment of systemic candidiasis*
Child: 6 to 12 mg/kg once daily for at least 4 to 6 weeks
Adult: 200 to 400 mg once daily for at least 4 to 6 weeks
- *Treatment of cryptococcal infections* (after 2 weeks' therapy with IV amphotericin B)
Child: 6 to 12 mg/kg once daily for 8 weeks
Adult: 400 mg once daily for 8 weeks
- *Secondary prophylaxis of cryptococcal infections*
Child: 3 to 6 mg/kg once daily, as long as necessary
Adult: 200 mg once daily, as long as necessary

Warning: the above doses should be administered every 72 hours to infants aged 0 to 2 weeks and every 48 hours to infants aged 2 to 4 weeks.

Contra-indications, adverse effects, precautions

- Do not administer to patients with hypersensitivity to azole antifungals (itraconazole, ketoconazole, miconazole, etc.).
- May cause:
 - gastrointestinal disturbances, headaches, rashes (possibly severe: Stevens Johnson syndrome), anaphylactic reactions, hepatitis,
 - raised transaminases, leukopenia, thrombocytopenia.
- Stop treatment in the event of signs of hepatic disease and / or serious cutaneous reactions.
- In the event of hepatic or renal impairment: reduce the dose and monitor hepatic function.
- Do not combine with co-artemether or halofantrine (risk of *torsades de pointe*).
- Monitor combination with: oral anticoagulants (risk of haemorrhage), oral antidiabetics (risk of hypoglycaemia), phenytoin, theophylline and aminophylline, benzodiazepines, ergometrine (increases plasma concentration of these medicines).
- Do not administer simultaneously with rifampicine, administer 12 hours apart (rifampicine in the morning, fluconazole in the evening).
- Pregnancy: CONTRA-INDICATED during the first trimester, except if vital and there is no other therapeutic alternative
- Breast-feeding: CONTRA-INDICATED

Remarks

- For the treatment of oropharyngeal candidiasis, use preferably miconazole muco-adhesive buccal tablets, clotrimazole or nystatin lozenges.
- For the treatment of vaginal candidiasis, use clotrimazole vaginal tablets as first line treatment.
- Storage: below 30°C – 
Once reconstituted, oral suspension keeps 14 days.

FLUOXETINE (Fluctine®, Prozac®...)



Prescription under medical supervision

Therapeutic action

- Antidepressant (selective serotonin re-uptake inhibitor)

Indications

- Depression
- Severe post-traumatic stress disorder

Presentation

- 10 mg and 20 mg capsules or tablets
- Also comes in 20 mg/5 ml oral solution.

Dosage

- Adult: 20 mg once daily. For patients who have only a partial clinical response after 15 days, dosage may be increased to 40 mg/day (up to 60 mg/day if needed).
- Reduce doses in elderly patients and in patients with impaired hepatic function (administer on alternate days).

Duration

- 6 to 8 months minimum. The treatment should be withdrawn gradually; if signs of relapse occur, increase the dose.

Contra-indications, adverse effects, precautions

- Do not administer to patients aged less than 15 years; to patients with hypersensitivity to fluoxetine.
- May cause, especially at the beginning of therapy:
 - nervousness, insomnia, drowsiness, headache, suicidal tendencies due to the suppression of psychomotor inhibition, exacerbation of anxiety or delusional symptoms,
 - gastrointestinal disturbances, allergic reactions, hypoglycaemia (particularly in diabetic patients, closely monitor blood glucose), confusion due to hyponatraemia, haemorrhage.
- Do not combine with MAOIs; do not drink alcohol during treatment.
- Administer with caution to patients with epilepsy, glaucoma, cardiac disease, hepatic or renal impairment, thyroid dysfunction, coagulation disorders.
- Monitor combination with: oral anticoagulants (risk of haemorrhage), carbamazepine, phenytoin, tricyclic antidepressants and ergometrine (increased plasma concentration of these drugs), lithium, tramadol, pethidine.
- Closely monitor patients with suicidal tendencies, especially at the beginning of therapy.
- Advise patients that fluoxetine may cause drowsiness and to be cautious when driving or operating machinery.
- Pregnancy: avoid. However, if treatment has been started before a pregnancy, do not stop treatment; reduce dosage at the end of pregnancy (risk of withdrawal syndrome in the newborn infant).
- Breast-feeding: avoid (safety is not established)

Remarks

- It takes 10 to 20 days for the patient to feel the antidepressant effect. The therapeutic efficacy can only be assessed after 3 weeks of treatment. This must be explained to the patient to encourage compliance.
- Anxiolytic or sedative treatment may be necessary during the first weeks of treatment in anxious or agitated patients.
- Fluoxetine is not included in the WHO list of essential medicines.
- Storage:

FUROSEMIDE = FRUSEMIDE (Lasix®, Lasix®, Seguril®...)

Prescription under medical supervision

1

Therapeutic action

- Diuretic

Indications

- Oedema caused by renal, hepatic or congestive heart failure
- Hypertension (prefer hydrochlorothiazide for this indication)

Presentation

- 40 mg tablet

Also comes in 20 mg tablet. Adjust dosage accordingly.

Dosage

- Child: 1 to 2 mg/kg once daily
- Adult: 20 to 40 mg once daily

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
40 mg tablet				1/4 tab	1/2 tab	1 tab

- Reduce doses according to clinical response.
- In case of persistent oedema: 80 to 150 mg once or in 2 divided doses, then reduce dosage.

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not administer for other types of oedema, especially those due to kwashiorkor.
- May cause:
 - hypokalaemia, especially in cases of cirrhosis, poor nutritional status, congestive heart failure (furosemide enhances toxicity of digoxin);
 - dehydration and orthostatic hypotension.
- Pregnancy: avoid - do not use for the arterial hypertension of pregnancy
- Breast-feeding: avoid (excreted in milk and may reduce milk production)

Remarks

- Give in the morning.
- A lot of fruit should be eaten during treatment (dates, bananas, mangos, oranges...) in order to supply additional potassium. Use potassium tablets as well if available.
- Storage: no special temperature requirements - 

GLIBENCLAMIDE (Daonil®, Euglucon®...)



Prescription under medical supervision

Therapeutic action

- Sulphonylurea hypoglycaemic which stimulates secretion of pancreatic insulin

Indications

- Adult-onset diabetes, insulin-independent and not controlled by well followed diet
Measurement of blood glucose levels is essential in establishing diagnosis and control of the disease process.

Presentation

- 2.5 mg and 5 mg tablets
Also comes in 1.25 mg tablet.

Dosage

- Adult: initially, 2.5 to 5 mg once daily in the morning
Adjust dosage until diabetic control is obtained; maximum dose: 15 mg / day.
Adjust dosage gradually and very cautiously for elderly patients.

Duration: according to clinical response and laboratory tests

Contra-indications, adverse effects, precautions

- Do not administer if:
 - insulin-dependent diabetes, juvenile diabetes mellitus;
 - renal, hepatic or thyroid function impairment, known allergy to sulphonamides.
- May cause:
 - hypoglycaemia due to excessive doses, especially in elderly patients; insufficient intake of sugar; hepatic or renal failure. Treat mild hypoglycaemia with intake of oral sugar and IV injection of hypertonic glucose solution if severe; adjust dosage;
 - allergic reactions.
- Combination is not recommended with numerous drugs such as co-trimoxazole, aspirin and other anti-inflammatory drugs, beta-blockers (risk of hypoglycaemia), barbiturates, glucocorticoids, oral contraceptives (antagonise hypoglycaemic effect), etc.
- Avoid combination with alcohol: antabuse reaction.
- Pregnancy: CONTRA-INDICATED during the third trimester
- Breast-feeding: CONTRA-INDICATED

Remarks

- Use only when diabetes cannot be controlled with diet alone, and monitor blood-glucose levels regularly.
- Use of oral antidiabetics does not mean dietetic measures should be cancelled.
- Insulin may be required in patients having surgery.
- Chlorpropamide (Diabinese®) is a long-acting sulphonylurea hypoglycaemic used at doses of 125 to 250 mg once daily. Risk of hypoglycaemia is higher than with other antidiabetics.
- Storage: below 30°C –

GLYCERYL TRINITRATE = NITROGLYCERIN = TRINITRIN

Prescription under medical supervision

1

Therapeutic action

- Vasodilator, antianginal

Indications

- Short-term prophylaxis and treatment of angina

Presentation

- 0.5 mg sublingual tablet

Dosage

- *Short-term prophylaxis of acute angina (sublingually)*
Adult: 0.5 to 1 mg taken 5 to 10 minutes before a precipitating event (exercise, stress, etc.)
- *Treatment of acute angina (sublingually)*
Adult: 0.5 to 1 mg, to be repeated 1 to 3 times at 3-4 minute intervals
Maximum dose: 3 mg/day

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not administer to patients with obstructive cardiomyopathy, hypotension, shock.
- May cause: orthostatic hypotension (especially in elderly patients), headache, nausea, flushing of the face, haemolysis in patients with G6PD deficiency, severe hypotension with risk of circulatory collapse in the event of overdose.
- Use the lowest effective dose in patients taking another nitrate derivative, a vasodilator or an antihypertensive drug and in elderly patients.
- Combination with antihypertensive drugs, diuretics, vasodilators and alcohol enhances hypotensive effects.
- Do not combine with sildenafil (risk of acute coronary syndrome).
- *Pregnancy: not recommended (safety is not established)*
- *Breast-feeding: not recommended (safety is not established)*

Remarks

- Tablet must be crunched first, then slowly dissolved under the tongue.
- Antianginal effect appears within less than 5 minutes and persists for less than 1 hour.
- Sustained-release formulations (Sustac®, etc.) are used for the long-term management of angina and the treatment of congestive heart failure.
- *Storage: below 25°C, preferably in airtight glass container.*  - 

GRISEOFULVIN

(Fulcine®, Grisefuline®, Grisovin®...)

Prescription under medical supervision

Therapeutic action

- Antifungal

Indications

- Dermatophyte infections of:
 - scalp (scalp ringworm)
 - skin (ringworm of the trunk, groin, foot)
 - nails

Presentation

- 125 mg and 250 mg tablets
- Also comes in 500 mg tablet.

Dosage

- Child: 10 to 20 mg/kg once daily or in 2 divided doses, during meals
- Adult: 500 mg to 1 g once daily or in 2 divided doses, during meals (do not exceed 1 g/day)

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
125 mg tablet	–	1/2 tab	1 tab	2 tab	–	
250 mg tablet	–	–	1/2 tab	1 tab	2 to 4 tab	
500 mg tablet	–	–	–	–	1/2 tab	1 to 2 tab

Duration

- *Scalp:* 6 to 12 weeks
- *Skin:* 4 to 8 weeks
- *Nails:* 6 months (fingernails); 12 months or more (toenails)

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to griseofulvin, hepatic impairment.
- May cause: gastrointestinal disturbances, headache, dizziness, peripheral neuropathy, skin allergic reactions, photosensitivity, haematologic disorders.
- Griseofulvin reduces:
 - the effect of oral anticoagulants: monitor prothrombine time,
 - the effect of oral contraceptives: use another contraceptive method.
- Avoid alcohol during treatment (antabuse effect).
- Pregnancy: CONTRA-INDICATED
- Breast-feeding: CONTRA-INDICATED

Remarks

- Apply gentian violet solution to lesions.
- Storage: below 30°C – 

HALOFANTRINE (Halfan®...)



Prescription under medical supervision

1

The drug must only be used in hospital settings. Its potential cardiotoxicity is unpredictable, even with the aid of an ECG.

Therapeutic action

- Antimalarial

Indications

- Treatment of uncomplicated falciparum malaria, when no other effective antimalarial is available, never as first-line treatment

Presentation

- 250 mg tablet
- 100 mg/5 ml oral suspension

Dosage

- Child over 1 year or over 10 kg: 24 mg/kg in 3 divided doses every 6 hours, between meals
- Adult: 1500 mg in 3 divided doses every 6 hours, between meals
- Do not exceed indicated doses.

Duration: one day

Contra-indications, adverse effects, precautions

- Do not administer to patients with hypersensitivity to halofantrine, cardiopathy, bradycardia, arrhythmia, family history of unexplained death or of prolongation of the QT interval, personal history of congenital or acquired prolongation of the QT interval or of unexplained syncope, severe electrolytic disorders, vitamin B1 deficiency.
- Do not administer to children under one year of age.
- Do not administer to patients who have received mefloquine in the previous 3 weeks (cardiotoxicity is more marked).
- ECG monitoring is essential before giving treatment.
- Do not combine with drugs inducing *torsades de pointes*: anti-arrhythmics (quinidine, amiodarone, sotalol, etc.), neuroleptics (haloperidol, chlorpromazine), erythromycin IV, pentamidine; drugs inducing hypokalaemia (diuretics, glucocorticoids, amphotericin B, etc.), azole antifungals, most of protease inhibitors.
- May cause: prolongation of the QT interval, *torsades de pointes* and other serious ventricular arrhythmias, sometimes fatal; diarrhoea, abdominal pain, nausea, vomiting, skin rash.
- Pregnancy: CONTRA-INDICATED
- Breast-feeding: CONTRA-INDICATED

Remarks

- Halofantrine should not be used for prophylaxis.
- Halofantrine is not included in the WHO list of essential medicines.
- Storage: below 30°C - ~~Protect from light~~
Once opened, oral suspension keeps for 15 days.

HALOPERIDOL (Haldol®, Serenace®...)



Prescription under medical supervision

Therapeutic action

- Neuroleptic

Indications

- Acute psychoses: severe states of agitation or aggressiveness, delirium, acute mania
- Chronic psychoses: schizophrenic delirium, hallucinations
- Anxiety not controlled by anxiolytics

Presentation

- 2 mg and 5 mg tablets

Also comes in 1 mg and 20 mg tablets; 2 mg/ml and 20 mg/ml oral solution.

Dosage

- *Psychoses*

- Child over 3 years: initial dose of 25 to 50 µg/kg/day in 2 to 3 divided doses
If necessary, increase cautiously up to a maximum of 150 µg/kg/day.
- Adult: 2 to 40 mg/day in 2 to 3 divided doses
If necessary, increase gradually up to 40 mg/day according to clinical response.

- *Anxiety*

- Adult: 1 mg/day in 2 divided doses

Duration

- *Psychoses*: according to clinical response
- *Anxiety*: short-term treatment

Contra-indications, adverse effects, precautions

- Do not administer to children under 3 years; to patients suffering from Parkinson's disease.
- In case of isolated hyperthermia (or associated with severe extrapyramidal disorders), stop treatment: possible neuroleptic malignant syndrome.
- May cause:
 - sedation or drowsiness, orthostatic hypotension;
 - extrapyramidal syndrome (requiring administration of anticholinergic antiparkinsonian drugs), early or tardive dyskinesia in case of prolonged treatment (may be exacerbated by antiparkinsonian drugs);
 - galactorrhea, amenorrhea, impotence.
- Administer with caution in hepatic or renal failure, to elderly patients, persons who drive or operate machinery, epileptics.
- Do not combine with levodopa.
- Risk of increased sedation when combined with alcohol and depressants of the central nervous system (hypnotics, anxiolytics, morphine and derivatives, antihistamines...).
- Avoid alcohol during treatment.
- Pregnancy: avoid
- Breast-feeding: avoid

Remarks

- Haloperidol may induce more extrapyramidal reactions than chlorpromazine, but less often provokes sedation and orthostatic hypotension.
- Storage: no special temperature requirements –

HYDRALAZINE (Apresoline®...) and DIHYDRALAZINE (Nepressol®...)



Prescription under medical supervision

1

Therapeutic action

- Vasodilator antihypertensive drug

Indications

- Moderate or severe hypertension when thiazide diuretics or beta-blockers on their own are ineffective

Presentation

- 25 mg and 50 mg tablets

Dosage

- Adult: initial dose of 25 to 50 mg / day in 2 to 3 divided doses
- Increase the dose gradually over 2 weeks to the optimal dose of 100 mg / day in 2 to 3 divided doses.
- When hypertension is controlled, decrease the dose gradually. A hypertensive crisis may occur when treatment is discontinued abruptly.
- Do not exceed indicated doses. Maximum dose: 200 mg / day.

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not administer in coronary insufficiency or recent myocardial infarction.
- May cause: tachycardia reflex, headache.
- Administer with caution to elderly patients or those with history of cerebrovascular disease.
- Pregnancy: avoid during the first trimester (safety is not established)
- Breast-feeding: no contra-indication

Remarks

- Hydralazine and dihydralazine are used for the same indications at the same dosage.
- Storage: below 30°C – ☀

HYDROCHLOROTHIAZIDE (Esidrex®, HydroSaluric®...)

Prescription under medical supervision

Therapeutic action

- Diuretic

Indications

- Moderate or severe hypertension
- Oedema caused by renal, hepatic or congestive heart failure

Presentation

- 50 mg tablet

Also comes in 25 mg tablet. Adjust dosage accordingly.

Dosage

- *Hypertension*
 - Adult: 25 to 50 mg/day in 2 divided doses
- *Oedema*
 - Child: 1 mg/kg/day in 2 divided doses
 - Adult: 50 to 100 mg in the morning, on alternate days

AGE	0 months	2 months	1 year	5 years	15 years	ADULT
WEIGHT	4 kg	8 kg	15 kg	35 kg		
<i>Hypertension</i> 50 mg tablet						1/4 to 1 tab x 2
<i>Oedema</i> 50 mg tablet				1/4 tab x 2		1 to 2 tab every 2 days

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not administer if severe renal failure, allergy to sulphonamides; for other types of oedema, especially those due to kwashiorkor.
- May cause: dehydration, hypotension, hypokalaemia, photosensitivity, hyperglycaemia.
- Pregnancy: CONTRA-INDICATED
- Breast-feeding: CONTRA-INDICATED

Remarks

- Often used in combination with an antihypertensive drug.
- A lot of fruit should be eaten during treatment (dates, bananas, mangos, oranges...), in order to supply additional potassium. Use potassium tablets as well if available.
- Storage: no special temperature requirements – 

HYOSCINE BUTYLBROMIDE = BUTYLCOPOLAMINE (Buscopan®...)

Prescription under medical supervision

1

Therapeutic action

- Antispasmodic

Indications

- Spasms of the gastrointestinal tract and genitourinary tract

Presentation

- 10 mg tablet

Dosage

- Child from 6 to 12 years: 10 mg to be repeated up to 3 times per day if necessary
- Adult: 10 to 20 mg to be repeated up to 3 or 4 times per day if necessary

Duration: according to clinical response; no prolonged treatment.

Contra-indications, adverse effects, precautions

- Do not administer tablets to children under 6 years (use injectable hyoscine butylbromide).
- 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, blurred vision, tachycardia.
- Administer with caution and under close supervision to patients taking other anticholinergic drugs (antidepressants, neuroleptics, H-1 antihistamines, antiparkinsonians, etc.).
- Pregnancy: no contra-indication; NO PROLONGED TREATMENT
- Breast-feeding: no contra-indication; NO PROLONGED TREATMENT

Remarks

- Other antispasmodics are used in certain countries:
 - atropine (child: 0.01 mg/kg every 4 to 6 hours, without exceeding 0.4 mg/day; adult: 0.4 to 0.6 mg every 4 to 6 hours),
 - propantheline (adult: 45 to 120 mg/day in 3 divided doses).
- Antispasmodic drugs are not included in the WHO list of essential medicines.
- Storage: below 30°C - 

IBUPROFEN

(Advil®, Brufen®, Nureflex®...)

Prescription under medical supervision

Therapeutic action

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

Indications

- Mild to moderate pain
- Fever
- Rheumatic diseases

Presentation

- 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

- *Mild to moderate pain, fever*

Child over 6 months: 30 mg/kg/day in 3 divided doses (= one pipette filled up to the graduation corresponding to the child's weight, 3 times per day)

Adult: 1200 to 1800 mg/day in 3 to 4 divided doses

In post-operative period, ibuprofen should be given on a regular basis, every 8 hours, rather than "as needed".

AGE	0	6 months	6 years	15 years	ADULT
WEIGHT		6 kg	20 kg	35 kg	
100 mg/5 ml oral susp.				-	-
200 mg tablet	Do not administer	Use the graduated pipette for oral solution	1 to 2 tab x 3	2 tab x 3 or 4	
400 mg tablet			-	1 tab x 3 or 4	

- *Rheumatoid arthritis*

Child: up to 40 mg/kg/day maximum

Adult: up to 3200 mg/day maximum

Duration: according to clinical response; *post-operative pain:* 8 days maximum

Contra-indications, adverse effects, precautions

- Do not administer to children under 6 months.
- Do not administer to 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 sometimes severe, 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 ACE inhibitors (drink plenty of fluids to avoid renal failure).
- *Pregnancy:* not recommended during the first five months. *CONTRA-INDICATED from the beginning of the sixth month (use paracetamol)*
- *Breast-feeding:* no contra-indication for short term treatment

Remarks

- Take with meals.
- Clean the graduated pipette carefully after use. Shake the bottle well before use.
- If ibuprofen alone does not provide pain relief, combine with paracetamol and/or an opioid analgesic.
- *Storage:* below 30°C -  - 

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

INDINAVIR = IDV (Crixivan®)

Prescription under medical supervision

1

Therapeutic action

- Antiretroviral, HIV-1 and HIV-2 protease inhibitor

Indications

- HIV-1 or HIV-2 infection, in combination with two nucleoside reverse transcriptase inhibitors and usually with a low-dose of ritonavir as booster

Presentation

- 200 mg, 333 mg and 400 mg capsules

Posologie

- *Administration of indinavir without ritonavir*

Child from 4 years: 1500 mg/m²/day in 3 divided doses, without exceeding 800 mg per dose

Adult: 2400 mg/day in 3 divided doses

Weight	200 mg capsule	400 mg capsule
10 to 14 kg	1 cap x 3	-
15 to 19 kg	2 cap x 3	1 cap x 3
20 to 24 kg	2 cap x 3	1 cap x 3
25 to 29 kg	2 cap x 3	1 cap x 3
30 to 49 kg	3 cap x 3	-
≥ 50 kg	4 cap x 3	2 cap x 3

- *Concomitant administration of indinavir + ritonavir*

Adult: 1600 mg/day of indinavir + 200 mg/day of ritonavir in 2 divided doses

Duration

- The duration of treatment depends on the efficacy and tolerance of indinavir.

Contra-indications, adverse effects, precautions

- May cause: gastrointestinal disturbances, rash, dry skin, myalgia, taste disturbances, headache, dizziness, urinary lithiasis (more frequent in children or when combined with ritonavir), hepatic disorders (raised transaminases or bilirubin), haematological disorders (neutropenia), metabolic disorders (lipodystrophy, hyperlipidaemia, diabetes mellitus with glucose intolerance and/or insulin resistance).
- Do not combine with rifampicin, phenobarbital and carbamazepine (reduced indinavir plasma concentration).
- When used concomitantly with oestrogen-progestogen oral contraceptives: increased risk of thromboembolism.
- Reduce dosage in patients with hepatic impairment (1800 mg/day).
- Administer with caution to patients with haemophilia (risk of haemorrhage).
- When patients receive indinavir and didanosine, administer first indinavir (as it requires acid for absorption), wait one hour, then administer didanosine.
- *Pregnancy: no contra-indication*
- *Breast-feeding: not recommended*

Remarks

- Take with plenty of water (200 ml). Drink at least 1.5 to 2 litres of water/day.
- Indinavir administered on its own (without ritonavir) must be taken 1 hour before or 2 hours after a meal.
- *Storage:* 

IODIZED OIL (Lipiodol®)

Therapeutic action

- Iodine supplementation

Indications

- Prevention and treatment of severe iodine deficiency

Presentation

- 200 mg capsule

Dosage and duration

- Child under 1 year: 200 mg (1 capsule) once a year
- Child from 1 to 5 years: 400 mg (2 capsules) once a year
- Child from 6 to 15 years: 600 mg (3 capsules) once a year
- Pregnant woman: 400 mg (2 capsules) once a year
- Adult from 16 to 45 years: 600 mg (3 capsules) once a year

Contra-indications, adverse effects, precautions

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

Remarques

- Also comes in 10 ml ampoule containing 480 mg/ml (Lipiodol® Ultra-Fluide) to be administered orally or by IM injection using a glass syringe:
 - children under 1 year: 0.5 ml
 - children from 1 to 15 years, pregnant women, adult from 16 to 45 years: 1 ml
- Storage: below 30°C - 

ISONIAZID = INH (Laniazid®, Rimifon®...)



Prescription under medical supervision

1

Therapeutic action

- Antituberculous antibacterial

Indications

- Tuberculosis
- Secondary prophylaxis of tuberculosis in HIV-infected patients

Presentation

- 100 mg and 300 mg tablets

Dosage

- *Treatment*
Child and adult:
 - Daily treatment : 5 mg/kg once daily, on an empty stomach; do not exceed 300 mg/day or
 - Intermittent treatment: 10 mg/kg 3 times weekly, on an empty stomach
- *Secondary prophylaxis in HIV-infected patients*
Child: 5 mg/kg once daily, on an empty stomach; do not exceed 300 mg/day
Adult: 300 mg once daily, on an empty stomach

Duration

- *Treatment:* according to protocol
- *Secondary prophylaxis in HIV-infected patients:* at least 6 months

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe hepatic impairment.
- Administer with caution to patients with epilepsy, history of convulsions or psychosis.
- May cause: gastrointestinal disturbances, liver disorders, hypersensitivity reactions (fever, rash), peripheral neuropathy.
- If the patient presents signs of liver damage (jaundice), stop treatment until the signs resolve.
- In pregnant women, malnourished or alcoholic patients, combine with pyridoxine (10 mg/day) to avoid peripheral neuritis.
- Do not give simultaneously with an antacid such as aluminium hydroxide, administer 2 hours apart.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Before starting antituberculosis treatment the following conditions should be met: protocols conform to international recommendations; regular patient follow-up for the duration of the isoniazid treatment; regular, uninterrupted supply of drugs and laboratory reagents; active tracing of defaulting patients.
- Isoniazid should not be used alone, but in combination with other antituberculosis drugs in order to avoid emergence of resistance.
- Secondary prophylaxis in HIV-infected patients should be considered only after excluding active tuberculosis.
- Fixed-dose combination tablets incorporating isoniazid + one, 2 or 3 other antituberculosis drugs exist.
- Storage: below 30°C -

ISOSORBIDE DINITRATE (Isordil®, Risordan®, Sorbitrate®...)

Prescription under medical supervision

Therapeutic action

- Vasodilator, antianginal

Indications

- Prophylaxis and treatment of acute angina
- Adjunctive therapy in left congestive heart failure

Presentation

- 5 mg tablet

Dosage

- *Short-term prophylaxis of acute angina (sublingually)*
Adult: 5 to 10 mg taken 10 minutes before a precipitating event (exercise, stress, etc.)
- *Long-term prophylaxis of angina and treatment of heart failure (orally)*
Adult: 30 to 120 mg/day in 2 to 3 divided doses. Gradually increase the dose until effective.
Do not stop treatment abruptly.
- *Treatment of acute angina (sublingually)*
Adult: 5 to 10 mg, to be repeated after 10 minutes if necessary

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not administer to patients with obstructive cardiomyopathy, hypotension, shock.
- May cause: orthostatic hypotension (especially in elderly patients), headache, nausea, flushing of the face, haemolysis in patients with G6PD deficiency, severe hypotension with risk of circulatory collapse in the event of overdose.
- Use the lowest effective dose in patients taking another nitrate derivative, a vasodilator or an antihypertensive drug and in elderly patients.
- Combination with antihypertensive drugs, diuretics, vasodilators and alcohol enhances hypotensive effects.
- Do not combine with sildenafil (risk of acute coronary syndrome).
- Pregnancy: not recommended (safety is not established)
- Breast-feeding: not recommended (safety is not established)

Remarks

- Sublingual tablet must be crunched first, then slowly dissolved under the tongue. Oral tablet must be swallowed whole.
- By sublingual route, antianginal effect appears within less than 10 minutes and persists for 1 to 2 hours.
- Sustained-release formulations are used for the long-term management of angina and the treatment of congestive heart failure. The time interval between each administration depends on the preparations.
- Storage: below 25°C –  – 

ITRACONAZOLE

(Sporanox®...)

Prescription under medical supervision

1

Therapeutic action

- Antifungal

Indications

- Treatment of histoplasmosis and penicilliosis
- Secondary prophylaxis of histoplasmosis and penicilliosis

Presentation

- 100 mg capsule
- 10 mg/ml oral solution

Dosage and duration

- *Treatment of histoplasmosis*
 - moderate:
Adult: 600 mg/day in 2 divided doses for 3 days then 400 mg/day in 2 divided doses for 12 weeks
 - severe, disseminated: same treatment, after 3-10 days' therapy with amphotericin B
- *Treatment of penicilliosis* (after 2 weeks' therapy with amphotericin B)
Adult: 400 mg/day in 2 divided doses for 10 weeks
- *Secondary prophylaxis of histoplasmosis*
Adult: 200 to 400 mg once daily, as long as necessary
- *Secondary prophylaxis of penicilliosis*
Adult: 200 once daily, as long as necessary

Contra-indications, adverse effects, precautions

- Do not administer to patients with hypersensitivity to azole antifungals (fluconazole, ketoconazole, miconazole, etc.).
- May cause: gastrointestinal disturbances, headache, rash, anaphylactic reactions, heart failure, hepatitis; raised transaminases, hypokalaemia.
- Administer with caution to patients with heart failure (risk of pulmonary edema), hepatic or renal impairment.
- Stop treatment in the event of liver dysfunction.
- In case of prolonged treatment, monitor liver function.
- Do not combine with co-artemether or halofantrine (risk of torsades de pointe).
- Monitor combination with: oral anticoagulants (risk of haemorrhage), digoxine, buprenorphine, benzodiazepines, calcium inhibitors, ergometrine, (increased plasma concentration), phenytoin, carbamazepine, phenobarbital (efficacy of itraconazole reduced).
- Do not administer simultaneously with:
 - rifampicin: administer 12 hours apart (rifampicin in the morning, itraconazole in the evening),
 - didanosine, antacids and ulcer-healing drugs: wait 2 hours between the administration of itraconazole and these medications.
- Pregnancy: CONTRA-INDICATED during the first trimester, except if vital and there is no other therapeutic alternative
- Breast-feeding: CONTRA-INDICATED

Remarks

- Storage: below 30°C – 
Once reconstituted, oral suspension keeps for 30 days.

IVERMECTIN (Mectizan®, Stromectol®...)

Therapeutic action

- Anthelminthic, antifilarial, scabicide

Indications

- Lymphatic filariases (in combination with albendazole), onchocerciasis and loiasis
- Scabies in immunodeficient patients, in combination with a topical scabicide

Presentation

- 3 mg and 6 mg scored tablets

Dosage and duration

- Child over 15 kg and adult: 150 µg/kg as a single dose, on an empty stomach

HEIGHT	0	90 cm	120 cm	140 cm	160 cm
WEIGHT		15 kg	25 kg	45 kg	65 kg
3 mg tablet	Do not administer	1 tab	2 tab	3 tab	4 tab
6 mg tablet		1/2 tab	1 tab	1 1/2 tab	2 tab

Contra-indications, adverse effects, precautions

- Do not administer to children under 15 kg (safety is not established).
- May cause:
 - transient allergic reactions: pruritus, lymphangitis, fever, edema, tachycardia, drowsiness, gastrointestinal disturbances, ocular irritation,
 - in heavily infected *Loa loa* carriers: severe reactions due to microfilariae lysis (functional impairment, encephalopathy, coma).
- In areas where loiasis is endemic, irrespective of the filariasis to be treated, it is essential to examine for and count *Loa loa* microfilariae prior to the administration of ivermectin:
 - if microfilarial count is < 8000 microfilariae/ml: treat as an outpatient,
 - if microfilarial count is ≥ 8000 microfilariae/ml: closely monitor the patient 5 days.
- Pregnancy: not recommended (safety is not established)
- Breast-feeding: not recommended during the first week of lactation

Remarks

- In the treatment of lymphatic filariases, ivermectin is administered in combination with a single dose of albendazole.
- In countries with a national programme for the elimination of bancroftian filariasis where onchocerciasis and loiasis are co-endemic, the combination of ivermectin + albendazole is given as a single dose once or twice yearly.
- In the treatment of generalised or crusted scabies, it may be necessary to administer a second dose after one or 2 weeks.
- Ivermectin is also effective in the treatment of strongyloidiasis (200 µg/kg as a single dose).
- Storage:

LAMIVUDINE = 3TC (Epivir®, Lamivir®...)

Prescription under medical supervision

1

Therapeutic action

- Antiretroviral, HIV-1 and HIV-2 nucleoside reverse transcriptase inhibitor

Indications

- HIV-1 or HIV-2 infection, in combination with other antiretroviral drugs

Presentation

- 150 mg and 300 mg tablets
- 50 mg/5 ml oral solution

Dosage

- Child under 1 month: 4 mg/kg/day in 2 divided doses
- Child from 1 month to 12 years: 8 mg/kg/day in 2 divided doses
- Adult: 300 mg once daily or in 2 divided doses

Weight	10 mg/ml oral solution	150 mg tablet	300 mg tablet
5 to 9 kg	2.5 ml x 2	-	-
10 to 14 kg	5 ml x 2	-	-
15 to 19 kg	7 ml x 2	1/2 tab x 2	-
20 to 24 kg	9 ml x 2	1/2 tab x 2	-
25 to 29 kg	11 ml x 2	2 tab	1 tab
≥ 30 kg	-	2 tab	1 tab

Duration

- The duration of treatment depends 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
- Breast-feeding: not recommended

Remarks

- For prophylactic treatment to reduce mother-to-child HIV transmission, check national recommendations.
- Also comes in fixed-dose combination tablets incorporating lamivudine-zidovudine (Combivir®), lamivudine-zidovudine-abacavir (Trizivir®) and lamivudine-stavudine-nevirapine (Triomune®, Triviro®).
- Storage:
 - Tablets : below 30°C
 - Oral solution : below 25°C. Once opened, solution keeps for 30 days maximum.

LEVODOPA + CARBIDOPA (Sinemet®...)



Prescription under medical supervision

Therapeutic action

- Antiparkinson drug

Indications

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

Presentation

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

Dosage

- Adult:
 - Initial dose of levodopa: 50 to 125 mg once or twice daily immediately after meals. Increase in increments of 50 to 125 mg every day or on alternate days, to individual optimal dose.
 - Maintenance dose: 750 to 1500 mg / day in 3 to 4 divided doses, immediately after meals.
- Reduce dosage in elderly patients.

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not administer if:
 - severe psychosis, mental 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;
 - psychiatric disorders more frequent in elderly patients: confusion, hallucinations, delirium, depression with or without suicidal tendencies;
 - later in treatment : fluctuation of the effect during the day (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 psychiatric disorders, cardiac disease, gastro-duodenal ulcer.
- Do not administer simultaneously with MAOIs, antidepressants, neuroleptics, reserpine.
- Pregnancy: CONTRA-INDICATED
- Breast-feeding: CONTRA-INDICATED

Remarks

- Tablet must be swallowed whole. Do not chew or dissolve.
- Storage: below 30°C -

LEVONORGESTREL (Norlevo®...)

1

Therapeutic action

- Progestogen

Indications

- Emergency contraception

Presentation

- 750 µg and 1500 µg tablets

Dosage and duration

- One 1500 µg tablet or two 750 µg tablets as a single dose, as early as possible after sexual intercourse, whatever the day of the cycle

The treatment is more effective if taken within 72 hours after sexual intercourse. It can be administered between 72 and 120 hours (5 days) after sexual intercourse, but its effectiveness decreases with time.

Contra-indications, adverse effects, precautions

- No contra-indication.
- May cause: metrorrhagia within 7 days following administration ; nausea.
- Pregnancy:
 - *the treatment will not terminate an ongoing pregnancy,*
 - *there is no known harm for the foetus if the treatment is used accidentally.*
- Breast-feeding: no contra-indication

Remarks

- After having administered treatment, carry out a pregnancy test if there is no menstruation:
 - within 21 days,
 - or within 5 to 7 days after the expected date, if the date is known.
- Storage: below 30°C

LOPERAMIDE (Imodium®...)

Prescription under medical supervision

Therapeutic action

- Opioid antidiarrhoeal

Indications

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

Presentation

- 2 mg capsule or tablet
- Also comes in 1 mg/5 ml oral solution.

Dosage

- Child from 2 to 5 years: 3 mg/day in 3 divided doses
- Child from 6 to 8 years: 4 mg/day in 2 divided doses
- Child over 8 years: 6 mg/day in 3 divided doses

Age	0-2 years	2-5 years	6-8 years	> 8 years
Weight	< 13 kg	13 - 20 kg	20 - 30 kg	> 30 kg
Oral solution	Do not administer	1 tsp x 3	2 tsp x 2	2 tsp x 3
Capsule		-	1 caps x 2	1 caps x 3

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

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not exceed indicated doses.
- Do not administer to children under 2 years.
- Do not administer to patients with bloody diarrhoea, acute inflammatory bowel disease, 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 30°C - 

LOPINAVIR + RITONAVIR = LPV/r (Kaletra®)

Prescription under medical supervision

1

Therapeutic action

- Antiretrovirals, HIV-1 and HIV-2 protease inhibitors

Indications

- HIV-1 or HIV-2 infection, in combination with other antiretroviral drugs

Presentation

- 133.3 mg lopinavir + 33.3 mg ritonavir soft capsule
- 400 mg lopinavir + 100 mg ritonavir/5 ml oral solution, containing 42% alcohol (v/v), with a graduated syringe for oral administration

Dosage

- Child from 10 to 15 kg: 24 mg/kg LPV + 6 mg/kg ritonavir/day in 2 divided doses
- Child from 15 to 40 kg: 20 mg/kg LPV + 5 mg/kg ritonavir/day in 2 divided doses
- Adult: 800 mg/day LPV + 200 mg ritonavir/day in 2 divided doses

Weight	80 + 20 mg/ml oral solution	133.3 mg + 33.3 mg capsule
10 to 14 kg	2 ml x 2	1 cap x 2
15 to 19 kg	2.5 ml x 2	1 cap AM and 2 cap PM
20 to 24 kg	3 ml x 2	2 cap x 2
25 to 29 kg	3.5 ml x 2	2 cap x 2
30 to 35 kg	4 ml x 2	3 cap x 2
> 35 kg	5 ml x 2	3 cap x 2

Duration

- The duration of treatment depends on the efficacy and tolerance of LPV/r.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe hepatic impairment and to children under 2 years.
- Do not administer oral solution to patients with renal impairment.
- May cause:
 - gastrointestinal disturbances (mainly diarrhoea), skin rash, pruritus,
 - hepatic disorders (raised transaminases), pancreatic disorders, metabolic disorders (lipodystrophy, hyperlipidaemia, diabetes mellitus with glucose intolerance and/or insulin resistance).
- LPV/r reduces the efficacy of oestrogen-progestogen oral contraceptives: offer an alternative or make sure that there is more than 20 µg ethinylestradiol per tablet.
- If LPV/r is used concomitantly with didanosine, administer LPV/r 2 hours before or 1 hour after didanosine.
- Do not combine with rifampicin (decreases the efficacy of lopinavir).
- Administer with caution to patients with haemophilia (risk of haemorrhage) or renal or hepatic impairment.
- Pregnancy: CONTRA-INDICATED for oral solution; for capsules: avoid, except if there is no therapeutic alternative
- Breast-feeding: not recommended

Remarks

- Take with meals.
- The soft capsules must not be crushed or opened.
- Storage: to be kept refrigerated (2°C to 8°C). If refrigeration is not available, capsules and oral solution kept below 25°C may be stored for 6 weeks maximum.

MEBENDAZOLE
(Pantelmin®, Vermox®, Wormin®...)

Prescription under medical supervision

Therapeutic action

- Anthelminthic

Indications

- Ascariasis, hookworm infections, trichuriasis, enterobiasis
- Trichinellosis

Presentation

- 100 mg and 500 mg tablets

Dosage and duration

- *Ascariasis*
Child over 1 year and adult: 500 mg as a single dose
- *Hookworm infections, trichuriasis*
Child over 1 year and adult: 500 mg as a single dose or 200 mg / day in 2 divided doses for 3 days
- *Enterobiasis*
Child over 1 year and adult: 100 mg as a single dose, to be repeated after 2 to 4 weeks if possible
- *Trichinellosis*
Child over 2 years and adult: 600 mg / day in 3 divided doses for 3 days then 1200 to 1500 mg / day in 3 divided doses for 10 days

Contra-indications, adverse effects, precautions

- May cause: gastrointestinal disturbances, headache, dizziness.
- Pregnancy: CONTRA-INDICATED during the first trimester
- Breast-feeding: no contra-indication

Remarks

- Tablets may be chewed or swallowed whole: follow manufacturer's instructions.
- Take tablets between meals.
- In the event of enterobiasis, treat all household members over 1 year of age simultaneously.
- Storage:  - 

MEFLOQUINE = MQ (Lariam...®)



Prescription under medical supervision

1

Therapeutic action

- Antimalarial

Indications

- Treatment of uncomplicated falciparum malaria, in combination with artesunate
- Prophylaxis of falciparum malaria for non-immune individuals

Presentation

- 250 mg mefloquine base scored tablet

Dosage

- *Treatment of uncomplicated falciparum malaria*

Child over 3 months (or over 5 kg) and adult: 25 mg base/kg in 2 divided doses (15 mg base/kg followed by 10 mg base/kg 12 to 24 hours later)

Weight	1 st day	2 nd day
5 to 6 kg	1/4 tab	1/4 tab
7 to 10 kg	1/2 tab	1/4 tab
11 to 19 kg	1 tab	1/2 tab
20 to 24 kg	1 1/2 tab	1 tab
25 to 35 kg	2 tab	1 tab
36 to 50 kg	3 tab	2 tab
> 50 kg	4 tab	2 tab

- *Prophylaxis of falciparum malaria*

Child: 5 mg base/kg/week

Adult : 250 mg base/week

Travellers should start prophylaxis 2 weeks before departure, continue throughout the stay and for at least 3 weeks after return.

Contra-indications, adverse effects, precautions

- Do not administer to patients with history of neuropsychiatric disorders, seizures or hypersensitivity to mefloquine.
- Do not administer for prophylaxis in patients with severe hepatic impairment.
- May cause:
 - gastrointestinal disturbances, dizziness, headache (effects usually transitory when used for prophylaxis);
 - more rarely: neuropsychiatric reactions (more frequent with doses used for treatment than for prophylaxis), heart rhythm disorders, hypo or hypertension, skin allergies.
- If the patient vomits within one hour after administration: repeat the full dose.
- Do not combine with: sodium valproate, phenytoin, carbamazepine (risk of seizures), co-artemether, chloroquine, halofantrine (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: CONTRA-INDICATED for the treatment of malaria during the first trimester
- Breast-feeding: avoid

Remarks

- The combination artesunate-mefloquine (Artequin®) exists in co-blisters. The active ingredients are not combined in the same tablet but are presented in the same blister to facilitate compliance.
- Also comes in fixed dose combinations artesunate-mefloquine: 25 mg artesunate + 50 mg mefloquine tablets and 100 mg artesunate + 200 mg mefloquine tablets.
- Storage: below 25°C - -

METAMIZOLE = DIPYRONE = NORAMIDOPYRINE (Nolotil®, Novalgin®...)



Prescription under medical supervision

The use of this drug is not recommended:

- it is potentially harmful;
- it has been taken off the market in many countries;
- it must never be prescribed as a first choice treatment.

Therapeutic action

- Analgesic
- Antipyretic

Indications

- Severe pain
- High fever

Presentation

- 500 mg tablet

Dosage

- Child over 5 years: 250 mg to 1 g / day in 3 divided doses
- Adult: 500 mg to 3 g / day in 3 divided doses

Duration: according to clinical response, 1 to 3 days

Contra-indications, adverse effects, precautions

- Do not administer in case of gastric ulcer.
- Severe and fatal cases of agranulocytosis have been reported. Use only when usual antipyretics and analgesics (acetylsalicylic acid and paracetamol) have been ineffective.
- Pregnancy: avoid
- Breast-feeding: avoid

Remarks

- Metamizole is not included in the WHO list of essential drugs.
- Storage: no special temperature requirements

METHYLDOPA (Aldomet®...)



Prescription under medical supervision

1

Therapeutic action

- Centrally acting antihypertensive

Indications

- Hypertension in pregnancy

Presentation

- 250 mg tablet

Dosage

- Initially 500 to 750 mg/day in 2 to 3 divided doses 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/day. Do not exceed 3 g/day.

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-related liver disease, 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, psychical disorders; allergic reactions.
- Stop treatment if haemolytic anaemia or jaundice appear during treatment.
- 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

Remarks

- Storage: below 30°C

METOCLOPRAMIDE (Primperan®...)

Prescription under medical supervision

Therapeutic action

- Anti-emetic

Indications

- Symptomatic treatment of nausea and vomiting
- Gastro-oesophageal reflux

Presentation

- 10 mg tablet

Also comes in 5 mg and 15 mg tablets, 0.1 mg/drop oral solution for paediatric use and 1 mg/ml syrup for adults only.

Dosage

- *Nausea and vomiting*

Child:

Age	Weight	Daily dose	10 mg tablet	Oral solution 0.1 mg/drop
0 to 1 year	< 10 kg	1 mg x 2	-	10 drops x 2
1 to 3 years	10 to 14 kg	1 mg x 2 to 3	-	10 drops x 2 to 3
3 to 5 years	15 to 19 kg	2 mg x 2 to 3	1/4 tab x 2 to 3	20 drops x 2 to 3
5 to 9 years	20 to 29 kg	2.5 mg x 3	1/4 tab x 3	-
9 to 14 years	30 kg and over	5 mg x 3	1/2 tab x 3	-

Adult: 10 mg every 6 to 8 hours if necessary

- *Gastro-oesophageal reflux*

Adult: 40 mg/day in 4 divided doses, 30 minutes before meals and at bedtime

Duration: according to clinical response, as short as possible

Contra-indications, adverse effects, precautions

- Do not administer to patients with gastrointestinal haemorrhage, obstruction or perforation, seizures.
- May cause:
 - drowsiness, headache,
 - rarely, extrapyramidal disorders (dyskinesia, tremor) especially in children and young patients,
 - increased frequency of seizures in epileptics,
 - worsening of Parkinson disease,
 - hyperprolactinemia in the event of prolonged treatment.
- Do not combine with levodopa.
- Avoid combination with antispasmodics (hyoscine butylbromide, atropine propantheline) and neuroleptics.
- Avoid alcohol during treatment.
- Reduce doses if renal or hepatic impairment.
- *Pregnancy:* no contra-indication
- *Breast-feeding:* avoid. If clearly needed, do not exceed a treatment period of 7 days.

Remarks

- *Storage:* 

- *Tablet and syrup:* below 30°C
- *Oral solution for paediatric use:* below 25°C

METRONIDAZOLE

(Flagyl®...)

Prescription under medical supervision

1

Therapeutic action

- Antiprotozoal, antibacterial

Indications

- Amoebiasis, giardiasis,
- Trichomoniasis, bacterial vaginitis
- Infection due to *Helicobacter pylori*, in combination with omeprazole and amoxicillin
- Infections due to anaerobic bacteria (*Bacteroides* sp, *Clostridium* sp, etc.)

Presentation

- 200 mg, 250 mg, 400 mg and 500 mg tablets
- 125 mg/5 ml and 200 mg/5 ml oral suspension

Dosage and duration

- *Amoebiasis*
Child: 35 to 50 mg/kg/day in 3 divided doses
Adult: 1.5 g/day in 3 divided doses
For intestinal amoebiasis, administer treatment for 5 to 10 days; for extra-intestinal amoebiasis (hepatic, etc.), administer for 10 to 14 days.
- *Giardiasis*
Child: 15 mg/kg/day in 3 divided doses for 5 days
Adult: 750 mg/day in 3 divided doses for 5 days or 2 g once daily for 3 days
- *Trichomoniasis, bacterial vaginitis*
Adult: 2 g as a single dose
- *Infection due to Helicobacter pylori*
Adult: 1 g/day in 2 divided doses for 10 days, in combination with omeprazole and amoxicillin
- *Infections due to anaerobic bacteria*
Adult: 1.5 g/day in 3 divided doses, in combination with an appropriate antibiotic if necessary. Duration of treatment must be adapted, according to indication and localisation, especially if elimination of the infectious focus is difficult.

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to metronidazole or another nitroimidazole (tinidazole, secnidazole, etc.).
- May cause: gastrointestinal disturbances, brownish urine, allergic reactions, headache, dizziness.
- Do not drink alcohol during treatment.
- 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 1/3 and give once daily to patients with severe hepatic impairment.
- Pregnancy: no contra-indication, avoid prolonged use
- Breast-feeding: avoid (significantly excreted in milk). If used, divide into smaller doses.

Remarks

- For the treatment of genital infections, do not use vaginal tablets. Treatment should be oral.
- Secnidazole (Flagentyl®, Secnol®) is another nitroimidazole used as a single dose in the treatment of intestinal amoebiasis, giardiasis, trichomoniasis and bacterial vaginitis (child: 30 mg/kg; adult: 2 g).
- Storage: below 30°C - 
Once the vial has been opened, oral suspension keeps 15 days maximum.

MICONAZOLE muco-adhesive buccal tablet (Tibazole®)

Prescription under medical supervision

Therapeutic action

- Antifungal

Indications

- Oro-pharyngeal candidiasis in immunodeficient patients

Presentation

- 10 mg muco-adhesive buccal tablet

Dosage and duration

- Child and adult: one tablet once daily for 7 days

Moisten the tablet with the tongue. Place the tablet on the upper gingiva, above a lateral incisor and cover with the upper lip. Apply a slight pressure with the index finger to the outside of the upper lip for 20 seconds, directly over the tablet, until it sticks to the gingiva. The tablet remains on the gingiva and releases miconazole for 8 to 12 hours.

Contra-indications, adverse effects, precautions

- The drug is well tolerated.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Do not swallow tablets: the treatment being local, swallowing is not harmful but is ineffective.
- Miconazole is not contra-indicated in young children but it is difficult to use correctly muco-adhesive buccal tablets in children under 7 years.
- Miconazole also exists as an oral gel (Daktarin®, etc.) applied on the lesions for 7 to 15 days (child: 1 measure 4 times a day; adult: 2 measures 4 times a day).
- Storage: below 25°C –  – 
Tablets are packed in a blister containing 7 tablets. Leave tablets in blister until use. Once a tablet is removed from the blister, it must be used immediately.

MIFEPRISTONE = RU486 (Mifegyne®...)

