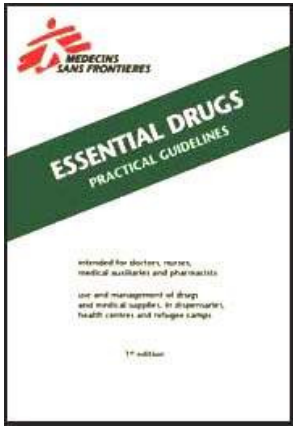
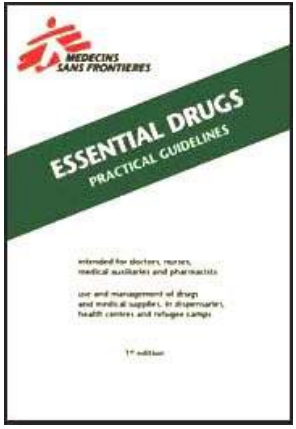
Home"" """"> ar.cn.de.en.es.fr.id.it.ph.po.ru.sw



- Bibliography
- Pharmaco-therapeutical index WHO essential drug list (7th list, 1992)
- Alphabetical index (with indicative prices)

Home"" """"> ar.cn.de.en.es.fr.id.it.ph.po.ru.sw



- Essential Drugs -Practical Guidelines (MSF, 1993, 286 p.)
  - *(introduction...)*
  - Acknowledgeements
  - Preface
  - Part one:drugs, infusions, vaccines
  - Part two
  - The New Emergency HeaIth Kit (WHO)
  - Bibliography
  - Pharmaco-therapeutical index WHO essential drug list (7th list, 1992)
  - Alphabetical index (with indicative prices)

By Mdecins Sans Frontires

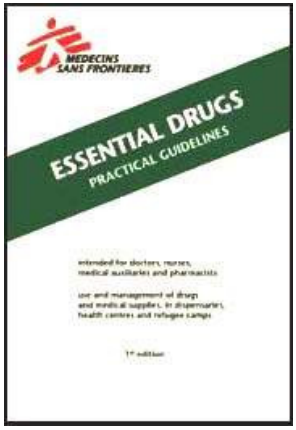
- intended for doctors, nurses, medical auxiliaries and pharmacists

- use and management of drugs and medical supplies, in dispensaries, health centres and refugee camps

NOTE FROM THE CD-ROM EDITORS: THIS MANUAL SHOULD BE USED BY MEDICALLY TRAINED PERSONS ONLY. THE GREATEST CARE HAS BEEN GIVEN TO ACCURATE REPORT BUT IT CAN NOT BE TOTALLY EXCLUDED SOMETIMES A TYPESETTING OR SCANNING ERROR HAS OCCURED (ON AVERAGE 1 OUT OF 2000 TO 3000 CHARATERS IN TEXT AND 1 OUT OF 200 DIGITS IN TABLES).

ALL DOSES OR MEDICAL ACTIONS MENTIONED HERE SHOULD BE CHECKED WITH THE COMMON MEDICAL SCIENTIFIC AND PHARMACEUTICAL KNOWLEDGE AND WITH THE PARTICULAR LOCAL CONDITIONS, AND PERFORMED OR PRESCRIBED UNDER THE SOLE RESPONSABILITY OF A MEDICALLY TRAINED PERSON.


Home"" """"> ar.cn.de.en.es.fr.id.it.ph.po.ru.sw



Acknowledgeements

1st edition

Essential drugs

Practical guidelines

PREPARATION OF THIS GUIDE COORDINATED BY
Jacques PINEL (Ph)

WITH ASSISTANCE OF

Annie FOURRIER (Ph)
Jeanne MARITOUX (Ph)
Franois MOUNIS (O)

Contributions (in alphabetical order):

Ph. Authier (MD), J. Combreau (MW), J.C. Desenclos (MD), H. Grandguillot (N), M. Henkens (MD), Ph. Malfait (MD), B. Morinire (MD), B. Renchon (Ph), J. Rigal (MD), C. Sgala (MD), A. Stragiotti (Ph), F. Van Loon (MD).

FRENCH-ENGLISH TRANSLATION COORDINATED BY

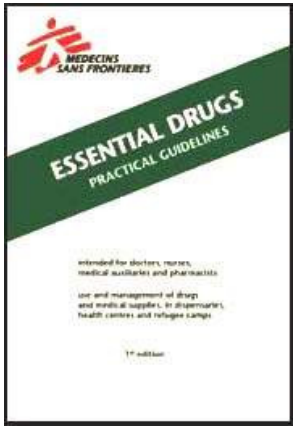
Mdecins Sans Frontires Holland

Egbert SONDORP (MD),
Elisabeth VANDOORNE (N),
Sharon CAMPBELL (Lab)

(MD) Medical doctor, (MW) Midwife, (N) Nurse, (O) Osteopath, (Ph) Pharmacist, (Lab) Lab technician

This book would not have been possible without Ms Evelyne LAISSU who was responsible for the design and layout.


Home"" """"> ar.cn.de.en.es.fr.id.it.ph.po.ru.sw



Preface

This guide is not a pharmacological dictionary, it is a practical manual. It is meant for health professionals, physicians, nurses, pharmacists and health auxiliaries whether they are working in curative care, or the use and management of drugs and medical equipment.

We have tried to answer as simply as possible the problems and questions that confront health staff with solutions practiced and tested on the field by Mdecins Sans Frontires. We have taken into account the recommendations of reference organisations such as the World Health Organization (WHO) and the advice of specialized publications (see bibliography page 255).

Some of the medicines listed are not on the essential drug list of the WHO, but are still frequently used in certain countries and, although their use is sometimes not advised, we have chosen to include them in this guide.

The level of information on the drug sheets is adapted to the level of training of the health worker:

- the sheets marked "Health post" give simple information for community health workers;

- the sheets marked "Health clinic" and "District hospital" are more detailed and are meant for qualified auxiliaries, nurses and doctors.;

- the sheets marked "Special department"are included for specialized health services (obstetrics, surgery, anaesthesia) and for programmes for the major endemic diseases (tuberculosis, leprosy, trypanosomiasis.).

Obviously the level of health care training and health workers varies from

country to country.

The drug sheets are classified in terms of administration, and within each class, in alphabetical order. This classification is an integral part of the whole proposed drug management system (see chapter "Organization and management of a pharmacy", page 179).

Only the main side-effects, contra-indications and precautions are mentioned in this book. For more complete information, we refer to specialized literature.

We would like those who use this book to send us their comments and criticisms so that it remains adapted to the realities of the field.

Please send to:

Mdecins sans Frontires - Service mdical
8 rue Saint-Sabin - 75544 Paris Cedex 11 - FRANCE
Tel. (33) 1- 40.21.29.29 - Fax (33) 1- 48.06.68.68 - Tlx 214360 MSF F

GENERAL RECOMMENDATIONS FOR THE PRESCRIPTION OF DRUGS

(see also "Prescription, cost, compliance", page 199)

When patients are hospitalized, the administration of drugs is controlled,

so in general they are used well.

With prescriptions for out-patients, however, it is important to adopt certain rules to encourage proper use of the prescribed treatments:

1° Limit the number of drugs prescribed at any one time: maximum two.
2° Limit the duration of treatment (should be maximum five days).

Whenever possible, the patient should preferably take his/her medication daily in the health clinic.

3° Give the patient all the necessary information or' how to take the treatment:

- when,
- how (preparation on an oral rehydration salt solution.).

Dispensing staff must be trained to do this and the drugs should be labelled with adequate instructions.

Use of the guide

General organization

Three easy ways to find information:

- A summary in the beginning of the guide lists the chapters and their corresponding pages.

- Two indexes of essential drugs in the final pages:

· a pharmaco-therapeutical index with the international generic names, integrated in the essential drug list of the WHO,

· an alphabetical index with double entry with international generic and commercial names.

Every sheet has a table showing an average dose by weight and age. The dosage is given in the unit of the drug (tablet, ampoule.).

With malnourished patients one has to bear in mind the weight and adapt the dose of the prescription accordingly in mg/kg.

Designation of drugs

The international nonproprietary names (INN) classification is used in this guide. Some frequently used commercial names, followed by the symbol (R), are given.

E.g.: ampicillin (Amfipen(R), Penbritin(R)

Drugs on sheets marked with a grey diagonal line are:

- either potentially dangerous and forbidden in certain countries;
- or obsolete, ineffective or capable to produce resistant bacterial strains.

These drugs are still widely used, therefore we draw attention to the risk and unnecessary cost of the prescription.

Symbols used

Health post - Community health worker level

Health clinic - Nurse and auxiliary staff level

District hospital - Doctor and medical assistant level

Special department - For the major endemic diseases or in specialised services (surgery, obstetrics, anaesthesia)

PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

This box is found on certain sheets at District hospital level to show that the nurse or medical assistant working at the hospital will not be authorized to prescribe this drug in absence of a doctor.

Figure: Signs

Warning, do not exceed maximum dose

Toxic, overdose may be lethal

Recommendations for drug storage :

drug very sensitive to light

drug very sensitive to humidity

FIGURE

Abbreviations used

Unit

kg = kilogram
g = gram
mg = milligram (1 g = 1,000 mg)
IU = international unit
mEq= milliequivalent
mmol= millimol
ml = millilitre (1 cc = 1ml)
tsp= teaspoon (=5ml)

Route of drug administration

P.O. = per os - orally
IM = intramuscular
IV = intravenous
SC = subcutaneous

Presentation

tab = tablet
cap =capsule
vl = vial
amp = ampoule
susp = suspension

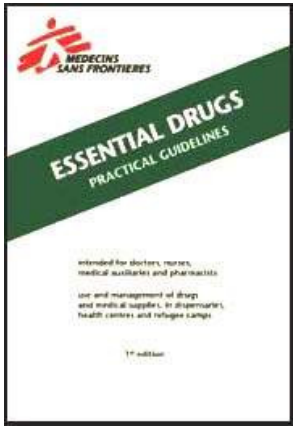
Duration

x. d = during. days

Example: 300 mg/d divided in 3 doses x 5 d

(three hundred milligrams per day to be divided in three doses of one hundred milligrams to be taken during five days)


Home"" """"> ar.cn.de.en.es.fr.id.it.ph.po.ru.sw



Essential Drugs -Practical Guidelines (MSF, 1993, 286 p.)

Part one:drugs, infusions, vaccines

Oral drugs

Acetaminophen
Acetyl salicylic acid = ASA
Albendazole
Albuterol
Aluminium hydroxide
Aminophylline
Amoxicillin

Ampicillin
Aneurin
Ascorbic acid
Atropine sulphate
B Complex
Butylscopolamine
Charcoal
Chloramphenicol
Chloroquine
Chlorpheniramine = Chlorphenamine
Chlorpromazine
Cimetidine
Clofazimine
Cloxacillin
Cotrimoxazole = SMX + TMP
Dapsone
Dexamethasone
Dexchlorpheniramine
Diazepam
Diethylcarbamazine
Digoxin
Dihydralazine
Dipyrone*
Doxycycline

Erythromycin
Ethambutol
Ferrous salts = Ferrous sulphate
Ferrous sulphate + Folic acid
Flubendazole
Folic acid
Furosemide = Frusemide
Griseofulvin
Halofantrine*
Hydralazine
Hydrochlorothiazide
Hyoscine butylbromide
Ibuprofen
Indometacin
Iron salts
Isoniazid = INH
Isoniazid + Thiacetazone
Ivermectin
Levamisole
Loperamide
Mebendazole
Mefloquine
Metamizol*
Methyldopa

Methylprednisolone
Metoclopramide
Metrifonate
Metronidazole
Multivitamins
Niclosamide
Nitrofurantoin
Noramidopyrine*
Noscapine
Nystatin
Oral rehydration salt = O.R.S.
Oxamniquine
Oxytetracycline
Paracetamol
Phenobarbitone = Phenobarbital
Phenoxymethyl penicillin = Penicillin V
Phenylbutazone*
Phenytoin
Piperazine
Potassium chloride
Praziquantel
Prednisolone- Prednisone
Probenecid
Proguanil

Promethazine
Propanthelin
Propranolol
Pyrantel
Pyrazinamide
Pyridoxine
Quinine salts
Reserpine
Retinol
Rifampicin
Salbutamol
Sulfadimidine
Sulfadoxine + Pyrimethamine
Sulfaguanidine*
Tetracycline
Theophylline
Thiabendazole
Thiamine
Tolbutamide
Vitamin A
Vitamin B1
Vitamin B6
Vitamin C
Vitamin B Complex

*** The use of this drug is not advised.**

ACETYL SALICYLIC ACID = A.S.A.

(Aspirin)

Health post

Therapeutic action

- Analgesic
- Antipyretic
- Anti-inflammatory

Indications

- Headache, toothache
- Fever
- Joint or muscular pain

Preparation

- Tablets of 75 mg, 100 mg, 300 mg and 500mg

Dosage

- Child: 50 mg/kg/d divided in 3 doses
- Adult: 1-3 g/d divided in 3 doses
- In case of joint pain, double the dose.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 75 mg			2 tab x 3			
Tablet 100 mg			1 1/2 tab x 3	3 tab x 3		
Tablet 300 mg			1/2 tab x 3	1 tab x 3	2 tab x 3	
Tablet 500 mg			1/4 tab x 3	1/2 tab x 3	1 tab x 3	

⚠ – Maximum dose : Child : 100 mg/kg/d Adult : 6 g/d

FIGURE

Duration: depending on clinical progress, 1-3 days

Contra-indications, side-effects, precautions

- Do not administer:

· in cases of heartburn, alcoholism, haemorrhage, asthma.

· children under one year (preferably use paracetamol when available).

- If heartburn or allergic reaction, stop treatment and give paracetamol.
- Do not combine with probenecid.
- Pregnancy: avoid if possible (preferably use paracetamol especially in the third trimester of pregnancy)
- Lactation: avoid if possible (preferably use paracetamol)

Remarks

- Take during meals, preferably",with a lot of water.
- Storage: keep cool if possible
- Do not use if the tablets have a strong unusual smell (acid or vinegar). A slight acetic acid smell is always present.

ALUMINIUM HYDROXIDE [with or without magnesium salts]

Health post

Therapeutic action

- Antacid
- Protects digestive mucosa

Indications

- Heartburn after or during meals (gastritis)
- Stomach ulcer

Preparation

- Tablet of 500 mg There are numerous preparations on the base of aluminium and/or magnesium hydroxide in varying dosages. Adapt dosage accordingly.

Dosage

- Child: rarely indicated. When necessary: 75 mg/kg/d
- Adult: 1.5 to 3 g/d divided in 3 doses after meals or at the time of extreme pain

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

FIGURE

Duration :5 days (longer if necessary)

Contra-indications, side-effects, precautions

- Frequent constipation (except when the tablets contain magnesium salts).
- Decreases the absorption of many drugs so avoid simultaneous administration especially with tetracycline. Separate the different drugs by one or two hours.
- Chew tablets.
- Besides this treatment, the patient should avoid taking alcohol, coffee, tea, coca-cola, carbonated drinks, spices and tobacco.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Storage: no special precautions

AMINOPHYLLINE (Euphyllin(R), Theodrox(R).) and THEOPHYLLINE (Nuelin(R).)

District hospital

Therapeutic action

- Bronchodilator

Indications PRESCRIPT/ONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Asthma
- Severe respiratory problems combined with bronchopneumonia

Preparation

- Tablets of 100 mg and 200 mg

Dosage

- Child and adult:

· Aminophylline: 13 to 15 mg/kg/d divided in 3 doses
· Theophylline : 10 to 13 mg/kg/d divided in 3 doses

- For smokers, it is sometimes necessary to increase the dosage to 20 mg/kg/d.
- Aminophylline contains 85% of theophylline.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 100 mg			1/4 tab x 3	1/2 tab x 3	2 to 3 tab x 3	
Tablet 200 mg				1/4 tab x 3	1 to 1.5 tab x 3	

FIGURE

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Paediatrics:

· do not combine with erythromycin.
· the therapeutic dose is near the toxic dose.

- Toxic in case of overdose:

· early signs: vomiting, hyperthermia.
· signs of intoxication: convulsions.

When these symptoms appear, stop treatment and refer to a doctor as

soon as possible.

- Lower the dosage in case of heart failure.
- Administer with care to children under one year.
- Avoid combination with phenobarbitone.
- Pregnancy: avoid (especially in the third trimester of pregnancy)
- Lactation :avoid

Remarks

- Storage: keep below 30°C

AMOXICILLIN (Amoxil(R), Clamoxyl(R).)

Health clinic

Therapeutic action

- Antibacterial (antibiotic) of the penicillin group

Indications

- Respiratory infections with fever in children under 5 years
- Prevention and treatment of secondary infections of whooping cough and measles

- Genito-urinary infections, especially in pregnant women

Preparation

- Tablets or capsules of 500 mg and 250 mg
- Syrup of 125 mg/5 ml = 1 teaspoon (tsp)

Dosage

- Child : 50 mg/kg/d divided in 2 doses
- Adult: 1 to 2 g/d divided in 2 doses
- In case of severe infections, use the maximum dosage in 3 doses/day.
- Treatment of genito-urinary infections in pregnant women: 1 g/d divided in 2 or 3 doses for 10 days.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 250 mg	1/4 tab x 2	1/2 tab x 2	1 tab x 2	1 1/2 tab x 2	2 to 4 tab x 2	
Tablet 500 mg	1/8 tab x 2	1/4 tab x 2	1/2 tab x 2	3/4 tab x 2	1 to 2 tab x 2	
Syrup 125 mg/5 ml	1/2 tsp x 2	1 tsp x 2				

FIGURE

Duration

- Minimum 5 days
- 10 days in case of genito-urinary infections in pregnant women

Contra-indications, side-effects, precautions

- Do not administer if known allergy to penicillin.
- If allergic reaction, stop treatment and refer to a doctor.
- Do not combine with other antibiotics without medical advice.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Amoxicillin is used for the same indications as ampicillin but, because of its better intestinal absorption, only half the dose is required by oral administration.
- Storage: keep cool if possible.
Once prepared, the syrup should be kept cool, and will only last for 1 week.

AMPICILLIN (Amfipen(R), Penbritin(R).)

Health clinic

Therapeutic action

- Antibacterial (antibiotic) of the penicillin group

Indications

- Respiratory infections with fever in children under 5 years
- Prevention and treatment of secondary infections of whooping cough and measles
- Genito-urinary infections, especially in pregnant women

Preparation

- Tablets or capsules of 500 mg and 250 mg - Syrup of 125 mg/5 ml = 1 teaspoon (tsp)

Dosage

- Child: 100 mg/kg/d divided in 2 doses
- Adult: 2 to 4 g/d divided in 2 doses
- In case of severe infections, use the maximum dosage in 3 doses/day.
- Treatment of genito-urinary infections in pregnant women: 1 g/d divided in 2 or 3 doses for 10 days.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 250 mg		1/4 tab x 2	1/2 tab x 2	1 tab x 2	1 1/2 tab x 2	2 to 4 tab x 2
Tablet 500 mg		1/8 tab x 2	1/4 tab x 2	1/2 tab x 2	3/4 tab x 2	1 to 2 tab x 2
Syrup 125 mg/5 ml		1/2 tsp x 2	1 tsp x 2			

FIGURE

Duration

- Minimum 5 days
- 10 days in case of genito-urinary infections in pregnant women

Contra-indications, side-effects, precautions

- Do not administer if known allergy to penicillin.
- If allergic reaction, stop treatment and refer to a doctor.
- Do not combine with other antibiotics without medical advice.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Avoid to take ampicillin during meals.
- Amoxicillin is used for the same indications as ampicillin but, because of its better intestinal absorption, only half the dose is required by oral administration.
- Storage: keep cool if possible.

Once prepared, the syrup should be kept cool, and will only last for 1 week.

ASCORBIC ACID = VITAMIN C (Redoxon(R).)

District hospital

Therapeutic action

- Vitamin

Indications

- Treatment and prevention of scurvy

Preparation

- Tablets of 50 mg and 250 mg

There are also tablets of 500 mg and 1 g. Adapt dosage accordingly.

Dosage

- Treatment:

child: 100 to 300 mg/d divided in 3 doses
adult: 500 mg to 1 g/d divided in 3 doses

- Prevention:

child: 50 to 100 mg/d
adult: 50 to 100 mg/d

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		1 kg	8 kg	15 kg	35 kg	
Treatment						
Tablet 50 mg	1 tab x 3	1 tab x 3	2 tab x 3	2 tab x 3		
Tablet 250 mg						1 to 2 tab x 3
Prevention						
Tablet 50 mg	1 tab	1 tab	1 tab	1 tab	2 tab	

FIGURE

Duration

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

Contra-indications, side-effects, precautions

- Well tolerated.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- High doses of vitamin C can interfere with the measurement of glucose in urine.
- This supplement is rarely necessary when the food intake contains enough fruit and vegetables.
- Storage: keep below 30°C

ATROPINE Sulphate
HYOSCINE BUTYLBROMIDE = BUTYLSCOPOLAMINE (Buscopan(R).)
PROPANTHELIN (Probanthine(R).)

District hospital

Therapeutic action

- Antispasmodic

Indications

- Spasms of the digestive and uro-genital tract

Preparation

- Atropine sulphate : tablet of 1 mg
- Hyoscine butylbromide: tablet of 10 mg
- Propanthelin : tablet of 15 mg

Dosage

- Child: avoid
- Adult:
atropine sulphate : 3 mg/d divided in 3 doses
hyoscine butylbromide: 30 to 60 mg/d divided in 3 doses
propanthelin : 45 to 90 mg/d divided in 3 doses
- Butylhyoscine or propanthelin are to be preferred since their side-effects are less pronounced than those of atropine.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Atropine sulphate Tablet 1 mg			avoid			1 tab x 3
Hyoscine butylbromide Tablet 10 mg			avoid			1 to 2 tab x 3
Propanthelin Tablet 15 mg			avoid			1 to 2 tab x 3

FIGURE

Duration: depending on clinical progress, maximum 1 to 4 days

Contra-indications, side-effects, precautions

- Do not administer in cases of:

· urinary retention,
· cardiac problems,
· glaucoma.

- May cause:

· dry mouth,

· constipation,
· dizziness, headache.

- Do not combine with chlorpromazine or promethazine.
- Pregnancy: avoid, particularly in the third trimester of pregnancy, NO PROLONGED TREATMENTS
- Lactation: avoid, NO PROLONGED TREATMENTS

Remarks

- Do not use for convenience.
- Storage:

CHARCOAL

District hospital

Therapeutic action

- Absorbent

Absorbs toxic substances of certain plants and drugs and those produced by some microbes.

Indications

- Intoxication after taking drugs in higher doses than normal (A.S.A., paracetamol, chloroquine, quinine, barbiturates, indometacin, phenytoine, digoxine, tolbutamide, theophylline...)
- Poisoning by plants

Preparation

- Tablet of 125 mg

There are different strengths. Adapt dosage accordingly.

Dosage

- Child and adult: 6 to 24 tablets in a single dose
- In case of severe overdose: 30 tablets in a single dose.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 125 mg	6 tab	6 tab	12 tab	18 tab	24 tab	

FIGURE

Duration: single dose; repeat if necessary.

Contra-indications, side-effects, precautions

- Do not administer after ingestion of caustic products.
- Constipation possible after treatment.
- Black colouring of faeces.
- Do not administer with other drugs, because of its absorbing properties.
- Pregnancy: no contra-indication (avoid prolonged use)
- Lactation: no contra-indication

Remarks

- Charcoal DOES NOT CURE DIARRHOEA. It does not correct dehydration. It can only relieve a blown up stomach.
- To make this drug easier to take, crush the tablets.
- Storage: no special temperature requirements

CHLORAMPHENICOL (Chloromycetin(R), Tifomycine(R).)

District hospital

Therapeutic action

- Antibacterial (antibiotic)

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE

UNDER MEDICAL SUPERVISION

- Typhoid fever
- Meningitis
- Bronchopneumonia

Preparation

- Tablet or capsule of 250 mg
- Syrup of 125 mg/5 ml

Dosage

- Child under 2 months: 25 mg/kg/d divided in 3 doses
- Child above 2 months: 50 to 100 mg/kg/d divided in 3 doses
- Adult :1 to 3 g/d divided in 3 doses

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 250 mg		1/2 tab x 3	1 tab x 3	2 tab x 3	3 tab x 3	
Syrup 125 mg/5 ml	1/4 tsp x 3	1 tsp x 3	2 tsp x 3			

FIGURE

- Typhoid: refer to national protocol. In other cases, start the first day with a half dose and increase gradually.
- For indications other than typhoid, do not exceed the total dose of 26 g for adults.
- Can be used for immediate treatment of gonorrhoea: 2 to 3 g once daily for 2 days.

Duration

- 5 days minimum
- Typhoid fever: continue the antibiotic therapy 15 days after the fever has gone.

Contra-indications, side-effects, precautio- In newborn babies, administer only for cases of typhoid or meningitis.

- If treatment causes anaemia, stop treatment and refer to a doctor.
- Do not combine with other antibiotics without medical advice.
- As far as possible, limit the use of chloramphnicol to serious infections.
- Pregnancy: CONTRA-INDICATED
- Lactation: CONTRA-INDICATED

Remarks

- In spite of a rare severe haematological toxicity, the use of chloramphenicol is justified because of its effective treatment of the above mentioned severe infections. Another advantage is the low price.
- The oral treatment is more effective than the injected (I.M.), as the blood- and tissue concentrations are better.
- Storage: keep below 30°C if possible-

Once prepared, the syrup should be kept cool, and will only last for 1 week.

CHLOROQUINE Phosphate or Sulphate (Nivaquine(R), Resochin(R).)

Health post

Therapeutic action

- Antimalarial

Indications

- Malaria

· Treatment of a malaria attack (in areas without chloroquine resistance)
· Prophylaxis for pregnant women, malnourished children and non-immune individuals in areas without chloroquine resistance

Preparation

- Tablet of 100 mg of chloroquine base
- Tablet of 150 mg of chloroquine base

IMPORTANT: THE DOSE WRITTEN ON THE LABELS IS SOMETIMES IN CHLOROQUINE SALT AND SOMETIMES IN CHLOROQUINE BASE WHICH LEADS TO FREQUENT CONFUSION. WHO RECOMMENDS PRESCRIPTIONS AND LABELS IN CHLOROQUINE BASE.

Equivalence for salt and base: 130 mg sulphate = 150 mg phosphate or diphosphate = 100 mg base 200 mg sulphate = 250 mg phosphate or diphosphate = 150 mg base

Dosage

PREVENTIVE TREATMENT

When there is no national protocol, apply one of the following schemes, depending on local practice:

Preparation	Age	Dose	
Tablet 100 mg base	under 1 year	1/4 tab (25 mg)	every two days
	1 to 3 years	1/4 tab (25 mg)	6 times per week
	3 to 6 years	1/2 tab (50 mg)	
	6 to 12 years	3/4 tab (75 mg)	
	over 12 years	1 tab (100 mg)	
Tablet 150 mg base	under 1 year	1/4 tab (37 mg)	2 times the first week, then 1 time per week
	1 to 3 years	1/2 tab (75 mg)	
	3 to 6 years	1 tab (150 mg)	
	6 to 12 years	1 1/2 tab (225 mg)	
	over 12 years	2 tab (300 mg)	

FIGURE

CURATIVE TREATMENT

When there is no national protocol, administer in the following way:

- Child and adult: 10 mg base/kg, D1 and D2 5 mg base/kg, D3, D4 and D5
- When treatment schedule must be very simple, it is possible to give 10 mg base/kg/d for 3 days.
- When using injectable chloroquine, never forget that the therapeutic oral dose is equivalent to a toxic dose when injected.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
D1 and D2						
Tablet 100 mg base		1/2 tab	1 tab	2 1/2 tab	6 tab	
Tablet 150 mg base		1/4 tab	1/2 tab	1 1/2 tab	4 tab	
D3, D4 and D5						
Tablet 100 mg base		1/2 tab	1 tab	1 1/2 tab	3 tab	
Tablet 150 mg base		1/4 tab	1/2 tab	1 tab	2 tab	

FIGURE

Duration: curative treatment: 5 or 3 days

Contra-indications, side-effects, precautions

- Vomiting and frequent headaches.
- Pruritis, cutaneous eruptions possible, most of them occurring in areas of endemic filariasis. These are not allergic reactions and treatment should not be stopped.
- Do not come near the toxic dose:

· child: 25 mg base/kg in one dose 2 g base in one dose
· adult: 2 g base in one dose

Intoxication is severe.

- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

PREVENTIVE TREATMENT

- The prevention of malaria in areas with high prevalence of chloroquine resistance is often debated. In this case, chloroquine has to be combined with proguanil or replaced by a different drug.
- Travellers only have to start treatment on the day of their arrival in affected areas. Treatment must be continued for 6 weeks after leaving the area.

CURATIVE TREATMENT

- When it is not possible to take two doses on the first day, give the total dose of the first day at once, 15 mg base/kg.
- If the patient vomits within one hour of medication being given, repeat the dose.
- Some national guidelines recommend to give only the first dose of treatment (conservation of natural immunity of population).
- It is advisable to use tablets of 150 mg base (= 250 mg of phosphate) in

english speaking countries and 100 mg base (= 150 mg of phosphate) in french speaking countries to mountain local practice and to avoid mistakes in dosage.
- Storage: no special temperature requirements -

CHLORPHENIRAMINE = CHLORPHENAMINE (Teldvin(R).)

District hospital

Therapeutic action

- Antihistamic

Indications

- Allergic reactions due to:

· contact, seasons.
· drugs, insect bites, food.

- Dry cough of allergic origin

Preparation

- Tablet of 4 mg

Dosage

- Child (above 2 years): 1 to 4 mg/d divided in 2 or 3 doses
- Adult: 8 to 12 mg/d divided in 2 or 3 doses

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 4 mg		Do not give		1/2 tab x 2	1 tab x 2	

FIGURE

Duration: single dose or 1 to 3 days depending on clinical progress

Contra-indications, side-effects, precautions

- Do not administer to children under 2 years.
- Risk of drowsiness, use with care when driving.
- Risk of increased sedation when combined with alcohol and other drugs that act on the central nervous system: diazepam (Valium(R)), phenobarbitone (Gardenal(R)) and chlorpromazine (Largactil(R)).
- Avoid alcoholic drink during the treatment.
- Pregnancy: avoid
- Lactation : avoid

Remarks

- Dexchlorpheniramine (Polaramine(R) has the same indications but: 2 mg of dexchlorpheniramine has the same effect as 4 mg of chlorpheniramine.
- Storage: keep below 30°C

CHLORPROMAZINE (Largactil(R).)

District hospital

Therapeutic action

- Sedative neuroleptic
- Major tranquillizer

Indications PRESCRIPTIONS AND FOLLOW-UP TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Acute psychosis with agitation
- Chronic psychosis, hallucinations and schizophrenia

Preparation

- Tablet of 25 mg

There are also tablets of 50 and 100 mg. Adapt dosage accordingly.

Dosage

Varies from one person to another, doses have to be progressive.

- Child: 1.5 mg/kg/d divided in 3 doses
- Adult: 50 to 100 mg/d divided in 3 doses

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 25 mg				½ tab x 3	1 to 2 tab x 3	

FIGURE

- Do not exceed indicated doses.
- Lower the dose for elderly patients.

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Do not administer in cases of:

· barbiturate or alcoholic coma,

· Parkinson's disease,
· renal or liver failure (risk of overdose).

- If patient becomes febrile, interrupt the treatment. It could be a case of malicious neuroleptic syndrome.
- Risk of extrapyramidal manifestations, orthostatic hypotension and photosensitization to the sun.
- Refer in case of acute intoxication.
- If prolonged treatment, check blood regularly (risk of agranulocytosis).
- Risk of sedation when combined with alcohol and other drugs that act on the central nervous system: diazepam (Valium(R)), phenobarbitone (Gardenal(R) and chlorpheniramine (Teldvin(R)).
- Pregnancy: CONTRA-INDICATED (in case of psychosis, stop treatment one week before delivery if possible)
- Lactation: avoid

Remarks

- Storage: keep below 30°C

CIMETIDINE (Tagamet(R).)

District hospital

Therapeutic action

- Healing of ulcers

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Active duodenal and gastric ulcers and prevention of relapses.
- esophagitis caused by gastro-esophageal reflux unresponsive to other treatments.

Preparation

- Tablets of 200 mg, 400 mg and 800 mg

Dosage

- Newborn and child: 10 to 20 mg/kg/d divided in 4 to 6 doses
- Adult :800 mg/d once daily (evening)

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet of 200 mg	1/16 tab x 4	1/8 tab x 4	1/4 tab x 4	1/2 tab x 4	4 tab	
Tablet of 400 mg					2 tab	

FIGURE

Duration :4 to 6 weeks

Contra-indications, side-effects, precautions

- Do not administer treatments over long periods.
- Do not administer an antacid (aluminium hydroxide) for 2 hours before or after taking cimetidine.
- May cause: diarrhoea, dizziness, rash, fever.
- Association with other drugs not advised (phenytoine), or to be monitored (propanolol theophylline...).
- Reduce dosage in case of severe hepatic or renal failure.
- Pregnancy: CONTRA-INDICATED
- Lactation: CONTRA-INDICATED

Remarks

- To prevent relapses of duodenal ulcers, reduce the dosage by half.
- Expensive treatment.
- Storage: keep below 30°C

CLOFAZIMINE (Lamprene(R).)

Special department

Therapeutic action

- Antibacterial, active against the leprosy bacillus

Indications

- Multibacillary leprosy, in association to other "anti-leprosy" medication
- Leprotic reaction: erythema nodosum leprosum

Preparation

- Capsules of 50 mg and 100 mg

Dosage

According to national protocol. For information:

- Multibacillary leprosy: 300 mg once a month under surveillance and 50 mg/d taken by patient at home. Must be combined with rifampicin and dapsone.
- Leprotic reaction: 100 to 300 mg/d

Duration

- 6 months or 2 years depending on the type of leprosy.
- Leprotic reaction :3 months, then decrease dosage progressively.

Contra-indications, side-effects, precautions

- Do not administer doses of 300 mg/d or over for more than 3 months.
- Administer with care in cases of liver or renal failure.
- Occasionally causes nausea and/or abdominal cramps.
- Orange red colouring of the skin, mucosa and skin lesions, which continues a long time after the end of treatment.
- Orange colouring of the urine, faeces and secretions.
- Should be combined with other "antileprotics".
- Pregnancy: avoid (if necessary may be used under medical supervision)
- Lactation: avoid (if necessary may be used under medical supervision)

Remarks

- The action on the tuberculoid type is quite slow, about 2 to 6 weeks.

- Only prescribe "anti-leprotics" in the content of an organised leprosy program.
- Storage: no special precautions.

CLOXACILLIN (Orbenin(R).)

District hospital

Therapeutic action

- Antibacterial (antibiotic) of the penicillin group, acting specifically against penicillinase producing staphylococci

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE

UNDER MEDICAL SUPERVISION

- Staphylococci infections resistant to other antibiotics: chronic osteomyelitis, pulmonary staphylococci of the newborn.

Preparation - Capsules of 250 mg and 500 mg

Dosage

- Child: 50 mg/kg/d divided in 3 doses
- Adult: 1 to 2 g/d divided in 3 doses

- In case of a severe infection, the dose can be doubled.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Capsule 250 mg			1/2 to 1 cap x 3	1 to 2 cap x 3	2 cap x 3	
Capsule 500 mg					1 cap x 3	

FIGURE

Duration: minimum 7 days

Contra-indications, side-effects, precautions

- Do not administer if known allergy to penicillin.
- If allergic reactions, stop treatment and refer to a doctor.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Cloxacillin, oxacillin and dicloxacillin are equivalent products: same indications and same doses, except for dicloxacillin (25 mg/kg/day).

- Storage: keep cool if possible

COTRIMOXAZOLE = Sulfamethoxazole (SMX) + Trimethoprim (TMP) (Bactrim(R), Cotrim(R), Eusaprim(R), Septrim(R).)

Health post

Therapeutic action

- Combination of 2 antibacterials including a sulfonamide (active during maximum 12 hours)

Indications

- Respiratory infections with fever
- Urinary infections
- Bacillary dysentery
- Otitis
- Gonorrhoea

Preparation

- Tablet of 400 mg sulfamethoxazole (SMX) + 80 mg trimethoprim (TMP)
- Syrup of 200 mg SMX + 40 mg TMP / 5 ml = 1 teaspoon

There are also tablets of 800 mg SMX + 160 mg TMP (named cotrimoxazole "forte") and paediatric tablets of 100 mg SMX + 20 mg TMP. Adapt dose accordingly.

Dosage

- Child : 1/2 to 2 tab of 400 mg + 80 mg/kg/d divided in 2 doses
- Adult: 4 tab of 400 mg + 80 mg/d divided in 2 doses

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 400 mg + 80 mg	Do not give	1/4 tab x 2	1/2 tab x 2	1 tab x 2	2 tab x 2	
Syrup 200 + 40 mg/5 ml		1/2 tsp x 2	1 tsp x 2			

FIGURE

- To treat:

· gonorrhoea: 10 tabs of 400 mg + 80 mg/d once daily for 3 days
· urinary infections: 4 tabs of 400 mg + 80 mg in a single dose

- In case of acute respiratory infections in children under 5 years, double

the dose:

· from 2 months to 1 year: 1/2 tab x 2
· from 1 to 5 years : 1 tab x 2

Duration: minimum 5 days

Contra-indications, side-effects, precautions

- Do not administer to children under 2 months.
- Frequent digestive problems.
- Allergic reactions mostly benign but sometimes severe (generalised bullous eruptions, agranulocytosis). In this case, stop treatment and refer to a doctor.
- Do not combine with other antibacterials.
- Drink a lot of liquid during treatment.
- Pregnancy: CONTRA-INDICATED
- Lactation: CONTRA-INDICATED

Remarks

- Storage: no special precautions.

Once prepared, the syrup can be kept for up to 1 week if kept cool.

DAPSONE (Avlosulfon(R).)

Special department

Therapeutic action

- Antibacterial, active against the leprosy bacillus

Indications

- Leprosy, in association to other "anti-leprosy" medication

Preparation

- Tablets of 50 mg and 100 mg

There are different strengths. Adapt dosage accordingly.

Dosage

According to national protocol.

For information:

- Child : 1 to 2 mg/kg/d once daily
- Adult: 100 mg/d once daily

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 50 mg			1/2 tab	1 tab	2 tab	
Tablet 100 mg			1/4 tab	1/2 tab	1 tab	

FIGURE

Duration

- Multibacillary leprosy: 2 years or more, depending on the progress
- Paucibacillary leprosy: 6 months

Contra-indications, side-effects, precautions

- Do not administer if allergy or intolerance to sulfonamides.
- Avoid in case of liver failure.
- If severe anaemia or leucopenia develops, stop treatment and replace dapsone with another "antileprotic".
- Pregnancy: avoid (if necessary may be used under medical supervision)
- Lactation: avoid (if necessary may be used under medical supervision)

Remarks

- Warning: antileprotic treatment should only be prescribed in the context of an organised program.
- Dapsone should not be used alone, but in combination with other "antileprotic" drugs to avoid development of resistance.
- Storage: keep below 30°C

DIAZEPAM (Tensium(R), Valium(R).)

District hospital

Therapeutic action

- Anxiolytic
- Anticonvulsive, muscle relaxant

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Muscular contractions
- Agitation and anxiety

Preparation

-Tablet of 5 mg

There are also tablets of 2 mg and 10 mg. Adapt dosage accordingly.

Dosage

- Child: 0.5 mg/kg/d divided in 3 doses
- Adult: 5 to 15 mg/d divided in 3 doses

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

FIGURE

- Do not exceed indicated doses.
- Signs of overdose: muscular weakness, ataxia.
- Signs of intoxication (5 times the therapeutic dose): hypothermic coma.
- The dose should be halved for elderly patients.
- Should only be used exceptionally and with great care for children.

Duration: depending on clinical progress

Contra-indications, side-effects, precautions.

- Do not administer in cases of respiratory depression.
- Risk of drowsiness, use with care when driving.
- Addiction will occur in case of prolonged use (average 12 days). Reduce the dosage gradually to wean the patient off the drug.
- Risk of causing sedation when combined with alcohol and other drugs that act on the central nervous system: chlorpromazine (Largactil(R)), phenobarbitone (Gardenal(R)) and chlorpheniramine (Teldvin(R)).
- Pregnancy: avoid
- Lactation :avoid

Remarks

- Do not use as an easy remedy.
- Storage: no special precautions

DIETHYLCARBAMAZINE (Banacide(R), Hetrazan(R), Notezine(R).)

Special department

Therapeutic action

- Filaricide

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Lymphatic filariasis (Wuchereria bancrofti)
- Onchocerciasis (Onchocerca volvulus)
- Loiasis (Loa-loa)

Preparation

- Tablets of 50 mg and 100 mg

Dosage

According to national protocol.

For information:

- Lymphatic filariasis and onchocerciasis

· Child : build up dose progressively (over 4 days) 6 mg/kg/d divided in 2 doses
· Adult: build up dose progressively (over 4 days) 400 mg/d divided in 2 doses start the first day with 25 to 50 mg divided in 2 doses

- Loiasis
Adapt dosage to the parasite-load of the patient

· Child and adult: build up progressively (over 5 to 8 days) to 6 mg/kg/d

divided in 2 doses start the first day with 3 mg/kg/d divided in 2 doses

- In West Africa, every treatment should start with 3 mg/d because of the risk of possible combination of loiasis with other filariasis.

Duration: 21 days

Contra-indications, side-effects, precautions

- Allergic reactions: pruritus, Iymphangitis, risk of shock due to the microfilaria lysis
(loiasis and onchocerciasis).
- Risk of lethal encephalitis; reactions are the most severe when the progressive protocol is not respected.
- Drowsiness, malaise, headache, nausea, vomiting.
- To prevent or decrease allergic reactions, administration of antihistamines is recommended.
- Pregnancy: avoid (in most cases, the treatment can wait until the end of the pregnancy)
- Lactation: avoid

Remarks - To treat onchocerciasis: ivermectin (Mectizan(R)), a single dose medication which is better tolerated, replaces diethylcarbamazine.

- An individual chemoprophylaxis against Loa-Loa is possible :100 mg once

weekly.
- Storage: keep below 30°C

DIGOXIN (Lanoxin(R).)

District hospital

Therapeutic action

- Cardiotonic (reinforces the cardiac contraction, slows down and regulates the cardiac rhythm)

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Congestive heart failure, sinus arrhythmia (fibrillation, flutter, paroxysmal tachycardia) DIAGNOSED BY A DOCTOR.

Preparation

- Tablet of 0.25 mg (= 250 microgram = 250 mcg = 250 ug)

Dosage

- Child

· initial dose : 0.015 mg/kg (= 15 mcg/kg) x 3 to 4 doses the first day
· maintenance dose: 0.015 mg/kg/d once daily, 5 days in every 7

- Adult

· initial dose : 0.5 to 1 mg/d divided in 3 or 4 doses the first day
· maintenance dose: 0.25 mg/d divided in 1 or 2 doses, 5 days in every 7

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Do not administer in cases of:

· bradycardia
· ill-defined heart rhythm disorders

- The surveillance of the pulse is vital at the beginning of the treatment.
- The therapeutic dose is near the toxic dose.
- Signs of overdose: digestive problems, visual problems, disorientation or confusion, arrythmia and problems of the atrio-ventricular conduction. In this case, reduce dosage or stop treatment. Nausea or vomiting are early signs of overdose.
- Higher risk of intoxication in cases of hypokalemia, especially if combined with a diuretic.

- Administer with care in cases of renal failure.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Storage: no special temperature requirements

ERYTHROMYCIN (Erythrocin(R), Ilotycin(R).)

District hospital

Therapeutic action

- Antibacterial (antibiotic)

Indications

- For upper and lower respiratory infections as a second choice and in case of allergy or resistance to penicillin

Preparation

- Tablets of 250 mg and 500 mg erythromycin (base)

Dosage

- Child : 30 to 50 mg/kg/d divided in 2 doses
- Adult: 1 to 3 g/d divided in 2 doses depending on the degree of infection
- In case of severe infections, it is recommended to give the dosage in 3 doses/day.

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

FIGURE

Duration: minimum 5 days

Contra-indications, side-effects, precautions

- Do not combine with ergotamine or aminophylline, especially in pediatrics.
- Allergic reactions, digestive problems possible.
- Administer with care in cases of liver failure.
- Transitory deafness at high doses.
- Pregnancy: no contra-indicafion

- Lactation: no contra-indication

Remarks

- Take before meals.
- Storage: no special precautions

ETHAMBUTOL (Myambutol(R).)

Special department

Therapeutic action

- "Antituberculous" antibacterial

Indications

- Only for tuberculosis, bacteriologically proven if possible

Preparation

- Tablets of 100 mg and 400 mg

There are also tablets of 250 mg and 500 mg. Adapt dosage accordingly.

Dosage

According to national protocol.

For information:

- Child above 5 years and adult: 20 mg/kg/d once daily

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 100 mg		Not recommended		3 to 6 tab		
Tablet 400 mg		Not recommended		1 tab	2 tab	

FIGURE

Duration: according to national protocol

Contra-indications, side-effects, precautions

- Do not administer in cases of severe renal failure or ocular disease.
- In case of inflammation of the optic nerve (problems of vision: colour and acuity), stop treatment and refer to a doctor.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Not recommended for children as the visual problems are hard to identify.
- Take in the morning before meal.
- Warning: antituberculous treatment should only be prescribed in the context of an organised program (well established protocol, regular patient checks and the possibility of laboratory examination).
- Ethambutol should not be used alone, but in combination with other "antituberculous" drugs to avoid development of resistance.
- Storage: no special precautions

Iron salts = FERROUS salts, fumarate, ascorbate, sulphate= FERROUS sulphate

Health post

Therapeutic action

- Essential to produce red blood cells

Indications

- Prevention of anaemia during pregnancy
- Treatment of anaemia due to lack of iron: insufficient intake, intestinal

parasitic disease, blood loss

Preparation

- Tablet of 200 mg ferrous sulphate (containing 60 mg of the element iron) Also available in different strengths. Adapt dosage accordingly.