Prescription under medical supervision

1

Therapeutic action

- Antiprogestogen

Indications

- Termination of pregnancy, in combination with misoprostol (or another prostaglandin)
- Cervical dilatation before aspiration or curettage (preferably use misoprostol for this indication)
- Cervical dilatation and labour induction in the event of intrauterine foetal death, when prostaglandins or oxytocin cannot be used

Presentation

- 200 mg tablet

Dosage and duration

- *Termination of pregnancy*
200 mg as a single dose, followed by a dose of misoprostol 36 to 48 hours later
- *Cervical dilatation before aspiration or curettage*
200 mg as a single dose, 36 to 48 hours before aspiration or curettage
- *Labour induction in the event of intrauterine foetal death*
600 mg once daily for 2 days

Contra-indications, adverse effects, precautions

- Do not administer in women with ectopic pregnancy, chronic suprarenal failure, non controlled severe asthma.
- May cause: gastrointestinal disturbances, metrorragia, uterine hypertonicity, headache, dizziness.
- Do not combine with NSAIDs (reduces the efficacy of mifepristone).
- Monitor combination with corticosteroids (reduces their efficacy).
- Breast-feeding: avoid

Remarks

- In the event if pregnancy termination, check after treatment if uterus is empty.
- Storage: below 25°C -  - 

MISOPROSTOL (Cytotec®, GyMiso®...)

Prescription under medical supervision

Therapeutic action

- Cervical ripening agent, oxytocic drug (prostaglandin)

Indications

- Cervical dilatation and labour induction in the event of:
 - intrauterine foetal death
 - severe pre-eclampsia and eclampsia, when the cervix is not favourable and a caesarean section cannot be performed
- Cervical dilatation before aspiration or curettage
- Treatment of post-partum haemorrhage due to uterine atony, when injectable oxytocics are unavailable or ineffective
- Termination of pregnancy, in combination with mifepristone

Presentation

- 200 µg tablet
- Also comes in 25 µg and 100 µg tablets.

Dosage and duration

- *Cervical dilatation and labour induction*
 - intrauterine foetal death: 200 µg vaginally every 6 hours until labour occurs (2 to 3 doses are usually sufficient)
 - severe pre-eclampsia and eclampsia: 25 µg vaginally every 6 hours until labour occurs (up to a maximum of 6 doses or 150 µg)
- *Cervical dilatation before aspiration or curettage*
400 µg vaginally as a single dose, 3 hours before procedure
- *Post-partum haemorrhage*
1000 µg rectally as a single dose
- *Termination of pregnancy*
36 to 48 hours after the administration of oral mifepristone, administer misoprostol:
 - up to 12 completed weeks since last menstrual period: 400 µg orally or vaginally. Repeat the dose of misoprostol after 3 hours if expulsion has not occurred.
 - after 12 completed weeks since last menstrual period: 400 µg orally, to be repeated every 3 hours, up to a maximum of 5 doses

Contra-indications, adverse effects, precautions

- During the 2nd and the 3rd trimester: do not administer in the event of malpresentation, cephalo-pelvic disproportion, complete placenta praevia, fragile uterus (history of caesarean section, grand multiparity).
- Before delivery, do not administer simultaneously with oxytocin. Only administer oxytocin 8 hours after the last administration of misoprostol.
- May cause: gastrointestinal disorders, headache, dizziness, fever, shivering, uterine hypertonia, uterine rupture, foetal distress.
- If the patient vomits within 30 minutes after administration, administer the same dose vaginally.
- Breast-feeding: no contra-indication

Remarks

- In the event of pregnancy termination check after treatment if uterus is empty.
- Storage: below 30° C

MORPHINE immediate-release (MIR) (Sevredol®...)



Prescription under medical supervision

1

Therapeutic action

- Centrally acting opioid analgesic

Indications

- Severe pain

Presentation

- 10 mg immediate-release capsule

Also comes in 5 mg, 20 mg, 30 mg and 50 mg immediate-release capsules or tablets.

Dosage

There is no standard dose of oral morphine. 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: 1 mg/kg/day in 6 divided doses at 4-hour intervals

Adult: 60 mg/day in 6 divided doses at 4-hour intervals

- 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/day, 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 in mg	10				10				10				10				10				10			
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 in mg			10			10									10									

The scheduled treatment on Day 2 is 90 mg/day, i.e. 60 mg (total scheduled doses on Day 1) + 30 mg (total rescue doses on Day 1), in 6 divided doses, i.e. 15 mg every 4 hours, etc.

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

Duration: according to clinical response. Once the pain is controlled, change to sustained-release morphine.

Contra-indications, adverse effects, precautions

- See sustained-release oral morphine.

Remarks

- 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 – –

MORPHINE sustained-release (MSR) (Kapanol® ...)



Prescription under medical supervision

Therapeutic action

- Centrally acting opioid analgesic

Indications

- Severe and persistent pain, especially cancer pain

Presentation

- 10 mg and 30 mg sustained-release capsules

Also comes in 20 mg, 50 mg, 60 mg, 100 mg and 200 mg sustained-release capsules or tablets.

Dosage

- Usually, the effective daily dose of morphine 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 6 times/day (120 mg/day), the dose of MSR is 60 mg 2 times/day (120 mg/day).
- If treatment is initiated directly with MSR:
 - Child over 6 months: initially 1 mg/kg/day in 2 divided doses at 12-hour intervals
 - Adult: initially 60 mg/day in 2 divided doses at 12-hour intervalsAdjust the dose if necessary, increasing the dose by 50% per day until pain relief is obtained.
- Reduce the dose by half in elderly patients and in patients with renal or hepatic impairment.
- 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, head injury, raised intracranial pressure, uncontrolled epilepsy, severe hepatic impairment, acute abdomen before diagnosis; do not administer to children under 6 months.
- May cause:
 - dose-related sedation and respiratory depression, nausea, vomiting, dry mouth, urinary retention, excitement, confusion, raised intracranial pressure, pruritus,
 - in the event of overdose: excessive sedation, respiratory depression, hypotension, hypothermia, coma.
- Management of respiratory depression includes assisted ventilation and / or administration of naloxone. Monitor patient closely for several hours.
 - Morphine always provokes constipation. For all treatments ≥ 48 hours, administer systematically a stimulant laxative (bisacodyl) in combination with an osmotic laxative (lactulose).
 - Administer with caution to patients with respiratory impairment, urethro-prostatic disorders, cardiopulmonary disease.

- 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: other opioid analgesics, neuroleptics (chlorpromazine, haloperidol, etc.), antihistamines (chlorphenamine, promethazine), antidepressants (clomipramine, fluoxetine, etc.), benzodiazepines (diazepam, etc.), phenobarbital, etc.
- Monitor combination with ritonavir (possible increase in morphine plasma concentrations).
- *Pregnancy: no contra-indication during the 1st and 2nd trimester. Administer with caution during the 3rd trimester (risk of respiratory depression and withdrawal symptoms in the newborn infant).*
- *Breast-feeding: no contra-indication for a short period, except in the event of respiratory pathology in the newborn infant. Monitor the newborn infant for adverse effects (drowsiness, etc.).*

Remarques

- 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

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 (pregnant women, malnourished persons).

Presentation

- Tablet and syrup

Composition of preparations 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 B1	1 mg	1 mg	0.9 to 1.3 mg
Vitamin B2	0.5 mg	1 mg	1.5 to 1.8 mg
Vitamin B3 (= PP)	7.5 mg	15 mg	15 to 20 mg
Vitamin C	15 mg	/	10 mg
Vitamin D3	300 IU	/	100 to 200 IU

Dosage

- Child under 5 years: 1 tsp or 1 tab/day
- Child over 5 years: 2 tab/day
- Adult: 3 tab/day

Duration: depending on situation

Contra-indications, adverse effects, precautions

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

Remarks

- Multivitamins may be used as a placebo as they are both safe and inexpensive. Their composition is generally similar to the preventive treatment of avitaminoses and has no contra-indication.
- Specific vitamin deficiency states require appropriate doses of vitamins.
- Multivitamins are not included in the WHO list of essential drugs.
- Storage: keep in a cool place (8°C to 15°C) – 

NALIDIXIC ACID

(**Negram®...**)

Prescription under medical supervision

1

The WHO no longer recommends the use of nalidixic acid for the treatment of shigellosis, even in areas where it is still effective.

Therapeutic action

- Antibacterial (group of quinolones)

Indications

- Acute uncomplicated cystitis, without fever or lumbar pain

Presentation

- 500 mg tablet

Dosage and duration

- Child over 3 months: 30 to 50 mg/kg/day in 4 divided doses for 7 days
- Adult: 4 g/day in 4 divided doses for 7 days

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe renal impairment, history of convulsions, G6PD deficiency.
- May cause: gastrointestinal disturbances, allergic reactions, photosensitivity, neurological disorders (headache, dizziness, visual disturbances).
- Administer with caution and reduce doses in patients with hepatic or renal impairment.
- Pregnancy: CONTRA-INDICATED
- Breast-feeding: CONTRA-INDICATED

Remarks

- Due to its efficacy, safety and ease of administration, ciprofloxacin is the first-line antibiotic for shigellosis.
- Once resistant to nalidixic acid, bacteria become very easily resistant to other quinolones (ciprofloxacin, etc.).
- Nalidixic acid is not included in the WHO list of essential medicines.
- Storage: below 30°C

NELFINAVIR = NFV (Viracept®)

Prescription under medical supervision

Therapeutic action

- Antiretroviral, HIV-1 and HIV-2 protease inhibitor

Indications

- HIV-1 or HIV-2 infection, in combination with other antiretroviral drugs

Presentation

- 250 mg and 625 mg tablets
- Oral powder, 50 mg nelfinavir/g of powder

Dosage

- Child under 1 year: 130 to 150 mg/kg/day in 2 divided doses at 12 hour interval
 - Child from 1 to 12 years: 110 to 130 mg/kg/day in 2 divided doses at 12 hour interval
 - Child from 13 years and adult: 2500 mg/day in 2 divided doses at 12 hour interval
- In order to reduce gastrointestinal disturbances, the daily dose can be administered in 3 divided doses.

Weight	250 mg tablet	625 mg tablet
5 to 9 kg	2 tab x 2	-
10 to 14 kg	3 tab x 2	-
15 to 19 kg	4 tab x 2	-
20 to 24 kg	5 tab x 2	4 tab x 2
25 to 29 kg	5 tab x 2	4 tab x 2
≥ 30 kg	5 tab x 2	4 tab x 2

Duration

- The duration of treatment depends on the efficacy and tolerance of nelfinavir.

Contra-indications, adverse effects, precautions

- May cause: gastrointestinal disturbances, rash, pruritus, hepatic disorders (jaundice, raised transaminases), metabolic disorders (lipodystrophy, hyperlipidaemia, diabetes mellitus with glucose intolerance and/or insulin resistance), raised creatinine phosphokinase.
- Nelfinavir reduces the efficacy of oestrogen-progestogen oral contraceptives: offer an alternative or make sure that there is > 20 µg ethinylestradiol per tablet.
- Do not combine with rifampicin.
- Administer with caution to patients with haemophilia (risk of haemorrhage) or with hepatic or renal impairment.
- Pregnancy: no contra-indication
- Breast-feeding: not recommended

Remarks

- Take with meals.
- Tablets may be cut or crushed and mixed with water or food.
- Do not mix oral powder with acidic food or juices.
- Storage: below 30°C

NEVIRAPINE = NVP

(Neravir®, Nevimune®, Viramune®...)

Prescription under medical supervision

1

Therapeutic action

- Antiretroviral, HIV-1 non nucleoside reverse transcriptase inhibitor

Indications

- HIV-1 infection, in combination with other antiretroviral drugs

Presentation

- 200 mg tablet
- 50 mg/5 ml oral suspension

Dosage

- Child from 2 months to 8 years: 4 mg/kg once daily for 14 days, then 14 mg/kg/day in 2 divided doses from the 15th day
- Child over 8 years: 4 mg/kg once daily for 14 days, then 8 mg/kg/day in 2 divided doses from the 15th day, without exceeding 400 mg/day
- Adult: 200 mg once daily for 14 days, then 400 mg/day in 2 divided doses from the 15th day

Weight	10 mg/ml oral suspension		200 mg tablet	
	Initial	Maintenance	Initial	Maintenance
5 to 9 kg	3 ml	6 ml x 2		-
10 to 14 kg	5 ml	10 ml x 2		1/2 tab x 2
15 to 19 kg	7 ml	14 ml x 2	1/2 tab	1 tab AM and 1/2 tab PM
20 to 24 kg	10 ml	< 8 years: 16 ml x 2 > 8 years: 10 ml x 2	1/2 tab	< 8 years: 1 tab AM and 1/2 tab PM > 8 years: 1/2 tab x 2
25 to 29 kg	12 ml	< 8 years: 20 ml x 2 > 8 years: 12 ml x 2	1/2 tab	< 8 years: 1 tab x 2 > 8 years: 1/2 tab x 2
30 to 39 kg	14 ml	14 ml x 2	1 tab	1 tab AM and 1/2 tab PM
40 to 49 kg	-	-	1 tab	1 tab x 2
≥ 50 kg	-	-	1 tab	1 tab x 2

Duration: the duration of treatment depends on the efficacy and tolerance of nevirapine.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe hepatic impairment, history of severe intolerance to nevirapine that led to permanent discontinuation of treatment.
- May cause:
 - cutaneous reactions sometimes severe (Lyell's and Stevens-Johnson syndromes), hepatic disorders possibly severe (fulminant hepatitis). In these cases, stop taking nevirapine immediately and permanently.
 - gastrointestinal disturbances, headache, myalgia.
- Nevirapine reduces the efficacy of oestrogen-progestogen oral contraceptives: offer an alternative or make sure that there is > 20 µg ethinylestradiol per tablet.
- Avoid combination with rifampicin (decreases the efficacy of nevirapine). If the administration of rifampicin is required, use efavirenz rather than nevirapine.
- Monitor liver enzyme level (ALAT) during the first 2 months, then every 3 to 6 months. If the enzyme level reaches 5 times the normal level, stop nevirapine immediately.
- Pregnancy: no contra-indication
- Breast-feeding: not recommended

Remarks

- For prophylactic treatment to reduce mother-to-child transmission, check national recommendations.
- To improve tolerance, respect the initial 14-day phase of treatment. In the event of restarting treatment after having stopped for more than 7 days, recommence initial 14-day phase.
- Tablets are not scored. When half a tablet is required, use a cutter to cut the tablet into two equal parts.
- Also comes in fixed-dose combination tablets incorporating nevirapine-lamivudine-stavudine (Triomune®, Triviro®...).
- Storage: below 30°C
Once opened, oral suspension keeps for 2 months maximum.

NICLOSAMIDE
(Tredemine®, Yomesan®...)

Therapeutic action

- Anthelminthic

Indications

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

Presentation

- 500 mg chewable tablet

Dosage and duration

- *T. saginata*, *T. solium* and *D. latum*

Child under 2 years: 500 mg as a single dose

Child from 2 to 6 years: 1 g as a single dose

Child over 6 years and adult: 2 g as a single dose

- *H. nana*

Child under 2 years: 500 mg on the first day, then 250 mg/day for 6 days

Child from 2 to 6 years: 1 g on the first day, then 500 mg/day for 6 days

Child over 6 years and adult: 2 g on the first day, then 1 g/day for 6 days

Contra-indications, adverse effects, precautions

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

Remarks

- Thoroughly chew the tablets before swallowing and wash down with as little water as possible.
- In the event of vomiting, the single dose treatment should be divided in 2 doses taken with an interval of one hour.
- As niclosamide is a taenicide, do not expect the patient to expel the whole killed worm, portions are voided in a partially digested form.
- Storage: below 25°C - 

NICOTINAMIDE = VITAMIN PP = VITAMIN B3 (Nicobion®...)

1

Therapeutic action

- Vitamin: nicotinamide deficiency leads to pellagra

Indications

- Treatment of pellagra

Presentation

- 50 mg tablet
- Also comes in 500 mg tablet.

Dosage

- Child and adult: 100 to 500 mg / day in 2 divided doses

Duration: according to clinical response

Contra-indications, adverse effects, precautions

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

Remarks

- Daily requirement: 15 to 20 mg / day.
- Meat, fish, wholemeal cereals (wheat, rice), ground-nuts are good sources of vitamin PP.
- Vitamin PP is usually one of the components of multivitamin preparations and B-complex (7.5 mg to 15 mg / tab).
- 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.
- Nicotinic acid has a similar action to nicotinamide, but is no longer used because of its adverse effects, especially its vasodilator action.
- Storage: 

NIFEDIPINE (Adalat®, Adalat®LA...)



Prescription under medical supervision

Therapeutic action

- Antihypertensive drug (calcium channel blocker)
- Uterine relaxant

Indications

- Threatened premature labour
- Hypertension

Presentation

- 10 mg short-acting (liquid-filled) capsule
- 10 mg prolonged-release tablet

Also comes in 20 mg, 30 mg, 60 mg and 90 mg prolonged-release tablets to be administered once daily or to be administered twice daily. Follow manufacturer's instructions.

Dosage

- *Threatened premature labour* (short-acting capsule)
10 mg by oral route, to be repeated every 15 minutes if uterine contractions persist (maximum 4 doses or 40 mg), then 20 mg by oral route every 6 hours
- *Hypertension* (prolonged-release tablets)
20 to 100 mg/day in 2 divided doses or 20 to 90 mg once daily depending on the preparation used

Duration

- *Threatened premature labour*: 48 hours
- *Hypertension*: lifetime treatment

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 shortly after starting treatment.
- Do not combine with magnesium sulphate, salbutamol IV, and calcium channel blockers.
- Monitor combination with cimetidine (additive hypotension), phenytoin (risk of phenytoin toxicity), rifampicin (efficacy of nifedipine diminished), itraconazole (increased risk of oedema), beta-blockers (enhanced antihypertensive effects).
- *Pregnancy*: CONTRA-INDICATED during the 1st trimester. Never administer sublingually (risk of foetal death from placental hypoperfusion).
- *Breast-feeding*: avoid

Remarks

- Methyldopa and beta-blockers are the drugs of choice for treating hypertension in pregnancy.
- Short-acting formulations of nifedipine should not be used in hypertension since their use may cause excessive fall in blood pressure and cerebral or myocardial ischaemia.
- Prolonged-release tablets must be swallowed whole.
- *Storage*: below 30°C -

NITROFURANTOIN (Furadantin®...)

Prescription under medical supervision

1

Therapeutic action

- Antibacterial (group of nitrofuranes)

Indications

- Uncomplicated cystitis, without fever or lumbar pain

Presentation

- 100 mg tablet

Also comes in 50 mg tablet or capsule and 25 mg/5 ml oral solution.

Dosage and duration

- Child over 3 months: 3 to 5 mg/kg/day in 3 divided doses for 5 to 7 days
- Adult: 300 mg/day in 3 divided doses for 5 to 7 days

AGE	0	3 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
50 mg tablet		Do not administer	1/4 tab x 3	1/4 to 1/2 tab x 3	1/2 to 1 tab x 3	2 tab x 3
100 mg tablet			–	–	1/4 to 1/2 tab x 3	1 tab x 3

Contra-indications, adverse effects, precautions

- Do not administer to patients with renal impairment, allergy to nitrofurantoin.
- May cause: nausea, vomiting, allergic reactions; haemolytic anaemia in patients with G6PD deficiency.
- Do not administer simultaneously with antacids, administer 2 hours apart.
- Pregnancy: CONTRA-INDICATED during the last month of pregnancy (risk of haemolysis in newborn)
- Breast-feeding: avoid during the first month

Remarks

- Take during meals.
- Storage: below 25°C

NYSTATIN (Mycostatin®, Nystan®...)

Prescription under medical supervision

Therapeutic action

- Antifungal

Indications

- Oropharyngeal, oesophageal and intestinal candidiasis

Presentation

- 100 000 IU lozenge
- 100 000 IU and 500 000 IU film coated tablets
- 100 000 IU/ml oral suspension

Dosage and duration

- *Oropharyngeal candidiasis*

Child and adult: 400 000 IU/day in 4 divided doses between meals for 7 days. The lozenge should be sucked. For children, use the oral suspension or crush lozenges and apply to the affected area.

It may be necessary to increase the dose to 2 000 000 IU/day in immunocompromised patients.

- *Oesophageal and intestinal candidiasis*

Child: 400 000 IU/day in 4 divided doses between meals for 20 days

Adult: 2 000 000 IU/day in 4 divided doses between meals for 20 days

Contra-indications, adverse effects, precautions

- The drug is well tolerated.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Film coated tablets used for the treatment of oesophageal and intestinal candidiasis are meant to be swallowed. They may be sucked when used for oropharyngeal candidiasis.
- Vaginal tablets may be used for the treatment of oropharyngeal candidiasis, in spite of their disagreeable taste.
- In immunocompetent patients, oropharyngeal candidiasis may also be treated by applying gentian violet.
- In immunocompromised patients:
 - For *oropharyngeal candidiasis*: by preference use miconazole muco-adhesive tablets or clotrimazole lozenge.
 - For *oesophageal candidiasis*: use fluconazole.
- Storage: below 25°C -  - 

Once the vial has been opened, oral suspension keeps 7 days.

OMEPRAZOLE

(Mopral®...)

Prescription under medical supervision

1

Therapeutic action

- Antiulcer drug (proton pump inhibitor)

Indications

- Gastro-oesophageal reflux
- Benign peptic ulcer
- Complicated peptic ulcer (perforation, haemorrhage), for healing and preventing recurrence, in combination with 2 antibacterial drugs to eradicate *Helicobacter pylori*

Presentation

- 10 mg and 20 mg capsules

Dosage and duration

Adult:

- *Gastro-oesophageal reflux*
 - Short-term relief of symptoms: 20 mg once daily in the morning for 3 days
 - Treatment of gastro-oesophageal reflux disease: 20 mg once daily in the morning for 4 weeks (up to 8 weeks according to severity)
- *Benign peptic ulcer*
20 mg once daily in the morning for 7 to 10 days
- *H. pylori eradication*
40 mg/day in 2 divided doses for 10 days (in combination with metronidazole or tinidazole + amoxicillin or clarithromycin)

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/day in patients with severe hepatic impairment.
- *Pregnancy: avoid during the 1st trimester (safety is not established)*
- *Breast-feeding: not recommended*

Remarks

- Swallow capsules whole, do not chew.
- For mild symptoms of gastro-oesophageal reflux, use antacids as first line treatment.
- For peptic ulcer perforation: use omeprazole IV. As soon as the patient can eat, change to oral treatment (omeprazole is equally effective when given IV or orally).
- Omeprazole is recommended by the WHO for the eradication treatment of *H. pylori* but is not included in the WHO list of essential medicines.
- *Storage: below 30°C - *

ORAL REHYDRATION SALTS = ORS

Indications

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

Presentation

- Sachet of powder to be diluted in 1 litre of clean, boiled and cooled water.
Reduced osmolarity WHO formulation:

	grams/litre		mmol/litre
sodium chloride	2.6	sodium	75
glucose	13.5	chloride	65
potassium chloride	1.5	glucose	75
trisodium citrate	2.9	potassium	20
Total weight	20.5	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/day)

Child from 2 to 10 years: 100 to 200 ml after each loose stool (approximately 1000 ml/day)

Adult: 200 to 400 ml after each loose stool (approximately 2000 ml/day)

- *Treatment of moderate dehydration (WHO - Treatment plan B)*

Child and adult: 75 ml/kg 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 intravenous therapy (*Treatment plan C*).

- *Treatment of severe dehydration (WHO - Treatment plan C)*

In combination with intravenous therapy and only to a conscious patient: 5 ml/kg/hour

After 3 hours, 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 minutes 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.
- Storage: no special temperature requirements – 
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 (Doliprane®, Panadol®...)

1

Therapeutic action

- Analgesic, antipyretic

Indications

- Mild to moderate pain
- Fever

Presentation

- 100 mg and 500 mg tablets or capsules
- 120 mg/5 ml oral solution

Dosage

- Child: 60 mg/kg/day in 3 or 4 divided doses
- Adult: 3 to 4 g/day in 3 or 4 divided doses

AGE	0 months	1 year	5 years	15 years	ADULT
WEIGHT	4 kg	8 kg	15 kg	35 kg	
100 mg tablet	1/2 tab x 3	3/4 to 1 1/2 tab x 3	1 1/2 to 3 tab x 3	-	-
500 mg tablet	-	-	1/4 to 1 1/2 tab x 3	1/2 to 1 1/2 tab x 3	2 tab x 3

- Maximum doses: child: 80 mg/kg/day; adult: 4 g/day

Duration

- According to clinical response

Contra-indications, adverse effects, precautions

- Administer with caution to patients with hepatic impairment.
- Do not exceed indicated doses, especially in children and elderly patients. Paracetamol intoxications are severe (hepatic cytolysis).
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- For the treatment of mild to moderate pain, paracetamol is used alone or in combination with an NSAID.
- For the treatment of moderate to severe pain, paracetamol is used in combination with an NSAID and a weak opioid analgesic (codeine, tramadol) or a strong opioid analgesic (morphine, etc.).
- Paracetamol is particularly recommended for patients allergic to acetylsalicylic acid (aspirin), patients with a history of or currently suffering from gastric problems and for pregnant women and children.
- Paracetamol has no anti-inflammatory properties.
- Storage: below 30°C - 

PHENOBARBITAL (Gardenal®, Luminal®...)



Prescription under medical supervision

Therapeutic action

- Anticonvulsant, sedative and hypnotic

Indications

- Epilepsy: tonic-clonic (grand mal) and partial (focal) seizures

Presentation

- 15 mg, 30 mg, 50 mg and 100 mg tablets

Dosage

Follow national protocol.

For information:

- Child: initial dose of 3 to 4 mg/kg once daily or in 2 divided doses, increase to 8 mg/kg/day if necessary
- Adult: initial dose of 2 mg/kg once daily at bedtime (up to 100 mg maximum), then, increase gradually if necessary, to the maximum dose of 6 mg/kg/day in 2 to 3 divided doses.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Initial dose:				1/2 tab x 2	1 1/2 tab x 2	3 tab
30 mg tablet						
50 mg tablet					1 tab x 2	2 tab
100 mg tablet					1 tab	1 tab

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not administer in respiratory depression or porphyria.
- Risk of drowsiness and depression of the central nervous system.
- Do not stop treatment abruptly.
- Risk of increased sedation when combined with alcohol and drugs acting on the central nervous system such as diazepam, chlorphenamine and chlorpromazine.
- Decreases oral contraceptive efficacy.
- Pregnancy: avoid
- Breast-feeding: avoid

Remarks

- Phenobarbital is subject to international controls: follow national regulations.
- For febrile convulsions, extreme agitation and in emergency, diazepam is preferred.
- Plasma-concentrations are stable after 2 to 3 weeks. Caution: risk of accumulation.
- If necessary, phenytoin may be combined with phenobarbital.
- Storage: no special temperature requirements -

PHENOXYMETHYL PENICILLIN = PENICILLIN V (Oracilline®, Ospen®...)

Prescription under medical supervision

1

Therapeutic action

- Penicillin antibacterial

Indications

- Streptococcal tonsillitis, buccodental infections, cutaneous anthrax
- Parenteral to oral switch therapy

Presentation

- 250 mg tablet (400 000 IU)
- Powder for oral suspension, 125 mg/5 ml (200 000 IU/5 ml) and 250 mg/5 ml (400 000 IU/5 ml)

Dosage

- Child under one year: 250 mg/day in 4 divided doses
- Child from 1 to 5 years: 500 mg/day in 4 divided doses
- Child from 6 to 12 years: 1 g/day in 4 divided doses
- Adult: 2 g/day in 4 divided doses

For the treatment of tonsillitis, the daily dose may be given in 2 divided doses.

Duration

- *Streptococcal tonsillitis*: 10 days
- *Buccodental infections*: 3 to 5 days
- *Cutaneous anthrax*: 7 to 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).
- May cause: gastrointestinal disturbances, allergic reactions sometimes severe. In the event of allergic reactions, stop treatment immediately.
- Do not combine with methotrexate.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Storage: 

Once reconstituted, the oral suspension keeps for 15 days, below 25°C.

PHENYTOIN
(Di-hydan®, Dilantin®, Epanutin®...)



Prescription under medical supervision

Therapeutic action

- Anticonvulsant

Indications

- Epilepsy, except absence seizure (petit mal)

Presentation

- 100 mg tablet
- Also comes in 25 mg and 50 mg tablets. Adjust dosage accordingly.

Dosage

- Child: 3 to 8 mg/kg/day in 2 to 3 divided doses
- Adult: 2 to 6 mg/kg/day in 2 to 3 divided doses; do not exceed 500 to 600 mg/day

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
100 mg tablet				1/2 tab x 2	1/2 to 1 tab x 2	1/2 to 1 tab x 3

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not administer in case of allergy.
- May cause:
 - gastro-intestinal disturbances: gingival hypertrophy, nausea, vomiting;
 - blood disorders: monitor blood counts if possible and administer folic acid in case of prolonged use;
 - neurological disorders: dizziness, visual disturbances, mental confusion;
 - allergic reactions: cutaneous eruption, fever, adenopathy.
- Do not stop treatment abruptly, decrease daily doses gradually.
- It is not recommended to combine phenytoin with oral contraceptives, sulphonamides, or chloramphenicol. Combination with other drugs must be closely monitored (diazepam, phenobarbital, digoxin, corticosteroids...).
- Pregnancy: avoid
- Breast-feeding: avoid

Remarks

- Storage: below 30°C –
- Never use phenytoin after expiry date (risk of underdosage).

POTASSIUM CHLORIDE (Kaleorid®, Slow-K®...)

1

Therapeutic action

- Potassium supplementation

Indications

- Hypokalaemia:
 - following treatment with potassium-wasting diuretics or corticosteroids
 - of other origin (dehydration...)

Presentation

- 600 mg potassium chloride tablet = 8 mmol (mEq) of K⁺
- 500 mg tablet potassium chloride = 6.7 mmol (mEq) of K⁺

WARNING, STRENGTHS VARY WITH MANUFACTURERS.

Dosage

- Adult: 15 to 25 mmol/day = 1 to 3 g/day in 2 to 3 divided doses, to be taken at the end of meals.
- Do not exceed indicated doses if potassium serum levels cannot be measured.
- Use extended-release tablets.

Duration: according to clinical response and duration of diuretic treatment

Contra-indications, adverse effects, precautions

- May cause: nausea, vomiting, duodenal ulcers and epigastric pain, in particular when using rapid-release tablets.
- Do not combine with spironolactone and other potassium-sparing diuretics.
- Reduce dosage in elderly patients and in renal failure.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- When it is possible to monitor serum-potassium levels, higher doses may be given: if serum-potassium level is lower than 3.6 mmol/l, start with 52 mmol/day (4 g potassium chloride / day).
- If tablets are not available, a lack of potassium may be corrected by a diet rich in dates, bananas, mangos, oranges, tomatoes...
- One ORS sachet contains 1,5 g of potassium chloride.
- Storage: 

PRAZIQUANTEL (Biltricide®, Cysticide®...)

Prescription under medical supervision

Therapeutic action

- Anthelminthic

Indications

- Urinary schistosomiasis (*S. haematobium*)
- Intestinal schistosomiases (*S. mansoni*, *S. japonicum*, *S. mekongi*, *S. intercalatum*)
- Taeniases (*Taenia saginata*, *Taenia solium*, *Diphyllobothrium latum*, *Hymenolepis nana*)
- Cysticercosis
- Liver flukes (*Opisthorchis felineus*, *Opisthorchis viverrini*, *Clonorchis sinensis*)
- Lung fluke (*Paragonimus westermani*)
- Intestinal flukes (*Heterophyes heterophyes*, *Metagonimus yokogawai*, *Fasciolopsis buski*)

Presentation

- 150 mg and 600 mg tablets

Dosage and duration

Child over 4 years and adult:

- Schistosomiases: 40 to 60 mg/kg as a single dose
- Taeniases
 - *T. saginata*, *T. solium*: 5 to 10 mg/kg as a single dose
 - *D. latum*: 10 to 25 mg/kg as a single dose
 - *H. nana*: 15 to 25 mg/kg as a single dose
- Cysticercosis: 50 mg/kg/day in 3 divided doses for 14 days (up to 30 days depending on localization)
- Fluke infections
 - liver and lung: 75 mg/kg/day in 3 divided doses for 2 days
 - intestinal: 25 mg/kg as a single dose

Contra-indications, adverse effects, precautions

- Do not administer to patients with ocular cysticercosis.
- May cause:
 - gastrointestinal disturbances (abdominal pain, nausea, vomiting), headache, dizziness, drowsiness,
 - rarely: allergic reactions.
- Pregnancy: no contra-indication for the treatment of schistosomiases and *T. solium* infections (taeniasis, cysticercosis). For the other indications, treatment can usually be deferred until after delivery.
- Breast-feeding: no contra-indication

Remarks

- In the event of neurocysticercosis, give prednisolone 2 or 3 days before treatment and continue for the duration of treatment with praziquantel.
- Praziquantel is not active against *Fasciola hepatica* or *Fasciola gigantica*. Use triclabendazole.
- Storage: 

PREDNISOLONE (Prednesol®, Solupred®...) and PREDNISONE (Cortancyl®, Ultracorten®...)



Prescription under medical supervision

1

Therapeutic action

- Steroidal anti-inflammatory drug (corticosteroid)

Indications

- Symptomatic treatment of:
 - allergic diseases
 - inflammatory diseases
 - severe asthma

Presentation

- 5 mg tablet

Dosage

- | | | |
|----------|--------------------------------|--|
| - Child: | initial dose: 1 to 2 mg/kg/day | maintenance dose: 0.1 to 0.5 mg/kg/day |
| - Adult: | initial dose: 20 to 80 mg/day | maintenance dose: 5 to 20 mg/day |

AGE	0 months	1 year	5 years	15 years	ADULT
WEIGHT	4 kg	8 kg	15 kg	35 kg	
<i>Initial dose</i> 5 mg tablet	Adjust the dose				
<i>Maintenance dose</i> 5 mg tablet			1/2 tab	1 tab	2 tab

- In case of prolonged treatment, do not stop abruptly. Decrease dose by 5 mg each day.
- Administer preferably once daily, in the morning.

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not administer if:
 - peptic ulcer (except if ulcer under treatment),
 - bacterial infections not controlled by antibiotics, and/or viral infections.
- May cause: hypokalaemia, osteoporosis in case of prolonged treatment; oedema and hypertension due to sodium and water retention.
- Risk of adrenal suppression if prolonged treatment with daily doses of 15 to 20 mg.
- If administration of more than 20 mg daily, a salt-free diet and potassium supplement are recommended.
- In the event of acute adrenal failure, prescribe hydrocortisone: 100 to 300 mg IV.
- *Pregnancy:* avoid during the first trimester
- *Breast-feeding:* avoid

Remarks

- 5 mg prednisolone has the same anti-inflammatory activity as:
 - 5 mg prednisone
 - 0.75 mg dexamethasone
 - 4 mg methylprednisolone
 - 20 mg hydrocortisone
- *Storage:* below 30°C -

PROGUANIL (Paludrine®...)

Therapeutic action

- Antimalarial

Indications

- Malaria prophylaxis in non immune persons, in combination with chloroquine

Presentation

- 100 mg tablet

Dosage

- Child: 3 mg/kg/day in combination with chloroquine
- Adult: 200 mg/day in combination with chloroquine

Age	Weight	100 mg tablet
Under 8 months	5 to 8 kg	1/4 tab/day
8 months to 3 years	9 to 16 kg	1/2 tab/day
4 to 7 years	17 to 24 kg	3/4 tab/day
8 to 10 years	25 to 35 kg	1 tab/day
11 to 13 years	36 to 50 kg	1 1/2 tab/day
14 years and over	50 kg and over	2 tab/day

Duration

- Start proguanil (combined with chloroquine) 24 hours before departure, continue throughout the stay and for at least 4 weeks after return.

Contra-indications, adverse effects, precautions

- May cause: mild and transient gastrointestinal disturbances, aphthous ulceration.
- Reduce dose in patients with renal impairment.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Take tablets with water, every day at the same time, after a meal.
- A fixed-dose combination of proguanil 200 mg + chloroquine 100 mg (Savarine®) can be used in adults (1 tab/day). Due to its strength, it cannot be used in children under 15 years.
- A fixed-dose combination tablets of proguanil-atovaquone (Malarone®) are also used in malaria prophylaxis: proguanil 100 mg + atovaquone 250 mg: 1 tab/day in children over 40 kg and adults; proguanil 25 mg + atovaquone 62.5 mg in children under 40 kg: 1 tab/day from 11 to 20 kg; 2 tab/day from 21 to 30 kg; 3 tab/day from 31 to 40 kg. For this combination, start 24 hours before departure, continue throughout the stay and for at least 7 days after return.
- Storage: below 30°C -  - 

PROMETHAZINE (Phenergan®...)



Prescription under medical supervision

1

Therapeutic action

- Sedating antihistaminic, anti-emetic

Indications

- Allergic reactions (contact dermatitis, seasonal allergy; allergy to drugs, insect bites, food, etc.)
- Nausea and vomiting

Presentation

- 25 mg tablet
- Also comes in 10 mg tablets and 1 mg / ml syrup.

Dosage

- *Allergic reactions*
Child from 2 to 5 years: 5 to 15 mg once daily or in 2 divided doses
Child from 5 to 10 years: 10 to 25 mg once daily or in 2 divided doses
Child over 10 years and adult: 25 to 50 mg once daily or in 2 divided doses
- *Nausea and vomiting*
Child from 2 to 10 years: 10 to 25 mg to be repeated every 6 hours if necessary
Child over 10 years and adult: 25 mg to be repeated every 6 hours if necessary

Duration

- According to clinical response, single dose or for a few days if necessary

Contra-indications, adverse effects, precautions

- Do not administer to patients with urethro-prostatic disorders, glaucoma.
- Do not exceed indicated doses.
- Do not drink alcohol during treatment.
- Avoid in children under 2 years (safety is not established).
- May cause: drowsiness (administer preferably once daily at night), dryness of the mouth, constipation, urinary retention, blurred vision.
- Risk of increased sedation when combined with alcohol and drugs acting on the central nervous system: opioid analgesics, neuroleptics (chlorpromazine, haloperidol, etc.), other antihistamines (chlorphenamine), antidepressants (clomipramine, fluoxetine, etc.), phenobarbital, etc.
- Pregnancy: avoid at the end of pregnancy; no prolonged treatment
- Breast-feeding: not recommended (drowsiness and risk of apnoea in the newborn infant)

Remarks

- Storage: below 30°C –

PYRANTEL

(Combantrin®...)

Therapeutic action

- Anthelminthic

Indications

- Ascariasis
- Enterobiasis
- Ancylostomiasis
- Trichinellosis

Presentation

- 250 mg pyrantel embonate chewable tablet
- Oral suspension, 50 mg pyrantel embonate per ml

Dosage and duration

- *Ascariasis*
Child and adult: 10 mg/kg as a single dose
- *Enterobiasis*
Child and adult: 10 mg/kg as a single dose followed by a second dose after 2 to 4 weeks
- *Ancylostomiasis*
Child and adult: 10 mg/kg as a single dose; in severe infection, 10 mg/kg once daily for 4 days
- *Trichinellosis*
Child and adult: 10 mg/kg once daily for 5 days

Contra-indications, adverse effects, precautions

- May cause: gastrointestinal disturbances, headache, dizziness, drowsiness, skin rash.
- Reduce dosage in patients with hepatic impairment.
- Pregnancy: avoid during the first trimester
- Breast-feeding: no contra-indication

Remarks

- Preferably use albendazole or mebendazole for these indications. However, when these drugs are contra-indicated, e.g. in children under one year, pyrantel is an alternative.
- Storage: 

PYRAZINAMIDE (Trebazid®, Zinamide®...)



Prescription under medical supervision

1

Therapeutic action

- Antituberculous antibacterial

Indications

- Tuberculosis

Presentation

- 400 mg and 500 mg tablets

Dosage

- Child and adult:
 - Daily treatment: 25 mg/kg once daily, do not exceed 2 g/day in adults or
 - Intermittent treatment: 35 mg/kg 3 times weekly

Duration: according to protocol

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe hepatic impairment.
- Reduce the dose in patients with renal impairment.
- May cause: arthralgia, jaundice, anorexia, nausea, vomiting, skin rash, attack of gout.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Before starting antituberculosis treatment the following conditions should be met: protocols conform to international recommendations; regular patient follow-up for the duration of treatment; regular, uninterrupted supply of drugs and laboratory reagents; active tracing of defaulting patients.
- Pyrazinamide should not be used alone, but in combination with other antituberculosis drugs in order to avoid the emergence of resistance.
- Fixed-dose combination tablets incorporating pyrazinamide and 2 or 3 other antituberculosis drugs exist.
- Storage: below 30°C –

PYRIDOXINE = VITAMIN B6 (Benadon®, Pyroxin®...)

Therapeutic action

- Vitamin

Indications

- Prevention and treatment of vitamin B6 deficiency and isoniazid neuropathy

Presentation

- 25 mg and 50 mg tablets
- Also comes in 10 mg tablet.

Dosage

- Deficiency state, treatment of isoniazid neuropathy
Adult: 150 mg/day in 3 divided doses
- Prevention of isoniazid neuropathy
Adult: 10 mg once daily

Duration

- According to clinical response or as long as treatment with isoniazid continues.

Contra-indications, adverse effects, precautions

- No contra-indication.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Storage: no special temperature requirements – 

PYRIMETHAMINE (Daraprim®, Malocide®...)



Prescription under medical supervision

1

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 cotrimoxazole cannot be used)
- Second-line treatment of isosporiasis in immunodeficient patients (only if cotrimoxazole cannot be used)

Presentation

- 25 mg tablet

Dosage and duration

- *Treatment of toxoplasmosis*
Adult: 200 mg in 2 divided doses on the first day, then 75 to 100 mg / day for at least 6 weeks
- *Secondary prophylaxis of toxoplasmosis*
Adult: 25 to 50 mg / day, as long as necessary
- *Primary prophylaxis of toxoplasmosis*
Adult: 50 to 75 mg / week, as long as necessary
- *Treatment of isosporiasis*
Adult: 50 to 75 mg / day 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 folinic acid deficiency.
- Administer calcium folinate to prevent folinic acid deficiency.
- Avoid if possible combination with other folate antagonists: cotrimoxazole, methotrexate (increased risk of folinic acid deficiency).
- Monitor combination with zidovudine (increased risk of zidovudine-associated haemotoxicity).
- Pregnancy: CONTRA-INDICATED during the first trimester
- Breast-feeding: no contra-indication; however avoid concomitant administration of other folate antagonists

Remarks

- The combination of pyrimethamine + sulfadoxine (Fansidar®) is used for the treatment of uncomplicated falciparum malaria.
- Storage: below 30°C

QUININE

Prescription under medical supervision

Therapeutic action

- Antimalarial

Indications

- Treatment of uncomplicated falciparum malaria
- Shift from injectable to oral quinine

Presentation

- 200 mg and 300 mg quinine sulfate or hydrochloride tablets
Also comes in 100 mg, 250 mg and 500 mg tablets.

Dosage

Dosage and strengths are expressed in salt. With the exception of quinine bisulfate, the dosage is the same for all quinine salts (formate, sulfate, hydrochloride, dihydrochloride).

- Child and adult d 50 kg: 30 mg/kg/day in 3 divided doses at 8-hour intervals
- Adult > 50 kg: 1800 mg/day in 3 divided doses at 8-hour intervals

Weight	200 mg tablet	300 mg tablet
3 to 6 kg	1/4 tab x 3	-
7 to 12 kg	1/2 tab x 3	-
13 to 17 kg	-	1/2 tab x 3
18 to 25 kg	1 tab x 3	-
26 to 35 kg	-	1 tab x 3
36 to 50 kg	2 tab x 3	-
> 50 kg	3 tab x 3	2 tab x 3

As bisulfate tablets contain a lower concentration of quinine, a higher dose is required (child: 40 mg/kg/day ; adult: 2 to 2.5 g/day).

Duration

- 7 days

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.
- If the patient vomits within one hour after administration: repeat the full dose.
- Do not combine with coartemeter, chloroquine, halofantrine, mefloquine.
- Pregnancy: no contra-indication. Do not exceed therapeutic dose.
- Breast-feeding: no contra-indication

Remarks

- In certain regions of South-East Asia, quinine is combined with doxycycline (100 mg/day for 7 days) or clindamycin (20 mg/kg/day for 5 days), due to a reduction in quinine sensitivity of *P. falciparum*.
- Quinine should not be used for prophylaxis.
- Storage: below 30°C - 

RESOMAL

Rehydration Solution for Malnutrition

1

Therapeutic action

- Oral rehydration salts with high potassium and low sodium contents

Indications

- Prevention and treatment of dehydration, in patients suffering from complicated acute malnutrition only

Presentation

- Sachet containing 84 g of powder, to be diluted in 2 litres of clean, boiled and cooled water
- Sachet containing 420 g of powder, to be diluted in 10 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 under 2 years: 50 to 100 ml after each loose stool as long as diarrhoea persists

Child over 2 years: 100 to 200 ml after each loose stool as long as diarrhoea persists

Adult: 200 to 400 ml after each loose stool as long as diarrhoea persists

- *Treatment of dehydration*

Child and adult: 5 ml/kg every 30 minutes over the first 2 hours, then 5 to 10 ml/kg/hour for the next 4 to 10 hours, until dehydration is corrected.

Contra-indications, adverse effects, precautions

- Do not administer to patients with cholera or uncomplicated acute malnutrition: use standard ORS instead.
- May cause: heart failure when administered too rapidly. During treatment, closely monitor the rate of administration in order to avoid overhydration. Increase in respiratory and pulse rates and appearance or increase of oedema are signs of over rapid rehydration. In this event, stop ReSoMal for one hour then reassess the patient's condition.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Storage: below 30°C –  – 

Do not use the powder if it has turned sticky.

Once prepared, the solution should be used within 24 hours.

RETINOL = VITAMIN A

Therapeutic action

- Vitamin

Indications

- Prevention of vitamin A deficiency
- Treatment of vitamin A deficiency (xerophthalmia)

Presentation

- 200 000 IU capsule

Also comes in 10 000 IU coated tablet, 50 000 IU capsule and 100 000 IU/ml oral solution.

Dosage and duration

- *Prevention of vitamin A deficiency*

Child under 6 months: 50 000 IU as a single dose

Child from 6 months to 1 year: 100 000 IU as a single dose every 4 to 6 months

Child over 1 year and adult: 200 000 IU as a single dose every 4 to 6 months

- *Treatment of vitamin A deficiency (xerophthalmia)*

Child under 6 months: 50 000 IU once daily at Day 1, Day 2 and Day 8 or 15

Child from 6 months to 1 year: 100 000 IU once daily at Day 1, Day 2 and Day 8 or 15

Child over 1 year and adult: 200 000 IU once daily at Day 1, Day 2 and Day 8 or 15

AGE	0	6 months	1 year	5 years	15 years	ADULT
WEIGHT		6 kg	8 kg	15 kg	35 kg	
<i>Prevention</i>						
50 000 IU capsule	1 cap	2 cap	-	-	-	
200 000 IU capsule	2 drops	4 drops	1 cap	1 cap	1 cap	1 cap
<i>Treatment</i>						
50 000 IU capsule	1 cap	2 cap	-	-	-	
200 000 IU capsule	2 drops	4 drops	1 cap	1 cap	1 cap	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 of vitamin A deficiency: do not administer during pregnancy. After delivery, administer 200 000 IU as a single dose.

Treatment of vitamin A deficiency: dosage depends on severity of eye lesions:

- *Mild xerophthalmia (night blindness, Bitot's spots): 10 000 IU once daily or 25 000 IU once weekly for at least 4 weeks.*
- *Severe xerophthalmia (corneal lesion): 200 000 IU once daily at Day 1, Day 2 and Day 8 or 15*
- Breast-feeding: no contra-indication at recommended doses

Remarks

- Administer preventive treatment systematically to all children suffering from malnutrition (single dose).
- Administer curative treatment (3 days) systematically to children suffering from measles to prevent the potential complications of measles.
- One 200 000 IU capsule contains about 8 drops (1 drop = 25 000 IU).
- Storage: below 25°C - 

RIFAMPICIN (Rifadin®...)



Prescription under medical supervision

1

Therapeutic action

- Antituberculous and antileprotic antibacterial

Indications

- Tuberculosis
- Paucibacillary and multibacillary leprosy

Presentation

- 150 mg and 300 mg tablets or capsules

Dosage

- *Tuberculosis*

Child and adult:

10 mg/kg once daily, on an empty stomach, do not exceed 600 mg/day or 10 mg/kg 3 times weekly, on an empty stomach

- *Paucibacillary and multibacillary leprosy*

Child under 10 years: 12 to 15 mg/kg once monthly, on an empty stomach

Child from 10 to 14 years: 450 mg once monthly, on an empty stomach

Adult: 600 mg once monthly, on an empty stomach

Duration

- *Tuberculosis*: according to protocol

- *Paucibacillary leprosy*: 6 months; *multibacillary leprosy*: 12 months

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe hepatic impairment, allergy to rifampicin.

- May cause:

- skin reactions, gastrointestinal disturbances, liver disorders (jaundice);
- influenza-like syndrome; rarely: thrombocytopenia (particularly with intermittent treatment);
- orange-red discolouration of secretions (urine, tears, saliva, sputum).

If the patient presents purpura or jaundice, stop treatment until the signs resolve.

- Rifampicin accelerates the metabolism of several drugs. Increase the dosage of drugs involved, especially: oral contraceptives, corticosteroids, cimetidine, digitalis alkaloids, glibenclamide, anticoagulants etc.

- Do not give simultaneously with:

- an antacid (aluminium hydroxide, etc.): administer 2 hours apart,
- fluconazole: administer 12 hours apart (rifampicin morning, fluconazole evening).

- Pregnancy: no contra-indication. Increased risk of haemorrhagic disease of the newborn when the mother receives rifampicin in late pregnancy. Administer preventive doses of vitamin K to mothers and neonates.

- Breast-feeding: no contra-indication

Remarks

- Before starting antituberculosis treatment the following conditions should be met: protocols conform to international recommendations; regular patient follow-up for the duration of treatment; regular, uninterrupted supply of drugs and laboratory reagents; active tracing of defaulting patients.

- Rifampicin must not be used alone but in combination with other antituberculosis or antileprotic drugs.

- Fixed-dose combination tablets incorporating rifampicin + one, 2 or 3 other antituberculosis drugs exist.

- For the treatment of *single-lesion* paucibacillary leprosy, rifampicin may be used in combination with ofloxacin and minocycline, as a single-dose treatment.

- Rifampicin may be used in combination with cotrimoxazole for the treatment of brucellosis in children under 8 years and pregnant or lactating women.

- Storage: below 30°C -

RITONAVIR = RTV (Norvir®)

Prescription under medical supervision

Therapeutic action

- Antiretroviral, HIV-1 and HIV-2 protease inhibitor

Indications

- Booster for protease inhibitors (indinavir, lopinavir, saquinavir) in HIV-1 or HIV-2 infection

Presentation

- 100 mg capsule
- 400 mg/5 ml oral solution, containing 43% alcohol (v/v)

Dosage

- Child from 6 months to 13 years:
 - Capsule: 8 mg/kg/day in 2 divided doses, without exceeding 200 mg/day
 - Oral solution: 0.10 ml/kg/day in 2 divided doses, without exceeding 2.5 ml/day
- Adult:
 - Capsule: 200 mg/day in 2 divided doses
 - Oral solution: 2.5 ml/day in 2 divided doses

Age	80 mg/ml oral solution	100 mg capsule
Child from 6 months to 5 years	0.05 ml/kg x 2	-
Child 6 to 13 years	0.05 ml/kg x 2 maximum dose: 1.25 ml x 2	1 cap x 2
Adult	1.25 ml x 2	1 cap x 2

Duration

- The duration of treatment depends on the efficacy and tolerance of ritonavir.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe hepatic impairment.
- May cause: gastrointestinal disturbances, allergic reactions sometimes severe, neuropsychic disorders (peripheral neuropathy, headache, dizziness, sleep disorders, paraesthesia), vasodilation and orthostatic hypotension, metabolic disorders (lipodystrophy, hyperlipidaemia, diabetes mellitus with glucose intolerance and/or insulin resistance), hepatic disorders (jaundice, raised transaminases), pancreatitis, neutropenia, raised creatinine phosphokinase.
- Ritonavir reduces the efficacy of oestrogen-progestogen oral contraceptives: offer an alternative or make sure that there is more than 20 µg ethynodiol diacetate per tablet.
- Do not combine with diazepam (risk of respiratory depression).
- Administer with caution to patients with haemophilia (risk of haemorrhage) and, for oral solution, to patients with hepatic disease or epilepsy.
- Pregnancy: no contra-indication
- Breast-feeding: not recommended

Remarks

- Take with meals.
- Also comes in fixed-dose combination tablets incorporating lopinavir-ritonavir (Kaletra®).
- Storage:
 - Capsule: to be kept refrigerated (2°C to 8°C). The patient may keep an opened bottle of capsules for 30 days if stored below 25°C.
 - Oral solution: between 20°C to 25°C for 30 days maximum. Do not refrigerate.

SALBUTAMOL = ALBUTEROL (Ventolin®...)

Prescription under medical supervision

1

Therapeutic action

- Bronchodilator

Indications

- Treatment of persistent asthma not controlled by inhaled corticosteroids (beclometasone)

Presentation

- 2 mg and 4 mg tablets
- 2 mg/5 ml syrup

Dosage

- Child from 2 to 6 years: 3 to 6 mg/day in 3 divided doses
- Child from 6 to 12 years: 6 mg/day in 3 divided doses
- Child over 12 years and adult: 6 to 12 mg/day in 3 divided doses

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Administer with caution to patients with diabetes mellitus, hyperthyroidism, arrhythmia, angina, hypertension.
- May cause: tachycardia, tremor, headache, dizziness, hypokalaemia, hyperglycaemia, gastrointestinal disturbances.
- Monitor combination with: furosemide, hydrochlorothiazide, corticosteroids, theophylline (increased risk of hypokalaemia).
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Oral salbutamol is not indicated in the treatment of asthma crisis: use inhaled salbutamol.
- Oral salbutamol is not very effective in children under 2 years.
- Storage: below 30°C - 

SALBUTAMOL aerosol = ALBUTEROL aerosol (Salbutin®, Ventolin®...)

Prescription under medical supervision

Therapeutic action

- Bronchodilator

Indications

- Asthma attack

Presentation

- Pressurized inhalation solution, 100 micrograms/inhalation

Dosage and administration technique

- Child: 100 micrograms (1 inhalation) to be repeated after a few minutes if necessary
- Adult: 100 to 200 micrograms (1 or 2 inhalations) to be repeated 1 or 2 times after a few minutes if necessary. Do not exceed 15 inhalations/day.

Shake the inhaler. 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. Verify that the inhalation technique is correct.

Co-ordination between the hand and inhalation is very difficult in certain patients (children under 6 years, elderly patients, patients with severe dyspnoea, etc.). Use a spacer to facilitate administration and improve the efficacy of treatment.

Contra-indications, adverse effects, precautions

- May cause: tremor, tachycardia, headache, dizziness, especially after repeated use or abuse.
- In the event of bronchial infection, administer simultaneously with appropriate antibiotic treatment.
- If usual effective doses become insufficient, consider another route of administration (nebulisation, injection) and re-evaluate the severity of asthma.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Clean the mouthpiece before and after each use.
- Do not pierce or incinerate used aerosol containers. Empty all residual gas, then bury.
- Storage: below 30°C

SAQUINAVIR = SQV (Fortovase®, Invirase®)

Prescription under medical supervision

1

Therapeutic action

- Antiretroviral, HIV-1 and HIV-2 protease inhibitor

Indications

- HIV-1 or HIV-2 infection, in combination with two nucleoside reverse transcriptase inhibitors and with low-doses of ritonavir as booster

Presentation

- 200 mg capsule or soft capsule

Dosage

- Adult: 2 g / day in 2 divided doses (in combination with 200 mg of ritonavir / day in 2 divided doses)

Duration

- The duration of treatment depends on the efficacy and tolerance of saquinavir.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe hepatic impairment.
- Do not administer to patients under 16 years of age.
- May cause:
 - neurological disorders (peripheral neuropathy, paraesthesia), hepatic disorders (jaundice, raised transaminases), metabolic disorders (lipodystrophy, hyperlipidaemia, diabetes mellitus with glucose intolerance and / or insulin resistance),
 - gastrointestinal disturbances, headache, fatigue, fever, rash, pruritus; neutropenia, thrombocytopenia, raised creatinine phosphokinase.
- Do not combine with rifampicin (hepatotoxicity).
- Administer with caution to patients with haemophilia (risk of haemorrhage) or renal or hepatic impairment.
- *Pregnancy: no contra-indication*
- *Breast-feeding: not recommended*

Remarks

- Take with meals or immediately after meals.
- *Storage:*
 - Capsule: below 30°C
 - Soft capsule: to be kept refrigerated (2°C to 8°C). The patient may keep an opened bottle of soft capsules for 3 months if stored below 25°C.

SPIRONOLACTONE

(Aldactone®, Spiroctan®...)

Prescription under medical supervision

Therapeutic action

- Potassium-sparing diuretic, antagonist of aldosterone

Indications

- Oedema associated with hepatic cirrhosis, heart failure, nephrotic syndrome
- Hypertension
- Primary hyperaldosteronism

Presentation

- 25 and 50 mg tablets
- Also comes in 75 and 100 mg tablets.

Dosage

- Child: 2 mg/kg/day in 2 to 3 divided doses
- Adult:
 - Initial dose: 50 to 100 mg/day, increased up to 300 mg/day in severe cases if necessary.
 - In case of primary hyperaldosteronism: 300 mg/day, adjusted according to patient's response

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not administer if severe renal failure, hyperkalaemia, known hypersensitivity to spironolactone.
- May cause:
 - endocrine disorders: gynaecomastia, impotence, amenorrhoea;
 - gastro-intestinal disorders, headache, skin rash, drowsiness;
 - hyperkalaemia.
- Do not combine with:
 - potassium salts, other potassium-sparing diuretics;
 - angiotensin-converting-enzyme inhibitors.
- Administer with caution in hepatic or renal failure, diabetes.
- Monitor regularly plasma-potassium levels.
- Pregnancy: CONTRA-INDICATED
- Breast-feeding: CONTRA-INDICATED

Remarks

- Spironolactone is frequently combined with other diuretics, thiazides or furosemide: it enhances their natriuretic effects. Nevertheless, combination may cause hypokalaemia or hyperkalaemia, especially in cases of diabetes and renal failure.
- Avoid prolonged use.
- Storage: below 30°C – 

STAVUDINE = d4T
(Stavir®, Zerit®, Zeritavir®)

Prescription under medical supervision

1

Therapeutic action

- Antiretroviral, HIV-1 and HIV-2 nucleoside reverse transcriptase inhibitor

Indications

- HIV-1 or HIV-2 infection, in combination with other antiretroviral drugs

Presentation

- 15 mg, 20 mg, 30 mg and 40 mg capsules
- Powder for oral solution, 5 mg/5 ml

Dosage

- Child over 3 months and under 30 kg: 2 mg/kg/day in 2 divided doses
- Child 30 kg and over: 60 mg/day in 2 divided doses
- Adult under 60 kg: 60 mg/day in 2 divided doses
- Adult 60 kg and over: 80 mg/day in 2 divided doses

Weight	1 mg/ml oral solution	Capsules			
		15 mg	20 mg	30 mg	40 mg
5 to 9 kg	7.5 ml x 2	—	—	—	—
10 to 14 kg	12.5 ml x 2	1 caps x 2	—	—	—
15 to 19 kg	18 ml x 2	—	1 caps x 2	—	—
20 to 24 kg	—	—	1 caps x 2	—	—
25 to 29 kg	—	—	—	1 caps x 2	—
30 to 60 kg	—	—	—	1 caps x 2	—
> 60 kg	—	—	—	—	1 caps x 2

Duration

- The duration of treatment depends on the efficacy and tolerance of stavudine.

Contra-indications, adverse effects, precautions

- Do not administer to patients with history of peripheral neuropathy or pancreatitis.
- May cause:
 - peripheral neuropathy, metabolic disorders (lipodystrophy, hyperlipidaemia, etc.), gastrointestinal disturbances (diarrhoea, nausea, vomiting, etc.),
 - lactic acidosis, pancreatic and hepatic disorders (if so stop taking stavudine).
- Do not combine with zidovudine.
- Reduce dosage in patients with renal impairment.
- Pregnancy: no contra-indication. Do not combine with didanosine, except if there is no alternative.
- Breast-feeding: not recommended

Remarks

- Also comes in fixed-dose combination tablets incorporating stavudine-lamivudine-nevirapine (Triomune®, Triviro®...) or stavudine-lamivudine (Coviro®...).
- Storage: below 30°C
Once prepared, the oral solution must be kept refrigerated (2°C to 8°C) and may be used for up to 30 days.

STAVUDINE + LAMIVUDINE + NEVIRAPINE = d4T + 3TC + NVP

(Triomune30®, Triomune40®, Triviro30®, Triviro40®...)

Prescription under medical supervision

Therapeutic action

- Combination of 3 antiretrovirals

Indications

- HIV-1 infection

Presentation

- 30 mg d4T + 150 mg 3TC + 200 mg NVP tablet
- 40 mg d4T + 150 mg 3TC + 200 mg NVP tablet

Dosage

- Child over 10 kg and adolescent: see table below
- Adult < 60 kg: two 30 mg d4T + 150 mg 3TC + 200 mg NVP tablet/day in 2 divided doses
- Adult ≥ 60 kg: two 40 mg d4T + 150 mg 3TC + 200 mg NVP tablet/day in 2 divided doses

Weight	30 mg d4T tablet	40 mg d4T tablet
10 to 14 kg	1/2 tab x 2	-
15 to 19 kg	1/2 tab x 2	-
20 to 24 kg	-	1/2 tab x 2
25 to 59 kg	1 tab x 2	-
≥ 60 kg	-	1 tab x 2

Duration

- The duration of treatment depends on the efficacy and tolerance of treatment.

Contra-indications, adverse effects, precautions

- Do not administer to patients with history of: peripheral neuropathy, pancreatitis, hepatic disorders, severe intolerance to nevirapine that led to permanent discontinuation of treatment.
- May cause:
 - adverse effects common to all 3 antiretrovirals: gastrointestinal disturbances,
 - adverse effects of stavudine: lactic acidosis, pancreatic or hepatic disorders (in these cases, stop taking stavudine), peripheral neuropathy, metabolic disorders (lipodystrophy, hyperlipidaemia, etc.),
 - adverse effects of lamivudine: haematological disorders, myopathy, pancreatic or hepatic disorders,
 - adverse effects of nevirapine: allergic reactions and hepatic disorders sometimes severe (Lyell's and Stevens-Johnson syndromes; fulminant hepatitis) that require immediate and permanent discontinuation of nevirapine; headache.
- Monitor liver enzyme level (ALAT) during the first 2 months, then every 3 to 6 months. If the enzyme level reaches 5 times the normal level, stop nevirapine immediately.
- Nevirapine reduces the efficacy of oestrogen-progestogen oral contraceptives: offer an alternative or make sure that there is more than 20 µg ethynodiol diacetate per tablet.
- Do not combine with zidovudine (antagonism with stavudine); avoid combination with rifampicin (decreases the efficacy of nevirapine).
- Reduce dosage in patients with renal impairment.
- Pregnancy: no contra-indication
- Breast-feeding: not recommended

Remarks

- Tablets are not scored. When half a tablet is required, use a cutter to cut the tablet into two equal parts.
- To improve tolerance of nevirapine, it is necessary to administer low doses for the first 14 days of treatment. Start triple therapy therefore buy combining d4T + 3TC tablets (Coviro®...) and nevirapine tablets (Neravir®, Nevimune®, Viramune®). After the initial 14-day phase of treatment, use the co-formulation d4T + 3TC + NVP.
- Storage: below 25°C

SULFADIAZINE (Adiazine®...)

Prescription under medical supervision

1

Therapeutic action

- Sulfonamide antibacterial

Indications

- Treatment and secondary prophylaxis of toxoplasmosis in immunodeficient patients, in combination with pyrimethamine

Presentation

- 500 mg tablet

Dosage and duration

- *Treatment of toxoplasmosis*
Adult: 4 to 6 g/day in 2 to 3 divided doses for 6 weeks minimum
- *Secondary prophylaxis of toxoplasmosis*
Adult: 2 to 3 g/day in 2 divided doses, 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 folinic 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 folinic 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 premature infant, jaundice, low-birth weight, infant under one month of age. If sulfadiazine is used, observe the infant for signs of jaundice.*

Remarks

- Storage: 

SULFADOXINE + PYRIMETHAMINE = SP (Fansidar®...)

Prescription under medical supervision

Therapeutic action

- Antimalarial

Indications

- Treatment of uncomplicated falciparum malaria, in combination with artesunate

Presentation

- 500 mg sulfadoxine + 25 mg pyrimethamine tablet

Dosage and duration

- Child over 2 months and adult: 25 mg/kg sulfadoxine + 1.25 mg/kg pyrimethamine as a single dose

Weight	5 kg	10 kg	20 kg	30 kg	≥ 45 kg
500 mg + 25 mg tablet	1/2 tab	1 tab	1 1/2 tab	2 tab	3 tab

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to sulfonamides, severe hepatic or renal impairment.
- May cause: gastrointestinal disturbances, allergic reactions sometimes severe (Lyell's and Stevens-Johnson syndromes), anaemia, leucopenia, agranulocytosis, thrombocytopenia, haemolytic anaemia in patients with G6PD deficiency.
- Do not combine with: coartemether, methotrexate, phenytoin.
- Do not give folic acid neither the same day nor within one week after SP administration.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- The combination artesunate-SP exists in co-blister (Arsudar®, etc.). The two active ingredients are not combined in the same tablet but are presented in the same blister to facilitate compliance.
- In areas of high transmission, intermittent presumptive treatment with SP can be given to pregnant women in the 2nd and 3rd trimester to reduce the consequences of malaria (anaemia, low birth weight, etc.). Check for national recommendations.
- Sulfadoxine + pyrimethamine should not be used for prophylaxis.
- Storage:

THIAMINE = ANEURINE = VITAMIN B1

(Benerva®, Betaxin®...)

1

Therapeutic action

- Vitamin: vitamin B1 deficiency leads to beri-beri

Indications

- Beri-beri: neurological (dry beri-beri) or cardiac (wet beri-beri) forms
- Polyneuritis in alcoholics or those due to nutritional deficiencies

Presentation

- 50 mg tablet

Also comes in 10 mg, 25 mg, 100 mg and 250 mg tablets. Adjust dosage accordingly.

Dosage

- Prophylaxis

- Child and adult: 5 mg/day

Daily needs:	child:	0.3 to 1 mg/day
	adolescent and adult:	1.3 to 1.5 mg/day
	pregnancy and breast-feeding:	1.5 to 1.8 mg/day

- Treatment

- Child: 10 to 30 mg/day
- Adult: 50 to 100 mg/day, up to 300 mg if severe deficiency
to be taken once daily or in several divided doses

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
50 mg tablet	1/4 tab	1/4 tab	1/2 tab	1/2 tab x 2	1 tab x 2 to 6	

Duration: at least 1 month for treatment

Contra-indications, adverse effects, precautions

- No contra-indication, or adverse effects with oral vitamin B1.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- The use of injectable vitamin B1 is only justified in exceptional cases (cardiac failure or acute pulmonary oedema due to severe deficiency).
- Cereals, green vegetables, fish, meat, milk and eggs are good sources of vitamin B1.
- Storage: in airtight nonmetallic container – 

TINIDAZOLE

(Fasigyn®...)

Prescription under medical supervision

Therapeutic action

- Antiprotozoal, antibacterial

Indications

- Amoebiasis, giardiasis
- Trichomoniasis, bacterial vaginitis
- Infection due to *Helicobacter pylori*, in combination with omeprazole and amoxicillin
- Infections due to anaerobic bacteria (*Bacteroides* sp, *Clostridium* sp, etc.)

Presentation

- 500 mg tablet

Dosage and duration

- *Amoebiasis*

Child: 50 mg/kg once daily, without exceeding 2 g

Adult: 2 g once daily

For intestinal amoebiasis, administer treatment for 3 days; for extra-intestinal amoebiasis (hepatic, etc.) administer for 5 days.

- *Giardiasis, trichomoniasis, bacterial vaginitis*

Child: 50 mg/kg as a single dose, without exceeding 2 g

Adult: 2 g as a single dose

- *Infection due to Helicobacter pylori*

Adult: 1 g/day in 2 divided doses for 10 days, in combination with omeprazole and amoxicillin

- *Infections due to anaerobic bacteria*

Adult: initially 2 g then 1 g once or twice daily, in combination with an appropriate antibiotic if necessary. Duration of treatment must be adapted, according to indication and localisation, especially if elimination of the infectious focus is difficult.

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to tinidazole or another nitroimidazole (metronidazole, secnidazole, etc.).
- May cause: gastrointestinal disturbances, allergic reactions, headache, dizziness.
- Do not drink alcohol during treatment.
- Monitor combination with anticoagulants (increased risk of haemorrhage).
- Pregnancy: no contra-indication, avoid prolonged use
- Breast-feeding: avoid (significantly excreted in milk)

Remarks

- Secnidazole (Flagentyl®, Secnol®) is another nitroimidazole used as a single dose in the treatment of intestinal amoebiasis, giardiasis, trichomoniasis and bacterial vaginitis (child: 30 mg/kg; adult: 2 g).
- Storage: below 25°C - 

TRAMADOL

(Tramal®, Zamadol®, Zydol®...)



Prescription under medical supervision

1

Therapeutic action

- Centrally acting opioid analgesic

Indications

- Moderate acute and chronic pain

Presentation

- 50 mg tablet or capsule
Also comes in 100 mg, 150 mg and 200 mg sustained-release tablets or capsules and 100 mg/ml oral solution for paediatric use (1 ml = 40 drops).

Dosage

Adjust dosage according to patient's response and tolerance:

- Child over 1 year: 1 to 2 mg/kg, to be repeated every 6 to 8 hours
- Adult: 50 to 100 mg, to be repeated every 4 to 6 hours, without exceeding 400 mg/day
Tramadol should be administered at regular times intervals and not on demand.

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe respiratory depression or epilepsy.
- Do not administer to children under one year.
- Tablets and capsules are not intended for use in children under 25 kg.
- May cause: dizziness, nausea, vomiting, drowsiness, dry mouth, sweating; rarely: allergic reactions, seizures, confusion.
- Do not combine with: opioid analgesics with mixed agonist-antagonist activity such as buprenorphine, nalbuphine, pentazocine (competitive action), carbamazepine, neuroleptics.
- Reduce doses by half or administer every 12 hours in elderly patients and in patients with renal or hepatic impairment (risk of accumulation).
- Overdose may cause respiratory depression. Treat with naloxone.
- *Pregnancy: no contra-indication during the first and second trimester. Administer with caution during the third trimester (risk of respiratory depression and withdrawal symptoms in the newborn infant).*
- *Breast-feeding: no contra-indication for a short period, except in the event of respiratory pathology in the newborn infant. Monitor the newborn infant for adverse effects (drowsiness, etc.).*

Remarks

- Tramadol is a step 2 analgesic according to the WHO classification.
- Tramadol is 5 to 10 times less potent than morphine.
- In some countries, tramadol is on the list of narcotics: follow national regulations.
- Storage: –

TRICLABENDAZOLE

(Egaten®, Fasinex®)

Prescription under medical supervision

Therapeutic action

- Anthelminthic

Indications

- *Fascioliasis* (*Fasciola hepatica* and *Fasciola gigantica* infections)
- *Paragominiasis*

Presentation

- 250 mg tablet

Dosage and duration

- *Fascioliasis*
Child and adult: 10 mg/kg as a single dose
- *Paragominiasis*
Child and adult: 20 mg/kg in 2 divided doses

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 (Bitin®, Lorothidol®) may be used as an alternative to triclabendazole in the treatment of fascioliasis: 30 mg/kg/day for 5 days.
- Unlike infections with other flukes, fascioliasis does not respond to praziquantel.
- Storage: below 30°C – 

VALPROIC ACID = SODIUM VALPROATE (Convulex®, Depakine®, Epilim®...)



Prescription under medical supervision

1

Therapeutic action

- Antiepileptic

Indications

- Generalised and partial epilepsy

Presentation

- 200 mg and 500 mg enteric coated tablets
- Also comes in syrup and oral solution for paediatric use.

Dosage

- Child under 20 kg: 20 mg/kg/day in 2 divided doses
- Child over 20 kg: initially 400 mg (irrespective of weight) in 2 divided doses, then increase the dose gradually until the optimal dose is reached, usually 20 to 30 mg/kg/day in 2 divided doses
- Adult: initially 600 mg/day in 2 divided doses, then increase by 200 mg every 3 days until the optimal dose is reached, usually 1 to 2 g/day in 2 divided doses (20 to 30 mg/kg/day)

Duration: lifetime treatment

Contra-indications, adverse effects, precautions

- Do not administer to patients with pancreatitis, hepatic disease (or history of).
- May cause:
 - increase in the frequency of seizures at the beginning of therapy, weight gain, gastrointestinal disturbances, hepatic dysfunction,
 - rarely: pancreatitis, extrapyramidal symptoms, cognitive disorders and behavioral disturbances, confusion, severe allergic reactions (Lyell's and Stevens-Johnson syndromes), amenorrhoea; thrombocytopenia, prolongation of bleeding time.
- Monitor, if possible, liver transaminase concentrations and prothrombine time during first 3-6 months of therapy.
- Stop treatment in the event of jaundice or gastrointestinal manifestations of hepatitis, significant lasting increase of transaminases, prolonged prothrombine time.
- Reduce dosage in patients with renal impairment.
- Do not combine with mefloquine (increased risk of seizures).
- Monitor combination with: tricyclic antidepressants, other antiepileptics.
- If other antiepileptic drugs have been prescribed, reduce the dose of these drugs and increase the dose of valproic acid gradually over 2 weeks.
- Pregnancy: risk of neural tube defect, limb malformations and craniofacial abnormalities, if used during the first trimester. Do not start treatment during the first trimester, except if vital and there is no alternative. However, if treatment has been started before a pregnancy, do not stop treatment, administer the daily dose in smaller fractioned doses and monitor the newborn infant (risk of haemorrhagic disease, non related to vitamin K deficiency).
The administration of folic acid before conception and during the first trimester seems to reduce the risk of neural tube defect.
- Breast-feeding: no contra-indication

Remarks

- Take with meals.
- Storage: below 30°C -

ZIDOVUDINE = AZT = ZDV (Retrovir®)

Prescription under medical supervision

Therapeutic action

- Antiretroviral, HIV-1 and HIV-2 nucleoside reverse transcriptase inhibitor

Indications

- HIV-1 or HIV-2 infection, in combination with other antiretroviral drugs

Presentation

- 100 mg and 250 mg capsules and 300 mg tablet
- 50 mg/5 ml oral solution

Dosage

- Premature infant: 3 mg/kg/day in 2 divided doses for the first 2 weeks after birth then 8 mg/kg/day in 2 divided doses
- Child under 4 weeks: 8 mg/kg/day in 2 divided doses
- Child from 4 weeks to 13 years: 360 to 480 mg/m²/day in 2 divided doses
- Adult: 600 mg/day in 2 divided doses

Weight	Oral solution 10 mg/ml	100 mg capsule	250 mg capsule	300 mg tablet
5 to 6 kg	6 ml x 2	—	—	—
7 to 9 kg	8 ml x 2	—	—	—
10 to 14 kg	12 ml x 2	1 cap x 2	—	—
15 to 19 kg	17 ml x 2	2 cap x 2	—	—
20 to 24 kg	20 ml x 2	2 cap x 2	—	—
25 to 29 kg	25 ml x 2	3 cap x 2	1 cap x 2	1 tab x 2
30 to 39 kg	28 ml x 2	3 cap x 2	1 cap x 2	1 tab x 2
≥ 40 kg	—	3 cap x 2	—	1 tab x 2

Duration

- The duration of treatment depends on the efficacy and tolerance of zidovudine.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe haematological disorders (leukopenia, anaemia), to neonates with hyperbilirubinaemia or raised transaminases.
- May cause: haematological disorders (monitor CBC), gastrointestinal disturbances (nausea, diarrhoea, etc.), headache, myopathy, hepatic disorders, lactic acidosis. Stop taking zidovudine in the event of severe haematological disorders or hepatic disorders (hepatomegaly, raised transaminases).
- Reduce dosage in patients with severe renal or hepatic impairment.
- Do not combine with stavudine.
- Pregnancy: no contra-indication
- Breast-feeding: not recommended

Remarks

- For prophylactic treatment to reduce mother-to-child transmission, check national recommendations.
- Also comes in fixed-dose combination tablets incorporating zidovudine-lamivudine (Combivir®...) and zidovudine-lamivudine-abacavir (Trizivir®...).
- Storage: below 30°C. For capsules:  - 

ZINC SULFATE

1

Therapeutic action

- Micronutrient

Indications

- Zinc supplementation in combination with oral rehydration therapy in the event of acute and/or persistent diarrhoea in children under 5 years

Presentation

- 20 mg scored and dispersible tablet, packed in a blister
- 20 mg/5 ml syrup

Dosage and duration

- Child under 6 months: 10 mg once daily (1/2 tablet or 1/2 teaspoon once daily) for 10 days
- Child from 6 months to 5 years: 20 mg once daily (1 tablet or 1 teaspoon 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 in combination with oral rehydration solution 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).
- Zinc supplementation is not recommended in the event of diarrhoea in malnourished children taking therapeutic food (BP100®, Plumpy' nut®, milk F75® or F100®, etc.) as these foods already contain the required amount of zinc.
- Storage: below 30°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	195	Hydralazine	175
Adrenaline	168	Hydrocortisone	176
Albuterol	202	Hyoscine butylbromide	177
Aminophylline	145	Insulin	178
Amoxicillin	147	Insulin, intermediate-acting	180
Amphotericin B	146	Insulin, long-acting	180
Ampicillin	147	Insulin, short-acting	181
Aneurine	206	Ketamine	182
Artemether	148	Lidocaine	183
Atropine	149	Lignocaine	183
Benzathine benzylpenicillin	150	Magnesium sulfate	184
Benzylpenicillin	151	Medroxyprogesterone	186
Benzylpenicillin procaine	152	Metamizole	187
Benzylpenicillin procaine + benzylpenicillin	153	Methylergometrine	169
Bupivacaine	154	Metoclopramide	188
Butylscopolamine	177	Metronidazole	189
Calcium gluconate	155	Morphine	190
Ceftriaxone	156	Naloxone	191
Chloramphenicol	157	Noramidopyrine	187
Chloramphenicol, long-acting oil	158	Norethisterone	192
Chloroquine	159	Omeprazole	193
Chlorpromazine	160	Oxytocin	194
Clindamycin	161	Paracetamol	195
Cloxacillin	162	Penicillin G	151
Dexamethasone	163	Penicillin G procaine	152
Diazepam	164	Pentamidine	196
Diclofenac	165	Phenobarbital	197
Digoxin	166	Phytomenadione	198
Dipyrrone	187	Promethazine	199
Ephedrine	167	Protamine	200
Epinephrine	168	Quinine	201
Ergometrine	169	Salbutamol	202
Fortified penicillin procaine	153	Spectinomycin	204
Frusemide	170	Streptomycin	205
Furosemide	170	Theophylline	145
Gentamicin	171	Thiamine	206
Haloperidol	174	Tramadol	207
Heparin	172	Vitamin B1	206
		Vitamin K1	198

AMINOPHYLLINE and THEOPHYLLINE



Prescription under medical supervision

2

Therapeutic action

- Bronchodilator

Indications

- Severe acute asthma, when inhaled bronchodilators are not effective

Presentation and route of administration

- 250 mg ampoule (25 mg/ml, 10 ml) for infusion. NEVER FOR RAPID IV INJECTION.

Dosage

Ask the patient if they have taken aminophylline or theophylline during the previous 24 hours. If they have or if the information is unavailable, do not administer the loading dose.

- Child:

- loading dose: 5 mg/kg

Dilute one 250 mg ampoule in 250 ml sodium chloride 0.9% to obtain a solution of 1 mg/ml. Administer 5 ml/kg over 30 minutes.

- maintenance dose: after 30 minutes, reduce the rate to 1 mg/kg/hour (1 ml/kg/hour) and continue at this rate until symptoms resolve.

- Adult (50 kg):

- loading dose: 5 mg/kg (one 250 mg ampoule in 250 ml sodium chloride 0.9% to be administered over 30 minutes)

- maintenance dose: 0.5 mg/kg/hour

Dilute one 250 mg ampoule in 1 litre 0.9% sodium chloride to obtain a solution of 0.25 mg/ml and administer 100 ml/hour (30 drops/minute). Continue at this rate until symptoms resolve.

Duration: according to clinical response, as short as possible

Contra-indications, adverse effects, precautions

- Administer with caution to children under 30 months.
- May cause: nausea, irritability, insomnia; rarely: allergic reactions sometimes severe (aminophylline).
- There is a narrow margin between the therapeutic and toxic dose.
- Signs of overdose:
 - early signs: vomiting, headache, tachycardia, hyperthermia, hypotension,
 - signs of toxicity: seizures.If these symptoms appear, stop treatment immediately.
- Reduce dosage in patients with hepatic impairment or heart failure, and in elderly patients.
- Avoid combination with:
 - erythromycin, cimetidine, fluconazole, ciprofloxacin, ritonavir (risk of aminophylline and theophylline overdose),
 - phenobarbital, carbamazepine, phenytoin, rifampicin (decreased plasma concentrations of aminophylline and theophylline).
- Pregnancy: avoid, especially during the 3rd trimester (risk of toxicity in the newborn infant)
- Breast-feeding: avoid

Remarks

- Do not mix with other drugs in the same infusion (numerous incompatibilities). Injectable corticosteroids (hydrocortisone or dexamethasone) may be administered via the infusion tube.
- Aminophylline and theophylline are not included in the WHO list of essential medicines.
- Storage: below 30°C

AMPHOTERICIN B conventional (Fungizone®...)



Prescription under medical supervision

Therapeutic action

- Antifungal

Indications

- Severe systemic fungal infections: cryptococcosis, histoplasmosis, penicilliosis, etc.

Presentation and route of administration

- Powder for injection, 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 490 ml of 5% glucose to obtain 500 ml of 0.1 mg/ml solution, for IV infusion.

Dosage

- Child and adult: initially 0.25 mg/kg over 2 to 6 hours, then increase gradually until reaching the dose of 1 mg/kg/day (up to 1.5 mg/kg daily maximum in very severe infections). Prior to starting treatment, it is recommended to administer a test-dose (1 mg diluted in 5% glucose and infused over 30 minutes) in order to assess the patient for immediate allergic reaction. The patient's vital signs (temperature, respiratory and pulse rates, blood pressure) are monitored. If no serious adverse reactions occur, the initial dose is administered.

Duration

- 6 to 12 weeks or more. If the treatment is interrupted for longer than 7 days, recommence at initial therapeutic dose and increase gradually.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe renal impairment or hypersensitivity to amphotericin.
- May cause:
 - fever, chills, headache, allergic reactions (discontinue if a reaction is observed after test-dose),
 - nephrotoxicity,
 - gastrointestinal disturbances, anorexia, muscle or joint pain, blood and cardiovascular disorders, seizures, blurred/double vision,
 - pain and thrombophlebitis at injection site,
 - in the event of rapid intravenous infusion: hypotension, arrhythmia, hypokalaemia, shock.
- Use paracetamol, an antihistamine or hydrocortisone to prevent or treat fever.
- The administration of sodium chloride appears to limit, even prevent, amphotericin nephrotoxicity (administer 1 litre of 0.9% NaCl before the administration of amphotericin).
- Monitor renal function, blood counts and kalaemia throughout treatment.
- Do not combine with drugs inducing *torsades de pointe* (quinidine, erythromycin IV, halofantrine, pentamidine, sotalol, amiodarone, etc.).
- Monitor combination with cardiac glycosides (enhanced digitalis toxicity) and drugs inducing hypokalaemia such as diuretics or corticosteroids.
- Pregnancy: no contra-indication. When administered during the last month of pregnancy, check for renal dysfunction in the newborn.
- Breast-feeding: avoid, except if vital

Remarks

- Liposomal amphotericin B (AmBisome®), amphotericin B lipid complex (Abelcet®), and amphotericin B colloidal (Amphotec®, Amphocil®) are lipid-based formulations which carry a reduced risk of nephrotoxicity compared to conventional amphotericin B.
- Only use 5% glucose for IV administration (incompatible with other infusion fluids).
- Do not mix with other drugs in the same infusion bottle.
- Storage:

 - Before reconstitution: keep refrigerated (between 2°C and 8°C). In the absence of a refrigerator, the vials of powder may be kept for 7 days maximum, below 25°C.
 - After reconstitution: concentrated solution may be kept refrigerated for 24 hours (between 2°C and 8°C); the solution for injection must be used immediately.

AMPICILLIN (Pentrexyl®...) and AMOXICILLIN (Clamoxyl®...)

Prescription under medical supervision

2

Therapeutic action

- Penicillin antibacterial

Indications

- Severe infections: pneumonia, meningitis, septicaemia, endocarditis, puerperal fever, pyelonephritis, etc., alone or in combination with other antibiotics, depending on indication, only when oral administration is not possible

Presentation and route of administration

- Powder for injection in 500 mg and 1 g vials, to be dissolved in water for injection, for IM or slow IV injection (over 3 to 5 minutes) or infusion (over 20 to 30 minutes) in 0.9% sodium chloride

Dosage

- The daily dose must be administered in at least 3 injections or infusions, at 8-hour intervals. Injectable ampicillin and injectable amoxicillin are used at the same doses for the same indications:

Child: 100 mg/kg/day in 3 injections or infusions

Adult: 3 to 4 g/day in 3 to 4 injections or infusions

Age	Weight	500 mg vial (to be dissolved in 5 ml)	1 g vial (to be dissolved in 5 ml)
< 1 year	< 8 kg	2 ml x 3	—
1 to 5 years	8 to 15 kg	4 ml x 3	2 ml x 3
5 to 10 years	15 to 25 kg	—	3 ml x 3
			1 g vial
10 to 15 years	25 to 35 kg	—	3/4 to 1 vial x 3
Adults	> 35 kg	—	1 vial x 3

- In the event of *pyelonephritis* or *puerperal fever*, increase dosage:

Child: 200 mg/kg/day in 3 injections or infusions

Adult: 8 g/day in 3 to 4 injections or infusions

- In the event of *meningitis*, *septicaemia* and *endocarditis*:

Child: 200 mg/kg/day in 3 to 4 injections or infusions or as a continuous infusion

Adult: 12 g/day in 3 to 4 injections or infusions or as a continuous infusion

Duration: according to indication; change to oral treatment as soon as possible

Contra-indications, adverse effects, precautions

- Do not administer to penicillin-allergic patients, patients with infectious 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: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Do not mix with another drug in the same in the same syringe or infusion.
- Storage: below 30°C – 
 - Ampicillin is stable for 12 hours in 0.9% sodium chloride and for 4 hours in 5% glucose.
 - Amoxicillin is stable for 6 hours in 0.9% sodium chloride and for 1 hour in 5% glucose.

ARTEMETHER (Paluther®...)

Prescription under medical supervision

Therapeutic action

- Antimalarial

Indications

- Treatment of severe falciparum malaria

Presentation and route of administration

- 80 mg ampoule (80 mg/ml, 1 ml), oily solution for IM injection
- 20 mg ampoule (20 mg/ml, 1 ml), oily solution for IM injection, to be administered with 1 ml syringe graduated in 0.01 ml, for paediatric use

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 until patient can swallow.
Then, change to oral route with a complete curative treatment with one of the following artemisinin-based combination therapies (ACT): artesunate-amodiaquine, artesunate-sulfadoxine/pyrimethamine, artesunate-mefloquine or coartemether.
The choice of the artemisinin-based combination depends on the resistance level in the area concerned.
Do not use the combination artesunate-mefloquine if the patient developed neurological signs during the acute phase.

Contra-indications, adverse effects, precautions

- Do not combine with drugs inducing bradycardia.
- May cause: headache, gastrointestinal disturbances, dizziness, neutropenia, transitory increase in liver transaminases.
- Pregnancy: avoid during the first trimester, except if vital
- Breast-feeding: no contra-indication

Remarks

- Do not mix with other drugs in the same syringe.
- Storage: below 30°C – 

ATROPINE



Prescription under medical supervision

2

Therapeutic action

- Parasympatholytic, antispasmodic

Indications

- Premedication in anaesthesia
- Spasms of the gastrointestinal tract
- Organophosphorus pesticide poisoning

Presentation and 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

- *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 as a single dose
Child over 6 years: 0.5 mg by SC injection as a single dose
Adult: 0.25 to 1 mg by SC injection, to be repeated every 6 hours if necessary, without exceeding 2 mg/day.
- *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 anti-cholinergic drugs (antidepressants, neuroleptics, H-1 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 30°C -

BENZATHINE BENZYL PENICILLIN (Extencilline®, Penadur®, Penidural®...)

Prescription under medical supervision

Therapeutic action

- Penicillin antibacterial with prolonged action (15 to 20 days)

Indications

- Treatment of syphilis (except neurosyphilis)
- Treatment of non-venereal treponematoses: bejel, yaws, pinta
- Treatment of streptococcal tonsillitis
- Prophylaxis of rheumatic fever
- Prophylaxis of diphtheria, in the event of direct contact

Presentation and route of administration

- Powder for injection, 2.4 M IU (= 1.44 g) vial, to be dissolved in 8 ml water for injection, for IM injection. NEVER FOR IV INJECTION NOR INFUSION. Shake suspension before administration. Also comes in 1.2 M IU (= 0.72 g) vial to be dissolved in 4 ml and 0.6 M IU (= 0.36 g) vial to be dissolved in 2 ml.

Dosage and duration

- *Treatment of syphilis*
Adult: 2.4 MIU. For early syphilis: administer a single dose; for late syphilis: one injection per week for 3 weeks. Divide the dose into 2 injections (half-dose in each buttock).
- *Bejel, yaws, pinta, streptococcal tonsillitis, prophylaxis of diphtheria*
Child under 30 kg: 600 000 IU as a single dose
Child over 30 kg and adult: 1.2 MIU as a single dose
- *Prophylaxis of rheumatic fever*
Child under 30 kg: 600 000 IU
Child over 30 kg and adult: 1.2 MIU
For primary prophylaxis: administer a single dose; for secondary prophylaxis: one injection every 3 to 4 weeks.

Contra-indications, adverse effects, precautions

- Do not administer to penicillin-allergic patients.
- 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 reactions, stop treatment immediately,
 - Jarisch-Herxheimer reaction in patients with syphilis (to be prevented with oral prednisolone: 3 doses of 20 mg administered at 12 hour-intervals).
- Ensure that the IM injection does not enter a blood vessel: IV administration may result in cardiorespiratory arrest.
- Do not combine with methotrexate.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Benzathine benzylpenicillin (or penicillin G benzathine) is a penicillin with a long duration of action (15 to 20 days), this must not be confused with benzylpenicillin (or penicillin G) that has a short duration of action (6 hours).
 - Benzathine benzylpenicillin should not be used for prevention, except in case of rheumatic fever or diphtheria.
 - Do not mix with other drugs in the same syringe.
 - Storage: below 30°C –
- Once reconstituted, suspension must be kept refrigerated (2°C to 8°C) and may be used for up to 24 hours.*

BENZYL PENICILLIN = PENICILLIN G (Crystapen®, Penilevel®...)

Prescription under medical supervision

This presentation is rarely used as it requires injections every 4 to 6 hours, which can only be done in a hospital setting.

2

Therapeutic action

- Penicillin antibacterial with rapid action and elimination (6 hours)

Indications

- Severe infections: pneumonia, neurosyphilis, meningitis, necrotising fasciitis, gas gangrene, septicaemia, endocarditis, etc., alone or in combination with other antibiotics, depending on indication

Presentation and route of administration

- Powder for injection in 1 MIU (600 mg) and 5 MIU (3 g) vials, for IM or IV injection (via the infusion tube) or infusion

Dosage

- *Severe pneumonia*
Child over 2 months: 200 000 to 400 000 IU (120 to 240 mg)/kg/day in 4 injections
Adult: 8 to 12 MIU (4.8 to 7.2 g)/day in 4 injections
- *Neurosyphilis*
Adult: 12 to 24 MIU (7.2 to 14.4 g)/day in 6 injections
- *Meningitis, streptococcal necrotising fasciitis, gas gangrene, anthrax*
Child: 600 000 IU (360 mg)/kg/day in 6 injections
Adult: 24 MIU (14.4 g)/day in 6 injections

Duration

- *Pneumonia: 5 days minimum; neurosyphilis and meningococcal or pneumococcal meningitis: 14 days; fasciitis and gas gangrene: 7 days minimum; anthrax: 7 to 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).
- May cause:
 - gastrointestinal disturbances, allergic reactions sometimes severe. In the event of allergic reactions, stop treatment immediately,
 - Jarisch-Herxheimer reaction in patients with syphilis (to be prevented with oral prednisolone: 3 doses of 20 mg administered at 12 hour-intervals),
 - neurotoxicity in patients with renal impairment or when large doses are injected too rapidly by IV route.
- Reduce dosage in patients with severe renal impairment: maximum 10 MIU/day (6 g/day) in adults.
- Do not combine with methotrexate.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Do not confuse rapidly acting benzylpenicillin, which can be used by IV route, with long-acting penicillins (procaine benzylpenicillin and benzathine benzylpenicillin), which must never be used for IV injection or infusion.
- Do not mix with other drugs in the same syringe or infusion.
- Storage: below 30°C - 
Once reconstituted, suspension must be used immediately.

BENZYL PENICILLIN PROCAINE = PENICILLIN G PROCAINE (Depocillin®, Duracillin®...)

Prescription under medical supervision

Therapeutic action

- Penicillin antibacterial with prolonged effect (12 to 24 hours)

Indications

- Diphtheria, pneumonia, erysipelas and cellulitis, cutaneous anthrax
- Neurosyphilis, in combination with probenecid

Presentation and route of administration

- Powder for injection in 1 MIU (1 g) and 3 MIU (3 g) vials, to be dissolved in water for injection, for IM injection. NEVER FOR IV INJECTION OR INFUSION.

Dosage

- Child: 50 000 IU/kg (50 mg/kg) once daily, without exceeding 1.5 MIU
- Adult: 1 to 1.5 MIU once daily

Age	Weight	1 MUI vial	3 MUI vial
< 1 year	< 8 kg	1/4 to 1/2 vial	—
1 to 5 years	8 to 15 kg	2/3 vial	—
5 to 10 years	15 to 25 kg	1 vial	1/3 vial
10 to 15 years	25 to 35 kg	1 vial	1/2 vial
Adult	> 35 kg	1 vial	1/2 vial

Duration

- *Diphtheria*: 7 days; *pneumonia*: 5 days minimum; *anthrax, erysipelas, cellulitis*: 7 to 10 days; *neurosyphilis*: 10 to 14 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).
- Administer with caution to children under one year: risk of seizures and allergy due to procaine.
- May cause:
 - pain at the injection site, gastrointestinal disturbances, allergic reactions sometimes severe. In the event of allergic reactions, stop treatment immediately.
 - Jarisch-Herxheimer reaction in patients with syphilis (to be prevented with oral prednisolone: 3 doses of 20 mg administered at 12 hour-intervals).
- Reduce dosage in patients with severe renal impairment.
- Do not combine with methotrexate.
- Ensure that the IM injection does not enter a blood vessel: IV administration may result in ischemia at the injection site, psychiatric and neurological disorders (agitation, hallucinations, seizures).
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- For the treatment of neurosyphilis, benzylpenicillin procaine is combined with oral probenecid (2 g/day in 4 divided doses at 6-hour intervals) for the entire length of treatment.
- Benzylpenicillin procaine is replaced in some countries by a combination of benzylpenicillin procaine (3 MIU) + benzylpenicillin (1 MIU), often called fortified penicillin procaine (PPF) which has the advantage of the immediate action of benzylpenicillin, followed by the delayed action of benzylpenicillin procaine.
- Do not mix with other drugs in the same syringe.
- Storage: Once reconstituted, suspension must be used immediately.

BENZYL PENICILLIN PROCAINE + BENZYL PENICILLIN = FORTIFIED PENICILLIN PROCAINE (Bicillin®...)

Prescription under medical supervision

2

Therapeutic action

- Penicillin antibacterial with both prolonged effect due to procaine benzylpenicillin (12 to 24 hours) and immediate effect due to benzylpenicillin

Indications

- Diphtheria, pneumonia, erysipelas and cellulitis, cutaneous anthrax

Presentation and route of administration

- Powder for injection in 3 MIU benzylpenicillin procaine + 1 MIU benzylpenicillin vial, to be dissolved in 8 ml water for injection, for IM injection. NEVER FOR IV INJECTION OR INFUSION.

Dosage

- Child: 50 000 IU/kg (50 mg/kg) once daily, without exceeding 1.5 MIU
- Adult: 1 to 1.5 MIU once daily

Age	Weight	3 MUI + 1 MUI vial (to be dissolved in 8 ml)
< 1 year	< 8 kg	0.75 ml
1 to 5 years	8 to 15 kg	1.5 ml
5 to 10 years	15 to 25 kg	2.5 ml
10 to 15 years	25 to 35 kg	3 ml
Adult	> 35 kg	3 ml

Duration

- *Diphtheria: 7 days; pneumonia: 5 days minimum; anthrax, erysipelas, cellulitis: 7 to 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).
- Administer with caution to children under one year: risk of seizures and allergy due to procaine.
- May cause: pain at the injection site, gastrointestinal disturbances, allergic reactions sometimes severe. In the event of allergic reactions, stop treatment immediately.
- Reduce dosage in patients with severe renal impairment.
- Do not combine with methotrexate.
- Ensure that the IM injection does not enter a blood vessel: IV administration may result in ischemia at the injection site, psychiatric and neurological disorders (agitation, hallucinations, seizures).
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Do not mix with other drugs in the same syringe.
- Storage: 
Once reconstituted, suspension must be used immediately.

BUPIVACAINE (Carbostesin®, Marcaine®...)



Prescription under medical supervision

Therapeutic action

- Long-acting local anaesthetic
- Anaesthesia is produced within 10 to 30 minutes and lasts for 2 to 4 hours.

Indications

- Local anaesthesia by subcutaneous infiltration
- Regional anaesthesia: peripheral nerve or plexus block, caudal block, epidural block
- Dental anaesthesia
- Epidural anaesthesia in obstetrics

Presentation and route of administration

- 0.25% solution (2.5 mg/ml) and 0.50% solution (5 mg/ml) in 10 ml and 20 ml ampoules
NEVER ADMINISTER BY IV ROUTE.

Dosage

- Child over 12 years and adult: 1.5 mg/kg (0.25% solution: 0.6 ml/kg; 0.50% solution: 0.3 ml/kg)
- Maximum dose in adults: 2 mg/kg for a period of 4 hours

Indication	Concentration	Usual dose for adult
Local anaesthesia	0.25 %	5 to 20 ml depending on surface
Plexus block	0.50 %	20 to 30 ml
Nerve block	0.50 %	up to 20 ml depending on nerve
Epidural block in surgery	0.50 %	12 to 24 ml
Caudal block	0.50 %	15 to 30 ml
Epidural block in obstetrics	0.25 %	18 to 20 ml
Dental anaesthesia	0.50 %	1.8 to 3.6 ml

Caudal and epidural anaesthesia must only be performed by an experienced anesthetist.

Contra-indications, adverse effects, precautions

- Do not administer to patients with known allergy to bupivacaine, impaired atrio-ventricular conduction, uncontrolled epilepsy, porphyria or to patients receiving anticoagulants.
- Do not use in the presence of local infection.
- May cause, especially in case of overdosage: neurological disorders (agitation, dizziness, etc.), cardiovascular disorders and respiratory failure, that must be closely monitored to avoid serious complications (convulsions, apnoea, collapse, etc.). Overdosage may result from an accidental intravascular injection. To avoid accidental injection into the bloodstream, aspirate and, if no blood enters the syringe, inject progressively. Repeat aspirations regularly.
- Administer with caution and reduce doses in epileptics, elderly patients, and those suffering from acute or hepatic diseases.
- Use only if technical equipment for intubation and assisted ventilation is available.
- Correct hypovolaemia before administration of bupivacaine if necessary.
- Pregnancy: avoid high doses during the third trimester
- Breast-feeding: no contra-indication

Remarks

- Also comes in solution with epinephrine (adrenaline) to be used when a longer duration is required as in peripheral nerve or plexus block. This solution should not be used for epidural and caudal anaesthesia.
- 0.5% bupivacaine in glucose hyperbaric solution also exists. It is used exclusively for spinal anaesthesia.
- Storage: below 30°C – Do not freeze –
- Do not reuse an open vial.

CALCIUM GLUCONATE

Prescription under medical supervision

2

Therapeutic action

- Calcium therapy
- Antidote to magnesium sulfate

Indications

- Severe hypocalcaemia (hypocalcaemic tetany, neonatal hypocalcaemia, etc.)
- Symptomatic hypermagnesaemia due to excessive doses of magnesium sulfate

Presentation and 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
- Also comes in 5 g ampoule (100 mg/ml, 50 ml), 10 g vial (100 mg/ml, 100 ml), 20 g vial (100 mg/ml, 200 ml).

Dosage

- *Severe hypocalcaemia*
Neonate: 2 ml/kg of a 10% solution by IV infusion over 30 minutes followed by 4 ml/kg of a 10% solution administered by continuous infusion over 24 hours
Adult: 10 ml by slow IV injection (over at least 5 minutes), either repeated as required, or followed by continuous infusion of 40 ml of a 10% solution over 24 hours
Change to oral route as soon as possible.
- *Magnesium sulfate intoxication*
Adult: 10 ml of a 10% solution by slow IV injection (over at least 5 minutes), to be repeated once if necessary

Duration: according to clinical response and plasma-calcium levels

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe renal disease or patients receiving cardiac glycosides.
- Do not administer by IM or SC route (pain and risk of tissue necrosis or abscess formation at injection site, especially in infants and children).
- 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, hypotension, bradycardia, arrhythmia, syncope and cardiac arrest may develop.
- 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: no contra-indication
- 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.
- Do not use if a precipitate is present.
- Storage: below 30°C - 

CEFTRIAXONE

(Rocephin®...)