Dosage (unit is ferrous salts)

- Prevention:

Child :6 mg/kg/d once daily
Pregnant women: 100 to 200 mg/d once daily

- Treatment :

Child: 15 to 30 mg/kg/d divided in 3 doses
Adult: 800 mg to 1.2 g/d divided in 3 doses

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Prevention – tab 200 mg			1/4 tab	1/2 tab	1 tab	
Treatment tab 200 mg		1/4 tab x 3	1/2 tab x 3	1 tab x 3	1 to 2 tab x 3	

FIGURE

- Do not exceed indicated doses. Toxic dose: 100 mg/kg ferrous sulphate (= 30 mg/kg element iron).
- Signs of overdose: diarrhoea with blood, heart failure.

Duration

- Prevention: throughout the risk period (pregnancy, malnutrition)
- Treatment: 2 months minimum

Contra-indications, side-effects, precautions

- Do not combine with tetracycline as each drug prevents the other from being absorbed properly.
- Do not administer in cases of sickle cell anaemia.
- Can cause gastro-intestinal problems: gastric burning, diarrhoea or

constipation.
- Black colouring of the stools.
- Do not exceed the recommended dose, especially in children.
- Pregnancy: no contra-indication (recommended to avoid anaemia)
- Lactation: no contra-indication

Remarks

- Take during meals to avoid digestive problems.
- If treatment requires the administration of ferrous salts, tablets containing both ferrous salts and folic acid are recommended.
- All ferrous salts are to be used in the same dose, e.g. ferrous fumarate, ascorbate
- Storage: no special precautions

FOLIC ACID

District hospital

Therapeutic action

- Vitamin necessary to produce red blood cells

Indications

- Anaemia caused by lack of folic acid: severe malnutrition, repeated attacks of malaria, intestinal parasites

Preparation

- Tablet of 5 mg. There are also tablets of 1 mg. Adapt dosage accordingly.

Dosage

- Child : 5 to 15 mg/d once daily
- Adult: 10 to 20 mg/d once daily
- In case of severe anaemia, it is recommended to double.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 5 mg	1 tab	1 to 2 tab	2 to 3 tab	2 to 3 tab	3 to 4 tab	

FIGURE

Duration :15 to 30 days

Contra-indications, side-effects, precautions

- Well tolerated.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Storage: no special temperature requirements

FERROUS Salt + FOLIC ACID (Fegal(R).)

Indications

- Prevention of lack of iron and folic acid, mainly during pregnancy

Preparation

- Tablet of 200 mg ferrous sulphate and 0.25 mg folic acid

Dosage

- Child: 1 tab/d
- Adult: 1 to 2 tab/d

Remarks

- This combination is not suitable for the treatment of folic acid deficiency

because of its low dose (0.25 mg).
- Storage: keep below 30°C

FUROSEMIDE = FRUSEMIDE (Frusid(R)), Lasix(R).)

District hospital

Therapeutic action

- Diuretic

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Oedema caused by renal, heart or liver failure, DIAGNOSED BY A DOCTOR

Preparation

- Tablet of 40 mg

Dosage

- Child: 0.5 to 1 mg/kg/d once daily
- Adult: 20 to 80 mg/d once daily

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

FIGURE

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Never administer for other types of oedema, particularly not for kwashiorkor.
- Risk of hypokalemia (increases the toxicity of digoxin when used together).
- Pregnancy:avoid
- Lactation: no contra-indication (but can reduce the milk production)

Remarks

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

GRISEOFULVIN (Fulcin(R), Grisavin(R).)

District hospital

Therapeutic action

- Antifungal

Indications

- Dermatophytosis: fungal infections of skin, scalp and nails (tinea)

Preparation

- Tablets of 125 mg and 500 mg

Dosage

- Child : 10 mg/kg/d divided in 2 doses
- Adult : 500 mg to 1 g/d divided in 2 doses

For scalp infection, there is a single dose treatment

- Child and adult :1.5 g in a single dose (3 tabs of 500 mg or 12 tabs of 125 mg). In this case, the administration of a spoonful of oil improves the effectiveness of the treatment.

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

FIGURE

Duration - Depending on clinical progress, minimum 10 days. Often needs to be extended over 1 month.

Contra-indications, side-effects, precautions

- Do not administer in cases of liver failure.
- May cause: frequent vomiting, diarrhea, stomach-ache, headache, dizziness, skin allergy and photosensitization, especially with the single dose treatment.
- Do not drink alcohol during treatment.
- Pregnancy: CONTRA-INDICATED
- Lactation: CONTRA-INDICATED

Remarks

- Use gentian violet to dry the lesions.
- Has no effect on candidiasis or pityriasis versicolor.
- Storage: no special temperature requirements.

HALOFANTRINE (Halfan(R).)

The use of this drug is not advised:

- it is potentially dangerous; these severe adverse effects concerning the cardiac conductions are unforeseable even if an ECG has been done previously;
- it is not included in the WHO essential drug list;
- it is expensive.

Therapeutic action

- Antimalarial

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Curative treatment of a malaria attack with Plasmodium falciparum resistant to chloroquine.

Preparation

- Tablet of 250 mg
- Oral suspension 45 ml to 20 mg/ml (1 measuring spoon=1 m.s. = 5 ml = 100 mg)

Dosage

- Child and adult: 24 mg/kg divided in 3 doses to be taken every 6 hours
- Do not exceed indicated doses

AGE	0			5 years		15 years	ADULT
WEIGHT		10 kg	13 kg	16 kg	23 kg	32 kg	40 kg
Suspension 1 m.s. = 100 mg		1 m.s. x 3	1 1/2 m.s. x 3	2 m.s. x 3	2 1/2 m.s. x 3	3 m.s. x 3	
Tablet 250 mg					1 tab x 3		2 tab x 3

FIGURE

Duration: 3 doses, taken every 6 hours

Contra-indications, side-effects, precautions

- Do not administer in case of congenital or acquired prolonged QT interval of the electrocardiogram.

- Avoid in case of severe electrolytic disorders and in thiamin (vitamin B1) deficiency.
- Do not associate with drugs predisposing to the occurrence of "torsades de pointes": antiarrhythmic drugs (quinidine, disopyramide, sotalol), drugs inducing hypokaliemia (diuretics, glucocorticoids).
- May induce arrhythmias: prolongation of QT interval and severe, eventually fatal, ventricular arrhythmias ("torsades de pointes").
- May cause diarrhoea (occasionally), abdominal pain, nausea and vomiting.
- Do an ECG before giving the treatment in case of history of unexplained syncope or malaise.
- Pregnancy: CONTRA-INDICATED
- Lactancy: CONTRA-INDICATED

Remarks

- Administer away from the meals.
- The QT prolongation is more marqued in case of recent treatment with mefloquine.
- Do not use as a preventive treatment because of rapid elimination.
- If the patient has not had a previous malaria attack repeat the treatment after one week.
- Since this treatment is expensive, and to avoid emergence of resistant strains, use, instead sulfadoxine-pyrimethamine or quinine if possible,

depending on the local situation and protocol.
- Storage:

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

District hospital

Therapeutic action

- Antihypertensive drug with vasodilatory action

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

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

Preparation

- Tablets of 25 mg and 50 mg

Dosage

- Initial dose: adult: 25 to 50 mg/d divided in 2 or 3 doses
- Raise the dose progressively over 2 weeks until the optimal dose of 100 mg/d in 2 or 3 doses is reached.

- When the hypertension is under control, decrease the dose progressively. Stopping suddenly can provoke a hypertensive crisis.
- Do not exceed indicated doses. Maximum dose : 200 mg/d.

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Do not administer in cases of coronary insufficiency or a recent myocardial infarction.
- Administer with care to elderly patients or those with a history of cerebrovascular accidents.
- Tachycardia reflex, headache.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

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

HYDROCHLOROTHIAZIDE (Dochlotride(R), Esidrex(R), HydroSaluric(R).)

District hospital

Therapeutic action

- Diuretic

Indications

- Moderate or severe arterial hypertension
- Oedema caused by renal, heart or liver failure, DIAGNOSED BY A DOCTOR

Preparation

- Tablet of 50 mg

There are also tablets of 25 mg. Adapt dosage accordingly.

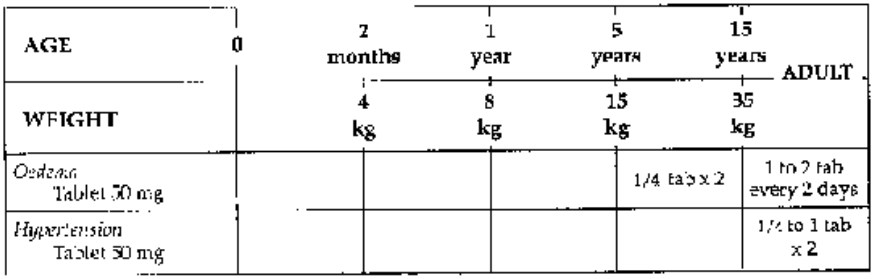
Dosage

- Œdema

· Child : 1 mg/kg/d divided in 2 doses
· Adult: 50 to 100 mg in the morning, every 2 days

- Hypertension

· Adult: 25 to 50 mg/d divided in 2 doses



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

FIGURE

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Do not administer in cases of severe renal failure, allergy to sulfonamides or kwashiorkor oedema.
- May cause: orthostatic hypotension, photosensitization, disturbance of electrolytes, skin allergies.
- Pregnancy: CONTRA-INDICATED
- Lactation: CONTRA-INDICATED

Remarks

- Often used in association with other antihypertensive drugs.
- A lot of fruit should be eaten during the treatment (dates, bananas, tomatoes, mangos, oranges.), in order to supply additional potassium. Use

potassium tablets as well if available.
- Storage: no special temperature requirements

IBUPROFEN (Brufen(R), Fenbid(R), Motrin(R).)

District hospital

Therapeutic action

- Non-steroidal anti-inflammatory
- Analgesic, antipyretic

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

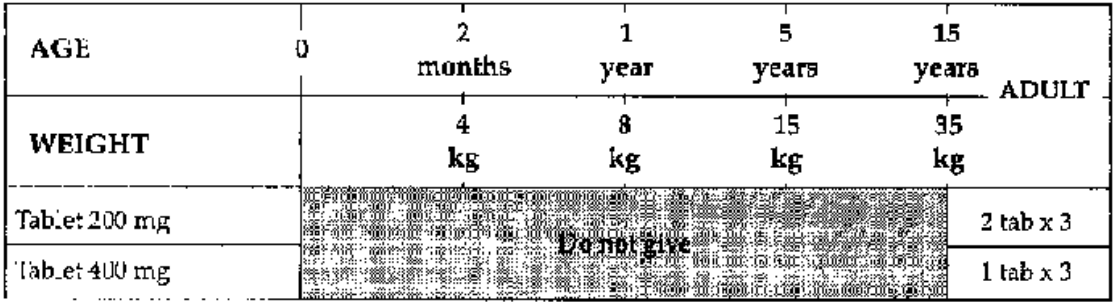
- Rheumatic diseases

Preparation

- Tablets of 200 mg and 400 mg

Dosage

- Adult: 1200 mg/d divided in 3 doses
- A dose of 2400 mg/d may be used at the beginning of treatment of rheumatoid arthritis.



FIGURE

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Do not administer in cases of gastroduodenal ulcer and severe renal or liver failure.
- Do not prescribe for children.
- May cause: gastrointestinal problems, allergic reactions.
- Do not combine with other anti-inflammatory drugs (aspirin, indometacin).
- Use with care for infectious diseases: can mask the usual symptoms of the infection.
- Pregnancy: CONTRA-INDICATED
- Lactation: CONTRA-INDICATED

Remarks

- Take with meals.
- Ibuprofen has less anti-inflammatory activity than indometacin, but is better tolerated in the long term.
- Only prescribe for severe cases which do not improve by ASA (aspirin).
- Storage: no special precautions

INDOMETACIN (Artracin(R), Indocid(R).)

District hospital

Therapeutic action

- Non-steroidal anti-inflammatory drug
- Analgesic, antipyretic

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Rheumatic diseases
- Gout

Preparation

- Tablet of 25 mg

Dosage

- Adult :50 to 150 mg/d divided in 3 doses

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 25 mg		[illegible]				1 to 2 tab x 3

FIGURE

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Do not administer in cases of:

· gastroduodenal ulcer,
· severe renal or hepatic failure,
· asthma.

- Do not prescribe for children.

- May cause: headache, dizziness, digestive problems, gastric ulcer.
- Use with care for elderly patients.
- Do not combine with ASA (aspirin) and corticosteroids.
- Pregnancy :avoid
- Lactation :avoid

Remarks

- Take with meals.
- Only prescribe for severe cases which are not improving with ASA (aspirin).
- Storage: no special temperature requirements.

ISONIAZID = INH (Rimifon(R).)

Special department

Therapeutic action

- "Antituberculous" antibacterial

Indications

- Only for tuberculosis, bacteriologically proven if possible

Preparation

- Tablets of 100 mg, 150 mg and 300 mg

There are also tablets of isoniazide + rifampicine.

Dosage

According to national protocol.

For information:

- Child: 10 to 20 mg/kg/d once daily
- Adult: 5 mg/kg/d once daily

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	38 kg	
Tablet 100 mg		1 tab	1 1/2 tab	2 tab	3 tab	
Tablet 150 mg		1/2 tab	1 tab	1 1/2 tab	2 tab	
Tablet 300 mg		1/4 tab	1/3 tab	1/2 tab	1 tab	

FIGURE

Duration: according to national protocol

Contra-indications, side-effects, precautions

- Do not administer in cases of liver failure or epilepsy.
- Do not combine with niridazole: severe mental problems.
- If the patient complains about a prickling feeling in the fingers and toes, or presents signs of liver intoxication (jaundice), stop the treatment and refer to a doctor.
- To avoid polyneuritis, give vitamin B6 with this treatment :10 to 25 mg/d.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Take in the morning before eating.
- Warning: antituberculous treatment should only be prescribed in the context of an organised program (well established protocol, regular patient checks and the possibility of laboratory examination).
- Isoniazid should not be used alone, but in combination with other "antituberculous" drugs to avoid development of resistance.
- Storage: no special temperature requirements

ISONIAZID + THIACETAZONE = INH + THIACETAZONE (Thiazine(R).)

Special department

Therapeutic action

- Combination of two "antituberculous" antibacterial drugs

Indications

- Only for tuberculosis, bacteriologically proven if possible

Preparation

- Tablets of 100 mg INH + 50 mg thiacetazone and 300 mg INH + 150 mg thiacetazone

Dosage

According to national protocol.

For information:

- Child: 10 to 20 mg/kg/d INH + 50 to 100 mg/d thiacetazone, once daily
- Adult: 5 mg/kg/d INH + 150 mg/d thiacetazone, once daily

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 100 INH + 50 Th.		1 tab	1 1/2 tab	2 tab	3 tab	
Tablet 300 INH + 150 Th.		1/4 tab	1/3 tab	1/2 tab	1 tab	

FIGURE

Duration: according to national protocol.

Contra-indications, side-effects, precautions

- Do not administer in cases of liver failure or epilepsy.
- Do not combine with niridazole: severe mental problems.
- If the patient complains about a prickling feeling in the fingers and toes, or presents signs of liver intoxication (jaundice), stop the treatment and refer to a doctor.
- In case of intolerance to thiacetazone: skin reactions, haematological disorders, signs of haemolysis, reduction of polynuclear cells or cerebral oedema, stop treatment and refer to a doctor, even if reaction is only moderate.
- If available, give vitamin B6 with this treatment :10 to 25 mg/d.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Take in the morning before eating.
- Warning: antituberculous treatment should only be prescribed in the context of an organised program (well established protocol, regular patient checks and the possibility of laboratory examination).
- Intolerance to thiacetazone varies genetically, and is notably more common in Asia.
- Warning: thiacetazone is not vitamin B1.
- At the beginning of treatment, INH + thiacetazone should be accompanied by another "antituberculous" drug.
- Storage: no special temperature requirements.

IVERMECTIN (Mectizan(R).)

Special department

Therapeutic action

- Antifilaria

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Onchocerciasis with O. volvulus

Preparation

- Divisible tablet of 6 mg

Dosage

- Child and adult :150 to 200 microgrammes/kg (= 0.200 mg/kg), single dose, to be taken on an empty stomach

AGE	0	5 years		15 years	ADULT
WEIGHT		15 kg	25 kg	45 kg	65 kg
Tablet of 6 mg		1/2 tab	1 tab	1 1/2 tab	2 tab

FIGURE

Duration: single dose

Contra-indications, side-effects, precautions

- Do not administer to children under 5 years.
- May cause passing allergic reactions: pruritus, lymphangitis, fever, œdema, tachycardia, drowsiness.

- Mild, passing digestive problems.
- Benign ophthalmic effects.
- Do not eat within 2 hours after taking the medicine.
- Pregnancy: avoid during first trimester
- Lactation: avoid until the breastfed infant is 3 months of age.

Remarks

- Ivermectin is much better tolerated than diethylcarbamazine in the treatment of onchocerciasis.
- Ivermectin is given free of charge by the manufacturer as part of the campaign against onchocerciasis.
- Storage: no special precaution

LEVAMISOLE (Tramisol(R).)

Health clinic

Therapeutic action

- Anthelminthic

Indications

- Ascariasis

- Hookworm (ankylostomiasis)

Preparation

- Tablet of 40 mg and 150 mg levamisole (base)

Dosage

Child and adult: 2.5 mg/kg

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 40 mg		1/2 tab	1 tab			
Tablet 150 mg		1/8 tab	1/4 tab	1/2 tab	1 tab	

FIGURE

Duration

- Ascariasis : single dose
- Hookworm: repeat treatment after 7 days

Contra-indications, side-effects, precautions

- May cause: nausea, vomiting.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Effectiveness in treatment of hookworm is 75 to 95%.
- Advice on sanitation should be given with the treatment.
- Storage: no special precautions

LOPERAMIDE (Imodium(R), Inosec(R).)

District hospital

Therapeutic action

- Antidiarrhoeal

Indications

- Symptomatic treatment of persistent diarrhoeas, primarily for adults with AIDS, with rehydration.

Preparation

- Capsule of 2 mg

Dosage

- Adult: 2 cap at once, then 1 cap 1 to 3 times per day
- Maximum dosage :8 cap/d

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Do not administer to children.
- Risk of constipation.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- The classical treatment of diarrhoea is based on oral rehydration. It is also possible to associate a treatment with traditional herbs (for example infusions of guava leaves.). Loperamide is necessary only for AIDS-patients.
- Storage: keep below 30°C

MEBENDAZOLE (Vermox(R).)

Health post

Therapeutic action

- Anthelminthic

Indications

- Hookworm (ankylostomiasis)
- Ascariasis
- Enterobiasis (pinworm)
- (Tapeworms and strongyloidiasis: second choice)

Preparation

- Tablet of 100 mg

There are also tablets of 500 mg. Adapt dosage accordingly.

Dosage

- Child above 2 years and adult

· Hookworm : 200 mg/d divided in 2 doses for 3 days
· Ascariasis : 500 mg in a single dose
· Enterobiasis 100 mg in a single dose, repeat after 2 or 3 weeks

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Hookworm Tablet 100 mg				1 tab x 2	1 tab x 2	1 tab x 2
Ascariasis Tablet 100 mg		Do not give		5 tab	5 tab	5 tab
Enterobiasis Tablet 100 mg				1 tab	1 tab	1 tab

FIGURE

Duration

- Hookworm : 3 days
- Ascariasis : single dose
- Enterobiasis: single dose, repeat treatment after 2 or 3 weeks

Contra-indications, side-effects, precautions

- Do not administer to children under 2 years.
- Pregnancy: avoid (in most cases, the treatment can wait until the end of the pregnancy)

- Lactation: no contra-indication

Remarks

- In cases of endemic hookworm, it is recommended to prescribe at the same time an antianaemic treatment with ferrous sulphate (if possible combined with folic acid).
- For the systematic elimination of parasites, a single dose scheme of 600 mg can be used.
- Flubendazole has the same indications and dosage.
- Albendazole (Zentel(R)) has the same indications and dosage as mebendazole: 400 mg (2 tab of 200 mg), single dose.
- Advice on sanitation should be given with the treatment.
- Storage: no special precautions

MEFLOQUINE (Lariam(R).)

District hospital

Therapeutic action

- Antimalarial

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Curative treatment of a malaria attack with Plasmodium falciparum resistant to chloroquine.

Preparation

- Divisible tablet of 250 mg
- Tablet of 50 mg

– *Curative treatment* : 25 mg/kg (person with no immunity)

WEIGHT	15 kg	45 kg	60 kg
Semi-immune person living in endemic area	1 1/2 to 3 tab at once	3 tab at once	3 tab at once + 1 tab 6 hours later
Person with no immunity = traveller	1 1/2 to 4 1/2 tab at once	3 tab at once + 2 tab 6 hours later	3 tab at once + 2 tab 6 hours later + 1 tab 6 hours later

– *Preventive treatment* for travellers with no immunity in areas with resistance to chloroquine : 4 mg/kg/week

WEIGHT	15 kg	20 kg	30 kg	45 kg
Tablet of 50 mg	1 tab	2 tab	4 tab	
Tablet of 250 mg				1 tab

FIGURE

Dosage

- Curative treatment :25 mg/kg (person with no immunity)
- Preventive treatment for travellers with no immunity in areas with resistance to chloroquine: 4 mg/kg/week

A weekly dose is necessary: start 1 week before departure and continue for one month after return. Do not take during more than 15 weeks.

Contra-indications, side-effects, precautions

- Not advised for children under 15 kg.
- Digestive problems, dizziness, headache.
- May cause neuropsychopathic problems at curative dosage.
- Bedrest under medical supervision for 24 hours after treatment.
- Do not use at the same time as quinine.
- Pregnancy: CONTRA-INDICATED
- Lactation: avoid

Remarks

- Because of the secondary reactions, the cost of the treatment, and to avoid the spread of resistance, treatment with mefloquine is prescribed as a last resort. Use, instead, sulfadoxine-pyrimethamine or quinine, depending on the local situation and protocol.
- Storage: keep below 30°C

METAMIZOL = DIPYRONE = NORAMIDOPYRINE (Nolotil(R), Novalgin(R), Novaminsulfon(R).)

The use of this drug is not advised:

- it is potentially dangerous;
- it is not included in the WHO essential drug list;
- its marketing is forbidden in several countries;
- its use is never justified as a first-line treatment.

Therapeutic action

- Analgesic
- Antipyretic

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

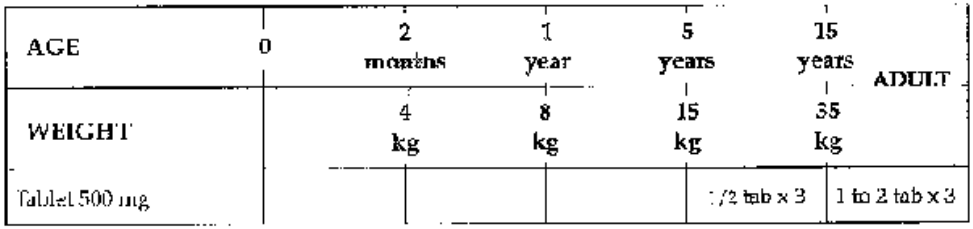
- Severe pains
- High fever

Preparation

- Tablet of 500 mg

Dosage

- Child (above 5 years): 250 mg to 1 g/d divided in 3 doses
- Adult: 500 mg to 3 g/d divided in 3 doses



AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 500 mg				½ tab x 3	1 to 2 tab x 3	

FIGURE

Duration: depending on clinical progress, 1 to 3 days

Contra-indications, side-effects, precautions

- Do not administer in cases of gastric ulcer.
- Severe and lethal cases of agranulocytosis have been found. Use only when other antipyretics and analgesics (e.g. acetyl salicylic acid and paracetamol) are not effective.
- Pregnancy: avoid
- Lactation: avoid

Remarks

- Storage: no special precautions

METHYLDOPA (Aldomet(R), Medomet(R).)

District hospital

Therapeutic action

- Central acting antihypertensive drug without a diuretic effect

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Arterial hypertension if no improvement is seen using only diuretics or if beta-blockers are contra-indicated

Preparation

- Tablet of 250 mg

Dosage

- Child: 10 mg/kg/d divided in 3 doses
- Adult: 750 mg/d divided in 3 doses; may be increased progressively up to 1,500 mg/d
- Maximum dosage :2.5 g/d (10 tab)

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 250 mg				1/3 tab x 3	1 to 2 tab x 3	

FIGURE

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Do not administer in cases of:

· angina pectoris,
· renal or liver failure,
· depression.

- May cause: orthostatic hypotension, dry mouth, sedation, mental or hormonal problems.
- Don't stop the treatment suddenly; reduce the daily doses progressively.
- Pregnancy: no contra-indication
- Lactation: avoid

Remarks

- Storage: keep below 30°C

METOCLOPRAMIDE (Anausin(R), Maxolon(R), Primperan(R), Reglan(R).)

District hospital

Therapeutic action

- Anti-emetic

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

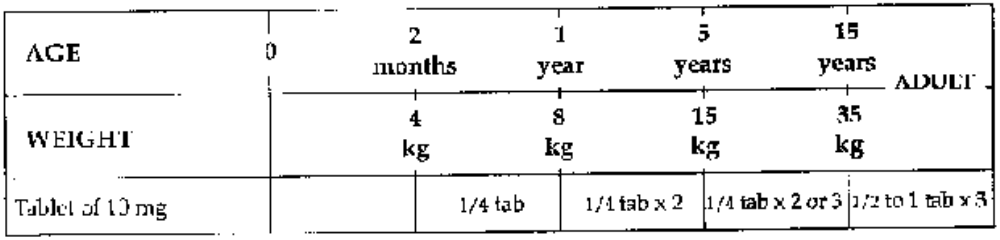
- Vomiting
- Nausea
- Hiccups

Preparation

- Tablet of 10 mg

Dosage

- Newborn: 0.5 mg/kg/d divided in 3 doses
- Child : 0.3 to 0.4 mg/kg/d divided in 3 doses
- Adult : 5 to 10 mg/kg/d divided in 3 doses



FIGURE

Duration: depending on clinical progress, as short as possible

Contra-indications, side-effects, precautions

- Contra-indicated in case of haemorrhage, gastro-intestinal obstruction or perforation.
- When elevated doses are given or when treatments are prolonged, extrapyramidal disorder can occur (agitation and spasms), specially in young patients.
- Increased risk of crisis with epileptics and those suffering from Parkinson's disease.
- Reversible methaemoglobinemia in newborns.
- Association with propantheline, hyoscine, atropine and chlorpromazine is not advised.
- Risk of drowsiness.
- Pregnancy: no contra-indication

- Lactation: avoid

Remarks

- It is most important to treat the cause of vomiting; look for bowel obstruction or malaria.
- Storage: keep below 30°C

METRIFONATE (Bilarcil(R))

Special department

Therapeutic action

- Schistosomicide

Indications

- Urinary bilharzia (Schistosoma haematobium)

Preparation

- Tablet of 100 mg

Dosage

- Child : 10 mg/kg in a single dose
- Adult: 400 mg in a single dose; if the weight of the patient is known, adapt dosage (10 mg/kg)
- 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	
Tablet 100 mg		1/2 tab	1 tab	2 tab	4 tab	
		If possible, calculate the exact dose in mg/kg				

FIGURE

Duration: single dose

Contra-indications, side-effects, precautions

- Risk of overdose: abdominal cramps, bronchospasms, sweating, salivation. In this case, inject an ampoule of atropine SC or inject slowly intravenously.
- Pregnancy: avoid (in most cases the treatment can wait until the end of the pregnancy)

- Lactation: avoid

Remarks

- Repeat treatment after 15 days if the patient leaves the endemic area.
- This drug should be preferred to niridazole (Ambilhar(R)). Niridazole is more expensive and less well tolerated.
- In an endemic area, antibilharzia treatment will only be effective if preventive measures exist to avoid continuous reinfection.
- Advice on sanitation should be given with the treatment.
- Storage: keep below 30°C

METRONIDAZOLE (Flagyl(R)), Metrolyl(R), Zadstat(R).)

Health clinic

Therapeutic action

- Anti-protozoal, antibacterial

Indications

- Amoebiasis, trichomoniasis, giardiasis (= lambliasis)
- Certain anaerobic infections (Bacteroides fragilis, Clostridium perfringens)

Preparation

- Tablet of 250 mg

There are also tablets of 200 mg. Adapt dosage accordingly.

Dosage

- Amoebic dysentery:

Child: 30 to 50 mg/kg/d divided in 3 doses
Adult: 1.5 g/d divided in 3 doses

- Giardiasis:

Child : 15 mg/kg/d divided in 3 doses
Adult: 750 mg/d divided in 3 doses

- Trichomoniasis :

Adult: 2 g in a single dose

- Metronidazole can be used as an antibiotic, under medical supervision, with the same dose used for amoebiasis treatment and combined with penicillin or ampicillin for 6 to 10 days.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Amoebic dysentery Tablet 250 mg		1/4 tab x 3	1/2 tab x 3	1 tab x 3		2 tab x 3
Giardiasis Tablet 250 mg			1/4 tab x 3	1/2 tab x 3		1 tab x 3
Trichomoniasis Tablet 250 mg						8 tab

FIGURE

Duration

- Amoebic dysentery: 7 days
- Giardiasis : 7 days; repeat treatment after one week
- Trichomoniasis : single dose

Contra-indications, side-effects, precautions

- May cause digestive problems.
- Do not drink alcohol during treatment.
- Pregnancy: a teratogenic effect is not proven, Metronidazole treatment is possible in pregnant woman and it is justified to treat amoebiasis with clinical signs. Nevertheless, try to avoid in the first trimester of pregnancy.

- Lactation: avoid (passes into the breast milk)

Remarks

- In case of trichomoniasis, the partner has to receive oral treatment as well.
- The metronidazole pessaries are not recommended for vaginal trichomoniasis. Treatment should be oral.
- The mere presence of amoeba cysts in the stools is not a sufficient reason to administer metronidazole.
- In mass-treatment of amoebiasis, single dose treatment can be used:

· child: 4 tab from 5 to 15 years; 2 tabs from 1 to 5 years; 1 tab from 1 month to 1 year
· adult: 8 tab (in case of vomiting, give in 2 doses/day)

- Storage: keep below 30°C

MULTIVITAMINS VITAMIN B COMPLEX

Health post

Therapeutic action

- Vitamin supplement

Indications

- Only a few indications: this drug has no effect in cases of real vitamin deficiency, but it will help prevent deficiency in people at risk (pregnant women, malnourished persons).

Preparation

- Tablet and syrup

Composition of tablets varies in quality and quantity, depending on the manufacturer.

Example of composition per tablet(1):

	Multivitamins	B complex	Daily needs - adult
Vitamin A	2.500 IU	/	2.500 IU
Vitamin B1	1 mg	2 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	1.5 to 20 mg
Vitamin C	15 mg	/	10 mg
Vitamin D3	300 IU	/	100 to 200 IU

(1) IDA catalogue, 1991

Dosage

- Child and adult: see table below

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet		1 tab	1 tab	2 tab	3 tab	
Syrup	1 tsp	1 tsp				

FIGURE

Duration: depending on situation

Contra-indications, side-effects, precautions

- Pregnancy: no contra-indicafion
- Lactation: no contra-indication

Remarks

- This drug has no impact on sexual activity.
- Multivitamins can 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.
- It is not included in the WHO Essential drug list.
- Storage: keep cool if posible.

NICLOSAMIDE (Tredemine(R), Yomesan(R).)

Health clinic

Therapeutic action

- Anthelminthic

Indications

- Tapeworms: Taenia saginata (beef), Taenia solium (pork), Hymenolepsis nana

Preparation

- Tablet of 500 mg

Dosage

- Taenia saginata and Taenia solium

· Child: 30 mg/kg in a single dose, on an empty stomach
· Adult: 2 g in a single dose, on an empty stomach

- Hymenolepsis nana

· Child: 30 mg/kg once daily for 5 days
· Adult: 2 g once daily the first day, then 1 g/d for 6 days

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 500 mg		1/2 tab	1 tab	2 tab	4 tab	

FIGURE

Duration

- Taenia saginata and Taenia solium: single dose
- Hymenolepsis nana : 7 days

Contra-indications, side-effects, precautions

- Frequent digestive problems (stomach pain).
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- The evening before, take a liquid meal. Take the drug in the morning before eating. CHEW THE TABLETS WELL. WAIT TWO HOURS BEFORE TAKING FOOD.
- In case of vomiting, the single dose treatment should be split into two doses, taken with an interval of one hour.
- Niclosamide kills the worm. You do not have to wait to see the worm complete in the stools because it is killed and partially digested.
- Advice on sanitation should be given with the treatment.
- Storage: no special temperature requirements.

NITROFURANTOIN (Furandantin(R), Urantoin(R).)

District hospital

Therapeutic action

- Antibacterial

Indications

- Infections without complications of the lower urinary tract (without fever or lumbar pain).

Do not confuse with gonorrhea (urethral discharge in the morning)

Preparation

- Tablets of 50 mg and 100 mg

Dosage

- Child (above one year): 5 mg/kg/d divided in 3 doses
- Adult: 300 mg/d divided in 3 doses

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

FIGURE

Duration: minimum 10 days

Contra-indications, side-effects, precautions

- Do not administer to children under 1 year.
- Do not administer in cases of renal failure.
- Dizziness can be a side-effect: stop treatment immediately and refer to a doctor.
- Do not drink alcohol during the treatment.
- Pregnancy: CONTRA-INDICATED at the end of the pregnancy
- Lactation :avoid

Remarks

- If possible, take with meals.
- Cotrimoxazole is generally more active in cases of urinary infections.
- Storage: no special temperature requirements.

NOSCAPINE

District hospital

Therapeutic action

- Antitussive

Indications

- Dry cough

Preparation

- Tablet of 15 mg
- Syrup of 15 mg/5 ml = 1 teaspoon

Dosage

- Child (above 30 months): 4 mg/kg/d divided in 3 doses
- Adult :45 to 90 mg/d divided in 3 doses
- Do not exceed indicated doses.

ACE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 15 mg			1 tab x 3	1 1/2 tab x 3	2 tab x 3	
Syrup 15 mg/5 ml			1 tsp x 3	1 1/2 tsp x3	2 tsp x 3	

FIGURE

Duration: maximum 5 days

Contra-indications, side-effects, precautions

- Do not administer in cases of productive cough (sputum).
- Avoid using in children under 30 months.
- May cause: headache, constipation.
- Pregnancy:avoid
- Lactation: avoid

Remarks

- Using traditional anti-cough plants in the form of an infusion or syrup is often recommended.
- Codeine is a similar product with the same indications, but taken in smaller doses.
- Storage: no special precautions.

NYSTATIN (Mycostatin(R), Nystan(R).)

District hospital

Therapeutic action

- Antifungal: candidiasis

Indications

- Digestive candidiasis
- Candidiasis of the mucosa of the mouth and vagina

Preparation

- Tablet of 100,000 IU; for oral and gynaecological use

There are also tablets of 500,000 IU. Adapt dosage accordingly.

Dosage

- Digestive candidiasis Child and adult :4 to 5 tab/d to be sucked
- Candidiasis of the mouth. Child and adult: 1 to 2 tab/d to be sucked or put in the mouth after being crushed
- Vaginal candidiasis. Adult: 1 to 2 tab/d (wet the tablet before introducing it into the vagina)

Duration

- Candidiasis of the mouth: 8 to 10 days
- Vaginal candidiasis : 10 to 20 days

Contra-indications, side-effects, precautions

- The drug is well tolerated.

- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Has no effect on other types of fungi.
- Oral candidiasis can also be treated with the application of gentian violet or mouth washes with a base of lemon juice or sodium bicarbonate.
- THE GYNAECOLOGICAL TABLETS CAN ALSO BE USED FOR TREATMENT OF ORAL CANDIDIASIS.
- The tablets of 500,000 IU are meant to be swallowed (candidiasis of the digestive tube), but they can be sucked in case of oral candidiasis.
- For vaginal candidiasis, administer orally at the same time as vaginal applications. Do not interrupt treatment during menstruation. Sexual activity is not a contra-indication.
- Storage: keep below 30°C.

ORAL REHYDRATION SALT = ORS (Oralit(R).)

Health post

Therapeutic action

- Provide salts and sugar

Indications

- Prevention and treatment of dehydration in case of diarrhoea and/or vomiting

Preparation

- Sachet of powder to be diluted in one litre of clean, cooled boiled water

Composition:

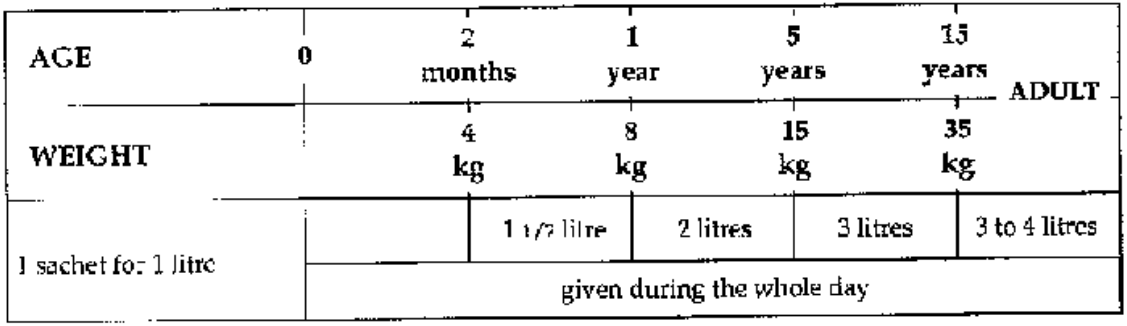
· sodium chloride (NaCl) 3.5 g
· potassium chloride (KCl) 1.5 g total = 27.9 g
· trisodium citrate 2.9 g
· glucose (dextrose) 20.0 g

Dosage

According to national protocol.

For information:

- Child : 1 to 2 sachets/d given during the whole day = 1 to 2 litres
- Adult: 3 to 4 sachets/d given during the whole day = 3 to 4 litres
- Do not exceed indicated doses.



FIGURE

Duration: as long as the diarrhoea and signs of dehydration continue

Contra-indications, side-effects, precautions

- If oedema develops, reduce the quantities.
- In case of vomiting, give the liquid frequently in very small amounts; do not stop the rehydration.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- If the child cannot swallow, use a (naso-) gastric tube if necessary.
- Signs of improvement: the patient begins to urinate again.

- When the patient improves, you can give ORS and clean water alternately.
- If no ORS is available, you can use a sugar and salt solution: 2 pinches of salt (3 g), 4 tablespoons of sugar (40 go), added to some fruit juice, diluted in one litre of clean, cooled boiled water.
- Storage: no special temperature requirements. Do not use the powder if it has turned into a yellow-brown sticky substance.

ONCE MADE UP, THE SOLUTION MUST BE USED THE SAME DAY.

OXAMNIQUINE (Mansil(R), Vansil(R).)

Special department

Therapeutic action

- Schistosomicide

Indications

- Intestinal bilharzia (Schistosomia mansoni)

Preparation

- Tablet of 250 mg

Dosage

- Child : 20 to 40 mg/kg in a single dose
- Adult: 1 g in a single dose

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

FIGURE

Duration: single dose

Contra-indications, side-effects, precautions

- Do not administer in cases of renal or heart failure, or epilepsy.
- May cause: nausea, some dizziness, drowsiness, headache.
- Colours the urine red.
- Pregnancy: avoid (in most cases, treatment can wait until the end of the pregnancy)
- Lactation: avoid

Remarks

- Take with evening meal to avoid side-effects.
- Treatment with praziquantel, which is just as effective and well tolerated, and 3 times as cheap (IDA 1991).
- This drug is less dangerous than niridazole (Ambilhar(R)).
- The impact of the antibilharziosis treatment will be negligible if there are no parallel preventive measures to avoid the recurrence of the disease in endemic areas.
- Advice on sanitation should be given with the treatment.
- Storage: no special precautions

PARACETAMOL=ACETAMINOPHEN (Doliprane(R), Panadol(R), Tylenol(R).)

Health post

Therapeutic action

- Analgesic
- Antipyretic

Indications

- Headache, toothache or joint pain
- Fever

Preparation

- Tablets of 100 mg and 500 mg

Dosage

- Child : 20 to 30 mg/kg/d divided in 3 doses
- Adult: 2 to 3 g/d divided in 3 doses

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

FIGURE

Maximum doses:	**Child: 50 mg/kg/d**
	Adult: 4 g/d

Duration

- Depending on clinical progress, 1 to 3 days.

- Do not continue treatment for an extended period without medical advice.

Contra-indications, side-effects, precautions

- Do not administer in cases of liver disease (hepatitis) or alcoholism.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Paracetamol is recommended for patients who are allergic to A.S.A. (aspirin), those with stomach problems and for children under one year.
- IT HAS NO ANTI-INFLAMMATORY PROPERTIES.
- Storage: keep below 30°C.

PHENOBARBITONE = PHENOBARBITAL (Gardenal(R), Luminal(R).)

District hospital

Therapeutic action

- Anticonvulsive, sedative and hypnotic

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE

UNDER MEDICAL SUPERVISION

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

Preparation

- Tablets of 30 mg, 50 mg and 100 mg

Dosage

According to national protocol.

For information:

- Child : 3 to 5 mg/kg/d once daily or divided in 2 to 3 doses
- Adult: 150 to 200 mg/d once daily or divided in 2 to 3 doses

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

FIGURE

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Do not administer in cases of respiratory depression or porphyria.
- Risk of drowsiness and depression of the central nervous system.
- Do not stop the treatment suddenly.
- Risk of sedation when combined with alcohol and other drugs that act on the central nervous system: diazepam (Valium(R), chlorpheniramine (Teldvin(R)) and chlorpromazine (Largactil(R)).
- Pregnancy:avoid
- Lactation: avoid

Remarks

- For convulsions, in cases of extreme agitation and in emergencies, it is better to use diazepam (Valium(R)).
- Plasma-concentrations are stable after 2 to 3 weeks. Beware of accumulation.
- If necessary, a treatment with phenytoin may be used with this treatment.
- Storage: no special precautions.

PHENOXYMETHYL PENICILLIN=PENICILLIN V (Crystapen V(R), Stabillin V-K(R), V-Cil-K(R).)

Health clinic

Therapeutic action

- Antibacterial (antibiotic)

Indications

- Tonsillitis
- Pneumopathy
- Dental abscess
- Extensive impetigo with or without general signs

Preparation

- Tablets of 125 mg (200,000 IU) and 250 mg (400,000 IU)
- Syrup of 125 mg/5 ml (200,000 IU/5 ml) = 1 teaspoon (1 tsp)

There are also other presentations and strengths. Adapt dosage accordingly.

Dosage

- Child: 150,000 IU/kg/d divided in 3 doses
- Adult: 1.5 to 3 MIU/d divided in 3 doses

4 doses/day are more effective, but to ensure that the treatment is likely to be followed correctly, we recommend 3 doses/day.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 125 mg	1 tab x 3	1 1/2 tab x 3	2 tab x 3	3 tab x 3		
Tablet 250 mg	1/2 tab x 3	3/4 tab x 3	1 tab x 3	1 1/2 tab x 3	2 tab x 3	
Syrup 125 mg/5 ml	1 tsp x 3	1 1/2 tsp x 3	2 tsp x 3			

FIGURE

Duration :5 to 8 days

Contra-indications, side-effects, precautions

- Do not administer in cases of known allergy to penicillin.
- If allergic reactions: stop treatment and refer to a doctor.
- Do not combine with other antibiotics.
- Pregnancy: no contra-indication

- Lactation: no contra-indication

Remarks

- Do not use orally in case of:

· meningitis or gonorrhoea (use injections of procaine penicillin or PPF);
· syphilis (use injections of benzathine penicillin).

- Storage: keep below 30°C.

Once prepared, the syrup must be kept cool and will only last for one week.

PHENYLBUTAZONE (Butazolidin(R).)

The use of this drug is not advised:

- it is potentially dangerous;
- it is not included in the WHO essential drug list;
- its marketing is forbidden in several countries.

Therapeutic action

- Non steroidal anti-inflammatory

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Ankylosing spondilitis, gout, resistant to other anti-inflammatory drugs

Preparation

- Tablet of 200 mg

Dosage

- Adult: 300 to 600 ma/d divided in 3 doses

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 200 mg						1/2 to 1 tab x 3

FIGURE

Duration: as short as possible, depending on clinical progress

Contra-indications, side-efects, precautions

- Do not administer in case of:

· peptic ulcer,
· liver failure,
· known allergy to phenylbutazone.

- Risk of severe sometimes fatal agranulocytosis.
- Should only be used as an analgesic if all other analgesics are ineffective.
- Do not combine with anticoagulants, digitalis, phenytoin or other anti-inflammatory drugs (including aspirin).
- Pregnancy: avoid
- Lactation: avoid

Remarks

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

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

District hospital

Therapeutic action

- Anticonvulsive

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Epilepsy, except absence seizure (petit mal)

Preparation

- Tablet of 100 mg

There are also tablets of 25 mg and 50 mg. Adapt the dosage accordingly.

Dosage

- Child : 3 to 8 mg/kg/d divided in 2 or 3 doses
- Adult: 2 to 6 mg/kg/d divided in 2 or 3 doses

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

FIGURE

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Do not administer in case of known allergy.
- Risk of digestive problems: gingival hypertrophy, nausea, vomiting.
- If prolonged usage, risk of haematologic problems. Monitor peripheric blood count if possible and administer folic acid.
- Risk of neurological problems: dizziness, visual problems, mental confusion.
- Allergic reactions: cutaneous eruptions, fever, adenopathy.
- Pregnancy: avoid
- Lactation: avoid

Remarks

- It is not advised to associate phenytoin with oral contraceptives, sulfamides, or chloramphenicol. Combination with other drugs must be closely monitored (diazepam, phenobarbital, barbiturates, digoxin, corticosteroids.).
- Storage: keep below 30°C.