Prescription under medical supervision

Therapeutic action

- Third-generation cephalosporin antibacterial

Indications

- Severe infections: septicaemia, pneumonia, meningitis (except *Listeria*), pyelonephritis; acute otitis media (if treatment with amoxicillin fails), etc.
- Gonococcal infections (gonorrhoea, gonococcal conjunctivitis)

Presentation and route of administration

- Powder for injection, 250 mg and 1 g vials, supplied with a specific solvent containing lidocaine, for IM injection
 - Powder for injection, 250 mg and 1 g vials, supplied with an ampoule of water for injection, for IV injection and infusion in 5% glucose or 0.9% sodium chloride
- Also comes in 500 mg and 2 g vials.

Warning: once reconstituted with the solvent containing lidocaine, the solution can only be used by IM injection. NEVER BY IV INJECTION OR INFUSION.

Dosage

- *Severe infections*

Neonate: 50 mg/kg once daily by infusion over 60 minutes

Child: 50 to 80 mg/kg once daily by IM or slow IV injection (over 3 minutes) or by infusion (over 30 minutes); for meningitis: 100 mg/kg once daily by IM injection

Adult: 1 to 2 g once daily by IM injection (1 g in each buttock if the dose is 2 g) or slow IV injection (over 3 minutes) or infusion (over 30 minutes)

- *Gonorrhoea, gonococcal conjunctivitis*

Neonate: 50 mg/kg by IM injection without exceeding 125 mg

Child and adult: 125 mg by IM injection

Duration

- *Severe infections:* according to indication and clinical response, usually: at least 5 days of antibiotic therapy
- *Gonorrhoea and gonococcal conjunctivitis:* single dose

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to cephalosporins; to neonates with jaundice (risk of bilirubin encephalopathy).
- Administer with caution to penicillin-allergic patients (cross-sensitivity may occur).
- May cause: gastrointestinal disturbances, allergic reactions sometimes severe (Stevens-Johnson syndrome), hepatic dysfunction; rarely: pancreatitis, blood disorders (anaemia, leucopenia, thrombocytopenia), renal dysfunction.
- In the event of allergic reactions, stop treatment immediately.
- Reduce dosage in patients with hepatic or renal impairment.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- For the treatment of gonorrhoea, preferably use cefixime (400 mg as a single dose).
- Do not mix with other drugs in the same syringe; do not add to solutions containing calcium (Ringer or Hartmann).
- Storage: below 30°C - 

Once reconstituted, solution keeps 6 hours, at a temperature below 25°C.

CHLORAMPHENICOL (Chloromycetin®, Kemicetine®...)



Prescription under medical supervision

2

Therapeutic action

- Antibacterial

Indications

- Severe infections: meningitis, septicaemia, typhoid fever, pneumonia, plague, etc., only when oral administration is not possible

Presentation and route of administration

- Powder for injection in 1 g vial, to be dissolved in water for injection, for IM or IV injection (over 1 to 2 minutes)

Dosage

- Child from 2 weeks to 1 year: 50 mg/kg/day in 3 to 4 injections
- Child over 1 year: 50 to 100 mg/kg/day in 3 to 4 injections
- Adult: 3 to 4 g/day in 3 to 4 injections

Age	Weight	1 g vial (to be dissolved in 10 ml)
< 2 weeks		Avoid
< 1 year	< 8 kg	1 to 2 ml x 3
1 to 5 years	8 to 15 kg	2 to 4 ml x 3
5 to 10 years	15 to 25 kg	4 to 5 ml x 3
		1 g vial
10 to 15 years	25 to 35 kg	1/2 to 1 vial x 3
Adults	> 35 kg	1 vial x 3

Duration : according to indication; change to oral treatment as soon as possible

Contra-indications, adverse effects, precautions

- Do not administer to premature infants; avoid in newborns and children under 2 months (if there is no alternative, dosage is 25 mg/kg/day in 3 injections).
- Do not administer to patients with a history of previous allergic reaction and/or toxic reaction to chloramphenicol, G6PD deficiency.
- Reduce dosage in patients with hepatic or renal impairment.
- May cause:
 - gastrointestinal disorders,
 - allergic reactions, dose related and reversible marrow depression (anaemia, leucopenia, thrombocytopenia): if so, stop treatment,
 - grey syndrome in premature infants and neonates (vomiting, hypothermia, blue-grey skin colour and cardiovascular depression), irreversible aplastic anaemia.
- Pregnancy: CONTRA-INDICATED, except if vital, if there is no therapeutic alternative. If used during the 3rd trimester, risk of grey syndrome in the newborn infant.
- Breast-feeding: CONTRA-INDICATED

Remarks

- Due to its potential haematotoxicity, the use of chloramphenicol should be restricted to severe infections when other less toxic antibiotics are not effective or are contra-indicated.
- Oral treatment is more effective than parenteral treatment: blood and tissue concentrations are higher when chloramphenicol is given orally.
- Storage: below 30°C -

Long-acting oily CHLORAMPHENICOL



Prescription under medical supervision

Therapeutic action

- Antibacterial with prolonged effect

Indications

- Treatment of meningococcal meningitis during epidemics

Presentation and route of administration

- 500 mg ampoule (250 mg/ml, 2 ml), oily suspension for IM injection only, NEVER FOR IV INJECTION.

Dosage

- Child over 1 year and adult: 100 mg/kg/injection, without exceeding 3 g/injection

Age	1 year	2 years	6 years	10 years	15 years and adults
Dose	do not administer	1 g	1.5 g	2 g	2.5 g

- 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 combine with other antibacterials.
- May cause: gastrointestinal disturbances, allergic reactions, anaemia, leucopenia, thrombocytopenia.
- Shake suspension before use.
- Pregnancy: CONTRA-INDICATED
- Breast-feeding: CONTRA-INDICATED

Remarks

- Oily chloramphenicol is not recommended as chemoprophylaxis for meningitis contacts during epidemics. All suspected cases must be examined at the first signs of the disease.
- Storage: below 30°C –

CHLOROQUINE (Nivaquine®...)



Prescription under medical supervision

The use of injectable chloroquine is not recommended:
– in the event of severe malaria, use injectable quinine,
artemether or artesunate,
– in the event of uncomplicated malaria *sensitive to*
chloroquine, use chloroquine by oral route.

2

Therapeutic action

- Antimalarial

Indications

- Treatment of malaria sensitive to chloroquine, only when oral administration is not possible (vomiting)

Presentation and route of administration

- 200 mg base ampoule (40 mg base / ml, 5 ml) for IM injection (in the tight), SC injection or slow infusion. NEVER FOR IV INJECTION.

Dosage and duration

- Child and adult:
 - slow infusion at constant rate: 10 mg base/kg over 8 hours, then 5 mg base/kg over 8 hours, every 8 hours
 - IM or SC: 3.5 mg base/kg every 6 hours

Do not administer the entire treatment parenterally. As soon as the patient can swallow, change to oral route. The total dose administered over the entire course of treatment must not exceed 25 mg base/kg.

Contra-indications, adverse effects, precautions

- Do not administer to patients with retinopathy.
- Avoid IM route in children under 5 years.
- There is a narrow margin between the therapeutic and toxic dose. Check that the patient has not taken chloroquine in the preceding days.
- May cause: gastrointestinal disturbances, headache, allergic reactions (urticaria, angioedema), visual disturbances; cardiorespiratory arrest if injected rapidly by IV route or in the event of overdose.
- Do not combine with: coartemether, quinine, mefloquine, halofantrine.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Caution: the therapeutic oral dose of chloroquine is equivalent to a toxic dose when given parenterally.
- *P. falciparum* is sensitive to chloroquine in Central America, Haiti and Dominican Republic only.
- Resistance of *P. vivax* to chloroquine exists in Papua New Guinea, Indonesia and Myanmar.
- Storage:

CHLORPROMAZINE (Largactil®...)



Prescription under medical supervision

Therapeutic action

- Sedative and anti-emetic neuroleptic

Indications

- Acute psychosis, agitation, aggressiveness, severe anxiety not controlled by other anxiolytics
- Very severe vomiting, intractable hiccup

Presentation and route of administration

- 50 mg in 2 ml ampoule (25 mg/ml) for deep IM injection or infusion
- Also comes in 5 ml ampoule containing 25 mg (5 mg/ml). Adjust dosage accordingly.

Dosage

Varies from one person to another:

- Child: 0.5 mg/kg/injection, do not exceed 75 mg/day
- Adult: 25 to 50 mg/injection, do not exceed 150 mg/day

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
25 mg/ml ampoule				0.2 ml	0.5 ml	1 to 2 ml
Repeat 4 hours after the first injection, then every 8 hours if necessary						

- Do not exceed indicated dose.

Duration

- According to indication and clinical response; several days of treatment are sometimes needed for severely agitated patients.

Contra-indications, adverse effects, precautions

- Stop treatment if patient becomes febrile (possible neuroleptic malignant syndrome).
- May cause: extrapyramidal disorders in case of prolonged treatment; hypotension orthostatic.
- Risk of increased sedation when combined with alcohol and drugs acting on the central nervous system such as diazepam, phenobarbital, chlorphenamine.
- Pregnancy: avoid prolonged use
- Breast-feeding: avoid

Remarks

- May be used to control eclampsia, double the dose if necessary. However, the use of magnesium sulphate or diazepam is preferable.
- Storage: below 30°C -

CLINDAMYCIN (Dalacin®...)



Prescription under medical supervision

2

Therapeutic action

- Lincosamide antibacterial

Indications

- Second-line treatment of pneumocystosis, in combination with primaquine
- Second-line treatment of cerebral toxoplasmosis, in combination with pyrimethamine

Presentation

- 300 mg ampoule (150 mg/ml, 2 ml), to be diluted in 5% glucose or 0.9% sodium chloride or Ringer Lactate, for infusion. NEVER FOR IV INJECTION.
Also comes in 600 mg ampoules (150 mg/ml, 4 ml) and 900 mg ampoules (150 mg/ml, 6 ml).

Dosage

- Adult: 2400 mg/day in 4 divided doses at 6-hour intervals

Duration

- *Pneumocystosis*: 21 days
- *Toxoplasmosis*: 6 weeks
- Change to oral route as soon as possible.

Contre-indications, effets indésirables, précautions

- Do not administer to patients with allergy to lincosamides, history of pseudomembranous colitis.
- Reduce dosage in patients with hepatic impairment.
- May cause: abdominal pain, diarrhoea (possibly severe: pseudomembranous colitis), nausea, rash, jaundice, allergic reactions sometimes severe.
- In the event of allergic reactions, stop treatment immediately.
- If pseudomembranous colitis develops (diarrhoea with mucus and false membranes), stop clindamycin and treat for *C. difficile* disease (oral metronidazole).
- Do not combine with: erythromycin and neuromuscular blocking drugs.
- Pregnancy: no contra-indication
- Breast-feeding: administer only if there is no therapeutic alternative. Check child's stools (risk of colitis).

Remarks

- Do not mix with other drugs in the same infusion bottle.
- Storage: below 30°C -

CLOXACILLIN (Cloxapen®, Orbenin®...)

Prescription under medical supervision

Therapeutic action

- Penicillin antibacterial active against penicillinase-producing staphylococci

Indications

- Severe infections due to staphylococci resistant to penicillin: staphylococcal pneumonia, pyomyositis, septicaemia, endocarditis, etc.

Presentation and route of administration

- Powder for injection, 500 mg vial, for IM or slow IV injection or infusion (over 60 minutes) in 5% glucose or 0.9% sodium chloride
Also comes in 1 g vial.

Dosage

- Child under 2 years: 1 to 2 g/day in 4 divided doses at 6-hour intervals
- Child from 2 to 10 years: 2 to 4 g/day in 4 divided doses at 6-hour intervals
- Adult: 4 to 8 g/day in 4 divided doses at 6-hour intervals

Age	Child < 2 years	Child from 2 to 10 years	Child > 10 years and adult
500 mg vial	1/2 to 1 vial x 4	1 to 2 vials x 4	2 to 4 vials x 4
1 g vial	1/4 to 1/2 vial x 4	1/2 to 1 vial x 4	1 to 2 vials x 4

Duration

- Depending on indication. Change to oral treatment as soon as possible.

Contra-indications, adverse effects, precautions

- Do not administer to penicillin-allergic patients.
- 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 reactions, stop treatment immediately.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Dicloxacillin (Diclocil®, etc.), flucloxacillin (FloxaPen®, etc.) and oxacillin (Bristopen®, etc.) are used for the same indications and at the same dosage.
- Do not mix with other drugs in the same syringe or infusion.
- Storage: 
Reconstituted solution must be used immediately.

DEXAMETHASONE

Prescription under medical supervision

2

Therapeutic action

- Corticosteroid

Indications

- Inflammatory syndrome in severe infections: severe typhoid fever, acute subglottic laryngitis, etc.
- Foetal lung maturation, in the event of threatened premature delivery before 34 weeks of gestation

Presentation and route of administration

- 4 mg dexamethasone phosphate in 1 ml ampoule (4 mg/ml) for IM or IV injection or infusion

Dosage and duration

- *Inflammatory syndrome in severe infections*
Dosage and duration vary according to severity and clinical response:
Child: 0.2 to 0.4 mg/kg/day
Adult: initial dose of 0.5 to 24 mg/day
- *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

- For systemic infections, only administer if patient is under antibiotic treatment.
- In the event of treatment longer than 10 days, decrease doses gradually to avoid adrenal gland failure.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Foetal lung maturation:
 - after 34 weeks of gestation, corticosteroid treatment is not indicated;
 - dexamethasone may be replaced by betamethasone (Betnesol®): 2 doses of 12 mg by IM injection at 24-hour interval (total dose: 24 mg).
- For allergic reactions (Quinke's oedema, anaphylactic shock) and status asthmaticus, use hydrocortisone.
- Dexamethasone acetate (Dectancyl®), 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 (Valium®...)



Prescription under medical supervision

**Use IV route only if technical equipment for ventilation
is available at hand.**

Therapeutic action

- Anxiolytic, sedative, anticonvulsant, muscle relaxant

Indications

- Seizures
- Tetanus
- Agitation associated with anxiety or confusion (delirium tremens), when oral administration is not possible

Presentation and route of administration

- 10 mg ampoule (5 mg/ml, 2 ml) for IM or very slow IV injection or infusion
- Injectable solution may be used by oral and rectal route.
- For rectal or IV administration, dilute 2 ml (10 mg) of diazepam in 8 ml of 5% glucose or 0.9% sodium chloride.
- For rectal administration, use a syringe without a needle, or better, cut a nasogastric tube, CH8, to a length of 2-3 cm and attach it to the tip of the syringe.

Dosage and duration

- *Seizures*
Child: 0.5 mg/kg rectally or 0.3 mg/kg by slow IV injection, without exceeding 10 mg
Adult: 10 mg rectally or by slow IV injection
If seizures do not stop within 5 minutes after the first dose, repeat once.
- *Tetanus*
The dosage range is variable, depending on severity. For information:
Child and adult: 0.1 to 0.3 mg/kg by slow IV injection, to be repeated every 1 to 4 hours, under close medical supervision
- *Agitation, delirium tremens*
Adult: 5 to 10 mg by IM injection, to be repeated after one hour if necessary

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe respiratory insufficiency or severe hepatic impairment.
- May cause:
 - pain at the IV or IM injection site,
 - hypotension, respiratory depression, particularly if administered IV, if injected too rapidly by IV route and if large doses are administered (tetanus),
 - in the event overdose: hypotonia, lethargy, respiratory distress, coma.
- Reduce the dose by one half in elderly patients and patients with renal or hepatic impairment.
- Risk of increased sedation when combined with alcohol and drugs acting on the central nervous system: opioid analgesics, neuroleptics (chlorpromazine, haloperidol, etc.), anti-histamines (chlorphenamine, promethazine), antidepressants (clomipramine, fluoxetine, etc.), phenobarbital, etc.
- Pregnancy: avoid if possible, except if vital
- Breast-feeding: avoid

Remarks

- Diazepam is subject to international controls: follow national regulations.
- Diluted solution is normally cloudy.
- Do not mix with other drugs in the same syringe or infusion.
- Storage: below 30°C -

DICLOFENAC (Cataflam®, Voltaren®, Voltarol®...)



Prescription under medical supervision

2

Therapeutic action

- Non-steroidal anti-inflammatory drug, analgesic, antipyretic

Indications

- Moderate pain, particularly due to inflammation (acute sciatic neuralgia, renal colic, post-operative pain etc.)

Presentation and route of administration

- 75 mg in 3 ml ampoule (25 mg/ml) for deep IM injection or infusion

Dosage

- Adult : 75 mg by deep IM injection; combine with 50 mg by oral route 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.
Maximum dose: 150 mg/day

Duration: maximum 2 to 3 days; change to oral treatment as soon as possible.

Contra-indications, adverse effects, precautions

- Do not administer in case of:
 - renal impairment, uncorrected dehydration or hypovolaemia, severe malnutrition,
 - peptic ulcer,
 - hypersensitivity to other NSAID (aspirin, ibuprofen, indometacin etc.), hepatic impairment, severe infection,
 - coagulation defects, surgery with risk of major blood loss.
- May cause: renal impairment, gastrointestinal disturbances, allergic reactions (rash, eczema, bronchospasm).
- Administer with caution to elderly or asthmatic patients.
- Do not combine with other NSAID (aspirin, ibuprofen, indometacin etc.), diuretics, anti-coagulants.
- 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 drugs.
- Storage: below 30°C –

DIGOXIN (Coragoxine®, Lanoxin®...)



Prescription under medical supervision

Therapeutic action

- Cardiotonic

Indications

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

Presentation and route of administration

- 500 µg ampoule (250 µg/ml, 2 ml) for slow IV injection or infusion in 5% glucose or 0.9% sodium chloride

Dosage

- Adult:
 - loading dose: 500 to 1000 µg
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 elderly 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 pulse 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 route (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 30°C -

EPHEDRINE



Prescription under medical supervision

2

Therapeutic action

- Sympathomimetic

Indications

- Hypotension induced by regional anaesthesia (spinal and epidural anaesthesia)
- First choice treatment of anaphylactic shock in pregnant women

Presentation and route of administration

- 30 mg in 1 ml ampoule (30 mg/ml) for IV injection
Also comes in 1 ml ampoule containing 50 mg (50 mg/ml).

Dosage

- Dilute 1 ampoule of 30 mg in 9 ml of water for injection to obtain a solution containing 3 mg ephedrine per ml.
- Adult: 3 to 6 mg by slow IV injection (1 to 2 ml of the diluted solution), to be repeated every minutes until blood pressure stabilizes

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Administer with caution to patients with coronary insufficiency, hyperthyroidism, closed-angle glaucoma.
- May cause: arrhythmia, hypertension.
- Pregnancy: no contra-indication
- Breast-feeding: avoid (excreted in milk)

Remarks

- For the treatment of anaphylactic shock in pregnant women, ephedrine is preferred over epinephrine to avoid placental vasoconstriction. However, if ephedrine is not immediately effective, use epinephrine (adrenaline).
- Ephedrine has a less potent but more prolonged action than epinephrine (adrenaline).
- Ephedrine has been used in the treatment of asthma but more selective sympathomimetics such as salbutamol are preferred.
- In some countries, ephedrine is a controlled substance: follow national regulations.
- Storage: below 30°C - ~~✓~~

EPINEPHRINE = ADRENALINE



Prescription under medical supervision

Therapeutic action

- Sympathomimetic

Indications

- Cardiopulmonary arrest
- Anaphylactic shock
- Hypotension induced by spinal anaesthesia (unresponsive to ephedrine)

Presentation and route of administration

- 1 mg in 1 ml ampoule (1 mg/ml) for SC or IV
Also comes in 1 ml ampoule containing 0.25 mg/ml.

Dosage

- *Cardiopulmonary arrest*
Dilute 1 ampoule of 1 mg in 9 ml water for injection to obtain a solution containing 0.1 mg epinephrine per ml.
 - Child and adult: 0.01 to 0.02 mg/kg/IV injection, to be repeated every minute if there is no response
- *Anaphylactic shock*
 - Child: 0.25 mg diluted in 9 ml water for injection, to be administered by slow direct IV injection, ml per ml, according to blood pressure and pulse, until improvement occurs.
 - Adult: 1 mg diluted in 9 ml water for injection, to be administered by slow direct IV injection, ml per ml, according to blood pressure and pulse, until improvement occurs.
- *Hypotension induced by spinal anaesthesia* (unresponsive to ephedrine)
Dilute 1 ampoule of 1 mg in 9 ml water for injection to obtain a solution containing 0.1 mg epinephrine per ml.
 - Adult: 0.1 to 0.2 mg (1 to 2 ml of the diluted solution)/IV injection, to be repeated every minute until blood pressure stabilizes

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Administer with caution to elderly patients and to patients with hypertension, angina, ischaemic heart disease, hyperthyroidism.
- Do not exceed indicated dose: risk of arrhythmia.
- For IV administration, epinephrine must always be diluted.
- *Pregnancy:* CONTRA-INDICATED, except in emergency situations
- *Breast-feeding:* no contra-indication

Remarks

- For the treatment of anaphylactic shock in pregnant women, ephedrine is preferred over epinephrine to avoid placental vasoconstriction. However, if ephedrine is not immediately effective, use epinephrine.
- Epinephrine (adrenaline) is also called levorenin.
- Epinephrine solution is colourless; discard any ampoules with a pink or brownish colour.
- *Storage:*

ERGOMETRINE (Ergotrate®...) and METHYLERGOMETRINE (Methergin®...)



Prescription under medical supervision

2

Therapeutic action

- Uterine stimulant

Indications

- Postpartum or postabortal haemorrhage caused by uterine atony (preferably use oxytocin for this indication)

Presentation and route of administration

- Ergometrine maleate: 500 µg in 1 ml ampoule (500 µg/ml), for IM injection
- Methylergometrine maleate: 200 µg in 1 ml ampoule (200 µg/ml), for IM injection

Dosage

- Ergometrine maleate: 250 µg to 500 µg/injection
- Methylergometrine maleate: 200 µg/injection

To be repeated every 2 to 4 hours if necessary, without exceeding a total of 5 injections.

Contra-indications, adverse effects, precautions

- Do not administer during delivery; do not use to induce or facilitate labour.
- Do not administer to patients with hypersensitivity to ergot derivatives (cabergoline, bromocriptine, ergotamine, etc.), severe hypertension, pre-eclampsia, eclampsia, septicaemia.
- Before administration always check:
 - that expulsion of the placenta is complete,
 - that there is no multiple pregnancy. Do not use before the birth of the last child.
- May cause: gastrointestinal disturbances, headache, paraesthesia, confusion, dizziness, tinnitus, hypertension, peripheral vasoconstriction, chest pain.
- Do not combine with another ergot derivative.
- Monitor combination with: metronidazole, azole antifungals, macrolides, protease inhibitors, efavirenz, fluoxetine (risk of ergotism).
- Exceptionally, for extensive uterine bleeding and if oxytocin is not available, ergometrine and methylergometrine may be used by IV route, slowly over a period of no less than one minute, with careful monitoring of blood pressure (risk of sudden hypertensive accidents).
- Pregnancy: CONTRA-INDICATED
- Breast-feeding: avoid, except if clearly needed

Remarks

- Do not confuse with dihydroergotamine, a related drug used for totally different indications.
- Ergometrine is also called ergonovine or ergobasine.
- 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.
- 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 30°C.
- Exposure to heat and especially light causes the deterioration of the active ingredients and thus loss of efficacy. Methylergometrine is as sensitive as ergometrine.
- The solution must be colourless. Discolouration indicated a deterioration of the active ingredients. Never use a coloured solution.

FUROSEMIDE = FRUSEMIDE (Lasix®, Lasix®, Seguril®...)

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

Presentation and 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

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
10 mg/ml ampoule	0.2 ml	0.3 ml	0.75 ml	1.5 ml	2 to 4 ml	
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 30°C - 

GENTAMICIN (Genticin®...)



Prescription under medical supervision

2

Therapeutic action

- Aminoglycoside antibacterial

Indications

- Severe infections (endocarditis, septicaemia, peritonitis, pyelonephritis, etc.), in combination with another antibacterial

Presentation and route of administration

- 20 mg ampoule (10 mg/ml, 2 ml) and 80 mg ampoule (40 mg/ml, 2 ml) for IM or slow IV injection or infusion
- Also comes in 10 mg ampoule (10 mg/ml, 1 ml), 40 mg ampoule (40 mg/ml, 1 ml), 40 mg ampoule (20 mg/ml, 2 ml) and 160 mg ampoule (80 mg/ml, 2 ml).

Dosage

- Child and adult: 3 to 6 mg/kg/day
The daily dose is usually administered in 2 injections. For treatments shorter than 7 days, the daily dose may be given in a single injection.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
20 mg ampoule (10 mg/ml, 2 ml)	1 ml x 2	1.5 ml x 2	3 ml x 2	-	-	
40 mg ampoule (20 mg/ml, 2 ml)	0.5 ml x 2	0.75 ml x 2	1.5 ml x 2	3 ml x 2	-	
80 mg ampoule (40 mg/ml, 2 ml)	0.2 ml x 2	0.4 ml x 2	0.75 ml x 2	1.5 ml x 2	3 ml x 2	
160 mg ampoule (80 mg/ml, 2 ml)	-	-	0.4 ml x 2	0.75 ml x 2	1.5 ml x 2	

Duration

- According to indication and clinical response. Given the risk of renal and auditory toxicity, do not prolong treatment unnecessarily.

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to gentamicin or another aminoglycoside.
- Administer with caution to patients with renal impairment, auditory and vestibular damage; reduce dosage in patients with renal impairment (1 mg/kg/day).
- May cause: renal impairment, auditory and vestibular damage, allergic reactions.
- Do not combine with another aminoglycoside.
- Monitor combination with: neuromuscular blockers, general anaesthetics (potentialization of their effects); amphotericin B, vancomycin, capreomycin, furosemide (enhanced renal and/or auditory toxicity).
- Pregnancy: avoid
- Breast-feeding: no contra-indication

Remarks

- Do not mix with other drugs in the same syringe or infusion.
- Storage: below 30°C -

HEPARIN



Prescription under medical supervision

Therapeutic action

- Anticoagulant

By IV injection: acts immediately for about 2 to 4 hours

By SC injection: acts within 1 hour for about 8 to 12 hours

Indications

- Venous and arterial thrombosis: pulmonary embolism, myocardial infarction, thrombo-phlebitis
 - 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.

Presentation and 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/day, 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: 150 IU/kg/day in 2 to 3 divided doses.

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 ophthalmic 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 thrombo-plastin 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 available. Heparin sodium is usually used by IV route. Both sodium and calcium heparin are used by SC route. There is a little difference in the action of these 2 medications.
- Do not mix with other drugs in the same syringe.
- Storage: keep in a cool place (8°C to 15°C) – 

HALOPERIDOL (Haldol®, Serenace®...)

Prescription under medical supervision

Therapeutic action

- Neuroleptic

Indications

- Acute psychoses: psychomotor agitation, acute mania, delirium tremens
- Severe vomiting induced by antineoplastic drugs

Presentation and route of administration

- 5 mg in 1 ml ampoule (5 mg/ml) for IM injection or IV infusion

Dosage

- Adult: 2 to 10 mg/day by IM injection, repeated at intervals of 4 to 8 hours if necessary
- In patients receiving chemotherapy: 5 mg by IV infusion or 1 to 5 mg by IM injection, repeated after 12 hours if necessary.

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not administer to children and to patients suffering from Parkinson's disease.
- In case of hyperthermia following an injection, stop treatment: possible neuroleptic malignant syndrome.
- May cause: extrapyramidal syndrome, dyskinesia, orthostatic hypotension.
- Do not combine with levodopa.
- Do not drink alcohol during treatment.
- Risk of increased sedation when combined with depressants of the central nervous system (morphine and derivatives, anxiolytics, antihistamines...).
- Pregnancy: avoid
- Breast-feeding: avoid

Remarks

- Haloperidol decanoate is a long-acting form acting as a pro-drug, releasing slowly haloperidol, used in the long-term treatment of psychotic disorders in patients stabilised on oral treatment (one IM injection every 3 to 4 weeks).
- Haloperidol may induce more extrapyramidal reactions than chlorpromazine, but less often provoke sedation and orthostatic hypotension.
- If administered by infusion, protect the bottle from light.
- Storage: below 30°C – ☀

HYDRALAZINE (Apresoline®...)



Prescription under medical supervision

2

Therapeutic action

- Antihypertensive vasodilatator

Indications

- Severe hypertension in pregnancy, when oral treatment is not possible

Presentation and route of administration

- Powder for injection, 20 mg vial, to be dissolved in 2 ml of water for injection, for slow IV injection or IV infusion

Dosage

Dosage must be adapted according to BP: treatment is administered if the diastolic BP is ≥ 110 mmHg. Hypertension is controlled when diastolic BP remains between 90 and 100 mmHg. During administration diastolic BP must never fall below 90 mmHg. Monitor maternal BP and pulse, as well as foetal heart rate.

- By IV infusion

Initially 200 to 300 micrograms / minute, then 50 to 150 micrograms / minute.

- Dilute 100 mg (5 ampoules) in 500 ml of sodium chloride 0.9% or Ringer lactate to obtain a solution containing 200 micrograms / ml.
- Administer by increasing the rate up to 20 drops / minute (maximum 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 IV injection

Administer 5 mg by slow IV injection (over 2 minutes) and check BP for 20 minutes. If diastolic BP remains ≥ 110 mmHg, repeat injection. Continue repeating if necessary, waiting 20 minutes between each injection, without exceeding a total dose of 20 mg.

Duration

- Change over to an oral antihypertensive as soon possible.

Contra-indications, adverse effects, precautions

- Administer with caution to patients with heart failure, coronary insufficiency, recent myocardial infarction, severe tachycardia, history of stroke.
- Reduce doses in patients with renal or hepatic impairment.
- May cause: tachycardia, headache, nausea, hypotension.
- Respect dosage and administration rate. An overdose or too rapid administration may provoke an abrupt and excessive fall in maternal blood pressure with placental hypoperfusion and foetal death.
- In the event of hypotension, administer Ringer lactate to maintain diastolic BP ≥ 90 mmHg.
- Pregnancy: avoid during the 1st trimester
- 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 30°C -

HYDROCORTISONE (Efcorstesol®, Solu-cortef®...)



Prescription under medical supervision

Therapeutic action

- Corticosteroid

Indications

- Anaphylactic shock
- Severe allergic reactions (Quincke's oedema)
- Status asthmaticus
- Acute laryngitis with respiratory distress

Presentation and route of administration

- 100 mg hydrocortisone (phosphate, succinate, hemisuccinate) in vial, powder for reconstitution to be dissolved in 2 ml water for injection, for IM or slow IV injection or infusion

Dosage and duration

- Child under 1 year: 25 mg/injection
- Child from 1 to 5 years: 50 mg/injection
- Child from 6 to 12 years: 100 mg/injection
- Adult: 100 to 500 mg/injection

Doses may be repeated 3 or 4 times daily according to the severity of the condition and the patient's response.

Contra-indications, adverse effects, precautions

- Avoid prolonged administration in patients with peptic ulcer, diabetes mellitus, cirrhosis.
- Administer with caution to patients receiving digitalis glycosides: increases digitalis toxicity associated with hypokalaemia.
- Pregnancy: if essential, use for a short period
- Breast-feeding: no contra-indication

Remarks

- Hydrocortisone acetate is a suspension insoluble in water, used as a local treatment only: intra- or peri-articular injection, epidural (sciatic neuralgia).
- Storage: below 30°C -

HYOSCINE BUTYLBROMIDE = BUTYLSCOPOLAMINE (Buscopan®...)

Prescription under medical supervision

2

Therapeutic action

- Antispasmodic

Indications

- Spasms of the gastrointestinal tract and genitourinary tract

Presentation and route of administration

- 20 mg in 1 ml ampoule (20 mg/ml) for IM, SC or slow IV injection

Dosage

- Child under 6 years: 5 mg/injection, to be repeated up to 3 times per day if necessary
- Child from 6 years to 12 years: 0.5 mg/kg/injection to be repeated up to 3 to 4 times per day if necessary
- Adult: 20 to 40 mg/injection, to be repeated if necessary; do not exceed 100 mg/day

Duration: according to clinical response; no prolonged treatment.

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, blurred vision, tachycardia.
- Administer with caution to children under 6 years.
- Administer with caution and under close supervision to patients taking other anti-cholinergic drugs (antidepressants, neuroleptics, H-1 antihistamines, antiparkinsonians, etc.).
- Pregnancy: no contra-indication; NO PROLONGED TREATMENT
- Breast-feeding: no contra-indication; NO PROLONGED TREATMENT

Remarks

- Antispasmodic drugs are not included in the WHO list of essential medicines.
- Storage: below 30°C - 

INSULIN

Prescription under medical supervision

General information

Therapeutic action

- Pancreatic hormone, antidiabetic
Diabetes mellitus is due to a deficiency in insulin secretion.

Classification

- There are 3 main types of insulin preparations, differing in onset and duration of action:

Administration by SC route	Short-acting insulin	Intermediate-acting insulin	Long-acting insulin
Onset	30 minutes to 1 hour	1 to 2 hours	2 to 4 hours
Time to peak	2 to 5 hours	4 to 12 hours	8 to 20 hours
Duration	6 to 8 hours	10 to 24 hours	24 to 36 hours
Description	solution	suspension	suspension
Appearance	clear	opalescent	opalescent

- Duration of action is indicated for each preparation by the manufacturer. For each preparation, onset and duration vary greatly according to the patient and route of administration.
- The type of insulin used depends on the type of diabetes, patient's age and blood glucose levels.

Indications

- Insulin-dependent diabetes
- Diabetes during pregnancy
- Degenerative complications of diabetes : retinopathy, neuropathy...
- Non-insulin-dependent diabetics 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. There is no standardized protocol.
Never exceed 200 IU/day, whatever the type of insulin.

Duration

- *Insulin-dependent diabetics*: life-time treatment
- *Other cases*: according to clinical response and laboratory tests

Contra-indications, adverse effects, precautions

- Do not administer if known allergy to insulin (rare).
- May cause :
 - hypoglycaemia due to overdosage or inadequate diet. Treat mild hypoglycaemia with intake of oral sugar and IV injection of hypertonic glucose solution if severe;
 - local reactions: pain, erythema at the injection site, lipodystrophy. Rotate injection sites systematically and use all available sites (upper arm, thighs, abdomen, upper back).
- Patient monitoring: blood and urine glucose concentrations, urine ketone tests.
Blood glucose concentrations should be maintained within the range of 4.4 to 8 mmol/litre under fasting (8 mmol = 1.4 g).
Diabetes is controlled when:
 - there are no glucose and ketones in urine;
 - before-meal blood glucose levels are < 1.2 g/litre (< 6.67 mmol/litre);
 - postprandial blood glucose levels are ≤ 1.4 g/litre (< 7.78 mmol/litre).
- Treatment of diabetes must be initiated in hospital under close supervision.
Treatment includes: insulin administration, specific diet, education and counselling under medical supervision (self-monitoring of blood glucose, self-administration of insulin, knowledge about signs of hypoglycaemia and hyperglycaemia).
- Closely monitor combination with:
 - drugs enhancing hypoglycaemic effect: acetylsalicylic acid, captopril, beta-blockers (which in addition, may mask symptoms of hypoglycaemia);
 - drugs increasing blood glucose levels: glucocorticoids, salbutamol, chlorpromazine, oral contraceptives.
- Avoid alcohol: induces hypoglycaemia and enhances hypoglycaemic effect of insulin.
- Use sterile technique.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Insulin is obtained by extraction from bovine or porcine pancreases. The term mono-component insulin is used for highly purified insulin.
- Insulin of human sequence is prepared either semisynthetically by modification of porcine material or biosynthetically.
- Preparations of human or animal origin have the same hypoglycemic effect. There is generally no significant difference.
- Insulin cannot be administered by mouth since it is inactivated in the gastro-intestinal tract.

INTERMEDIATE-ACTING INSULIN (Insulatard®, Semitard®...)

LONG-ACTING INSULIN (Ultralente®, Ultratard®...)

Prescription under medical supervision

Therapeutic action

- Insulin suspension modified by addition of protamine and/or zinc, in order to prolong the duration of action

Indications

- As for insulin in general, except in the emergency treatment of diabetic ketoacidosis and coma

Presentation and route of administration

- 400 IU of insulin suspension in 10 ml vial (40 IU/ml) for deep SC injection, administered with a calibrated syringe for IU-40 insulin.

Also comes in solution containing 100 IU/ml, administered only with calibrated syringe for IU-100 insulin.

IM route may be used but SC route is less painful and drug action is longer and more regular.

Dosage

- 20 to 40 IU/day divided in 2 injections for intermediate-acting insulin, in 1 or 2 injections for long-acting insulin.

Administer 15 to 30 minutes before meals. Increase by 2 IU/day until reaching the blood glucose level required. Adjust dosage and frequency of injections according to patient's needs.

Short-acting insulin is often administered in combination with an intermediate-acting or long-acting insulin.

Examples of regimens:

Insulin	Administration
– Short-acting insulin – Intermediate-acting insulin	– before breakfast and lunch – at bedtime
– Short-acting insulin – Long-acting insulin	– 3 times/day before breakfast, lunch and dinner – at bedtime or before breakfast
– Intermediate-acting with or without short-acting insulin	– 2 times/day before breakfast and dinner

Contra-indications, adverse effects, precautions

- See "insulin: general information".
- **Never administer by IV injection.**
- Do not administer if known allergy to protamine.
- Shake suspension gently before use. Remove from the refrigerator 1 hour before administration or roll the vial between hands.

Remarks

- Storage: to be kept refrigerated (2°C to 8°C) – 
 - Do not freeze; discard if freezing occurs.
 - Most manufacturers consider that a solution stored by the patient at a temperature up to 25°C and protected from light is stable for 1 month.

SHORT-ACTING INSULIN (Actrapid®, Velosulin®...)

Prescription under medical supervision

2

Therapeutic action

- Soluble insulin, sometimes called neutral insulin, regular insulin or unmodified insulin.

Indications

- As for insulin in general, particularly in cases of diabetic ketoacidosis and diabetic coma.

Presentation and route of administration

- 400 IU of insulin in 10 ml vial (40 IU/ml) for deep SC injection, IM or IV injection, administered with a calibrated syringe for IU-40 insulin.
Also comes in solution containing 100 IU/ml, administered only with calibrated syringe for IU-100 insulin.

Dosage

- *Emergency treatment of ketoacidosis and diabetic coma*
 - Child: initial dose 0.1 IU/kg by direct IV injection followed by 0.3 IU/kg every 4 hours.
 - Adult: initial dose of 5 to 20 IU by direct IV injection followed by 10 to 20 IU every hour via the drip tubing. When ketone bodies are cleared and blood glucose level has fallen to less than 20 mmol/litre, give 20 IU by SC injection every 4 to 6 hours according to blood glucose level.Treat dehydration with a sodium chloride solution, then glucose-saline solution.
Correct cautiously acidosis with isotonic solution of bicarbonate and, if necessary, post-insulinic hypokalaemia.
- *Treatment of diabetes mellitus*
Start with 5 IU, 15 minutes before meals, 3 to 4 times/day by SC injection. Adjust dosage according to blood glucose levels before and after meal. Adjustments should not exceed 10 IU/day.
When hyperglycemia is controlled, an intermediate-acting insulin may be substituted in order to limit injections.
Short-acting insulin may be mixed with intermediate-acting insulin in the proportion of 10 to 50%.

Contra-indications, adverse effects, precautions

- See "Insulin: general information".

Remarks

- The terms "cristalline insulin" and "neutral insulin" are used either for soluble insulin or intermediate and long-acting insulin.
- Storage: to be kept refrigerated (2°C to 8°C) – 
 - Do not freeze.
 - Most manufacturers consider that a solution stored by the patient at a temperature up to 25°C and protected from light, is stable for 1 month.

KETAMINE (Calypsol®, Ketalar®, Ketanest®...)



Prescription under medical supervision

Therapeutic action

- General anaesthetic

Indications

- Induction and maintenance of general anaesthesia

Presentation and route of administration

- 500 mg in 10 ml vial (50 mg/ml) for IM, IV injection or infusion

Also comes in 5 ml and 20 ml ampoules containing 10 mg/ml and 5 ml ampoule containing 100 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 for 10 to 15 minutes.
- IM: 10 mg/kg. Anaesthesia is produced within 5 minutes and lasts for 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 caesarean 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.
- Storage:

LIDOCAINE = LIGNOCAINE (Xylocaine®...)

Prescription under medical supervision

2

Therapeutic action

- Local anaesthetic

Indications

- Local anaesthesia:
 - minor operations : 1% lidocaine plain
 - dental surgery : 2% lidocaine (plain or with epinephrine)

Presentation and 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 1 1/2 ml	2 to 4 ml	4 to 7 ml	7 to 10 ml	

Duration: single 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 30°C - 

MAGNESIUM SULFATE



Prescription under medical supervision

Therapeutic action

- Anticonvulsant

Indications

- Eclampsia: treatment of eclamptic seizures and prevention of recurrence
- Severe pre-eclampsia: prevention of eclamptic seizures

Presentation and route of administration

- 1 g ampoule (500 mg/ml, 2 ml) and 5 g ampoule (500 mg/ml, 10 ml) for IM injection or IV infusion

Warning, also comes in different concentrations: ampoule containing 1.5 g (150 mg/ml, 10 ml), 2 g (100 mg/ml, 20 ml), 3 g (150 mg/ml, 20 ml) and 4 g (200 mg/ml, 20 ml). Check concentration before use, there is a risk of potentially fatal overdosage.

Dosage and duration

- *IV protocol:*

Start with a loading dose of 4 g, to be administered by IV infusion in 0.9% sodium chloride over 15 to 20 minutes.

Then administer a maintenance dose of 1 g per hour by continuous IV infusion. Continue this treatment for 24 hours after the delivery or the last seizure.

- *IV/IM protocol:*

Start with a loading dose of 4 g, to be administered by IV infusion in 0.9% sodium chloride over 15 to 20 minutes.

Then administer by IM route: 10 g (5 g in each buttock) followed by 5 g every 4 hours (changing buttock for each injection). Continue this treatment for 24 hours after the delivery or the last seizure.

Regardless of the protocol chosen, in the event that seizures persist or recur: administer a further 2 g (patients < 70 kg) to 4 g by IV infusion, without exceeding 8 g total dose during the first hour.

Contra-indications, adverse effects, precautions

- Do not administer to patients with severe renal failure.

- Check:

- urine output every hour,
 - patellar reflex, blood pressure, pulse and respiratory rate every 15 minutes during the first hour of treatment. If no signs of over dosage are observed, continue this surveillance every hour.

- May cause:

- pain at the injection site, warm flushes,
 - in the event of over dosage: diminished then absent patellar reflex (early sign of hypermagnesaemia), hypotension, drowsiness, difficulty in speaking, confusion, arrhythmias, respiratory depression (respiratory rate < 12 / minute).

- In the event of decreased urine output (< 30 ml/hour or 100 ml/4 hour):
 - pre-eclampsia: stop magnesium sulfate and perform delivery as soon as possible,
 - eclampsia: stop magnesium sulfate and perform delivery immediately. If delivery cannot be performed *immediately*, stop magnesium sulfate for one hour then resume magnesium sulfate perfusion until delivery.
- In the event of overdosage: stop magnesium sulfate and give 1 g calcium gluconate by IV route as an antidote (in this event, the anticonvulsant effect is reversed and seizures may recur).
- Reduce dose in patients with renal impairment.
- Do not combine with nifedipine and quinidine.
- Pregnancy: no contra-indication

Remarks

- Regardless of the protocol chosen, delivery must be performed:
 - within 12 hours after the first seizure in the event of eclampsia,
 - within 24 hours after the appearance of symptoms in the event of severe pre-eclampsia.
- 1 g magnesium sulfate contains approximately 4 mmol (or 8 mEq) of magnesium.
- Do not mix with other drugs in the same syringe or infusion fluid.
- Storage: below 30°C – 

MEDROXYPROGESTERONE (Depo-Provera®...)

Prescription under medical supervision

Therapeutic action

- Long-acting synthetic progestogen

Indications

- Long-term contraception

Presentation and route of administration

- 150 mg of medroxyprogesterone acetate in 1 ml vial (150 mg/ml) for IM injection
Also comes in 3 ml vial containing 150 mg (50 mg/ml).

Dosage

- Adult:
 - 150 mg between the 1st and the 7th day of the menstrual cycle
 - or
 - 150 mg within 5-7 days after delivery (only if the woman does not breastfeed) or an abortion

Duration

- One injection every 12 weeks

Contra-indications, adverse effects, precautions

- Do not administer to patients with breast or genital cancer, uncontrolled hypertension, history of thromboembolic disorders, stroke, coronary insufficiency, non equilibrated or complicated diabetes, severe or recent liver disease, undiagnosed vaginal bleeding.
- May cause: menstrual irregularities, amenorrhoea or bleeding, nausea, vomiting, allergic reactions, weight gain.
- A period of 5 to 7 days after delivery or an abortion must be respected before the administration of the first injection (increased risk of bleeding).
- Clinical examinations must be carried before and during treatment (weight, BP, breasts).
- Shake vial before use.
- Pregnancy: CONTRA-INDICATED
- Breast-feeding: CONTRA-INDICATED before 6 weeks

Remarks

- Injection may be administered up to 2 weeks before and up to 2 weeks after the fixed day, without the need for additional contraception.
- Return of fertility may be delayed long after the discontinuation of treatment.
- There is a combined contraceptive injection containing medroxyprogesterone acetate 25 mg + estradiol cipionate 5 mg (Cyclofem®, Lunelle®) administered once monthly.
- Do not mix with other drugs in the same syringe.
- Storage: below 30°C

METAMIZOLE = DIPYRONE = NORAMIDOPYRINE (Nolotil®, Novalgin®...)



Prescription under medical supervision

USE THIS DRUG ONLY IN SERIOUS SITUATIONS WHERE NO ALTERNATIVE IS AVAILABLE.

- it is potentially harmful;
- it is forbidden to market this drug in many countries;
- it must never be prescribed as a first choice treatment.

2

Therapeutic action

- Analgesic
- Antipyretic

Indications

- Severe pain
- High fever

Presentation and route of administration

- 1 g in 2 ml ampoule (500 mg/ml) for IM, SC or slow IV injection or infusion

Dosage

- Child: 10 mg/kg/injection
- Adult: 500 mg/injection

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
500 mg / ml ampoule				0.2 ml	0.5 ml	1 to 2 ml
Repeat every 8 hours if necessary						

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not administer in gastric ulcer.
- SEVERE AND FATAL CASES OF AGRANULOCYTOSIS HAVE BEEN REPORTED. THE RISK IS UNPREDICTABLE AND INDEPENDENT OF THE ADMINISTERED DOSE.
- Pregnancy: avoid
- Breast-feeding: avoid

Remarks

- Metamizole is not included in the WHO list of essential drugs.
- Storage: no special temperature requirements

METOCLOPRAMIDE (Primperan®...)

Prescription under medical supervision

Therapeutic action

- Anti-emetic

Indications

- Postoperative nausea and vomiting

Presentation and route administration

- 10 mg in 2 ml ampoule (5 mg/ml) for IM or slow IV injection
Also comes in 100 mg in 5 ml ampoule (20 mg/ml).

Dosage

- Child:

Age	Weight	Daily dose	10 mg ampoule
Under 1 year	Under 10 kg	1 mg x 2	0.2 ml x 2
1 to 3 years	10 to 14 kg	1 mg x 2 to 3	0.2 ml x 2 to 3
3 to 5 years	15 to 19 kg	2 mg x 2 to 3	0.4 ml x 2 to 3
5 to 9 years	20 to 29 kg	2.5 mg x 3	0.5 ml x 3
9 to 14 years	30 kg and over	5 mg x 3	1 ml x 3

- Adult: 10 mg every 6 to 8 hours as needed

Duration: according to clinical response, as short as possible

Contra-indications, adverse effects, precautions

- Do not administer to patients with gastrointestinal haemorrhage, obstruction or perforation, seizures.
- May cause:
 - drowsiness, headache,
 - rarely, extrapyramidal disorders (dyskinesia, tremor) especially in children and young patients,
 - increased frequency of seizures in epileptics,
 - worsening of Parkinson disease,
 - hyperprolactinemia in the event of prolonged treatment.
- Do not combine with levodopa.
- Avoid combination with antispasmodics (hyoscine butylbromide, atropine propantheline) and neuroleptics.
- Avoid alcohol during treatment.
- Reduce doses if renal or hepatic impairment.
- Pregnancy: no contra-indication
- Breast-feeding: avoid. If clearly needed, do not exceed a treatment period of 7 days.

Remarks

- Higher doses are used for prevention and treatment of chemotherapy-induced nausea and vomiting in adults: 2 to 10 mg/kg/day by IV injection.
- Storage: below 30°C - 

METRONIDAZOLE (Flagyl®...)

Prescription under medical supervision

2

Therapeutic action

- Antiprotozoal, antibacterial

Indications

- Severe infections due to anaerobic bacteria (*Bacteroides* sp, *Clostridium* sp, etc.), usually in combination with other antibacterials, only when oral administration is not possible

Presentation and route of administration

- 500 mg in 100 ml vial or bag (5 mg/ml), for infusion

Dosage

- Child: 20 to 30 mg/kg/day in 2 to 3 divided doses administered over 20 to 30 minutes
- Adult: 1 to 1.5 g/day in 2 to 3 divided doses administered over 20 to 30 minutes (one 500 mg-vial 2 to 3 times per day)

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.
- 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 1/3 and give once daily to patients with severe hepatic impairment.
- Pregnancy: no contra-indication, avoid prolonged use
- Breast-feeding: avoid (significantly excreted in milk)

Remarks

- Metronidazole is as effective by oral route than by parenteral route.
- Do not add any drugs in the infusion vial.
- Storage: below 30°C - 

MORPHINE



Prescription under medical supervision

Therapeutic action

- Centrally acting opioid analgesic

Indications

- Severe pain, especially in surgery, trauma and neoplastic disease

Presentation and route of administration

- 10 mg ampoule (10 mg/ml, 1 ml) for SC, IM or IV injection

Dosage

- Child and adult: 0.1 to 0.2 mg/kg/SC injection, to be repeated 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, head injury, raised intracranial pressure, uncontrolled epilepsy, severe hepatic impairment, acute abdomen before diagnosis; do not administer to children under 6 months.
- May cause:
 - dose-related sedation and respiratory depression, nausea, vomiting, dry mouth, urinary retention, excitement, confusion, raised intracranial pressure, pruritus,
 - in the event of overdose: excessive sedation, respiratory depression, hypotension, hypothermia, coma.
- Management of respiratory depression includes assisted ventilation and / or administration of naloxone. Monitor patient closely for several hours.
- Morphine always provokes constipation. For all treatments ≥ 48 hours, administer systematically a stimulant laxative (bisacodyl) in combination with an osmotic laxative (lactulose).
- Administer with caution to patients with respiratory impairment, urethro-prostatic disorders, cardiopulmonary disease.
- 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: other opioid analgesics, neuroleptics (chlorpromazine, haloperidol, etc.), antihistamines (chlorphenamine, promethazine), antidepressants (clomipramine, fluoxetine, etc.), benzodiazepines (diazepam, etc.), phenobarbital, etc.
- Monitor combination with ritonavir (possible increase in morphine plasma concentrations).
- Pregnancy: no contra-indication during the 1st and 2nd trimester. Administer with caution during the 3rd trimester (risk of respiratory depression and withdrawal symptoms in the newborn infant).
- Breast-feeding: no contra-indication for a short period, except in the event of respiratory pathology in the newborn infant. Monitor the newborn infant for adverse effects (drowsiness, etc.).