Never use expired phenytoin (risk of under dosage).

PIPERAZINE (Antepar(R), Pripsen(R).)

District hospital

Therapeutic action

- Anthelminthic

Indications

- Ascariasis
- Enterobiasis (pinworm)

Preparation

- Tablets of 300 mg and 500 mg
- Syrup of 750 mg/5 ml = 1 teaspoon

Dosage (expressed in piperazine hydrate)

- Ascariasis : Child: 75 mg/kg, in a single dose Adult :3 to 4 g, in a single dose
- Enterobiasis: Child: 50 mg/kg/d for 5 days Adult: 3 to 4 g/d for 5 days
- 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	
Tablet 300 mg		2 tab	3 tab	6 tab	10 tab	
Tablet 500 mg		1 tab	2 tab	4 tab	6 tab	
Syrup 750 mg/5 ml		1/2 tsp	1 tsp	3 tsp	5 tsp	

FIGURE

Duration

- Ascariasis : single dose
- Enterobiasis: 1 course of 5 days

Contra-indications, side-effects, precautions

- Do not administer in case of epilepsy, renal or liver failure.
- Risk of overdose and neurological toxicity: dizziness, problems of vision and/or consciousness.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- This drug is still frequently used but considering its ineffectiveness on hookworm and its side-effects, it is often replaced by more broad-spectrum anthelmintic drugs (mebendazole), which are more effective for general deworming.
- 100 mg piperazine hydrate = 120 mg adipate = 125 mg citrata = 104 mg phosphate.
- Advice on sanitation should be given with the treatment.
- Storage: no special temperature requirements.

POTASSIUM Chloride

District hospital

Therapeutic action

- Potassium supplement

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Hypokalemia:

· following diuretic treatment with thiazides
· of other origin (dehydration.)

Preparation

- Tablet of 8 mmol (mEq) of K+ = 600 mg
- Tablet of 6.7 mmol (mEq) of K+ = 500 mg

WARNING, DOSES VARY DEPENDING ON SUPPLIER. Adapt dosage accordingly.

Dosage

- Adult: 7 to 15 mmol/d or 0.5 to 1 g/d
- Do not exceed indicated doses.
- Use slow release tablets.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 600 mg						1 to 2 tab

FIGURE

Duration: depending on clinical progress and duration of diuretic treatment

Contra-indications, side-effects, precautions

- May cause: nausea, vomiting.
- Risk of intestinal ulcers and heartburn, in particular when using quick dissolving tablets.
- Do not combine with spironolactone and other similar diuretics.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- If tablets are not available, a lack of potassium can 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(R).)

Special department

Therapeutic action

- Schistosomicide, also active on distomiasis

Indications

- Bilharziasis:

· S. haematobium (urinary bilharzia)
· S. mansoni and S. intercalatum (intestinal bilharzia)
· S. japonicum and S. mekongi (hepato-splenic bilharzia)

- Distomiasis: Opisturchis felinus, Clonorchis sinensis, Paragonimum westermani, Fasciola hepatica

Preparation

- Tablet of 600 mg

Dosage

- Bilharziasis S. haematobium, S. mansoni, S. intercalatum
Child and adult :40 mg/kg in a single dose
- Bilharziasis S. japonicum, S. mekongi
Child and adult :60 mg/kg divided in 3 doses in 1 day
- Distomiasis
Child and adult: 75 mg/kg/d divided in 3 doses

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
S. haematobium, mansoni intercalatum – tab 600 mg			1/2 to 1 tab	1 to 2 tab	4 tab	
S. japonicum, mekongi tablet 600 mg			1/2 to 1/3 tab x 3	1/2 to 1 tab x 3	2 tab x 3	
Distomiasis tablet 600 mg			1/2 tab x 3	3/4 tab x 3	1 1/4 tab x 3	

FIGURE

Duration

- Bilharziasis S. haematobium, S. mansoni, S. intercalatum: single dose
- Bilharziasis S. japonicum, S. mekongi :3 doses, 1 day
- Distomiasis: Opisturchis felinus, Clonorchis sinensis, Paragonimum westermani :2 to 3 days

Fasciola hepatica :5 to 7 days

Contra-indications, side-effects, precautions

- Risk of allergy.
- May cause: nausea, vomiting, headache.
- Pregnancy: avoid (in most cases, treatment can wait until the end of the pregnancy)
- Lactation :avoid

Remarks

- In an endemic area, antibilharzia treatment will only be effective if preventive measures exist to avoid continuous reinfection.
- Advice on sanitation should be given with the treatment.
- Storage:

PREDNISOLONE (Codelsol(R), Deltastab(R), Prednesol(R).) and PREDNISONE (Decortisyl(R), Econosone(R).)

District hospital

Therapeutic action

- Corticosteroid

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Symptomatic treatment:

· allergic diseases
· inflammatory diseases
· severe asthma

Preparation

- Tablet of 5 mg

Dosage

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

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Initial dose Tablet 5 mg			1/2 tab	1 tab	2 tab	
Maintenance dose Tablet 5 mg	Calculate the dose					

FIGURE

- In case of prolonged treatment, do not stop the treatment suddenly. Decrease the dose by 5 mg each day.

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Do not administer in cases of:

· peptic ulcer,
· fungal and/or viral infections (herpes), or bacterial infections not controlled by antibiotics.

- May cause: hypokalemia, osteoporosis if prolonged treatment.
- Risk of oedema and arterial hypertension as a result of sodium and water retention.
- Risk of adrenal suppression in case of prolonged treatment with daily doses of 15 to 20 mg.
- If daily administration of more than 20 mg, a salt-free diet and potassium supplement are recommended.
- If acute adrenal failure, prescribe hydrocortisone: 100 to 300 mg IV.
- Pregnancy: avoid in the first trimester
- Lactation :avoid

Remarks

- 5 mg prednisolone has the same anti-inflammatory activity as:

· 5 mg prednisone · 4 mg methyl prednisolone
· 0.75 mg dexamethasone · 20 mg hydrocortisone

- Storage: keep below 30°C.

PROBENECID (Benemid(R).)

Health clinic

Therapeutic action

- Prolongs the action of penicillin and ampicillin
- (Anti-gout)

Indications

- In combination with procaine penicillin (or possibly with ampicillin or amoxycillin) in the treatment of gonorrhoea. Can be combined with other penicillin preparations. BENZATHINE PENICILLIN CAN NOT BE USED WITH PROBENECID.

Preparation

- Tablet of 500 mg

Dosage

In conjunction with penicillin treatment:

- Child (above 2 years): 20 to 25 mg/kg/d
- Adult :1 g/d

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 500 mg		Do not give		1/2 tab	1 tab	2 tab

FIGURE

Duration: depending on the penicillin treatment

Contra-indications, side-effects, precautions

- Do not administer in children under 2 years.
- Do not combine with acetyl salicylic acid (aspirin).
- Pregnancy :avoid
- Lactation :avoid

Remarks

- The combination of probenecid and procaine penicillin is always indicated for the treatment of gonorrhoea, except in pregnant women.
- Tablets can be taken at the same time as the injection, or preferably, 1/2 hour before.
- Storage: keep below 30°C.

PROGUANIL (Paludrine(R).)

District hospital

Therapeutic action

- Antimalarial

Indications

- Prevention of malaria in association with chloroquine in countries with rare or moderate resistance to chloroquine.

Preparation

- Tablet of 100 mg

Dosage

Conform to national protocol.

For information:

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

FIGURE

Duration

- Travellers must start to take proguanil associated with chloroquine 24 hours before departure, continue throughout their journey and for 4 to 6 weeks after return.

Contra-indications, side-effects, precautions

- Transitory digestive problems.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Take tablets with some water, every day, at the same time, after the

meal.
- Storage: no special precaution.

PROMETHAZINE (Phenergan(R).)

District hospital

Therapeutic action

- Anti-emetic
- Antihistaminic
- Sedative

Indications

- Vomiting
- Allergic reactions due to:

· contact, seasons.
· drugs, insect bites, food.

- Dry cough of allergic origin

Preparation

- Tablets of 25 mg

Dosage

- Child: 1 mg/kg/d divided in 2 or 3 doses
- Adult: 25 to 50 mg/d divided in 2 or 3 doses

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

FIGURE

Duration: single dose or 1 to 3 days depending on clinical progress

Contra-indications, side-effects, precautions

- Do not drink alcohol during treatment.
- In case of drowsiness, administer in the evening.
- Risk of sedation when combined with alcohol and other drugs that act on the central nervous system: diazepam (Valium(R), phenobarbitone (Gardenal(R)), chlorpromazine (Largactil(R) and chlorpheniramine (Teldvin(R).
- Pregnancy: no contra-indication

- Lactation: no contra-indication

Remarks

- Chlorpheniramine is cheaper, but has no anti-emetic action.
- Storage: keep below 30°C.

PROPRANONOL (Angilol(R), Inderal(R).)

District hospital

Therapeutic action

Beta-blocker, used against hypertension, angina and arrhythmias

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Arterial hypertension
- Angina pectoris
- Arrhythmia diagnosed by a doctor (with ECG)

Preparation

- Tablets of 10 mg and 40 mg

Dosage

-Arterial hypertension
80 mg/d divided in 2 doses, to be increased progressively depending on clinical progress, maximum 320 mg/d
-Prophylaxis for angina pectoris
Initial dose: 30 to 60 mg/d divided in 3 doses, to be increased every 4 days up to a dose of 160 to 320 mg/d
-Prevention of arrhythmia after myocardial infarction
180 to 240 mg/d divided in 2 or 3 doses; start as of the 6th or 9th day after the infarction and continue for 18 months at a dose of 160 mg/d

Duration

- Depending on indication and clinical progress
- Do not stop abruptly.

Contra-indications, side-effects, precautions

-The drug should only be prescribed for patients who are following a prolonged treatment. The treatment should never be stopped suddenly.
- Do not administer in cases of:

· asthma,
· bradycardia below SO/min, bundle-branch block,

· heart failure (or a history of),
· arteritis of the lower limbs, Raynaud syndrome.

- Administer with care in cases of diabetes, digitalis treatment or emphysema, and in cases of renal or liver failure.
- Do not combine with aminophylline (reciprocal inhibition), digitalis (bradycardia), adrenaline (hypertension), curare, M.A.O. inhibitors.
- Pregnancy: no contra-indication
- Lactation :avoid

Remarks

- For the treatment of hypertension, may be combined with a diuretic.
- Storage: no special temperature requirements.

PYRANTEL (Combantrin(R).)

District hospital

Therapeutic action

- Anthelminthic

Indications

- Ascariasis
- Enterobiasis (pinworm)
- Hookworm (ankylostomiasis)

Preparation

- Tablet of 125 mg

There are also tablets of 250 mg. Adapt dosage accordingly.

Dosage

- Ascariasis, enterobiasis, hookworm caused by Ancylostoma duodenalis

Child and adult :10 mg/kg in a single dose

- Hookworm caused by Necator americanus

Child and adult :20 mg/kg/d once daily

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Ascariasis - Enterobiasis - Hookworm (*A. duodenalis*) tablet 125 mg			1 tab	2 tab	4 tab	
Hookworm (*Necator americanus*) tablet 125 mg			2 tab	3 to 4 tab	8 tab	

FIGURE

Duration

- Ascariasis, enterobiasis, hookworm caused by Ancylostoma duodenalis: single dose
- Hookworm caused by Necator americanus: 3 days

Contra-indications, side-effects, precautions

- Administer with care in case of liver failure.
- May cause: digestive problems, headache, dizziness.
- Pregnancy: avoid (in most cases, the treatment can wait until the end of the pregnancy)
- Lactation: no contra-indication

Remarks

- Generally more expensive than mebendazole and levamisole.
- Sanitation advice should be given with the treatment.
- Storage: no special temperature requirements.

PYRAZINAMIDE (Zinamide(R).)

Special department

Therapeutic action

- "Antituberculous" antibacterial

Indications

- Only for tuberculosis, bacteriologically proven if possible

Preparation

- Tablet of 500 mg

Dosage

According to national protocol.

For information

- Child and adult :25 mg/kg/d maximum
- Can also be given in a dose of 40 mg/kg 2 times a week or 70 mg/kg once a week

Duration: according to national protocol

Contra-indications, side-effects, precautions

- Do not administer in cases of:

· Iiver failure,
· history of allergy to ethionamide, isoniazid and nicotinamide.

- May cause: anorexia, nausea, vomiting, skin allergies, joint pains, gout.
- Pregnancy :avoid
- Lactation: avoid

Remarks

- Warning: antituberculous treatment should only be prescribed in the context of an organised program (well established protocol, regular patient checks and the possibility of laboratory examination).
- Pyrazinamide should not be used alone, but in combination with other

"antituberculous" drugs to avoid resistance.
- Storage: keep below 30°C.

PYRIDOXINE = Vitamin B6

District hospital

Therapeutic action

- Vitamin

Indications

- Prevention and treatment of peripheral neuropathies, particularly if isoniazid (INH) has been prescribed

Preparation

- Tablets of 25 mg and 50 mg

Dosage

- Child: 25 to 50 mg/d once daily
- Adult: 50 to 150 mg/d once daily

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 25 mg		1 tab	2 tab	2 tab	2 to 6 tab	
Tablet 50 mg		1/2 tab	1 tab	1 tab	1 to 3 tab	

FIGURE

Duration: depending on clinical progress or as long as the treatement with isoniazid (INH) continues

Contra-indications, side-effects, precautions

- No contra-indication.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Storage: no special temperature requirements

QUININE Salts

District hospital

Therapeutic action

- Antimalarial

Indications

- Treatment of Plasmodium falciparum malaria resistant to chloroquine
- Follow up of injectable quinine given for cerebral malaria or chloroquine resistance

Preparation

- Tablets of 200 mg and 300 mg of quinine salts (generally sulphates or chlorhydrates)

There are also tablets of 100 mg, 250 mg and 500 mg. Adapt dosage accordingly.

Dosage

- Child : 25 to 40 mg/kg/d divided in 3 doses
- Adult: 1.5 to 2 g/d divided in 3 doses

Dosages and doses of the tablets are generally expressed in salts. They are

all equal (formiate, sulphate, chlorhydrate, bi-chlorhydrate), except for bi-sulphate which is weaker and thus needs its own special dose.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 200 mg		1/4 tab x 3	1/2 tab x 3	1 tab x 3	3 tab x 3	
Tablet 300 mg			1/4 to 1/2 tab x 3	1/2 to 1 tab x 3	? tab x 3	

FIGURE

Duration: 7 days

Contra-indications, side-effects, precautions

- Risk of toxicity in case of doses over 4 g: headache, disturbance of vision, abdominal pain, nausea, buzzing (tinitus) of ears.
- Possible allergic reactions.
- Pregnancy: no contra-indication (do not exceed the therapeutic doses)
- Lactation: no contra-indication

Remarks

- In some regions of South-East Asia, the combination of quinine and tetracycline (25 mg/kg/d) or doxycycline (200 mg/d) for 10 days is necessary because of resistance.
- Antacids, like aluminium hydroxide, can slow down the absorption of quinine.
- Storage: keep below 30°C.

RESERPINE (Decaserpyl(R), Rauwiloid(R), Serpasil(R).)

District hospital

Therapeutic action

- Antihypertensive

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Moderate arterial hypertension (in combination with a diuretic)

Preparation

- Tablets of 0.10 mg, 0.25 mg and 0.50 mg

Dosage

- Adult: 0.10 to 0.25 mg/d to be combined with a diuretic and to be adapted according to therapeutic progress

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet 0.10 mg						1 to 2 tab
Tablet 0.25 mg						1/2 to 1 tab
Tablet 0.50 mg						1/4 to 1/2 tab

FIGURE

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Do not administer in cases of:

· depression or history of depression,
· peptic ulcer,
· heart and/or severe renal failure,
· epilepsy.

- May cause: nausea, vomiting, gastritis, depression, anxiety, bronchial spasms.
- It has a slow but long lasting action: risk of accumulation.
- Avoid combination with digitalis, quinidine and other anti-arrhythmic drugs, alcohol and suppressors of the central nervous system: diazepam (Valium(R), phenobarbitone (Gardenal(R)) and chlorpromazine (Largactil(R)).
- Pregnancy : avoid
- Lactation: avoid

Remarks

- Storage: keep below 30°C.

RETINOL = VITAMIN A (Ro-A-Vit(R)..)

Health clinic

Therapeutic action

- Vitamin

Indications

- Prevention of vitamin A deficiency

- Treatment of xerophthalmia: reduced night vision, desiccation (drying) and ulceration of the cornea, Bitot's spots.
- Treatment of children specifically vulnerable for vitamin A deficiency: measles, malnutrition, respiratory infections.

Preparation

- Capsules of 50,000 IU and 200,000 IU

There are also capsules of 25,000 IU. Adapt dosage accordingly.

Dosage

- Prevention: Adult and Child above 1 year: 200,000 IU in a single dose every 6 months.

Child under 1 year: 100,000 IU in a single dose every 6 months

- Treatment: Adult and Child above 1 year: 1st, 2nd and 8th day, 200,000 IU once daily.

Child under 1 year : 1st, 2nd and 8th day, 100,000 IU once daily

- Do not exceed indicated doses.

For children under 1 year: when capsules of 50,000 IU are not available,

pierce a capsule of 200,000 IU and give 3 drops.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Prevention						
Capsule 50,000 IU	2 cap	2 cap	4 cap	4 cap	4 cap	
Capsule 200,000 IU			1 cap	1 cap	1 cap	
Treatment						
Capsule 50,000 IU	2 cap	2 cap	4 cap	4 cap	4 cap	
Capsule 200,000 IU			1 cap	1 cap	1 cap	

FIGURE

Duration

- Prevention: single dose every 6 months
- Treatment: 1st, 2nd and 8th day; thereafter as for "prevention" if necessary

Contra-indications, side-effects, precautions

- Pregnancy: prevention: avoid, give a single dose just after delivery treatment: do not exceed a dose of 10,000 Odd (risk of fetal malformation)
- Lactation: no contra-indication

Remarks

- The injectable form has no advantages.
- Food rich in vitamin A: dark green vegetables, palm oil, orange or red coloured fruits and vegetables, eggs, full-cream milk and meat.
- Storage: keep cool.

RIFAMPICIN (Rifadin(R), Rimactane(R).)

Special department

Therapeutic action

- "Antituberculous" and "antileprotic" antibacterial

Indications

- Tuberculosis, bacteriologically proven if possible
- Leprosy (Hansen's disease)

Preparation

- Tablets or capsules of 150 mg and 300 mg

Dosage

According to national protocol.

For information:

- Tuberculosis: 10 mg/kg/d
- Leprosy : 600 mg once every month

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tuberculosis						
Tablet 150 mg		1/4 to 1/2 tab	1/2 to 1 tab	1 to 2 tab	3 to 4 tab	
Tablet 300 mg			1/4 to 1/2 tab	1/2 to 1 tab	1 to 2 tab	
Leprosy						
Tablet 150 mg					4 tab	
Tablet 300 mg					2 tab	

FIGURE

Duration: according to national protocol

Contra-indications, side-effects, precautions

- Do not administer if liver failure, porphyria or allergy for rifampicin.
- Risk of hepatotoxicity.
- May cause allergies.
- Urine, stools and secretions may turn red.
- Pregnancy: avoid
- Lactation: avoid

Remarks

- Warning: antituberculous and antileprotic treatments should only be prescribed in the context of an organised program (well established protocol, regular patient checks and the possibility of laboratory examination).
- Rifampicin should not be used alone, but in combination with other "antituberculous" or "antileprotic" drugs to avoid resistance.
- Rifampicin is an expensive antituberculous drug.
- Storage: no special temperature requirements

SALBUTAMOL = ALBUTEROL (Salbulin(R), Salbutan(R), Ventolin(R).)

District hospital

Therapeutic action

- Bronchodilator

- Uterorelaxant

Indications

- Acute or chronic asthma (with continuous dyspnea).
- Bronchitis and obstructive pneumopathies with bronchospasm.
- Prevention of premature delivery: taking over treatment after emergency injectable treatment.

Preparation

- Tablets of 2 mg and 4 mg of salbutamol (in the form of sulphate)
- Syrup of 2 mg/5 ml

Dosage

- Asthma

· Child: 0.10 mg/kg/d divided in 3 doses
· Adult: 6 to 12 mg/d divided in 3 doses

Prevention of premature delivery: 1 tab of 2 mg 4 times a day

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tablet of 2 mg				1/2 tab x 3	1 tab x 3	1 to 2 tab x 3
Tablet of 4 mg				1/4 tab x 3	1/2 tab x 3	1/2 to 1 tab x 3
Syrup of 2 mg/5 ml				1/2 tsp x 3	1 tsp x 3	

FIGURE

Duration: depending on clinical evolution

Contra-indications, side-effects, precautions

-Do not administer in cases of myocardial infarction or acute coronary insufficiency.
-Administer carefully if cardiac insufficiency, arrhythmia, hypertension, diabetes, hyperthyroidism.
-May cause: tachycardia, trembling, dizziness, headache.
-During the treatment, especially if the doses are taken too often, the bronchodilatory effect can decrease: stop treatment.
-Salbutamol is not very efficient for children less than 2 years.
-Pregnancy: no contra-indication

-Lactation: no contra-indication

Remarks

- Storage: keep below 30°C.

SULFADIMIDINE = SULPHADIMIDINE

District hospital

Therapeutic action

- Antibacterial (sulfonamide)

Indications

- Infections of the lower urinary tract without complications: without fever or lumbar pain.

Do not confuse with gonorrhoea (urethral discharge in the morning).

Preparation

- Tablet of 500 mg

Dosage

- Child (above 2 months): 100 to 250 mg/kg/d divided in 3 doses
- Adult: 2 to 6 g/d divided in 3 doses

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
First day Tablet 500 mg	Do not give	1 tab x 3	2 tab x 3	4 tab x 3	6 tab x 3	
Next days Tablet 500 mg		1/2 tab x 3	1 tab x 3	2 tab x 3	3 tab x 3	

FIGURE

Duration: minimum 7 days

Contra-indications, side-effects, precautions

- Do not administer:

· for children under 2 months,
· if known allergy to sulfonamides,
· if hematological disorder.

- Frequently causes digestive problems.

- Allergic reactions possible. Stop the treatment and refer to a doctor.
- DRINK A LOT during treatment to prevent kidney stones.
- Do not combine with other antibacterials.
- Pregnancy: CONTRA-INDICATED (use ampicillin if causative bacteria is sensitive)
- Lactation: CONTRA-INDICATED

Remarks

- For upper urinary tract infections and those with fever, cotrimoxazole is more effective.
- Sulfadimidine is nowadays usually replaced by cotrimoxazole.
- Storage: keep below 30°C.

SULFADOXINE + PYRIMETHAMINE (Fansidar(R).)

Special department

Therapeutic action

- Antimalarial

Indications

- Treatment of Plasmodium falciparum malaria resistant to chloroquine and

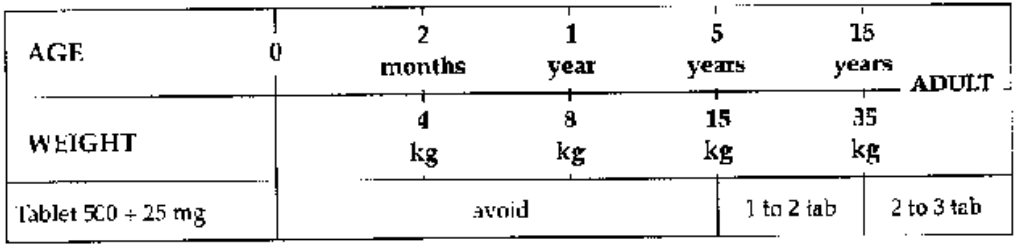
other amino-4-quinolines (Amodiaquine(R).)

Preparation

- Tablet of 500 mg sulfadoxine + 25 mg pyrimethamine

Dosage

- Child: i/2 tab/10 kg, in a single dose
- Adult: 2 to 3 tab, in a single dose



FIGURE

Duration: single dose

Contra-indications, side-effects, precautions

- Do not administer if:

· allergy to sulfonamides,
· renal or liver failure.

- Do not combine with chloroquine.
- Do not administer at the same time as cotrimoxazole.
- May cause: gastro-intestinal problems, nausea, vomiting, cutaneous allergic reactions.
- If the attack is pernicious, treat with quinine.
- Avoid for children under 5 years.
- Pregnancy: CONTRA-INDICATED
- Lactation :avoid

Remarks

- Sulfadoxine + pyrimethamine as prophylaxis has been abandoned because of frequent serious side-effects.
- Warning: there is an increasing number of resistant strains.
- Storage: no special temperature requirements.

SULFAGUANIDINE (Ganidan(R).)

The use of this drug is not advised:

- it has no proven effectiveness;
- it is not included in the WHO essential drug list;

- its purchase is an useless expense.

Therapeutic action

- Antibacterial (sulfonamide)

Indications

- None. It has no effect on the treatment of bacterial diarrhoea : the pathogens have become resistant

Preparation

- Tablet of 500 mg

Dosage

It used to be given as follows:

- Child (above 2 months): 100 mg/kg/d, divided in 4 doses
- Adult: 12 g/d divided in 4 doses

Contra-indications, side-effects, precautions

- Do not administer:

· to children under 2 months,
· if known allergy to sulfonamides.

- Allergic reactions possible. Stop treatment and refer to a doctor.
- Pregnancy: CONTRA-INDICATED
- Lactation: CONTRA-INDICATED

Remarks

- Storage: no special precautions.

TETRACYCLINE (Abfosan(R), Hexacycline(R), Tetramig(R).)

OXYTETRACYCLINE (Terramycine(R).)

DOXYCYCLINE (Doxy 100(R), Granudoxy(R), Spanor(R), Vibramycin(R).)

District hospital

Therapeutic action

- Antibacterials (of the cycline group)

Indications

- Cholera, brucellosis, borreliosis, rickettsiosis

- Gonorrhoea (if allergy or resistance to penicillin)
- Syphilis (if allergy or resistance to penicillin)
- Genital infections with Chlamydia
- Infections with Balantidium coli
- Atypical pneumopathy
- Chloroquine-resistant malaria, in association with quinine

Preparation

- Tetracycline: capsule or tablet of 25 mg
- Doxycycline: capsule or tablet of 100 mg

Dosage

- Tetracycline:

child above 8 years: 25 to 50 mg/kg/d divided in 3 doses
adult: 1 to 3 g/d divided in 3 doses

- Doxycycline:

child above 8 years :4 mg/kg/d once daily
adult: 200 mg/d once daily

- Cholera:

· tetracycline treatment 2 g/d divided in 4 doses for 3 days prophylaxis 1 to 1.5 g/d divided in 2 or 3 doses for 2 days to be repeated every 10 to 15 days
· doxycycline treatment and prophylaxis

child: 4 mg/kg in a single dose
adult: 300 mg in a single dose

Vibrio is increasingly resistant to cyclines.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Tetracycline tab 250 mg	Do not administer				1 tab x 3	2 to 3 tab x 3
Doxycycline tab 100 mg					1 tab	2 tab

FIGURE

Duration: 57days (tetracycline or doxycycline); Syphilis :14 days; Chlamydia: 21 days

Contra-indications, side-effects, precautions

- Do not administer:

· to children less than 8 years (colors teeth yellow)
· if renal diseases

- Do not give together with milk, iron or aluminium hydroxide.
- May cause: frequent digestive problems (diarrhoea.).
- Do not combine with other antibiotics.
- Pregnancy: CONTRA-INDICATED
- Lactation: CONTRA-INDlCATED

Remarks

- Take in-between meals.
- Treatments with doxycycline are cheaper and more efficient than those with tetracycline.
- Oxytetracycline has the same indications and doses as tetracycline.
- Storage: keep below 30°C.
Never administer expired tetracyclines or doxycycline

THIABENDAZOLE (Mintezol(R).)

District hospital

Therapeutic action

- Anthelminthic

Indications

- Strongyloidiasis
- Trichinosis
- Cutaneous larva migrans
- Hookworm (ankylostomiasis) and trichocephalosis: mebendazole preferred

Preparation

- Tablet of 500 mg

Dosage

- Strongyloidiasis Child and adult: 50 mg/kg in a single dose
- Trichinosis Child and adult: 50 mg/kg/d divided in 3 doses
- Cutaneous larva migrans Child and adult: 3 g in 30 g vaseline or antipruritic ointment, 3 applications per day during one week
- Chew tablets during the meal.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Strongyloidiasis Tablet 500 mg			1 tab	2 to 3 tab	6 tab	
Trichinosis Tablet 500 mg			1/2 tab x 3	1 tab x 3	2 tab x 3	

FIGURE

Duration

- Strongyloidiasis : single dose
- Trichinosis : 5 days
- Cutaneous larva migrans: 7 days

Contra-indications, side-effects, precautions

- Do not administer if allergy to thiabendazole, renal or liver failure.
- May cause: drowsiness, frequent dizziness, nausea, vomiting, diarrhoea.
- Allergic reaction can sometimes be very strong: Quincke oedema, Stevens Johnson syndrome.
- Pregnancy: avoid
- Lactation: avoid

Remarks

- Because of its limited indications, its price and side-effects, do not use for systematic elimination of parasites, but administer cheaper, broad-spectrum anthelminthic drugs.
- Storage: keep below 30°C.

THIAMINE = ANEURIN = VITAMIN B1 (Benerva(R), Bevitine(R).)

District hospital

Therapeutic action

- Vitamin

Indications

- Beri-beri: neurological or cardiac form
- Polyneuritis in alcoholics or due to nutritional deficiency

Preparation

- Tablet of 50 mg

There are also tablets of 10 mg, 25 mg, 100 mg and 250 mg. Adapt dosage accordingly.

Dosage

- Curative treatment

· Child: 10 to 30 mg/d
· Adult: 50 to 100 mg/d - up to 300 mg in case of severe deficiency to be taken once daily or divided in several doses

- Preventive treatment

· Child and adult :5 mg/d

Daily needs

child : 0.3 to 1 mg/d
adult and adolescent : 1.3 to 1.5 mg/d
pregnancy and lactation: 1.5 to 1.8 mg/d

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

FIGURE

Duration: at least one month for curative treatment

Contra-indications, side-effects, precautions

- No contra-indications, or side-effects with oral administration of vitamin B1.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- The use of injectable vitamin B1 is only justified in exceptional cases (for example in cases of cardiac insufficiency or acute pulmonary oedema caused by an unbalanced diet).
- Storage: closed, non-metallic container.

TOLBUTAMIDE (Artosin(R), Dolipol(R), Rastinon(R).)

District hospital

Therapeutic action

- Sulfamide hypoglycemic agent wich stimulates the secretion of pancreatic insulin

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

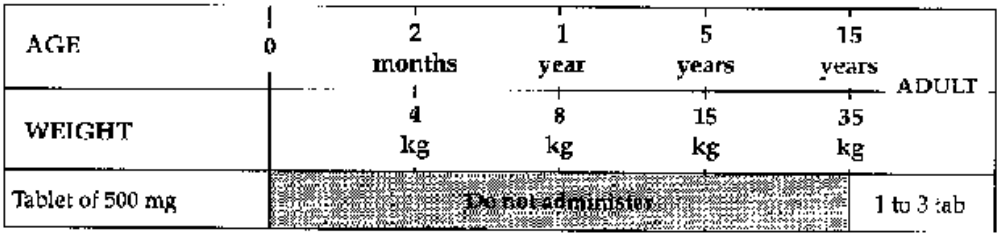
- Diabetes of the adult, non acidocetosic, of insulin independent type and not balanced by a well followed diet

Preparation

- Tablet of 500 mg

Dosage

- Adult: 0.25 to 1.5 g/d at once during breakfast or divided in 3 doses before meals
- Adapt dosage progressively and with great care to elderly people.



FIGURE

Duration: depending on clinical progress and results of laboratory

Contra-indications, side-effects, precautions

- Do not administer to diabetic children under 16 years.
- Do not administer to an insulin-dependant diabetic, or to a patient with renal or hepatic failure.
- Do not administer to an alcoholic: antabuse reaction.
- Hypoglycemic problems to be treated with intake of oral sugar or IV injection if severe.
- Use with many associations to other drugs not advisable: sulfadimidine, prednisone, aspirin.
- Pregnancy :avoid
- Lactation :avoid

Remarks

- Chlorpropamide (Diabinese(R)) is an oral long acting antidiabetic of the same group, used at doses of i/2 to 2 tab/d once daily. Risk of hypoglycemia is higher.
- Another hypoglycemic sulfamide is glibenclamide (Daonil(R)), tablet of 5 mg: 1/2 to 3 tab/d.
- Use if failure of proper diet, and control glycemia regularly.
- Usage of oral antidiabetics does not mean dietetic measures should be cancelled.
- Storage: keep below 30°C.

Injectable drugs

Acetyl salicylate lysine
Adrenaline
Albuterol
Aminophylline
Amoxicillin
Ampicillin
Aspirin
Atropine sulphate
Benzathine penicillin G
= Benzathine benzyl penicillin
Benzyl penicillin = Penicillin G
Butylscopolamine = Butylhyoscine
Chloramphenicol
Chloramphenicol in oil
Chloroquine
Chlorphenamine = Chlorpheniramine
Chlorpromazine
Cloxacillin
Dexamethasone
Dexchlorpheniramine
Diazepam
Digoxin

Dihydralazine
Dipyrone*
Epinephrine
Ergometrine
Furosemide = Frusemide
Gentamicin
Glucose or dextrose (hypertonic)
Hydralazine
Hydrocortisone
Hydroxocobalamin
Hyoscine butylbromide
Ketamine
Levorenine
Lignocaine = Lidocaine
Lignocaine hyperbaric
= Lidocaine hyperbaric
Metamizol*
Methylergometrine
Metoclopramide
Noramidopyrine*
Oxytocin
Pentazocine
Pentobarbital
Phenobarbitone = Phenobarbital

Phytomenadione
Procaine penicillin = Procaine benzyl penicillin
Procaine benzyl penicillin + Benzyl penicillin = PPF
Potassium chloride
Promethazine
Quinine (salts)
Theophylline
Salbutamol
Sodium bicarbonate
Sodium chloride (hypertonic)
Streptomycin
Sulfadoxine + pyrimethamine*
Thiopentone = Thiopental
Vitamin B12
Vitamin K1

*** The use of this drug is not advised.**

ACETYL SALICYLATE LYSINE - "ASPIRIN" (Aspegic(R).)

District hospital

Therapeutic action

Same as acetyl salicylic acid (aspirin):

- analgesic
- antipyretic
- anti-inflammatory

The action is fast, intense and prolonged (6 hours).

Indications

- Intense pain
- High fever

Preparation and route of drug administration

- Vial of 0.5 g of aspirin (0.1 g/ml, 5 ml) acetyl salicylate Iysine for deep IM injection, slow IV or infusion
- Vial of 1 g of aspirin (0.2 g/ml, 5 ml) acetyl salicylate Iysine for deep IM injection, slow IV or infusion

Dosage

- Children above 6 years: 10 to 25 mg/kg/d

· from 6 to 10 years

Vial of 0.5 g: 0.5 to 1 ml per injection, or 1/2 to 1 vial/d divided in 5

injections
· above 11 years
Vial of 0.5 g :1 to 2 ml per injection, or 1 to 2 vials/d divided in 5 injections

- Adult
0.5 to 1 g per injection, without giving more than 4 g/d divided in 4 injections (8 vials of 0.5 g or 4 vials of 1 g)

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Do not administer to children under 6 years.
- Do not administer if gastro-duodenal ulcer, haemorrhage or risk of haemorrhaging.
- Do not administer for the treatment of gout.
- Use with care for asthmatic patients.
- Can cause allergic reactions, haemorrhage.
- Pregnancy: avoid, especially at the end of pregnancy
- Lactation: avoid

Remarks

- Do not use 1 g vials for children.

- Do not mix other drugs in the same syringe.
- Do not use solutions that are not clear or which contain crystals.
- Storage: keep below 30°C.

ADRENALINE = EPINEPHRINE = LEVORENINE

District hospital

Therapeutic action

- Sympathomimetic

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Anaphylactic shock
- Asthma
- Cardio-respiratory arrest
- Hypotension caused by local or regional anaesthesia (spinal anaesthesia)

Preparation and route of drug administration

- Ampoule of 0.25 mg (0.25 mg/ml, 1 ml) for SC or slow diluted IV injection
- Ampoule of 1 mg (1 mg/ml, 1 ml) for SC or given in slowly diluted IV

injection

Dosage

- Child 0 to 1 year : SC: 0.10 mg/injection (IV diluted: same dose diluted in 20 ml)
- Child 1 to 5 years : SC: 0.25 mg/injection (IV diluted: same dose diluted in 20 ml)
- Child 5 to 15 years: SC: 0.50 mg/injection (IV diluted: same dose diluted in 20 ml)
- Adult : SC: 1 mg/injection (IV diluted: same dose diluted in 20 ml)
- Do not exceed indicated doses: risk of arrhythmia.
- Be careful when treating elderly patients: risk of heart failure.
- For IV injection, dilute with isotonic solution of sodium chloride or glucose.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Ampoule 0.25 mg/ml		0.5 ml	1 ml	2 ml	4 ml	
Ampoule 1 mg/ml		0.1 ml	0.25 ml	0.5 ml	1 ml	
	Repeat after 30 minutes if necessary. Maximum 3 injections.					

FIGURE

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Do not administer in cases of:

· arterial hypertension,
· angina.

- If used intravenously (reanimation), preferably use diluted.
- Pregnancy: CONTRA-INDICATED except in emergencies
- Lactation: no contra-indication

Remarks

- The adrenaline solution is colourless; discard any ampoules showing a pink or brown coloration.
- Storage: keep cool

AMINOPHYLLINE (Euphyllin(R).) and THEOPHYLLINE

District hospital

Therapeutic action

- Bronchodilator

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Asthma attacks
- Severe respiratory problems due to bronchopneumonia
- Apnoea in a premature infant

Preparation and route of drug administration

- Ampoule of 250 mg (25 mg/ml, 10 ml) for very slow IV injection (10 to 15 minutes) or infusion. NEVER GIVE IV QUICKLY. Better to use 10% dilutions (especially if rectal use).
- Administration by IM is possible but painful.
- Children can be treated rectally (dilution 1/10), but the absorption is irregular.
- Apnoea in a premature infant: can be used orally (dilution 1/10) as adjuvant in the treatment of apnoea. Dosage: 2.5 to 5 mg/kg initial dose, following doses 2 mg/kg/24 hours.

Dosage

- Child and adult :5 mg/kg/injection
- Reduce the dose in cases of heart failure and for elderly patients.

- Make sure the patient has not taken oral theophylline before-hand.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Ampoule 25 mg/ml				2 ml	5 ml	10 ml
			Repeat after 8 hours if necessary.			

FIGURE

Duration: depending on clinical progress, change to oral treatment as soon as possible

Contra-indications, side-effects, precautions

- Paediatrics:

· never combine with erythromycin,
· the therapeutic dose is near the toxic dose.

- Toxic in case of overdose:

· early signs: vomiting, hyperthermia,

· sign of intoxication: convulsions.

- Administer with care to children under one year.
- Avoid combination with erythromycin or phenobarbitone.
- Pregnancy: avoid, particularly at the end of the pregnancy
- Lactation: avoid

Remarks

- Administration of theophylline for the same indications and at the same dosage (5 mg/kg) in very slow IV injection. Attention, preparation in ampoule of 240 mg/4 ml: calculate exactly the volume to inject.
- Storage: keep cool.

AMOXICILLIN (Amoxil(R), Clamoxyl(R).) AMPICILLIN (Amfipen(R), Penbritin(R).)

District hospital

Therapeutic action

- Antibacterial (antibiotic) of the penicillin group

Indications

- Severe infections: septicemia, endocarditis, meningitis, pulmonary infections, burns
- First choice in the treatment of uro-genital infections in pregnant women

Preparation and route of drug administration

- Vials of powder of 500 mg or 1 g for IM, IV injection or infusion

Dosage

Amoxicillin and ampicillin have the same indications and doses when injected:

- Child: 50 to 100 mg/kg/d divided in 3 injections
- Adult: 3 to 4 g/d divided in 3 injections
- The 3 injections/day are necessary.
- In case of severe infections, the dose can be raised to:

Child: 200 mg/kg/d; Adult :12 g/d

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Vial 500 mg		1/4 to 1/2 vl x 3	1/2 to 1 vl x 3	1 to 2 vl x 3	2 to 3 vl x 3	
Vial 1 g			1/4 to 1/2 vl x 3	1/2 to 1 vl x 3	1 vl x 3	

FIGURE

Duration: 7 days of antibiotic therapy; change to oral treatment as soon as possible

Contra-indications, side-effects, precautions

- Do not administer if known allergy to penicillin.
- If allergic reaction, stop treatment and refer to a doctor.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Combination with aminoglycoside (e.g. gentamicin) is sometimes necessary (need medical advice).

- THE POWDER IN THE VIALS IS THE SAME FOR ALL METHODS OF ADMINISTRATION ALTHOUGH THEY MAY BE LABELEED DIFFERENTLY. Some solvents that come with the vials contain lidocaine for IM injections. Once mixed with its solvent, the solution can no longer be used for IV injection. If you use sterile water as solvent, both IM and IV injections are possible.
- Storage: keep cool

· Once dissolved, the liquid must be clear and should be used the same day.
· Diluted in a glucose infusion, ampicillin stays stable for 6 hours; in sodium chloride it stays stable for 12 hours. It is recommended that it be injected directly into the infusion tube.
· Amoxicillin is not as stable as ampicillin (can not be kept more than one hour in glucose solution) and is more expensive (for the same dosage).

ATROPINE Sulphate

District hospital

Therapeutic action

- Antispasmodic and parasympatholytic

Indications

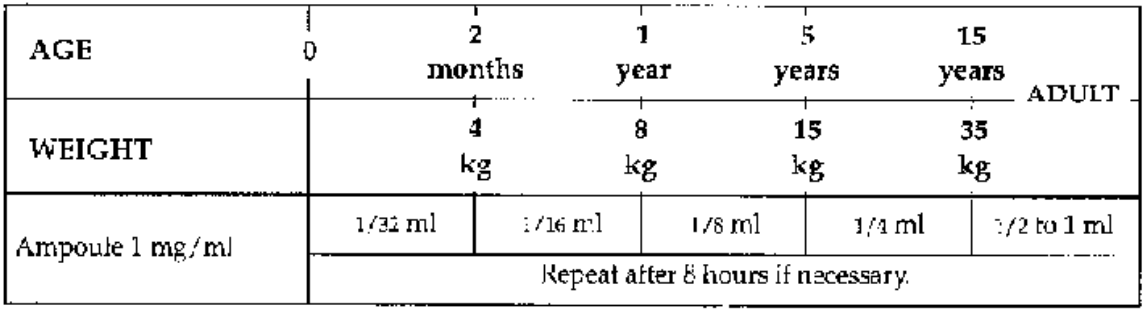
- Spasms of the digestive and uro-genital tract (colics, ulcers and severe gastritis)
- Premedication in case of anaesthesia
- Intoxication with organophosphate insecticide

Preparation and route of drug administration

- Ampoule of 1 mg (1 mg/ml, 1 ml) for SC, IV, IM injection or eventually for oral use

Dosage

- Child: 0.01 to 0.02 mg/injection or per os diluted
- Adult: 0.5 to 1 mg/injection or per os diluted
It is possible to repeat the injection if necessary.
- Intoxication with organophosphates: 2 to 4 mg/IV injection every 5 to 10 minutes until signs of effect of the atropine appear (dilation of pupils).



AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Ampoule 1 mg/ml	1/32 ml	1/16 ml	1/8 ml	1/4 ml	1/2 to 1 ml	
	Repeat after 8 hours if necessary.					

FIGURE

Duration: depending on clinical progress: single dose or 1 to 3 days

Contra-indications, side-effects, precautions

- Do not administer in cases of:

· urinary retention, cardiac problems, glaucoma,
· high fever in children: decreased transpiration, risk of hyperpyrexia, anoxia, convulsions, cardio-respiratory arrest.

- May cause: dry mouth, constipation, dizziness, headache.
- Do not combine with chlorpromazine or promethazine.
- Do not use for minor symptoms.
- Pregnancy: avoid, particularly at the end of the pregnancy; NO PROLONGED TREATMENTS

- Lactation: avoid; NO PROLONGED TREATMENTS

Remarks

- Do not use for convenience.
- Storage: no special temperature requirements.

BENZATHINE PENICILLIN G = BENZATHINE BENZYL PENICILLIN (Penidural(R).)

District hospital

Therapeutic action

- Antibacterial (antibiotic) with prolonged action: 15 to 20 days

Indications

- Syphilis
- Bejel, Yaws
- Prevention of rheumatoid arthritis (RA)

Preparation and route of drug administration

- Vial of powder of 2.4 M IU = 1.44 g only for IM injection (NEVER IV or infusion)

There are also vials of 1.2 M IU = 0.72 g and 0.6 M IU = 0.36 g. Adapt dosage accordingly.

Dosage

- Child: 50,000 to 100,000 IU/kg/injection
- Adult: 1 to 3 M IU/injection

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Béjel, Yaws Vial 2,4 M IU			1/4 vl	1/2 vl		1/2 vl
Prevention of R.A. Vial 2,4 M IU			1/4 vl	1/4 vl		1/2 vl
Primary syphilis Vial 2,4 M IU						1 vl
Secondary syphilis Vial 2,4 M IU						2 vl

FIGURE

Duration: depending on indications:

- Bejel, Yaws: single dose

- Prevention of rheumatoid arthritis: every 4 weeks
- Syphilis (primary and secondary): repeat after 15 days

Contra-indications, side-effects, precautions

- Do not administer if known allergy to penicillin.
- If allergic reaction, stop treatment and refer to a doctor.
- Do not combine with other antibiotics.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- After injection, benzathine penicillin releases the penicillin G very slowly from its complex which provides the long action of 15 to 20 days. This form of penicillin is not suitable for urgent cases (blood level too low), nor for gonorrhoea.
- Benzathine penicillin should not be used as prevention, except in case of RA.
- Storage: keep below 30°C.