Remarks

- Morphine is on the list of narcotics: follow national regulations.
- Do not mix with other drugs in the same syringe.
- Storage:

NALOXONE (Nalone®, Narcan®, Zynox®...)



Prescription under medical supervision

2

Therapeutic action

- Specific opioid antagonist

Indications

- Respiratory depression induced by opioids (analgesia, anaesthesia, intoxication)
- Respiratory depression in newborns resulting from the administration of opioids to the mother

Presentation and 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%

Also comes in 10 ml ampoule containing 4 mg (0.4 mg/ml) and 2 ml ampoule containing 40 µg (20 µg/ml) for paediatric use.

Dosage

- Newborn: initial dose of 10 µg/kg by IV injection, followed by 10 µg/kg by IM injection every 90 minutes
- Child: 5 to 10 µg/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 µg/kg/hour, or by 5 to 10 µg/kg by IM injection every 90 minutes
- Adult: 1 to 3 µg/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 µg/kg/hour, or by 5 to 10 µg/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.
- IV route is preferred, use IM route if IV route is not feasible.
- Storage:

NORETHISTERONE (Noristerat®...)

Prescription under medical supervision

Therapeutic action

- Long-acting synthetic progestogen

Indications

- Long-term contraception

Presentation and route of administration

- 200 mg of norethisterone enantate in 1 ml ampoule (200 mg/ml), for IM injection

Dosage

- Adult:
 - 200 mg between the 1st and the 7th day of the menstrual cycle
 - or
 - 200 mg immediately after delivery (if the woman does not breastfeed) or an abortion

Duration

- One injection every 8 weeks

Contra-indications, adverse effects, precautions

- Do not administer to patients with breast or genital cancer, uncontrolled hypertension, history of thromboembolic disorders, stroke, coronary insufficiency, non equilibrated or complicated diabetes, severe or recent liver disease, undiagnosed vaginal bleeding, hyperlipidaemia.
- May cause: menstrual irregularities, amenorrhoea or bleeding, nausea, vomiting, breast tenderness, weight gain.
- Clinical examinations must be carried before and during treatment (weight, BP, breasts).
- Pregnancy: CONTRA-INDICATED
- Breast-feeding: CONTRA-INDICATED before 6 weeks

Remarks

- Injection may be administered up to 2 weeks before and up to 2 weeks after the fixed day, without the need for additional contraception.
- Return of fertility may be delayed long after the discontinuation of treatment.
- There is also a combined contraceptive injection containing norethisterone enantate 50 mg + estradiol valerate 5 mg (Mesigyna®) administered once monthly.
- Do not mix with other drugs in the same syringe.
- Storage: below 30°C

OMEPRAZOLE

(Mopral®...)

Prescription under medical supervision

2

Therapeutic action

- Antiulcer drug (proton pump inhibitor)

Indications

- Peptic ulcer perforation

Presentation

- Powder for injectable solution, 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/day 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.
- Omeprazole is not included in the WHO list of essential medicines.
- Storage: below 30°C – 

OXYTOCIN (Syntocinon®...)



Prescription under medical supervision

Therapeutic action

- Synthetic oxytocic

Indications

- Induction and augmentation of labour
- Treatment of postpartum haemorrhage caused by uterine atony
- Prevention of postpartum haemorrhage
- Prevention of uterine atony after caesarean section

Presentation and route of administration

- 10 IU/ampoule (10 IU/ml, 1 ml) for IM or slow IV injection or infusion in Ringer lactate or 0.9% sodium chloride or 5% glucose
- Also comes in 5 IU/ampoule (5 IU/ml, 1 ml).

Dosage

- *Induction and augmentation of labour*
 - Dilute 5 IU in 500 ml of solution for infusion.
 - Initially 5 drops/minute, then increase the rate by 5 drops/minute every 30 minutes until efficient contractions are obtained (i.e. over 10 minutes, 3 contractions lasting 40 seconds). Do not exceed 60 drops/minute.
- *Treatment of postpartum haemorrhage*
 - 5 to 10 IU by slow IV injection or 10 IU by IM injection, followed by an infusion of 10 IU (preferably in 500 ml of Ringer lactate solution), at the rate of 60 drops/minute, to be repeated if necessary until retraction of the uterus, without exceeding a total dose of 60 IU.
 - If treatment cannot be given by infusion, repeat IV or IM injections if needed until retraction of the uterus, without exceeding a total dose of 60 IU.
- *Prevention of postpartum haemorrhage*
 - 5 IU by IM injection *after* delivery of the placenta
 - Only competent medical staff with experience in obstetrics can administer oxytocin *before* delivery of the placenta (risk of placental retention).
- *Caesarean section:* systematic administration immediately after the foetus is delivered
 - 5 to 10 IU by slow IV injection

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not administer when vaginal delivery is contra-indicated (malpresentation, cephalo-pelvic disproportion, complete placenta praevia).
- Do not administer to patients with fragile uterus (history of caesarean section, grand multiparity), uterine hypertonia, foetal distress.
- May cause, especially when injected too rapidly by IV route or when excessive doses are used: uterine hypertonia and/or uterine rupture, foetal distress.
- Respect the dosage and rate of administration, monitor uterine contractility and foetal heart rate.
- Administer with caution to women with pregnancy-induced hypertension.
- Do not administer simultaneously with prostaglandins (misoprostol, etc.). Only administer oxytocin 8 hours after the last administration of misoprostol.

Remarks

- 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 ingredients and thus loss of efficacy.
 - If refrigeration is not available, vials kept below 30°C and protected from light may be stored for a maximum of one month.

PARACETAMOL = ACETAMINOPHEN

(Perfalgan®, Perfusalgan®...)

Prescription under medical supervision

2

Therapeutic action

- Analgesic, antipyretic

Indications

- Very high fever, when oral administration is not possible
- Mild to moderate pain, when oral administration is not possible

Presentation and route of administration

- 500 mg vial (10 mg/ml, 50 ml), for infusion
- Also comes in 1 g vial (10 mg/ml, 100 ml), for infusion

Dosage

- Neonate (child < 10 days): 7.5 mg/kg/infusion (0.75 ml/kg/infusion), to be administered over 15 minutes. Repeat 2 to 3 times/24 hours if necessary. Wait at least 4 hours between each infusion. Do not exceed 30 mg/kg/day.
- Infant and child: 15 mg/kg/infusion (1.5 ml/kg/infusion), to be administered over 15 minutes. Repeat 2 to 3 times/24 hours if necessary. Wait at least 4 hours between each infusion. Do not exceed 60 mg/kg/day.
- Adolescent and adult over 50 kg : 1 g/infusion (100 ml/infusion), to be administered over 15 minutes. Repeat 2 to 3 times/24 hours if necessary. Wait at least 4 hours between each infusion. Do not exceed 4 g/day.

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 hepatic impairment, severe renal impairment (wait 6 hours between each infusion), chronic alcoholism, malnutrition, dehydration.
- May cause (rarely): malaise, hypotension, rash.
- Do not exceed indicated doses, especially in children and elderly patients. Paracetamol intoxications are severe (hepatic cytolysis).
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- For the treatment of mild to moderate pain, paracetamol is used alone or in combination with an NSAID.
- For the treatment of moderate to severe pain, paracetamol is used in combination with an NSAID and a weak opioid analgesic (codeine, tramadol) or a strong opioid analgesic (morphine, etc.).
- 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 possible.
- Paracetamol has no anti-inflammatory properties.
- Do not mix with other drugs in the same infusion bottle.
- Storage: below 30°C - ☀

PENTAMIDINE
(Pentacarinat®, Pentam®...)



Prescription under medical supervision

Therapeutic action

- Antiprotozoal active against *Pneumocystis jiroveci (carinii)*

Indications

- Second-line treatment of pneumocystosis, in the event of contra-indication, intolerance or unresponsiveness to cotrimoxazole

Presentation and 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 slow infusion (over 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 an empty stomach, keep the patient supine during injection and 30 min 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 30°C –
- Once reconstituted, solution keeps for 24 hours maximum, between 2°C to 8°C.*

PHENOBARBITAL (Gardenal®, Luminal®...)



Prescription under medical supervision

2

Therapeutic action

- Anticonvulsant, sedative

Indications

- Status epilepticus: prolonged seizures or repeated seizures at short intervals without consciousness recovery

Presentation and route of administration

- 200 mg in 1 ml ampoule (200 mg/ml) for deep IM or slow and diluted IV injection
- Also comes in 40 mg and 200 mg vial containing phenobarbital in powder to be dissolved in 2 ml water for injection.

Dosage

- Child: 15 to 20 mg/kg by slow IV injection
- Adult: 10 to 15 mg/kg by slow IV injection (at a rate of 100 mg/minute maximum)
Phenobarbital solution must be diluted: 1 ml in 10 ml water for injection.

Duration: according to clinical response

Contra-indications, adverse effects, precautions

- Do not administer in severe respiratory depression.
- Assisted ventilation is essential in case of respiratory distress.
- May cause: drowsiness, respiratory depression.
- Risk of increased sedation when combined with alcohol and drugs acting on the central nervous system such as diazepam, chlorphenamine, chlorpromazine.
- Pregnancy and breast-feeding: risks linked to status epilepticus appear greater than risks linked to phenobarbital

Remarks

- For febrile convulsions in children, use diazepam by parenteral or rectal route.
- In the treatment of status epilepticus, administer first diazepam (rapid effect) rectally or by slow IV route, then phenobarbital (prolonged effect) by slow IV route.
- Phenobarbital IM has been used for prophylaxis of convulsions in patients suffering from cerebral malaria, as a single dose of 5 to 7 mg. This use is being discussed; in addition, the optimal dose is not yet agreed upon.
- Phenobarbital should be injected in glass syringe; if not available, inject immediately after filling the plastic syringe.
- SC route may cause necrosis.
- Do not mix with other drugs in the same syringe.
- Warning: also comes in 200 mg in 2 ml ampoule (100 mg/ml). Before any injection, check concentration.
- Phenobarbital is subject to international controls: follow national regulations.
- Injectable phenobarbital is not included in the WHO list of essential drugs.
- Storage: no special temperature requirements -

PHYTOMENADIONE = VITAMIN K1

Prescription under medical supervision

Therapeutic action

- Vitamin, anti-haemorrhagic

Indications

- Prophylaxis and treatment of haemorrhagic disease of the newborn

Presentation and route of administration

- 1 mg ampoule (1 mg/ml, 1 ml), only for IM or slow IV injection
- 2 mg ampoule (10 mg/ml, 0.2 ml), for oral administration, IM or slow IV injection
- 10 mg ampoule (10 mg/ml, 1 ml), for oral administration, IM or slow IV injection

Dosage

- *Systematic prophylaxis of haemorrhagic disease of the newborn*

	IM route	Oral route
Breastfed infants	<i>Single dose:</i> 1 mg the day of birth	<i>3 doses:</i> 2 mg the day of birth 2 mg 4 to 7 days after birth 2 mg 4 weeks after birth
Formula fed infants	<i>Single dose:</i> 1 mg the day of birth	<i>2 doses:</i> 2 mg the day of birth 2 mg 4 to 7 days after birth

Prophylaxis by oral route is effective only if all the doses are administered. Therefore, use IM route systematically in all newborn infants if treatment compliance cannot be guaranteed.

In *newborns at high risk* (preterm neonates, jaundice, neonatal diseases; newborns whose mother is treated with enzyme-inducing drugs), always use IM route.

- *Treatment of haemorrhagic disease of the newborn*
1 mg by IM injection, to be repeated every 8 hours if necessary

Duration: according to clinical response and results of coagulation tests

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

- To pregnant women taking enzyme-inducing drugs (rifampicin, phenobarbital, phenitoin, carbamazepine), administer 10 mg/day orally for the 15 days prior to the expected date of delivery. This maternal prevention does not change the need for IM prophylactic treatment in newborns at high risk.
- Phytomenadione is also used for the treatment of haemorrhage due to antivitamin K agents: 5 mg by slow IV route in the event of severe haemorrhage; 0.5 mg by slow IV route or 5 mg orally in the event of minor haemorrhage or risk of haemorrhage.
- Vitamin K has no direct or immediate haemostatic action, it is not indicated for traumatic haemorrhage.
- Do not mix with other drugs in the same syringe.
- Storage: below 25°C - 

PROMETHAZINE (Phenergan®...)



Prescription under medical supervision

2

Therapeutic action

- Sedating antihistaminic, anti-emetic

Indications

- Allergic reactions (contact dermatitis, seasonal allergy; allergy to drugs, insect bites, food, etc.), when oral administration is not possible
- Nausea and vomiting

Presentation and route of administration

- 50 mg in 2 ml ampoule (25 mg/ml) for IM injection

Dosage

- *Allergic reactions*

Child from 5 to 10 years: 12.5 mg/injection

Child over 10 years and adult: 25 to 50 mg/injection

To be repeated if necessary without exceeding 3 injections/day.

- *Nausea and vomiting*

Child from 5 to 10 years: 12.5 mg/injection

Child over 10 years and adult: 25 mg/injection

To be repeated if necessary every 4 to 6 hours.

- Never exceed 100 mg daily.

Duration

- According to clinical response, single dose or for a few days if necessary. Change to oral treatment as soon as possible.

Contra-indications, adverse effects, precautions

- Do not administer to patients with urethro-prostatic disorders, glaucoma.
- Avoid in children under 5 years.
- May cause: drowsiness, dryness of the mouth, constipation, urinary retention, blurred vision.
- Risk of increased sedation when combined with alcohol and drugs acting on the central nervous system: opioid analgesics, neuroleptics (chlorpromazine, haloperidol, etc.), other antihistamines (chlorphenamine), antidepressants (clomipramine, fluoxetine, etc.), phenobarbital, etc.
- Pregnancy: avoid at the end of pregnancy; no prolonged treatment
- Breast-feeding: not recommended (drowsiness and risk of apnoea in the newborn infant)

Remarks

- Storage: below 25°C -

PROTAMINE (Prosulf®...)

Prescription under medical supervision

Therapeutic action

- Neutralisation of the anticoagulant action of heparin

Indications

- Haemorrhage resulting from heparin overdosage

Presentation and route of administration

- 50 mg protamine sulfate in 5 ml ampoule (10 mg/ml) for slow IV injection
- Dosage may be expressed in antiheparin units: 1000 antiheparin units/ml = 10 mg/ml

Dosage

Depends on the amount of heparin to be neutralised.

- Adult: 1 mg protamine sulfate by slow IV injection neutralises 100 IU of heparin when administered less than 15 minutes after heparin. If protamine sulfate is given 30 minutes after heparin, reduce the dose by one-half because heparin is rapidly excreted.
Do not inject more than 50 mg for any one dose.

Duration: according to clinical response. Closely monitor coagulation parameters.

Contra-indications, adverse effects, precautions

- May cause: hypotension, bradycardia, dyspnoea.
- Risk of allergic reactions in diabetics treated by protamine-insulin.
- Overdosage may cause a rebound bleeding effect (protamine sulfate has an anticoagulant effect when used in excess).
- Administer very slowly by IV injection (over 10 minutes) in order to avoid risk of hypotension and bradycardia.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Anticoagulant effect of protamine may depend on origin of heparin: follow manufacturer's recommendations.
- Protamine sulfate may be used to neutralize the effect of heparin before surgery and during extracorporeal circulation (dialysis, cardiac surgery).
- Storage: to be kept refrigerated (2°C to 8°C) – 

QUININE



Prescription under medical supervision

2

Therapeutic action

- Antimalarial

Indications

- Severe falciparum malaria

Presentation and route of administration

- 600 mg ampoule (300 mg/ml, 2 ml) of quinine dihydrochloride, to be diluted in glucose, for slow infusion. NEVER FOR IV INJECTION.

Also comes in different strengths.

Dosage

Labels and dosages are expressed in salts. The dosage is the same for quinine formate or dihydrochloride.

- Child and adult:

- loading dose: 20 mg/kg diluted in glucose solution (preferably 10% glucose) administered over 4 hours. Then keep the vein open with an infusion of 5% glucose over 4 hours.
- maintenance dose: 10 mg/kg by slow infusion to be repeated every 8 hours (administer quinine over 8 hours in 5% glucose or, preferably, alternate quinine over 4 hours and 5% glucose over 4 hours).

For adults, administer each dose of quinine in 250 ml (if administered over 4 hours) or 500 ml (if administered over 8 hours). For children under 20 kg, administer each dose of quinine in a volume of 10 ml/kg (if administered over 4 hours) or 20 ml/kg (if administered over 8 hours).

Do not administer loading dose to patients who have received quinine, mefloquine or halofantrine within the previous 24 hours (start with maintenance dose).

Duration

- Minimum 3 doses of IV quinine or more until the patient is able to take oral treatment: administer oral quinine to complete 7 days of treatment or an artemisinin-based combination (if patient developed neurological signs during the acute phase, do not use the combination artesunate-mefloquine).

Contra-indications, adverse effects, precautions

- May cause: hypoglycaemia, auditory and visual disturbances, cardiac disorders (especially in the event of overdose), allergic reactions, cardiac depression if injected by direct IV route.
- In the event of shock or renal failure reduce the dose by one-half.
- Monitor blood glucose if possible (reagent strip test).
- Do not combine with coartemether, chloroquine, halofantrine.
- 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. Do not exceed therapeutic dose. Increased risk of quinine related-hypoglycaemia during pregnancy.
- 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. However this may cause complications (paralysis of sciatic nerve, muscular necrosis, infection). Doses are the same as for the IV route. Dilute quinine (1/2 or 1/5). For the loading dose, administer half the dose into each thigh.
- In certain regions of South-East Asia, quinine is combined with doxycycline (100 mg/day for 7 days) or clindamycin (20 mg/kg/day for 5 days), due to a reduction in quinine sensitivity of *P. falciparum*.
- Storage: below 30°C -

SALBUTAMOL = ALBUTEROL

(Salbutamol®...)

Prescription under medical supervision

Therapeutic action

- Bronchodilator
- Uterine relaxant

Indications

- Acute severe asthma, status asthmaticus
- Threatened premature labour

Presentation and route of administration

- 0.25 mg in 5 ml ampoule (0.05 mg / ml) for SC, IM, slow IV injection or infusion
Also comes in 1 ml ampoule containing 0.5 mg (0.5 mg/ml) and 5 ml ampoule containing 5 mg (1 mg/ml).

Dosage

- *Acute severe asthma, status asthmaticus*

SC or IM injection

Child: 10 to 20 micrograms / kg to be repeated after 4 hours if necessary
Adult: 0.5 mg to be repeated after 4 hours if necessary

IV injection (over one minute)

Child: 0.05 to 0,2 mg to be repeated after 15 minutes if necessary
Adult: 0.25 mg to be repeated after 15 minutes if necessary

IV infusion

Child:

Dilute 2.5 mg (5 ampoules of 0.5 mg) in 500 ml of 5% glucose or 0.9% sodium chloride to obtain a solution of 5 micrograms / ml.
Start with an initial dose of 5 to 7.5 micrograms / kg by IV injection then administer 5 to 7.5 micrograms / kg / hour (20 to 30 drops / kg / hour).

Adult:

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 with an initial dose of 0.25 mg (half of a 0.5 mg ampoule, non diluted) by IV injection. Then start infusion at the rate of 5 micrograms / minute (10 drops / minute). Increase the rate if necessary; the optimal dose is usually around 10 to 20 micrograms / minute (20 to 40 drops / minute).

- *Threatened premature labour*

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.
Monitor maternal pulse regularly, decrease the infusion rate in the event of maternal tachycardia > 120 / minute.

Duration

- *Acute severe asthma, status asthmaticus:* according to clinical response
- *Threatened premature labour:* 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, uncontrolled hypertension.
- Do not administer simultaneously with nifedipine.
- May cause: foetal and maternal tachycardia, tremor, headache, dizziness, hypokalaemia, hyperglycaemia, gastrointestinal disturbances.
- Administer with caution to patients with diabetes, hyperthyroidism.
- Pregnancy: no contra-indication
- Breast-feeding: avoid

Remarks

- Not to be confused salbutamol solution for injection with salbutamol solution for nebulizer in 1.25 mg (0.5 mg/ml, 2.5 ml), 2.5 mg (1 mg/ml, 2.5 ml) and 5 mg (2 mg/ml, 2.5 ml) ampoules, administered by inhaled route in severe acute asthma.
- Do not mix with other drugs in the same syringe or the same infusion fluid.
- Storage: below 25°C – 

SPECTINOMYCIN (Stanilo®, Trobicin®...)

Prescription under medical supervision

Therapeutic action

- Antibacterial (group of aminoglycosides) active against *Neisseria gonorrhoeae*

Indications

- Gonococcal infections

Presentation and route of administration

- Powder for reconstitution in 2 g vial, to be dissolved in 3 to 4 ml of water for injection, for deep IM injection

Dosage and duration

- *Gonorrhoea, adult gonococcal conjunctivitis*
2 g as a single dose; in severe cases, 4 g to be injected in 2 separate sites
- *Neonatal gonococcal conjunctivitis*
25 mg/kg as a single dose to a maximum of 75 mg

Contra-indications, adverse effects, precautions

- Do not administer to children, except if there is no alternative.
- Avoid in patients with renal impairment.
- May cause: nausea, dizziness, fever, urticaria, pain at injection site.
- Shake well prior to withdrawal medication and use a 19-gauge needle.
- *Pregnancy: CONTRA-INDICATED (safety is not established)*
- *Breast-feeding: CONTRA-INDICATED (safety is not established)*

Remarks

- In the treatment of gonococcal infections in adults, by preference use oral cefixime or ceftriaxone IM.
- Chlamydia is often associated with gonococcus. Administer a concurrent anti-chlamydia treatment (azithromycin or doxycycline or erythromycin) to patients with gonorrhoea.
- In the treatment of gonococcal neonatal conjunctivitis, by preference use ceftriaxone IM.
- Spectinomycin may be used in the treatment of disseminated gonococcal infection at a dose of 4 g/day in 2 divided doses for 7 days.
- Spectinomycin is not effective in the treatment of syphilis and chlamydial infection.
- Do not mix with other drugs in the same syringe.
- *Storage: below 30°C*

STREPTOMYCIN



Prescription under medical supervision

2

Therapeutic action

- Antibacterial (group of aminoglycosides)

Indications

- Tuberculosis
- Pneumonic and septicaemic plague

Presentation and route of administration

- Powder for injection, vial containing 1 g of streptomycin base, to be dissolved in 5 ml of water for injection, for IM injection. NEVER FOR IV ROUTE.

Dosage

- *Tuberculosis*

Child and adult:

- daily treatment: 15 mg/kg once daily; do not exceed 1 g/day
or
- intermittent treatment: 15 mg/kg 3 times weekly

Due to the ototoxicity and nephrotoxicity of streptomycin, do not exceed a total dose of 60 g for the treatment of tuberculosis in adults.

- *Pneumonic and septicaemic plague*

Child: 30 mg/kg/day in 2 divided doses at 12 hour-intervals; do not exceed 1 g/day

Adult: 2 g/day in 2 divided doses at 12 hour-intervals

Duration

- *Tuberculosis*: according to protocol, generally 2 months
- *Plague*: 10 days

Contra-indications, adverse effects, precautions

- Do not administer to patients with renal impairment.
- May cause: vestibular and auditory damage, renal impairment, allergic reactions.
- Stop treatment in the event of dizziness, tinnitus, hearing loss.
- Reduce the dose to 500-750 mg/day in patients over 60 years or under 50 kg and if renal impairment occurs (albuminuria, decreased urine output).
- Pregnancy: CONTRA-INDICATED
- Breast-feeding: CONTRA-INDICATED

Remarks

- Before starting antituberculosis treatment the following conditions should be met: protocols conform to international recommendations; regular patient follow-up for the duration of treatment; regular, uninterrupted supply of drugs and laboratory reagents; active tracing of defaulting patients.
- In the treatment of tuberculosis, streptomycin must never be used alone, but in combination with other antituberculosis drugs.
- Streptomycin is also used in combination with doxycycline for the treatment of brucellosis.
- Storage: below 25°C -
Reconstituted solution keeps for 24 hours maximum, below 25°C and protected from light.

THIAMINE = ANEURINE = VITAMIN B1

(Benerva®, Betaxin®...)

Therapeutic action

- Vitamin: vitamin B1 deficiency leads to beri-beri

Indications

- Severe thiamine deficiency, in case of acute "wet" beri-beri (cardiac failure) or chronic alcoholism (Wernicke-Korsakoff syndrome), when oral route cannot be used.

Presentation and route of administration

- 100 mg thiamine hydrochloride in 1 ml ampoule (100 mg/ml) and in 2 ml ampoule (50 mg/ml) for IM or slow IV injection.

Dosage

- Child and adult: 100 mg/day, every day or every two days

Duration: according to clinical response; change to oral treatment as soon as possible.

Contra-indications, adverse effects, precautions

- May cause: hypotension, rare but severe allergic reactions, during or shortly after injection.
- IV injection must be administered very slowly (over 10 minutes).
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Thiamine degrades rapidly in parenteral nutrition solutions, which may lead to vitamin B1 deficiency.
- Thiamine is combined with other B vitamins in multivitamin preparations often called "B complex", the amount of thiamine may vary from one preparation to another.
- Use of high doses of thiamine to relieve pain in rheumatic or neurological diseases has no scientific basis.
- Injectable thiamine is not included in the WHO list of essential drugs.
- Storage: 

TRAMADOL

(Tramal®, Zamadol®, Zydol®...)



Prescription under medical supervision

2

Therapeutic action

- Centrally acting opioid analgesic

Indications

- Moderate acute and chronic pain

Presentation and route of administration

- 100 mg ampoule (50 mg / ml, 2 ml) for SC, IM, slow IV injection or infusion

Dosage

Adjust dosage according to patient's response and tolerance:

- Child over 1 year: 1 to 2 mg / kg, to be repeated every 6 to 8 hours
 - Adult: 50 to 100 mg, to be repeated every 4 to 6 hours, without exceeding 600 mg / day
- Tramadol should be administered at regular times intervals and not on demand.

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 respiratory depression or epilepsy.
- Do not administer to children under one year.
- May cause: dizziness, nausea, vomiting, drowsiness, dry mouth, sweating; rarely: allergic reactions, seizures, confusion.
- For intravenous administration, it is better to use tramadol by infusion rather than by IV injection, in order to limit adverse effects (especially dizziness, nausea and vomiting).
- Do not combine with opioid analgesics with mixed agonist-antagonist activity such as buprenorphine, nalbuphine, pentazocine (competitive action), carbamazepine and neuroleptics.
- Reduce doses by half or increase intervals between each injection (every 12 hours) in elderly patients and in patients with renal or hepatic impairment (risk of accumulation).
- Overdose may cause respiratory depression. Treat with naloxone.
- *Pregnancy: no contra-indication during the first and second trimester. Administer with caution during the third trimester (risk of respiratory depression and withdrawal symptoms in the newborn infant).*
- *Breast-feeding: no contra-indication for a short period, except in the event of respiratory pathology in the newborn infant. Monitor the newborn infant for adverse effects (drowsiness, etc.).*

Remarks

- Tramadol is a step 2 analgesic according to the WHO classification.
- Tramadol is 5 to 10 times less potent than morphine.
- In some countries, tramadol is on the list of narcotics: follow national regulations.
- Do not mix with other drugs in the same syringe or infusion.
- Storage:

Infusion fluids and electrolytes

3

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Use of infusion fluids

Choice of infusion fluids according to indications

3 kinds of infusion fluids should be permanently available:

- one for IV rehydration: Ringer Lactate is the most suitable;
- one for dilution of IV injectable drugs: 5% glucose is the most suitable;
- one for expansion of blood volume: see next page.

Indications	First choice	Alternatives
Intravenous rehydration	Ringer Lactate	<ul style="list-style-type: none"> – Sodium chloride 0.9% and glucose 5% solution + 4 g NaCl/litre + 2 g KCl/litre – Half Strength Darrow's solution – Glucose 5% + 4 g NaCl/litre + 2 g KCl/litre
Vehicle for administration of drugs	Glucose 5%	<ul style="list-style-type: none"> – Sodium chloride 0.9% – Glucose and sodium chloride – Ringer Lactate – Half Strength Darrow's solution

Precautions for the use of infusion fluids

- Carefully read the labels on the infusion bottle to avoid mistakes.
- Indicate on the label any drugs added to the infusion.
- If drugs are added to the intravenous fluid, think of the risks of:
 - physical and chemical incompatibilities,
 - microbial contamination: strict aseptic technique.
- Examine each bottle against the light to check clearness: discard any bottles that show particles in suspension, cloudiness.

Volume expanders

	Duration*	Volume	Dosage	Indications	Contra-indications	Advantages	Disadvantages
CRISTALLOIDS Ringer Lactate NaCl 0.9 %	1 to 2 hours	3 times the estimated fluid loss	According to patient's condition	- Hypovolaemia - Prevention of hypotension induced by spinal anaesthesia	- None	- Free from adverse effects - Inexpensive	- Large amounts to be infused rapidly - Expansion of short duration
COLLOIDS Polygeline Modified fluid gelatin	2 to 3 hours	1 to 1.5 times the estimated fluid loss	According to patient's condition	- Hypovolaemia	- Allergy to gelatins	- Relatively good volume expansion	- Allergic reactions - Expansion of short duration - Expensive
Dextran	Dextran 40 3 to 4 hours Dextran 70 4 to 6 hours	Expansion of plasma volume is slightly in excess of the infused volume	According to patient's condition Adult: 1000 ml / day maxi (500 ml / day if prolonged treatment)	- Hypovolaemia	- Obstetrics - Allergy to dextran - Clotting abnormalities - Renal failure	- Good volume expansion - Expansion of rela- tively long duration	- Anaphylactic reactions - Clotting abnormalities - Inhibition of platelet aggregation - Renal failure - Elderly patients

* Length of time during which the fluid remains in the intravascular compartment after infusion.

For more information, refer to relevant fact-sheet.

Half Strength DARROW'S SOLUTION

solution for INFUSION

Prescription under medical supervision

3

Indications

- Severe dehydration in children with severe malnutrition

Presentation

- 500 ml plastic bottle

Composition

- Varies with manufacturer. Example of ionic composition per 100 ml:

Glucose:	2.50 g
Potassium chloride:	0.13 g
Sodium chloride:	0.20 g
Sodium Lactate:	0.30 g

Dosage and duration

- For information:
15 ml/kg over 2 hours then stop infusion and administer oral rehydration salts

Contra-indications, adverse effects, precautions, remarks

- Closely monitor the clinical state and the rate of infusion to avoid overhydration.
- By preference use Ringer Lactate in non malnourished or moderately malnourished children.
- Half Strength Darrow's solution is recommended by the WHO for the treatment of severe dehydration in children with severe malnutrition but is not included in the WHO list of essential drugs.
- Storage: below 30°C

GLUCOSE 5% = DEXTROSE 5% **isotonic solution for INFUSION**

Indications

- Vehicle for the administration of other drugs
- Intra-cellular dehydration (rare): fever, sunstroke

Presentation

- 500 ml and 1000 ml bottles or bags

Composition

- Isotonic solution: glucose 5 g per 100 ml

Contra-indications, adverse effects, precautions, remarks

- Glucose solution does not contain electrolytes or Lactate. Its use is not recommended for the treatment of dehydration. Preferably use Ringer Lactate solution. If not available, add KCl (2 g/l) + NaCl (4 g/l) to glucose 5%.
- 5% glucose solutions containing sodium chloride 0.2% or 0.4% or 0.6% have the same indications and disadvantages as isotonic NaCl solutions. Do not confuse with 10 %, 15%, 30% and 50% hypertonic glucose solutions.
- Low nutritional value: 200 kcal/litre.
- For the administration of IV quinine, preferably use glucose 10% solution. If not available, add 10 ml glucose 50% to 100 ml glucose 5%, to obtain a 10% glucose solution.
- Storage: below 30°C

GLUCOSE 50% = DEXTROSE 50% **hypertonic solution in AMPOULE**

Prescription under medical supervision

Indications

- Hypoglycaemia
- Energy supplementation (1 g glucose provides 4 kcal)

Presentation

- 50% solution in 10 ml ampoule
- Also comes in 20 ml ampoule and 50 ml or 500 ml bottles.

Composition

- Hypertonic solution: glucose 50% = 5 g/10 ml

Contra-indications, adverse effects, precautions, remarks

- Do not administer hypertonic solution by IM or SC route. The injections must be given by slow and strict direct IV injection or by infusion.
- Storage: below 30°C

MODIFIED FLUID GELATIN (Gelofusine®, Plasmion®...)

and POLYGELINE (Haemaccel®...)

solution for INFUSION

Prescription under medical supervision

3

Therapeutic action

- Colloidal plasma substitute

Indications

- Fluid replacement in hypovolaemic shock (haemorrhagic shock, septic shock)

Presentation

- 500 ml plastic bottle or bag

Composition

- Varies according to the manufacturer. Example:

	Plasmion®	Haemaccel®
Modified fluid gelatin	30 g/litre	–
Polygeline	–	35 g/litre
Sodium (Na ⁺)	150 mmol (150 mEq)	145.00 mmol (145.00 mEq)
Potassium (K ⁺)	5 mmol (5 mEq)	5.10 mmol (5.10 mEq)
Calcium (Ca ⁺⁺)	–	6.25 mmol (12.50 mEq)
Chloride (Cl ⁻)	100 mmol (100 mEq)	145.00 mmol (145.00 mEq)
Magnesium (Mg ⁺⁺)	1.5 mmol (3 mEq)	–
Lactate	30 mmol (30 mEq)	–

Dosage

- Adjust dosage according to the patient's haemodynamic status.
- In the event of haemorrhage, replace the lost volume by the same volume of plasma substitute.

Contra-indications, adverse effects, precautions

- May cause: allergic reactions, possibly severe (anaphylactic shock).
- Pregnancy: CONTRA-INDICATED: risk of maternal anaphylactic reaction with serious consequences for the foetus. Use Ringer lactate.

Remarks

- Do not add any drugs to the bottle.
- When plasma substitutes are not available, use Ringer lactate (giving 3 times the lost blood volume).
- Storage: below 25°C

POTASSIUM CHLORIDE 10%



hypertonic solution in AMPOULE

Prescription under medical supervision

Indications

- Prevention and treatment of severe hypokalaemia

Presentation

- 1 g in 10 ml ampoule (potassium chloride 10%)
- 2 g in 20 ml ampoule (potassium chloride 10%)

Also comes in 10 ml and 20 ml ampoules containing 7.5%, 11.2%, 15% and 20% solutions.

Composition

Potassium chloride: 10 g per 100 ml

- Hypertonic solution
- Ionic composition:

potassium (K^+): 13.4 mmol per 10 ml ampoule (13.4 mEq)
 26.8 mmol per 20 ml ampoule (26.8 mEq)

chloride (Cl^-) : 13.4 mmol per 10 ml ampoule (13.4 mEq)
 26.8 mmol per 20 ml ampoule (26.8 mEq)

Contra-indications, adverse effects, precautions

- Do not administer hypertonic solution by direct IV, IM or SC route. Administer only by slow infusion **diluted** in glucose 5%.
Do not exceed 1 to 2 g KCl/hour (13 to 27 mmol/hour).
- Risk of ventricular arrhythmia when injected too rapidly.
- Administer with caution to elderly patients and to patients suffering from renal failure.

Remarks

- Normal plasma-potassium concentration is about 3.5 to 5 mmol per litre. Normal daily needs are about 40 mmol.
- May be used to prepare a solution for IV rehydration (if Ringer Lactate is not available): add KCl (2 g/l) + NaCl (4 g/l) in glucose 5%.
- Storage: no special temperature requirements

RINGER LACTATE = COMPOUND SODIUM LACTATE

= Hartmann's solution

isotonic solution for INFUSION

3

Indications

- Severe dehydration
- Hypovolaemia (trauma, surgery, anaesthesia...)

Presentation

- 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.

Contra-indications, adverse effects, precautions, remarks

- In cases of metabolic alkalosis, diabetes, severe hepatic failure, head injury: isotonic solution of NaCl 0.9% is preferred.
- Ringer Lactate provides appropriate amounts of sodium and calcium. 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.**
- It contains 4 mEq of potassium/litre, which is sufficient for short-term use. For prolonged use (after 2 to 3 days), addition of potassium chloride is necessary: 1 or 2 g per litre = one to two 10 ml ampoules of KCL 10% / litre.
- For moderate and mild dehydration, administer oral rehydration salts (ORS).
- For correction of hypovolaemia due to haemorrhage; administer 3 times the lost volume only if:
 - cardiac and renal function are not impaired,
 - blood loss does not exceed 1500 ml in adults.
- May be used to prevent hypotension induced by spinal anaesthesia.
- Storage: below 30°C

SODIUM BICARBONATE 1.4% isotonic solution for INFUSION

Prescription under medical supervision

Indications

- Severe metabolic acidosis

Presentation

- 500 ml bottle

Composition

Sodium bicarbonate: 1.4 g per 100 ml

- Isotonic solution
- Ionic composition: sodium (Na^+): 167 mmol (167 mEq) per litre
bicarbonate : 167 mmol (167 mEq) per litre

Contra-indications, adverse effects, precautions, remarks

- Do not use in case of metabolic alkalosis or respiratory acidosis.
- 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.
- Do not add: penicillins, chloramphenicol, aspirin, atropine, calcium, insulin, vitamins... to sodium bicarbonate solution.
- Normal plasma-bicarbonate concentration is about 20 to 30 mmol /litre.
- Storage: below 30°C

SODIUM BICARBONATE 8.4% hypertonic solution in AMPOULE

Prescription under medical supervision

Indications

- Severe metabolic acidosis

Presentation

- 10 ml or 20 ml ampoule

Composition

Sodium bicarbonate in hypertonic solution: 8.4 g per 100 ml

- 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, remarks

- 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.
- 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.
- Do not add: penicillins, chloramphenicol, aspirin, atropine, calcium, insulin, vitamins... to sodium bicarbonate solution.
- Storage: below 30°C

SODIUM CHLORIDE 0.9% = NaCl = physiological saline isotonic solution for INFUSION

3

Indications

- Vehicle for the administration of other drugs
- Correction of hypovolaemia (trauma, surgery, anaesthesia...)

Presentation

- 500 ml and 1000 ml bottles or bags
- Also comes in 2 ml, 5 ml, 10 ml, 20 ml, or 50 ml ampoules.

Composition

- Sodium chloride: 0.9 g per 100 ml
- Isotonic solution
 - Ionic composition: sodium (Na^+) : 154 mmol per litre (154 mEq)
chloride (Cl^-) : 154 mmol per litre (154 mEq)

Contra-indications, adverse effects, precautions, remarks

- Do not administer in cases of combined water and sodium retention, heart failure, oedema and ascites due to cirrhosis.
- This solution contains neither lactate nor potassium. In case of severe dehydration, Ringer Lactate is preferred.
- If Ringer Lactate is not available, add KCl (2 g/l) + NaCl (4 g/l) to glucose 5%.
- Too rapid infusion of inappropriate large amounts may provoke pulmonary oedema.
- For correction of hypovolaemia due to haemorrhage; administer 3 times the lost volume only if:
 - cardiac and renal function are not impaired,
 - blood loss does not exceed 1500 ml in adults.
- May be used to prevent hypotension induced by spinal anaesthesia.
- Storage: below 30°C

SODIUM CHLORIDE = NaCl hypertonic solution in AMPOULE

Prescription under medical supervision

Indications

- Hyponatraemia

Presentation

- 10 % and 20% solution in 10 ml and 20 ml ampoules

Composition

- Sodium chloride: 10 g per 100 ml and 20 g per 100 ml
- Hypertonic solution
 - Ionic composition: sodium (Na^+) : 1.7 mmol per litre (1.7 mEq), solution 10%
3.4 mmol per litre (3.4 mEq), solution 20%
chloride (Cl^-) : 1.7 mmol per litre (1.7 mEq), solution 10%
3.4 mmol per litre (3.4 mEq), solution 20%

Contra-indications, adverse effects, precautions, remarks

- Do not administer hypertonic solutions by IM or SC route. Administer by slow direct IV injection **diluted** or by infusion in 5% glucose or sodium chloride 0.9%.
- Do not use in cases of combined water and sodium retention, heart failure, oedema and ascites due to cirrhosis.
- Storage: below 30°C

Vaccines, immunoglobulins and antisera

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ANTITUBERCULOUS VACCINE = BCG VACCINE

Indications

- Prevention of tuberculosis, especially severe forms of the disease in children (miliary tuberculosis, tuberculous meningitis)

Composition, presentation and route of administration

- Live attenuated bacterial vaccine
- Powder for injection in multidose vial, to be dissolved with the entire vial of the specific 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 as a single dose as soon after birth as possible
 - If child is over one year old: 0.1 ml as a single dose
- Duration of protection is not known, and decreases over time.

Contra-indications, adverse effects, precautions

- Do not administer to patients with extensive dermatosis, congenital or acquired immunodeficiency (symptomatic HIV infection, immunosuppressive therapy, etc.), malignant haemopathy. Vaccination should be postponed in the event of severe acute febrile illness. Minor infections are not contra-indications.
- Clean the injection site with boiled and cooled water and allow to dry. Do not use antiseptics (risk of inactivation of live vaccine).
- 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 scar of a few mm in diameter,
 - occasionally: abscess at the injection site, keloid formation, regional lymph nodes 2 to 3 months after injection, suppurative lymphadenitis,
 - exceptionally: osteitis.
- 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. A pale papule should appear at the injection site if administered properly.
- Storage: 
 - Reconstituted vaccine: between 2°C and 8°C for 4 hours maximum.
 - Powder: between 2°C and 8°C. Freezing is possible but unnecessary.
 - Diluent: a cold chain is not required for storage. However, at least 24 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.

DIPHTHERIA-PERTUSSIS-TETANUS VACCINE (DPT)

Indications

- Prevention of diphtheria, pertussis and tetanus

Composition, presentation and route of administration

- Trivalent vaccine containing diphtheria toxin, tetanus toxin and one of the following two types of pertussis vaccine: whole-cell vaccine prepared using inactivated *B. pertussis* bacteria (DwPT) or acellular vaccine (DaPT) prepared using purified antigens of *B. pertussis*.
- Suspension for injection in multidose vial, for IM injection into the anterolateral part of the thigh

Dosage and vaccination schedule

- Child: 0.5 ml/injection
Administer 3 injections, 4 weeks apart: at 6, 10 and 14 weeks of age, then a booster dose one year after the third dose.
If a child has not been vaccinated at 6 weeks of age, start vaccination as soon as possible.
Protection lasts several years after 4 doses.

Contra-indications, adverse effects, precautions

- Do not administer in the event of:
 - severe acute febrile illness: in this event, vaccination should be postponed. Minor infections are not contra-indications.
 - significant reactions to a previous dose of DPT: use DT instead of DPT for the subsequent doses.
 - evolving neurological disease (encephalopathy, uncontrolled epilepsy): use DT instead of DPT.
- Do not administer into the gluteal region.
- Do not administer DPT to children over 7 years: use Td.
- May cause:
 - mild local reactions: swelling, redness and pain at the injection site,
 - general reactions: fever within 24 hours after injection,
 - rarely: allergic reactions, seizures.
- Respect an interval of 4 weeks between each dose.
- Shake before use to homogenise the 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.

Remarks

- 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.
- There are two bivalent vaccines containing toxins of diphtheria and tetanus:
 - **diphtheria-tetanus vaccine (DT)**, used for children under 7 years of age for booster doses, or in children whom whole-cell pertussis vaccine is contra-indicated, or after a significant reaction to a previous dose of DPT,
 - **tetanus-diphtheria vaccine** with low dose diphtheria toxoid (Td), used for booster doses in adults, adolescents and children over 7 years.
- Storage: between 2°C and 8°C. Do not freeze. 

HEPATITIS B VACCINE

Indications

- Prevention of hepatitis B

Composition, presentation and route of administration

- There are 2 types of vaccines: recombinant vaccines (Engerix B®, GenHevac B®, HBvaxpro®, etc.) and human plasma-derived vaccines (Heptavax®, etc.)
- Solution for injection, in single-dose syringe or multidose vial, for IM injection into the deltoid muscle (into the anterolateral part of the thigh in children under 2 years)

Dosage and vaccination schedule

Dosage varies according to age and type of vaccine used: follow manufacturer's instructions.

- *Standard schedule*
 - Newborns and infants:
In countries where perinatal infection is common: one injection after birth, then at 6 and 14 weeks
Where perinatal infection is less common: one injection at 6, 10 and 14 weeks
 - Children, adolescents, adults:
Schedule 0-1-6: 2 injections 4 weeks apart, then a 3rd injection 5 months after the 2nd injection
Immunity develops 1 to 2 months after the 3rd injection. Vaccine efficacy is > 80%.
- *Accelerated schedules, when rapid protection is required (imminent departure in highly endemic areas, post-exposure prophylaxis)*
 - Schedule D0-D7-D21: 3 injections administered during the same month, then a 4th injection one year after the 1st injection
 - Schedule 0-1-2-12: 3 injections 4 weeks apart, then a 4th injection one year after the 1st injection

Contre-indications, effets indésirables, précautions

- Do not administer to patients with hypersensitivity to any component of the vaccine, or history of an allergic reaction to a previous injection. Vaccination should be postponed in the event of severe acute febrile illness. Minor infections are not contra-indications.
- Do not administer into the gluteal region (diminished antibody response to vaccine).
- In patients with multiple sclerosis, assess the benefit-risk balance of vaccination.
- May cause:
 - minor local or general reactions (pain or redness at injection site, fever, headache, myalgia, etc.),
 - very rarely: anaphylactic reaction, serum disease, lymphadenopathy, peripheral neuropathy.
- Shake before use to homogenise the 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: only administer if there is a high risk of contamination
- Breast-feeding: no contra-indication

Remarks

- 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.
- 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 areas (rural areas of Southeast Asia and Western Pacific countries)
 - in travellers spending more than 1 month in endemic areas during the season of transmission (monsoon)

Composition, presentation and route of administration

- Inactivated virus vaccine
- Powder for injection in single-dose vial, to be dissolved with the entire vial of the specific diluent supplied by the manufacturer, for SC injection

Dosage and vaccination schedule

- Child from 1 to 3 years: 0.5 ml/injection
- Child over 3 years and adult: 1 ml/injection

Administer 3 injections on Day 0, Day 7 and Day 30; a booster dose after 2 years, and every 3 years in high-risk areas.

An accelerated schedule is possible: 3 doses on Day 0, Day 7 and Day 14. However, a higher degree of protection is achieved by the Day 0, Day 7 and Day 30 schedule.

In travellers, 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.

Protection lasts at least 2 years after 3 doses. Vaccine efficacy is 90%.

Contra-indications, adverse effects, precautions

- Do not administer to children under 1 year.
- Do not administer to patients with history of an allergic reaction to a previous injection. Vaccination should be postponed in the event of severe acute febrile illness. Minor infections are not contra-indications.
- May cause:
 - mild local reactions at the injection site,
 - general reactions: fever, headache, rash, chills, myalgia, gastrointestinal disturbances, allergic reactions up to 2 weeks after injection,
 - rarely: neurological disorders (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

- Japonesee encephalitis vaccine is not included in the WHO list of essential medicines.
- Storage: 
 - Reconstituted vaccine: between 2°C and 8°C for 8 hours maximum.
 - Powder: between 2°C and 8°C. Do not freeze.
 - Diluent: a cold chain is not required for storage. However, at least 24 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.

MEASLES VACCINE

Indications

- Prevention of measles

Composition, presentation and route of administration

- Live-attenuated virus vaccine
- Powder for injection in single multidose vial, to be dissolved with the entire vial of the specific diluent supplied by the manufacturer, for IM or SC injection into the anterolateral part of the thigh or into the deltoid muscle

Dosage and vaccination schedule

- Children from 9 months of age: 0.5 ml as a single dose
- In situations where there is high risk of infection (overcrowding, hospitalised children, epidemics, HIV infection, malnutrition, etc.) administer 2 doses: a first dose from 6 months of age (between 6 and 8 months), and a 2nd dose from 9 months of age.
Immunity develops 7 to 10 days after injection, for at least 10 years (when administered at 9 months).

Contra-indications, adverse effects, precautions

- Do not administer to patients with hypersensitivity to egg or under immunosuppressive therapy. Vaccination should be postponed in the event of severe acute febrile illness. Minor infections are not contra-indications.
- Do not administer within the 6 weeks following administration of immunoglobulins or blood products (efficacy of vaccination may be impaired).
- Clean the injection site with boiled and cooled water and allow to dry. Do not use antiseptics (risk of inactivation of live vaccine).
- May cause:
 - within 15 days after injection: fever, skin rash, rhinopharyngitis,
 - exceptionally: seizures, encephalitis.
- 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 and breast-feeding: vaccination against measles is not indicated in adults

Remarks

- Storage: 
 - Reconstituted vaccine: between 2°C and 8°C for 6 hours maximum.
 - Powder: between 2°C and 8°C. Freezing is possible but unnecessary.
The vaccine vials 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.
 - Diluent: a cold chain is not required for storage. However, at least 24 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.

MENINGOCOCCAL VACCINE A + C

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 endemic areas (African meningitis belt)

Composition, presentation and route of administration

- Inactivated bacterial vaccine
- Powder for injection in multidose vial, to be dissolved with the entire vial of the specific 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 as a single dose
Immunity develops 10 to 14 days after injection, for at least 3 years.

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

- Storage: 
 - Reconstituted vaccine: use immediately.
 - Powder: between 2°C and 8°C.
 - Diluent: a cold chain is not required for storage. However, at least 24 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.

MENINGOCOCCAL VACCINE A + C + W135

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 endemic areas (African meningitis belt)

Composition, presentation and route of administration

- Inactivated bacterial vaccine
- Powder for injection in multidose vial, to be dissolved with the entire vial of the specific diluent supplied by the manufacturer, for SC injection only

Dosage and vaccination schedule

- Child from 2 years and adult: 0.5 ml as a single dose
Immunity develops 10 to 14 days after injection, for at least 3 years.

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

- Storage: 
 - Reconstituted vaccine: use immediately.
 - Powder: between 2°C and 8°C.
 - Diluent: a cold chain is not required for storage. However, at least 24 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.

ORAL ANTIPOLIOMYELITIS VACCINE (OPV)

Indications

- Prevention of poliomyelitis

Composition, presentation and route of administration

- Live-attenuated virus vaccine, trivalent (poliovirus types 1, 2 and 3)
- Oral suspension in multidose vial, to be administered on the tongue, with dropper

Dosage and vaccination schedule

- One dose = 2 to 3 drops depending on manufacturer
 - *in non endemic areas*, administer 3 doses 4 weeks apart: at 6, 10 and 14 weeks of age
 - *in endemic areas*, administer 4 doses 4 weeks apart: at birth then at 6, 10 and 14 weeks of age

Protection lasts at least 5 years after 3 doses.

Contra-indications, adverse effects, precautions

- No contra-indication. Vaccination should be postponed in the event of severe acute febrile illness. Minor infections are not contra-indications.
- If a child has diarrhoea when the vaccine is administered, give the usual dose then give an extra dose 4 weeks later.
- May cause (exceptionally): paralytic poliomyelitis, encephalopathy.
- Respect an interval of 4 weeks between each dose.
- *Pregnancy: CONTRA-INDICATED during the first trimester, except if there is a high risk of contamination*
- *Breast-feeding: no contra-indication*

Remarks

- Storage: between 2°C and 8°C – 
For prolonged storage: freeze (-20°C).

OPV is very sensitive to heat. The vaccine vials therefore 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, or if the solution is cloudy, the vial must be destroyed.

RABIES IMMUNOGLOBULIN (HUMAN)

Therapeutic action

- Neutralisation of rabies virus

Indications

- Prevention of rabies after category III exposure (transdermal bites, scratches or contamination of mucous membranes with saliva), in combination with rabies vaccine

Presentation and route of administration

- Solution for injection in 300 IU (150 IU/ml, 2 ml) and 1500 IU (150 IU/ml, 10 ml) vials, for infiltration into the wound site and for IM injection into deltoid muscle in adult or the anterolateral part of the thigh in children, in the opposite arm or thigh to where the rabies vaccine is injected

Dosage and duration

- Child and adult: 20 IU/kg as a single dose, half of the amount into and around the wound site, and the rest by IM injection into the deltoids or the thigh
Administer simultaneously rabies immunoglobulin and rabies vaccine as soon as possible after exposure.
However, if immunoglobulin is not immediately available, it should be administered within 8 days after the first dose of the rabies vaccine.
Rabies human immunoglobulin provides passive immunization against rabies for 3 to 4 weeks.

4

Contra-indications, adverse effects, precautions

- Do not administer measles vaccine during 6 weeks after injection of rabies immunoglobulin (efficacy of vaccination may be impaired).
- May cause: fever, myalgia, headache, gastrointestinal disturbances, skin allergy.
- 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.
- Do not administer rabies immunoglobulin and rabies vaccine in the same syringe and in the same injection site.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- In children and/or in the event of multiple wounds, the dose of immunoglobulin can be diluted 2 to 3 times with 0.9 % sodium chloride solution if the volume is too small to be infiltrated into the wound(s).
- Storage: between 2°C and 8°C – Do not freeze – 

RABIES VACCINE

Indications

- Prevention of rabies after confirmed or suspected exposure
- Pre-exposure rabies prevention in persons at risk (people living in or travelling through endemic areas, etc.)

Composition, presentation and route of administration

- Inactivated virus vaccine
- Suspension for injection in single-dose vial, to be dissolved with the entire vial of the specific diluent supplied by the manufacturer, for IM injection into the deltoid muscle (into the anterolateral part of the thigh in children)

Dosage and vaccination schedule

- Child and adult:
The dose varies according to the type of vaccine used: follow manufacturer's instructions.
- *Post-exposure prophylaxis*

Type of contact	Vaccinal status	
	Incomplete vaccination or no vaccination or vaccination completed more than 5 years ago	Vaccination completed less than 5 years ago
Category I Simple contact with animals or licks on intact skin	no treatment	no treatment
Category II Minor scratches or abrasions without bleeding or licks on broken skin	rabies vaccine, 4 doses IM: 2 doses on Day 0 (one dose into each arm) then one dose on Day 7 and Day 21 or rabies vaccine, 5 doses IM: one dose on Day 0, Day 3, Day 7, Day 14 and Day 28	rabies vaccine, 2 doses IM: one dose on Day 0 and Day 3
Category III Transdermal bites, scratches or contamination of mucous membranes with saliva (licks)	rabies vaccine, 4 doses IM: 2 doses on Day 0 (one dose into each arm) then one dose on Day 7 and Day 21 + rabies immunoglobulin or rabies vaccine, 5 doses IM: one dose on Day 0, Day 3, Day 7, Day 14 and Day 28 + rabies immunoglobulin	rabies vaccine, 2 doses IM: one dose on Day 0 and Day 3 + rabies immunoglobulin

Administer the rabies vaccine as soon as possible after exposure. However, as the incubation period may last several months, administer the vaccine even if the patient seeks medical attention long after exposure.

Intradermal vaccination may also be used in post-exposure treatment: 2 doses of 0.1 ml in 2 different sites on Day 0, Day 3, Day 7 and 1 dose on Day 28 and Day 90.

- *Pre-exposure prophylaxis*

Child and adult: 3 doses on Day 0, Day 7 and Day 28 (or 21); a booster dose after 1 year then every 5 years.

Protection conferred by the vaccine rapidly diminishes, it is therefore essential to administer the booster doses.

Contra-indications, adverse effects, precautions

- No contra-indication after exposure.
- For pre-exposure prophylaxis: do not administer to patients with history of an allergic reaction to a previous injection. Vaccination should be postponed in the event of severe acute febrile illness. Minor infections are not contra-indications.
- Do not administer into the gluteal region (diminished antibody response to vaccine).
- May cause:
 - mild local reactions at the injection site,
 - general reactions (fever, chills, malaise, headache, gastrointestinal disturbances, etc.),
 - exceptionally: anaphylactic reaction.
- 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.
- Avoid concomitant use of corticosteroids (vaccine efficacy diminished).
- Do not mix with other vaccines in the same syringe (inactivation of vaccines).
- If administered simultaneously with rabies immunoglobulin or other vaccines, use different syringes and injection sites.
- Pregnancy and breast-feeding: pre-exposure vaccination: do not administer; post-exposure vaccination: no contra-indication

Remarks

- Storage: 
 - Reconstituted vaccine: use immediately.
 - Powder: between 2°C and 8°C. Do not freeze.
 - Diluent: a cold chain is not required for storage. However, at least 24 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.

TETANUS VACCINE (TT)

Indications

- Prevention of tetanus:
 - in women of child-bearing age and pregnant women
 - in wounded patients not immunised, incompletely immunised or whose immunisation history is unknown

Composition, presentation and route of administration

- Purified tetanus toxoid
- Suspension for injection in multidose vial or single-dose syringe, for IM or SC injection into the anterolateral part of the thigh or into the deltoid muscle

Dosage and vaccination schedule

- 0.5 ml per injection
 - *Women of child-bearing age, pregnant women:*

Dose	When to give	Level of protection	Expected duration of protection
TT1	At first contact with medical services <i>or as early as possible during pregnancy</i>	0%	None
TT2	at least 4 weeks after TT1 <i>and no later than two weeks before delivery</i>	80%	1 to 3 years
TT3	at least 6 months after TT2 <i>or during the next pregnancy</i>	95%	5 years
TT4	at least one year after TT3 <i>or during subsequent pregnancy</i>	99%	10 years
TT5	at least one year after TT4 <i>or during subsequent pregnancy</i>	99%	All childbearing years after the fifth dose

Pregnant women who have not previously been immunized with TT in their infancy or adolescence should receive at least 2 doses of tetanus vaccine administered at least 4 weeks apart, with the last dose at least 2 weeks before delivery. After delivery, continue vaccination as described in the table above until the required five doses have been administered.

- *Wounded patients:*
2 doses administered 4 weeks apart followed by a booster dose after 1 year, then every 10 years

Contra-indications, adverse effects, precautions

- Do not administer if there was an allergic reaction to a previous injection. Vaccination should be postponed in the event of severe acute febrile illness. Minor infections are not contra-indications.
- May cause (rarely): local reactions (redness, pain at the injection site), allergic reactions.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- For children, use combined diphtheria-tetanus-pertussis or diphtheria-tetanus vaccines.
- Do not mix with other drugs or vaccines in the same syringe.
- Storage: 
Between 2°C and 8°C. Do not freeze.

TETANUS IMMUNOGLOBULIN (HUMAN)

4

Therapeutic action

- Neutralisation of tetanus toxin

Indications

- Tetanus prophylaxis in wound management, in persons non immunised or incompletely immunised against tetanus or in persons whose immunisation history is unknown
- Treatment of tetanus

Presentation and 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

– Prophylaxis

Child and adult: 250 IU as a single dose (500 IU if the injury occurred more than 24 hours before; if the wound is major or contaminated; in the event of burns or shock with haemorrhage; in adult over 90 kg).

Tetanus human immunoglobulin provides passive immunization against tetanus for 3 to 4 weeks.

Vaccination history	Clean minor wounds	Major or contaminated wounds
Non immunised History unknown	begin immunisation against tetanus	immunoglobulin and begin immunisation against tetanus
Incompletely immunised	vaccine booster injection	immunoglobulin + vaccine booster injection
Fully immunised <i>Last booster dose:</i>		
Less than 5 years	no prophylaxis	no prophylaxis
5 to 10 years	no prophylaxis	vaccine booster injection
More than 10 years	vaccine booster injection	immunoglobulin + vaccine booster injection

– Treatment

Neonate: 1500 IU as a single dose, injected in different sites

Child and adult: 3000 IU as a single dose, injected in different sites

Whether for prophylaxis or treatment, always administer the tetanus vaccine, by IM or SC route, together with immunoglobulin (in a separate syringe and injection site), then continue vaccination according to the usual schedule.

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to tetanus immunoglobulin.
- May cause: very rare allergic reactions.
- Do not administer measles vaccine during 6 weeks after injection of tetanus immunoglobulins (efficacy of vaccination may be impaired).
- 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

- Administer by SC route only if IM route is contra-indicated.
- Storage: between 2°C and 8°C – Do not freeze – 

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

Indications

- Tetanus prophylaxis in wound management, in persons non immunised or incompletely immunised against tetanus or in persons whose immunisation history is unknown
- Treatment of tetanus

Composition, presentation and route of administration

- Solution prepared from the serum of horses that have been immunised against tetanus toxin.
- 1500 IU in 1 ml ampoule, for IM injection. DO NOT ADMINISTER BY IV ROUTE.

Dosage and duration

– Prophylaxis

Child and adult: 1500 IU as a single dose (3000 IU if the injury occurred more than 24 hours before; if the wound is major or contaminated; in the event of burns or shock with haemorrhage; in adult over 90 kg).

Tetanus antiserum provides temporary passive immunity against tetanus for 15 days.

Vaccination history	Clean minor wounds	Major or contaminated wounds
Non immunised History unknown	begin immunisation against tetanus	serum and begin immunisation against tetanus
Incompletely immunised	vaccine booster injection	serum + vaccine booster injection
Fully immunised <i>Last booster dose:</i>		
Less than 5 years	no prophylaxis	no prophylaxis
5 to 10 years	no prophylaxis	vaccine booster injection
More than 10 years	vaccine booster injection	serum + vaccine booster injection

– Treatment

Neonate: 1500 IU as a single dose

Child and adult: 10 000 IU as a single dose

Whether for prophylaxis or treatment, always administer the tetanus vaccine, by IM or SC route, together with antiserum (in a separate syringe and injection site), then continue vaccination according to the usual schedule.

Contra-indications, adverse effects, precautions

- Do not administer to patients with allergy to tetanus antiserum.
- May cause: hypersensitivity reactions, anaphylactic shock, Quincke 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, finish 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 and breast-feeding: no contra-indication

Remarks

- Administer by SC route only if IM route is contra-indicated.
- Equine tetanus antitoxin is not included in the WHO list of essential medicines.
- Storage: between 2°C and 8°C – Do not freeze – 

YELLOW FEVER VACCINE

Indications

- Prevention of yellow fever:
 - in children from 9 months of age and adults living in or travelling through endemic areas
 - in children between 6 and 9 months of age, in the event of an outbreak or in high risk areas

Composition, presentation and route of administration

- Live-attenuated virus vaccine
- Powder for injection in multidose vial, to be dissolved with the entire vial of the specific diluent supplied by the manufacturer, for SC injection into the deltoid muscle (or IM injection into the anterolateral part of the thigh in children under 2 years)

Dosage and vaccination schedule

- Child and adult: 0.5 ml as a single dose
- Immunity develops 7 to 10 days after injection, for at least 10 years. Vaccine efficacy is 95%.

Contra-indications, adverse effects, precautions

- Do not administer to patients with congenital or acquired immunodeficiency (symptomatic HIV infection, immunosuppressive therapy, etc.), true allergy to egg. Vaccination should be postponed in the event of severe acute febrile illness. Minor infections are not contraindications.
- Clean the injection site with boiled and cooled water and allow to dry. Do not use antiseptics (risk of inactivation of live vaccine).
- May cause:
 - mild local reactions, fever, headache, myalgia,
 - exceptionally: allergic reactions, encephalitis (especially in children under 9 months).
- 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. Only administer if there is a high risk of contamination (epidemics).
- Breast-feeding: no contra-indication

Remarks

- Storage: 
 - Reconstituted vaccine: between 2°C and 8°C for 6 hours maximum.
 - Powder: between 2°C and 8°C. Freezing is possible but unnecessary.
 - Diluent: a cold chain is not required for storage. However, at least 24 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.

Drugs for external use, antiseptics and disinfectants

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ACICLOVIR eye ointment (Zovirax®...)

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

Presentation

- 3% sterile ointment, tube

Dosage

- *Treatment of herpes keratitis*
Child and adult: 5 applications/day into the conjunctival sac of both eyes
- *Prevention of herpes keratitis in neonate*
Immediately after birth:
 - wash the eyes with sterile sodium chloride 0,9%,
 - apply aciclovir 3% into the conjunctival sac of both eyes.

Duration

- *Treatment of herpes keratitis*: continue treatment for 3 days after lesions have healed
- *Prevention of herpes keratitis in neonate*: one single application

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.

Remarks

- *Conservation: below 30°C*
Use within 30 days after first opening.
To avoid contamination, close the tube properly after opening.

BENZOIC ACID + SALICYLIC ACID ointment = Whitfield's ointment

Therapeutic action

- Antifungal and keratolytic agent

Indications

- Dermatophytoses of the scalp (ringworms), in combination with griseofulvin
- Dermatophytoses of the skin, in combination with griseofulvin in the event of extensive lesions

Presentation

- Benzoic acid 6% + salicylic acid 3% ointment, tube or jar

Dosage

- 2 applications / day

Duration

- 3 to 6 weeks according to clinical response

Contra-indications, adverse effects, precautions

- Do not apply to exudative lesions, mucous membranes or eyes.
- In case of secondary bacterial infection, start appropriate local (antiseptic) or systemic (antibiotic) treatment before applying Whitfield's ointment.
- May cause: skin irritation and inflammation.
- 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

- Storage: below 30°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.

To avoid contamination, close the tube or the jar properly after opening.

BENZYL BENZOATE (Ascabiol®...)

Therapeutic action

- Scabicide

Indications

- Scabies

Presentation

- Benzyl benzoate 25% lotion
- Benzyl benzoate 90% concentrated lotion

Preparation

Prepared with \ Use	Scabies in child	Scabies in adult
Benzyl benzoate 25%	dilute to 1/2 (1 part + 1 part of water)	pure
Benzyl benzoate 90%	dilute to 1/8 (1 part + 7 parts of water)	dilute to 1/4 (1 part + 3 parts of water)

Use

- Shake before use.
- Wash, rinse and dry skin.
- Apply the lotion using a suitable brush over the whole body, including the scalp and soles of the feet ; paying particular attention to skin creases and interdigital webs. Do not apply to the face or mucous membranes.
- Leave on skin:
 - 6 hours for children under 6 months
 - 12 hours for children under 2 years
 - 24 hours for children over 2 years and adults
- For children under 2 years, wrap hands to avoid accidental ingestion.

Duration

- Rinse and repeat application, except for children under 6 months and pregnant women

Contra-indications, adverse effects, precautions

- Do not administer to patients with hypersensitivity to benzyl benzoate.
- Do not apply to the broken or infected skin. In case of secondary bacterial infection, administer an appropriate local (antiseptic) or systemic (antibiotic) treatment 24 to 48 hours before applying benzyl benzoate.
- May cause:
 - burning sensation, contact dermatitis in case of repeated applications,
 - seizures in the event of marked transcutaneous absorption (broken skin, children under 2 years)
- Avoid contact with eyes. In case of eye contact flush immediately with plenty of water.
- Do NOT SWALLOW. Seizures may result from ingestion. In case of swallowing: do not induce vomiting, do not perform gastric lavage ; administer activated charcoal.
- Never use 90% concentrated emulsion undiluted.
- Pregnancy: do not leave on skin longer than 12 hours, do not repeat application
- Breast-feeding: do not apply on breasts

Remarks

- Patients and their close contacts should be treated simultaneously, regardless of whether there have symptoms or not.
- Decontaminate clothes and bed linen by washing at 60°C.
- Itching may persist for 1 to 2 weeks despite successful treatment. Do not re-treat during this period.
- Use drinking or boiled and cooled water for dilution.
- Storage: below 30°C - 

CALAMINE lotion

Action thérapeutique

- Antipruritic drug

Indications

- Pruritic dermatoses

Presentation

- Calamine 8% or 15% lotion, bottle

Dosage

- 2 to 4 applications / day

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 on breasts*)

Remarks

- Shake the lotion well before using.
- Storage: below 30°C – 
To avoid contamination, close the bottle properly after opening.

CETRIMIDE (Cetavlon®...)

The use of this product is not recommended:

- it has almost no advantage over ordinary soap,
- its aqueous solutions are very easily contaminated by pathogens.

Therapeutic action

- Antiseptic

Indications

- Antisepsis of minor wounds

Presentation

- Powder to be dissolved before use
- 20 % concentrated solution to be diluted before use
- 40 % concentrated solution to be diluted before use

Preparation

- Use 1% cetrimide solution. For one litre:
10 g of powder + 1 litre of water
or
50 ml of 20 % concentrated solution + 950 ml of water
or
25 ml of 40 % concentrated solution + 975 ml of water
- Prepare dilutions with clear water, boiled a few minutes and cooled.
- Wash the bottle carefully with hot water and leave to dry before refilling.

Contra-indications, adverse effects, precautions

- Do not bring into contact with eyes, brain, meninges, ear (risk of deafness if ear drum is perforated), body cavities, genital mucous membranes.
- Do not use with soap (inactivation) or with iodine disinfectants.

Remarks

- Chlorhexidine-cetrimide is much more effective than cetrimide alone.
- Cetrimide is not included in the WHO list of essential medicines.
- Storage:
 - Concentrated solution: below 25°C
 - Diluted solution: solution can easily be contaminated by pathogens. Do not keep diluted solutions for more than one week; never mix a fresh solution with a "leftover" solution.

CHLORHEXIDINE (Hibitane®...)

Therapeutic action

- Antiseptic

Indications

- Antisepsis of:
 - healthy skin and mucous membranes
 - wounds, superficial minor burns, ulcers, abscesses
- Local treatment of bacterial skin infection

Presentation

- 5% concentrated solution of chlorhexidine gluconate to be diluted before use

Check that the solution may be diluted with ordinary non distilled water (in this event the formulation should contain a surfactant to prevent the precipitation of chlorhexidine).

Preparation

- Use as a 0.05% aqueous solution of chlorhexidine gluconate:
For one litre: 10 ml of 5% solution + 990 ml of clear water, boiled a few minutes and cooled.
- Wash the bottle carefully with hot water and leave to dry before refilling.

Contra-indications, adverse effects, precautions

- Do not bring into contact with eyes, brain, meninges, ear (risk of deafness if ear drum is perforated).
- Avoid applications to mucous membranes, especially to genital mucous membranes; and in newborns.
- Do not use simultaneously with soap or other antiseptics (incompatibility).
- Do not use a cork stopper (promotes contamination and inactivates chlorhexidine).

Remarks

- The combination chlorhexidine-cetrimide is preferred: it has better detergent properties and may be diluted with non distilled water (cetrimide acts as a surfactant).
- Also comes in 20% chlorhexidine gluconate concentrated solutions. These solutions usually do not contain a surfactant and must be diluted with distilled water.
- Also comes in solution for surgical hand disinfection and antiseptic handwashing (Hibiscrub®, etc.) and alcoholic solutions for pre-operative skin antisepsis.
- Storage:
 - Concentrated solution: below 25°C
 - Diluted solution: solution can easily be contaminated by pathogens. Do not keep diluted solutions for more than one week; never mix a fresh solution with a "leftover" solution.

CHLORHEXIDINE + CETRIMIDE (HAC®, Hibicet®...)

Therapeutic action

- Antiseptic and detergent

Indications

- Antisepsis of:
 - healthy skin and mucous membranes
 - wounds, superficial minor burns, ulcers, abscesses
- Local treatment of bacterial skin infections

Presentation

- Concentrated solution of 1.5% chlorhexidine gluconate and 15% cetrimide to be diluted before use

Preparation

- Use a solution containing 0.03 % chlorhexidine and 0.3 % cetrimide:
For one litre: 20 ml of concentrated solution + 980 ml of clear water, boiled a few minutes and cooled.
- Wash the bottle carefully with hot water and leave to dry before refilling.

Contra-indications, adverse effects, precautions

- Do not bring into contact with eyes, brain, meninges, ear (risk of deafness if ear drum is perforated), body cavities.
- Do not use for occlusive dressing.
- Avoid applications to mucous membranes, especially to genital mucous membranes; and in newborns.
- Do not use simultaneously with soap or other antiseptics (incompatibility).
- Do not use a cork stopper (promotes contamination and inactivates chlorhexidine).

Remarks

- Storage:
 - Concentrated solution: below 25°C
 - Diluted solution: solution can easily be contaminated by pathogens. Do not keep diluted solutions for more than one week; never mix a fresh solution with a “leftover” solution.

CHLORINE-RELEASING COMPOUNDS (NaDCC, HTH, choramine-T, liquid bleach, chlorinated lime, TCCA)



Therapeutic action

- Disinfectants

Indications

- Disinfection of objects, instruments, linen, floors and surfaces

Presentation

- The potency of chlorine disinfectants is generally expressed in terms of available (or "active") chlorine in either:
 - percentage (%)
 - g/litre or mg/litre
 - parts per million (ppm)
 - chlorometric degree (1°chl. = approximately 0.3% available chlorine)

$$1\% = 10 \text{ g/litre} = 10\,000 \text{ ppm}$$
$$1 \text{ mg/litre} = 1 \text{ ppm} = 0.0001\%$$

- The most widely used chlorine disinfectants are:

- Sodium dichloroisocyanurate (NaDCC) 1 g available chlorine/tablet
- Calcium hypochlorite (HTH), granules 65-70% available chlorine
- Chloramine-T, powder or tablet 25% available chlorine
- Sodium hypochlorite solutions (liquid bleach):
 - concentrated bleach (extrait de javel) 6° or 48°chl. = 10 or 15% available chlorine
 - bleach (eau de Javel) 5% available chlorine
 - bleach (eau de Javel) 12°chl. = 3.6% available chlorine
 - bleach (eau de Javel) 9°chl. = 2.6% available chlorine
- Chlorinated lime, powder 25-35% available chlorine
- Trichloro-isocyanuric acid (TCCA), granules or powder available chlorine

Preparation and use

- The concentration required depends on the infectious risk and on the amount of organic material present (how clean/unclean the surface is).
- Prepare solutions just before use, with clear water, in non-metallic containers (metal inactivates chlorine).
- The available chlorine content must always be checked on the product packaging in order to adjust the dilution if necessary.
- A deposit in HTH solutions and chlorinated lime solutions is normal (use only the supernatant).
- Disinfection of linen: only suitable for white cotton and linen (risk of discolouration). Soak for 15 minutes maximum. Do not exceed 0.1% (1000 ppm) of available chlorine. Rinse abundantly (at least 3 times) with clear water.
- Disinfection of instruments: use only for stainless steel instruments. Do not exceed 0.1% (1000 ppm) of available chlorine. Soak for 30 minutes maximum. Use cold water only. Rinse abundantly and dry.

Equipment and surfaces				
	Clean	"Unclean" not contaminated with blood	"Unclean" contaminated with blood	Heavily soiled large blood spills, sputum
Examples	clean medical items, clean linen	surfaces and equipment in cholera outbreaks	floors, laboratory equipment	any heavily soiled item
Concentration required expressed in available chlorine	$0.1\% = 1000 \text{ ppm}$	$0.2\% = 2000 \text{ ppm}$	$0.5\% = 5000 \text{ ppm}$	$1\% = 10\,000 \text{ ppm}$
NaDCC (1 g available chlorine/tablet)	1 tab/litre water	2 tab/litre water	5 tab/litre water	10 tab/litre water
Calcium hypochlorite (70% available chlorine)	$1.5 \text{ g/litre} =$ $\pm 1 \text{ level tablespoon}$ for 10 litres water	$3 \text{ g/litre} =$ $\pm 2 \text{ level tablespoons}$ for 10 litres water	$7 \text{ g/litre} =$ $\pm 5 \text{ level tablespoons}$ for 10 litres water	$15 \text{ g/litre} =$ $\pm 1 \text{ level tablespoon}$ for 1 litre water
Bleach (5% available chlorine)	20 ml + 980 ml water	40 ml + 960 ml water	100 ml + 900 ml water	200 ml + 800 ml water

Precautions

- Handle concentrated products with caution (avoid jolts and exposure to high temperatures or flames).
- Avoid inhaling vapours and dust when opening or handling the containers.
- Do not mix with detergents.
- Do not bring dry products, particularly HTH and chlorinated lime, in contact with organic materials (e.g. corpses): risk of explosion.

Remarks

- Sodium dichloroisocyanurate (NaDCC) is more stable and less corrosive than the other products.
 - Trichloro-isocyanuric acid (TCCA) is very similar to NaDCC, but its use is limited due to its poor solubility.
 - Calcium hypochlorite, bleach and concentrated bleach may be used to prepare antiseptic solutions (as substitute to Dakin's solution) provided sodium bicarbonate (one teaspoon per litre) is added to the final solution to neutralise the alkalinity.
 - for wounds: solution of 0.1% (1000 ppm) available chlorine,
 - for mucous membranes: solution of 0.05% (500 ppm) available chlorine.
 - Sodium tosylchloramide (chloramine T) is used above all as an antiseptic for wounds and mucous membranes.
 - Storage: in airtight, non-metallic containers, protected from light, heat (and humidity for dry products). ☀ – 🌦
- Chlorinated lime, bleach and concentrated bleach are unstable (maximum a few months for bleach and concentrated bleach). HTH is more stable. NaDCC is by far the most stable.

CLOTRIMAZOLE (Canestene®, Mycoril®...)

Prescription under medical supervision

Therapeutic action

- Antifungal

Indications

- Vaginal candidiasis

Presentation

- 200 mg and 500 mg vaginal tablets with applicator
Also comes in 1% and 10% vaginal cream.

Dosage and duration

- Adult:
 - one vaginal tablet of 500 mg as a single dose, inserted high into the vagina, at bedtime or
 - one vaginal tablet of 200 mg / day for 3 days, inserted high into the vagina, at bedtime

Contra-indications, adverse effects, precautions

- Do not administer to patients with:
 - hypersensitivity to other azole antifungals (fluconazole, itraconazole, ketoconazole, etc.),
 - vulvar or vaginal sores or ulcers.
- May cause: local irritation (due to infection, a true allergy is exceptional).
- Do not combine with nystatin vaginal tablets (antagonism).
- Pregnancy: no contra-indication (but do not use the applicator to avoid mechanical trauma)
- Breast-feeding: no contra-indication

Remarks

- Also comes in 100 mg vaginal tablet (one vaginal tablet / day for 6 days).
- Do not interrupt treatment during menstruation.
- Storage: below 30°C - 

CRESOL saponated solution = LYSOL = Liquor sapinitus

Therapeutic action

- Disinfectant and detergent

Indications

- Cleansing and disinfection of objects, floors, surfaces, linen

Presentation

- Concentrated solution containing 50% cresol and 50% liquid soap, to be diluted just before use

Preparation and use

- Prepare 1 to 5% depending on how dirty the material is:
 - for 1 litre: use 10 to 50 ml of cresol and add water to make up a volume of 1 litre
 - or
 - for 10 litres: add 100 to 500 ml of cresol to a bucket of 10 litres of water
- *Objects*: soak in the diluted solution for at least 15 minutes, scrub carefully and rinse thoroughly.
- *Floors, surfaces, rooms*: evacuate patients, wash with diluted solution, rinse and air to remove unpleasant and irritating odour.
- *Linen*: soak in diluted solution for 6 hours and rinse thoroughly.

Precautions

- Wear gloves while using (cresol highly irritates the skin).
- Do not bring into contact with eyes, skin, mucous membranes, wounds. In the event of contact, rinse with plenty of water.
- Do not use in maternity or neonatal wards (may cause hyperbilirubinaemia in neonates).
- Do not use to disinfect drinking water or food, do not use to disinfect surfaces or material that comes in contact with drinking water or food.
- Do not use on rubber or other synthetic porous material: cresol may cause deterioration, and irritant residues may remain even after thorough rinsing.

Remarks

- Do not confuse cresol saponated solution with pure cresol. Pure cresol is not recommended since it is less soluble in water and more irritating than the saponated solution. Moreover, it has no detergent properties and stains linen.
- Lyorthol®, Cresyl®, Creolin® are brand names; concentration and composition vary according to manufacturers (check manufacturer's instructions for composition and dilution).
- Chloroxylenol or para-chlorometaxylenol or PCMX (Dettol®) is a similar product that is less irritating than cresol. It can be used as an antiseptic on skin and wounds.
- Storage: in airtight containers

ETHYL ALCOHOL = ETHANOL

Therapeutic action

- Antiseptic and disinfectant

Indications

- Antisepsis of intact skin (prior to injections, venopunctures and placement of IV catheters)
- Disinfection of latex stoppers of infusion bottles and multi-dose vials (except vaccines), latex injection sites of infusion sets

Presentation

- 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 preferably expressed as a percentage by volume of alcohol (% v/v); e.g. 1000 ml of 95% v/v alcohol contains 950 ml of absolute alcohol.
- Alcoholic strength is sometimes expressed as a percentage by weight of alcohol (% w/w). The percentage w/w is not equal to the percentage v/v because the mixture of water and alcohol produces a reduction in volume.
- Alcoholic strength is sometimes expressed 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 ($1^\circ = 1\% \text{ v/v}$)
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.

Remarks

- Ethanol can be useful for routine 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 30°C – 
Close bottles tightly to avoid evaporation.

FLUORESCEIN

Therapeutic action

- Ophthalmic diagnostic agent

Indications

- Diagnosis of corneal and conjunctival lesions
- Detection of corneal and conjunctival foreign bodies

Presentation

- 0,5%, 1% and 2% fluorescein eye drops in single use vial
- Sterile, individually wrapped paper strips impregnated with fluorescein

Use

- Eye drops: instill 1 or 2 drops into the conjunctival sac.
- Paper strips: place a strip into the conjunctival sac.
- After instillation of fluorescein, the eye should be examined under cobalt blue illumination.

Contra-indications, adverse effects, precautions

- Before use, check that the patient is not wearing soft contact lenses (fluorescein can permanently stain soft contact lenses).
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Vials and paper strips are designed for single use only; they must be discarded after use.
- Storage: below 30°C – 

Alcoholic solutions of IODINE (iodised alcohol, iodine tincture)

The use of alcoholic solutions of iodine is not recommended. They are very irritating, expensive and difficult to store ; the alcohol evaporates (solutions become even more irritating as they age).

Polyvidone iodine is much less irritating and easier to store.

Therapeutic action

- Antiseptic
- Antifungal

Indications

- Antisepsis of intact skin (skin cleansing prior to injections, puncture, surgery)
- Treatment of fungal infections of the skin

Presentation

- Iodised alcohol (1 or 3% iodine in 50 to 90% ethanol v/v)
- Iodine tincture (5% iodine in 80 or 90% ethanol v/v + 3% potassium iodine) is a very concentrated preparation that should no longer be used.

Contra-indications, adverse effects, precautions

- Do not apply to mucous membranes, wounds or burns: the alcohol is painful, irritating and slows the healing process.
- May cause: skin reactions, allergic reactions.
- Incompatible with mercury compounds (merbromine, etc).

Remarks

- Storage: maximum of a few weeks

MALATHION (Prioderm®...)

Therapeutic action

- Pediculicide (organophosphorus insecticide)

Indications

- Head pediculosis (lice)

Presentation

- Malathion 0.5%, lotion

Use

- Apply lotion to hair, roots and scalp (pay particular attention to the areas behind the ears and around the nape of the neck).
- Leave on hair for 8 to 12 hours.
- Rinse with plenty of water.
- Repeat application after 8 to 10 days if possible.

Contra-indications, adverse effects, precautions

- Use with caution and under medical supervision in children under 2 years. The lotion should not be left in contact with the scalp for more than 6 hours in children under 6 months and 8 hours in children between 6 months and 2 years.
- May cause : scalp irritation.
- Avoid contact with eyes. In the event of product entering the eye, rinse with plenty of water.
- NEVER SWALLOW. The first signs of poisoning after accidental ingestion are gastrointestinal disturbances (vomiting, diarrhoea). Dyspnoea, seizures or coma are signs of severe intoxication. As soon as the first signs appear, administer injectable atropine as an antidote.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Examine everyone in contact with a patient and treat only those infected. Preventive treatment of non-infected persons is ineffective and increases the risk of resistance.
- Malathion is flammable. Keep medication away from heat sources.
- Malathion is not included in the WHO list of essential medicines.
- Storage: below 30°C - 

MERBROMIN = SODIUM MERCURESCEIN (Mercurochrome®...)

The use of this drug is not recommended:

- it is toxic and allergenic,
- it is a weak antiseptic,
- it is inactivated by organic matter,
- it is expensive.

Therapeutic action

- Antiseptic

Indications

- Antisepsis of minor and superficial wounds

Presentation

- Powder to be dissolved
- 1 or 2% aqueous solutions ready for use
- 2% alcoholic solution ready for use

Contra-indications, adverse effects, precautions

- Do not use with iodine compounds (iodised alcohol, polyvidone iodine): risk of necrosis.
- May cause:
 - renal, neurologic and gastrointestinal toxicity due to the resorption of mercury through skin,
 - frequent allergic reactions, often associated with a hypersensitivity to all mercurial compounds (other mercurial antiseptics, dental amalgams, preservatives used in cosmetics).
- Colours the skin: may mask an inflammatory reaction.

Remarks

- Aqueous solutions have a very weak antiseptic activity. Alcoholic solutions are more effective. However merbromin carries serious adverse effects and the use of all solutions must therefore be abandoned.
- Other mercurial compounds: phenylmercuric borate, mercurobutol (Mercryl®), thiomersal (Thimerosal®) have the same adverse effects and must also be abandoned.
- Merbromin is not included in the WHO list of essential medicines.
- Storage: no special temperature requirements

METHYLROSANILINIUM CHLORIDE = GENTIAN VIOLET = GV = CRYSTAL VIOLET

Therapeutic action

- Antifungal
- Drying agent

Indications

- Treatment of candidal infections:
 - oral candidiasis
 - mammary candidiasis in nursing mothers
 - candidal diaper dermatitis
- Treatment of oozing dermatosis (dermatophytosis, impetigo, etc.)

Presentation

- Powder to be dissolved
- 0.5% solution

Preparation

- Dissolve one teaspoon of powder (= 5 g) in 1 litre of clear water (boiled a few minutes and cooled) to obtain a 0.5% aqueous solution.
- Shake well and leave to settle. Filter through cotton or pour carefully into another bottle to eliminate any possible sediment.
- Before use, carefully wash both the bottle for dilution and the storage bottle with hot water and leave to dry.

Use

- 2 applications/day until lesions disappear

Contra-indications, adverse effects, precautions

- May cause:
 - persistent stains if the skin is ulcerated. Avoid using on the face. The use of cooking oil or vaseline around lips before swabbing can limit the risk of skin coloration.
 - irritation, ulceration, allergic reactions.
- Stop treatment in the event of allergic reactions or if new ulcerations develop.
- The solution may be applied to the oral cavity but should not be swallowed.
- In the event of product entering the eye, rinse with plenty of water.

Remarks

- Avoid contact with clothes (causes permanent staining of fabrics).
- Storage:
 - *Powder to be dissolved: unlimited*
 - *Diluted solution: maximum 1 week*

MICONAZOLE (Daktarin®, Micatin®...)

Prescription under medical supervision

Therapeutic action

- Antifungal

Indications

- Treatment of cutaneous candidiasis
- Treatment of dermatophytoses (ringworm, etc.)

Presentation

- 2% cream, tube
- Also comes in powder, ointment, and gel for external use.

Dosage

- 2 applications / day, sparingly, on clean and dry skin

Duration

- *Cutaneous candidiasis:* 1 to 2 weeks
- *Scalp ringworm:* 4 to 8 weeks; *ringworm of the body:* 2 to 3 weeks

Contra-indications, adverse effects, precautions

- Do not administer to patients with hypersensitivity to azole antifungals (fluconazole, ketoconazole, itraconazole, etc.).
- May cause: skin reactions (irritation, burning sensation). In the event, stop treatment.
- When applied to a large area of skin or when used in newborns: risk of systemic absorption.
- Avoid contact with the eyes. In case of contact with eyes, flush immediately with plenty of water.
- *Pregnancy:* no contra-indication
- *Breast-feeding:* no contra-indication. Do not apply on breast, except in the event of mammary candidiasis (in this event apply cream two times a day after breast-feeding).

Remarks

- *Storage:* below 30°C - 
To avoid contamination, close the tube properly after opening.

NYSTATIN (Mycostatin®...)

Therapeutic action

- Antifungal

Indications

- Vaginal candidiasis

Presentation

- 100 000 IU vaginal tablet

Dosage and duration

- Adult: 1 or 2 tablets of 100 000 IU/day at bedtime for 14 days
Tablets must be moistened and inserted high into the vagina.

Contra-indications, adverse effects, precautions

- The drug is well tolerated.
- Do not combine with clotrimazole vaginal tablets (antagonism).
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- By preference use clotrimazole vaginal tablets for this indication.
- Do not interrupt treatment during menstruation.
- Storage: below 25°C - ☼ - ☂

PERMETHRIN lotion (Lyclear®...)

Therapeutic action

- Pediculicide (pyrethroid insecticide)

Indications

- Head pediculosis (lice)

Presentation

- Permethrin 1% lotion

Use

- Apply lotion to hair, roots and scalp (pay particular attention to the areas behind the ears and around the nape of the neck).
- Leave on hair for 10 minutes.
- Rinse with plenty of water.
- Repeat application after 8 to 10 days if possible.

Contra-indications, adverse effects, precautions

- Do not administer to patients with hypersensitivity to synthetic pyrethroids.
- Use with caution and under medical supervision in children under 6 months.
- May cause: scalp irritation.
- Avoid contact with eyes. In case of eye contact flush immediately with plenty of water.
- NEVER SWALLOW. In case of accidental swallowing, the treatment is symptomatic.
- Pregnancy: no contra-indication
- Breast-feeding: no contra-indication

Remarks

- Examine everyone in contact with a patient and treat only those infected. Preventive treatment of non-infected persons is ineffective and increases the risk of resistance.
- For better results, use the lotion rather than the shampoo.
- Permethrin 5% cream is used for the treatment of scabies in children over 2 months and adults (children between 2 months and 2 years should be treated under medical supervision): wash with soap and water, dry and apply cream on the whole body from the neck down. Leave on skin for 8 to 12 hours then rinse.
- Storage: below 25°C – 

PODOPHYLLOTOXIN (Condyline®, Condylox®, Wartec®...)

Prescription under medical supervision

Therapeutic action

- Antiviral, antimitotic, cytolytic agent active against human papillomaviruses (HPVs)

Indications

- Treatment of external genital warts, vaginal warts and perianal warts

Presentation

- 0.5% solution or gel, with applicator tips

Dosage

- Apply podophyllotoxin to venereal warts twice 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 venereal warts in children.
- Do not apply to cervical, urethral, anorectal or oral warts.
- Do not apply to healthy skin. Inadvertent application to healthy skin can be prevented by applying a protective layer of vaseline or zinc ointment on the surrounding skin prior to treatment.
- 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 30°C – 

PODOPHYLLUM resin

Prescription under medical supervision

Therapeutic action

- Antiviral, antimitotic, cytolytic agent active against human papillomaviruses (HPVs)

Indications

- Treatment of external genital warts, vaginal warts and perianal warts

Presentation

- Podophyllum resin in alcohol or compound benzoin, 10%, 15% and 25% solution.

Use

- Always apply a protective layer of vaseline or zinc 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 venereal warts in children.
- Do not apply to healthy skin, 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 30°C – 

POLYVIDONE IODINE = POVIDONE IODINE = PVI aqueous solution (Betadine dermal solution®...)

5

Therapeutic action

- Antiseptic and disinfectant

Indications

- Antisepsis of intact skin, mucous membranes and wounds
- Local treatment of skin or mucous membrane infections due to bacteria, viruses and fungi
- Disinfection of rubber stoppers of infusion bottles and multi-dose vials (except vaccines), latex injection sites of infusion sets

Presentation

- 10% aqueous solution

Use

- *Antisepsis of clean, intact skin*
 - prior to SC, IM, IV injection or venipuncture: apply the solution, allow to dry
 - prior to puncture, catheter insertion, blood collection, epidural/spinal anaesthesia, etc.: clean, rinse and dry. Apply the solution, allow to dry.
- *Preoperative skin antisepsis*
Clean with PVI scrub solution, rinse and dry. Apply the 10% PVI aqueous solution twice. Allow to dry between each application (do not dab to accelerate drying). Incise once the 2nd application has dried.
- *Perineal preparation in vaginal delivery*
Clean, rinse and dry. Apply the solution, allow to dry.
- *Antisepsis of the umbilical cord*
Apply the solution once daily for 3 days
- *Antisepsis of wounds*
Apply the solution during dressing changes
- *Mouth washes*
Dilute 2 teaspoons of PVI solution in 200 ml of water. Rinse around the mouth, do not swallow, spit out, repeat. Use twice daily.
- *Local treatment of bacterial, fungal and viral skin infections*
Apply the solution twice daily

Contra-indications, adverse effects, precautions

- Do not use with chlorhexidine or with chlorhexidine + cetrimide.
- Do not use with mercury compounds (merbromin, Mercurochrome®, thiomersal, etc.): can produce a toxic compound, risk of necrosis.
- Avoid repeated use on large surfaces (potential absorption of iodine); in newborns, pregnant women during the 2nd and 3rd trimester, lactating women.
- May cause: local skin reactions; exceptionally, allergic reactions. If so stop treatment.

Remarks

- Also comes in antiseptic scrub solution (Betadine scrub®, etc.) for antiseptic and surgical hand washing, patient preoperative showering, surgical site preparation and antisepsis of soiled wounds.
- For skin preparation before surgery: it is essential to clean the skin with a antiseptic scrub solution before applying antiseptic solution to the incision site. In order to avoid incompatibilities, it is imperative that cleaning is performed with a PVI antiseptic scrub solution.
- For the other indications requiring skin cleaning (catheter insertion, puncture, epidural/spinal anaesthesia, perineal preparation, etc.): ordinary soap may be used if PVI antiseptic scrub solution is not available.
- The antiseptic effect of PVI begins after 30 seconds of contact. However, a minimum contact time of 1 minute is recommended to eliminate bacteria.
- For some specific uses (severe burns, peritoneal washing, etc.), PVI must be diluted with sterile solution of 0.9% sodium chloride.
- 10% solution is not suitable for disinfection of surfaces and material.
- Storage: below 30°C -

POTASSIUM PERMANGANATE

The use of this drug is not recommended because of frequent mistakes in dilution when using crystals or solutions, and the risk of ingestion when using tablets.

Therapeutic action

- Antiseptic

Indications

- Cleansing of wounds, ulcers, abscesses
- Treatment of oozing eczema

Presentation

- 0.25 g and 0.50 g tablets to be dissolved before use
- Crystals to be dissolved before use
- 0.1% concentrated aqueous solution to be diluted before use

Preparation and use

- Prepare a 0.01% solution with clear water, boiled a few minutes and cooled. The concentration must be precise:
 - if it is too low: ineffective
 - if it is too high: caustic

Tablets: one 0.25 g tablet in 2.5 litres of water or one 0.50 g tablet in 5 litres of water

0.1% concentrated aqueous solution: dilution 1:10

Crystals: 100 mg in 1 litre of water. Use scales to weigh the crystals in order to obtain the correct concentration.

- Use as wet dressings and baths.

Contra-indications, adverse effects, precautions

- Do not insert into vagina (risk of haemorrhage, perforation, peritonitis).
- May cause: irritation and dryness of skin in the event of repeated applications.
- Do not store permanganate tablets near oral tablets.
- NEVER SWALLOW. Ingestion may cause: nausea, vomiting, gastrointestinal damages (oedema, burns, haemorrhage) ; cardiovascular depression, etc.
- Handle crystals, tablets and concentrated solutions with caution: risk of burns (wear gloves) ; risk of explosion when brought into contact with readily oxidisable substances.
- In the event of product entering the eye, rinse with plenty of water for 15 minutes.

Remarks

- Storage:
 - Dry product: in a cool place, in airtight containers –  – 
 - 0.01% solution diluted for use: do not store, prepare just before use.

SILVER SULFADIAZINE (Dermazin®, Flamazine®, Sicazine®...)

5

Therapeutic action

- Antibacterial (group of sulfonamides)

Indications

- Prophylaxis and treatment of infections of second- and third-degree burns
- Treatment of infections of chronic wounds: leg ulcers, bed sores, etc.

Presentation

- 1% sterile cream, tube or jar

Use

- Clean the wound with sterile water or sodium chloride 0.9%.
- Apply a 2 to 3 mm layer of silver sulfadiazine cream to the wound once daily and cover with sterile compresses.
- If the wound is left uncovered, re-apply silver sulfadiazine if necessary (the wound should always remain covered by cream).

Duration

- Until satisfactory healing has occurred.
- For burns that require skin grafting: until skin graft is performed.

Contra-indications, adverse effects, precautions

- Do not administer to patients with hypersensitivity to sulfonamides.
- Do not apply this cream to newborn infants.
- Do not apply other topical treatments to wounds where silver sulfadiazine is applied.
- May cause:
 - skin reactions,
 - when applied to a large burned area: systemic absorption with risk of adverse effects related to sulfonamides (haematologic disorders, gastrointestinal disturbances, etc.).
- *Pregnancy: CONTRA-INDICATED during the last month of pregnancy*
- *Breast-feeding: CONTRA-INDICATED*

Remarks

- *Storage: between 8°C and 25°C – ☀*
Close the tube or the jar properly after opening to avoid contamination and exposure to light.



Therapeutic action

- Antiseptic and disinfectant (chlorine-releasing compound)

Indications

- Antisepsis of wounds (only if the formulation can be used for this purpose)
- Pre-disinfection of soiled instruments
- Disinfection of instruments, linen, laboratory equipment, surfaces, floors, etc.

Presentation

- 1.67 g NaDCC effervescent tablet, releasing 1 g available chlorine when dissolved in water.
Also comes in different strengths and in granules and powder.
- Some formulations used for disinfecting floors contain additives (detergents, colouring, etc.) and can not be used on wounds. Check label or leaflet.

Preparation and use

- *Antisepsis of wounds*
0.1% available chlorine solution (1000 ppm): 1 tablet of 1 g available chlorine per litre
Use in wet dressing, irrigation or bath. For prolonged use, protect the healthy skin around the wound with vaseline.
- *Pre-disinfection of soiled instruments*
0.1% available chlorine solution (1000 ppm): 1 tablet of 1 g available chlorine per litre
Immediately after use, soak instruments for 15 minutes, then clean instruments.
- *"High level" disinfection of clean instruments*
0.1% available chlorine solution (1000 ppm): 1 tablet of 1 g available chlorine per litre
Soak previously cleaned instruments for 20 minutes, rinse thoroughly and dry.
- *Disinfection of linen*
0.1% available chlorine solution (1000 ppm): 1 tablet of 1 g available chlorine per litre
Soak for 15 minutes, rinse thoroughly (at least 3 times).
- *General disinfection (surfaces, floors, sinks, equipment, etc.)*
 - Clean conditions:
0.1% available chlorine solution (1000 ppm): 1 tablet of 1 g available chlorine per litre
 - « Unclean » conditions without blood contamination:
0.2% available chlorine solution (2000 ppm): 2 tablets of 1 g available chlorine per litre
 - « Unclean » conditions with blood spills:
0.5% available chlorine solution (5000 ppm): 5 tablets of 1 g available chlorine per litre
 - Large blood spills, sputum:
1% available chlorine solution (10 000 ppm): 10 tablets of 1 g available chlorine per litre
Pour 1% solution over area, leave in contact for 10 minutes, wipe off with absorbent material (to be discarded as contaminated waste), rinse and clean.

Precautions

- Prepare solutions with clean water, in non metallic containers.
- NaDCC can corrode metal. The risk is limited for good quality stainless steel instruments if concentration, contact time (30 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:
 - some detergents: release of toxic chlorine gas. Only anionic detergents (soft soap) can be safely mixed with NaDCC solutions.
 - acid solutions (urine, etc.): release of toxic chlorine gas.

Remarks

- 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. ☀ - 🌂
 - Solutions ready for use: maximum 1 week in dark or opaque bottle (do not use a metal container) or 3 days in a transparent bottle.
 - Solutions used for soaking instruments must be renewed every day.

TETRACYCLINE dermal ointment

The use of antibacterial ointments is not recommended: local applications of antibiotics that are also used orally increase the risk of selecting resistant strains of bacteria.

Therapeutic action

- Antibacterial

Indications

- No indications.
- Regular washing with antiseptic is often enough to treat a skin infection. If this fails, use oral antibiotics rather than local antibiotics.

Presentation

- 3% tetracycline sterile ointment, tube or jar

Contra-indications, adverse effects, precautions

- May cause: eczema, photosensitivity.
- In the event of eye infection, do not apply dermal ointment to the eyes. Use only tetracycline eye ointment.

Remarks

- Storage: below 30°C – 
Do not use after expiry date.
To avoid contamination, close the tube or the jar properly after opening.

TETRACYCLINE eye ointment

Therapeutic action

- Antibacterial

Indications

- Conjunctivitis
- Trachoma (by preference use oral azithromycin for this indication)
- Prevention of chlamydial and gonococcal neonatal conjunctivitis

Presentation

- 1% sterile 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*: 2 applications / day for 7 days
 - *Trachoma*: 2 applications / day for 6 weeks
 - *Prevention of neonatal conjunctivitis*: one single application immediately after birth

Contra-indications, adverse effects, precautions

- Do not administer to patients with hypersensitivity to tetracyclines.
- May cause allergic reactions; stop treatment in the event of serious reaction.