Afler preparation, the suspension must be used within 24 hours.

BENZYL PENICILLIN = PENICILLIN G = CRYSTALLINE PENICILLIN (Crystapen(R)...)

District hospital

Therapeutic action

- Antibacterial (antibiotic) with rapid action and elimination (6 hours)

Indications

- Infections sensitive to penicillin: pneumonia, tonsillitis, anthrax, septicemia, meningitis.

Preparation and route of drug administration

- Vials of powder of 1 M IU and 5 M IU for IM, infusion, IV injection (preferably in the infusion tube)

This presentation is rarely used because it requires intensive monitoring in a hospital environment: INJECTION EVERY 6 HOURS THROUGH AN INFUSION TUBE.

Dosage

- Child: 80,000 IU/kg/d divided in 4 injections or infusions (maximum 400,000 IU/kg/d)
- Adult: 1 to 3 M IU/d divided in 4 injections or infusions (maximum 10 to

20 M IU/d)

Duration: depending on indications and clinical progress

Contra-indications, side-effects, precautions

- Do not administer in case of known allergy to penicillin.
- If allergic reaction, stop treatment and refer to a doctor.
- Do not mix in the same infusion with other antibacterials (gentamicin.).
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- 600 mg benzylpenicillin = 1 million international units (M IU) = 1 mega unit.
- Warning: the labels are not always very clear. Do not confuse penicillin G with LONG ACTING PENICILLIN CONTAINING PENICILLIN G: procaine penicillin G or benzathine penicillin G. Long acting penicillin CANNOT BE USED FOR IV INJECTION OR INFUSION.
- Storage: keep below 30°C.

After preparation, the solution must be clear and used within 24 hours.

CHLORAMPHENICOL (Chloromycetin(R), Tifomycine(R).)

District hospital

Therapeutic action

- Antibacterial (antibiotic)

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST ME UNDER MEDICAL SUPERVISION

- Typhoid fever
- Meningitis
- Bronchopneumonia
when oral administration is not possible

Preparation and route of drug administration

- Vial of powder of 1 g of chloramphenicol (as sodium succinate) for IM or IV injection

Dosage

- Child : 50 to 100 mg/kg/d divided in 3 injections
- Adult: 1 to 4 g/d divided in 3 injections
- For any indication except typhoid fever, do not exceed a total dose of 26 g for adult.

- Typhoid fever: conform to national protocol; if not available, start the first day with half the dose and increase gradually.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Vial 1 g	Do not give	1/10 vl x 3	1/5 vl x 3	1/3 vl x 3	1 vl x 3	

FIGURE

Duration

- Minimum 5 days, change to oral treatment as soon as possible.
- Typhoid fever: continue antibiotic therapy for 15 days after the fever has gone.

Contra-indications, side-effects, precautions

- If treatment causes anaemia, stop treatment and refer to a doctor.
- Do not combine with other antibiotics without medical advice.
- For newborn babies: CONTRA-INDICATED.
- Pregnancy: CONTRA-INDICATED
- Lactation: CONTRA-INDICATED during the first two months

Remarks

- In spite of its severe but rare haematological toxicity, the use of chloramphenicol is justified because of its effectiveness on the serious infections mentioned above. This drug has also the advantage of being cheap.
- ORAL TREATMENT IS MORE EFFECTIVE THAN IM INJECTION (the blood- and tissue concentrations are better with oral absorption).
- Storage: keep below 30°C.
Once dissolved, the solution must be clear and used within 24 hours.

CHLORAMPHENICOL IN OIL ("long acting") (Tifomycine(R).)

Special department

Therapeutic action

- Antibacterial (antibiotic) with prolonged action (a few weeks)

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Epidemics of purulent mningococcal meningitis

Preparation and route of drug administration

- Ampoule of oily suspension of 500 mg (250 mg/ml, 2 ml) for IM injection only, NEVER IV

Dosage

- Child: 50 to 100 mg/kg/injection
- Adult: 2 to 3 g/injection
- A second injection can be given 3 days later if necessary (same dose).

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Ampoule 250 mg/ml	1 ml	2 ml	4 to 6 ml	8 to 10 ml	8 to 12 ml	
	To be divided between both buttocks.					

FIGURE

Duration: single dose

Contra-indications, side-effects, precautions

- Do not combine with other antibiotics.
- Pregnancy: CONTRA-INDICATED
- Lactation: CONTRA-INDICATED

Remarks

- "A single dose injection of chloramphenicol in oil has been proven effective in the treatment of patients of all ages. This antibiotic is therefore the recommended treatment in case of epidemics, however it is not suitable for the treatment of patients with Streptococcus pneumoniae or Haemophilus influenzae" (WHO - epidemiological record, n°16-20, April 1990).
- No chemoprophylaxis is recommended. It is necessary, for suspected cases, to be examined at the first sign of the disease.
- Storage: keep belozv 30°C.

CHLOROQUINE (Nivaquine(R), Resochin(R).)

District hospital

Therapeutic action

- Antimalarial

Indications

- Severe malaria: outside chloroquine resistant areas, if oral treatment is not possible.

Attention: if malaria must be treated by injection, use quinine, if available, in preference.

Preparation and route of drug administration

- Ampoules of 80 mg base, 100 mg base, 200 mg base and 300 mg base (40 mg base/ml and 50 mg base/ml) for IM, SC injection, slow infusion

Dosage

- THE THERAPEUTIC DOSES ARE LOWER IF INJECTED THAN IF TAKEN ORALLY.
- THE MAXIMUM DOSE is 25 mg (base)/kg/d, whatever the way of injection.

· IM or SC
3.5 mg (base)/kg/6 hours up to a total dose of 25 mg (base)/kg
· Infusion
5 mg (base)/kg/8 hours up to a total dose of 25 mg (base)/kg; monitor that the infusion proceeds very slowly
In case of cerebral malarial, the initial dose can be 10 mg (base)/kg, up to a total dose of 25 mg (base)/kg.

Duration

- Maximum 1 to 3 days. Do NOT GIVE THE COMPLETE TREATMENT BY CHLOROQUINE INJECTIONS.

AS SOON AS POSSIBLE, CHANGE TO ORAL TREATMENT 24 HOURS AFTER THE LAST INJECTION, give the oral dose as recommended for the second day of the treatment. If necessary, use a gastric tube.

Contra-indications, side-effects, precautions

- Do not use IM for children under 5 years. IN CASE OF VITAL NEED, USE SC (absorption is slower).
- The therapeutic dose is near the toxic dose: check that the patient has not taken chloroquine tablets in the preceding days. If oral treatment, taken correctly, fails, use quinine.
- Risk of cardiac toxicity and hypotension: sudden death.
- Sign of toxicity: convulsions.
- Do not combine injectable chloroquine and injectable quinine.
- Follow strict aseptic procedures because abscesses frequently develop after injections.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Storage: no special temperature requirements

CHLORPHENAMINE = CHLORPHENIRAMINE (Piriton(R), Teldvin(R).)

District hospital

Therapeutic action

- Antihistaminic

Indications

- Severe allergic reactions due to:

· contact, seasons.
· drugs, insect bites, food.

Preparation and route of drug administration

- Ampoule of 10 mg (10 mg/ml, 1 ml) for IM, slow IV or SC injection

Dosage

- Child (above 2 years): 1 mg/kg/injection
- Adult: 25 to 50 mg/injection

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Ampoule 10 mg/ml	Do not give			1 to 1.5 ml	1.5 to 3 ml	2 to 5 ml

FIGURE

Duration: depending on indications and clinical progress; change to oral treatment as soon as possible

Contra-indications, side-effects, precautions

- Risk of drowsiness.
- Do not administer to children under 2 years.
- Risk of sedation when combined with alcohol and other drugs that act on the central nervous system: diazepam (Valium(R)), phenobarbitone (Gardena(R)) and chlorpromazine (Largactil(R).
- Pregnancy:avoid
- Lactation :avoid

Remarks

- Chlorpheniramine has not anti-emetic properties.

- Promethazine has stronger sedative effects.
- 5 mg dexchlorpheniramine (Polaramine(R)) has the same effect as 10 mg chlorpheniramine.
- Storage: keep below 30°C.

CHLORPROMAZINE (Largactil(R).)

District hospital

Therapeutic action

- Sedative and anti-emetic neuroleptic
- Major tranquillizer

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Severe state of agitation
- Very severe vomiting, intractable hiccup

Preparation and route of drug administration

- Ampoule of 50 mg (25 mg/ml, 2 ml) for deep IM injection or infusion

Dosage

Varies from one patient to another:

- Child: 0.5 mg/kg/injection
- Adult: 25 to 100 mg/injection

In cases of eclampsia, the dose can be doubled if necessary.

- 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	
Ampoule 25 mg/ml				0.2 ml	0.5 ml	2 to 4 ml
	Repeat 4 hours after the first injection, then every 8 hours if necessary.					

FIGURE

Duration

- Depending on indications and clinical progress, several days of treatment are sometimes needed for very agitated patients.

Contra-indications, side-effects, precautions

- If temperature rises after the injection, stop treatment. It may be a sign

of the neuroleptic malignant syndrome.
- Risk of extrapyramidal disorder in case of prolonged treatment.
- Risk of orthostatic hypotension.
- Risk of sedation when combined with alcohol and other drugs that act on the central nervous system: diazepam (Valium(R), phenobarbitone (Gardenal(R)) and chlorpheniramine (Teldvin(R)).
- Pregnancy: avoid prolonged use
- Lactation :avoid

Remarks

- Can be used in case of an eclamptic attack. However, the use of diazepam (Valium(R)) is preferable.
- For intractable hiccup, use a gastric aspiration tube as well.
- Storage: keep below 30°C.

CLOXACILLIN (Orbenin(R).)

District hospital

Therapeutic action

- Antibacterial (antibiotic) of the penicillin group, acting particularly on penicillinaseproducing staphylococci

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Staphylococcal infections resistant to other antibiotics: chronic osteomyelitis, pulmonary staphylococcal infections of the new-born.

Preparation and route of drug administration

- Vials of powder of 250 mg and 500 mg for IM or IV injection

Dosage

- Child: 100 mg/kg/d divided in 3 or 4 injections
- Adult: 1 to 2 g/d divided in 3 or 4 injections
- If severe infections, the dose can be doubled: maximum 6 g/d.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Vial 250 mg		1/3 vl x 3	1/2 vl x 3	1 to 2 vl x 3		2 vl x 3
Vial 500 mg			1/4 vl x 3	1/2 to 1 vl x 3		1 vl x 3

FIGURE

Duration

- Minimum 7 days of antibiotic therapy.
- Pulmonary staphylococcal infections of the new-born: 10 days.
- Change to oral treatment as soon as possible.

Contra-indications, side-effects, precautions

- Do not administer if known allergy to penicillin.
- If allergic reaction, stop treatment and refer to a doctor.
- Pregnancy: no contra-indication
- Lactation:nocontra-indication

Remarks

- A little enters the cerebro-spinal fluid.
- Storage: keep coal.

After preparation, the solution should be clear and must be used within 24 hours.

DEXAMETHASONE phosphate (Decadron(R), Oradexon(R).)

District hospital

Therapeutic action

- Hormone glucocorticoid

Indications

- Anaphylactic shock
- Status asthmaticus
- Acute laryngitis with signs of respiratory distress
- Severe allergies: Quincke's oedema

Preparation and route of drug administration

- Ampoule of 4 mg dexamethasone phosphate (4 mg/ml, 1 ml) for deep IM, IV injection or infusion

Sometimes, the dose is expressed in dexamethasone sodium phosphate: 4 mg dexamethasone phosphate = 5 mg dexamethasone sodium phosphate.

Dosage

- Child and adult: 0.5 to 10 mg/d depending on indication and severity

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Ampoule 4 mg/ml	1/4 to 1/2 ml	1/4 to 1/2 ml	1/4 to 1/2 ml	1/2 to 2 ml	1/2 to 2 ml	
	Repeat every 8 to 12 hours if necessary.					

FIGURE

Duration: Depending on clinical progress; for the treatment of shock, a single injection can be sufficient

Contra-indications, side-effects, precautions

- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- If prolonged treatment, reduce the doses gradually, otherwise adrenal failure may develop.
- 5 mg prednisolone has the same anti-inflammatory activity as:

· 5 mg prednisone
· 4 mg methyl prednisolone

· 0.75 mg dexamethasone
· 20 mg hydrocortisone

- Dexamethasone acetate (Dectancyl(R) is a suspension only used for local treatments: intra- or peri-articular injection, peridural.
- Storage: keep cool if possible.

DIAZEPAM (Tensium(R), Valium(R)

District hospital

Therapeutic action

- Anxiolytic, sedative
- Anticonvulsive
- Muscle relaxant

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Agitation
- Premedication in anaesthesia
- Convulsions, eclampsia
- Tetanus

Preparation and route of drug administration

- Ampoule of 10 mg (5 mg/ml, 2 ml) for IM, slow IV injection or rectal administration
- The injectable solution can also be used orally.

Dosage

- Agitation - Premedication child :0.3 mg/kg/injection adult :10 to 20 mg/injection
- Convulsions child :0.5 mg/kg/injection adult :25 mg or + /injection
- Tetanus child :0.3 to 1 mg/kg/iniection adult :50 to 100 mg/injection
- For elderly patients, halve the dose.
- Newborn and child, rectal administration: 0.5 mg/kg, repeat if necessary.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Agitation – Premedication Ampoule 5 mg/ml	0.1 ml	0.3 ml	0.6 ml	1.5 ml	4 ml	
Convulsions Ampoule 5 mg/ml	0.2 ml	0.6 ml	1.2 ml	2.5 ml	6 ml	
Tetanus Ampoule 5 mg/ml	Calculate the dose					

FIGURE

Duration

- Depending on clinical progress: 1 to 2 days.
- In case of tetanus or convulsions: repeat every 6 hours.
- If convulsions do not stop after the first injection, the same dose can be repeated 10 minutes later.

Contra-indications, side-effects, precautions

- Do not administer if respiratory depression.
- Risk of respiratory depression if injected IV too quickly.
- IV, IM: painful injection; rectal or oral administration are preferred.
- If administered IV or rectally: dilute 1 to 5 = 10 mg in 10 ml.
- Signs of intoxication (5 times the therapeutic dose): hypothermic coma.
- Risk of sedation when combined with alcohol and other drugs that act on the central nervous system: chlorpromazine (Largactil(R), phenobarbitone (Gardenal(R)) and chlorpheniramine (Teldvin(R)).
- When used intravenously, make sure that respiratory equipment is available.
- Pregnancy: avoid, except if vital risk
- Lactation: avoid

Remarks

- Treat also hyperthermia which often causes convulsions.
- The diluted solution is normally cloudy.
- Storage: no special temperature requirements

DIGOXIN (Lanoxin(R)..)

District hospital

Therapeutic action

- Cardiotonic (supports the cardiac contraction, slows down and regulates the cardiac rhythm)

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Heart failure, sinus arrhythmia (fibrillation, flutter, paroxysmal tachycardia)
DIAGNOSED BY A DOCTOR

Preparation and route of drug administration

- Ampoule of 0.50 mg (0.25 mg/ml, 2 ml) for IM or slow IV injection

Dosage

- Child

· Initial dose : 0.010 mg/kg (= 10 mcg/kg), repeat 3 to 4 times/24 hours if necessary
· Maintenance dose: 0.010 mg/kg/d once daily

- Adult

· Initial dose : 0.25 to 0.5 mg/d, repeat 3 to 4 times/24 hours if necessary
· Maintenance dose: 0.25 mg/kg/d once daily

Duration: depending on clinical progress; change to oral treatment as soon as possible

Contra-indications, side-effects, precautions

- Do not administer if:

· bradycardia,
· ill defined heart rhythm disorders.

- The pulse must be monitored closely at the beginning of the treatment.
- The therapeutic dose is near the toxic dose.
- Signs of overdose: nausea, vision problems, disorientation or confusion, rhythm problems, problems of atrio-ventricular conduction. If so, decrease

dose or stop the treatment. Nausea or vomiting are early signs of overdose.
- Higher risk of toxicity in case of hypokalemia (especially in combination with a diuretic treatment) and in case of calcemia (do not inject calcium at the same time).
- Administer with care in cases of renal failure.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Storage: no special temperature requirements.

ERGOMETRINE and METHYLERGOMETRINE (Methergin(R).)

District hospital

Therapeutic action

- Uterotonic

Indications

- Treatment of post-partum and post-abortion haemorrhage

Preparation and route of drug administration

- Ampoule of 0.2 mg/ml, 1 ml of methylergometrine maleate
- Ampoule of 0.5 mg/ml, 1 ml of ergometrine maleate for IM, slow IV or intramural injection (injection in the uterus)

Dosage

- 0.2 mg/injection, to be repeated if necessary every 2 to 4 hours depending on urgency (0.2 mg = 1 ml of methylergometrine = 0.4 mg of ergometrine)
If bleeding persists after 3 injections, refer to a doctor.
- Do not exceed a total of 5 doses.

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Before administration, be sure that the expulsion of the placenta is complete.
- Do not administer during delivery.
- Do not administer in cases of severe hypertension, pre-eclampsia.
- Pregnancy: CONTRA-INDICATED
- Lactation :avoid

Remarks

- Before using this drug, be sure there is no multiple pregnancy. Do not use before the birth of the last child.
- Do not confuse with ergotamine, a related drug, used for totally different indications.
- Storage: refridgerated

· Do not freeze.
· The colour of the solution is normally white to pink; if it becomes yellow/green, the solution has deteriorated.
· Methylergometrine is as sensitive to heat as ergometrine.

FUROSEMIDE = FRUSEMIDE (Lasix(R).)

District hospital

Therapeutic action

- Diuretic

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

Emergency treatment of:

- Oedema caused by renal, heart or liver failure
- Hypertensive crisis

Preparation and route of drug administration

- Ampoule of 20 mg (10 mg/ml, 2 ml) for IM or slow IV injection

Dosage

- Child: 0.5 to 1 mg/kg/injection
- Adult: 20 to 40 mg/injection
- In cases of acute pulmonary oedema, up to 250 mg can be given.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Ampoule 10 mg/ml	0.2 ml	0.3 ml	0.75 ml	1.5 ml	4 ml	
	Repeat if necessary.					

FIGURE

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Do not administer in cases of oedema caused by kwashiorkor.
- Risk of hypokalemia (increased toxicity of digoxin if administered simultaneously).
- Pregnancy:avoid
- Lactation: no contra-indication

Remarks

- In case of prolonged treatment, change to oral treatment as soon as possible, after the injectable emergency treatment.
- Storage: keep below 30°C.

GENTAMICIN (Cidomycin(R), Garamycin(R), Gentallin(R).)

District hospital

Therapeutic action

- Antibacterial (antibiotic)

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Severe infections caused by bacteria resistant to other antibacterials (gram negative, pyocyanic): septicemia, osteomyelitis.

- Severe upper urinary tract infections: pyelonephritis.

Preparation and route of drug administration

- Ampoule of 10 mg (10 mg/ml, 1 ml) for IM or slow IV injection or infusion
- Ampoule of 40 mg (20 mg/ml, 2 ml) for IM or slow IV injection or infusion
- Ampoule of 80 mg (40 mg/ml, 2 ml) for IM or slow IV injection or infusion
- Ampoule of 160 mg (80 mg/ml, 2 ml) for IM or slow IV injection or infusion

Dosage

- Child and adult: 3 to 6 mg/kg/d divided in 2 or 3 injections

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Ampoule 10 mg/ml	1 ml x 2	1.5 ml x 2	3 ml x 2			
Ampoule 40 mg/ml			0.75 ml x 2	1.5 ml x 2	3 ml x 2	
Ampoule 80 mg/ml			0.4 ml x 2	0.5 ml x 2	1.5 ml x 2	

FIGURE

Duration: depending on indications and clinical progress: 7 days minimum
Limit the duration of the treatment because of the risk of toxicitv.

Contra-indications, side-effects, precautions

- Do not administer if:

· renal failure,
· hearing and vestibular problems (dizziness),
· allergy to gentamicin.

- Risk of renal, cochlear and vestibular toxicity.
- Potentiates the action of muscle relaxants and certain general anaesthetics: risk of respiratory paralysis.
- Do not use with potent diuretics (furosemide).
- Gentamicin can be used in combination with a penicillin (benzyl penicillin or ampicillin), but only on medical advice.
- Gentamicin must not be mixed with other products in the same syringe or infusion, specially with penicillin.
- Pregnancy: avoid
- Lactation :avoid

Remarks

- This drug has no effect on gonorrhea and syphilis.
- Does not enter the cerebrospinal fluid (cannot be used in the treatment of meningitis).
- Storage: keep below 30°C.

When using plastic syringes, inject immediately after preparation. The solution must be clear.

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

District hospital

Therapeutic action

- Antihypertensive with vasodilatory action

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

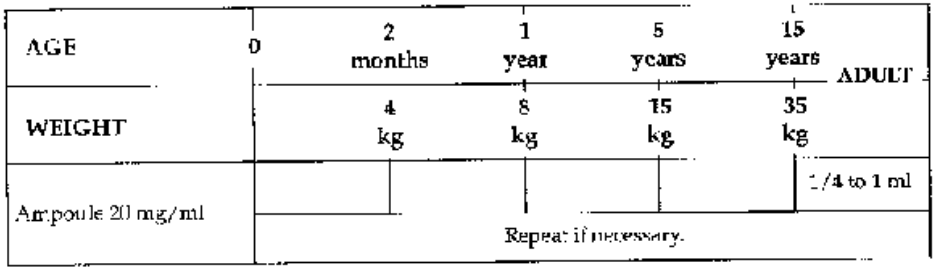
- Hypertensive crisis and especially eclampsia and pre-eclampsia

Preparation and route of drug administration

- Ampoule of 20 mg (20 mg/ml, 1 ml and 10 mg/ml, 2 ml) of powder for IM or slow IV injection or infusion

Dosage

- Adult: 5 to 20 mg/injection depending on clinical situation; this dose can be repeated after 20 to 30 minutes.
- Infusion: dilute 4 ampoules in 500 ml sodium chloride 0.9%; increase infusion rate progressively up to 30 drops/minute; do not dilute in glucose solutions which inactivates hydralazine.
- Do not exceed indicated doses.
- In case of overdose (uncontrolled hypotension), use a plasma substitute, preferably a polygeline fluid (Haemacel(R)).
- If the hypertension is under control, reduce the doses progressively. A sudden stop can provoke a hypertensive crisis.



FIGURE

Duration: depending on clinical progress; change to oral treatment as soon as possible

Contra-indications, side-effects, precautions

- Do not administer if:

· coronary insufficiency,
· recent myocardial infarction,
· tachycardia.

- Take care when administering to elderly patients or patients who have had cerebrovascular accidents in the past.
- Do not combine with adrenaline.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Storage: keep below 30°C.

HYDROCORTISONE phosphate, succinate, hemi-succinate (Efcortesol(R), Solu-cortef(R).)

District hospital

Therapeutic action

- Glucocorticoid hormone

Indications

- Anaphylactic shock
- Status asthmaticus
- Acute laryngitis with signs of respiratory distress
- Severe allergies: Quincke's oedema

Preparation and route of drug administration

- Vial of powder of 100 mg for IM or IV injection or infusion

There are also other doses. Adapt dosage accordingly.

Dosage

- Child: 1 to 5 mg/kg/d divided in 2 or 3 injections
- Adult: 100 mg/injection, repeat if necessary

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

FIGURE

Duration: depending on clinical progress; change to oral treatment as soon as possible

Contra-indications, side-effects, precautions

- Avoid prolonged administration if:

· peptic ulcer,
· diabetes
· cirrhosis.

- Increases the toxicity of digoxin.
- Pregnancy: avoid, particularly during the first 3 months
- Lactation: no contra-indication

Remarks

- 5 mg prednisolone has the same anti-inflammatory activity as:

· 5 mg prednisone
· 4 mg methyl prednisolone
· 0.75 mg dexamethasone
· 20 mg hydrocortisone

- Hydrocortisone acetate suspension is only used as a local treatment: intra- or periarticular injection, epidural.
- Storage: keep below 30°C.

HYDROXOCOBALAMIN = VITAMIN B12 (Cobalin(R), Docemine(R), Novobedouze(R), Redisol(R).)

District hospital

Therapeutic action

- Vitamin

Indications

- Biermer anaemia (due to decreased absorption of vitamin B12).
- Intoxication with cyanide ions, caused by a diet based on insufficiently prepared cassava.

Preparation and route of drug administration

- Ampoule of 1 mg/ml, 1 ml (1 mg = 1,000 microgrammes) for IM injection

Dosage

- Child and adult

· Initial treatment: 1 mg/d or 3 times/week up to a total dose of 10 mg
· Followed by :1 mg/month

Duration

- Biermer anaemia: continue for life.

Contra-indications, side-effects, precautions

- Do not administer in cases of malignant tumor.
- May cause allergic reactions (urticaria, erythema.), pain at injection site, acne.
- Colors urine red.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Cyanocobalamin has the same indications, the same preparation and the same dosage.
- Except for Biermer anaemia, lack of vitamin B12 (stored in the liver) is rare. Daily needs: 0,002 to 0,004 mg.
- Vitamin B12 at high doses is recommended as an antalgic by certain manufacturers (2 mg, 10 mg, 20 mg/ampoule): this antalgic activity has not been proven.
- Storage: keep below 15°C.

HYOSCINE BUTYLBROMIDE = BUTYLSCOPOLAMINE = BUTYLHYOSCINE (Buscopan(R).)

District hospital

Therapeutic action

- Antispasmodic, parasympatholytic

Indications

- Spasms of the digestive and uro-genital tract (colics, ulcers and severe gastritis)

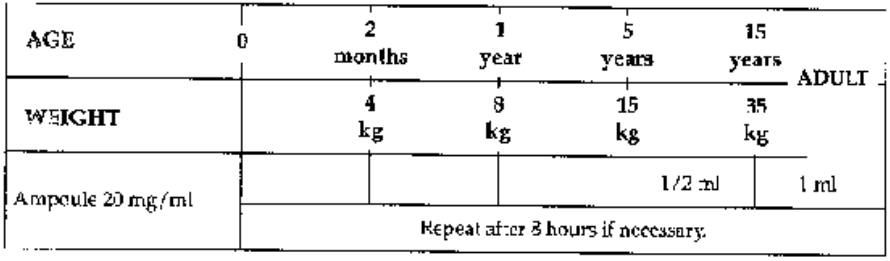
Preparation and route of drug administration

- Ampoule of 20 mg (20 mg/ml, 1 ml) for IM or IV injection

Dosage

- Child: 0.3 to 1 mg/kg/injection
- Adult: 10 mg/injection

It is possible to repeat the injection if necessary.



FIGURE

Duration: depending on clinical progress: single dose or 1 to 3 days

Contra-indications, side-effects, precautions

- Do not administer if:

· urinary retention, cardiac problems, glaucoma,
· high fever in children: loss of transpiration, risk of hyperpyrexia, anoxia,

convulsions, cardio-respiratory arrest.

- May cause: dry mouth, constipation, dizziness, headache.
- Do not combine with chlorpromazine or promethazine.
- Do not use for minor symptoms.
- Pregnancy: avoid, particularly in the third trimester of pregnancy, NO PROLONGED TREATMENTS
- Lactation: avoid, NO PROLONGED TREATMENTS

Remarks

- Storage: no special temperature requirements.

KETAMINE (Ketalar(R), Ketanest((R).)

District hospital

Therapeutic action

- General anaesthetic

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- General anaesthesia for short interventions

Preparation and route of drug administration

- Ampoule of 10 mg/ml (5 ml and 20 ml) for IM or IV injection or infusion of 50 mg/ml (5 ml and 10 ml) for IM or IV injection or infusion of 100 mg/ml (5 ml) for IM or IV injection or infusion

Dosage

- Child and adult

· IV : 2 mg/kg injected slowly over 1 to 2 minutes. The anaesthesia lasts for 5 to 10 minutes
· IM: 10 mg/kg in deep IM over 3 to 4 minutes. The anaesthesia begins after 10 minutes and lasts for 12 to 25 minutes.

Duration: depending on the duration of the intervention

To prolong the anaesthesia, repeat with half dose injection.

Contra-indications, side-effects, precautions

- Do not administer if:

· arterial hypertension, intracranial or intraocular pressure
· renal or heart failure or pre-eclampsia.

- Risk of hypertension, hallucinations on waking (less frequent with children or when injected IM).
- Use with care for obstetric cases: passes the placenta barrier.
- Give atropine premedication to prevent hypersalivation and vagal reactions.
- Use diazepam as premedication.
- Always have resuscitation and respiratory equipment available and ready for use.
- Pregnancy: no contra-indication, except in case of pre-eclampsia; with caesarian sections, there is a risk of the newborn having respiratory problems.
- Lactation: no contra-indication

Remarks

- Do not mix in the same syringe with barbiturates (thiopentone, phenobarbitone).
- Ketamine has no muscle relaxant properties.
- In certain countries, ketamine is on the list of narcotics. In that case, follow the national rules for imports, handling and storage.
- Storage: no special temperature requirements

LIGNOCAINE = LIDOCAINE (Xylocaine(R), Xylocard(R).)

District hospital

Therapeutic action

- Local anaesthetic

Indications

- Local anaesthesia:

· suturing, whitlow (= panaris): solution of 1%.
· dental care: solution of 2%, (with or without adrenaline)

Preparation and route of drug administration

- Solution of 1% (10 mg/ml), vials of 20 and 50 ml, for SC injection (and infusion)
- Solution of 2%, (20 mg/ml), vials of 20 and 50 ml, for SC injection (and infusion)

Dosage

- The volume to be injected depends on the surface area to be anesthetized.
- Do not exceed:

Child: 5 mg/kg/injection
Adult: 200 mg = 20 ml solution of 1% or 10 ml solution of 2%

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Solution 1 %, 10 mg/ml		2 to 3 ml	4 to 8 ml	9 to 15 ml	15 to 20 ml	
Solution 2 %, 20 mg/ml		1 to 1 1/2 ml	2 to 4 ml	4 to 7 ml	7 to 10 ml	

FIGURE

Duration: single injection, to be repeated if necessary

Contra-indications, side-effects, precautions

- Do not administer if known allergy to lignocaine, problems of blood coagulation or impairment of cardiac conduction.
- Lignocaine with adrenaline:

· In dental care, adrenaline added to lignocaine prolongs the anaesthesia.
· Do not administer solutions containing adrenaline for the anaesthesia of the extremities (fingers, penis): risk of ischemia and necrosis.

- When anaesthetizing the extremities, inject distally (at the root), in

circle, without tourniquet and without adrenaline.
- Do not use lignocaine for the incision of abscesses: risk of spreading the infection.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- The anaesthesia sets in after 2 to 5 minutes and lasts 1 to 1.5 hours.
- Preferably use lignocaine 2% for dental applications.
- Do not confuse with lignocaine 5% hyperbaric which is reserved for spinal anaesthesia.
- The more concentrated the lignocaine, the more localised the anaesthetic effect.
- To simplify the protocol, choose lignocaine 2% with adrenaline for dental use and lidocaine 1% without adrenaline for skin anaesthesia.
- Storage: keep below 30°C.

LIGNOCAINE Hyperbaric = LIDOCAINE Hyperbaric (Xylocaine(R) of 5% for spinal anaesthesia)

Special department

Therapeutic action

- Local or regional anaesthetic

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Spinal anaesthesia = injection in the cerebro-spinal fluid: anaesthesia for the surgery of the lower limbs and the lower abdomen (below the umbilicus)

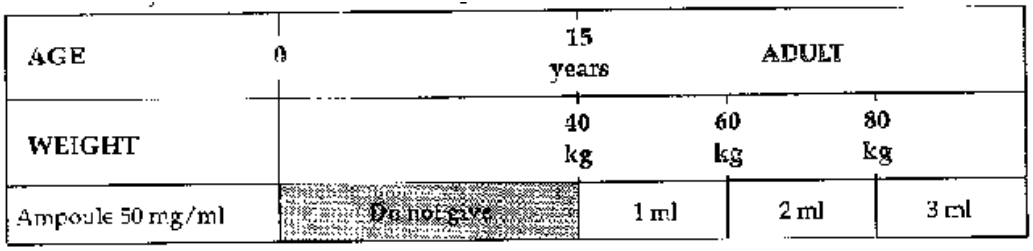
Preparation and route of drug administration

- Ampoule of 100 mg (50 mg/ml, 2 ml, equals 100 mg lignocaine in a hyperbaric glucose solution), for injection in the cerebro-spinal fluid

Dosage

According to the weight of the patient:

- Adult (shorter than 1.55 m): 50 to 75 mg
- Average adult : 100 mg
- Heavy adult : 150 mg



FIGURE

Duration: the anaesthesia sets in after 2 to 3 minutes and lasts 90 minutes

Contra-indications, side-effects, precautions

- Spinal anaesthesia should not be applied if there is no proper intubation and respiratory equipment.
- Do not administer in cases of :

· shock,
· disease of the central or peripheral nervous system,
· septicemia, meningitis,
· coagulation problems; severe haemorrhages, skin infection near the place of injection,
· known allergy to local anaesthetics.

- May cause:

· hypotension which should be prevented by the administration of a 500 ml ringer lactate infusion before spinal anaesthesia,
· nausea, vomiting, often linked to hypotension,
· sometimes urine retention,
· frequent headache after surgery.

- Use spinal anaesthesia only for adults.
- Before anaesthesia, the patient should be premedicated with atropine.
- Before spinal anaesthesia, the patient should be very well hydrated with ringer lactate or isotonic sodium chloride (500 ml). There should be good venous access, and the arterial pressure should be strictly monitored.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Lignocaine hyperbaric is strictly reserved for spinal anaesthesia.
- Storage: keep below 30°C.

METAMIZOL = DIPYRONE = NORAMIDOPYRINE (Nolotil(R), Novalgin(R), Novaminsulfon(R).)

RESERVE THIS DRUG FOR SERIOUS SITUATIONS WHERE NO OTHER TREATMENT IS POSSIBLE:

- it is potentially dangerous;
- it is not included in the WHO essential drug list;
- its marketing is forbidden in several countries;
- its use is never justified as a first-line treatment.

District hospital

Therapeutic action

- Analgesic
- Antipyretic

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

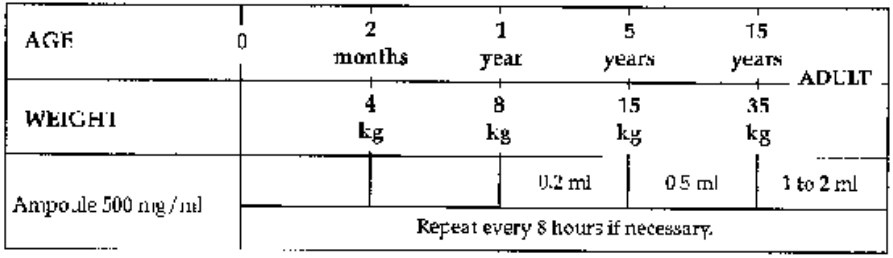
- Severe pain
- High fever

Preparation and route of drug administration

- Ampoule of 1 g (500 mg/ml, 2 ml) for IM, SC or slow IV injection or infusion

Dosage

- Child: 10 mg/kg/injection
- Adult: 500 mg/injection



FIGURE

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Do not administer if gastric ulcer.
- SEVERE AND LETHAL CASES OF AGRANULOCYTOSIS HAVE BEEN FOUND. THE RISK IS UNPREDICTABLE AND INDEPENDENT OF THE DOSE ADMINISTERED.
- Pregnancy: avoid
- Lactation: avoid

Remarks - Storage: no special precautions.

METOCLOPRAMIDE (Anausin(R), Maxolon(R), Primperan(R), Reglan(R).)

District hospital

Therapeutic action

- Anti-emetic

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Vomiting

Preparation and route of drug administration

- Ampoule of 10 mg (5 mg/ml, 2 ml) for IM or slow IV injection

Dosage

- Adult: 5 to 10 mg/injection 1 to 3 times per day, IM or slow IV injection

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Ampoule of 5 mg/ml			0.5 ml	1 ml	1 to 2 ml	

FIGURE

Duration: depending on clinical evolution, as short as possible

Contra-indications, side-effects, precautions

- Contra-indicated in case of gastro-intestinal haemorrhage, obstruction or perforation.
- In case of elevated doses or prolonged treatments, risk of extrapyramidal disorder (agitation and spasms), specially in young patients.
- Increase of crisis for epileptics and those suffering from Parkinson's disease.
- Reversible methaemoglobinemia in newborns.
- Association with propanthelin, hyoscine, atropine and chlorpromazine is not advised.
- Risk of drowsiness.
- Pregnancy: no contra-indication
- Lactation : avoid

Remarks

- It is most important to treat the cause of vomiting; look for bowel obstruction or malaria.
- Storage: keep below 30°C.

OXYTOCIN (Pitocin(R), Syntocinon(R).)

District hospital

Therapeutic action

- Uterotonic

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Induction of delivery on medical indication

Preparation and route of drug administration

- Ampoule of 5 IU (5 IU/ml, 1 ml) for injection in infusion
- Ampoule of 10 IU (10 IU/ml, 1 ml) for injection in infusion

Dosage

- 1 to 5 IU diluted in 500 ml isotonic solution in a very slow infusion :2 to 4 drops a minute. Increase the dose progressively until the contractions are normal: maximum 40 drops a minute.

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Do not administer if:

· hypertonia of the uterus,
· fragile uterus: former caesarian section,
· placenta praevia,
· pre-eclampsia.

- The cervix of the uterus should be dilated (3 to 4 cm) and effacing.
- The foetal membranes should be ruptured.
- The foetus must be monitored throughout, since there is a risk of fetal distress.

Remarks

- If not contra-indicated, preferably use (methyl)-ergometrine for uterine atonies and postpartum haemorrhage.
- Storage: refrigerated

Do not freeze.

PENTAZOCINE (Fortal(R).)

District hospital

Therapeutic action

- Central analgesic (opioid analgesic)

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Severe pains not responding to other analgesics

Preparation and route of drug administration

- Ampoule of 30 mg (30 mg/ml, 1 ml) for IM, slow IV or SC injection, infusion or rectal administration

Dosage

- Child (above 3 years): 0.5 mg/kg/injection for slow IV injection 1 mg/kg/injection for IM or SC injection
- Adult: 30 to 60 mg/injection, repeat every 3 to 4 hours if necessary

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Ampoule 30 mg/ml IV	Do not give			0.5 ml	1 to 2 ml	
Ampoule 30 mg/ml – IM				1 ml	1 to 2 ml	

FIGURE

Duration: depending on indications and clinical progress

Contra-indications, side-effects, precautions

- Do not administer if:

· liver impairment,
· respiratory depression,
· head injury.

- May cause: sedation, dizziness, hypotension, respiratory depression.
- Prolonged treatment can cause addiction.
- Signs of overdose: respiratory depression, hypotension, hypothermia.
- Pregnancy :avoid

- Lactation: avoid

Remarks

- In some countries, pentazocine is on the list of narcotics. In that case, follow the national rules for imports, handling and storage.
- Storage: keep cool.

PHENOBARBITONE = PHENOBARBITAL (Gardenal(R), Luminal(R).)

District hospital

Therapeutic action

- Anticonvulsive, sedative and hypnotic

Indications

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

Preparation and route of drug administration

- Ampoule of 200 mg (100 mg/ml, 2 ml) for deep IM or slow IV injection

Dosage

- Child and adult: 3 to 5 mg/kg/d (maximum 200 mg/d)
- Do not exceed indicated doses.

Duration: depending on clinical progress; change to oral treatment as soon as possible

Contra-indications, side-effects, precautions

- Do not administer in case of respiratory depression.
- Depresses the central nervous system: drowsiness, respiratory depression.
- Risk of sedation when combined with alcohol and other drugs that act on the central nervous system: diazepam (Valium(R)), chlorpheniramine (Teldvin(R)) and chlorpromazine (Largactil(R)).
- Pregnancy: avoid (refer to a doctor)
- Lactation: no contra-indication

Remarks

- For convulsions, in cases of extreme agitation and in emergencies, it is better to use diazepam (Valium(R)).
- Phenobarbitone should be injected in glass syringes; if not available, inject immediately after filling the syringe.
- Do not mix phenobarbitone with other drugs in the same syringe.
- Storage: no special temperature requirements.

PHYTOMENADIONE = VITAMIN K1 (Konakion(R).)

District hospital

Therapeutic action

- Vitamin

Indications

- Haemorrhagic disease of the newborn: treatment and prevention.
- Haemorrhage in patients subject to an anti-coagulant treatment (anti-vitamin K).
- Lack of vitamin K.
Vitamin K has no immediate haemostatic action: it is not indicated in cases of haemorrhagia of traumatic origin. Its therapeutic indications are very limited since vitamin K1 deficiency is rarely seen.

Preparation and route of drug administration

- Ampoule of 1 mg/ml, 1 ml for oral, IM or IV injection

Dosage

- Haemorrhagic disease of the newborn: oral

· prevention: 1 mg in a single dose at birth
· treatment : 1 mg/d x 7 days

- Prophylaxis and treatment of lack of vitamin K: 10 to 20 mg/IM injection
- Haemorrhagia due to anti-vitamin K: 10 to 20 mg/slow IV injection

Duration

Contra-indications, side-effects, precautions

- Injectable administration is contra-indicated in newborn and infants.
- Risk of haematoma at IM injection point.
- Risk of allergic reactions by IV injection.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Vitamin K should not be mixed with another medicine.
- Use glass syringe.
- Storage:

PROCAINE PENICILLIN = PROCAINE BENZYL PENICILLIN = PROCAINE PENICILLIN G

District hospital

Therapeutic action

- Antibacterial (antibiotic) with prolonged action (24 hours)

Indications

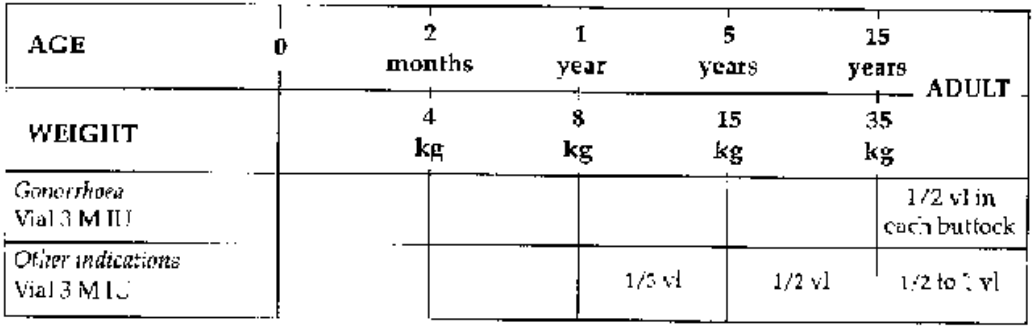
- Pneumonia
- Gonorrhoea
- Anthrax
- Prophylaxis of septicemia following abortion

Preparation and route of drug administration

- Vial of powder of 3 M IU procaine penicillin for IM injection, NEVER IV injection or infusion After diluting the powder with distilled water, the suspension has to be shaken before it can be used.

Dosage

- Child : 50,000 to 100,000 IU/kg/d
- Adult: 1 to 4 M IU/d



FIGURE

Duration

- Gonorrhea: single dose divided between each buttock. COMBINE WITH A DOSE OF 1 G PROBENECID TABLETS at the time of injection.
- Other indications: 5 days minimum.

Contra-indications, side-effects, precautions

- Do not administer if known allergy to penicillin.
- If allergic reaction, stop treatment and refer to a doctor.
- For children under 1 year, administer with care: risk of convulsions and allergies caused by the procaine.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Procaine penicillin is penicillin G bound to procaine, which gives it an action lasting for 24 hours.
- 1 g procaine penicillin equals 1 M IU penicillin.
- Procaine penicillin is replaced in some countries by a mixture of procaine penicillin and penicillin G (3 + 1 M IU), often called procaine penicillin forte (PPF) which has the advantage of the immediate action of penicillin G, followed by the delayed action of procaine penicillin.
- Penicillin benethamine (Bi-clinocilline(R)) has a prolonged action (2 to 3 days): administer every other day.
- In case of gonorrhea, ALWAYS TREAT THE PARTNER AS WELL.
- Storage: keep below 30°C.
After preparation, the suspension must be used within 24 hours.

PROCAINE BENZYL PENICILLIN + BENZYL PENICILLIN = PROCAINE PENICILLIN FORTE = PPF (Bicillin(R).)

District hospital

Therapeutic action

- Antibacterial (antibiotic) with double action prolonged (24 hours) by the procaine penicillin and immediate by the benzyl penicillin

Indications

- Pneumonia
- Gonorrhoea
- Anthrax
- Prophylaxis of septicemia following abortion

Preparation and route of drug administration

- Vial of powder of 3 M IU procaine penicillin + 1 M IU benzyl penicillin (penicillin G) for IM injection, NEVER IV injection or infusion. After diluting the powder with distilled water, the suspension has to be shaken before it can be used.

There are also vials of 600,000 IU procaine penicillin + 300,000 IU benzyl penicillin.

Dosage

- Child: 50,000 to 100,000 IU/kg/d
- Adult: 1 to 4 MIU/d

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Gonorrhoea Vial 3 + 1 M IU						1/2 vl in each buttock
Other indications Vial 3 + 1 M IU			1/3 vl	1/2 vl	1/2 to 1 vl	

FIGURE

Duration

- Gonorrhea: single dose divided between each buttock. COMBINE WITH A DOSE OF 1 G PROBENECID TABLETS at the time of injection.
- Other indications :5 days minimum.

Contra-indications, side-effects, precautions

- Do not administer if known allergy to penicillin.
- If allergic reaction, stop treatment and refer to a doctor.
- For children under 1 year, administer with care: risk of convulsions and allergies caused by the procaine.
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Compared to procaine penicillin, PPF has the advantage of the immediate action of penicillin G, and 24 hours action of procaine penicillin.
- In case of gonorrhea, ALWAYS TREAT THE PARTNER AS WELL.
- Storage: keep below 30°C.

After preparation, the suspension must be used within 24 hours.

PROMETHAZINE (Phenergan(R).)

District hospital

Therapeutic action

- Anti-emetic
- Antihistaminic
- Sedative

Indications

- Vomiting
- Allergic reactions due to:

· contact, seasons.

· drugs, insect bites, food.

Preparation and route of drug administration

- Ampoule of 50 mg (25 mg/ml, 2 ml) for IM or IV injection or infusion

Dosage

- Child: 1 mg/kg/d
- Adult: 25 to 100 mg/d

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Ampoule 25 mg/ml			0.5 ml	0.5 to 1 ml	1 to 4 ml	

FIGURE

Duration: depending on clinical progress; change to oral treatment as soon as possible

Contra-indications, side-effects, precautions

- Risk of drowsiness.

- Risk of sedation when combined with alcohol and other drugs that act on the central nervous system: diazepam (Valium(R)), phenobarbitone (Gardenal(R)), chlorpromazine (Largactil(R)) and chlorpheniramine (Teldvin(R)).
- In case of anaphylactic shock: use adrenaline and/or corticoid-steroids.
- Pregnancy: avoid in the first 3 months of the pregnancy and in the perinatal period
- Lactation: no contra-indication

Remarks

- The use of promethazine as an anti-emetic can mask the symptoms of the causal disease. Do not use for convenience.
- Storage: keep below 30°C.

QUININE Salts

District hospital

Therapeutic action

- Antimalarial

Indications

- Plasmodium falciparum malaria, pernicious attack, when the patient cannot take oral treatment: cerebral malaria (coma), convulsions, vomiting and diarrhoea

Preparation and route of drug administration

- Ampoules of 200 mg (100 mg/ml, 2 ml), 300 mg (150 mg/ml, 2 ml) and 600 mg (300 mg/ml, 2 ml) for infusion

There are also other doses. Adapt dosage accordingly. IM injection is possible, but only when absolutely necessary because there are numerous complications: paralysis of sciatic nerve, muscular necrosis, infections.

Dosage

- Child and adult: 30 mg/kg/d in slow infusion divided in 3 infusions of 10 mg/kg in 500 ml glucose 5% administered slowly (4 hours or 40 drops/minute)

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Ampoule 100 mg/ml	0.4 ml	0.6 ml	1 ml	2 ml	5 ml	
Ampoule 150 mg/ml	0.25 ml	0.4 ml	0.8 ml	1.2 ml	4 ml	
Ampoule 300 mg/ml	0.1 ml	0.2 ml	0.4 ml	0.6 ml	2 ml	
	Repeat 2 or 3 times a day.					

FIGURE

Doses and dosages are expressed in salts. They are all equal: formiate or bi-chlorhydrate (quinine dihydrochloride).

Duration

- One day or more until oral treatment is possible: change to quinine or chloroquine tablets according to national protocol.

Contra-indications, side-effects, precautions

- Possible allergic reactions.
- Never inject in direct IV, always dilute: risk of cardiac depression. Infuse slowly. Do not combine with chloroquine.
- Signs of overdose: obvious hearing and visual disturbances.
- If shock or renal failure: halve the dose.

- If convulsions, combine with diazepam (Valium(R)).
- Pregnancy: no contra-indication (do not exceed the therapeutic doses)
- Lactation: no contra-indication

Remarks

- In some regions of South-East Asia, the combination of quinine + tetracycline (25 mg/kg/d) or doxycycline (10 mg/kg/d orally) for 10 days is necessary because of resistance.
- Storage: keep below 30°C.

SALBUTAMOL = ALBUTEROL (Salbulin(R), Salbutan(R), Ventolin(R).)

District hospital

Therapeutic action

- Bronchodilator
- Uterorelaxant

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Treatment of severe asthmatic crisis and of status asthmaticus
- Emergency treatment of threatening premature delivery, except in case of

toxemia or haemorrhage

Preparation and route of drug administration

- Ampoule of 0.5 mg/ml, 1 ml for SC, IM injection or infusion

Dosage

- Asthma

Adult: 0.5 mg SC or IM to be repeated every 4 to 6 hours if necessary

- Threatening premature delivery

· Emergency treatment: 5 mg (10 ampoules) in infusion, diluted in 500 ml of dextrose; approximately 30 to 40 drops/minute, to be progressively increased until contractions stop, then decrease dosage. Injectable salbutamol should only be used under strict medical surveillance, with regular checking of the pulse, blood-pressure and the fœtal heart rate.
· Maintenance dose: 2 mg/d divided in 4 IM injections; change to oral medication as soon as possible.

Duration: depending on clinical progress

Contra-indications, side-effects, precautions

- Do not administer to children.
- Do not administer in cases of myocardial infarction and acute coronary insufficiency.
- Administer with care to patients with cardiac insufficiency, arrhythmia, high bloodpressure, haemorrhage, diabetes, hyperthyroidism.
- May cause: tachycardia, trembling, dizziness, headache.
- Do not use with beta-blocking agents (propranolol).
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- Storage: keep below 30°C.

STREPTOMYCIN

Special department

Therapeutic action

- "Antituberculous" antibacterial (antibiotic)

Indications

- Only for tuberculosis, bacteriologically proven if possible

Preparation and route of drug administration

- Vials of powder of 1 g and 5 g (base) to be diluted respectively in 5 or 10 ml sterile water, for IM injection, NEVER IV injection of infusion.

Dosage

According to national protocol.

For information:

- Child: 20 mg (base)/kg/d in 1 injection
- Adult: 750 mg to 1 g/d depending on the weight of the patient, in 1 injection
- Do not exceed a total dose of 60 g because of the oto-toxicity of streptomycin.

Duration: according to national protocol (generally 2 months)

Contra-indications, side-effects, precautions

- Do not administer if severe renal failure.
- Stop treatment if dizziness, buzzing of ears, hearing loss.
- Pregnancy: CONTRA-INDICATED
- Lactation: CONTRA-INDICATED

Remarks

- Streptomycin is also used for the treatment of plague and brucellosis. Other antibacterials are active against these diseases. Reserve this drug for the treatment of tuberculosis.
- Warning: antituberculous treatment should only be prescribed in the context of an organised program (well established protocol, regular patient checks and the possibility of laboratory examination).
- Streptomycin should not be used alone, but in combination with other "antituberculous" drugs to avoid resistance.
- Storage: keep cool.

After preparation, the solution must be clear and can be kept for only one hour.

SULFADOXINE + PYRIMETHAMINE (Fansidar(R).)

Therapeutic action

- Antimalarial

Indications

- Treatment of Plasmodium falciparum malaria resistant to chloroquine and other amino-4 quinolines (amodiaquine(R).)

Preparation and route of drug administration

- Ampoule of 400 mg sulfadoxine + 20 mg pyrimethamine (200 mg sulfadoxine + 10 mg pyrimethamine/ml, 2 ml) for IM injection or infusion

Dosage

- Child: 25 mg/kg sulfadoxine in a single dose for IM injection or infusion (1/2 amp./10 kg)
- Adult: 800 ma sulfadoxine in a single dose for IM injection or infusion
- Never give in direct IV, always dilute.

AGE	0	2 months	1 year	5 years	15 years	ADULT
WEIGHT		4 kg	8 kg	15 kg	35 kg	
Amp. 200 – 10 mg/ml		Avoid		1.5 to 3 ml	4 ml	

FIGURE

Duration: single dose

Contra-indications, side-effects, precautions

- Do not administer if:

· allergy to sulfonamides,
· renal or liver failure.

- May cause: gastro-intestinal problems, nausea, vomiting, sometimes severe allergic reactions.
- Do not combine with chloroquine.
- Avoid for children under 5 years.
- Pregnancy: CONTRA-INDICATED
- Lactation: avoid

Remarks - Preferably use injectable quinine.

- Warning: there is an increasing number of resistant strains.
- Storage: no special precautions

THIOPENTONE sodium = THIOPENTAL sodium = PENTOBARBITAL sodium (Pentothal(R).)

Special department

Therapeutic action

- Anaesthetic
- Anticonvulsive

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Induction of general anaesthesia
- Anaesthesia of short duration (not more than 15 minutes)
- This drug has no analgesic action and is not a muscle relaxant

Preparation and route of drug administration

- Vials of powder of 0.5 g or 1 g for IV injection, to be dissolved in a glucose 5% solution or in 0.9% NaCl solution (0.5 g in 20 ml)

Dosage

- Dose:

· average :1 to 10 mg/kg
· total maximum :1 g

- Induction of anaesthesia: test dose 50 mg, afterwards 100 to 200 mg in 20 seconds
- Lower dose for elderly patients.

Duration: depending on duration of the intervention

Contra-indications, side-effects, precautions

- Use only if intubation and ventilation equipment are available.
- Do not administer in cases of shock.
- Do not administer to ambulatory patients or to children under 4 years.
- May cause:

· apnoea, laryngospasm, bronchospasm,
· initial bloodpressure drop.

- Possible depression of circulation and respiration if overdose.
- Risk of pain and necrosis if extravenous or intra-arterial injection.
- Use with care in cases of asthma, heart failure, liver, renal or severe adrenal insufficiency, porphyria, myasthenia.
- The anaesthesia has to be preceded by a premedication with atropine and, if necessary, with analgesics and muscle relaxants.
- Pregnancy: use with care near term (causes foetus to sleep)
- Lactation :avoid

Remarks

- The concentration should not exceed 2.5% due to risk of thrombo-phlebitis.
- Do not mix with another injectable drug, nor with ringer lactate.
- Storage: keep cool.

After preparation, the solution can be kept for up to 24 hours if kept cool.

Infusion solutions and Electrolytes

Use of infusion solutions
Dextran
Dextrose - Glucose
Half Strength Darrow's solution
Polygeline
Potassium chloride
Ringer lactate (Hartmann)
Sodium bicarbonate
Sodium chloride

Use of infusion solutions

Choice of infusion solutions according to the indications

There is no justification for using more than 3 kinds of infusion solution:

- one kind for IV rehydration (ringer lactate is the most suitable);
- one kind for dilution of IV injectable drugs (isotonic dextrose solution is the most suitable);
- one kind for fluid replacement (best choice is polygeline).

Indications	First choice	Alternatives
Intravenous rehydration	Ringer lactate	– Dextrose 1/2 salted, 1/3 salted or 1/4 salted – Half Strength Darrow's solution Dextrose 5 % 1 40 ml NaCl 10 % 20 ml KCl 10 %
Infusion medium	Dextrose 5 %	– Sodium chloride 0.9 % – Dextrose 1/2 salted, 1/3 salted or 1/4 salted – Ringer lactate – Half Strength Darrow's solution

FIGURE

Precautions for the use of infusion solutions

- Read the labels on the infusion bottle (or bag) well to avoid mistakes.
- Indicate on the label any drugs added to the infusion.
- If drugs are added in a vial, think of the risks of:

· physical or chemical incompatibility,
· contamination: strict asepsis.

- Inspect each bottle against the light to check its clarity: discard any bottles that show particles in suspension.

**DEXTRAN (Macrodex(R), Rheomacrodex(R))
solution for INFUSION**

District hospital

Preparation

- Bottle of 500 ml

Composition

- Dextran 40,000 or 70,000 (composition and concentration varies with manufacturer) in a sorbitol, glucose, NaCI or ringer lactate solution

Indications

- Restoring macromolecules and maintaining the blood pressure and volume. Fluid replacement in case of hypovolemic shocks: trauma, surgery and sepsis.

Contra-indications, side-effects, precautions, remarks

- Risk of inducing renal failure: do not exceed 1000 ml for an adult and/or 500 ml/d if the treatment has to be prolonged.
- Risk of haemostatic disorder.

- Risk of allergy.
- In case of dehydration, correct electrolyte imbalance.
- Draw blood for type and cross-match before infusing.
- Do not mix other drugs in the infusion solution.
- Storage: keep below 30°C, but over 4°C.
The solution must be clear.

DEXTROSE 5% = GLUCOSE 5%
isotonic solution in INFUSION

District hospital

Preparation

- Bottle/bag of 500 ml of 5%
- Bottle/bag of 1 litre of 5%

Composition

- Isotonic solution: dextrose 5 g per 100 ml

Indications

- Infusion medium
- Intra-cellular dehydration (rare): fevers, sunstroke

Contra-indications, side-effects, precautions, remarks

- This solution contains no electrolytes or lactate. Therefore it is not recommended for the treatment of dehydration. Preferably use ringer lactate. If this is not available, take a solution of dextrose 5% and add KCI (2 g/l) + NaCI (4 g/l).
- The solutions of dextrose 5% 1/2, 1/3 or 1/4 salted have the same indications and inconveniences as the isotonic NaCI solution.
- Do not confuse with the 10%, 15%, 30% and 50% hypertonic solutions.
- Storage: keep below 30°C

DEXTROSE 30 or 50% = GLUCOSE 30 or 50%
hypertonic solution in AMPOULE

District hospital

Preparation

- Ampoule of 10 ml of 30% or 50%

There are also ampoules of 20 ml and bottles of 50 ml, 500 ml

Composition

- Hypertonic solution: dextrose 30% = 3 g/10 ml dextrose 50% = 5 g/10

ml

Indications

- Energy supplementation (1 g dextrose provides 4 calories)
- Hypoglycaemia

Contra-indications, side-effects, precautions, remarks

- Do not administer hypertonic solution IM or SC. The injections must be given in slowly direct IV injection or in IV infusion.
- Storage: keep below 30°C

Half Strenght DARROW'S SOLUTION
solution for INFUSION

District hospital

Preparation

- Bottle/bag of 500 ml
- Bottle/bag of 1 litre

Composition

- Varies with manufacturer. Example (ionic composition per litre):

Sodium (Na+) : 61 mmol = 61 mEq
Potassium (K+) : 18 mmol = 18 mEq
Chloride(Cl-) : 51 mmol = 51 mEq
Bicarbonate : 27 mmol = 27 mEq

Indications

- Severe dehydration

Contra-indications, side-effects, precautions, remarks

- Isotonic solution without providing calories.
- This solution has the disadvantage of not providing enough NaCl, but the advantage of providing suitable quantities KCI. For prolonged use, double the amount or add 10% or 20%, NaCl by ampoule in order to obtain sufficient concentrations (1 ampoule per litre = 1 to 2 g NaCl).
- Preferably use ringer lactate when available.
- There are also hypertonic solutions.
- Storage: keep below 30°C

POLYGELINE (Hmacel(R).)
solution for INFUSION

District hospital

Preparation

- Bottle of 500 ml

Composition

- Varies with manufacturer. Example (ionic composition per litre):

	Haemacel(R)
Polygeline	35 g/l
Sodium (Na+)	145.00 mmol = 145.00 mEq
Potassium (K+)	5.10 mmol = 5.10 mEq
Calcium (Ca++)	6.25 mmol = 12.50 mEq
Chloride (Cl-)	145.00 mmol = 145.00 mEq
Magnesium (Mg++)	----

Indications

- Fluid replacement in cases of hypovolemic shock: trauma, surgery and sepsis.

Contra-indications, side-effects, precautions, remarks

-This solution combines replacement of electrolytes and macromolecules. It has almost no effect on haemostasis.
-Administer 1 or 2 bottles on average. Adapt dosage according to the needs of the patient.
-In case of haemorrhagic shock, infuse one after the other. If polygelines are not availabe, use ringer lactate, giving three times the lost volume.
-For other forms of shock, infuse quickly until a good pulse reappears.
-Risk of allergy.
-Draw blood for type and cross-match before infusing.
-Do not dilute other drugs into this type of infusion.
Storage: stable between 18°C and +50°C.
Usable after freezing.

POTASSIUM Chloride 10%
hypertonic solution in AMPOULE

District hospital

Preparation

- Ampoule of 10 ml of 10% = 1 g KCI per ampoule
- Ampoule of 20 ml of 10% = 2 g KCl per ampoule

There are also ampoules of 10 ml and 20 ml of 7.5%, 15% and 20%. Adapt dosage accordingly.

Composition

Potassium chloride: 10 g per 100 ml

- Hypertonic solution
- Ionic composition:

potassium (K+):	13.4 mmol per ampoule of 10 ml (13.4 mEq)
	26.8 mmol per ampoule of 20 ml (26.8 mEq)
chloride (Cl-):	13.4 mmol per ampoule of 10 ml (13.4 mEq)
	26.8 mmol per ampoule of 20 ml (26.8 mEq)

Indications

- Treatment and prevention of hypokalemia

Contra-indications, side-effects, precautions, remarks

- Do not administer hypertonic solution IM or SC. Administer slowly as direct IV injection or infusion (in dextrose 5%).
- Risk of ventricular rhythm problems if injected too quickly : do not exceed 2 to 3 g KCl/hour.
- If ringer lactate is not available, take a 5% solution of dextrose and add KCl (2 g/l) + NaCl (4 g/l)

- Storage: no special precautions

RINGER LACTATE = COMPOUND SODIUM LACTATE SOLUTION = Hartmann's solution
isotonic solution for INFUSION

District hospital

Preparation

- Bottle/bag 500ml
- Bottle/bag 1 litre

Composition

- Varies with manufacturer
- Most usual 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

Indications

-Severe dehydration

Contra-indications, side-effects, precautions, remarks

-Isotonic solution without providing calories.
-Ringer lactate provides appropriate quantities of electrolytes. It contains lactate which transforms into bicarbonate in the body and corrects metabolic acidosis if it exists (if haemodynamic and liver function are normal). WARNING, SOME COMMERCIALLY AVAILABLE SOLUTIONS DO NOT CONTAIN LACTATE.
-It does not contain much KCl (5 mEq/litre), but sufficient for short term use. For prolonged use (after 2 to 3 days), a supplement of potassium is necessary. Add 1 or 2 g KCl per litre = 1 to 2 ampoules of 10 ml KCl 10%/litre.
-For moderate and mild dehydration, administer ORS (Oral Rehydration Salts).
-This solution can be used for haemorrhagic shock. In that case, 3 times the lost volume has to be infused.
Storage: keep below 30°C

SODIUM Bicarbonate 1.4%
isotonic solution for INFUSION

District hospital

Preparation

- Bottle/bag 500 ml

Composition

Sodium bicarbonate :1.4 g per 100 ml

- Isotonic solution
- Ionic composition per litre:

Sodium (Na+): 167 mmol = 167 mEq

Bicarbonate 167 mmol = 167 mEq

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Severe metabolic acidosis

Contra-indications, side-effects, precautions, remarks

- Do not use in case of metabolic alkalosis or respiratory acidosis.
- Contains a high concentration of bicarbonate and sodium ions. This is seldom justified in the case of metabolic acidosis caused by dehydration. Poor monitoring of use may induce hypernatremia and hypokalemia.

- Do not mix in the same infusion: penicillin, chloramphenicol, aspirin, atropine, calcium, insulin, vitamins.
- Storage: keep below 30°C

SODIUM Bicarbonate 8.4%
hipertonic solution in AMPOULE

District hospital

Preparation

- Ampoule of 10 ml or 20 ml

Composition

Sodium bicarbonate: 8.4 g per 100 ml

- Hypertonic solution
- Ionic composition:
Sodium (Na+): 10 mmol = 10 mEq per ampoule of 10 ml
Bicarbonate : 10 mmol = 10 mEq per ampoule of 10 ml

Indications PRESCRIPTIONS AND FOLLOW-UP OF TREATMENT MUST BE UNDER MEDICAL SUPERVISION

- Severe metabolic acidosis

Contra-indications, side-effects, precautions, remarks

- Do not administer hypertonic solutions IM or SC. Administer under strict medical supervision, slowly direct IV injection or infusion (in dextrose 5%).
- Do not use in case of alkalosis or respiratory acidosis.
- Contains a high concentration of bicarbonate and sodium ions. This is seldom justified in the case of metabolic acidosis caused by dehydration. Poor monitoring of use may induce hypernatremia and hypokalemia.
- Do not mix in the same infusion: penicillin, chloramphenicol, aspirin, atropine, calcium, insulin, vitamins.
- Storage: keep below 30°C

SODIUM Chloride 0.9% = NaCl physiological salt = normal saline isotonic solution for INFUSION

District hospital

Preparation

- Bottle/bag of 500 ml or 1 litre of 0.9%

There are also ampoules of different volumes.

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)
Indications
- Infusion medium (administration of drugs, instant venous access)

Contra-indications, side-effects, precautions, remarks

- Do not use in case of water-salt retention, heart failure, oedema and ascites due to cirrhosis.
- This solution contains neither lactate nor potassium. Its use is therefore not recommended for the treatment of severe dehydration. Preferably use ringer lactate.
- If ringer lactate is not available, take a 5%, solution of dextrose and add KCI (2 g/l) + NaCl (4 g/l).
- Storage: keep below 30°C

SODIUM Chloride = NaCl
hypertonic solution in AMPOULE

District hospital

Preparation

- Ampoules of 10 ml or 20 ml of 10% and 20%

Composition
Sodium bicarbonate: 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%

Indications

- Hyponatremia

Contra-indications, side-effects, precautions, remarks

- Do not administer hypertonic solutions IM or SC. Administer slowly direct IV injection or IV infusion.
- Do not use in case of water-salt retention, heart failure, oedema and ascites due to cirrhosis.
- Storage: keep below 30°C

Vaccines and sera

Antiamaril vaccine
Antimeningococcal vaccine A + C
Antitetanic serum
BCG vaccine
DPT vaccine
Measles vaccine
Oral antipoliomyelitis vaccine
Tetanus vaccine

Vaccines and sera are sensitive products to heat and light. Even if new productions give vaccines more stable to heat (called "thermostable"), they still have to be stocked in the refrigerator between 0 and 8°C, and cold chain strictly have to be respected during transport.

Information mentioned hereafter concerning stability only helps to decide if vaccines stocked during a short time at a temperature superior to 8°C could be used or have to be destroyed.

ANTIAMARIL VACCINE (Stamaril, Amarela)

Health clinic

Indications

- Prevention of yellow fever
- Must be integrated in the national Expanded Program of Immunization (EPI)

Presentation and route of drug administration

- Live attenuated viral vaccine, freeze-dried powder to be diluted with a special solvent. There are vials of powder for 10 doses, 20 doses and 50 doses, with the vials of solvent.
- Administration in deep subcutaneous or IM injection in the deltoid muscle of the arm.

Dosage and vaccination scheme

- Child and adult :0.5 ml
- May be administered as of the age of 6 months (4 months during epidemics)
- Efficiency: after 10 days for 10 years

Contra-indications, side-effects, precautions

- Contra-indicated in case of immunodeficiency and genuine allergy to eggs.
- Local reaction possible in 20% of the cases.
- Fever and myalgia 4 to 10 days after the injection in 5 to 10% of the

cases.
- Complications:

· neurological reactions (encephalitis),
· allergic reactions: erythema, urticaria, oedema (1 case in 1 million doses).

- Pregnancy: this vaccine can be administered to pregnant women only if there is a major risk of infection (epidemic)
-Lactation: no contra-indication

Remarks

- It is always better to use the solvent delivered with the vaccine. In case of loss, we recommend sodium chloride 0.9% or water for injection as the solvent, using the same quantity as the solvent delivered.
- Combinations

· Simultaneous combination (at the same time, in a separate syringe)
Compatible with other vaccines given by EPI; contra-indicated with cholera and typhoid A and B.
· Combinations with other vaccines (in the same syringe)
Possible with measles vaccine.

- Storage

· Freeze-dried powder
Store between O and 8°C. Freezing (-20°C) recommended for long periods. At 37°C, freeze-dried vaccine is stable for 7 to 14 days.
· After dilution
Between O and 8°C, the vaccine is stable for 3 hours; at 37°C, it becomes unefficient in less than 1 hour. This vaccine is one of the most sensitive to heat. At the moment of dilution, the solvent must be at the same temperature as the vaccine (0 to 8°C).

ANTIMENINGOCOCCAL VACCINE A + C

Health clinic

Indications

- Prevention of meningococcal meningitis type A and C

Presentation and route of drug administration

- Polysaccharide vaccine from meningococcal serogroup A and C, freeze-dried powder to be diluted with a solvent.
There are vials of powder for 10 doses and 50 doses.
- Administration in deep subcutaneous or IM injection in the deltoid muscle of the arm.

Dosage and vaccination scheme

- Child and adult :0.5 ml
- Age of administration

· meningococcus type A: from 3 months of age
· meningococcus type C: the vaccine is effective only if given after 18 months of age

- Efficiency: 1 week after injection for 3 years (if injection after 2 years of age)

Contra-indications, side-effects, precautions

- There are no contra-indications.
- There are no side-effects, vaccine is well tolerated.
- In some cases, redness at injection site for 24 hours.
- In 0.4% of the cases, fever (up to 38.5°C).
- Pregnancy: no contra-indication
- Lactation: no contra-indication

Remarks

- It is always better to use the solvent delivered with the vaccine. In case of loss, we recommend sodium chloride 0.9% or water for injection as the

solvent, using the same quantity as the solvent delivered.
- Combinations

· Simultaneous combination (at the same time, in a separate syringe)
Compatible with other vaccines given by EPI.
· Combinations with other vaccines (in the same syringe)
Possible with measles and antiamaril vaccine.

- Storage

· Freeze-dried powder
Store between 0 and 8°C.
Freezing (-20°C) recommended for long periods.
The freeze-dried vaccine is very stable (18 months: at 37°C; 4 weeks: at 45°C).
· After dilution
Store between 0 and 8°C is possible.
Vaccine remains stable for 4 days at 37°C, but, for asepsis, it is preferable to destroy the vial when the vaccination session is over.
At the moment of dilution, the solvent must be at the same temperature as the vaccine (0 to 8°C).

ANTITETANIC SERUM equine tetanus antitoxin

District hospital

Therapeutic action

- Neutralises the tetanus toxin

Indications

- Prevention of tetanus for non-vaccinated wounded patients
- Treatment of tetanus

Preparation and route of drug administration

- Ampoule (or ready-to-use syringe) of 1,500 IU/ml, 1 ml for SC or IM injection Serum equine origin (horse)

Dosage

- Prevention of tetanus: 1,500 IU
- Treatment of tetanus

· Newborn: 1,500 IU
· Child : 5,000 IU
· Adult : 10,000 IU

It is necessary to administer the injection following the Besredka method: inject 0.1 ml, wait 15 minutes leaving the needle and syringe in place,

inject 0.25 ml and wait 30 minutes; if there is no reaction, finish the injection.

- Efficiency: during 1 to 2 weeks.

Duration: single dose

Contra-indications, side-effects, precautions

- Do not administer if known allergy to anti-tetanic serum.
- May cause severe, sometimes deadly, allergic reactions.
- Anti-tetanic serum only has a transitory action and must be combined with anti-tetanic vaccination.
- Pregnancy: CONTRA-INDICATED
- Lactation: no contra-indication

Remarks

- In cases of tetanus, immediately apply antibiotic and symptomatic treatment.
- Anti-toxin from human origin (tetanus immunoglobulin) exists. It does not cause allergic reactions and is not contra-indicated during pregnancy, but it is much more expensive.
- This product is not included in the WHO essential drug list.
- Storage: keep refrigerated, between 2 and 8°C. Do not freeze.

BCG VACCINE (Glutamate BCG vaccine)

Health clinic

Indications

- Prevention of tuberculosis
- Must be integrated in the national Expanded Program of Immunization (EPI)

Presentation and route of drug administration

-Live attenuated bacterial vaccine, freeze-dried powder to be diluted with a solvent. There are vials of powder for 10 doses, 20 doses and 50 doses, with the vials of special solvent.
-Injections are given strictly intracutaneously ("pig skin") in the middle third of the upper arm, external side.

Dosage and vaccination scheme

- 0.05 ml for child under 1 year.
- 0.10 ml for child abeve 1 year.
-BCG is given at birth in a single dose. If after 3 months, there is no scar, BCG vaccine must be repeated (maximum 3 times).
- Efficiency: (80%) during 10 years.

Contra-indications, side-effects, precautions

- Absolutely contra-indicated in patients with Acquired or Congenital Immune Deficiency Syndrome (AIDS).
- Contra-indicated in cases of progressive dermatoses.
- Normal local reaction: after 2 to 4 weeks, appearance of a small red nodule, becoming a vesicle. - This reaction will remain for 2 to 5 months and leave a superficial scar, 2 to 10 mm in diameter.
- Possibility of abscess on the scar (Becegitis).
- Presence of an axillary or cervical adenitis in 1 to 4% of the cases, 2 to 3 months after the injection. The adenitis may sometimes cause suppuration and fistulization.
- Fatal disseminated infections with the BCG are very seldom.

Remarks

- It is always better to use the solvent delivered with the vaccine. In case of loss, we recommend sodium chloride 0.9% or water for injetion as the solvent, using the same quantity as the solvent delivered.
- Combinations

· Simultaneous combination (at the same time, in a separate syringe) Compatible with other vaccines given by EPI.

· Combinations with other vaccines (in the same syringe)

Impossible.

-Storage

· Freeze-dried powder
Store between 0 and 8°C.
Freezing is possible.
Defrosting/re-freezing is possible. At 37°C, stability of the freeze-dried vaccine is very variable, with loss of effectiveness after 3 to 14 days.

· After dilution
Keep for maximum 5 to 6 hours between 0 and 8°C.
Protect from light.

DPT VACCINE (DTP, DTCoq)

Health clinic

Indications

-Prevention of diphteria, tetanus and pertussis
-Must be integrated in the national Expanded Program of Immunization (EPI)

Presentation and route of drug administration

-Adsorbed vaccine (diphtheric and tetanic toxoid and killed bacterial vaccine against pertussis), ampoule with ready to use solution.
There are ampoules of 10 doses, 20 doses and 50 doses.
-Administration in deep subcutaneous or IM injection in the outer part of the mid-thigh or in the deltoid muscle of the arm.

Dosage and vaccination scheme

- 0.5 ml per injection
3 injections given 4 weeks apart, followed by a booster 1 year after the 3rd dose.
- Age of administration
The first dose may be given from 6 weeks of age.
- Efficiency: during several years after 3 doses.

Contra-indications, side-effects, precautions

- Contra-indicated if history of neurological disorder.
- In case of significant reactions after the first dose of DTP (high fever, convulsions, neurological signs), only give diphtheria-tetanus vaccine.
- Febrile reactions (39° - 40°C) during approximately 48 hours.
- Local reactions: induration and painful reaction at injection site.
- Complications are often due to the anti-pertussis component: toxic shock, encephalopathies.

Remarks

-Combinations

· Simultaneous combination (at the same time, in a separate syringe)
Compatible with other vaccines given by EPI.
· Combinations with other vaccines (in the same syringe)
Possible with measles vaccine (DPT serves as solvent).

-Storage
Between 2 and 3°C.
NEVER FREEZE: if frozen, the adjuvant can cause aseptic abscesses and a poor diffusion of the vaccine.
At 37°C, the vaccine will remain stable for 6 weeks.
Attention: univalent pertussis vaccine: will remain stable for only 3 to 7 days at 37°C.

MEASLES VACCINE (Rouvax, Morbilvax, Rimevas)

Health clinic

Indications

- Prevention of measles

Must be integrated in the national Expanded Program of Immunization (EPI)

Presentation and route of drug administration

- Live attenuated viral vaccine (Schwarz strain), freeze-dried powder to be diluted with a special solvent.
There are vials of powder for 10 doses, 20 doses and 50 doses, with the vials of solvent.
- Administration in deep subcutaneous or IM injection in the outer part of the mid-thigh or in the deltoid muscle of the arm.

Dosage and vaccination scheme

- 0.5 ml in a single dose
- Age of administration

· From the age of 9 months to 5 years.
· If the population is concentrated, 2 doses may be given:
1 first dose from 6 months of age (between 6 and 8 months),
1 second dose from of 9 months of age.

- Efficiency: undefinitly, some days after injection (when injection after 9 months of age)

Contra-indications, side-effects, precautions

- Contra-indicated in case of genuine allergy to eggs.
- Wait 6 weeks after injection of gammaglobulins to give measles vaccine.
- Local reactions: none.
- Generalized reactions:

· fever after 5 to 10 days (in 15% of the cases),
· cutaneous rash for 48 hours,
· rhinopharyngitis.

- Complications:

· hyperthermic convulsions,
· encephalitis (1 case in 1 million vaccinations).

Remarks

- It is always better to use the solvent delivered with the vaccine. In case of loss, we recommend water for injection (distilled water) as the solvent, using the same quantity as the solvent delivered.
- A new high dose strain vaccine (AIK C, Edmonstron Zagreb), administered as of the age of 6 months in a single dose of 0.5 ml in deep subcutaneous ir IM injection, should be available in the near future.
- Combinations

· Simultaneous combination (at the same time, in a separate syringe)
Compatible with other vaccines given by EPI.
· Combinations with other vaccines (in the same syringe)
Possible with the DPT vaccine, which can be used as solvent, and with antimeningococcal and antiamaril vaccine.

- Storage

· Freeze-dried powder
Store between O and 8°C.
Freezing (-20°C) recommended for long periods.
Defrosting/re-freezing is possible, but not advisable.
At 37°C, the freeze-dried vaccine is stable for 7 days.

· After dilution
Store between 0 and 8°C, maximum 8 hours; at 37°C, maximum 1 hour.
At the moment of dilution, the solvent must be at the same temperature as the vaccine (0 to 8°C).
Protect from light.

ORAL ANTIPOLIOMYELITIS VACCINE (Polioral trivalent, Polio Oral Sabin, Oral Poliomyelitis

Health clinic

Indications

- Prevention of poliomyelitis (for the 3 types of polio 1, 2 and 3)
- Must be integrated in the national Expanded Program of Immunization (EPI)

Presentation and route of drug administration

- Live attenuated viral vaccine, monovalent (Sabin), vial with liquid vaccine, limpid and pink colored, ready for administration (do not use the vaccine when cloudy). There are vials of 10 doses, 20 doses, 25 doses and 50 doses, with a plastic dropper.
- Administration: orally, on the tongue.

Dosage and vaccination scheme

- 2 to 3 drops (depending on manufacturer)
Three doses of vaccine must be given, minimum 4 weeks apart.
- Age of administration
The first dose is administered at the age of 6 weeks at the same time as DPT.
The WHO recommends an additional dose at birth (Polio zero).
- Efficiency: 5 years after 3 doses.

Contra-indications, side-effects, precautions

- Contra-indicated in case of immunodeficiency.
- Diarrhoea is not a contra-indication, but it is preferable to give a supplementary dose once the child is cured.
- No reactions to this vaccine.
- Complications: 1 case of encephalitis out of 3 million administered doses.
- Pregnancy: CONTRA-INDICATED during the first trimester of pregnancy, except if there is a major risk for poliomyelitis.
Lactation: no contra-indication

Remarks

- Other antipoliomyelitis vaccines: injectable inactivated vaccine.
Not used very often in developing countries because of the high cost.
- Combinations

· Simultaneous combination (at the same time, in a separate syringe)
Compatible with all other vaccines given by EPI.
· Combinations with other vaccines (in the same syringe)
Impossible since this is an oral vaccine and not an injection.

- Storage
Between 0 and 8°C.
Freezing (-20°C) recommended for long periods.
Defrosting/re-freezing is possible.

Stability: the most fragile vaccine (1 day: at 37°C; 1 to 3 hours: at 50°C).

TETANUS VACCINE (Tetanus toxoid, Tetanol)

Health clinic

Indications

- Prevention of tetanus
- Must be integrated in the national Expanded Program of Immunization (EPI)

Presentation and route of drug administration

- Adsorbed tetanic toxoid, monovalent, vial with ready to use solution. There are vials of 10 doses, 20 doses and 50 doses.
- Administration in deep subcutaneous or IM injection in the outer part of the mid-thigh or in the deltoid muscle of the arm.

Dosage and vaccination scheme

- 0.5 ml per injection.
Vaccinate all women of child-bearing age. 5 doses are needed to give a definitive immunization status.
- Newborn child: give 3 doses, one month apart, followed by boosters

later. 5 doses are needed to give a definitive immunization status.

Contra-indications, side-effects, precautions

- Slight but rare side-effects, this vaccine is extremely well tolerated.
- Painful, red reaction at injection site possible.
- Complications: none.

Remarks

- Combinations

· Simultaneous combination (at the same time, in a separate syringe)
Compatible with other vaccines given by EPI.
· Combinations with other vaccines (in the same syringe)
Possible with anti-pertussis, diphtheria and polio vaccine.

- Storage
Between 2 and 8°C.
NEVER FREEZE: if frozen, the adjuvant can cause aseptic abscesses and poor
diffusion of the vaccine.
At 37°C, the vaccine remains stable for at least 2 months.
Antitetanic toxoid is the vaccine the most resistant to heat

Drugs for external use and Disinfectants

Benzoic acid + Salicylic acid
Benzyl benzoate
Calamine lotion
Cetrimide
Chloramine T = Chloramine
Chlorhexidine
Chlorhexidine + Cetrimide
Chlorine
Chlortetracycline, eye ointment
Cresol
Dakin's solution
(Ethyl) alcohol
Ethanol 70%
Gentian violet
Iodine (alcoholic solutions)
Lysol
Merbromine
Mercuresceine sodium
Methylrosanilinium chloride
Oxytetracycline, eye ointment
Polyvidone iodine = PVI
Potassium permanganate

Tetracycline, dermal ointment
Tetracycline, eye ointment
Tosylchloramide sodium
Whitfield's ointment
Zinc Oxide (vaseline)

BENZOIC ACID + SALICYLIC ACID ointment = Whitfield's ointment

District hospital

Therapeutic action

- Antifungal and keratolytic

Indications

- Fungal infection of the skin
- Fungal infection of the scalp (tinea)

Preparation

- Ointment with 3% salicylic acid and 6% benzoic acid

Dosage

- 2 applications per day

Duration

- 3 weeks minimum depending on progress

Precautions

- Do not apply to open wounds or mucous membranes (mouth, nose, vagina, rectum).
- Local irritation and inflammation can occur (if a severe reaction, stop treatment).

Remarks

- Storage: exposure to high temperature may cause the active parts to separate from the mixture. Stir well before use.

BENZYL BENZOATE = BENZOATE DE BENZYLE (BBL (R).)

Health post

Therapeutic action

- Parasiticidal preparation for external use (skin)

Indications

- Scabies
- Pediculosis (lice)

Preparation

- Emulsion containing 25% benzyl benzoate
- Concentrated emulsion containing 90% benzyl benzoate

Use / Prepared with	Scabies in children 12 % BBL	Scabies in adults 25 % BBL	Lice in children and adults 25 % BBL
Emulsion of 25 % BBL	dilute to 1/2 (1 part + 1 part of water)	pure	pure
Emulsion 90 % of BBL	dilute to 1/8 (1 part + 7 parts of water)	dilute to 1/4 (1 part + 3 parts of water)	dilute to 1/4 (1 part + 3 parts of water)

FIGURE

Directions for use

- Shake well before use.
- For the treatement of scabies
Warning: in case of secondary infection, first clean and apply gentian violet for several days before applying benzyl benzoate.

· Wash the patient.
· Apply the product all over the body, except for the face and the mucous membranes.
· Leave the product on the body for 24 hours (12 hours for children under 2 years).
· Wash.
· Repeat the following morning if possible, washing the patient between the two applications.

- For the destruction of lice

· Apply the product, leave for 24 hours (12 hours for children under 2 years), wash the patient afterwards.

Precautions

- NEVER SWALLOW: VERY DANGEROUS.
- In case of ingestion, DO NOT INDUCE VOMITING, refer to a doctor.
- Do not apply to mucous membranes (mouth, nose, vagina, rectum).
- Lactation: avoid applying to the nipples.

Remarks

- Examine the other family members and treat everyone affected with scabies simultaneously. Have the clothing and bed linen washed with

boiling water.
- Itching can continue for several days which does not imply that the treatment is ineffective.
- The concentration recommended by WHO is 25%.

Storage: no special precautions

CALAMINE lotion and Vaseline with ZINC OXIDE

District hospital

Therapeutic action

- Astringent, soothing, antipruritic
- Skin protection

Indications

- Burns
- Eczema
- Psoriasis
- Varicose ulcers

Preparation

- Calamine lotion (15% zinc carbonate)
- Vaseline with 10% zinc oxide, jar or tube

Dosage

- 1 to 3 applications per day

Duration

- Depending on clinical progress.

Precaution

- Clean and disinfect the skin well before applying the ointment or lotion.

Remarks

- These two products are used in the same way. In general, calamine lotion is better known in english speaking countries and zinc oxide in french speaking countries.
- Zinc oxide can be used to replace sterile paste for burns: sterilize in a pressure-cooker or heat while stirring until boiling point, allow to cool, coat the sterile compresses and apply.
- Storage: no special temperature requirements. Exposure to high temperatures may cause the active parts to separate from the mixture. Stir

well before use.

CETRIMIDE (Cetavlon (R).)

The use of this drug is not advised:

- it has almost no advantage over ordinary scop;
- the aqueous solution is very often contaminated;
- it is not included in the WHO essential drug list.

Therapeutic action

- Antiseptic detergent and disinfectant

Indications

- Cleaning of wounds
- Cleaning of dirty materials

Preparation

- Powder for dissolving
- Concentrated solution of 20% to be diluted
- Concentrated solution of 40% to be diluted

Dilution

- It is used in a 1% solution of cetrimide
10 g of powder in 1 litre of water
or 50 ml of the solution of 20% in 950 ml
or 25 ml of the solution of 40% in 975 ml
- Prepare the solutions with drinking water from the water mains or use boiled water, filtered if necessary.
- Wash the bottle carefully with hot water and let it dry before refilling.

Precautions

- The aqueous solution diluted for use are easily contaminated by pathogenic germs (if possible, prepare the solution just before use).
- Incompatible (causes inactivation) with soap and iodine (polyvidone iodine).
- Not suitable for the sterilization of instruments (nor for sterile storage).

Remarks

- Use of the product is not advised (limited efficiency and high risk of contamination of the aqueous solutions).
- The combination of chlorhexidine + cetrimide is much more efficient.
- Storage. no special precautions
Never keep diluted solutions for more than 1 week.

CHLORAMINE = CHLORAMINE T = TOSYLCHLORAMIDE SODIUM

Health clinic

Therapeutic action

- Antiseptic and disinfectant (generates chlorine)

Indications

- Antiseptic

· Cleaning of dirty wounds
· Disinfection of wounds or infected mucous membranes (abscess, ulcers.)

- Disinfectant

· Disinfection of medical instruments
· Disinfection of floors, surfaces, various objects.

Preparation

- Powder or tablets of 250 mg, 500 mg or 1 g, with a slight odour of chlorine. The tablets must be easily and completely soluble, otherwise the powder is preferable.

Dilution

- Antiseptic

· For general use :5 g per litre
· For repeated use on mucous membranes: 2 g per litre

- Disinfectant

· Disinfection of instruments: 20 g per litre
· Disinfection of floors, surfaces, various objects: 5 g per litre

- Prepare the solutions with drinking water from the water mains or use boiled water, filtered if necessary.

Use

- For wounds and mucous membranes: bath, irrigation or compresses (solutions of chloramine are better than DAKIN). For prolonged use, protect the healthy skin around the wound with vaseline.
- Rapid disinfection of instruments and laboratory equipment: soak for 15 minutes in a solution of 20 g/litre (the instruments must be cleaned first).

Precautions

- Protect people from accidental swallowing of the tablets: DO NOT STORE NEAR ORAL TABLETS.

Remarks

- There are tablets of 12 or 20 mg for the disinfection of drinking water for individuals and families (1 tablet per litre clear water).
- 1 g of chloramine generates 250 mg of active chlorine.

- Storage:

· Storage of r eady to use solutions: maximum 1 week.
· The solutions use for soaking instruments must be renewed every day.
· The solutions must be stored in the shade and protected from direct sunlight: use an opaque bottle or brown glass (do not use a metal container).

CHLORHEXIDINE (Hibitane (R).)

Health post

Therapeutic action

- Antiseptic

Indications

Cleaning and disinfection of:

- skin and mucous membranes
- wounds
- burns
- ulcers
- abscesss

Preparation

- Concentrated solution of 5% chlorhexidine digluconate to be DILUTED before use. Check whether the supplied concentrated solution can be diluted with non-distilled, ordinary water (in this case, the solution must contain a cosolvent).
- There are solutions of 20% chlorhexidine, but they contain generally no cosolvents and must therefore be DILUTED WITH DISTILLED WATER to avoid a possible precipitation of chlorhexidine.

Dilution

- Used in an aqueous solution of 0.05% chlorhexidine = 10 ml of the 5% solution in 1 litre of water.
- Use drinking water from the water mains or boiled water, filtered if necessary.
- Wash the bottle carefully with hot water and let it dry before refilling.

Precautions

- Do not bring into contact with cerebral tissue, the meninges or an injured ear-drum.
- Do not use with soap (rendered inactive).
- Do not use for cleaning the ears.
- Not suitable for the sterilization of instruments (nor for sterile storage).

Remarks

- The combination of chlorhexidine + cetrimide is more useful: better detergent properties (cleaning) and it can always to be diluted with non-distilled water (cetrimide operates as a cosolvent).
- Storage:

· concentrated solution: no special precautions.
· solution diluted ready for use: maximum 1 week

CHLORHEXIDINE + CETRIMIDE (HAC (R)), Savlon(R).)

Health post

Therapeutic action

- Combination of an antiseptic and a detergent

Indications

Cleaning and disinfection of:

- skin and mucous membranes
- wounds
- burns
- ulcers
- abscesss
- various objects

Preparation

- Concentrated solution of 1.5% chlorhexidine and 15% cetrimide to be DILUTED before use.

Dilution

- Make a 2% solution from the concentrate: 20 ml of the concentrated solution in 1 litre of water. This solution contains 0.03% chlorhexidine and 0.3% cetrimide.
- Use drinking water from the water mains or boiled water, filtered if necessary.
- Wash the bottle carefully with hot water and let it dry before refilling.