Remarks

- Tetracycline eye ointment replaces silver nitrate 1% eye drops for the prevention of neonatal conjunctivitis.
- For the treatment of trachoma, azithromycin as single dose is as effective as a 6-week course of tetracycline ointment.
- Gonococcal neonatal conjunctivitis must be treated systemically with ceftriaxone IM (125 mg as a single dose). When systemic treatment cannot be given immediately, apply tetracycline eye ointment to both eyes every hour until ceftriaxone is available.
- Oxytetracycline (Terramycin®) and chlortetracycline (Aureomycin®) 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 30°C – 
Do not use after expiry date.
To avoid contamination, close the tube properly after opening.

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

Presentation

- 10% zinc oxide ointment, tube or jar

Dosage

- 1 to 3 applications / day

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 on breasts*)

Remarks

- Storage: below 30°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.

To avoid contamination, close the tube or the jar properly after opening.

Part two

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Organisation and management of a pharmacy

Preliminary stage
Layout of a pharmacy
Pharmacy management

Organisation and rigorous management of a pharmacy are vital in all health structures, particularly when resources are limited. These activities are often entrusted to doctors and nurses with little preparation and no experience in this area. The principles concisely set out in this guide concern organisation and management of pharmacies in health centres or dispensaries; they are directed towards the following objectives :

- to maintain a permanent stock of drugs and essential consumable products of quality;
- to reduce costs;
- to save time and optimise the work of the staff;
- to facilitate management verification and continuous evaluation of consumable products.

In emergency programmes or precarious situations, the first objective is to respond to needs by ensuring that health structures are supplied. Pharmacy management (supply, storage, distribution) should be both simple enough and precise enough in order to :

- rapidly set up a system;
- integrate non-specialised, even non-qualified staff;
- replace the person in charge of the pharmacy at any moment;
- facilitate subsequent evolution towards a more complex management system.

In any case, national pharmaceutic policies and current regulations must be considered when implementing pharmaceutic activities.

To organise regional or national programmes, refer to specialised publications (see bibliography), especially "*Managing drug supply*" (WHO).

Preliminary stage

Choice of drugs

Drawing up a list of basic drugs following defined standardised therapeutic protocols offers two major advantages :

- better treatments due to more rational and safer use of a restricted number of essential drugs;
- economic and administrative improvements concerning purchasing, storage, distribution and control.

If a recently adapted national list of essential drugs exists, it should be respected. Otherwise the list proposed by the WHO (updated) is adapted to suit needs and priorities of each programme, based on recommended selection criteria.

The use of such a list, which has already proven its worth in practice, presents several advantages:

- it facilitates co-ordination of international aid and obtains approval from organisations which subsidise projects (United Nations, European Economic Community...);
- it simplifies supply and reduces costs: most drugs on the WHO list are available in generic forms, at prices far more affordable than corresponding patent drugs.

It is recommended to conform to certain treatments. E.g., doses of certain common drugs: in French-speaking Africa, 100 mg (base) chloroquine tablets and 500 mg aspirin tablets are used; in English-speaking Africa, 150 mg (base) chloroquine tablets and 300 mg aspirin tablets are currently used.

Proposing the same drug in several dosages should be avoided for it risks leading to confusion in prescriptions and complicates management. Paediatric doses may be obtained by dividing adult doses, made easier if tablets are divisible.

Choice may also be orientated by availability on local markets if drugs conform to quality standards and are at competitive prices.

Consumable medical items (dressing material, injections, sutures...) should be limited to essentials and the object of a standardised list.

Drug designation

All active substances have an international non-proprietary name (INN) published by the WHO: drugs should be designated by their INN in all standardised lists. These designations should be used in therapeutic protocols and management documents so that all persons use the same language thus avoiding confusion. Common drugs are sold under a wide variety of brand names, depending on the manufacturer and

distributor. A single laboratory product may have different names in a single country. E.g., ampicillin may be sold as Britapen®, Penbritin®, Pentrexyl®, Totapen®...

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.

Drug classification

Drugs can be classified in several ways.

– Pharmaco-therapeutic classification

In the WHO list, drugs are classified according to their therapeutic action. In certain cases, a drug may appear in several classes, sometimes in a different form (e.g., atropine, diazepam...).

This classification presents a certain pedagogical advantage: it facilitates the integration (e.g., into drug stocks) of supplies from diverse sources, as well as finding a substitute for a missing product.

– Alphabetical classification according to the route of administration

Drugs are divided into five classes and listed in alphabetical order within each class:

- oral drugs,
- injectable drugs,
- infusion fluids and electrolytes,
- vaccines, immunoglobulins and antisera
- drugs for external use, antiseptics and disinfectants.

This classification has been retained by Médecins Sans Frontières as it satisfies criteria of simplicity and standardisation, needed for complete management systems. Non-specialised personnel can work with it.

If needed, a system of codes may be added in countries not using the Latin alphabet.

Whatever classification system is adopted, it should be used at every level of a management system (ordering, storage, distribution, dispensing) in order to facilitate all procedures.

Levels of Use

More limited lists should be established according to capacities 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

To define or re-organise a supply system, it is necessary to determine the quantities of drugs and consumable materials needed. Once lists and therapeutic protocols have been established, it is possible to calculate the respective quantities of each drug from the expected number of patients and from a breakdown of diseases.

Several methods have been suggested: see "*Estimating drug requirements*" (WHO). Figures obtained may differ from those corresponding to true needs or demands: this is the case when improvement of a health centre increases its use, or when prescribers do not respect proposed lists and therapeutic protocols. It is also possible to refer to the consumption of well-managed health structures that are comparable in terms of population and pathology.

When a system is well organised, management aids easily furnish quantitative data.

In a disaster situation (e.g. displaced population), the "*Emergency Health Kit 98*", developed in collaboration with WHO, UNHCR, MSF..., provides a rapid response to medical needs, both qualitative and quantitative. Each kit is intended to supply drugs and material needed to manage health needs of a population of 10,000 people for 3 months. Afterwards, specific local needs should be quickly evaluated in order to establish a suitable supply.

Systematic evaluation of needs also allows verification of how well prescription schemes are respected and prevents possible stock ruptures.

Layout of a pharmacy

Premises

Functional premises should be designed in order to assure:

- the safe keeping of stocks,
- correct storage of drugs and material,
- rational and easy management.

Whether constructing a building, converting an existing building, regional warehouse or a dispensary pharmacy, the objectives are the same only the means differ. Proposals in this chapter apply to district pharmacies, responsible for supplying district health clinics, dispensaries and health posts that refer to it.

In this case, two separate areas, which may or may not be adjacent, are needed : one for daily dispensing to persons using the centre, the other a warehouse where drugs and medical material intended for all district health facilities may be stored, managed and distributed.

Characteristics of a Warehouse

Dimensions of warehouse are determined by storage needs, which depend on:

- the number of drugs and kinds of material to be stocked,
- the number and activities of facilities to supply,
- 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 in and keep clean, and any increases in stock or activity are also difficult. For 1 m² of storage space count 3 m² of floor space.

Security of goods demands strong and solid doors, locks, windows and even 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, with fans if possible, or even air-conditioning which reduces heat and humidity but is very costly.
- Windows should be shaded to avoid exposure to direct sunlight.
- Insulating construction materials may be used.
- Construction should be in concrete or stone with cement floors, slightly inclined to facilitate water drainage and maintenance.

In cold countries, it should be remembered that freezing causes ampoules and bottles to shatter, and alters certain drugs.

Interior Layout of a Warehouse

The layout should be logical and correspond to the circuit "reception, storage, distribution".

Shelves

Solid and stable shelves are vital. In tropical countries where termites attack wood, metal structures are preferable ; if they can be dismantled, it is easy to adjust spaces between shelves and alleys to better accommodate goods to be stored.

The arrangement of shelves, tables or other furniture varies according to the layout of the premises.

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 flooding.

Within a warehouse, or close by, stocking areas should be provided for:

- *Receiving area*

For stocking parcels before unpacking and checking freight and quality control.

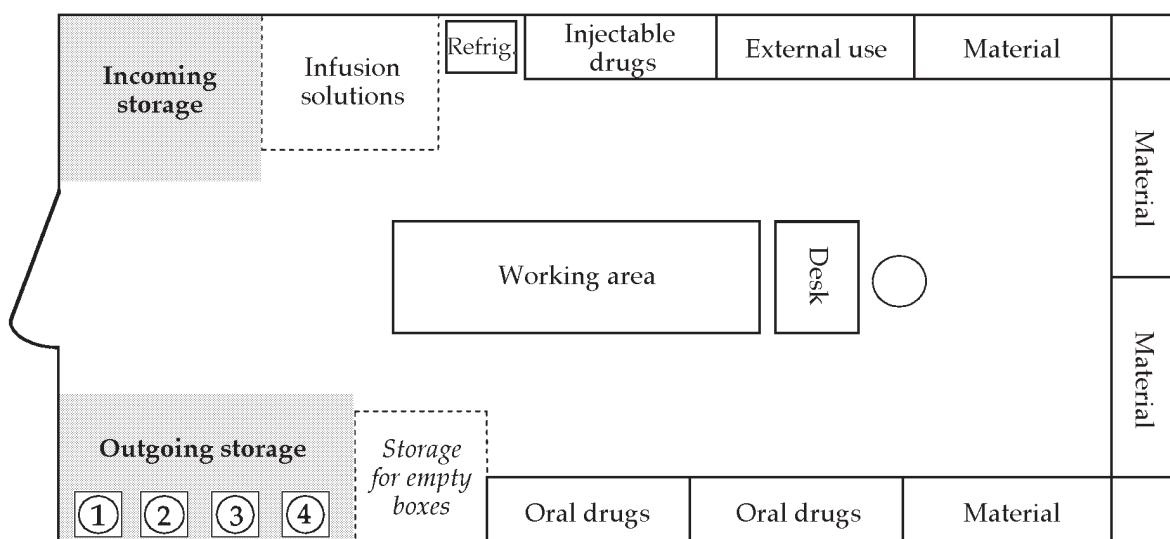
- *Distribution area*

For stocking peripheral orders before distribution. Each destination should have a designated area where parcels may be stocked before distribution.

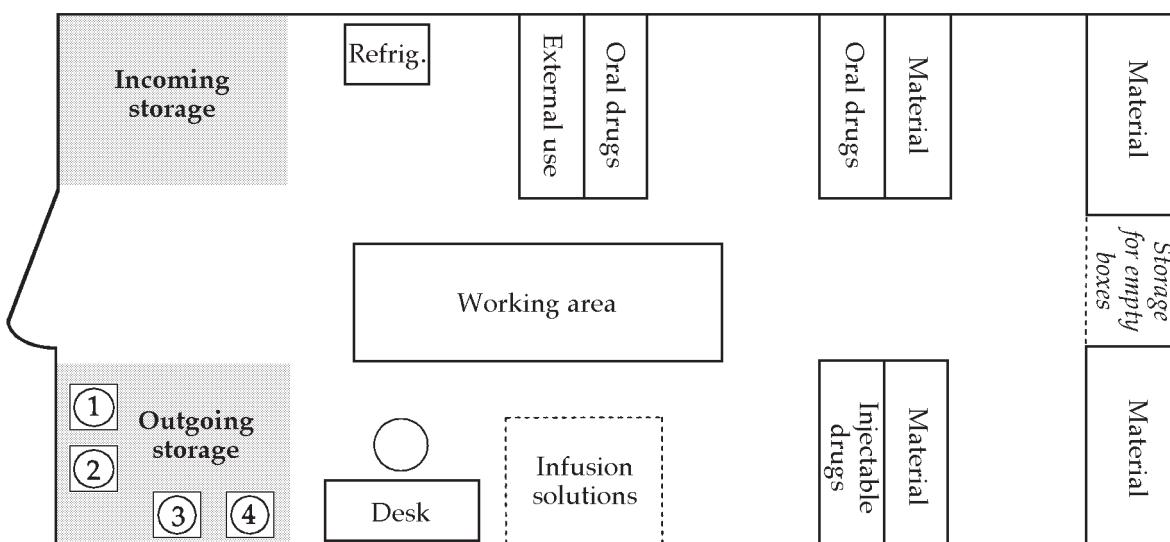
Receiving and distribution areas should be near access doors in order to facilitate handling.

Examples of peripheral pharmacy layouts (health clinic). For larger stocks or central pharmacies, use several rooms and apply the same principles by adapting layouts to needs: administration, cold room, refrigerators...

Schema 1



Schema 2



It is also recommended to plan a storage area for empty boxes, used to prepare orders for peripheral pharmacies.

A work space should be set up in order to verify deliveries (included physical examination: change of colour for tablets; particles, turbidity, precipitation for solutions) and prepare orders.

For the person in charge of the pharmacy, a desk near a light source should be set up to facilitate administrative work and for arranging documents.

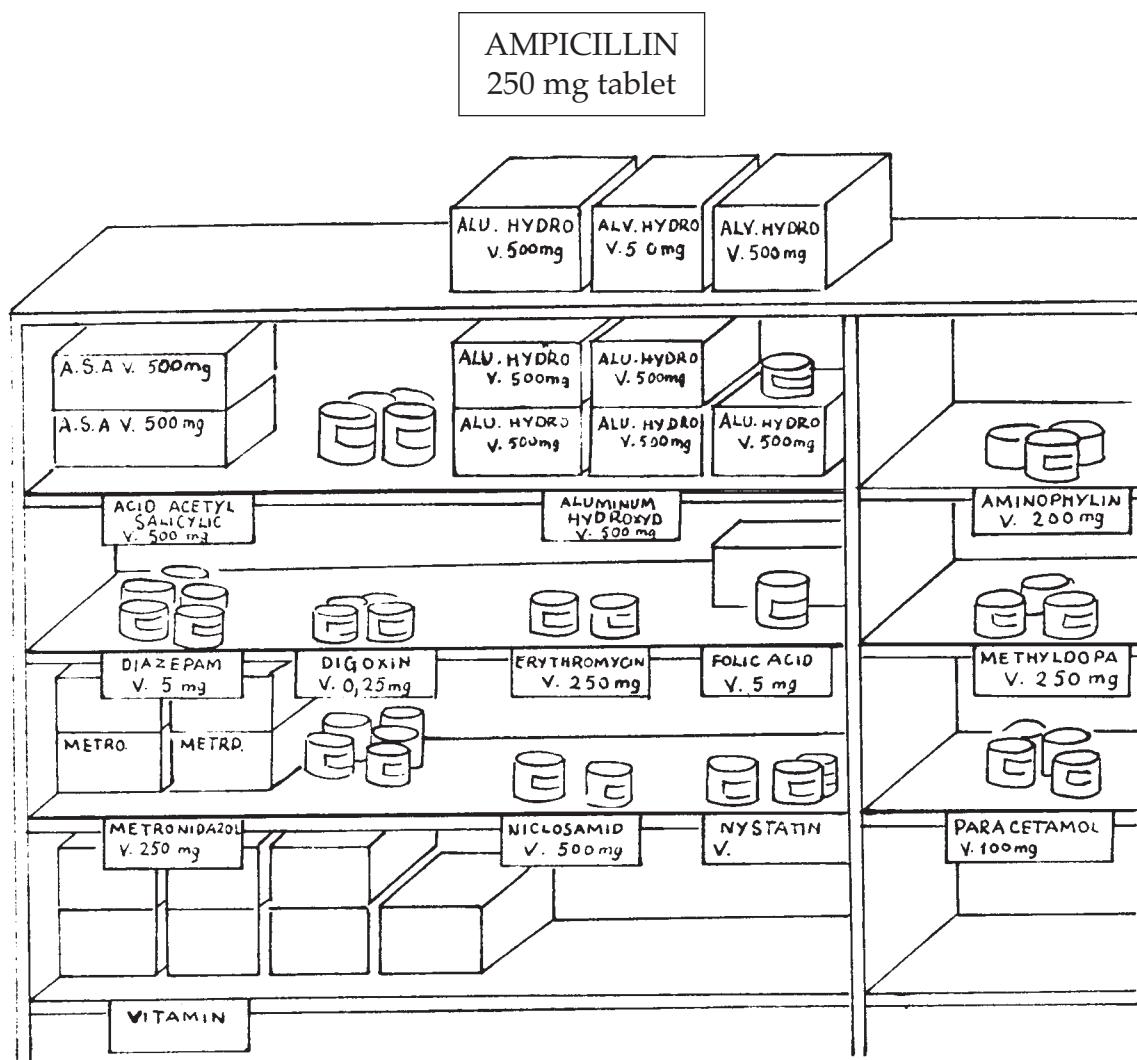
Arrangement of drugs and material

Stocks are arranged according to the classification adopted :

- oral drugs,
- injectable drugs; IV infusions are stocked separately due to their bulk,
- drugs for external use and disinfectants,
- small consumable medical material classified in sub-categories: dressings, injections, sutures, reagents and laboratory material...

In each category of products (oral, injectable, external use) are classified alphabetically.

Each product should have a designated place, well identified by a fixed label indicating the INN, form and dosage. E.g.:



– *Labelling*

Every box and bottle is clearly labelled and in the official local language.

Each label should clearly indicate:

- the INN,
- form and dosage,
- the number of units (tablets, ampoules...) or volume (syrups...) in each box or bottle,
- name and address of manufacturer,
- batch number,
- expiry date.

Narcotics and other controlled substances should be placed under lock and key

Products needing a cold chain should be stored in a refrigerator (between 2–8°C): vaccines, serums, ergometrine, insulin, oxytocin, and certain laboratory tests.

Clearly indicate expiry dates on boxes (chalk, large marker). Arrange products with the earliest expiry date at the front of the shelves and those with the latest at the back (LILO principle: last in last out). This arrangement is essential to avoid products passing their expiry date and becoming unusable.

– *Storing bulky materials*

Put a few boxes in their normal place and, on the label, indicate where the rest of the stock is kept. Do not disperse the rest of the stock in several places.

– *Storing medical materials*

Given the diversity of items, it is preferable not to use strict alphabetical ordering, but to group articles by category: injection material, dressing, sutures...

Organising the pharmacy, stock cards, inventory lists and order lists in the same manner greatly reduces the workload.

Furthermore, so that persons not familiar with the INN system can find their way around in case of emergency or sudden replacement, a list of commercial names and the corresponding INN can be put up:

Bactrim®	see co-trimoxazole
Flagyl®	see metronidazole
Valium®	see diazepam
Totapen®	see ampicillin

– Provide for sufficient space between and for each drug.

– Arrangement should allow visual operation.

It should be possible to note the number of each box and evaluate, in a few minutes, current stock or monthly consumption of a product.

– An empty space behind a label immediately shows a stock rupture.

This organisational system is indispensable for easy and efficient management. Only a few hours should be needed to do a complete inventory.

Management of a pharmacy

Organisation of activities

The management of a district pharmacy should be entrusted to a single person having received adequate training. He is responsible for both the pharmacy and the warehouse. He is the only person possessing keys to the pharmacy, warehouse and narcotics cupboard. He is helped by one or more assistants, depending on the anticipated workload.

Tasks and responsibilities of each assistant should be clearly defined: one of them should be able to replace the person in charge if necessary.

Timetables and work calendars (orders, distributions, stock-control activities) are planned to share the workload as equally as possible.

Stock-control

Stock cards

The stock-card is the principle instrument for stock control. For each item (drug and material), a stock-card is established and regularly updated, always by the same person. These cards allow:

- the identification of all stock movement, in or out;
- determining at any moment the theoretical level of stocks;
- the follow-up of consumption of different users;
- to correctly anticipate orders;
- the evaluation and localisation of losses (differences between theoretical stock and actual stock after inventory).

The following should be noted on stock cards:

- The INN, dosage form and strengths.
- All movements (in, out, origin, destination, loss due to expiration, damages) and dates.
- Current orders and dates.
- Inventories and dates. If cards are well maintained and there are no thefts, the stock column corresponds to a permanent inventory.
- The following may also be included:
 - stock levels: buffer stock, running stock, minimum stock,
 - other stock areas for a product,
 - unit price.
- Quantities are always recorded in units (5000 tablets, 80 ampoules...) and never in boxes (10 boxes of ampicillin tablets may correspond to 200 tablets [10 boxes of 20 tablets] or 10 000 tablets [10 boxes of 1000 tablets]).
- Write a single operation per line, even if several operations take place the same day.

When an order is made, the date, supplier, and quantity ordered are recorded in the origin/destination column. The stock column is not changed. When the order arrives, the quantity received is recorded in the "IN" column, and the "STOCK" column is then calculated.

Example of a stock card

Calculation of stock quantities to retain and order (stock level)

- Average monthly consumption

Calculated from outgoing stock recorded on stock cards : add the quantities of several months in the out column (3, 6 or 12) and divide the total by the number of months.

- 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 = monthly consumption x 3.

- Buffer stock (or reserve stock)

This stock is planned to compensate for possible late deliveries, losses, and increases in consumption. It depends on the delivery delay of orders.

Expressed in months of consumption, 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 ruptures, drug expiration, specific situations (resources, seasonal supply problems...).

E.g., if the delivery delay is two months, the buffer stock corresponds to one month of average monthly consumption.

- Orders

Quantities to order are based on data from stock cards:

- inventory stock levels on the day of the order,
- running stock,
- buffer stock,
- delay period between the order and delivery,
- orders not yet delivered.

Order = (running stock + buffer stock + probable consumption during delivery delay) – (inventory + orders not yet delivered)

Order forms

Pre-printed order forms for peripheral structures facilitate the preparation of orders and inventories, and avoid transcription errors.

Order forms are established according to stock classification; drugs are designated using INN and the form (tablet, capsule, ampoule...), dosage, quantity ordered... The following may also be included:

- *Unit price*, so that persons in charge of health structures can calculate the cost of orders.
- *Stock levels*: it is best to do an inventory before each order.
- *Monthly consumption*.

Orders should be in triplicate, dated and countersigned by persons in charge of health structures. Two copies are sent to the supplier : one serves as a way bill and may also be used for invoicing, the second stays with the supplier. The third copy stays at the structure.

E.g.: health clinic order form, 6 month supply period, minimum stock of 3 months (2 month delivery delay + 1 month buffer stock)

Health structure: **Beboro**

Head of structure: **Jack. Pinel, MD**

Date: **26.06.00**

Signature: **XXX**

ORAL DRUGS

NAME	PREPARATION	Price (FF)	Stock	Monthly consump.	Qty ordered	Qty delivered
ACETAZOLAMIDE	tab 250 mg	0.14	—	—	—	
ACETYLSALICYLIC ACID	tab 300 mg	0.01	55 000	10 000	15 000	
ASCORBIC ACID	tab 250 mg	0.04		—		
ALUMINIUM HYDROXYDE	tab 500 mg	0.03	15 000	6 000	27 000	
AMINOPHYLLINE	tab 100 mg	0.02	3 000	1 000	4 000	
AMPICILLIN	tab 250 mg	0.18	16 000	4 000	12 000	
CHLORAMPHENICOL	caps 250 mg	0.09	6 000	500	—	
CHLOROQUINE	tab 150 mg phosphate = 100 mg base	0.04	50 000	10 000	20 000	

Receiving orders

All orders should be accompanied by a way bill or invoice and packing list.

On reception, the number of parcels should be verified immediately, followed by verification of their contents:

- Ensure that items delivered correspond to items ordered, and that the quantities conform to those on the packing list.
- Packaging, labelling and expiry dates of each drug should be verified, as well as the aspect of each product. Do not forget to verify 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 three years or more according to current regulations.

Inventory

Inventories should be done at least once per year. If possible 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 theft or errors in record-keeping. 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

A warehouse supplies district pharmacies following a timetable agreed upon between the warehouse manager and persons in charge of district health structures.

Each pharmacy sends the warehouse two copies of an order form (described above):

- actual quantities supplied by the warehouse while completing the order are recorded in the “Qty delivered” column on both copies;
- one copy is sent with the delivery (mandatory);
- after verifying that all items have been correctly recorded on their respective stock cards, the second copy is placed in a file established for each district pharmacy; the date is recorded on the order form as proof.

Orders from and deliveries to district health centres or pharmacies proceed in the same manner.

Each pharmacy has its own file intended for internal management.

– Re-packaging drugs for dispensing to patients

Drugs are delivered in large boxes (or containers) containing, for example, 1000 tablets or 100 ampoules.

In order to dispense drugs to patients, it is recommended to pre-pack each drug. To do this:

- make a list of the most commonly prescribed drugs;
- note usual treatment protocols for each drug, for adults and for children of each age group;
- obtain small plastic bags (rather than paper);
- prepare labels for each drug, clearly showing:
 - the name of the centre,
 - the name of the drug (INN), dosage form and strength,
 - the dosage written out in full (and in symbols for the illiterate),
 - the expiry date.
- put the number of tablets corresponding to a single treatment and the corresponding label into the bag;

- seal the bags: bags that can be resealed by pressure exist (Minigrip ®); if not, it is possible to staple them closed or, preferably, to use a small heat-sealing machine which seals both sides.

Pre-packing has numerous advantages:

- easier and quicker distribution;
- better preservation of drugs;
- easier and more rigorous control of outgoing drugs ;
- a more acceptable presentation for the patient; at the same time, the drug is easier to identify and its administration is clearly indicated.

Drugs should be pre-packed according to precise procedures and checked to ensure hygiene norms are respected (cleanliness of hands, tables, containers before they are opened, bags...) in order to avoid the risk of errors when dispensing drugs or in counting, as well as theft during work. This is always justified for health structures performing over 20 consultations per day.

To repack large quantities of tablets (health centres of large districts) tablet-counters exist, either for manual counting or automatic counting using a simple electrical device.

– *Re-packaging for distribution of certain drugs in small health structures*

It is necessary to divide up containers of 1,000 tablets or 100 ampoules for little-used drugs in small health structures.

To obtain 100, 200 or 500 tablets, it is possible to weigh them instead of counting them if a sufficiently accurate scale is available.

– *Dispensing drugs to patients*

So that patients correctly follow treatment, adequate explanations should be given:

- how to take the drug;
- for how long;
- why antibiotic treatments must be completely taken, while analgesic treatments should be stopped when pain ceases;
- possible side-effects: e.g., drowsiness caused by anti-histamines, the need to avoid alcohol with metronidazole...

Persons dispensing drugs should be able to give patients the information they need.

Drug packaging should be presentable; labels sufficiently legible and complete to remind patients how to use the drug.

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 then verifies and gives them to patients with all necessary explanations, slightly away from other users.

Interpreters are needed if several languages or dialects 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 drugs thus supplied interfere with the implementation of standardised therapeutic protocols and makes any form of management impossible.

Choosing suppliers

Buy or import ? It is necessary to make a choice when the possibility of local supplies exists (manufacturers and / or wholesalers) and that individual importation procedures are also authorised. Excepting emergencies, the decision depends on two factors: quality and cost.

Quality

On the market there are poor quality drugs that have not undergone required controls: some do not contain enough active substances, or even none at all, while others are poorly made and deteriorate rapidly, and some are harmful.

To identify dubious suppliers, those in charge of supply centres can seek advice from local health authorities. In any case, the decision to use a local supplier is made by a pharmaceutical expert after having evaluated the possible supplier. A continuous quality control system should be set up once a supplier has been selected.

Cost

It is necessary to compare local prices with real costs of identical imported products, i.e. by including transportation (maritime or air) and transit costs, and sometimes various custom duties.

Local supply may have an advantage even if prices are slightly higher than imported products: it allows a reduction of stock levels because re-supply may be more frequent, therefore limiting risks of loss due to theft or drug expiration as well as stock volume.

When possible, it is recommended to buy local IV infusions if they are of good quality, as they are very cumbersome and relatively expensive to transport.

Rarely used drugs, which represent a negligible percentage of total supply costs, are not worth importing if they are available locally and of good quality.

Drug quality and storage

Quality standards

Storage conditions

Deterioration

Expiration

Drug quality influences treatment efficacy and safety. It 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 assure 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 exterior aspects (colour, odour...), physicochemical properties, analysis procedures, shelf-life (validity period) and storage instructions.

Analysis certificates guarantee that products from one batch (products from the same production cycle) conform with official quality standards in the country of manufacture. These certificates are furnished for each product by manufacturers.

Storage conditions

Stability of drugs depends on both environmental factors such as temperature, air, light and humidity, and on drug-related factors such as the active substance itself, the dosage form (tablet, solution) and the manufacturing process. It is therefore necessary to respect storage instructions for each information sheet in this guide or on manufacturer's notices and labels if the norms are not identical.

Temperature

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	+ 30°C

During transit and transportation temperatures may attain 50 to 60° C inside vehicles, shipping containers or on unloading 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 precipitation of active substances or the shattering of ampoules.

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.

Air

Air is a factor of deterioration due to its content of oxygen and humidity. All containers should remain closed. In air-tight and opaque containers (hospital type), drugs are protected against air and light. Opening containers long before the use of drugs should be avoided.

Light

Light is harmful for drugs, particularly for solutions. Injectable forms should be preserved in their packaging, protected from light. Coloured glass may give illusory protection against light.

Remark

Laboratory reagents, rubber and sometimes plastic material are to be protected as drugs are.

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 antibiotics 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 overdosage when using toxic drugs.

In time, certain drugs undergo a deterioration leading to the development of substances much more dangerous, thus *an increase in toxicity*. Tetracycline is the principal 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. This is the case for penicillins and cephalosporins.

Suppositories, pessaries, creams and ointments that have been melted under heat should not be used. The active substance 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 expiration dating period (or validity period or shelf-life period). The expiry date indicated by manufacturers designates the date up to and including which the therapeutic effect remains unchanged (90% of the active substance 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. Validity period currently guaranteed is from 3 to 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.

When the expiry date is not indicated, the date of manufacture is generally indicated. In this case, the rule of a 3-year validity period may be applied for common antibiotics, hormones, vitamins, and in general all liquid forms, and a 5-year validity period for all other products. This is a general rule with many exceptions and is not applied for products necessitating particular storage conditions (e.g., in a refrigerator).

Single-use material delivered in sterile packaging may be used as long as the packaging remains intact.

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 preserved in acceptable conditions (sheltered 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 anti-epileptic 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 products or to bury them without precaution. It is recommended to incinerate most of them. Tablets, capsules, suppositories, liquids... are first of all separated from non-combustible packaging. An area should always be reserved for this operation. Residues are buried at a great depth, far from all water points and water tables. 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 costs - Facilitating compliance - Reducing risks

- Limiting the use of injectable drugs
- Limiting the use of syrups and oral suspensions
- Studying the choice of treatment protocols
- Considering non-essential drugs and placebos

It is possible to promote a more rational use of drugs, as much for safety as for cost, by a judicious choice of therapeutic regimens and the resulting lists of drugs.

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 IV infusions are more technical acts and thus increase their prestige.

Treatment by injection is always more costly than oral treatment. The price of the drug itself is higher for an equal dose of active substance. It requires rigorous sterilisation of reusable injection material or very costly disposable material. ***It exposes patients to complications*** due to poorly tolerated products (abscesses, necrosis due to quinine injections or IV antibiotics, etc.) or badly performed injection techniques (symptoms of overdose after a IV injection done too rapidly, sciatic neuropathy, etc.). In case of incorrect sterilisation, patients are exposed to a ***risk of bacterial or viral contamination*** (tetanus, hepatitis, HIV, etc.).

When both oral and injectable drugs are effective, administration by injection is only justified in case of ***emergency, digestive intolerance*** or when a patient is ***unable to take anything by mouth***.

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 children and more so if they are sweetened or flavoured. It is, however, recommended to avoid their use for numerous reasons:

- *Risk of incorrect usage*

Outside of hospitals, determining the correct dosage is hazardous for people with little medical knowledge: spoons never contain standard volumes (soup spoons, dessert spoons, tea spoons). Oral suspensions should be prepared immediately before use with clean water, boiled, well measured, and well shaken before use. There is therefore a risk of overdose or giving an insufficient dosage.

Preservation of oral suspensions is limited to a few days, and with syrups there is a risk of contamination or fermentation.

In numerous countries syrups are thought of as "cough medicine". Confusion between cough mixtures and antibiotic oral 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 protocols

The choice of a treatment protocol 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 evidently ideal. Examples:

- Single dose treatment is often preferable (for example, treatment of hookworm by a single dose of mebendazole rather than the classic 3-day treatment).
- Treatment of uncomplicated malaria with sulfadoxine-pyrimethamine should not be a first line treatment in areas where chloroquine is effective. However, its use as a single dose taken right away aids in compliance.
- "Short" course antituberculous therapy including rifampicin may seem costly. However, costs are even higher when uncontrolled long course treatments are interrupted, followed by relapses, reinfection, and resistance.

Considering non-essential drugs 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 drug or placebo? If so, what placebo should be prescribed?

When national drug policy is very 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, diazepam, and even antibiotics. Conversely, a placebo may take the place of a genuinely 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. For example, 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.

Use of antibiotics in precarious situations

Possible causes of antibiotic treatment failure
Choosing an antibiotic
Antibiotic combinations
Principal antibiotic groups

Prescribing antibiotics in precarious situations is difficult. The diagnosis of an infection is based essentially on clinical criteria as laboratory testing (culture, isolation and identification of bacteria) is rarely available.

The choice of treatment protocol depends on the context in which the patient is examined:

– *Dispensaries*

Many patients examined rapidly and therefore difficult to follow. Standard protocols should be drawn up for diagnosis and treatment of the most frequently encountered diseases. The number of available antibiotics should be limited.

– *Medical centres and hospitals*

The number of available antibiotics is greater, alternatives are possible in the event of failure or intolerance to first line treatment.

Possible causes of antibiotic treatment failure

- Clinical signs that are infact due to viral or parasitic infections.
- Choice of antibiotic that penetrates poorly into infected tissues (abscess, cerebrospinal fluid).
- Insufficient dosage or treatment duration.
- Poor treatment compliance.
- Vomiting after oral ingestion.
- Drug interactions reducing absorption (e.g. simultaneous administration of antacids).
- Inactivation of an antibiotic after mixing several drugs in the same syringe or infusion.
- Use of antibiotic that has expired or that has deteriorated due to poor storage conditions (most antibiotics become only ineffective, except expired tetracyclines that become toxic to the kidneys).
- Bacterial resistance to the antibiotic.

Choosing an antibiotic

The table below summarises the choice of antibiotics appropriate both for their penetration into the infected tissue and the most probable bacteria.

Drugs preceded by an asterisk (*) are **contra-indicated during pregnancy**.

Infections	First choice	Other possible first-line treatments
<i>Upper respiratory tract infections</i>		
Tonsillitis	benzathine benzylpenicillin	amoxicillin or erythromycin or penicillin V or azithromycin
Diphtheria	benzathine benzylpenicillin	erythromycin
Epiglottitis	ceftriaxone	ampicillin or *chloramphenicol
Sinusitis	amoxicillin	erythromycin or *cotrimoxazole
<i>Lower respiratory tract infections</i>	amoxicillin	ceftriaxone or ampicillin + gentamicin
<i>Acute otitis media</i>	amoxicillin	erythromycin or *cotrimoxazole
<i>Intestinal infections</i>		
Typhoid fever	*ciprofloxacin	amoxicillin or cefixime
Shigellosis	*ciprofloxacin	ceftriaxone
<i>Urinary tract infections</i>		
Upper	*ciprofloxacin	ceftriaxone or ampicillin + gentamicin
Lower	amoxicillin	nitrofurantoin or *nalidixic acid
<i>Urethritis and cervicitis</i>	azithromycin + cefixime or azithromycin + ceftriaxone	*doxycycline + cefixime or *doxycycline + ceftriaxone or erythromycin + cefixime or erythromycin + ceftriaxone
<i>Genital ulcers</i>		
Syphilis	benzathine benzylpenicillin	*doxycycline or erythromycin
Chancroid	azithromycin	ceftriaxone or erythromycin or *ciprofloxacin
<i>Pelvic inflammatory disease</i>		
Veneral	cefixime + *doxycycline or erythromycin + metronidazole	ceftriaxone or *spectinomycin + *doxycycline or erythromycin + metronidazole
Puerperal	ampicillin + gentamicin + metronidazole	
<i>Meningitis</i>	*oily chloramphenicol or ceftriaxone or ampicillin	
<i>Eye infections</i>		
Conjunctivitis	tetracycline eye ointment	*chloramphenicol eye drops
Trachoma	azithromycin	tetracycline eye ointment

Antibiotic combinations

Combining several antibiotics is only justified in severe infections (brucellosis, leprosy, tuberculosis, pelvic inflammatory disease, etc.).

Certain combinations should be avoided, as the action of one antibiotic can neutralise the action of another antibiotic administered simultaneously (e.g. penicillins and tetracyclines).

Principal antibiotic groups

Penicillin and derivatives

- Amoxicillin and ampicillin
- Benzylpenicillin (penicillin G)
- Benzathine benzylpenicillin (penicillin G benzathine)
- Procaine benzylpenicillin with or without benzylpenicillin
- Cloxacillin
- Phenoxyethylpenicillin (penicillin V)

Fast-acting penicillins

- Benzylpenicillin should be reserved for treating severe infections. Due to rapid elimination, an injection every 4 to 6 hours is required, which is impossible if the patient is not hospitalised.
- Oral phenoxyethylpenicillin is used in the treatment of tonsillitis.

Long-acting penicillins

- Benzathine benzylpenicillin has a concentration that slowly increases in the 24 hours following the injection. It remains active for 15 to 20 days. Due to its delayed action and low concentration in the blood, its use is restricted to infections susceptible to penicillin that evolve slowly. Its use is contra-indicated in acute infections. It is only administered by IM route.
- Procaine benzylpenicillin has the advantage of being injected only once every 24 hours. It acts rapidly (45 to 60 minutes) and is only administered by IM route.
- The combination of procaine benzylpenicillin and benzylpenicillin is also known as fortified penicillin procaine (PPF). It acts within 15 to 30 minutes after injection, thus more rapidly than procaine benzylpenicillin alone due to the presence of benzylpenicillin. It is only administered by IM route.

Penicillin derivatives

- Amoxicillin and ampicillin are broad-spectrum antibiotics with good tissue penetration and are therefore used for many infections. They are often used in pregnant women, for whom other antibiotics are frequently contra-indicated.

Amoxicillin is better absorbed through the intestinal tract than ampicillin and therefore requires lower oral doses.

For oral administration, use amoxicillin rather than ampicillin. On the other hand, injectable ampicillin is preferable to injectable amoxicillin. Injectable forms should be reserved for severe infections only.

- Cloxacillin is a narrow-spectrum antibacterial, essentially limited to treatment of staphylococcal infections, most of which have become resistant to penicillin.

Macrolides

- Erythromycin
- Azithromycin

- Erythromycin is reserved for penicillin-allergic patients.
- Azithromycin is effective as a single-dose for the treatment of *Chlamydia trachomatis* infections, due to its prolonged half-life.

Chloramphenicols

- Chloramphenicol
 - Long-acting oily chloramphenicol
- Chloramphenicol is a broad-spectrum antibiotic, effective against numerous infections. Due to its effectiveness and low cost, it is still widely used. However, due to its potential haematotoxicity, its use should be restricted to severe infections when other less toxic antibiotics are not effective or are contra-indicated.
Oral treatment is more effective than parenteral treatment: blood and tissue concentrations are higher when chloramphenicol is given orally.
 - Oily chloramphenicol is reserved for meningococcal meningitis epidemics.

Sulphonamides

- Sulfadiazine
- Sulfadoxine
- Cotrimoxazole (sulfamethoxazole + trimethoprim)

Simple sulphonamides

- Sulfadiazine combined with pyrimethamine is the first-line treatment of toxoplasmosis.
- Sulfadoxine is a long-acting sulphonamide (approximately one week). Due to the existence of resistant strains it should not be used for meningitis or cholera epidemics.
- The use of non-absorbable sulphonamides (sulfaguanidine, etc.) is not recommended as they are ineffective in the majority of intestinal infections of bacterial origin.

Combined sulphonamides

- The combination of a sulphonamide-trimethoprim (cotrimoxazole) benefits from the synergic effect of both active ingredients. Indications are more numerous than for sulphonamides alone. However, there are an increasing number of strains resistant to cotrimoxazole.

Tetracyclines

- Doxycycline
 - Tetracycline
- Due to the multiplication of organisms resistant to tetracyclines, their use should be reserved for specific infections: brucellosis, cholera, borreliosis, typhus, chlamydial infections and certain pneumopathies.
- Doxycycline has the advantage of being administered in a single dose for the treatment of cholera, epidemic typhus, or louse-borne relapsing fever.

Aminoglycosides

- Gentamicin
- Spectinomycin
- Streptomycin

Due to their toxicity (irreversible ototoxicity, severe renal impairment, allergic reactions), aminoglycosides should only be prescribed for their specific indications and ensuring the monitoring of auditory and renal function.

Cephalosporins

- Cefixime
- Ceftriaxone

Cefixime and ceftriaxone are third-generation cephalosporins particularly active against Gram-negative bacteria. These are an alternative to fluoroquinolones when the latter are to be avoided, especially in children and pregnant women.

Quinolones

- Nalidixic acid
- Ciprofloxacin, ofloxacin, etc.

- First generation quinolones: nalidixic acid
Nalidixic acid is no longer recommended for the treatment of shigellosis. It remains indicated for the treatment of cystitis.
- Second generation quinolones (fluoroquinolones): ciprofloxacin, ofloxacin, etc.
Fluoroquinolones have a broader antibacterial spectrum than first-generation quinolones and have good tissular penetration. Their use should be reserved for the treatment of severe infections unresponsive to first-line antibacterials in order to avoid the emergence of resistant strains.

Nitrofuranes

- Nitrofurantoin

Nitrofurantoin may be prescribed as first-line treatment in cystitis, particularly in young women (except during the last month of pregnancy).

Antiseptics and disinfectants

Definition

Selection

Recommended antiseptics and dilutions

Preparation of antiseptic solutions

Preparation of disinfectant solutions for floors and surfaces

Use of disinfectant solutions for medical items

Definition

Antiseptics are products used for the disinfection (antisepsis) of living tissues (skin, wounds, mucous membranes).

Disinfectants are products used for the disinfection of objects and surfaces (floors, tables, etc.).

Certain products can be used both as an antiseptic and as a disinfectant, for example: polyvidone iodine, sodium tosylchloramide (chloramine-T) and certain formulations of sodium dichloroisocyanurate (NaDCC).

Selection

No single product can meet all the needs of a medical facility regarding cleaning, antisepsis and disinfection but in general, a restricted list will suffice and facilitate management (to avoid shortages, overstocks and incorrect use).

I - Recommended list

- ordinary soap, usually available locally
- a detergent, usually available locally
- a chlorine-releasing compound:
 - preferably: NaDCC in a multi-purpose formulation which may be used for the disinfection of wounds, drinking water and surfaces
 - if not available: chloramine-T
- chlorhexidine-cetrimide
- polyvidone iodine
- gentian violet
- a phenolic detergent such as cresol saponated solution (lysol)

Remarks:

– *Alcohols (ethanol and isopropanol or isopropyl alcohol)*

If a restricted list of disinfectants must be selected, there are few advantages in choosing alcohols:

- their use is contraindicated on wounds and mucous membranes,
- they have no remanent effect. For indications where this effect is required, they must be used in combination with other disinfectants (Clinogel®, Sterilium®, Hibisprint®, etc.),
- they are expensive to transport by air,
- importation often requires complicated administrative procedures.

However, if ethanol and isopropanol are available locally, they can be useful to disinfect intact skin before injection or taking a blood sample, as its action is rapid (a few seconds). These products are more effective at 60-70° v/v than at 90-95°.

– *Glutaral/Glutaraldehyde*

Glutaraldehyde in 2% alkaline solution is a very potent disinfectant, non corrosive to metal. It may be used for the disinfection of semi-critical medical items (20 minutes) that cannot be sterilised by heat (e.g. laryngoscope blades), provided all recommendations are adequately followed:

- thorough cleaning before disinfection,
- complete immersion in “activated” glutaraldehyde solution,
- thorough rinsing to eliminate any residue,
- adequate drying.

The “activation” consists in the addition of the activator supplied with the product, which is intended to raise the pH to the alkaline value necessary for the efficacy of the solution. The activated solution has a limited shelf-life, between 2 to 4 weeks depending on the brand. Glutaraldehyde solution is very useful for endoscopes but its price and the constraints for safe use make it of limited interest for facilities with limited resources.

Glutaraldehyde solution releases toxic vapours and should therefore only be used in well ventilated wards (air extractor recommended).

2 - Non-recommended products

- Eosin: eosin is still frequently used as an antiseptic but it has a very narrow spectrum and its aqueous solutions are very easily contaminated by bacteria.
- Hydrogen peroxide (hydroperoxide): useful for the cleaning of dirty wounds but its efficacy is limited. Moreover, concentrated hydrogen peroxide is dangerous to transport and handle.
- Hexachlorophene: antiseptic with limited effectiveness and toxic for the central nervous system.
- Mercury compounds: phenylmercuric borate, merbromin (Mercurochrome®), mercurobutol (Mercryl®), thiomersal (Merthiolate®, Timerosal®). Aqueous solutions of these antiseptics have limited efficacy (very limited for merbromin). Alcoholic solutions are more effective. All mercury compounds, however, may cause serious adverse effects (toxic for kidneys, central nervous system and digestive tract; allergies). Moreover they pollute the environment. They must not be used.
- Ether: often wrongly used as an antiseptic. It has no disinfecting properties, but degreases the skin and removes sticky residues of elastoplast and similar dressings.

Recommended antiseptics and dilutions

Indications	Product to be used	Dilution	Remarks
<ul style="list-style-type: none"> - Insertion of IV devices - Insertion of urinary catheter - Lumbar puncture - Umbilical cord care - Pre-operative skin preparation (including perineum before delivery) - Skin disinfection before suturing - Post-operative wound (dressing) - Disinfection of injection site - Venepuncture 	<p style="text-align: center;">polyvidone iodine (PVI) concentrated solution</p>	10% PVI concentrated solution	<ul style="list-style-type: none"> - Do not use with chlorhexidine or with chlorhexidine+cetrimide. - Do not use with mercury compounds (Mercurochrome®, Merbromin, Thiomersal®, etc.); can produce a toxic compound, risk of necrosis.
<ul style="list-style-type: none"> - Mouth washes 		2 teaspoons of 10% PVI solution in 200 ml of water	
<ul style="list-style-type: none"> - Wounds, abscesses, ulcers 		1.5% chlorhexidine + 15% cetrimide 2% dilution: = 20 ml/litre	<ul style="list-style-type: none"> - Do not use dilutions more than one week old. - Do not bring in contact with eyes, brain, meninges, ears, genital mucous membranes. - Do not use with soap (inactivation) and other antiseptics (incompatibility).
<ul style="list-style-type: none"> - Infected or necrotic wounds - Abscesses - Furuncles - Infected ulcers 		1.67g NaDCC/litre = 1 tablet 1g available chlorine/litre (or 5 g chloramine-T/litre)	<ul style="list-style-type: none"> - Do not use solutions more than 3 days old (or 1 week if an opaque, dark coloured container is used). - Do not use a metal container. - For prolonged use, protect the intact skin around the wound with vaseline.
<ul style="list-style-type: none"> - Candidiasis (oral, mammary, diaper dermatitis) - Oozing superficial skin infections 	gentian violet	0.5% solution (5g/litre) = 1 teaspoon per litre	<ul style="list-style-type: none"> - For preparation: shake several times, leave to settle. Filter or pour carefully into another bottle to eliminate any possible sediment. - Do not use dilutions more than one week old.

Preparation of antiseptic solutions

Although it may seem paradoxical, aqueous solutions of many antiseptics can be contaminated by pathogenic microorganisms during handling (especially *Pseudomonas aeruginosa*). Antiseptic solutions may be the cause of nosocomial infections.

To avoid this, the following precautions must be taken:

- Prepare all aqueous antiseptic solutions with clear water, that has been boiled for a few minutes and cooled.
- Renew all aqueous solutions at least once a week.
- Only prepare small amounts at a time to avoid wastage and the temptation of keeping expired solutions.
- Never mix a fresh solution with a “leftover” solution.
- Wash bottles with hot water and leave to dry before each refill.
- Never use a cork stopper because it promotes contamination (rough surface impossible to clean properly). Moreover cork inactivates certain antiseptics such as chlorhexidine.
- Mark on the bottles:
 - the name of the product,
 - its concentration,
 - the date of preparation or the date of expiry.

Every medical facility should define a clear policy concerning the renewal of its the antiseptic solutions.

Preparation of disinfectant solutions for floors and surfaces

- Dilutions of phenolic detergents such as cresol saponated solution should be prepared with clear water just before use (no need to boil the water).
- Chlorine solutions should be prepared with clear water just before use, in non metal containers (no need to boil the water).

Use of disinfectants for medical items

Disinfectants are used:

- to pre-disinfect soiled medical items in order to limit risks of contamination for cleaning staff,
- to disinfect clean medical items, in order to avoid patient-to-patient transmission of infections through medical items.

Use of disinfectants for pre-disinfection of soiled instruments

The cleaning of instruments, especially sharp instruments, carries a high risk for personnel, even if they wear gloves (e.g. risk of HIV or hepatitis B transmission). It is therefore recommended to use a disinfectant before the cleaning phase: this does not eliminate the risk but reduces it.

There is no ideal product i.e. effective on a broad spectrum of pathogens, not inactivated by organic matter, non corrosive to metal, and affordable in resource-limited settings.

Although NaDCC, calcium hypochlorite or chloramine-T are corrosive and inactivated by organic matter, will often be the safest choice if contact time and concentration recommendations are respected.

If available, use NaDCC as it less corrosive than calcium hypochlorite and faster acting than chloramine-T.

In practice:

- If pre-disinfecting soiled instruments immediately after use: soak instruments for 15 minutes in 0.1% available chlorine solution.
- If it is not possible to pre-disinfect soiled instruments immediately after use: leave instruments to soak in clear water to avoid the drying of organic matter until proceeding to pre-disinfection.

Soaking for too long (more than 30 minutes) and/or in a solution that is too concentrated will increase the risk of corrosion.

Use of disinfectants for disinfection of clean instruments

See table, following page.

“High level disinfection” consists in eliminating most of the germs present on a surface or object through immersion in a disinfectant solution for 20 minutes.

Only *heat sensitive semi-critical* items (rectal or oral thermometers, laryngoscope blades, etc.) must undergo “high level disinfection” between each patients.

“High level disinfection” does not replace sterilisation and must never be used for material that can be sterilised in an autoclave. Even after “high level disinfection”, items cannot under any circumstances be considered sterile.

Reusable medical items must be carefully cleaned with soap and water before disinfection as disinfectants are only effective on clean surfaces.

Immersion in a “high-level disinfectant” should always be followed by thorough rinsing with sterile or boiled water.

Chemical disinfection or boiling are not sufficient for critical items, as bacterial spores are not destroyed. Chemical disinfection must not be used for critical items, especially syringes and needles.