Precautions

- Do not bring into contact with cerebral tissue, the meninges or an injured ear-drum.
- Do not use with soap (rendered inactive) or with an iodine disinfectant (e.g. polyvidone iodine).
- Do not use for cleaning the ears.
- Not suitable for the sterilization of instruments (nor for sterile storage).

Remarks

- Storage:

· concentrated solution: no special precaution.
· solution diluted ready for use: maximum 1 week

Products that generate CHLORINE (Calcium hypochlorite = HTH, Chlorinated lime, Bleach, Sodium dichloroisocyanurate or NaDCC)

Therapeutic action

- Strong disinfectants (generate active chlorine)

Indications

- Disinfection of objects, instruments, linen.
- Disinfection of floors, surfaces (tables, sinks.)

Preparation

- Calcium hypochlorite grains (HTH).+/-70% active chlorine
- Chlorinated lime powder, bleaching powder+/- 25% active chlorine
- Solutions of sodium hypochlorite (bleach, Milton(R):

· Bleach 12° chlorometrical degrees. +/- 4% active chlorine
· Bleach 15° chlorometrical degrees.+/- 5% active chlorine
· Concentrated bleach 48° chlorometrical degrees. +/- 15% active chlorine (to be diluted in 3/4 litre water to become bleach with 4% active chlorine)

- Sodium dichloroisocyanurate or NaDCC:

· Powder.60-65% active chlorine
· Tablets (Javel solid(R)) 1.5 g active chlorine per tablet

The power of the disinfectants that generate chlorine is expressed in active chlorine (generally percentage in active chlorine).

The amount of active chlorine is sometimes expressed in chlorometrical degrees.
1° chlorometrical = approximately 0.3% active chlorine

The amount of chlorine in diluted solutions is expressed in% or in ppm (parts per rnillion) of active chlorine (1 ppm = 1 mg/litre = 0.0001%).

Dilution

- The amount of active chlorine must always be checked on the packaging of the product to correct the dosage if necessary.
- In certain conditions, solutions with a stronger content of active chlorine can be made by adjusting the dosage.
- Always dilute in non-metal containers just before use.
- A deposit in HTH or chlorinate lime solutions is normal (use the upper part). - Prepare solution with clean water.

Use / Prepared with	Clean conditions (e.g. clean instruments or linen) 0.1 % = 1,000 ppm active chlorine	Reasonable conditions (e.g. floors, sinks, straw mattress, tables…) 0.2 % = 2,000 ppm active chlorine	Dirty conditions (e.g. heavily contaminated materials, laboratory materials, blood splashes, sputum…) 0.5 % = 5,000 ppm active chlorine
Bleach 12° (4 % active chlorine)	25 ml/litre	50 ml/litre	125 ml/litre
Calcium hypochlorite (70 % active chlorine)	1.5 g/litre = ± 1 full tablespoon per bucket of 10 litres	3 g/litre = ± 2 full tablespoons per bucket of 10 litres	7 g/litre = ± 5 full tablespoons per bucket of 10 litres
Sodium dichloroisocyanurate or NaDCC (1.5 g active chlorine per tablet)	1 tab per 1.5 litre or for easiness : 1 tab/litre	1 tab per 3/4 litre or for easiness : 2 tab/litre	3 tab/litre

FIGURE

Precautions

- Handle the concentrated products with care (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 the dry product, particularly calcium hypochlorite, in contact with organic materials (for example: corpses): risk of explosion.
- Disinfection of linen

Only suitable for cotton and linen (but risk of discolouration). Soak for maximum 15 minutes. Do not exceed 0.1% (1,000 ppm) of active chlorine. Rinse abundantly (at least 3 times) with clear water after soaking.

- Disinfection of instruments
To avoid corrosion, use only for stainless steel instruments. Do not use solution containing more than 0.1% (1,000 ppm) of active chlorine frequently, do not leave in contact for more than 30 minutes, instruments and solution should be cold, rinse abundantly and dry after disinfection.
- NaDCC is less corrosive than solutions of calcium hypochlorite and bleach.

Remarks

- Chloramine T (sodium tosylchloramide) also produces chlorine (25% active chlorine), but acts more slowly than the products described above. It is especially suitable as an antiseptic for infected wounds and mucous

membranes because it is less irritating.
- Calcium hypochlorite, bleach and concentrated bleach can be used to prepare antiseptic solutions (DAKIN solution) if 1 teaspoon of sodium bicarbonate is added to the final solution (to neutralise the alkalinity).

· For wounds: solution of 0.1% (1,000 ppm) active chlorine.
· For mucous membranes: solution of 0.05% (500 ppm) active chlorine.

- Trichloro-isocyanuric acid containing 90% of active chlorine is very similar to NaDCC, but its use is limited by poor solubility. It is mainly used for chlorination of pool water as pellets placed in a float.
- Storage:

· Store in air-tight containers: protectedfrom light and heat (and humidityfor solids).
· Chlorinated lime, bleach and concentrated bleach are difficult to keep (maximum a few months for the last two).
· Calcium hypochlorite is relatively easy to keep.
· NaDCC is much more stable.

Soapy solution of CRESOL = Lysol

District hospital

Therapeutic action

- Disinfectant and detergent

Indications

- Cleaning and disinfection of materials (floors, objects, instruments, surfaces, linen.)

Preparation

- Concentrated solution (containing 50% cresol and 50% liquid soap) to be DILUTED before use

Dilution

- Dilute in water just before use: 2 to 5% depending on amount of dirt (1 part of concentrated solution in 20 to 50 parts of water = 200 to 500 ml for 10 litres of water)

Use

- Objects and instruments
Soak in the diluted solution during 30 minutes, brush with care, rinse and sterilize if necessary.
- Rooms
Evacuate the patients, clean with the diluted solution, rinse and ventilate

to eliminate the smell and irritating odour.
- Linen
Soak in the diluted solution during 6 hours, rinse abundantly.

Precautions

- Do not confuse with pure cresol, without soap (see remarks).
- Do not use for the disinfection of food, or for materials than can come in contact with drinking water or food.
- Very irritating for skin and mucous membranes:

· Never use for wounds, skin.
· Avoid contact with the hands.

Remarks

- Lyorthol (R), sodium cresylol, Cresyl (R), Creolin (R), chloroxylenol 5%, Dettol (R), are similar products used for the same purposes and diluted in the same way, but Dettol (R) can also be used for skin, wounds and mucous membranes.
- Cresol (without soap) can be used but is not advised since it is more difficult to dissolve in water and is more irritating than the soapy solution. Furthermore, it has no detergent properties and stains linen.
- Storage: keep containers tightly closed.

(ETHYL) ALCOHOL = ETHANOL 70%

The use of this drug is not advised for general use: it is expensive, irritating and less effective than polyvidone iodine or chlorhexidine

Therapeutic action

- Antiseptic

Indications

- Used only for disinfection and cleaning of healthy skin before injections.

Preparation

- Alcohol of 95%, 92%
1 litre of 95% alcohol contains 950 ml of pure alcohole. Use diluted.

Dilution

- To obtain 1 litre of 70% alcohol from 95% alcohol, you need approximately 740 g (737 ml) of 95% alcohol and 260 g (263 ml) of distilled or filtered water. 95% alcohol must always be diluted 70% alcohol has the best antiseptic strength.

Contra-indications, side-effects cautions

- Do not apply to the eyes, mucous membranes, wounds or burns.

Remarks

- Can be easily replace polyvidone iodine. The use of alcohol can be justified only when it is available locally at a competitive price.
- Dilution can be expressed in% or in alcoholic degres: alcohol 95% = alcohol 95°.
- Storage: keep below 30 C
Close bottles tightly to avoid evaporation.

Alcoholic solutions of IODINE (iodised alcohol, iodine tincture)

The use of this drug is not advised: see remarks

Therapeutic action

- Strong, rapid acting antiseptic
- Antifungal

Indications

- Disinfection of healthy skin (surgery, injection or puncture)
- Treatment of fungal skin infection.

Preparation

- Iodised alcohol (1 or 2% in ethanol 70 or 80°)
- Iodine tincture (5% in ethanol 80 or 90° + 3% potassium iodine) is very concentrated preparation that should no longer be manufactured or prepared.

Precautions

- Very irritating solutions.
- Can provoke allergic reactions.
- Should not be used on wounds as it is painful and slows the healing process.
- Incompatible with mercury derivatives.

Remarks

- Alcoholic solutions of iodine have very limited use. They are very irritating, expensive and difficult to preserve; the alcohol evaporates (solutions become even more irritating as they age).
- They should be replaced by polyvidone iodine that is much less irritating and easier to preserve (see polividone iodine).
- Storage: maximum of a few weeks

MERBROMINE = MERCURESCEINE SODIUM (Mercurochrome(R).)

The use of this drug is not advised:

- it is toxic and allergenic;
- as an antiseptic, it is weak and expensive;
- it is not included in the WHO essential drug list.

Therapeutic action

- Antiseptic

Indications

- Disinfection of small superficial wounds

Preparation

- Powder to be dissolved
- Aqueous solutions of 1 or 2% ready for use
- Alcoholic solutions of 2% ready for use

Precautions

- Toxic for kidneys, nervous system and digestive system (resorption of mercury through skin).
- Allergic reactions, frequently accompanied by a sensitivity to all mercury

derivatives (other mercury antiseptics, amalgam for dental applications, preservation agents in cosmetics..).
- Colours the skin which can mask an inflammatory reaction.
- Never use together with an iodine product (iodised alcohol, polyvidone iodine): risk of necrosis.

Remarks

- The aqueous solutions; have a very weak antiseptic capacity.
- The alcoholic solutions are more efficient but mercuresceine has such a high level of toxicity that its use, in all forms, should be banned.
-Storage:

· Powder and alcoholic solutions: no special precautions.
· Aqueous solutions: never preserve diluted solutions for more than 1 week.

METHYLROSANILINIUM CHLORIDE = GENTIAN VIOLET = GV = Crystal violet

Health post

Therapeutic action

- Antifungal

- Antiseptic
- Drying

Indications

- Treatment of fungal infections of:

· the skin
· the scalp (tinea)
· the oral and vaginal mucous membranes

- Treatment of wet dermal disorders (eczema, impetigo.)
- Treatment of burns and superficial wounds

Preparation

- Powder to be dissolved
- Solution of 0.5%

Dilution

- It is used in a 0.5% solution = 5 g per litre (saturated solution). Dissolve one teaspoon in 1 litre of water. Stir several times and leave to settle. Filter through cotton or pour carefully into another bottle to eliminate possible sediment.

- Use drinking water from the water mains or boiled water, filtered if necessary.
- Wash the bottle carefully with hot water and let it dry before refilling.

Use

- Apply once a day.
- The solution can be applied in the mouth without danger.

Precautions

- May cause permanent pigmentation (do not use on the face of light skinned people).

Remarks

- Storage:

· of powder: unlimited.
· solution diluted ready for use: maximum 1 week.

POLYVIDONE IODINE = PVI (Betadine (R), Videne (R).)

District hospital

Therapeutic action

- Antiseptic and disinfectant

Indications

- Disinfection of the skin, wounds and burns
- Treatment of fungal and other skin infections, and skin manifestations caused by certain viruses (herpes, shingles.)
- Disinfection of medical instruments
- Disinfection of the hands before surgery

Preparation

- Concentrated solution of 10% PVI to be used pure or diluted

Dilution

- Pure (= solution 10% PVI) for the disinfection of the skin.
- Diluted to 2.5% PVI for the disinfection of wounds, burns and instruments (1 part of concentrated solution of 10% + 3 parts water).
- Diluted to 0.5% PVI for the mucous membranes (1 part of concentrated solution of 10% + 19 parts water).
- Prepare the dilutions with drinking water from the water mains or boiled water, filtered if necessary.

Use

- Disinfection of the skin

· Before injection or setting up IV catheter: one application of the diluted solution of 2.5% PVI (if the skin is dirty, first wash with soap and water).
· Before surgery: two applications of concentrated solution (10% PVI) after washing with soap and water, rinsing and drying.

- Disinfection of the umbilical cord
Concentrated solution (10% PVI).
- Treatment of fungal skin infections and viral manifestations (herpes, shingles)
Concentrated solution (10% PVI) twice a day.
- Disinfection of wounds and burns
One application of diluted solution of 2.5% PVI every time the dressing is changed.
- Treatment of infections and fungi on mucous membranes
Diluted solution of 0.5% PVI twice a day.
- Rapid disinfection of stainless steel instruments
Soak the clean instruments for 15 minutes in the diluted solution of 2.5% PVI.
- Disinfection of the hands
After careful and prolonged washing with soap, and rinsing with boiled water, rub the
hands while still damp with a small amount of 10% PVI solution until dry.

Precautions

- Do not use repeatedly on very large surfaces or with infants.
- Never use with a mercury derivative (e.g. Mercurochrome (R), certain disinfecting soaps) because of necrosis risk.
- Stop treatment if allergic reaction.

Remarks

- Relatively expensive product, but very efficient and polyvalent.

Storage:

· Concentrated solution 10% PVI: no special precautions.
· Diluted solution of 2.5% PVI: maximum 1 week.
· Diluted solution of 0.5% PVI: prepare just before use.
· Solution used for the disinfection of instruments: renew every day.

POTASSIUM PERMANGANATE

The use of this drug is not advised:

- the risk of misuse is too great;
- it is not included in the WHO essential drug list.

Therapeutic action

- Antiseptic
- Astringent

Indications

- Superficial wounds.
- Eczema.
- Fungal infection, in particular of the toes (athlete's foot)

Preparation

- Dark crystal violet to be dissolved
- Tablets to be dissolved; exist in various doses: 0.25 g, 0.50 g and 1 g

Dilution

- Dilute to 0.01% (100 mg in 1 litre water)
- The concentration must be precise:

· if it is too high: caustic
· if it is too low : inefficient

Scales must be used to obtain the proper concentration from the crystals.

Precautions

- Handle the dry product the concentrated solutions with care (burning of the skin and risk of explosion when brought in contact with an easily oxidizable material).
- Take precautions to avoid swallowing the tablets. Do not store near oral tablets, INGESTION IS VERY HARMFUL: risk of digestive perforation.
- Repeated applications will dry out the skin.

Remarks

-This product has no special advantages, except for its cheap price.
- Its use is discouraged because of constant mistakes in dilution and the risk of ingestion of the tablets.
- Storage:

· dry product: protect against air (air-tight containers).
solution diluted for use maximum 1 week.

TETRACYCLINE dermal ointment

The use of this drug is not advised:

- local applictions of antibiotics also utilised orally increase
- the risk of selecting resistent strains of bacteria.

Therapeutic action

- Antibacterial

Indications

- No indications. The use of antibacterial ointments is discouraged (risk of selecting resistant strains). Regular washing with antiseptic is often enough to heal a skin infection. If this fails, the treatment with oral antibiotics is preferable.

Preparation

- Ointment of 3% tetracycline (tube of 15 g or jar of 1 kg)

Precautions :

- Do not apply the dermal ointment to the eyes. Use only eye ointment for the eyes.

Remarks

- Storage: keep below 30°C.
Do not use after the expiry date.

TETRACYCLINE eye ointment CHLORTETRACYCLINE eye ointment and

OXYTETRACYCLINE eye ointment

Health post

Therapeutic action

- Antibacterial

Indications

- Eye infections (conjunctivitis)
- Trachoma
- Prevention of eye infections in the newborn (chlamydia and gonococcus)

Preparation

- Sterile ointment of 1% or 3% (tube of 5 g)

Dosage

Applied under the eyelids.

- Conjunctivitis :2 applications per day for 1 week.
- Trachoma: 2 applications per day for 4 to 6 weeks.
- Prevention of eye infections in the newborn: 1 single application at birth.

Duration

- Depending on indications

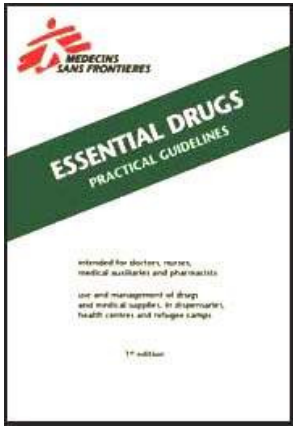
Precautions

- Allergic reactions possible. Stop treatment and refer to a doctor.

Remarks

- The ointments of 1% and 3% are used in the same way.
- Do not apply the dermal ointment to the eyes. Use only eye ointment for the eyes.
- The tetracycline eye ointment is better than SILVER NITRATE for the prevention of conjunctivitis in the newborn.
- Oxytetracycline and chlortetracycline are used in the same way as tetracycline.
- Storage: keep below 30°C.
Do not use after the expiry date.
After opening, close the tube well to avoid contaminahon.


Home"" """"> ar.cn.de.en.es.fr.id.it.ph.po.ru.sw



Essential Drugs -Practical Guidelines (MSF, 1993, 286 p.)

Part two

Organization and management of a pharmacy

Preliminary stage
Layout of the pharmacy
Management of the pharmacy

Organisation and rigorous management of the pharmacy are vital in all health structures, particularly when the resources are limited. These activities are often entrusted to doctors and nurses with little preparation

and no experience in this area. The principles set out concisely in this guide concern the organisation and the management of a pharmacy in a health centre or health post; they are directed towards the following objectives:

- to maintain a permanent stock of drugs and appropriate medical supplies;
- to reduce the costs: purchase - management - wastage;
- to save time and optimise the work of the staff;
- to make it easier to check the management and continuously evaluate consumption.

During an emergency programme or in a precarious situation, the first objective is to ensure that the health structures are supplied. Pharmacy management (supply storage, distribution) should be both simple and precise enough to:

- set up the system quickly;
- integrate non-specialised, even non-qualified staff;
- replace the person in charge of the pharmacy if necessary, without adversely affecting medical activity;
- facilitate the later evolution towards a more complex management system.

In any case, it is essential to bear in mind the national pharmaceutical

strategy and regulations, within which any pharmaceutical activities must be fitted.

To organise a regional or national programme, refer to the specialist works (see bibliography), especially "Managing drug supplies" (18) and "Approvisionnement en medicaments" (21).

Preliminary stage

Choice of drugs - Therapeutic regimens

Drawing up a list of basic drugs and standard therapeutic regimens offer two major advantages:

- better therapeutic treatment due to more rational and safer use of a restricted number of essential drugs;
- economic and administrative improvements at the level of purchase, storage, distribution and control.

If a recently adapted national essential drug list exists, it should be respected. Otherwise the list proposed by the WHO (Technical reports series 796,1990) is adapted to suit the needs and priorities of each programme, based on the recommended selection procedures.

The use of such a list, which has generally proved its worth in practice, has

several advantages:

- it makes it easier to coordinate international aid and obtain the approval of the organisations which subsidise the projects (United Nations, European Economic Community…);
- it simplifies and reduces the costs of supply: most drugs on the WHO list are available in generic form, at a price far more affordable than the corresponding patent drugs.

It is advisable to conform to certain treatment habits. For example, the doses of certain common drugs: in francophone Africa, tablets of 100 mg (base) of chloroquine are used, and 500 mg tablets of aspirin; in anglophone Africa, it is 150 mg (base) tablets of chloroquine and 300 mg aspirin tablets that are commonly used.

It will usually be necessary to avoid including the same drug under several dosages, which risks causing confusion in prescription and complicates management: paediatric doses can be obtained by dividing adult doses, made easier if the tablets are divisable.

The choice can also be affected by availability on the local market, if quality products are available at competitive prices.

Medical items (material for sterilisation, injection, suture.) should also be limited to the essentials and a standard list prepared.

Designation of drugs

Each active ingredient has an International Nonproprietary Name (INN) given by the WHO: drugs are designated by their INN in all standard lists. This name should be use in therapeutic protocols and management, so that everyone speaks the same language and there is no confusion. Common drugs are sold under a wide variety of brand names, depending on the manufacturer and distributor; same laboratory product may even have different names in different countries. For example, ampicillin can be Totapen (R), Penbritin (R), Pentrexil (R), Binotal (R).

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.

Classification of drugs

Drugs can be classified in several ways.

- Pharmaco-therapeutic classification

In the WHO list, drugs are grouped according to their therapeutic action. In some cases, a drug can appear in several groups, sometimes in a different form (atropine, diazepam.). With this classification (and its peadagological advantage), it is easier to insert supplies from different

origins as well as find a substitute for a missing product.

– Alphabetic classification according to administration

The drugs are divided into four groups and listed in alphabetical order within each group:

· oral drugs,
· injectables,
· infusions,
· drugs for external use.

This classification is used throughout this document since it satisfies the criteria of simplicity and standardization needed for the whole management system. Nonspecialised personnel can work with it.

Whichever classification is adopted, it should be used at every level of the management system (ordering, storage, distribution, dispensing) in order to facilitate all these procedures.

Levels of use

More limited lists should be drawn up depending on the capacities of the health facilities and the competence of the prescribers.

- "Health Post"
For the viIlage health workers.
- "Health Clinic"
For clinics with nurses or health auxiliaries.
- "District Hospital"
For health centres with doctors and physician's assistants.
- "Special Department"

To deal with the major endemic diseases and specialised hospital services: surgery, anaesthesia, obstetrics.

These restricted lists and the designation of the different levels must be adapted to the terminology and context of each country.

Quantitative evaluation of the needs

To define or reorganise a supply system, it is necessary to determine the quantities of drugs and materials needed. Once the list and therapeutic regimens have been established, it is possible to calculate the respective quantities of each drug from the expected number of patients and the diseases seen.

Several methods have been suggested: see "Estimating drug requirements" (41). The figures obtained can differ from those corresponding to the true needs or demand: this is the case when the

improvement of a health centre increases its use, or when the prescribers do not follow the proposed lists and therapeutics regimens. It may be possible to refer to the consumption of drugs in other situations that are comparable in terms of population and pathology.

When the system is well organised, the management aids will easily supply the necessary figures.

In all precarious situations, the "Emergency Health Kit" provides a rapid response to the medical needs, both qualitative and quantitative. Each kit is intended to supply the drugs and material needed to cater to the health needs of a population of 10,000 people for 3 months. Afterwards, the specific local needs must be quickly evaluated to establish a suitable supply.

The systematic evaluation of the needs also makes it possible to check how well the prescription schemes are respected.

Layout of the pharmacy

The premises

It is necessary to design working premises sufficient to enable:

- the safekeeping of stocks,

- the preservation of the drugs and material,
- rational and straightforward management.

Whether it is a question of building from scratch or converting an existing building, a regional warehouse or a clinic pharmacy, the objectives are the same, only the means of reaching these objectives differ. The proposals in this chapter apply to a district pharmacy, responsible for supplying the district health centre as well as the clinics and village health posts that refer to it.

In this case, two separate areas, which may or may not be adjacent, are needed: one for the daily dispensing to the patients of the centre, the other a warehouse where the drugs and medical material intended for all of the health facilities of the district can be stored, managed and distributed.

Characteristics of the warehouse

The dimensions of the warehouse will be determined by the storage needs which depend on:

- the number of drugs and kinds of material held,
- the number and activities of the facilities supplied,
- the timespan between distributions of supplies and deliveries received: the further apart these are, the bulkier the stocks are and the bigger the space needed.

It is better to have something too big than too small: a cramped warehouse is difficult to work in and keep tidy, and any necessary increases in stock or activity are awkward.

The security of the goods stored necessitate that the doors, locks, windows and even ceilings are solidly built.

Whether the drugs are well preserved or not depends on the ambient temperature and humidity, factors that are often hard to control in a tropical environment.

- It should be well-aired, with fans if possible, or even air conditioning which reduces the heat and humidity, but is very costly.
- Isolating construction materials can be used.
- The floors will be sloped so that water can run away, which makes maintenance far easier.
In colder countries, it should not be forgotten that frost can cause ampoules and bottles to break.

Layout of the interior of the warehouse

The layout should be logical and correspond to the circuit: reception, storage, distribution.

Shelving

Solid and stable shelving is vital. In tropical countries where termites attack wood, metal structures are preferred; if they can be taken apart, it is easy to adjust the distances between the shelves to suit the goods to be stored.

The arrangement of the shelves, tables. varies according to the arrangement of the premises.

Space between the shelves and the walls will improve ventilation. No products or package, even large-sized, should be stored on the floor, but on pallets which permit air circulation and protect against flooding.

Examples of layout of a peripheral pharmacy (Health Center). For more larger stock or for a central pharmacy, use several rooms and apply the same principles by adapting the layout to the needs: administration, cold room or refrigerators.

Inside the room, or if this is not possible in an adjoining room, it is necessary to prepare the following storage areas:

- Incoming storage area

For the storage of packages, unpacking and checking of goods before they are placed on the shelves.

- Outgoing storage area

For the storage of peripheral orders before they are distributed. Every destination should have its assigned area where it is possible to store the packages until their distribution.

Those two storage areas will be situated close to the entrance to facilitate handling.

It is also recommended to plan a storage area for empty boxes which will be used to prepare the orders from peripheral pharmacies.

A working area has to be included to check the orders or to prepare the orders.

A desk, close to a light source if possible, will be used by the person in charge of the pharmacy for administration.

Arrangement of medicines and materials

The stock will be arranged according to the classification adopted:

- oral drugs,
- injectable drugs; infusion solutions will be stored separately due to their bulk

- drugs for external use and disinfectants,
- smaller medical materials classified in sub-categories: dressing, injection, suture

In every category (oral, injectable, infusions, external usage), the product will be classified alphabetically.

Every product needs its own well defined place, shown by a large label giving the name of the product in INN, its form and dose; for example:

Ampicillin caps 250 mg

Every box and bottle will be correctly labelled, a new label being put on if necessary (old one illegible, in a foreign language). A label should clearly show:

- the name of the product in INN,
- the dose,
- the form,
- the expiry date.

Narcotic drugs should be kept in a locked cupboard: fentanyl, pethidine, morphine (as well as ketamine. pentazocine and codeine in certain countries).

Clearly indicate on the boxes (chalk, large marker) the expiry date. Arrange the products with the latest expiry date at the back of the shelves and those that should be used first in the front. 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, state where the rest of the stock is kept. Do not separate the rest of the stock in several places.

- Storing medical materials

Given the diversity of the articles to be stored, it is preferable not to use a strict alphabetical ordering, but to group the articles by category: injection material, dressing, sutures.

Using the same order for the arrangement in the pharmacy, for the inventory lists and for orders makes the work far easier.

Further, to enable a person who is not familiar with the INN system to find their way around in times of emergency or in case of sudden replacement, or in order to train the auxiliary staff, a list of the commercial names and the corresponding INN can be put up,

BACTRIM (R)	see Cotrimoxazole
FLAGYL (R)	see Metronidazole
VALIUM (R)	see Diazepam
TOTAPEN (R)	see Ampicillin

- Allow enough space for each drug.
- The arrangement should make it possible to work "by sight".

It should be possible to pick out the number of boxes of each product. In a few minutes, it should be possible to work out how many weeks or months stock of a given product remains.

- An empty space behind a label immediately shows that that product is out of stock.

This way of arranging the supplies is essential to a simple and effective management. A few hours should be enough to do a complete stock inventory.

Management of the pharmacy

Organisation of activities

The management of a district pharmacy should be entrusted to a single person with adequate training. He will be responsible for both the health centre pharmacy and the warehouse; he will be helped by one or more assistants, depending on the workload anticipated.

The job of each worker must be defined exactly: one of them should be able to replace the person in charge if necessary.

The timetable and calendar of work (orders, distributions, stock-control activities) will be planned to spread the workload as evenly as possible.

Stock-control

STOCK CARDS

The stock-card is the main instrument for stock-control. For each item (drug and material), a stock-card is made out and regularly updated, always by the same person. These cards allow:

- the identification of all movements of stock, in or out;
- the theoretical stock level to be available at any time;
- the consumption of the different users to be monitored;
- the orders to be correctly foreseen;
- an assessment of what and how much has been lost (difference between the theoretical stock and the actual stock after inventory).

On this stock-card, the following will be noted:

- The name of the product in INN, the form and the dose.
- All the movements (entries, exits, origin, destination) and the date.
- Orders made and the date.
- Inventories and the date. If the cards are well kept, and there are no thefts, the stock column corresponds to a permanent inventory.
- The following can also be included:

· safety stock,
· maximum stock,
· other storage areas for this product,
· unit price.

- The amounts are always recorded in units (5,000 tablets, 80 ampoules.) and never by box (10 boxes of ampicillin tablets could correspond to 200 tablets [10 boxes of 20 tablets] or 10,000 tablets [10 boxes of 1,000 tablets]).
- Write only one movement on each line, even if several operations take place the same day.

When an order is made, the date, supplier, and amount ordered are recorded. The stock column is not changed. When the order arrives, the amount received is included in the "incoming" column, and the "stock"

column is then modified.

Example of a stock card

Ampicillin – capsule 250 mg (Totapen®)

N° Rack _____ Mini 100.000 Maxi _____

DADUMPTA Ref. S 3

DATES	ORIGIN OR DESTINATION	INCOMING	OUTGOING	STOCK	ORDERED OR REMARKS
12.12.91	M.S.F.				130.000
04.01.92	M.S.F.	130.000		130.000	
05.01.92	Béboro		30.000	100.000	
05.01.92	Koumra		5.000	95.000	
06.01.92	Moissala		25.000	70.000	
30.01.92	Inventory			70.000	
01.02.92	UNICEF				150.000
01.02.92	Béboro		20.000	50.000	
05.02.92	Goundi		40.000	10.000	
04.03.92	UNICEF	150.000		160.000	

Example of a stock card

CALCULATION OF QUANTITIES TO RETAIN IN STOCK AND TO ORDER(STOCK LEVELS)

- Monthly consumption

This is calculated from the exits recorded on the stock cards: add the quantities in the outgoing column from several months (3, 6 or 12) and divide the total by the number of months.

- Working stock

Working stock corresponds to the amount of each drug consumed between supply of the pharmacy. For example, if the supplies arrive every three months,
working stock = monthly consumption x 3.

- Safety stock (or reserve stock)

This stock is planned to compensate for any delays in delivery, increases in consumption or possible losses. It depends on the delivery time of the orders.

This is the quantity below which the stock should never fall, at the risk of

running out of stock.

The quantity to be kept as a safety stock is generally calculated as half of the consumption during the time between two deliveries. It depends on the risks that the programme is able to take: running out of stock and having drugs pass their expiry date, in its particular context (resources, seasonal supply problems.).

- Quantity to order

The amount to order is based, for each item, on the information on the stock cards:

· stock according to the inventory when the order is made,
· safety stock,
· working stock.

Order = (working stock + safety stock) - remaining stock on the day the order was made.

ORDER AND DELIVERY FORMS

Pre-printed order forms make it easier to prepare orders and inventories, and to avoid transcription errors.

Order forms are drawn up according to the classification of the stock; the drugs are recorded using their INN names and the form (tablet, gel, bottle, ampoule.), dosage, amount ordered. The following can also be included:

- The unit price, so that the person in charge of the health facility can calculate the cost of his order.
- The packaging generally supplied (box of 1,000 tabs, 100 ampoules).
- The level of distribution: each product is allocated to a level of health facility (the same order form is used for all facilities).
- The stocks: it is best to make an inventory before every order.
- The monthly consumption.

Three copies of the order should be made, dated and countersigned by the person in charge of the health facility. Two copies will be sent to the supplier: one of which will be used as a delivery note and can also be used for invoicing, the second one rests at suppliers. The third copy will be kept for the facility itself.

Example: health centre order form, supplied every 3 months, with a reserve stock of 4 months

Name of the facility: Beboro
Person responsible: Dr A. Bernard
Date: 29.04.92

Signature: XXX

NAME	PRESENTATION/REMARKS	Destination	Price (FF)	Stock	Monthly consump.	Quantity ordered	Quantity delivered
ACETAZOLAMIDE Diamox®	tab 250 mg	S	0.14	—	—	—	
ACETYL SALICYLIC ACID Aspirin	tab 300 mg	B	0.01	55,000	10,000	15,000	
ASCORBIC ACID Vit. C	tab 250 or 500 mg	M - S	0.04		—		
ALUMINIUM HYDROXIDE with or without magnesium	tab 300 or 500 mg	B	0.03	15.000	6,000	27,000	
AMINOPHYLLINE	tab 100 mg	M	0.02	3,000	1,000	4,000	
AMPICILLIN	tab/caps 250 mg	B	0.18	16,000	4,000	12,000	
ATROPINE OR DERIVATIVES : PROPANTHELIN HYOSCINE BUTYBROMIDE Buscopan®		B	0.03		—	—	
BISACODIL	tab 5 mg		0.01		—	—	
CHLORAMPHENICOL	caps 250 mg	M	0.09	6,000	500	—	
CHLOROQUINE tab 150mg phosphate = 100mg base		B	0.04	50,000	10,000	20,000	
CHLORPHENAM	tab 4		0.01				
CHLORP							

ORAL ADMINISTRATION

RECEPTION OF THE ORDER

The order should be accompanied by a delivery note or an invoice showing the number of packages and their contents.

On reception, the number of packages should be checked immediately. Then, their contents can be checked:

- Ensure that the items delivered correspond to the items ordered, and that the quantities conform to those on the delivery note.
- The packaging of each drug is checked, its labelling, its expiry date and the appearance of the product if possible.

The dispatcher will be informed immediately of any discrepancy.

The drugs and materials will be arranged, as soon as possible, in the place assigned to them. The quantities received are recorded on the stock-cards.

The delivery notes and invoices are filed with the order forms in an "orders" file to be kept for three years or more depending on the regulations in force.

INVENTORY

At least once a year, but if possible before every order, an inventory of the

quantities actually in stock and their expiry dates should be made.

The stock cards give a theoretical figure for the stock, but the quantities actually available should be checked, product by product. Differences can arise through theft or errors in the record-keeping. These differences should be thoroughly investigated.

An inventory can be made easily in a correctly arranged pharmacy. It is a vital job.

During the inventory, the pharmacy or warehouse should arrange that there is no movement of stock.

DISTRIBUTION

The warehouse supplies the pharmacies in the district following a timetable agreed between the warehouse manager and the persons in charge of the district health facilities. Each pharmacy will send the warehouse two copies of an order form (as described earlier):

- the quantities actually supplied by the warehouse in completing the order will be filled in on both copies;
- one copy will be sent along with the delivery;
- the other will be placed in a file that has been created for each pharmacy in the district, after checking that each item sent has been correctly

recorded on its stock card; the date of this recording will be on the order form as proof.

The orders and deliveries to the pharmacy of the district health centre will proceed in the same manner.

Each pharmacy in the district will have its own file intended for its own internal management. The entries in this file will keep an account of all that has come in from the order forms and all that has gone out from the consultation and (for the structures that have this facility) hospitalisation registers.

- Re-packaging drugs in view of their distribution

The drugs are delivered in large boxes (or containers) holding, for example, 1,000 tablets or 100 ampoules. It is necessary to divide the boxes of certain little-used or expensive drugs (e.g. ampoules of adrenaline - praziquantel) to distribute them to the pharmacies of small clinics.

To dispense the drugs to patients, it is better to pre-packe.

To do this:

· make a list of the most commonly prescribed drugs,

· note the usual treatment regimens for each of these drugs, for adults and for children in each age range;
· obtain small plastic bags (rather than paper);
· prepare labels for each drug, showing clearly:

- the name of the centre,
- the name of the drug (INN) and its dose,
- the dosage written out in full (and in symbols for the illiterate);

· put the number of tablets corresponding to a single treatment and add the corresponding label into the bag;
· seal the bags: there are bags that can be resealed by pressure; if not it is possible to staple them closed or, preferably, to use a small heat-sealing machine which welds both sides.

Prepacking has many advantages:

· easier and quicker distribution;
· the drugs keep better;
· easier and more rigorous control over drugs going out;
· a more acceptable presentation to the patient; at the same time, the drug is easier to identify and the way to use it 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.), to avoid the risk of making mistakes in the drugs dispensed or in counting, as well as to avoid drugs being lost while this work is being done. It is necessary for all health structures which have more than 20 consultations per day.

Remarks

To get 100, 200 or 500 tablets from a container of 1000, it is possible to weigh them, rather than counting, if a sufficiently accurate balance is available.

To repackage large quantities of tablets (health centres of large districts) tablet-counters exist, either for manual counting or for automatic counting through a simple electrical device.

- Dispensing drugs to the pahent

For the patient to correctly follow his treatment, adequate explanation should be given to ensure that they understand:

· how to take the medicine;
· how often a for how long;
· why the entire course of an antibiotic treatment must be taken, whilst treatment with an analgesic should be stopped when the pain stops;
· possible side-effects: for example, drowsiness caused by anti-histamines,

the need to avoid alcohol with metronidazole.

The person dispensing the drugs should be able to give the patient the information that he needs.

The packaging of the drug should be presentable; its label sufficiently legible and complete to remind the patient how to use the drug.

In busy centres, it is better to have two people responsible for dispensing to double check the delivery of prescriptions; the first assembles the drugs prescribed, the second checks that they are correct and gives them to the patient giving him all necessary explanations, a little apart from the other users.

Interpreters are needed if several languages or dialects exist in the same region.

Gifts of recuperated medicines and medical samples

It is recommended that you do not seek or accept supplies coming from collections of medicines retrieved from consumers in industrialised countries, or the samples that the manufacturers give freely to doctors.

Very often, they are proprietary drugs that are unknown to the prescribers and unsuitable for the local pathologies. The many brand drugs that are

supplied in this way interfere with the implementation of standardised therapeutic regimens and makes any form of management impossible.

In certain individual cases, this support can be valuable, provided the drugs have been rigorously sorted and reply to the precise needs of competent prescribers. However, for most health centres and for the clinics, it is far better to use an autonomous supply system, based on a limited number of drugs at an acceptable cost, that can be used and managed correctly.

The choice of suppliers

To buy or to import? A choice has to be made whenever there is the possibility of obtaining supplies locally (manufacturers and/or wholesalers) and that, at the same time, individual importation procedures are permitted. Other than in emergencies, the decision depends on two factors, quality and cost.

QUALITY

There are poor quality drugs on the market that have not passed the necessary controls: some of them do not contain enough of the active ingredients, or even no active ingredients at all, while others are poorly made and deteriorate quickly.

To identify the dubious suppliers, those in charge of supply centres can seek advice from the local health authorities and hospital pharmacists who know the local pharmaceutical market that they must use.

COST

You should compare the local price of supplies against the cost price of importing the same items, including freight charges (by sea of by air), transit costs and, sometimes, the payment of various duties.

Local supplies can have an advantage, even if the prices are slightly higher than the cost price of importation: they make it possible to reduce the level of stocks, since more frequent resupplies are possible, and therefore to reduce the risks of losses (expiry, misappropriations.) and the volume of storage needed.

For infusion solutions, which are very bulky and cost a lot in freight charges, it is recommended to buy locally if they are available and of good quality.

For rarely used drugs, which represent a negligible percentage of the total cost of supplies, it is not worth the effort of importing them if they are available on the spot and of good quality.

Preservation and quality of the drugs

General remarks
Quality
Identification
Stability - Storage
Expiry period
Deterioration

To guarantee effective treatment, it is vital to maintain the quality of the drugs, which means that their identity, dosage and condition have to be assured.

General remarks

Storage conditions and climatic conditions such as temperature, humidity and light are often very different in tropical countries than in those countries in which the drug was tested. This raises the question whether the drug is still reliable and effective upon arrival.

First, we ought to bear in mind that drugs do not lose their efficacy suddenly at the expiry date. The deterioration process is very slow and varies widely.

There are not only many different products but any given product may also come in various forms and the process of deterioration may vary accordingly.

The determination of the conventional expiry date is based upon the average rate of deterioration that is supposed to occur under normal conditions of light, temperature and humidity. When the expiry date has been calculated on the basis of such conditions, drugs will keep their original therapeutic effect up to the very date of expiry (at least 90% of the active ingredients should be still present and there should not be any substantial increase in toxicity).

Quality

In order to obtain good quality drugs, we should try to acquire them in the best possible manner, which means dealing with reliable suppliers and being able to assure quality maintenance through optimum transport and storage conditions.

The quality of generic drugs is equal to that of specialized pharmaceutical products, provided that they are manufactured and controlled properly. When no laboratory is available to test the quality of these generics, we have to rely on the manufacturers and wholesalers for proof of that quality. The choice of a supplier should never depend exclusively upon price.

Identification

All drugs should be easily identifiable, both by the medical staff and the

patient. In whatever form the drug is packed (bottle, bag or box), it must bear not only the name of the product inside, but also its dose and expiry date. This is particularly important for generic drugs which are sometimes hard to recognize. Different products often look alike or, on the other hand, the same product may exist in different colours and/or forms (e.g. tablets or capsules).

Stability—Storage

Environmental conditions, such as temperature, air and light, are all factors that influence the storage of drugs.

TEMPERATURE

Standard storage conditions are normally defined as the following temperatures:

deep freeze	-15 to 0°C
refrigerator	0 to + 6°C
cooled	+6 to +15°C
room temperature	+ 15 to + 30°C

However, temperatures during transit and transport may reach 5°C to 60°C

in vehicles, wagons or on loading platforms. This means that very often the original expiry dates cannot be guaranteed.

Freezing can be particularly damaging to solutions, causing precipitation of the active ingredients or breaking the ampoules.

AIR

Drugs may also be damaged by the influence of humidity and oxygen. Therefore all drug containers must remain closed. Special medical packing, often opaque and waterproof, offers protection against the influences of air and light. Avoid repackaging, until first distribution.

LIGHT

Excessive light may also harm drugs. Solutions are particularly sensitive to light. Injectable preparations have to be kept in the dark in their original packing. Certain types of coloured glass give the misleading impression that they protect drugs from light.

Remark

Laboratory equipment, such as chemical substances or rubber and sometimes plastic materials, require protective measures that are comparable to those for drugs.

Expiry date

In most countries, manufacturers art bound by law to have the stability of their products tested under standard conditions. They have to be able to ensure a minimum period of preservation. This is usually between 3 and 5 years, although certain sophisticated products have only a 1 to 2 year period before they expire.

Packaging should bear the expiry date and any specifications as to storage conditions.

When there is no such expiry date, the manufacturing date can be used as a basis for calculating the expiry period. Common antibiotics, hormone preparations, vitamins and liquid drugs in general will last 3 years from the date of manufacture. Other preparations usually have a 5-year period before expiry. This is only a very general rule and there are many exceptions. For instance, it does not apply to products that have to be stored under special conditions (refrigerated.).

Disposable material in sterilized packs may be used as long as the packaging remains intact.

Deterioration

Being well acquainted with the normal characteristics of every drug

(colour, smell, solubility, appearance) is essential. It will enable you to detect any changes as soon as they occur. Certain processes may however occur without any detectable change in the appearance of the products.

Active agents that lose their power may have consequences varying in severity both for the individual patient or for a larger group of users.

Antibiotics that have expired, and become less active, may encourage resistant strains.

Any loss in effectiveness should not be compensated for by administering higher doses, since this may lead to serious risks of overdosage of toxic drugs.

Some drugs may even undergo changes that bring about the formation of substances which are far more dangerous and lead to an increase in toxicity. A classic example is tetracycline: when this pale-yellow powder has become brownish and viscous, it must not be used; tetracycline would then be dangerous to use, even if the expiry date has not yet been reached.

Other drugs which lose their effectiveness may produce an increase of allergic reactions. This is the case with penicillin and cephalosporin.

Do not use suppository, ovules, creams or ointments that have melted because of the heat. The active substance will no longer be homogeneously

mixed.

Oral rehydration salts can be used as long as they maintain their typical white powdery aspect. Humidity will turn them into a compact mass, more or less brownish and insoluble. Whatever their expiry date, they are then no longer fit for consumption.

DRUGS THAT HAVE EXPIRED

When the only drug available has passed its expiry date, the doctor may in certain cases decide to use it anyway.

It is better to use such drug than to leave a seriously ill patient without treatment. Although a particular drug will not suddenly become unfit for consumption from one day to the next, the following factors should be considered before using any drug after its expiry date. Storage conditions should have been consistently acceptable, i.e. packaging undamaged, stored at an average temperature and protected against humidity and light. It should also be remembered that its physical appearance may not reveal some problems such as insolubility.

The drug sheets give information on the stability of a individual drugs. Unfortunately, research does not yet offer enough readily available information.

Expiry dates on drugs that require a precise dosage need to be strictly respected because of the risk of under-dosage. This is especially the case for cardiotonic drugs or anti-epileptics, and for drugs that may become toxic such as tetracyclines.

THROWING AWAY EXPIRED OR USELESS DRUGS AND MATERIALS

Do not throw away or bury any expired products without taking special precautions. It is advisable to incinerate them. If any tablets, capsules or liquid drugs are enclosed in incombustible packing, that packing should first be removed before incinerating the drugs. Keep a special spot for this operation and bury residual material at a great depth, far away from any well or water reservoir.

Prescription, cost, compliance

SOME SUGGESTIONS FOR

Reducing costs - Facilitating control - Reducing risks

Limiting the use of injectable drugs

Limiting the use of syrups and other drinkable solutions

Looking at other regimens of treatment

Considering the prescription of non-essential drugs and placebos

Using the traditional pharmacopoeia as a supplement to essential drugs

A more effective, safe and economical use of drugs can result from carefully choosing treatment protocols and the corresponding list of drugs.

Limiting the use of injectable drugs

Many patients ask to be treated by means of injection because they imagine it to be more effective. There are also prescribers who attach greater value and effectiveness to injections and transfusions.

Treatment by injection is always more costly than oral treatment. The price of the drug is higher for an equal dose of effective, active substance. More over, treatment by injection requires the strict sterilization of injection material or even the use of expensive disposable material. It may also expose the patient to complications due to poorly tolerated products (e.g. abscess, gangrene as a result of quinine injections, transfused antibiotics). Complications may arise when the injection technique is performed badly (overdose symptoms following an IV injection administered too quickly, paralysis of the sciatic nerve). If sterilization does not meet optimum standards, there may also be a risk of bacterial or viral contamination (tetanus, hepatitis, AIDS.).

If the drug required also exists in the form of tablets or capsules, injections should not be administered except in emergency cases when the patient's digestive system would not tolerate any other treatment or when he or she is incapable of taking the drug orally.

In such a case, treatment by means of oral drugs should replace treatment by injection as soon as possible (antimalarials, antibiotics, diuretics.).

Limiting the use of syrups and other drinkable solutions

It is often easier to take drugs in liquid form, especially for children who like the nice-smelling sweetened solutions. There are however numerous reasons to avoid the use of such syrups:

- Risk of incorrect usage

Away from controlled hospital conditions, people with little medical understanding may often take a dangerous dose of the drug. Spoons are never of a standard size (there are spoons used for soup, coffee, tea.). Solutions have to be prepared in advance, using an exact measure of clean boiled water and should be shaken before use. There is therefore a high chance of an under- or overdose.

Solutions can only be stored for a few days and carry the risk of contamination or fermentation.

In many countries, syrups are thought of as cough mixtures. This may account for much confusion between such cough mixtures and antibiotic syrups or solutions.

- Economic considerations

Compared with the price of tablets or capsules, the price of syrups and drinkable solutions is substantially higher. Even if used in the form of a powder for subsequent preparation, costs may be between 2 and 7 times higher than for an equivalent active dose. This is because of the drug bottle itself and the higher transportation costs caused by weight and volume.

Looking at other regimens of treatment

The initial choice of a particular treatment will often determine compliance and its medium-term cost. It is preferable to choose those treatments that are as short as possible and require fewest doses (once or twice a day). Obviously, treatment with a single dose daily is the ideal. In this respect, the following cases are good examples:

- An "instant" treatment using a single dose is often preferable, even if such a treatment is sometimes less effective from a pharmacological point of view. For instance, the treatment of amoebiasis with a single dose of 8 tablets of 250 mg metronidazole may be preferred to a dassic 7-day

treatment.

- The combination of pyrimethamine-sulfadoxine for treating malaria should not be given as a first choice treatment in those zones where chloroquine is effective. But a single dose which may be taken immediately may be preferable for those patients who may not be very disciplined.

- A short-course anti-tuberculosis chemotherapy including rifampicin may seem a costly treatment. Those costs might be even higher if poorly monitored treatment is interrupted, followed by relapse or reinfection.

Considering the prescription of non-essential drugs and placebos

Psychosomatic illnesses occur frequently in developing countries, just as they do in industrialised ones. It is not always possible to prescribe a specific therapy in order to overcome these complaints. Is it really possible and desirable to send those patients home without giving them a symptomatic drug or a placebo? And what kind of placebo should be used?

When local medication rules are quite strict and do not allow the use of any placebo or non-essential symptomatic medication, we often see an abuse of other products (chloroquine, acetyl salicylic acid, diazepam and even antibiotics).

On the other hand, you may sometimes run the risk of using a placebo

when genuinely effective and necessary medication should be prescribed. This happens, but not very frequently. Therefore, the introduction of a placebo on the drug list may be justified. Multivitamins may, for example, act as a harmless and relatively cheap placebo. Their composition is generally that necessary to prevent vitamin deficiencies and they have no contra-indications.

Many specialized pharmaceutical products (tonics, liver treatments presented as drinkable ampoules) have no real therapeutic justification and, as they cost more, they should not be used as placebos.

Using the traditional pharmacopoeia as a supplement to essential drugs

Effective traditional medication, usually intended for the treatment of symptoms, still exists nearly everywhere in the world. Prepared from local plants and used for generations, these remedies often have all the advantages and half the cost of industrially-prepared drugs for the same indications.

This may be the case for laxatives, cough mixtures, anti-diarrhoea, cholagogue and dermatological preparations. They may be administered in the form of infusions, decoctions or various other mixtures and they can be prepared at health care facilities.

Medical personnel should of course be aware of the existence of these

treatments and suggest their use to patients as a complement to the therapeutic treatment that has already been chosen.
Nevertheless, the patient must understand the limits of traditional remedies when it comes to serious illnesses such as tuberculosis,meningitis. In these cases, there is no effective treatment other than "modern" drugs.

Use of antibiotics in precarious situations

ANTIBACTERLAL = ANTIBIOTICS + SULPHAMIDES.

Possible causes for failure of antibiotic treatment
Choice of antibiotic therapy
Combination of antibiotics
Principal antibiotic groups

Knowing which antibiotic to prescribe is difficult in precarious situations.

The diagnosis of an infection is essentially based on clinical criteria. It is practically impossible to rely on bacteriology (culture, isolation and identification of the bacteria). At best, a Gram stain can give an idea of the nature of the bacteria involved.

The choice of treatment protocol depends on the context in which the patient is seen:

- Dispensary: many patients examined rapidly and therefore difficult to follow up for treatment. Standard protocols should be drawn up for diagnosis and treatment of the most frequently encountered diseases. The number of available antibiotics will be restricted.

- Health centre and hospital: prescriptions can be more versatile. In case treatment fails or the patient tolerates the initial treatment badly, altematives are available. More antibiotics are available.

Possible causes for failure of antibiotic treatment

- Poor diagnosis: clinical signs of infection may be caused by diseases that are not of bacterial origin: viral, parasitic.
- The dosage or the length of treatment has been inadequate.
- The treatment has not been followed properly.
- Vomiting occurs after the drug has been taken orally.
- The interaction between different types of drugs taken by the patient decreases their absorption (e.g. tetracyclines with ferrous salts or antacids).
- The antibiotic does not diffuse well into the infected tissue (abscess, cerebro-spinal fluid).
- The antibiotic becomes inactive after several products have been mixed in the same infusion bag.
- The antibiotic has passed its expiry date or has lost its efficacy due to

poor storage conditions (most antibiotics simply lose their effectiveness; tetracyclines, however, become toxic for the kidneys and they must be avoided).
- Bacterial resistance to the chosen antibiotic.

Choice of antibiotic therapy

The following table gives, for each type of infection, the bacteria most often responsible for such an infection and the antibiotics most suited both to these bacteria and diffusion into the infected tissue.

Explanatory notes:

- Medication preceded by an asterisk (*) is contra-indicated during pregnancy.
- Figures between brackets give an idea of the average price per treatment in French Francs (standard treatment being 5 days, except for typhoid fever: 3 weeks, and for trachoma: 1 month).
It is interesting to compare prices of different treatments. The cost would affect the choice of a particular treatment, along with other criteria such as effectiveness, tolerance and expected results.
- Antibiotics under the heading "alternative" should be prescribed if the initial choice of antibiotic fails, is not tolerated or is contra-indicated.

Type of infection	Most commonly involved bacteria	First choice antibiotic	Alternative
Upper respiratory infections			
+ 5 years	Streptococcus A	Penicillin V (2)	Erythromycin (8)
- 5 years	Haemophilus influenzæ	Ampicillin (2) or *Cotrimoxazole (1)	*Chloramphenicol (2) or Erythromycin (4)
Lower respiratory infections			
+ 5 years	Pneumococcus	P.P.F. (10)	*Chloramphenicol (5)
	Mycoplasma	*Tetracycline (3)	Erythromycin (8)
	Chlamydia	*Tetracycline (3)	Erythromycin (8)
	Rickettsioses	*Tetracycline (3)	Erythromycin (8)
5 years	Haemophilus influenzæ	Ampicillin (2) or *Cotrimoxazole (1)	*Chloramphenicol (2) or Erythromycin (8)
Otitis			
+ 5 years	Pneumococcus	Penicillin V (2)	*Cotrimoxazole (1) or Erythromycin (8)
- 5 years	Haemophilus influenzæ	Ampicillin (2) or *Cotrimoxazole (1)	*Chloramphenicol (2) or Erythromycin (4)

FIGURE

Type of infection	Most commonly involved bacteria	First choice antibiotic	Alternative
Intestinal infections			
Typhoid fever	Salmonella typhi	*Chloramphenicol (15)	Ampicillin (45)
Bacterial dysentery	Shigella Salmonella non typhi	*Cotrimoxazole (2) *Cotrimoxazole (2)	Ampicillin (9) Ampicillin (9)
Urinary infections			
Upper	Enterobacteria	*Cotrimoxazole (2)	Ampicillin (9)
Lower	Streptococcus B	*Cotrimoxazole (2)	Ampicillin (9)
Urethritis	Gonococcus	PPF + Probenecid (3)	*Chloramphenicol (1)
Chancroid	Haemophilus ducreyi	*Cotrimoxazole (3)	Erythromycin (11)
Salpingitis	Enterobacteria Gonococcus Chlamydia Mycoplasma No identified organism	Ampicillin (9) Ampicillin (9) *Tetracycline (3) *Tetracycline (3) Ampi. injectable + metro. + genta. (51)	PPF Metro. (11) Erythromycin (8) Erythromycin (8) Erythromycin (8) *Chloramphenicol (5)
Meningitis			
> 5 years	Meningococcus Pneumococcus	*Chloramphenicol oil (12) Ampicillin	Ampicillin *Chloramphenicol
< 5 years	Meningococcus Pneumococcus Haemophilus influenzae	*Chloramphenicol oil (6) Ampicillin *Chloramphenicol	Ampicillin *Chloramphenicol Ampicillin
Ocular infections			

Conjunctivitis	Haemophilus influenzae Pneumococcus	Tetracycline eye (1) Tetracycline eye (1)	Sulfacetamide eye (2) Sulfacetamide eye (2)
Trachoma	Chlamydia	Tetracycline eye (2)	Sulfacetamide eye (4)
Osteomyelitis	Staphylococcus aureus	Cloxacillin (6)	Ampicillin + Gentamicine (50)

PPF = Procaine Penicillin Forte (3 MIU procaine penicillin + 1 MIU penicillin G)
Metro. = Metronidazole
Genta. = Gentamicine

FIGURE

PPF = Procaine Penicillin Forte (3 MIU procaine penicillin + 1 MIU penicillin G)
Metro. = Metronidazole
Genta. = Gentamicine

Combination of antibiotics

A combined treatment using several antibiotics can only be justified in cases of severe infections.

Certain combinations are to be avoided because the effect of one antibiotic may neutralize the effect of the second when administered at the same time.

At any rate, the decision to use antibiotics in combination must be made by

a doctor for each case and such a decision must never be made as a matter of course.

Penicillin and its derivatives should not be used in combination with tetracycline, chloramphenicol, erythromycin or rifampicin.

Principal antibiotic groups

PENICILLIN AND ITS DERIVATIVES

· Ampicillin and amoxycillin
· Benzathine penicillin
· Benzyl penicillin (Penicillin G)
· Cloxacillin
· Phenoxymethyl penicillin (Penicillin V)
· Procaine penicillin with or without benzyl penicillin

Fast-acting types

- Penicillin V or phenoxymethyl penicillin taken orally is the first treatment for tonsillitis. However, its effect on pulmonary infections is variable.
- Penicillin G or benzylpenicillin should be reserved for acute infections only. Because of its rapid elimination, injections every six hours are vital. This is difficult to manage outside a hospital environment.

Long-acting types

- Procaine penicillin has the advantage that it can be injected in one single dose once a day. It reacts quickly (45 to 60 minutes) and can only be injected IM.

For the treatment of gonorrhoea, it must be combined with probenecid.

- Procaine penicillin forte (PPF) is a combination of procaine penicillin and benzylpenicillin. It acts 15 to 30 minutes after injection, more rapidly than the procaine penicillin on its OWll, because of the penicillin G. For the treatment of gonorrhoea, it must be combined with probenecid.
- The concentration of the benzathine penicillin builds up progressively in the 24 hours following injection. It remains active for 15 to 20 days. Because of the delayed action and the low concentrations in the blood, it is only used for infections susceptible to penicillin which evolve slowly. Its use is contra-indicated in cases of acute infections.

Derivatives of penicillin

- Ampicillin is a broad-spectrum antibiotic. It is only to be used for the treatment of respiratory infections in children under 5 years of age: it is active against Hmophilus influenz, frequently the cause of these infections. Its use is also recommended for pregnant women, for whom other antibiotics are frequently contra-indicated. Apart from these examples, the

use of cheaper antibiotics is preferred. The injectable forms should only be used in cases of severe infections.
- Amoxycillin has the same spectrum as ampicillin and has the advantage of a better intestinal absorption rate which allows lower doses to be given. If orally administered, use amoxycillin rather than ampicillin if the cost is more or less the same.
- Cloxacillin is a small spectrum antibiotic, limited to the treatment of staphylococcus infections, as most of these have become resistant to penicillin.

MACROLIDES

- Erythromycin

Erythromycin should only be used in cases of penicillin allergy because it is expensive.
It is the only macrolide available in generic form. The others have the same indications.

PHENICOLS

- Chloramphenicol

Chloramphenicol is a broad spectrum antibiotic, effective against many types of infections. It should be the antibiotic of first choice in cases of

typhoid fever.

Because of its efficacy and low cost, it is still widely used, but because of the risks of haematological toxicity, its use should be strictly limited to specific indications: typhoid fever, meningitis and broncho-pneumonia.

The injectable form of chloramphenicol in oil should be reserved for meningitis epidemics.

SULPHONAMIDES

· Sulfadimidine
· Sulfadoxine
· Cotrimoxazole (sulfamethoxazole + trimethoprim)

Simple sulphonamides

- The use of sulphonamides in the form of sulphadimidine is limited to lower urinary infections without complications (without lumbar pain or fever).
- Sulfadoxine is a long-acting antibiotic (about one week). Despite the existence of resistant strains and significant side-effects, it is still incorrectly used for meningitis or cholera epidemics.
- The use of non-absorbing sulphonamides (sulfaguanidine, phtalysulfathiazole) is not recommended because they rarely work in cases

of intestinal infections of bacterial origin.

Combined sulphonamides
- The use of a sulphonamide in combination with trimethoprim (e.g. cotrimoxazole) benefits from the synergic effect of the two products. Indications are more numerous than for simple sulphonamides: urinary infections with fever, pneumonia's..

CYCLINES

· Tetracycline and oxytetracycline
· Doxycycline

- Because of the multiplication of organisms resistant to cyclines, they should be kept for specific infections: brucellosis, cholera, borreliosis, typhus, gonorrhoea resistant to penicillin and certain chronic pneumopathies. They must not be used as a matter of course and must always be prescribed under medical supervision.
- Doxycycline has the advantage of being able to be administered in a single dose for the treatment and prevention of cholera or typhus. It is still less widespread and better tolerated than tetracycline, even in case of renal disease.

AMINOSIDES

- Gentamicin

The specific indications for gentamicin are such that they should always be prescribed under medical supervision because of its toxicity, cost and frequent appearance of resistance.

ANTIBACTERIAL (ANTISEPTIC) OF THE URINARY TRACT

- Nitrofurantoin

It acts over a sufficiently wide spectrum to cover the majority of lower urinary tract infections in young women. In that case, it can be prescribed as first choice except late in pregnancy. Its cost is low.

Antiseptics and disinfectants

Definition

Antiseptics are products used for the disinfection (asepsis) of living tissues (skin, wounds, mucosa.).

Disinfectants are products used for the disinfection of objects and surfaces (floors, tables.).

Certain products can be used both as antiseptic and as disinfectant (e.g. polyvidone iodine, chloramine T), but, unfortunately, the perfect product, which is cheap, effective for all bacteria, stable, easy to transport and suitable for use both on living tissue and objects, does not exist - at least not yet.

Selection

We can nevertheless suggest a restricted list of products that meet all the demands of medical facilities:

- normal soap,
- tosylchloramide sodium (= chloramine T),
- chlorhexidine (or preferably chlorhexidine + cetrimide),
- polyvidone iodine,
- gentian violet,
and for floors and surfaces:
- a soapy solution of cresol (= Lysol) or preferably a product that generates chlorine like calcium hypochlorite (HTH), bleach, sodium

dichloro-isocyanurate (= NaDCC) or even chloramine T.

In the chapter "Drugs for external use and disinfectants", the descriptions for each product give details on the use of these products. Other widely-used products are also described.

Finally, some notes on particular products:

- Alcohols (ethanol and isopropanol)

Good disinfectants at 60-70° (60-70%) for objects or intact skin (more effective at 60-70° than at 90-95°), but:

They are not good for wounds because they are painful and slow the healing process.

They are expensive both to buy and to transport (they require special packing for air transport). Moreover, the purchase, transport and importation of ethanol often require complicated administrative procedures.

They can be advantageously replaced by polyvidone iodine.

- Chloroxylenol (Dettol (R))

An efficient but expensive product which can be used as an antiseptic (0.25% chloroxylenol solution) and disinfectant (see "soapy solution of cresol").

Can be of interest if locally available.

- Eosin

Antiseptic with limited effectiveness, but useful as a drying agent. Its aqueous solutions are easily contaminated by pathogenic bacteria.

Can be replaced by gentian violet.

- Hydrogen peroxide (hydroperoxide)

Very useful for certain indications (e.g. dirty wounds), but very hard to preserve in diluted and ready-to-use form. Concentrated hydrogen peroxide is dangerous to transport and handle.

- Hexachlorophene

Antiseptic with limited effectiveness and toxic for the central nervous system. Usage not advised.

- Mercury derivatives: e.g. Phenylmercury (Merfen (R)), Mercuresceine

(Merbromine, Mercurochrome (R), Mercurobutol (Mercryl (R)), Thiomersal (Merthiolate (R), Timerosal (R))
Antiseptics with limited effectiveness in aqueous solutions (mercurosceine has very little effect).

Toxic for the kidneys and the central nervous system, often cause allergies and pollute the environment.

Forbid their use.

- 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.

INDICATIONS	PRODUCT TO USE	DILUTION		STORAGE	REMARKS
– *Fresh wounds* – *Washing hands* – *Cleaning skin* (e.g. before injections) – *Perineal cleaning before delivery*	CHLORHEXIDINE (1.5 %) + CETRIMIDE (15 %) = HEXACO or Savlon® or CHLORHEXIDINE (5 %) or ORDINARY SOAP	20 ml per 1 litre 10 ml per 1 litre	Use water from the water mains (running water) or water filtered by a candle type filter and boiled for 5mn. Rinse the bottle abundantly before each preparation.	Renew once a week	Never use for wounds to the skull or ear. Never use with soap.
– *Infected wounds* (pus, smell...) – *Abscess* – *Furuncles* – *Infected ulcers...* (anything purulent)	TOSYLCHLORAMIDE SODIUM	5 g per litre (2 g per litre for mucosa or when used frequently) (equivalent to DAKIN solution)		Renew once a week	Put in a brown or opaque bottle (non metal containers). In case of prolonged use, protect the healthy skin around the wound with vaseline
– *Mycoses* (e.g. thrush) – *Running dermatoses* (eczema, impetigo) – *Superficial burns* – *Small and superficial wounds*	GENTIAN VIOLET	Saturated solution (5 g/l) 1 teaspoon/litre Shake several times, leave for some time and pour into another bottle or filter to remove any deposit.		Renew once a week	Do not use on the face of light skinned people, as it can provoke persistant pigmentation.
– *Placement of IV catheter (under pressure)* – *Umbilical cord* – *Surgical procedure* – *Surgical wounds before suture*	POLYVIDONE IODINE (10 %) = PVI = Betadine®	Pure (= 10 % PVI)			Never use with a mercury derivative (Merien®, Mercuro chrome®, disinfectant liquid soap).
– *Post-operative care* (change of dressing) – *Site of injection*		2.5 % PVI : 1 part of 10 % solution + 3 parts of filtered and boiled water.		Renew once a week	
– *Floors, mattresses, tables, kidney-dishes, drawsheets.*	LYSOL or CHLORINATED SOLUTION	Lysol : 20 to 50 ml/litre depending on the amount of dirt. Bleach 12° (4 % chlorine) : 50 ml/litre Calcium hypochlorite (70 % chlorine) : 3 g/litre (2 tablespoons per 10 litres of water) Chloramine : 5 g/litre		Prepare just before use	Precautions for the use of chlorinated solutions : do not use a metal container and do not mix with a detergent. Clean dirty surfaces before application.

Table for the use of antiseptics and disinfectants

Preparation and storage

Although it may seem paradoxical, the aqueous solutions of antiseptics can become contaminated when handled and turn into bacterial cultures, especially Pseudomonas aeruginosa (pyocyanic).

To avoid this, the following precautions must be taken:

- Make all aqueous dilutions with either:

· drinking water,
· water filtered by a well-maintained candle type filter,
· boiled water (previously filtered through cotton if it is turbid).

- RENEW ALL AQUEOUS SOLUTIONS AT THE LAST ONCE A WEEK.
- Only prepare small amounts at a time to avoid wastage and the temptation to keep and use expired solutions.
- Never mix the fresh solution with the expired one (wash and dry the bottle before each refill).
- Do not use a cork.

On the bottles, mark the name and concentration of products.

Preparation and use of disinfectant solutions for floors and surfaces

- The dilutions of Lysol (or similar) and the dilutions of chlorinated disinfectants must be prepared just before use. Make the dilutions with

clear water.
- The chlorinated disinfectants are only fully effective on clean surfaces. The area must be cleaned before they are applied. Nevertheless, they have the advantage of clearly proven antiviral activity and are relatively cheap.

Preparation and use of disinfectant solutions for medical material

Soaking clean material for 15 minutes in the disinfectant solutions indicated in the table below gives a very effective disinfection for bacteria in vegetative forms and for viruses (including the AIDS and hepatitis B virus). However, the bacterial spores are generally not destroyed (e.g. tetanus spores).

Sterilization (elimination of all bacteria, including the spores) can only be obtained with an autoclave or a good electric hot air sterilizer. Sterilization is obligatory for all materials that come in contact with sterile parts of the body (equipment for punctures, injections and surgery.)

Soaking in strong disinfectant solutions can sometimes be an alternative to sterilization when the latter is impossible. However, in that case, boiling is still the best approach. The effectiveness of chemical disinfection can be impaired by an error in the dilution or the degradation of the disinfectant resulting from poor storage conditions.

Chemical disinfection is never recommended for sterilizing syringes and

needles.

Disinfectants	Recommended concentration	Preparation
Calcium hypochlorite (1) Bleach or concentrated bleach (1) NaDCC (1)	0.1 % active chlorine	see sheet "chlorine"
Chloramine T (1) Tosylchloramide sodium	2 %	20 g/litre
Polyvidone iodine (1) (PVI)	2,5 %	1 part of concentrated solution of 10 % (e.g. Betadine®) + 3 parts of water
Ethanol	70°	8 parts of ethanol 90° + 2 parts of water
Isopropanol	70°	7 parts of isopropanol + 3 parts of water
(1) These solutions oxidize metals ; therefore use only stainless steel containers of good quality.		

Powerful disinfectants suitablefor use on medical material

CLEANING OF DIRTY EQUIPEMENT

Reusable equipment must be carefully cleaned before sterilization or disinfection.

The cleaning is carried out with water and soap (or another detergent).

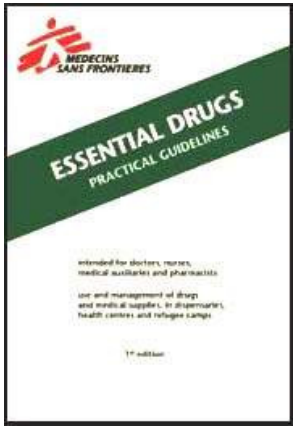
To facilitate cleaning, the material should be soaked in water immediately after use, so soiled parts will not dry. Half an hour before cleaning the equipment, a disinfectant can be added to this water for an initial decontamination (e.g. chloramine 20 g/litre, Lysol 50 g/litre). Soaking for too long or with too high a concentration of disinfectant can cause corrosion of metal instruments.

After cleaning, the equipment must be carefully rinsed with clean water and then dried.


Home"" """"> ar.cn.de.en.es.fr.id.it.ph.po.ru.sw


Essential Drugs -Practical Guidelines (MSF, 1993, 286 p.)


(introduction...)



The New Emergency HeaIth Kit (WHO)

Lists of drugs and medical supplies for a population of 10,000 persons for approximately 3 months

Introduction

In recent years the various organizations and agencies of the United Nations system have been called upon to respond to an increasing number of large-scale emergencies and disasters, many of which pose a serious threat to health. Much of the assistance provided in such situations by donor agencies, governments, voluntary organizations and others is in the form of drugs and medical supplies. But the practical impact of this aid is

often diminished because requests do not reflect the real needs or because these have not been adequately assessed. This can result in donations of unsorted, unsuitable and unintelligibly labelled drugs, or the provision of products which have passed their expiry date. Such problems are often compounded by delays in delivery and customs clearance.

The World Health Organization, which is the directing and coordinating authority for international health work within the United Nations system, took up the question of how emergency response could be facilitated. After several years of study, field testing and modifications, standard lists of essential drugs and medical supplies for use in an emergency were developed. The aim was to encourage the standardization of drugs and medical supplies used in an emergency to permit a swift and effective response with supplies that meet priority health needs. A further goal was to promote disaster preparedness since such standardization means that kits of essential items can be kept in readiness to meet urgent requirements.

The WHO Emergency Health Kit, which resulted from this work, was originally developed in collaboration with the Office of the United Nations High Commissioner for Refugees (UNHCR) and the London School of Hygiene and Tropical Medicine. It has now been revised in collaboration between the Action Programme on Essential Drugs (WHO, Geneva), the Emergency Preparedness and Response Unit (WHO, Geneva), the unit of

Pharmaceuticals (WHO, Geneva), the Office of the United Nations High Commissioner for Refugees, UNICEF, Mdecins Sans Frontires, the League of Red Cross and Red Crescent Societies (Geneva), the Christian Medical Commission of the World Council of Churches and the International Committee of the Red Cross. A review of the experience of previous users of the kit, prepared by the London School of Hygiene and Tropical Medicine, as well as field experience of UNICEF and Mdecins Sans Frontires, were also considered during the revision. Major suppliers of the kit were consulted on the specifications of its contents.

The kit has now been adopted by many organizations and national authorities as a reliable, standardized, inexpensive, appropriate and quickly available source of the essential drugs and health equipment urgently needed in a disaster situation. Its contents are calculated to meet the needs of a population of 10,000 persons for three months. It has been renamed the: "New Emergency Health Kit" because of the number and diversity of United Nations agencies and other bodies which have adopted this list of drugs and medical supplies for their emergency operations and which participated in its revision.

This booklet provides background information on the development of the kit, a description of its contents, comments on the selection of items, treatment guidelines for prescribers and some useful checklists for suppliers and prescribers. Chapter 1 (Essential drugs and supplies in

emergency situations) is intended as a general introduction for health administrators and field officers. Chapter 2 (Comments on the selection of drugs, medical supplies and equipment included in the kit) contains more technical details and is intended for prescribers.

Publication of this document was made possible by financial contributions received from the United Nations High Commissioner for Refugees, the Government of the Netherlands, the WHO Emergency Preparedness and Response Unit and the WHO Action Programme on Essential Drugs.

Chapter 1: Essential drugs and supplies in Emergency situations

What is an Emergency?

The term "emergency" is applied to various situations resulting from natural, political and economic disasters. The New Emergency Health Kit is not intended for the acute phase of epidemics, war, earthquake, floods, etc. but is designed to meet the needs of a population with disrupted medical facilities in the second phase of a natural or other disaster, or a displaced population without medical facilities. It has also been used in countries with acute shortages of drugs due to economic reasons.

It must be emphasized that, although supplying drugs and medical supplies in the standard kits is convenient in the second phase of an emergency, specific local requirements need to be assessed as soon as

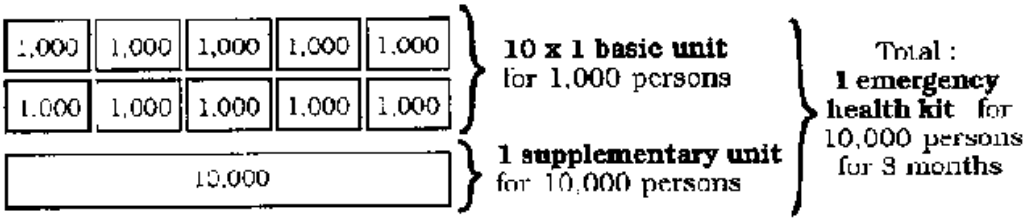
possible and further supplies must be ordered accordingly.

Quantification of drug requirements

Morbidity patterns (the relative frequency of different illnesses) may vary considerably between emergencies. For example, in emergencies where malnutrition is common morbidity rates may be very high. For this reason an estimation of drug requirements from a distance can only be approximate, although certain predictions can be made based on past experience. For the present kit estimates have been based on the average morbidity patterns and the use of standard treatment guidelines. The quantities of drugs supplied will therefore only be adequate if prescribers follow these guidelines (given in Annexes 1-3).

Contents of the kit

The New Emergency Health Kit consists of two different sets of drugs and medical supplies, named a BASIC UNIT and a SUPPLEMENTARY UNIT(The previous version consisted of three lists: A = basic drugs; B = supplementary drugs; C = medical supplies and equipment for basic and supplementary lists). To facilitate distribution to smaller health facilities on site, the quantities of drugs and medical supplies in the basic unit have been divided into ten identical units for 1,000 persons each.



FIGURE

The BASIC UNIT contains drugs, medical supplies and some essential equipment for primary health care workers with limited training. It contains twelve drugs, none of which are injectable. Simple treatment guidelines, based on symptoms, have been developed to help the training of personnel in the proper use of the drugs. Copies of these treatment guidelines, an example of which is printed in Annexes 1-3, should be be included in each unit. Additional copies can be obtained from the Action Programme on Essential Drugs, WHO, Geneva, and from UNICEF Copenhagen (see Annex 7 for addresses).

The SUPPLEMENTARY UNIT contains drugs and medical supplies for a population of 10,000 and is to be used only by professional health workers or physicians. It does not contain any drugs or supplies from the basic units and can therefore only be used when these are available as well.

The selection and quantification of drugs for the basic and supplementary

units have been based on recommendations for standard treatment regimens from technical units within WHO. A manual describing the standard treatment regimens for target diseases, developed in collaboration between Mdecins sans Frontires and WHO, is available from Mdecins sans Frontires at cost price and is to be included in each supplementary unit.

To facilitate identification in an emergency, one green sticker (international color code for medical items) should be placed on each parcel. The word "BASIC" should be printed on stickers for basic units.

Referral system

Health services can be decentralized by the use of basic health care clinics (the most peripheral level of health care) providing simple treatment using the basic units. Such a decentralization will:
1) increase the access of the population to curative care; and 2) avoid overcrowding of referral facilities by solving all common health problems at the most peripheral level. Basic treatment protocols have been drawn up to allow these health workers to take the right decision on treatment or referral, according to the symptoms (see Annexes 1-3).

The first referral level should be staffed by professional health workers, usually medical assistants or doctors, who will use drugs, supplies and

equipment from both the basic and the supplementary units. It should be stressed here that the basic and supplementary units have not been intended to enable these health workers to treat rare diseases or major surgical cases. For such patients a second level of referral is needed, usually a district or general hospital. Such facilities are normally part of the national health system and referral procedures are arranged with the local health authorities.

Procurement of the kit

The New Emergency Health Kit can be provided from a number of major pharmaceutical suppliers, some of which will have a permanent stock of kits ready for shipment within 48 hours. It may however be desirable to secure procurement at the regional level to reduce the cost of shipping. The procuring agency should ensure that manufacturers comply with the guidelines for quality, packaging and labelling of drugs (see Annex 6).

It is important to note that many drugs in the kit can be considered as examples of a therapeutic group, and that other drugs can often serve as alternatives. This should be taken into consideration when drugs are selected at the national level, since the choice of drugs may then be influenced by whether equivalent products are immediately available from local sources, and their comparative cost and quality. National authorities may wish to stockpile the same or equivalent drugs and supplies as part of

their emergency preparedness programme. The kit can also serve as a useful baseline supply list of essential drugs for primary health care.

Donor guidelines

Whatever the source of drugs, it is very important that:

- No drugs should be sent from a donor country without a specific request, or without prior clearance by the receiving country;
- No drugs should be sent that are not on the List of Essential Drugs of the receiving country, or, if such a national list is not available, on the WHO Model List of Essential Drugs;
- No drugs should arrive with a future life (before expiry date) of less than one year;
- Labelling of the drugs should be in the appropriate language(s) and should at least contain the generic name, strength, name of manufacturer and expiry date (see Annex 6);
- Labelling on the outside package should contain the same information, plus the total quantity of drugs in the package.

Immunization in emergency

Experience in past emergencies involving displacements of populations has shown measles to be one of the major causes of death among younger children. The disease spreads rapidly in overcrowded conditions, and

serious respiratory tract infections are frequent, particularly in malnourished children. An adequate supply of essential drugs may reduce the mortality rate, but measles can be prevented by immunization. A measles immunization programme should therefore be given high priority in the early phase of an emergency. The WHO Expanded Programme on Immunization (EPI), UNICEF, the Office of the High Commissioner for Refugees (UNHCR) and OXFAM have collaborated in the development of the Emergency Immunization Kit, which may be used to set up an emergency immunization programme against measles. This kit contains cold chain and injection equipment for 5,000 immunizations and may be ordered from OXFAM. Vaccines are not included.

Post emergency needs

After the acute phase of an emergency is over and basic health needs have been covered by the basic and supplementary units, specific needs for further supplies should be assessed as soon as possible. In most cases this will necessitate a quick description and, if possible, quantification of the morbidity profile. It should characterise the most common diseases and should identify the exposed and high risk groups in the population (e.g. children below 5 years of age and pregnant women). These high risk groups should be the first target of the continuing health care programme. Any other factors that may influence requirements should also be taken into account, e.g. the demographic pattern of the community, the physical

condition of the individuals, seasonal variations of morbidity and mortality, the impact of improved public health measures, the local availability of drugs and other supplies, drug resistance, usual medical practice in the country, capabilities of the health workers and the effectiveness of the referral system.

Much time and money may be saved by adapting re-order forms to the specific needs of the situation and by standardizing re-order procedures for all locations and health teams, regardless of whether supplies are available locally or must be ordered from abroad.

Chapter 2: Comments on the selection of drugs, medical supplies and equipment included in the kit

The composition of the New Emergency Health Kit is based on epidemiological data, population profiles, disease patterns and certain assumptions borne out by emergency experience. These assumptions are:

· The most peripheral level of the health care system will be staffed by health workers with only limited medical training, who will treat symptoms rather than diagnosed diseases and who will refer to the next level those patients who need more specialized treatment.
· Half of the population is 0-14 years of age.
· The average number of patients presenting themselves with the more

common symptoms or diseases can be predicted.
· Standardized schedules will be used to treat these symptoms or diseases.
· The rate of referral from the basic to the next level is 10%.
· The first referral level of health care is staffed by experienced medical assistants or medical doctors, with no or very limited facilities for inpatient care.
· If both the basic and first referral health care facilities are within reasonable reach of the target population, every individual will, on average, visit such facilities four times per year for advice or treatment. As a consequence the supplies in the kit, which are sufficient for approximately 10,000 outpatient consultations, will serve a population of 10,000 people for a period of approximately three months.

Selection of the drugs

Injectable drugs

There are no injectable drugs in the basic unit. Basic health workers with little training have usually not been taught to prescribe injections, neither are they trained to administer them. Moreover, the most common diseases in their uncomplicated form do not generally require an injectable drug. Any patient who needs an injection must be referred to the first referral level.

Antibiotics

Infectious bacterial diseases are common at all levels of health care, including the most peripheral, and basic health workers should therefore have the possiblity to prescribe an antibiotic. However, many basic health workers have not been trained to prescribe antibiotics in a rational way. Cotrimoxazole is the only antibiotic included in the basic unit, and this will enable the health worker to concentrate on taking the right decision between prescribing an antibiotic or not, rather than on the choice between several antibiotics. Cotrimoxazole has been selected because it is active against the most common bacteria found in the field, especially S. pneumoni and H. influenz for acute respiratory infections. It is also stable under tropical conditions, needs to be taken only twice daily and its side-effects (exfoliative dermatitis or bone marrow depression) are uncommon. In addition to this it is less expensive than other antibiotics. The risk of increasing bacterial resistance must be reduced by rational prescribing practice.

Drugs not included in the kit

The kit includes neither the common vaccines nor any drugs against communicable diseases such as tuberculosis or leprosy. The vaccines needed and any plans for an expanded programme on immunization should be discussed with the national authorities as soon as possible; the same

applies for programmes to combat communicable diseases. In general no special programme should be initiated unless there is sufficient guarantee for its continuation over a longer period.

In addition, drugs in the kit do not cover some specific health problems occurring in certain geographical areas, e.g. specific resistant malaria strains.

Selection of renewable supplies

Syringes and needles

Considering the risk of direct contamination with hepatitis and AIDS during handling, needles are dangerous items. The health risk for the staff should be limited by the following means:

· Limiting the number of injections;
· Using disposable needles only;
· Strictly following the destruction procedures for disposable material.

It is less dangerous to handle syringes than needles. For this reason a system with resterilisable nylon syringes and disposable needles has been chosen for the supplementary unit. However, in the very first stage, when sterilization procedures are not yet established, some provision will be necessary for giving injections by means of fully disposable materials. A

small number of disposable syringes are therefore provided in the supplementary unit and their destruction should be supervised by the person in charge.

Gloves

Disposable protective gloves are provided in the basic unit to protect health workers against possible infection during dressings or handling of infected materials. In any case a dressing should be applied or changed with the instruments provided in the kit. Surgical gloves, which should be resterilizable, are supplied in the supplementary unit. They are to be used for deliveries, sutures and minor surgery, all under medical supervision.

Selection of equipment

Resuscitation / Surgical instruments

The kit has been designed for general medicine under primitive conditions, and for that reason no equipment for resuscitation or major surgery has been included. In situations of war, earthquakes or epidemics, specialised teams with medical equipment and supplies will be required.

Sterilization

A complete sterilization set is provided in the kit. The basic units contain

two small drums each for sterile dressing materials. Two drums are included to enable the alternate sterilization of one at the first referral level while the other is being used in the peripheral facility. The supplementary unit contains a kerosene stove and two pressure sterilizers, a small one for sterilizing 2 ml and 5 ml syringes, and a larger one for the small drums with dressing materials and the instrument sets.

Dilution and storage of liquids

The kit contains several plastic bottles and a few large disposable syringes which are needed to dilute and store liquids (e.g. benzyl benzoate, chlorhexidine and gentian violet solution).

Water supply

The kit contains several items to help provide for clean water at the health facility. Each basic unit contains a 20 litre foldable jerrycan and a plastic bucket. The supplementary unit contains a water filter with candles and 2.5 kg of chloramine powder to chlorinate the water.

Chapter 3: Composition of the New Emergency Health Kit

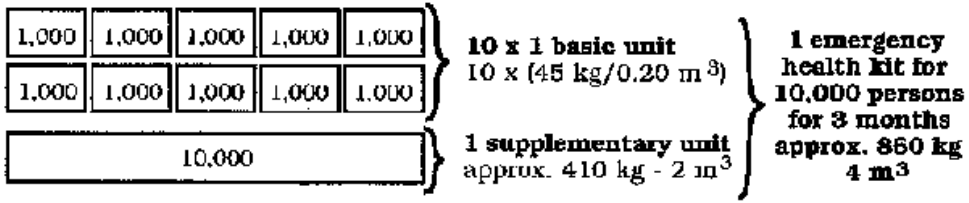
The New Emergency Health Kit consists of ten basic units and one supplementary unit.

10 basic units (for basic health workers) for a population of 10,000 persons for 3 months (1 basic unit for 1,000 persons for 3 months). The unit contains drugs, renewable supplies and basic equipment packed in one carton.