The effectiveness of chemical disinfection can be impaired by error in dilution or deterioration of the product due to poor storage conditions.

Level of processing required according to classification/destination of medical items

Device classification	Examples	Level of asepsis required	Processing possibilities
Critical items – Items that contact normally sterile parts of the body. – Items through which circulate liquids that go into the vascular system or that contact sterile parts of the body.	Syringes, needles, trocarts, surgical instruments, urinary catheters, etc	Sterile at the time of use	Autoclave sterilization in appropriate wrapping or Single-use items
Semi-critical items Items that contact mucous membranes or non intact skin	Rectal or oral thermometer, nasal or vaginal speculum, laryngoscope blade, etc.	<p>Heat sensitive material: submitted to « high-level disinfection » between each patient</p> <p>Heat resistant material: sterilized between each patient, but need not necessarily be kept sterile until use.</p>	Disinfection by immersion for 20 minutes in 0.1% available chlorine solution (1000 ppm) or chloramine-T solution (20 g/litre) or 2% glutaraldehyde solution. – Autoclave sterilization (wrapping not compulsory) – Boiling
Non critical items – Items that contact intact skin – Items that do not contact patients	Stethoscope, blood pressure cuff, examining table, wheel chairs, infusions supports, beds, weighing scales, etc.	Regularly cleaned and disinfected but not necessarily between each patient, except if they are soiled by blood ¹ or other biological fluids or in case of infection requiring isolation.	To be chosen according to availability and type of item to be processed: – chlorine solution ² – phenolics (1% lysol, chloroxylenol) – 70% ethanol or isopropanol

¹ In this event, cover area with 1 % available chlorine solution (10 000 ppm), leave in contact for 10 minutes, wipe off with an absorbent material (to be discarded as contaminated waste), rinse and clean.

² Chlorine solutions = solutions prepared preferably with sodium dichloroisocyanurate (NaDCC), if not available, with calcium hypochlorite (more corrosive) or chloramine-T (1 g/litre minimum), or, as last resort, with sodium hypochlorite (even more corrosive and very unstable to heat).

Essential Medicines

WHO Model List (revised March 2005) Explanatory Notes

The **core list** presents a list of minimum medicine needs for a basic health care system, listing the most efficacious, safe and cost-effective medicines for priority conditions. Priority conditions are selected on the basis of current and estimated future public health relevance, and potential for safe and cost-effective treatment.

The **complementary list** presents essential medicines for priority diseases, for which specialized diagnostic or monitoring facilities, and/or specialist medical care, and/or specialist training are needed. In case of doubt medicines may also be listed as complementary on the basis of consistent higher costs or less attractive cost-effectiveness in a variety of settings.

When the strength of a drug is specified in terms of a selected salt or ester, this is mentioned in brackets; when it refers to the active moiety, the name of the salt or ester in brackets is preceded by the word "as".

The **square box symbol** (□) is primarily intended to indicate similar clinical performance within a pharmacological class. The listed medicine should be the example of the class for which there is the best evidence for effectiveness and safety. In some cases, this may be the first medicine that is licensed for marketing; in other instances, subsequently licensed compounds may be safer or more effective. Where there is no difference in terms of efficacy and safety data, the listed medicine should be the one that is generally available at the lowest price, based on international drug price information sources. Therapeutic equivalence is only indicated on the basis of reviews of efficacy and safety and when consistent with WHO clinical guidelines. National lists should not use a similar symbol and should be specific in their final selection, which would depend on local availability and price.

Drugs are listed in alphabetical order, within sections.

1. ANAESTHETICS

1.1 General anaesthetics and oxygen

<input type="checkbox"/> halothane	inhalation
ketamine	injection, 50 mg (as hydrochloride)/ml in 10-ml vial
nitrous oxide	inhalation
oxygen	inhalation (medicinal gas)
<input type="checkbox"/> thiopental	powder for injection, 0.5 g, 1.0 g (sodium salt) in ampoule

1.2 Local anaesthetics

<input type="checkbox"/> bupivacaine	injection, 0.25%, 0.5% (hydrochloride) in vial injection for spinal anaesthesia, 0.5% (hydrochloride) in 4-ml ampoule to be mixed with 7.5% glucose solution
<input type="checkbox"/> lidocaine	injection, 1%, 2% (hydrochloride) in vial injection for spinal anaesthesia, 5% (hydrochloride) in 2-ml ampoule to be mixed with 7.5% glucose solution topical forms, 2-4% (hydrochloride)
lidocaine + epinephrine (adrenaline)	injection 1%, 2% (hydrochloride)+ epinephrine 1:200 000 in vial; dental cartridge 2% (hydrochloride) + epinephrine 1:80 000

Complementary List

<i>ephedrine</i>	<i>injection, 30 mg (hydrochloride)/ml in 1-ml ampoule (For use in spinal anaesthesia during delivery, to prevent hypotension)</i>
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1.3 Preoperative medication and sedation for short-term procedures

atropine	injection, 1 mg (sulfate) in 1-ml ampoule
<input type="checkbox"/> diazepam	injection, 5 mg/ml in 2-ml ampoule; tablet, 5 mg
morphine	injection, 10 mg (sulfate or hydrochloride) in 1-ml ampoule
promethazine	elixir or syrup, 5 mg (hydrochloride)/5ml

2. ANALGESICS, ANTIPYRETICS, NON-STEROIDAL ANTI-INFLAMMATORY MEDICINES (NSAIMs), MEDICINES USED TO TREAT GOUT AND DISEASE MODIFYING AGENTS IN RHEUMATOID DISORDERS (DMARDs)

2.1 Non-opioids and non-steroidal anti-inflammatory medicines (NSAIMs)

acetylsalicylic acid	tablet, 100-500 mg; suppository, 50-150 mg
ibuprofen	tablet, 200 mg, 400 mg
paracetamol*	tablet, 100-500 mg; suppository, 100 mg; syrup, 125 mg/5ml * not recommended for anti-inflammatory use due to lack of proven benefit to that effect

2.2 Opioid analgesics

codeine	tablet, 30 mg (phosphate)
morphine	injection, 10 mg in 1-ml ampoule (sulfate or hydrochloride); oral solution, 10 mg (hydrochloride or sulfate)/5 ml; tablet, 10 mg (sulfate)

2.3 Medicines used to treat gout	
allopurinol	tablet, 100 mg
2.4 Disease modifying agents used in rheumatoid disorders (DMARDs)	
chloroquine	tablet, 100 mg, 150 mg (as phosphate or sulfate)
<i>Complementary List</i>	
azathioprine	tablet, 50 mg
methotrexate	tablet, 2.5 mg (as sodium salt)
penicillamine	capsule or tablet, 250 mg
sulfasalazine	tablet, 500 mg
3. ANTIALLERGICS AND MEDICINES USED IN ANAPHYLAXIS	
<input type="checkbox"/> chlorphenamine	tablet, 4 mg (hydrogen maleate); injection, 10 mg (hydrogen maleate) in 1-ml ampoule
dexamethasone	injection, 4 mg dexamethasone phosphate (as disodium salt) in 1-ml ampoule
epinephrine (adrenaline)	injection, 1 mg (as hydrochloride or hydrogen tartrate) in 1-ml ampoule
hydrocortisone	powder for injection, 100 mg (as sodium succinate) in vial
<input type="checkbox"/> prednisolone*	tablet, 5 mg, 25 mg * there is no evidence for complete clinical similarity between prednisolone and dexamethasone at high doses.
4. ANTIDOTES AND OTHER SUBSTANCES USED IN POISONINGS	
Section 4 will be reviewed at the next meeting of the Expert Committee.	
4.1 Non-specific	
charcoal, activated	powder
4.2 Specific	
acetylcysteine	injection, 200 mg/ml in 10-ml ampoule
atropine	injection, 1 mg (sulfate) in 1-ml ampoule
calcium gluconate	injection, 100 mg/ml in 10-ml ampoule
deferoxamine	powder for injection, 500 mg (mesilate) in vial
dimercaprol	injection in oil, 50 mg/ml in 2-ml ampoule
DL-methionine	tablet, 250 mg
methylthioninium chloride (methylene blue)	injection, 10 mg/ml in 10-ml ampoule
naloxone	injection, 400 micrograms (hydrochloride) in 1-ml ampoule
penicillamine	capsule or tablet, 250 mg

potassium ferric hexacyano-ferrate(II) ·2H ₂ O (Prussian blue)	powder for oral administration
sodium calcium edetate	injection, 200 mg/ml in 5-ml ampoule
sodium nitrite	injection, 30 mg/ml in 10-ml ampoule
sodium thiosulfate	injection, 250 mg/ml in 50-ml ampoule

5. ANTICONVULSANTS/ANTIEPILEPTICS

carbamazepine	scored tablet, 100 mg, 200 mg
□ diazepam	injection, 5 mg/ml in 2-ml ampoule (intravenous or rectal)
magnesium sulfate*	injection, 500 mg/ml in 2-ml ampoule; 500mg/ml in 10-ml ampoule * for use in eclampsia and severe pre-eclampsia and not for other convulsant disorders.
phenobarbital	tablet, 15-100 mg; elixir, 15 mg/5ml
phenytoin	capsule or tablet, 25 mg, 50 mg, 100 mg (sodium salt); injection, 50 mg/ml in 5-ml vial (sodium salt)
valproic acid	enteric coated tablet, 200 mg, 500 mg (sodium salt)

Complementary List

ethosuximide	capsule, 250 mg; syrup, 250 mg/5ml
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6. ANTI-INFECTIVE MEDICINES

6.1 Anthelminthics

6.1.1 Intestinal anthelminthics

albendazole	chewable tablet, 400 mg
levamisole	tablet, 50 mg; 150 mg (as hydrochloride)
□ mebendazole	chewable tablet, 100 mg, 500 mg
niclosamide*	chewable tablet, 500 mg * niclosamide is listed for use when praziquantel treatment fails
praziquantel	tablet, 150 mg, 600 mg
pyrantel	chewable tablet 250 mg (as embonate); oral suspension, 50 mg (as embonate)/ml

6.1.2 Antifilarials

ivermectin	scored tablet, 3 mg, 6 mg
<i>Complementary List</i>	
diethylcarbamazine	tablet, 50 mg, 100 mg (dihydrogen citrate)
suramin sodium	powder for injection, 1 g in vial

6.1.3 Antischistosomal and antitrematode medicine

praziquantel	tablet, 600 mg
triclabendazole	tablet, 250 mg

Complementary List

oxamniquine*	capsule, 250 mg; syrup, 250 mg/5ml * oxamniquine is listed for use when praziquantel treatment fails.
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6.2 Antibacterials

6.2.1 Beta Lactam medicines

Applications for cefalexin and cefazolin are anticipated for the next meeting of the Expert Committee.

amoxicillin	capsule or tablet, 250 mg, 500 mg (anhydrous); powder for oral suspension, 125 mg (anhydrous)/5 ml
amoxicillin + clavulanic acid	tablet, 500 mg + 125 mg
ampicillin	powder for injection, 500 mg, 1 g (as sodium salt) in vial
benzathine benzylpenicillin	powder for injection, 1.44 g benzylpenicillin (=2.4 million IU) in 5-ml vial
benzylpenicillin	powder for injection, 600 mg (= 1 million IU), 3 g (= 5 million IU) (sodium or potassium salt) in vial
cefixime*	capsule 400mg * only listed for single dose treatment of uncomplicated ano-genital gonorrhoea
<input type="checkbox"/> cloxacillin	capsule, 500 mg, 1 g (as sodium salt); powder for oral solution, 125 mg (as sodium salt)/5 ml; powder for injection, 500 mg (as sodium salt) in vial
phenoxytmethylpenicillin	tablet, 250 mg (as potassium salt); powder for oral suspension, 250 mg (as potassium salt)/5 ml
procaine benzylpenicillin	powder for injection, 1 g (=1 million IU), 3 g (=3 million IU) in vial

Complementary List

ceftazidime	<i>powder for injection, 250 mg (as pentahydrate) in vial</i>
<input type="checkbox"/> ceftriaxone	<i>powder for injection, 250 mg, 1 g (as sodium salt) in vial</i>
imipenem* + cilastatin*	<i>powder for injection 250 mg (as monohydrate) + 250 mg (as sodium salt), 500 mg (as monohydrate) + 500 mg (as sodium salt) in vial * only listed for the treatment of life-threatening hospital-based infection due to suspected or proven multidrug resistant infection</i>

6.2.2 Other antibacterials

azithromycin*	capsule, 250 mg or 500 mg; suspension 200 mg/5 ml * only listed for single dose treatment of genital <i>C. trachomatis</i> and of trachoma
chloramphenicol	capsule, 250 mg; oral suspension, 150 mg (as palmitate)/5 ml; powder for injection, 1 g (sodium succinate) in vial; oily suspension for injection 0.5 g (as sodium succinate)/ml in 2-ml ampoule

<input type="checkbox"/> ciprofloxacin*	tablet 250 mg (as hydrochloride) * final selection depends on indication for use
doxycycline*	capsule or tablet, 100 mg (hydrochloride) * final selection depends on indication for use
<input type="checkbox"/> erythromycin	capsule or tablet, 250 mg (as stearate or ethyl succinate); powder for oral suspension, 125 mg (as stearate or ethyl succinate); powder for injection, 500 mg (as lactobionate) in vial
<input type="checkbox"/> gentamicin*	injection, 10 mg, 40 mg (as sulfate)/ml in 2-ml vial * final selection depends on indication for use
<input type="checkbox"/> metronidazole	tablet, 200-500 mg; injection, 500 mg in 100-ml vial; suppository, 500 mg, 1 g; oral suspension, 200 mg (as benzoate)/5 ml
nitrofurantoin	tablet, 100 mg
spectinomycin	powder for injection, 2 g (as hydrochloride) in vial
sulfamethoxazole + trimethoprim	tablet, 100 mg + 20 mg, 400 mg + 80 mg; oral suspension, 200 mg + 40 mg/5 ml; injection, 80 mg + 16 mg/ml in 5-ml and 10-ml ampoules
trimethoprim	tablet, 100 mg, 200 mg

Complementary List

clindamycin	capsule, 150 mg; injection, 150 mg (as phosphate)/ml
sulfadiazine	tablet, 500 mg; injection, 250 mg (sodium salt) in 4-ml ampoule
vancomycin	powder for injection, 250 mg (as hydrochloride) in vial

6.2.3 Antileprosy medicines

Medicines used in the treatment of leprosy should never be used except in combination. Combination therapy is essential to prevent the emergence of drug resistance. Colour coded blister packs (MDT blister packs) containing standard two medicine (paucibacillary leprosy) or three medicine (multibacillary leprosy) combinations for adult and childhood leprosy should be used. MDT blister packs can be supplied free of charge through WHO.

clofazimine	capsule, 50 mg, 100 mg
dapsone	tablet, 25 mg, 50 mg, 100 mg
rifampicin	capsule or tablet, 150 mg, 300 mg

6.2.4 Antituberculosis medicines

ethambutol	tablet, 100 mg-400 mg (hydrochloride)
isoniazid	tablet, 100-300 mg
isoniazid + ethambutol	tablet, 150 mg + 400 mg
pyrazinamide	tablet, 400 mg
rifampicin	capsule or tablet, 150 mg, 300 mg
rifampicin + isoniazid	tablet, 60 mg + 30 mg; 150 mg + 75 mg; 300 mg + 150 mg; 60 mg + 60 mg (For intermittent use three times weekly); 150 mg + 150 mg (For intermittent use three times weekly)
rifampicin + isoniazid + pyrazinamide	tablet, 60 mg + 30 mg + 150 mg; 150 mg + 75 mg + 400 mg 150 mg + 150 mg + 500 mg (For intermittent use three times weekly)

rifampicin + isoniazid + pyrazinamide + ethambutol	tablet, 150 mg + 75 mg + 400 mg + 275 mg
streptomycin	powder for injection, 1 g (as sulfate) in vial

Complementary List

Reserve second-line drugs for the treatment of multidrug-resistant tuberculosis (MDR-TB) should be used in specialized centres adhering to WHO standards for TB control. These medicines will be reviewed at the next meeting of the Expert Committee.

amikacin	powder for injection, 1000 mg in vial
p-aminosalicylic acid	tablet, 500 mg; granules, 4 g in sachet
capreomycin	powder for injection, 1000 mg in vial
ciprofloxacin	tablet, 250 mg, 500 mg
cycloserine	capsule or tablet, 250 mg
ethionamide	tablet, 125 mg, 250 mg
kanamycin	powder for injection, 1000 mg in vial
levofloxacin	tablet, 250 mg, 500 mg
ofloxacin	tablet, 200 mg, 400 mg

6.3 Antifungal medicines

clotrimazole	vaginal tablet, 100 mg, 500 mg, vaginal cream 1%, 10%
fluconazole	capsule 50 mg; injection 2 mg/ml in vial; oral suspension 50 mg/5-ml
griseofulvin	capsule or tablet, 125 mg, 250 mg
nystatin	tablet, 100 000, 500 000 IU; lozenge 100 000 IU; pessary, 100 000 IU

Complementary List

amphotericin B	powder for injection, 50 mg in vial
flucytosine	capsule, 250 mg; infusion, 2.5 g in 250 ml
potassium iodide	saturated solution

6.4 Antiviral medicines

6.4.1 Antiherpes medicines

<input type="checkbox"/> aciclovir	tablet, 200 mg; powder for injection 250 mg (as sodium salt) in vial
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6.4.2 Antiretrovirals

Adequate resources and specialist oversight are prerequisites for the introduction of this class of drugs. The antiretroviral drugs do not cure the HIV infection, they only temporarily suppress viral replication and improve symptoms. They have various adverse effects and patients receiving these drugs require careful monitoring by adequately trained health professionals. For these reasons, continued rigorous promotion of measures to prevent new infections is essential and the need for this has not been diminished in any way by the addition of antiretroviral drugs to the Model List. Adequate resources and trained health professionals are a prerequisite for the introduction of this class of drugs. Effective therapy requires commencement of three or four drugs simultaneously, and alternative regimens are necessary to meet specific requirements at start-up, to substitute for first-line regimens in the case of toxicity, or to replace failing regimens. In order to simplify treatment, facilitate storage and distribution, and improve patients' adherence to the treatment plan, the Committee recommends and endorses the use of fixed-dose combinations and the development of appropriate new fixed-dose combinations. These include modified dosage forms, non-refrigerated formulations and paediatric formulations with assured pharmaceutical quality and interchangeability with the single products as approved by the relevant drug regulatory authority.

6.4.2.1 Nucleoside reverse transcriptase inhibitors

abacavir (ABC)	tablet, 300 mg (as sulphate), oral solution, 100 mg (as sulphate)/5ml
didanosine (ddI)	buffered chewable, dispersible tablet, 25mg, 50mg, 100mg, 150mg, 200mg buffered powder for oral solution, 100 mg, 167 mg, 250 mg packets unbuffered enteric coated capsule, 125 mg, 200 mg, 250 mg, 400 mg
lamivudine (3TC)	tablet, 150mg, oral solution 50 mg/5ml
stavudine (d4T)	capsule 15mg, 20 mg, 30 mg, 40 mg, powder for oral solution, 5 mg/5ml
zidovudine (ZDV or AZT)	tablet, 300 mg capsule 100 mg, 250 mg oral solution or syrup, 50 mg/5ml solution for IV infusion injection, 10 mg/ml in 20-ml vial

6.4.2.2 Non-nucleoside reverse transcriptase inhibitors

efavirenz (EFV or EFZ)	capsule, 50 mg, 100 mg, 200 mg oral solution, 150 mg/5ml
nevirapine (NVP)	tablet 200 mg; oral suspension 50 mg/5-ml

6.4.2.3 Protease inhibitors

Selection of two or three protease inhibitors from the Model List will need to be determined by each country after consideration of local treatment guidelines and experience, as well as the comparative costs of available products. Ritonavir is recommended for use in combination with indinavir, lopinavir and saquinavir as a booster, and not as a drug in its own right.

indinavir (IDV)	capsule, 200 mg, 333 mg, 400 mg (as sulfate)
ritonavir	capsule, 100 mg, oral solution 400 mg/5ml
lopinavir + ritonavir (LPV/r)	capsule, 133.3 mg + 33.3 mg, oral solution, 400 mg + 100 mg/5ml

nelfinavir (NFV)	tablet, 250 mg (as mesilate), oral powder 50 mg/g
saquinavir (SQV)	capsule, 200 mg

6.5 Antiprotozoal medicines

6.5.1 Antiamoebic and anti*giardiasis* medicines

diloxanide	tablet, 500 mg (furoate)
□ metronidazole	tablet, 200-500 mg; injection, 500 mg in 100-ml vial; oral suspension 200 mg (as benzoate)/5 ml

6.5.2 Antileishmaniasis medicines

□ meglumine antimoniate	injection, 30%, equivalent to approximately 8.1% antimony in 5-ml ampoule
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Complementary List

amphotericin B	<i>powder for injection, 50 mg in vial</i>
pentamidine	<i>powder for injection, 200 mg, 300 mg (isetionate) in vial</i>

6.5.3 Antimalarial medicines

6.5.3.1 For curative treatment

Medicines for the treatment of *P. falciparum* malaria cases should be used in combination.

amodiaquine*	tablet, 153 mg or 200 mg (base) * amodiaquine should preferably be used as part of combination therapy
artemether + lumefantrine*	tablet, 20 mg + 120 mg * recommended for use in areas with significant drug resistance and not in pregnancy or in children below 10 kg
chloroquine	tablet 100 mg, 150 mg (as phosphate or sulfate); syrup, 50 mg (as phosphate or sulfate)/5 ml; injection 40 mg (as hydrochloride, phosphate or sulfate)/ml in 5-ml ampoule
primaquine	tablet, 7.5 mg, 15 mg (as diphosphate)
quinine	tablet, 300 mg (as bisulfate or sulfate); injection, 300 mg (as dihydrochloride)/ml in 2-ml ampoule

Complementary List

artemether	<i>injection, 80 mg/ml in 1-ml ampoule</i>
artesunate	<i>tablet, 50 mg</i>
doxycycline	<i>capsule or tablet, 100 mg (hydrochloride) (for use only in combination with quinine)</i>
mefloquine	<i>tablet, 250 mg (as hydrochloride)</i>
sulfadoxine + pyrimethamine	<i>tablet, 500 mg + 25 mg</i>

6.5.3.2 For prophylaxis

chloroquine	tablet, 150 mg (as phosphate or sulfate); syrup, 50 mg (as phosphate or sulfate)/5 ml
doxycycline	capsule or tablet, 100 mg (hydrochloride)
mefloquine	tablet, 250 mg (as hydrochloride)
proguanil	tablet, 100 mg (hydrochloride) <i>(for use only in combination with chloroquine)</i>

6.5.4 Anti-pneumocystosis and antitoxoplasmosis medicines

pyrimethamine	tablet, 25 mg
sulfamethoxazole + trimethoprim	injection 80 mg + 16 mg/ml in 5-ml ampoule 80 mg + 16 mg/ml in 10-ml ampoule

Complementary List

<i>pentamidine</i>	<i>tablet 200 mg, 300 mg</i>
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6.5.5. Antitrypanosomal medicines

6.5.5.1 African trypanosomiasis

melarsoprol	injection, 3.6% solution
suramin sodium	powder for injection, 1 g in vial

Complementary List

<i>eflornithine</i>	<i>injection, 200 mg (hydrochloride)/ml in 100-ml bottles</i>
<i>pentamidine</i>	<i>powder for injection, 200 mg, 300 mg (isetionate) in vial</i>

6.5.5.2 American tripanosomiasis

benznidazole	tablet, 100 mg
nifurtimox	tablet, 30 mg; 120 mg; 250 mg

7. ANTIMIGRAINE MEDICINES

7.1 For treatment of acute attack

acetylsalicylic acid	tablet, 300-500 mg
paracetamol	tablet, 300-500 mg

7.2 For prophylaxis

<input type="checkbox"/> propranolol	tablet, 20 mg, 40 mg (hydrochloride)
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**8. ANTINEOPLASTIC, IMMUNOSUPPRESSIVES AND MEDICINES
USED IN PALLIATIVE CARE**

8.1 Immunosuppressive medicines

Complementary List

<i>azathioprine</i>	<i>tablet, 50 mg; powder for injection, 100 mg (as sodium salt) in vial</i>
<i>ciclosporin</i>	<i>capsule, 25 mg; concentrate for injection 50 mg/ml in 1-ml ampoule for organ transplantation</i>

8.2 Cytotoxic medicines

Complementary List

<i>asparaginase</i>	<i>powder for injection, 10 000 IU in vial</i>
<i>bleomycin</i>	<i>powder for injection, 15 mg (as sulfate) in vial</i>
<i>calcium folinate</i>	<i>tablet, 15 mg; injection, 3 mg/ml in 10-ml ampoule</i>
<i>chlorambucil</i>	<i>tablet 2 mg</i>
<i>chlormethine</i>	<i>powder for injection, 10 mg (hydrochloride) in vial</i>
<i>cisplatin</i>	<i>powder for injection, 10 mg, 50 mg in vial</i>
<i>cyclophosphamide</i>	<i>tablet, 25 mg; powder for injection, 500 mg in vial</i>
<i>cytarabine</i>	<i>powder for injection, 100 mg in vial</i>
<i>dacarbazine</i>	<i>powder for injection, 100 mg in vial</i>
<i>dactinomycin</i>	<i>powder for injection, 500 micrograms in vial</i>
<i>daunorubicin</i>	<i>powder for injection, 50 mg (as hydrochloride)</i>
<i>doxorubicin</i>	<i>powder for injection, 10 mg, 50 mg (hydrochloride) in vial</i>
<i>etoposide</i>	<i>capsule, 100 mg; injection, 20 mg/ml in 5-ml ampoule</i>
<i>fluorouracil</i>	<i>injection, 50 mg/ml in 5-ml ampoule</i>
<i>levamisole</i>	<i>tablet, 50 mg (as hydrochloride)</i>
<i>mercaptopurine</i>	<i>tablet, 50 mg</i>
<i>methotrexate</i>	<i>tablet, 2.5 mg (as sodium salt); powder for injection, 50 mg (as sodium salt) in vial</i>
<i>procarbazine</i>	<i>capsule, 50 mg (as hydrochloride)</i>
<i>vinblastine</i>	<i>powder for injection, 10 mg (sulfate) in vial</i>
<i>vincristine</i>	<i>powder for injection, 1 mg, 5 mg (sulfate) in vial</i>

8.3 Hormones and antihormones

Complementary List

dexamethasone	injection, 4 mg dexamethasone phosphate (as disodium salt) in 1-ml ampoule
hydrocortisone	powder for injection, 100 mg (as sodium succinate) in vial
<input type="checkbox"/> prednisolone*	tablet, 5 mg, 25 mg * there is no evidence for complete clinical similarity between prednisolone and dexamethasone at high doses.
tamoxifen	tablet, 10 mg, 20 mg (as citrate)

8.4 Medicines used in palliative care

The WHO Expert Committee on the Selection and Use of Essential Medicines recommended that all the drugs mentioned in the WHO publication Cancer Pain Relief: with a Guide to Opioid Availability, second edition, be considered essential. The drugs are included in the relevant sections of the Model List, according to their therapeutic use, e.g. analgesics.

9. ANTIPARKINSONISM MEDICINES

biperiden	tablet, 2 mg (hydrochloride); injection, 5 mg (lactate) in 1-ml ampoule
levodopa + <input type="checkbox"/> carbidopa	tablet, 100 mg + 10 mg; 250 mg + 25 mg

10. MEDICINES AFFECTING THE BLOOD

10.1 Antianaemia medicines

ferrous salt	tablet, equivalent to 60 mg iron; oral solution equivalent to 25 mg iron (as sulfate)/ml
ferrous salt + folic acid	tablet equivalent to 60 mg iron + 400 micrograms folic acid (<i>nutritional supplement for use during pregnancy.</i>)
folic acid	tablet 1 mg, 5 mg
hydroxocobalamin	injection, 1 mg in 1-ml ampoule

10.2 Medicines affecting coagulation

heparin sodium	injection, 1000 IU/ml, 5000 IU/ml, 20,000 IU/ml in 1-ml ampoule
phytomenadione	injection, 10 mg/ml in 5-ml ampoule; tablet, 10 mg
protamine sulfate	injection, 10 mg/ml in 5-ml ampoule
<input type="checkbox"/> warfarin	tablet, 1 mg, 2 mg and 5 mg (sodium salt)

11. BLOOD PRODUCTS AND PLASMA SUBSTITUTES

11.1 Plasma substitutes

<input type="checkbox"/> dextran 70*	injectable solution, 6% * polygeline, injectable solution, 3.5% is considered as equivalent
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11.2 Plasma fractions for specific use

All plasma fractions should comply with the WHO Requirements for the Collection, Processing and Quality Control of Blood, Blood Components, and Plasma Derivatives (Revised 1992). (WHO Technical Report Series, No. 840, 1994, Annex 2).

Complementary List

<input type="checkbox"/> factor VIII concentrate	dried
<input type="checkbox"/> factor IX complex (coagulation factors, II, VII, IX, X) concentrate	dried

12. CARDIOVASCULAR MEDICINES

12.1 Antianginal medicines

<input type="checkbox"/> atenolol	tablet, 50 mg, 100 mg
glyceryl trinitrate	tablet (sublingual), 500 micrograms
<input type="checkbox"/> isosorbide dinitrate	tablet (sublingual), 5 mg
verapamil	tablet, 40 mg, 80 mg (hydrochloride)

12.2 Antiarrhythmic medicines

This subsection will be reviewed at the next meeting of the Expert Committee when it is anticipated that applications for amiodarone and sotalol will be received.

<input type="checkbox"/> atenolol	tablet, 50 mg, 100 mg
digoxin	tablet, 62.5 micrograms, 250 micrograms; oral solution 50 micrograms/ml; injection 250 micrograms/ml in 2-ml ampoule
epinephrine (adrenaline)	injection, 1 mg (as hydrochloride)/ml in ampoule
lidocaine	injection, 20 mg (hydrochloride)/ml in 5-ml ampoule
verapamil	tablet, 40 mg, 80 mg (hydrochloride); injection, 2.5 mg (hydrochloride)/ml in 2-ml ampoule

Complementary List

<input type="checkbox"/> procainamide	injection, 100 mg (hydrochloride)/ml in 10-ml ampoule
<input type="checkbox"/> quinidine	tablet, 200 mg (sulfate)

12.3 Antihypertensive medicines

<input type="checkbox"/> amlodipine	tablet, 5mg
<input type="checkbox"/> atenolol	tablet, 50 mg, 100 mg
<input type="checkbox"/> enalapril	tablet, 2.5 mg
hydralazine*	tablet, 25 mg, 50 mg (hydrochloride); powder for injection, 20 mg (hydrochloride) in ampoule * hydralazine is listed for use in the acute management of severe pregnancy-induced hypertension only. Its use in the treatment of essential hypertension is not recommended in view of the availability of more evidence of efficacy and safety of other medicines.

<input type="checkbox"/> hydrochlorothiazide	scored tablet, 25 mg
methyldopa*	tablet, 250 mg * methyldopa is listed for use in the management of pregnancy-induced hypertension only. Its use in the treatment of essential hypertension is not recommended in view of the availability of more evidence of efficacy and safety of other medicines.

Complementary List

<i>sodium nitroprusside</i>	<i>powder for infusion, 50 mg in ampoule</i>
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12.4 Medicines used in heart failure

This subsection will be reviewed at the next meeting of the Expert Committee.

digoxin	tablet, 62.5 micrograms, 250 micrograms; oral solution, 50 micrograms/ml; injection, 250 micrograms/ml in 2-ml ampoule
<input type="checkbox"/> enalapril	tablet, 2.5 mg
<input type="checkbox"/> furosemide	tablet, 40 mg; injection, 10 mg/ml in 2-ml ampoule
<input type="checkbox"/> hydrochlorothiazide	scored tablet, 25 mg

Complementary List

<i>dopamine</i>	<i>injection, 40 mg (hydrochloride) in 5-ml vial</i>
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12.5 Antithrombotic medicines

acetylsalicylic acid	tablet, 100 mg
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Complementary List

<i>streptokinase</i>	<i>powder for injection, 1.5 million IU in vial</i>
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12.6 Lipid-lowering agents

The WHO Expert Committee on the Selection and Use of Essential Medicines recognizes the value of lipid-lowering drugs in treating patients with hyperlipidaemia. HMG-CoA reductase inhibitors, often referred to as "statins", are a family of potent and effective lipid-lowering drugs with a good tolerability profile. Several of these drugs have been shown to reduce the incidence of fatal and non-fatal myocardial infarction, stroke and mortality (all causes), as well as the need for coronary by-pass surgery. All remain very costly but may be cost effective for secondary prevention of cardiovascular disease as well as for primary prevention in some very high-risk patients. Since no single drug has been shown to be significantly more effective or less expensive than others in the group, none is included in the Model List; the choice of drug for use in patients at highest risk should be decided at the national level.

13. DERMATOLOGICAL MEDICINES (topical)

13.1 Antifungal medicines

benzoic acid + salicylic acid	ointment or cream, 6% + 3%
<input type="checkbox"/> miconazole	ointment or cream, 2% (nitrate)
sodium thiosulfate	solution, 15%

Complementary List

<i>selenium sulfide</i>	<i>detergent-based suspension, 2%</i>
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13.2 Anti-infective medicines

<input type="checkbox"/> methylrosanilinium chloride (gentian violet)	aqueous solution, 0.5%; tincture, 0.5%
<input type="checkbox"/> neomycin sulfate + <input type="checkbox"/> bacitracin	ointment, 5 mg neomycin sulfate + 500 IU bacitracin zinc/g
potassium permanganate	aqueous solution 1:10 000
silver sulfadiazine	cream, 1%, in 500-g container

13.3 Anti-inflammatory and antipruritic medicines

<input type="checkbox"/> betamethasone	ointment or cream, 0.1% (as valerate)
<input type="checkbox"/> calamine lotion	lotion
<input type="checkbox"/> hydrocortisone	ointment or cream, 1% (acetate)

13.4 Astringent medicines

aluminium diacetate	solution, 13% for dilution
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13.5 Medicines affecting skin differentiation and proliferation

benzoyl peroxide	lotion or cream, 5%
coal tar	solution, 5%
dithranol	ointment, 0.1%-2%
fluorouracil	ointment, 5%
<input type="checkbox"/> podophyllum resin	solution, 10-25%
salicylic acid	solution 5%
urea	ointment or cream, 10%

13.6 Scabicides and pediculicides

<input type="checkbox"/> benzyl benzoate	lotion, 25%
permethrin	cream 5%; lotion 1%

14. DIAGNOSTIC AGENTS

14.1 Ophthalmic medicines

fluorescein	eye drops, 1% (sodium salt)
<input type="checkbox"/> tropicamide	eye drops, 0.5%

14.2 Radiocontrast media

<input type="checkbox"/> amidotrizoate	injection, 140-420 mg iodine (as sodium or meglumine salt)/ml in 20-ml ampoule
barium sulfate	aqueous suspension
<input type="checkbox"/> iohexol	injection 140 –350 mg iodine/ml in 5-ml, 10-ml and 20-ml ampoule
<input type="checkbox"/> iopanoic acid	tablet, 500 mg
<input type="checkbox"/> propyl iodone	oily suspension, 500-600 mg/ml in 20-ml ampoule (<i>For administration only into the bronchial tree.</i>)

Complementary List

<input type="checkbox"/> meglumine iotroxate	solution, 5-8 g iodine in 100-250 ml
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15. DISINFECTANTS AND ANTISEPTICS

15.1 Antiseptics

<input type="checkbox"/> chlorhexidine	solution, 5% (digluconate) for dilution
<input type="checkbox"/> ethanol	solution, 70% (denatured)
<input type="checkbox"/> polyvidone iodine	solution, 10%

15.2 Disinfectants

<input type="checkbox"/> chlorine base compound	powder (0.1% available chlorine) for solution
<input type="checkbox"/> chloroxylenol	solution, 4.8%
glutaral	solution, 2%

16. DIURETICS

amiloride	tablet, 5 mg (hydrochloride)
<input type="checkbox"/> furosemide	tablet, 40 mg; injection, 10 mg/ml in 2-ml ampoule
<input type="checkbox"/> hydrochlorothiazide	scored tablet, 25 mg
mannitol	injectable solution, 10%, 20%
spironolactone	tablet, 25 mg

17. GASTROINTESTINAL MEDICINES

17.1 Antacids and other antiulcer medicines

aluminium hydroxide	tablet, 500 mg; oral suspension, 320 mg/5 ml
<input type="checkbox"/> ranitidine	tablet, 150 mg (as hydrochloride); oral solution 75 mg/5-ml; injection, 25 mg/ml in 2-ml ampoule
magnesium hydroxide	oral suspension, equivalent to 550 mg magnesium oxide/10 ml

17.2 Antiemetic medicines

metoclopramide	tablet, 10 mg (hydrochloride); injection, 5 mg (hydrochloride)/ml in 2-ml ampoule
promethazine	tablet, 10 mg, 25 mg (hydrochloride); elixir or syrup, 5 mg (hydrochloride)/5 ml; injection, 25 mg (hydrochloride)/ml in 2-ml ampoule

17.3 Anti-inflammatory medicines

<input type="checkbox"/> sulfasalazine	tablet, 500 mg; suppository 500 mg; retention enema
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Complementary List

<input type="checkbox"/> hydrocortisone	suppository 25 mg (acetate); retention enema (the <input type="checkbox"/> only applies to hydrocortisone retention enema)
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17.4 Laxatives

<input type="checkbox"/> senna	tablet, 7.5 mg (sennosides) (or traditional dosage forms)
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17.5 Medicines used in diarrhoea

17.5.1 Oral rehydration

oral rehydration salts * (for glucose-electrolyte solution)	glucose: 75 mEq sodium: 75 mEq or mmol/l chloride: 65 mEq or mmol/l potassium: 20 mEq or mmol/l citrate: 10 mmol/l osmolarity: 245 mOsm/l glucose: 13.5 g/l sodium chloride: 2.6 g/l potassium chloride: 1.5 g/l trisodium citrate dihydrate+: 2.9 g/l
+ trisodium citrate dihydrate may be replaced by sodium hydrogen carbonate (sodium bicarbonate) 2.5 g/l. However, as the stability of this latter formulation is very poor under tropical conditions, it is only recommended when manufactured for immediate use.	
* in cases of cholera a higher concentration of sodium may be required	

17.5.2 Medicines for diarrhoea in children

zinc sulfate*	tablet or syrup in 10 mg per unit dosage forms * in acute diarrhoea zinc sulphate should be used as an adjunct to oral rehydration salts
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17.5.3 Antidiarrhoeal (symptomatic) medicines in adults

codeine*	tablet, 30 mg (phosphate) * the therapeutic efficacy of this item has been questioned and its continued inclusion on the list will be reviewed at the next meeting of the Expert Committee
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18. HORMONES, OTHER ENDOCRINE MEDICINES AND CONTRACEPTIVES

18.1 Adrenal hormones and synthetic substitutes

Addison's disease is a rare condition; adrenal hormones are already included in section 3.

18.2 Androgens

Complementary List

testosterone	injection, 200 mg (enantate) in 1-ml ampoule
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18.3 Contraceptives

This subsection will be reviewed at the next meeting of the Expert Committee.

18.3.1 Oral hormonal contraceptives

<input type="checkbox"/> ethinylestradiol + <input type="checkbox"/> levonorgestrel	tablet, 30 micrograms + 150 micrograms
<input type="checkbox"/> ethinylestradiol + <input type="checkbox"/> norethisterone	tablet, 35 micrograms + 1.0 mg
levonorgestrel	tablet, 30 micrograms, 750 micrograms (pack of two), 1.5 mg

18.3.2 Injectable hormonal contraceptives

medroxyprogesterone acetate	depot injection, 150 mg/ml in 1-ml vial
norethisterone enantate	oily solution, 200 mg/ml in 1-ml ampoule

18.3.3 Intrauterine devices

copper-containing device	
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18.3.4 Barrier methods

condoms	
diaphragms	

18.4 Estrogens

<input type="checkbox"/> ethinylestradiol*	tablet, 10 micrograms, 50 micrograms * the public health relevance and/or comparative efficacy and/or safety of this item has been questioned and its continued inclusion on the list will be reviewed at the next meeting of the Expert Committee
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18.5 Insulins and other antidiabetic agents

glibenclamide	tablet, 2.5 mg, 5 mg
insulin injection (soluble)	injection, 40 IU/ml in 10-ml vial, 100 IU/ml in 10-ml vial
intermediate-acting insulin	injection, 40 IU/ml in 10 ml vial; 100 IU/ml in 10 ml vial (as compound insulin zinc suspension or isophane insulin)
metformin	tablet, 500 mg (hydrochloride)

18.6 Ovulation inducers

Complementary List

<i>clomifene</i>	tablet, 50 mg (<i>citrate</i>)
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18.7 Progestogens

norethisterone*	tablet, 5 mg * the public health relevance and/or comparative efficacy and/or safety of this item has been questioned and its continued inclusion on the list will be reviewed at the next meeting of the Expert Committee
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Complementary List

<i>medroxyprogesterone acetate*</i>	tablet, 5 mg * the public health relevance and/or comparative efficacy and/or safety of this item has been questioned and its continued inclusion on the list will be reviewed at the next meeting of the Expert Committee
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18.8 Thyroid hormones and antithyroid medicines

levothyroxine	tablet, 50 micrograms, 100 micrograms (sodium salt)
potassium iodide	tablet, 60 mg
<input type="checkbox"/> propylthiouracil	tablet, 50 mg

19. IMMUNOLOGICALS

19.1 Diagnostic agents

All tuberculins should comply with the WHO Requirements for Tuberculins (Revised 1985). WHO Expert Committee on Biological Standardization Thirty-sixth report, (WHO Technical Report Series, No. 745, 1987, Annex 1).

tuberculin, purified protein derivative (PPD)	injection
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19.2 Sera and immunoglobulins

All plasma fractions should comply with the WHO Requirements for the Collection, Processing and Quality Control of Blood, Blood Components and Plasma Derivatives (Revised 1992). WHO Expert Committee on Biological Standardization Forty-third report, (WHO Technical Report Series, No. 840, 1994, Annex 2).

anti-D immunoglobulin (human)	injection, 250 micrograms in single-dose vial
antitetanus immunoglobulin (human)	injection, 500 IU in vial
antivenom serum*	injection * exact type to be defined locally
diphtheria antitoxin	injection, 10 000 IU, 20 000 IU in vial
<input type="checkbox"/> rabies immunoglobulin	injection, 150 IU/ml in vial

19.3 Vaccines

All vaccines should comply with the WHO Requirements for Biological Substances.

19.3.1 For universal immunization

BCG vaccine	
diphtheria vaccine	
hepatitis B vaccine	
measles vaccine	
pertussis vaccine	
poliomyelitis vaccine	
tetanus vaccine	

19.3.2 For specific groups of individuals

influenza vaccine	
meningococcal meningitis vaccine	
mumps vaccine	
rabies vaccine (inactivated: prepared in cell culture)	
rubella vaccine	
typhoid vaccine	
yellow fever vaccine	

20. MUSCLE RELAXANTS (PERIPHERALLY-ACTING) AND CHOLINESTERASE INHIBITORS

<input type="checkbox"/> alcuronium*	injection, 5 mg (chloride)/ml in 2-ml ampoule * It is likely that alcuronium will be replaced and that similar products, including atracurium and/or pancuronium, will be added at the next meeting of the Expert Committee.
neostigmine	tablet, 15 mg (bromide); injection, 500 micrograms in 1-ml ampoule; 2.5 mg (metilsulfate) in 1-ml ampoule
suxamethonium	injection, 50 mg (chloride)/ml in 2-ml ampoule; powder for injection (chloride), in vial

Complementary List

<i>pyridostigmine</i>	<i>tablet, 60 mg (bromide); injection, 1 mg in 1-ml ampoule</i>
<input type="checkbox"/> <i>vecuronium</i>	<i>powder for injection, 10 mg (bromide) in vial</i>

21. OPHTHALMOLOGICAL PREPARATIONS

This section will be reviewed at the next meeting of the Expert Committee

21.1 Anti-infective agents

<input type="checkbox"/> gentamicin *	solution (eye drops), 0.3% (sulfate) * final selection depends on indication for use
<input type="checkbox"/> idoxuridine	solution (eye drops), 0.1%; eye ointment, 0.2%
<input type="checkbox"/> tetracycline	eye ointment, 1% (hydrochloride)

21.2 Anti-inflammatory agents

<input type="checkbox"/> prednisolone	solution (eye drops), 0.5% (sodium phosphate)
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21.3 Local anaesthetics

<input type="checkbox"/> tetracaine	solution (eye drops), 0.5% (hydrochloride)
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21.4 Miotics and antiglaucoma medicines

acetazolamide	tablet, 250 mg
<input type="checkbox"/> pilocarpine	solution (eye drops), 2%, 4% (hydrochloride or nitrate)
<input type="checkbox"/> timolol	solution (eye drops), 0.25%, 0.5% (as maleate)

21.5 Mydriatics

atropine	solution (eye drops), 0.1%; 0.5%, 1% (sulfate)
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Complementary List

<i>epinephrine (adrenaline)</i>	<i>solution (eye drops), 2% (as hydrochloride)</i>
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22. OXYTOCICS AND ANTIOXYTOCICS

22.1 Oxytocics

<input type="checkbox"/> ergometrine	injection, 200 micrograms (hydrogen maleate) in 1-ml ampoule
oxytocin	injection, 10 IU in 1-ml ampoule

Complementary List

<i>misoprostol</i>	<i>vaginal tablet, 25 micrograms</i>
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<i>mifepristone* - misoprostol *</i>	<i>tablet 200 mg - tablet 200 micrograms</i> <i>* requires close medical supervision</i>
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Where permitted under national law and where culturally acceptable.

22.2 Antioxytoxics

nifedipine	immediate release capsule, 10 mg
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23. PERITONEAL DIALYSIS SOLUTION

Complementary List

<i>intraperitoneal dialysis solution (of appropriate composition)</i>	<i>parenteral solution</i>
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24. PSYCHOTHERAPEUTIC MEDICINES

24.1 Medicines used in psychotic disorders

<input type="checkbox"/> chlorpromazine	tablet, 100 mg (hydrochloride); syrup, 25 mg (hydrochloride)/5ml; injection, 25 mg (hydrochloride)/ml in 2-ml ampoule
<input type="checkbox"/> fluphenazine	injection, 25 mg (decanoate or enantate) in 1-ml ampoule
<input type="checkbox"/> haloperidol	tablet, 2 mg, 5 mg; injection, 5 mg in 1-ml ampoule

24.2 Medicines used in mood disorders

24.2.1 Medicines used in depressive disorders

<input type="checkbox"/> amitriptyline	tablet, 25 mg (hydrochloride)
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24.2.2 Medicines used in bipolar disorders

carbamazepine	scored tablet, 100 mg, 200 mg
lithium carbonate	capsule or tablet, 300 mg
valproic acid	enteric coated tablet, 200 mg, 500 mg (sodium salt)

24.3 Medicines used in generalized anxiety and sleep disorders

<input type="checkbox"/> diazepam	scored tablet, 2 mg, 5 mg
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24.4 Medicines used for obsessive compulsive disorders and panic attacks

clomipramine	capsules, 10 mg, 25 mg (hydrochloride)
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24.5 Medicines used in substance dependence programmes

Complementary List

<input type="checkbox"/> methadone*	<i>oral solution 5 mg/5ml, 10 mg/5ml, concentrate for oral solution 5 mg/ml, 10 mg/ml (hydrochloride)</i> <i>* the square box is added to include buprenorphine. The medicines should only be used within an established support programme</i>
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25. MEDICINES ACTING ON THE RESPIRATORY TRACT

Antiasthmatic and medicines for chronic obstructive pulmonary disease

<input type="checkbox"/> beclometasone	inhalation (aerosol), 50 micrograms per dose (dipropionate); 250 micrograms (dipropionate) per dose
epinephrine (adrenaline)	injection, 1 mg (as hydrochloride or hydrogen tartrate) in 1-ml ampoule
ipratropium bromide	inhalation (aerosol), 20 micrograms/metered dose
<input type="checkbox"/> salbutamol	tablet, 2 mg, 4 mg (as sulfate); inhalation (aerosol), 100 micrograms (as sulfate) per dose; syrup, 2 mg/5 ml; injection, 50 micrograms (as sulfate)/ml in 5-ml ampoule; respirator solution for use in nebulizers, 5 mg (as sulfate)/ml

26. SOLUTIONS CORRECTING WATER, ELECTROLYTE AND ACID-BASE DISTURBANCES

26.1 Oral

oral rehydration salts (for glucose-electrolyte solution)	see section 17.5.1
potassium chloride	powder for solution

26.2 Parenteral

glucose	injectable solution, 5%, 10% isotonic; 50% hypertonic
glucose with sodium chloride	injectable solution, 4% glucose, 0.18% sodium chloride (equivalent to Na ⁺ 30 mmol/l, Cl ⁻ 30 mmol/l)
potassium chloride	solution, 11.2% in 20-ml ampoule, (equivalent to K ⁺ 1.5 mmol/ml, Cl ⁻ 1.5 mmol/ml)
sodium chloride	injectable solution, 0.9% isotonic (equivalent to Na ⁺ 154 mmol/l, Cl ⁻ 154 mmol/l)
sodium hydrogen carbonate	injectable solution, 1.4% isotonic (equivalent to Na ⁺ 167 mmol/l, HCO ₃ ⁻ 167 mmol/l); solution, 8.4% in 10-ml ampoule (equivalent to Na ⁺ 1000 mmol/l, HCO ₃ ⁻ 1000 mmol/l)
<input type="checkbox"/> sodium lactate, compound solution	injectable solution

26.3 Miscellaneous

water for injection	2-ml, 5-ml, 10-ml ampoules
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27. VITAMINS AND MINERALS

ascorbic acid	tablet, 50 mg
<input type="checkbox"/> ergocalciferol	capsule or tablet, 1.25 mg (50 000 IU); oral solution, 250 micrograms/ml (10 000 IU/ml)
iodine	iodized oil, 1 ml (480 mg iodine), 0.5 ml (240 mg iodine) in ampoule (oral or injectable); 0.57 ml (308 mg iodine) in dispenser bottle; capsule, 200 mg.
<input type="checkbox"/> nicotinamide	tablet, 50 mg
pyridoxine	tablet, 25 mg (hydrochloride)
retinol	sugar-coated tablet, 10 000 IU (as palmitate) (5.5 mg); capsule, 200 000 IU (as palmitate) (110 mg); oral oily solution 100 000 IU (as palmitate)/ml in multidose dispenser; water-miscible injection 100 000 IU (as palmitate) (55 mg) in 2-ml ampoule
riboflavin	tablet, 5 mg
sodium fluoride	in any appropriate topical formulation
thiamine	tablet, 50 mg (hydrochloride)
<i>Complementary List</i>	
calcium gluconate	<i>injection, 100 mg/ml in 10-ml ampoule</i>

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