1 supplementary unit (for physicians and senior health workers), for a population of 10,000 people for 3 months. One supplementary unit contains:

- drugs (approximately 130 kg)
- essential infusions (approximately 180 kg)
- renewable supplies (approximately 60 kg)
- equipment (approximately 40 kg)

NB: The supplementary unit does not contain any drugs and medical supplies from the basic unit. To be operational, the supplementary unit should be used together with ten basic units



FIGURE

Basic unit (for 1,000 persons for 3 months)

Drugs

Acetylsalicylic acid, tab 300 mg. tab	3,000
Aluminium hydroxyde, tab 500 mg tab	1,000
Benzyl benzoate, lotion 25%. bottle 1 litre	1
Chlorhexidine (5%). bottle 1 litre	1
Chloroquine, tab 150 mg base. tab	2,000
Ferrous Sulfate + Folic Acid, tab 200 + 0.25 mg. tab	2,000
Gentian Violet, powder. 25 g	4
Mebendazole, tab 100 mg. tab	500
ORS (Oral Rehydration Salts).sachet for 1 litre	200
Paracetamol, tab 100 mg. tab	1,000
Sulfamethoxazole + Trimetoprim, tab 400 + 80mg (cotrimoxazole) tab	2,000
Tetracycline eye ointment 1% tube 5 g	50

Renewable supplies

Absorbent cotton wool. Kg	1

Adhesive tape 2.5 cm x 5 m. roll	30
Bar of soap (100-200 g). bar	10
Elastic bandage (crepe) 7.5 cm x 10 m.unit	20
Gauze bandage 7.5 cm x 10 m,. roll	100
Gauze compress 10 x 10 cm, 12 ply, nonsterile.unit	500
Ballpen, blue or black.unit	10
Exercise book A4 unit	4
Health card + plastic sachet. unit	500
Small plastic bag for drugs. Unit	2,000
Notepad A6. unit	10
Thermometer (oral/rectal) Celsius / Fahrenheit unit	6
Protective glove, nonsterile, disposable.unit	100
Treatment guidelines for basic list.unit	2

Equipment

Nail brush, plastic, autoclavable.unit	2
Bucket, plastic, approx. 20 litres.unit	1
Gallipot, stainless steel, 100 ml.unit	1

Kidney dish, stainless steel, approx. 26 x 14 cm unit	1
Dressing set (3 instruments + box). unit	2
Dressing tray, stainless steel, approx. 30 x 15 x 3 cm.unit	1
Drum for compresses approx. 15 cm H, 014 cm unit	2
Foldable jerrycan, 20 litres.unit	
Forceps Kocher, no teeth, 12-14 cm.unit	2
Plastic bottle, 1 litre.unit	3
Syringe Luer, disposable, 10 mlunit	1
Plastic bottle, 125 ml.unit	1
Scissors straight/blunt, 12-14 cm. Unit	2

Supplementary unit (for 10,000 persons for 3 months)

Drugs

Anaesthesics

Ketamine, inj. 50 mg/ml.10 ml / vial	25
Lidocaine, inj. 1%. 20 rnl / vial	50

Analgesics

Pentazocine, inj. 30 mg/ml1 ml / ampoule	50
Probenecid, tab 500 mg. tab	500

Recall from basic unit:

Acetyl salicyclic acid, tab 300 mg.(10 x 3,000)	30,000
Paracetamol, tab 100 mg. (10 x 1,000)	10,000

Anti-allergics

Dexamethasone, inj. 4 mg/ml 1 ml / amp.	50
Prednisolone, tab 5 mg. tab	100

Epinephrine (adrenaline), see "respiratory tract"

Anti-epileptics

Diazepam, inj. 5 mg/ml.2 rnl / arnpoule	200
Phenobarbital, tab 50 mg. tab	1,000

Anti-infective drugs

Ampicillin, tab 250 mg tab	2,000
Ampicillin, inj. 500 mg /vial. vial	200
Benzathine benzylpenicillin, inj. 2.4 MIU / vial.vial	50
Chloramphenicol, caps 250 mg. caps	2,000
Chloramphenicol, inj. 1 g / vial. vial	500
Metronidazole, tab 250 mg tab	2,000
Nystatin, non-coated tablet.100,000 IU / tab	2,000
Phenoxymethylpenicillin, tab 250 mg tab	4,000
Procan benzylpenicillin, inj. 3-4 MU / vial.vial	1,000
Quinine, inj. 300 mg/ml.2 ml / amp.	100
Quinine sulfate, tab 300 mg tab	3,000
Sulfadoxine + pyrimethamine, tab 500 mg + 25 mg tab	300
Tetracycline, caps or tab 250 mg.caps or tab	2,000

Recall from basic unit:

Mebendazole, tab 100 mg(10 x 500)	5,000
Cotrimoxazole, tab 400 + 80 mg. (10 x 2,000)	20,000
Chloroquine, tab 150 mg (10 x 2,000)	20,000
Blood, drugs affecting the Folic acid, tab 1 mg.	5,000

Recall from basic unit:
Ferrous sulfate + Folic acid, tab 200 + 0.25 mg. (10 x 2,000) 20,000

Cardiovascular drugs

Methyldopa, tab 250 mg. tab	500
Hydralazine, inj. 20 mg/ml.1 ml / amp.	20

Dermatological

Polyvidone iodine 10%, sol., 500 ml bottle	4
Zinc oxyde 10% ointment. kg	2
Benzoic acid 6% + salicylic acid 3% ointment. kg	1

Recall from basic unit:

Tetracycline eye ointment, 1% (10 x 50)	500
Gentian violet, powder 25 g. (10 x 4)	40
Benzyl benzoate, lotion 25%, litre. (10 x 1)	10

Diuretics

Furosemide, inj. 10 mg/ml. 2 ml / amp.	20
Furosemide, tab 40 mg.tab	200

Gastro-intestinal drugs

Promethazine, tab 25 mg. tab	500
Promethazine, inj. 25 mg/ml.2 ml / amp.	50
Atropine, inj. 1 mg/ml.1 ml / amp.	50

Recall from basic unit:

Aluminium hydroxyde, tab 500 mg (10 x 1,000)	10,000

Oxtocics

Ergometrine maleate, inj. 0.2 mg/ml.1 ml / amp.	200

Psychotherapeutic drugs

Chlorpromazine, inj. 25 mg/ml. 2 ml / amp.	20

Respiratory tract, drugs acting on

Aminophylline, tab 100 mg. tab	1,000

Aminophylline, tab 100 mg. tab	1,000
Aminophylline, inj. 25 mg/ml.10 ml / amp.	50
Epinephrine (adrenaline), inj. 1 mg/ml.1 ml / amp.	50

Solutions correcting water, electrolyte and acid-base disturbances

Compound solution of sodium lactate (Ringer's Lactate), inj. sol., with giving set and needle 500 ml / bag	200
Glucose, inj. sol. 5%, with giving set and needle 500 ml / bag	100
Glucose, inj. sol. 50%.50 ml / vial	20
Water for injection.10 ml / plastic vial	2,000

Recall from basic unit:

ORS (Oral Rehydration Salts).(10 x 200)	2,000

Vitamins

Retinol (Vitamin A), caps 200,000 IU caps	4,000
Ascorbic acid, tab 250 mg. tab	4,000

Renewable supplies

Scalp vein infusion set, disposable, 25G (D 0.5 mm). Unit	300
Scalp vein infusion set, disposable, 21G (D 0.8 mm).unit	100
IV placement canula, disposable, 18G (D 1.7 mm). Unit	15
IV placement canula, disposable, 22G (D 0.9 mm).unit	15
Needle Luer IV, disposable, 19G (D 1.1 mm x 38 mm). unit	1,000
Needle Luer IM, disposable, 21G (D 0.8 mm x 40 mm). unit	2,000
Needle Luer SC, disposable, 25G (D 0.5 mm x 16 mm) unit	100
Spinal needle, disposable, 20G (64 mm - D 0.9 mm). Unit	30
Spinal needle, disposable, 23G (64 mm - D 0.7 mm). Unit	30
Syringe Luer resterilisable, nylon, 2 ml. unit	20
Syringe Luer resterilisable, nylon, 5 ml. unit	100
Syringe Luer resterilisable, nylon, 10 ml.unit	40
Syringe Luer, disposable, 2 ml. unit	400
Syringe Luer, disposable, 5 ml.unit	500
Syringe Luer, disposable, 10 ml.unit	200
Syringe conic connector (for feeding), 60 ml unit	20
Feeding tube, CH5 (premature baby), disposable. unit	20
Feeding tube, CH8, disposable. Unit	50
Feeding tube, CH16, disposable. unit	10

Urinary catheter (Foley), n°12, disposable unit	10
Urinary catheter (Foley), n°14, disposable unit	5
Urinary catheter (Foley), n°18, disposable.unit	5
Surgical gloves sterile and resterilisable n°6.5 pair	50
Surgical gloves sterile and resterilisable n°7.5 pair	150
Surgical gloves sterile and resterilisable n°8.5 pair	50

Recall from basic unit:

Protective glove, non sterile, disposable. (100 units x 10)	1,000
Sterilization test tape (for autoclave). roll	2
Chloramine, tabs or powder kg	2.5
Thermometer (oral/rectal) dual Celsius / Fahrenheit.unit	10
Spare bulb for otoscope. Unit	2
Batteries R6 alkaline AA size (for otoscope).unit	6

Recall from basic unit:

Thermometer (oral/rectal) Celsius /Fahrenheit.(6 units x 10)	60
Ballpen, blue or black (10 units x 10)	100
Exercise book A4 (4 units x 10)	40

Exercise book A4.(4 units x 10)	40
Health card + plastic sachet. (500 units x 10)	5,000
Small plastic bagfor drugs. (2,000 units x 10)	20,000
Notepad A6 (10 units x 10)	100
Urine collecting bag with valve, 2000 ml. unit	10
Finger stall 2 fingers, disposable. Unit	300
Suture, synthetic absorbable, braided, size DEC.2 (000) with cutting needle curved 3/8, 20 mm triangular unit	24
Suture, synthetic absorbable, braided, size DEC.3 (00) with cutting needle curved 3/8, 30 mm triangular unit	36
Surgical blade (surgical knives) n°22 for handle n°4. unit	50
Razor blade.unit	100
Tongue depressor (wooden), disposable unit	100
Gauze roll 90 m x 0.90 m roll	3
Gauze compress 10 x 10 cm, 12 ply, sterile unit	1,000

Recall from basic unit:

Absorbent cotton wool.(1 kg x 10)	10
Adhesive tape 2.5 cm x 5 m.(30 rolls x 10)	300
Bar of soap (100-200 g/bar), (10 bars x 10)	100

Elastic bandage (crepe) 7.5 cm x 10 m. (20 units x 10)	200
Gauze bandage 7.5 cm x 10 m (100 rolls x 10)	1,000
Gauze compress 10 x 10 cm, 12 ply, nonsterile. (500 units x 10)	5,000

Equipment

Clinical stethoscope, dual cup. unit	2
Obstetrical stethoscope (metal).unit	1
Sphygmomanometer (adult). unit	1
Razor non disposable. unit	2
Scale for adult. unit	1
Scale hanging 25 kg x 100 g (Salter type) + 3 trousers. unit	3
Tape measure. unit	5
Drum for compresses, h: 15 cm, D 14 cm.unit	2

Recall from basic unit:

Drum for compresses, approx. h :15 cm, D 14 cm.(2 units x 10)	20
Otoscope + disposable set of pdiatric speculums. unit	1
Tourniquet. Unit	2
Dressing tray, stainless steel, approx. 30 x 15 x 3 cm unit	1

Dressing tray, stainless steel, approx. 30 x 15 x 3 cm unit	1
Kidney dish, stainless steel, approx. 26 x 14 cm.unit	1
Scissors straight/blunt, 12-14 cm. unit	2
Forceps Kocher no teeth, 12-14 cm. Unit	2

Recall from basic unit:

Kidney dish, stainless steel, approx. 26 x 14 cm. (1 unit x 10)	10
Gallipot, stainless steel, 100 ml. (1 unit x 10)	10
Dressing tray, stainless steel, approx. 30 x 15 x 3 cm (1 unit x 10)	10
Scissors straight/blunt, 12-14 cm. (2 units x 10)	20
Forceps Kocher, no teeth, 12-14 cm.(2 units x 10)	20
Abcess/suture set (7 instruments + box).unit	2
Dressing set (3 instruments + box). Unit	5

Recall from basic unit:

Dressing set (3 instruments + box). (2 units x 10)	20
Pressure sterilizer, 7.5 litres (type: Prestige 7506, double rack, ref. UNIPAC 01.571.00) unit	1
Additional rack Public Health Care 2ml/5ml, ref.Prestige 7531 unit	2
Pressure sterilizer, 20-40 litres with basket (type UNIPAC 01.560.00).unit	1

Pressure sterilizer, 20-40 litres with basket (type UNIPAC 01.300.00).unit	1
Kerosene stove, single burner (t,vpe UNIPAC 01.700.00).unit	2
Water filter with candles, 10-20 litres (type UNIPAC 56.199.02).unit	3
Nail brush, plastic, autoclavable.unit	2

Recall from basic unit:

Plastic bottle, 1 litre. (3 units x 10)	30
Syringe Luer, disposable, 10 ml (1 unit x 10)	10
Plastic bottle, 125 ml. (1 unit x 10)	10
Nail brush, plastic autoclavable.(2 units x 10)	20
Bucket, plastic, approx. 20 litres. (1 unit x 10)	10
Foldable jerrycan, 20 litres.(1 unit x 10)	10

Portable weight / height chart (UNICEF/SCF) (UNIPAC 01.455.70) unit	1
Clinical guidelines - diagnostic and treatment manual.	1
Guide clinique et thrapeutique.	1
Guia clinica y teraputica	1

Annex 1

Basic unit: treatment guidelines

These treatment guidelines are intended to give simple guidelines for the training of primary health care workers using the basic unit. In the dosage guidelines, five age groups have been distinguished. When dosage is shown as 1 tab. x 2, one tablet should be taken in the morning and one before bedtime. When dosage is shown as 2 tab. x 3, two tablets should be taken in the morning, two should be taken in the middle of the day and two before bedtime.

The treatment guidelines contain the following diagnosis/symptom groups:

- **Anemia**
- **Pain**
- **Diarrhoea: see detailed diagnosis and treatment schedules in Annex 2 a-c.**
- **Fever**
- **Respiratory tract infections: see detailed diagnosis and treatment schedules in Annex 3.**
- **Measles**
- **Eye**
- **Skin conditions**
- **Urinary tract infections**
- **Sexually transmitted disease**
- **Preventive care in pregnancy**
- **Worms**

DIAGNOSIS / SYMPTOM — WEIGHT / AGE	4 kg 2 months	8 kg 1 year	15 kg 5 years	35 kg 15 years	ADULT
➔ *Anemia*					
Severe anemia (oedemas, dizziness, shortness of breath)	**Refer**				
Moderate anemia (pallor and tiredness)	**Refer**	*Ferrous sulfate + Folic acid* 1 tab. daily for at least 2 months	*Ferrous sulfate + Folic acid* 2 tab. daily for at least 2 months	*Ferrous sulfate + Folic acid* 3 tab. daily for at least 2 months	*Ferrous sulfate + Folic acid* 3 tab. daily for at least 2 months
➔ *Pain*					
Pain headache, joint pain, tooth ache...		*Paracetamol* tab 100 mg 1/2 tab. x 3	*Paracetamol* tab 100 mg 1 tab. x 3	*ASA* [1] [2] tab 300 mg 1 tab. x 3	*ASA* [1] tab 300 mg 2 tab. x 3
Stomach pain			**Refer**	*Aluminium hydroxide* 1/2 tab. x 3 for 3 days	*Aluminium hydroxide* 1 tab. x 3 for 3 days

[1] *ASA = Acetyl Salicylic Acid*

[2] *For children under 12 paracetamol is to be preferred because of the risk of Reye's Syndrome.*

FIGURE

WEIGHT / AGE / DIAGNOSIS / SYMPTOM	4 kg 2 months	8 kg 1 year	15 kg 5 years	35 kg 15 years	ADULT
➔ ***Diarrhoea***					
Diarrhoea lasting more than 2 weeks or in malnourished or poor condition patient	Give ORS according to dehydration stage and **refer**				
Bloody diarrhoea[b] (check the presence of blood in the stools)	Give ORS according to dehydration stage and **refer**				
Diarrhoea with severe dehydration (Plan C, WHO) Annex 2c	*ORS*, 100 ml/kg as soon as possible, and **refer** patient for nasogastric tube and/or IV treatment				
Diarrhoea with some dehydration (Plan B, WHO) Annex 2c	Treat with ORS, 50-100 ml/kg in first 4-6 hours, reassess the condition after 4-6 hours				
	250 ml within 6 h	500 ml within 6 h	1 litre within 6 h	2 litres within 6 h	3 litres or i within 6 h
Diarrhoea with no dehydration (Plan A, WHO) Annex 2b	- Continue to feed. - Return to health worker in case of frequent stools, increased thirst, sunken eyes, fever, or when the patient does not eat or drink normally, or does not get better.				
➔ ***Fever***					
Fever in malnourished or poor condition patient or when in doubt	**Refer**				
Fever with chills assuming it is malaria		*Chloroquine*[a] tab 150mg base	*Chloroquine*[a] tab 150mg base	*Chloroquine*[a] tab 150mg base	*Chloroquine*[a] tab 150mg base

	Refer	[illegible] then 1/2 tab. after 6 h, 24 h and 48 h	[illegible] then 1/2 tab. after 6 h, 24 h and 48 h	[illegible] then 1 tab. after 6 h, 24 h and 48 h	[illegible] then 2 tab. after 6 h, 24 h and 48 h
Fever with cough	**Refer**	See "Respiratory tract infections"			
Fever (unspecified)	**Refer**	*Paracetamol* tab 100 mg 1/2 tab. x 3 for 1 to 3 days	*Paracetamol* tab 100 mg 1 tab. x 3 for 1 to 3 days	*ASA* [3] tab 300 mg 1 tab. x 3 for 1 to 3 days	*ASA* tab 300 mg 2 tab. x 3 for 1 to 3 days

[1] Protocol will be established according to epidemiological data. Cotrimoxazole will usually be effective.
[2] Chloroquine 150 mg base is equivalent to 250 mg chloroquine phosphate or to 200 mg chloroquine sulfate.
[3] For children under 12 paracetamol is to be preferred because of the risk of Reye's Syndrome.

FIGURE

WEIGHT / DIAGNOSIS / SYMPTOM / AGE	3 kg	8 kg	15 kg	35 kg	
	2 months	1 year	5 years	15 years	ADULT

→ ***Respiratory tract infections***

Severe pneumonia Annex 3	Give the first dose of *cotrimoxazole* (see pneumonia) and **refer.**				
Pneumonia Annex 3	**Refer**	*Cotrimoxazole* tab. 400 mg SMX + 80mg TMP 1/2 tab. x 2 for 5 days	*Cotrimoxazole* tab 400 mg SMX + 80mg TMP 1 tab. x 2 for 5 days	*Cotrimoxazole* tab 400 mg SMX + 80mg TMP 1 tab. x 2 for 5 days	*Cotrimoxazole* tab 400 mg SMX + 80mg TMP 2 tab. x 2 for 5 days
		Reassess after 2 days ; continue (breast) feeding, give fluids, clear the nose ; return if breathing becomes faster or more difficult, or not able to drink or condition deteriorates.			

No pneumonia : cough or cold Annex 6	**Refer**	*Paracetamol*[1] tab 100 mg 1/2 tab x 3 for 3 days	*Paracetamol*[1] tab 100 mg 1 tab x 3 for 3 days	*ASA*[1] tab 300 mg 1 tab x 3 for 3 days	*ASA*[1] tab 300 mg 2 tab x 3 for 3 days
		Supportive therapy : continue (breast) feeding, give fluids, clear the nose; return if breathing becomes faster or more difficult, or not able to drink or condition deteriorates.			
Prolonged cough (over 30 days)			**Refer**		
Acute ear pain and/or ear discharge For **less** than 2 weeks	**Refer**	*Cotrimoxazole* tab 400 mg SMX + 80mg TMP 1/2 tab. x 2 for 5 days[1]	*Cotrimoxazole* tab 400 mg SMX + 80mg TMP 1 tab. x 2 for 5 days[1]	*Cotrimoxazole* tab 400 mg SMX + 80mg TMP 1 tab. x 2 for 5 days	*Cotrimoxazole* tab 400 mg SMX + 80mg TMP 2 tab. x 2 for 5 days
Ear discharge For **more** than 2 weeks, no pain, no fever	Clear the ear once daily by syringe without needle using lukewarm clean water. Repeat until the water comes out clean. Dry repeatedly with clean piece of cloth.				

[1] *If fever is present*
[2] *For children under 12 paracetamol is to be preferred because of the risk of Reye's Syndrome.*

FIGURE

WEIGHT / AGE	4 kg	8 kg	15 kg	35 kg	ADULT
DIAGNOSIS / SYMPTOM	2 months	1 year	5 years	15 years	
➔ ***Measles***					
Measles	Treat respiratory tract disease according to symptoms. Treat conjunctivitis as "Red eyes".				

	[illegible] according to symptoms. Continue (breast) feeding. Give *Retinol* (vitamin A).

➜ *Eye*

Red eyes (conjunctivitis)	Apply *Tetracycline eye ointment* 3 times a day for 7 days. If not improved after 3 days or in doubt : **refer**

➜ *Skin conditions*

Wounds : extensive, deep or on face	**Refer**	
Wounds : limited and superficial	Clean with clean water and soap **or** with diluted *Chlorhexidine solution** Apply *Gentian Violet solution*** once a day.	
Severe burns (on face or very extensive)	Treat as for mild burns, and **refer**.	
Mild, moderate burns	Immerse immediately in cold water, or use a cold wet cloth. Continue until pain ceases. Then, treat as wounds	
Severe bacterial infection (with fever)	**Refer**	
Mild bacterial infection	Clean with clean water and soap or diluted *Chlorhexidine solution** Apply *Gentian Violet solution*** twice a day. If not improved after 10 days : **refer**.	
Fungal infection	Apply *Gentian Violet solution*** once a day for 5 days.	
Infected scabies	Bacterial infection : clean with clean water and soap or diluted *Chlorhexidine solution** and apply *Gentian Violet solution*** twice a day. When infection is cured : Apply diluted *Benzyl benzoate**** once a day for 3 days	Apply non diluted *Benzyl benzoate 25 %* once a day for 3 days
Non infected scabies	Apply diluted *Benzyl benzoate**** once a day for 3 days	Apply non diluted *Benzyl benzoate 25 %* once a day for 3 days

* *Chlorhexidine 5 % must always be diluted before use : 20 ml in 1 litre of water (take one litre plastic bottle supplied with kit. Put 20 ml of Chlorhexidine solution into the bottle using the 10 ml syringe supplied with the kit. Fill up the bottle with boiled or clean water). Chlorhexidine 1.5 % + Cetrimide 15 % solution should be used at the same dilution.*

** *Gentian violet solution 0.5 % concentration = 1 teaspoon of gentian violet powder in 1 litre of boiled/clean water*

*** Dilute by mixing one half litre Benzyl benzoate 25 % with one half litre clean water in the one litre plastic bottle supplied with the kit.

FIGURE

WEIGHT / DIAGNOSIS / AGE / SYMPTOM	4 kg	8 kg	15 kg	35 kg	ADULT
	2 months	1 year	5 years	15 years	
→ *Urinary tract infection*					
Suspicion of urinary tract infection			**Refer**		
→ *Sexually transmitted disease*					
Suspicion of sexually transmitted disease (syphilis, gonorrhoea)			**Refer**		
→ *Preventive care in pregnancy*					
Anemia for treatment, see under Anemia					*Ferrous sulfate* + *Folic acid* 1 tab. daily, throughout pregnancy
Malaria for treatment, see under: Fever					*Chloroquine*[0] tab 150mg base 2 tab weekly, throughout pregnancy
→ *Worms*					
Roundwort		*Mebendazole*	*Mebendazole*	*Mebendazole*	

Pinworm		2 tab. once	2 tab. once	2 tab. once
Hookworm		*Mebendazole* tab 100 mg 1 tab. x 2 for 3 days	*Mebendazole* tab 100 mg 1 tab. x 2 for 3 days	*Mebendazole* tab 100 mg 1 tab. x 2 for 3 days

(1) Cinchoquine 150 mg base is equivalent to 250 mg chloroquine phosphate or to 200 mg chloroquine sulfate.

FIGURE

Annex 2

Evaluation and treatment of diarrhoea

Annex 2a

Assessment of diarrhoea patients for dehydration

First assess your patient for dehydration			
	A	**B**	**C**
1. LOOK AT :			
CONDITION	Well, alert	Restless, irritable	Lethargic or **unconscious ;** floppy
EYES[1]	Normal	Sunken	Very sunken and dry
TEARS	Present	Absent	Absent
MOUTH and TONGUE[2]	Moist	Dry	Very dry
THIRST	Drinks normally, not thirsty	**Thirsty, drinks eagerly**	**Drinks poorly or not able to drink**
2. FEEL :			
SKIN PINCH[3]	Goes back quickly	**Goes back slowly**	**Goes back very slowly**
3. DECIDE :	The patient has NO SIGN OF DEHYDRATION	If the patient has two or more signs, including at least one **sign**, there is SOME DEHYDRATION	If the patient has two or more signs, including at least one **sign**, there is SEVERE DEHYDRATION
4. TREAT :	Use ***Treatment plan A***	Weigh the patient, if possible, and use ***Treatment plan B***	Weigh the patient and use ***Treatment plan C*** URGENTLY

FIGURE

Annex 2b

Treatment plan A to treat diarrhoea at home

Use this plan to teach the mother to:

· Continue to treat at home her child's current episode of diarrhoea.
· Give early treatment for future episodes of diarrhoea.

Explain the three rules for treating diarrhoea at home

1. GIVE THE CHILD MORE FLUIDS THAN USUAL TO PREVENT DEHYDRATION:

· Use a recommended home fluid, such as a cereal gruel. If this is not possible, give plain water.
· Use ORS solution for children described in the box overleaf.
· Give as much of these fluids as the child will take. Use the amounts shown below for ORS as a guide.
· Continue giving these fluids until the diarrhoea stops.

2. GIVE THE CHILD PLENTY OF FOOD TO PREVENT UNDERNUTRITION:

· Continue to breast-feed frequently.
· If the child is not breast-fed, give the usual milk. If the child is less than 6

months old and not yet taking solid food, dilute milk of formula with an equal amount of water for 2 days.
· If the child is 6 months or older, or already taking solid food:

- Also give cereal or another starchy food mixed, if possible, with pulses, vegetables, and meat of fish. Add 1 or 2 teaspoonfuls of vegetable oil to each serving.
- Give fresh fruit juice or mashed banana to provide potassium.
- Give freshly prepared foods. Cook and mash or grind food well.
- Encourage the child to eat: offer food at least 6 times a day.
- Give the same foods after diarrhoea stops, and give an extra meal each day for two weeks.

3. TAKE THE CHILD TO THE HEALTH WORKER IF THE CHILD DOES NOT GET BETTER IN 3 DAYS OR DEVELOPS ANY OF THE FOLLOWING:

· Many watery stools
· Repeated vomiting
· Marked thirst
· Eating or drinking poorly
· Fever
· Blood in the stool

Children should be given ORS solutions at home, if:

· They have been on Treatment Plan B or C.
· They cannot return to the health worker if the diarrhoea gets worse.
· It is national policy to give ORS to all children who see a health worker for diarrhoea.

IF THE CHILD WILL BE GIVEN ORS SOLUTION AT HOME, SHOW THE MOTHER HOW MUCH ORS TO GIVE AFTER EACH LOOSE STOOL AND GIVE HER ENOUGH PACKETS FOR 2 DAYS

Age	Amount of ORS to give after each loose stool	Amount of ORS to provide for use at home
Less than 24 moths	50 100 ml	500 ml/day
2 up to 10 years	100-200 ml	1,000 ml/day
10 years or more	As much as wanted	2,000 ml/day

• Describe and show the amount to be given after each stool using a local measure.

FIGURE

· Describe and show the amount to be given after each stool using a local measure.

Show the mother how to mix ORS.
Show her how to give ORS:

· Give a teaspoonful every 1-2 minutes for a child under 2 years.

· Give frequent sips from a cup for an older child.
· If the child vomits, wait 10 minutes. Then give the solution more slowly (for example, a spoonful every 2-3 minutes).
· If diarrhoea continues after the ORS packets are used up, tell the mother to give other fluids as described in the first rule above or return for more ORS.

Annex 2 c

Treatment plan B to treat dehydration

APPROXIMATE AMOUNT OF ORS SOLUTION TO GIVE IN THE FIRST 4 HOURS

Age*	Less than 4 months	4-11 months	12-23 months	2-4 years	5-14 years	15 years or older
Weight :	less than 5 kg	5-7,9 kg	8-10,9 kg	11-15,9 kg	16-29,9 kg	30 kg or more
In ml :	200-400	400-600	600-800	800-1200	1200-2200	2200-4000
In local measure						

FIGURE

*** Use the patient's age only when you do not know the weight. The approximate amount of ORS required (in ml) can also be calculated by**

multiplying the patient's weight (in grams) times 0.075.

· If the child wants more ORS than shown, give more.
· Encourage the mother to continue breast-feeding.
· For infants under 6 months who are not breast-fed, also give 100-200 ml clean water during this period.

OBSERVE THE CHILD CAREFULLY AND HELP THE MOTHER GIVE ORS SOLUTION:

· Show her how much solution to give her child.
· Show her how to give it - a teaspoonful every 1-2 minutes for a child under 2 years, frequent sips from a cup for an older child.
· Check from time to time to see if there are problems.
· If the child vomits, wait 10 minutes and then continue giving ORS, but more slowly, for example, a spoonful every 2-3 minutes.
· If the child's eyelids become puffy, stop ORS and give plain water or breast milk. Give ORS according to Plan A when the puffiness is gone.

AFTER 4 HOURS, REASSESS THE CHILD USING THE ASSESSMENT CHART. THEN SELECT PLAN A, B OR C TO CONTINUE TREATMENT.

· If there are no signs of dehydration, shift to Plan A. When dehydration has been corrected, the child usually passes urine and may also be tired and fall asleep.

· If signs indicating some dehydration are still present, repeat Plan B, but start to offer food, milk and juice as described in Plan A.
· If signs indicating severe dehydration have appeared, shift to Plan C.

IF THE MOTHER MUST LEAVE BEFORE COMPLETING TREATMENT PLAN B:

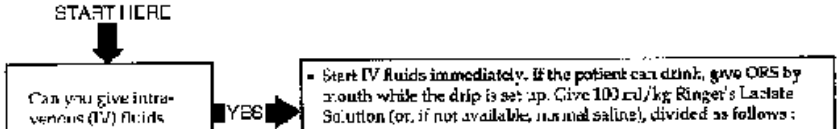
· Show her how much ORS to give to finish the 4 hour treatment at home.
· Give her enough ORS packets to complete rehydation, and for 2 more days as shown in Plan A.
· Show her how to prepare ORS solution.
· Explain to her the three rules in Plan A for treating her child at home:

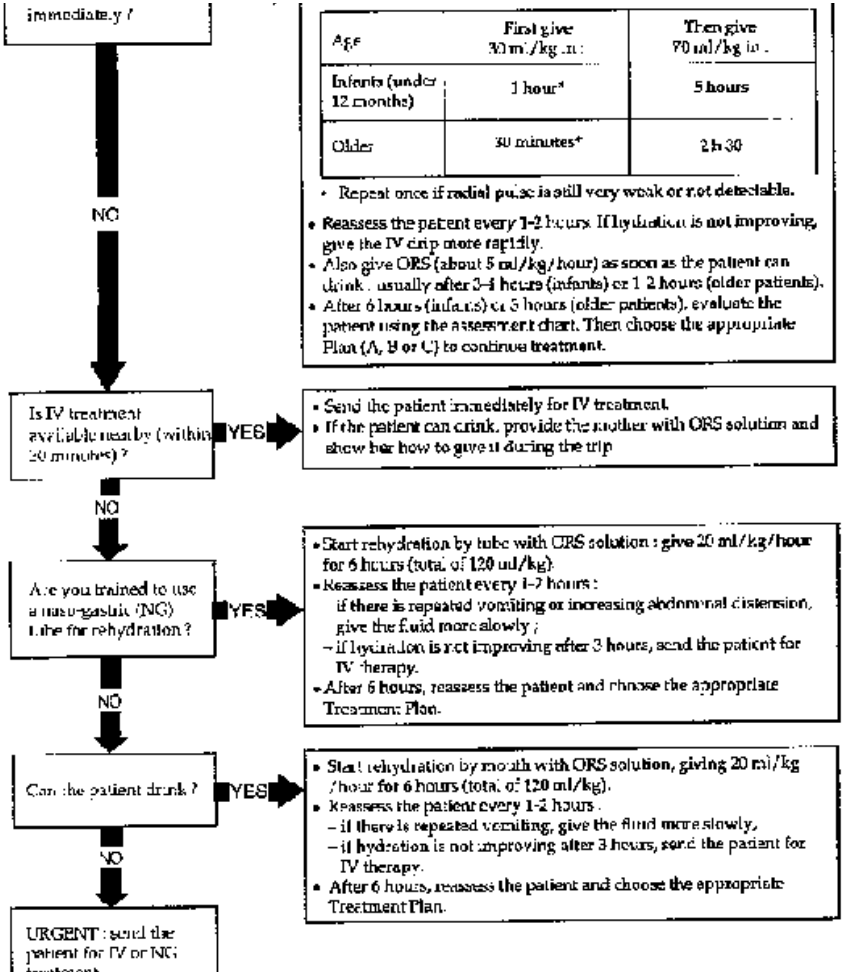
- to give ORS or other fluids until diarrhoea stops;
- to feed the child;
- to bring the child back to the health worker, if necessary.

Annex 2d

Treatment plan C to treat severe dehydration quickly

Follow the arrows. If the answer is "yes", go across. If "no", go down.




immediately ?
NO
Is IV treatment available nearby (within 30 minutes) ?
YES
Are you trained to use a naso-gastric (NG) tube for rehydration ?
YES
Can the patient drink ?
YES
NO
URGENT : send the patient for IV or NG
Age
First give 30 ml/kg in :
Then give 70 ml/kg in :
Infants (under 12 months)
1 hour*
5 hours
Older
30 minutes*
2 h 30
* Repeat once if radial pulse is still very weak or not detectable.
• Reassess the patient every 1-2 hours. If hydration is not improving, give the IV drip more rapidly.
• Also give ORS (about 5 ml/kg/hour) as soon as the patient can drink, usually after 3-4 hours (infants) or 1-2 hours (older patients).
• After 6 hours (infants) or 3 hours (older patients), evaluate the patient using the assessment chart. Then choose the appropriate Plan (A, B or C) to continue treatment.
• Send the patient immediately for IV treatment.
• If the patient can drink, provide the mother with ORS solution and show her how to give it during the trip
• Start rehydration by tube with ORS solution : give 20 ml/kg/hour for 6 hours (total of 120 ml/kg).
• Reassess the patient every 1-2 hours :
if there is repeated vomiting or increasing abdominal distension, give the fluid more slowly ;
– if hydration is not improving after 3 hours, send the patient for IV therapy.
• After 6 hours, reassess the patient and choose the appropriate Treatment Plan.
• Start rehydration by mouth with ORS solution, giving 20 ml/kg /hour for 6 hours (total of 120 ml/kg).
• Reassess the patient every 1-2 hours :
– if there is repeated vomiting, give the fluid more slowly,
– if hydration is not improving after 3 hours, send the patient for IV therapy.
• After 6 hours, reassess the patient and choose the appropriate Treatment Plan.

FIGURE

Notes:

· If possible, observe the patient at least 6 hours after rehydration to be sure the mother can maintain hydration giving ORS solution by mouth.
· If the patient is above 2 years and there is cholera in your area, give an appropriate oral antibiotic after the patient is alert.

Annex 3

Management of the child with cough or difficult breathing

· Assess the child

Ask:

- How old is the child?
- Is the child coughing? For how long?
- Is the child able to drink? (for children age 2 months up to 5 years)
- Has the child stopped feeding well? (for children less than 2 months)
- Has the child had fever? For how long?
- Has the child had convulsions?

Look and listen (the child must be calm):

- Count the breaths in one minute.
- Look for chest indrawing.
- Look and listen for stridor.
- Look and listen for wheeze. Is it recurrent?
- See if the child is abnormally sleepy, or difficult to wake.
- Feel for fever, or low body temperature (or measure temperature).
- Look for severe undernutrition.

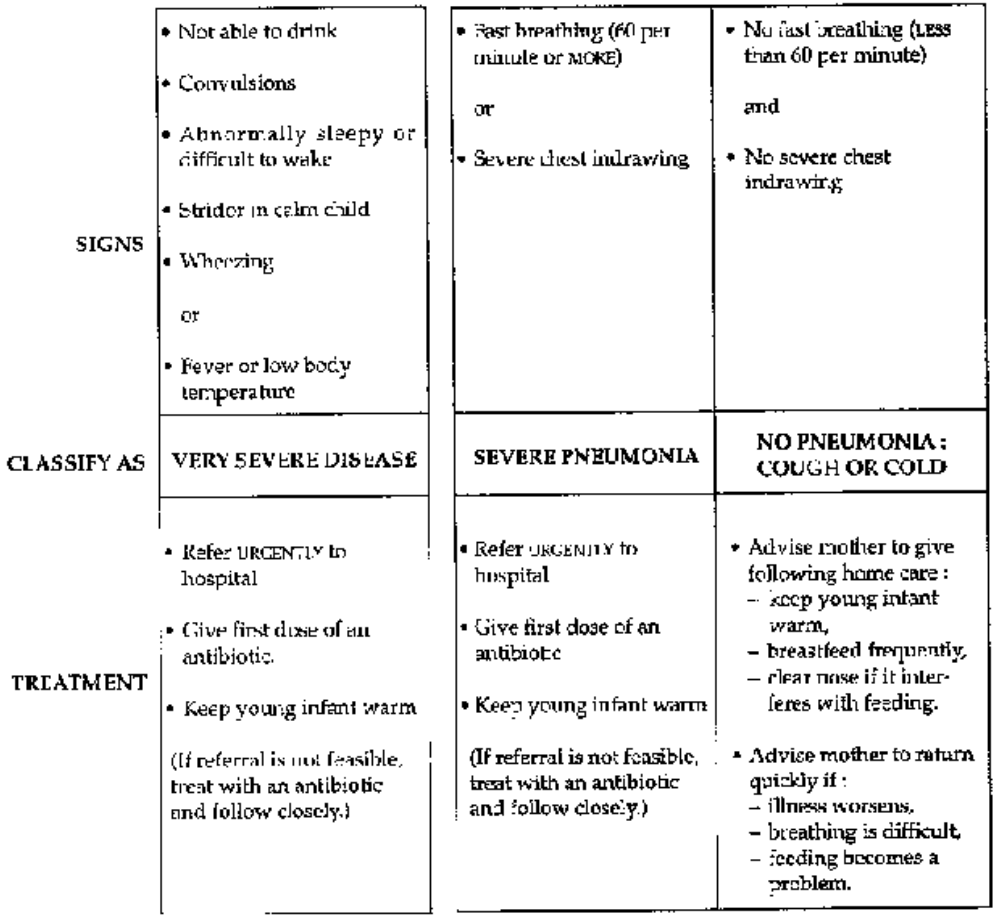
· Decide how to treat the child

- The child aged less than two months see Annex 3a
- The child aged two months up to five years
- who is not wheezing see Annex 3b
- who is wheezing refer

- Treatment instructions see Annex 3c
- Give an antibiotic
- Advise mother to give home care
- Treatment of fever

Annex 3a

The child aged less than two months



SIGNS	• Not able to drink • Convulsions • Abnormally sleepy or difficult to wake • Stridor in calm child • Wheezing or • Fever or low body temperature	• Fast breathing (60 per minute or MORE) or • Severe chest indrawing	• No fast breathing (LESS than 60 per minute) and • No severe chest indrawing
CLASSIFY AS	VERY SEVERE DISEASE	SEVERE PNEUMONIA	NO PNEUMONIA : COUGH OR COLD
TREATMENT	• Refer URGENTLY to hospital • Give first dose of an antibiotic • Keep young infant warm (If referral is not feasible, treat with an antibiotic and follow closely.)	• Refer URGENTLY to hospital • Give first dose of an antibiotic • Keep young infant warm (If referral is not feasible, treat with an antibiotic and follow closely.)	• Advise mother to give following home care : – keep young infant warm, – breastfeed frequently, – clear nose if it interferes with feeding. • Advise mother to return quickly if : – illness worsens, – breathing is difficult, – feeding becomes a problem.

FIGURE

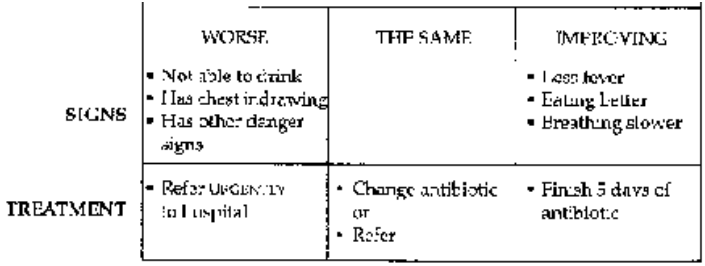
Annex 3b

The child aged two months to five years

SIGNS	• Not able to drink • Convulsions • Abnormally sleepy or difficult to wake • Stridor in calm child or • Severe under-nutrition	• Chest indrawing	• No chest indrawing and • Fast breathing (50 per minute or MORE if child 2-12 months of age or 40 per minute or MORE if child 1-5 years)	• No chest indrawing and • No fast breathing (LESS than 50 per minute if child 2-12 months of age or 40 per minute if child 1-5 years)
CLASSIFY AS	VERY SEVERE DISEASE	SEVERE PNEUMONIA	PNEUMONIA	NO PNEUMONIA COUGH OR COLD
TREATMENT	• Refer URGENTLY to hospital. • Give first dose of an antibiotic. • Treat fever if present. • If cerebral malaria is possible, give an antimalarial drug.	• Refer URGENTLY to hospital. • Give first dose of an antibiotic. • Treat fever if present. (If referral is not possible, treat with an antibiotic and follow closely.)	• Advise mother to give home care. • Give antibiotic. • Treat fever if present. • Advise mother to return with the child in 2 days for reassessment, or earlier if the child is getting worse.	• If coughing more than 30 days, refer for assessment. • Assess and treat ear problem or sore throat, if present. • Assess and treat other problems. • Advise mother to give home care. • Treat fever if present.

▼

Reassess in 2 days a child who is taking an antibiotic for pneumonia.



	WORSE	THE SAME	IMPROVING
SIGNS	• Not able to drink • Has chest indrawing • Has other danger signs		• Less fever • Eating better • Breathing slower
TREATMENT	• Refer URGENTLY to Hospital	• Change antibiotic or • Refer	• Finish 5 days of antibiotic

FIGURE

Annex 3c

Treatment instructions

· Give an antibiotic

- Give first dose of antibiotic in clinic.
- Instruct mother on how to give the antibiotic for five days at home (or to return to clinic for daily procaine penicillin injection).

AGE or WEIGHT	COTRIMOXAZOLE Trimethoprim (TMP) + sulphamethoxazole (SMX)			AMOXYCILLIN[3]		AMPICILLIN		PROCAINE PENICILLIN
	2 times daily for 5 days			3 times daily for 5 days		4 times daily for 5 days		1 time daily for 5 days
	Adult tablet single strength (80 mg TMP + 400 mg SMX)	Paediatric tablet (20 mg TMP + 100 mg SMX)	Syrup (40 mg TMP + 200 mg SMX)	Tablet 250 mg	Syrup 125 mg in 5 ml	Tablet 250 mg	Syrup 125 mg in 5 ml	Intramuscular injection
Less than 2 months[1] (< 5 kg)	1/4[2]	1[2]	2.5 ml[2]	1/4[2]	2.5 ml	1/2	2.5 ml	200,000 units
2 to 12 months (6-9 kg)	1/2	2	5.0 ml	1/2	5.0 ml	1	5.0 ml	400,000 units
12 months to 5 years (10-19 kg)	1	3	7.5 ml	1	10.0 ml	1	5.0 ml	800,000 units

FIGURE

(1) Give oral antibiotic for five days at home only if referral is not feasible.
(2) If the child is less than 1 month old, give 1/2 pediatric tablet or 1.25 ml syrup twice daily. Avoid cotrimoxazole in infants less than one month of age who are premature or jaundiced.

(3) Not included in kit but if available can be used as an alternative to ampicillin.

Advise mother to give home care

· Feed the child.

- Feed the child during illness.
- Increase feeding after illness.
- Clear the nose if it interferes with feeding.

· Increase fluids.

- Offer the child extra to drink.
- Increase breastfeeding.

· Soothe the throat and relieve the cough with a safe remedy.
· More important: in the child classified as having "No pneumonia: cough or cold", watch for the following signs and return quickly if they occur:

- Breathing becomes difficult.
- Breathing becomes fast.
- Child is not able to drink.
- Child becomes sicker.

This child may have pneumonia

- **Treat fever**

• Fever is high (≥ 39°C)	• Fever is not high (38-39°C)	In a falciparum malarious area : • Any fever or • History of fever	• Fever for more than 5 days
• Give paracetamol	• Advise mother to give more fluids	• Give an antimalarial (or treat according to your malaria programme recommendations)	• Refer for assessment

PARACETAMOL doses :

• Every six hours

AGE or WEIGHT	100 mg tablet	500 mg tablet
2 months up to 12 months (6-9 kg)	1	1/4
12 months up to 3 years (10-14 kg)	1	1/4
3 years up to 5 years (15-19 kg)	1 1/2	1/2

Fever alone is not a reason to give an antibiotic except in a young infant (age less than 2 months).

Give first dose of an antibiotic and refer urgently to hospital.

FIGURE

Annex 4

Sample monthly activity report

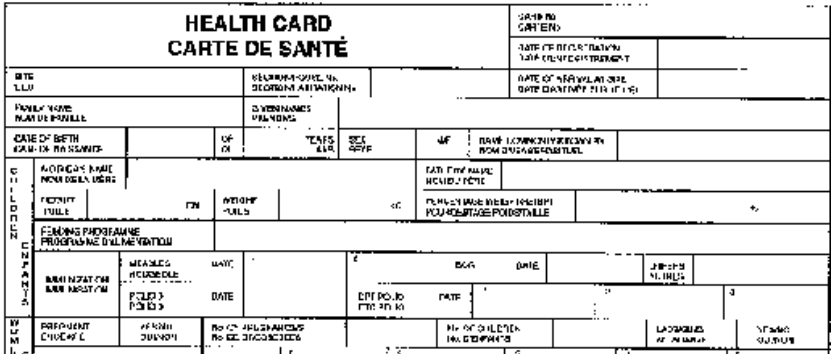
Diagnosis / Symptom groups		< 2 months	2 - 12 months	1 - 4 years	5 - 15 years	Adult	Total	%
ANEMIA	Severe							
	Moderate							
PAIN	Headache, joint pain							
	Stomach pain							
DIARRHOEA	More than 2 weeks							
	Bloody diarrhoea							
	Severe dehydration							
	Some dehydration							
	No dehydration							
FEVER	Malnourished patient							
	With chills							
	With cough							
	Unspecified							
RESPIRATORY	Severe pneumonia							
TRACT	Pneumonia							
INFECTION	Cold or cough							
	Prolonged cough							
	Acute ear pain							
	Ear discharge							
MEASLES								
RED EYES	(conjunctivitis)							
SKIN	Extensive wounds							
CONDITIONS	Limited superficial wounds							
	Severe burns							
	Mild, moderate burns							
	Severe bacterial infection							
	Mild bacterial infection							

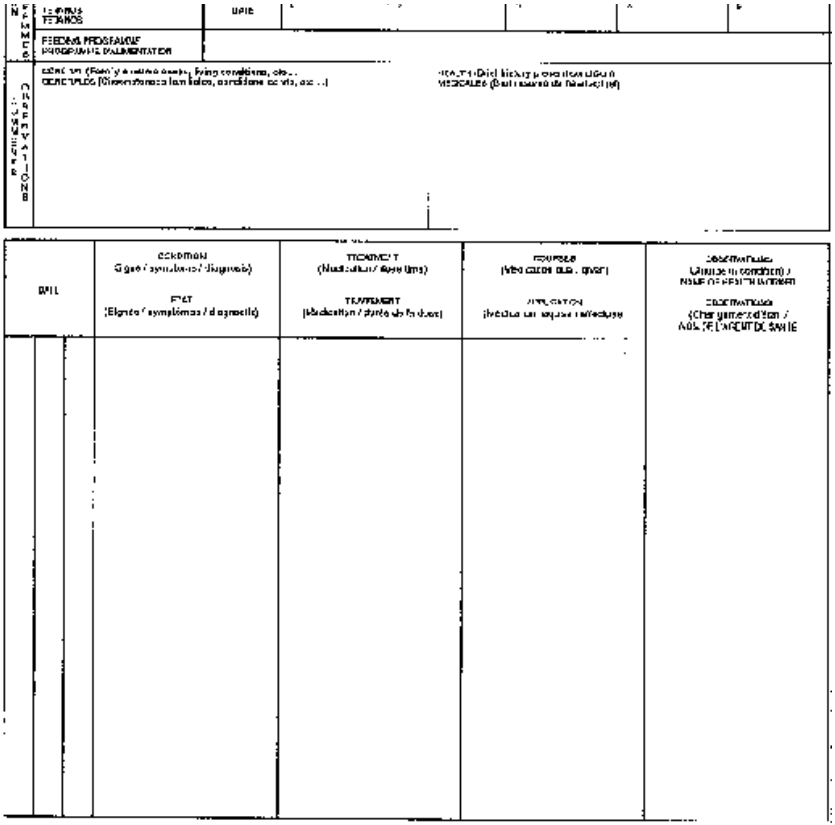
	Fungal infection						
	Infected scabies						
	Non infected scabies						
URINARY TRACT INFECTION							
SEXUALLY TRANSMITTED DISEASE							
PREV. CARE IN PREGNANCY	Anemia						
	Malaria						
WORMS	Roundworm, pinworm						
	Hookworm						
Referred patients							
Repeated consultation for same diagnosis							
TOTAL							

FIGURE

Annex 5

Sample health card





FIGURE

Annex 6

Guidelines for suppliers

Quality

1. The quality of the drugs must comply with intemationally recognized pharmaco-poeial standards.
2. At the time of shipment the product shall have at least two thirds of its shelf life.
3. Tablets should preferably be divisible and carry characteristic symbols for easy identification.
4. Drugs should be procured only from those manufacturers able to produce documents meeting the regulations of the WHO Certification Scheme on the Quality of Pharmaceutical Products Moving in International Commerce.

Labelling

1. Labelling should be in English and preferably one other official language of WHO.
2. All labels should display at least the following information:

· International nonproprietary name (INN) of the active ingredient(s).
· Dosage form.
· Quantity of active ingredient(s) in the dosage form (e.g. tablet, ampoule) and the number of units per package.

· Batch number.
· Date of manufacture.
· Expiry date (in clear language, not in code).
· Pharmacopoeial standard (e.g. BP, USP.).
· Instructions for storage.
· Name and address of the manufacturer.

3. A printed label on each ampoule should contain the following:

· INN of the active ingredient(s).
· Quantity of the active ingredient.
· Batch number.
· Name of the manufacturer.
· Expiry date.

The full label should again appear on the collective package.

4. Directions for use, warnings and precautions may be given in leaflets (package inserts). However, such leaflets should be considered as a supplement to labelling and not as an alternative.

5. For articles requiring reconstitution prior to use (e.g. powders for injection) a suitable beyond-use time for the constituted product should be indicated.

Packaging

1. Tablets and capsules should be packed in sealed waterproof containers

with replaceable lid, protecting the contents against light and humidity.
2. Liquids should be packed in unbreakable leak-proof bottles or containers.
3. Containers for all pharmaceutical preparations must conform to the latest edition of internationally recognized pharmacopoeial standards.
4. Ampoules must either have break-off necks, or sufficient files must be provided.
5. Each Basic Unit should be packed in one carton. The Supplementary Unit must be packed in cartons of max. 50 kg. The cartons should preferably have two handles attached. Drugs, renewable supplies, infusions and equipment should all be packed in separate cartons, with corresponding labels.
6. Each carton must be marked with a green label (the international colour code for medical supplies in emergency situations). The word "BASIC" must be printed on each green label for the basic unit.

Packing list

Each consignment must be accompanied by a list of contents, stating the number of cartons and the type and quantity of drugs and other supplies in each carton.

Annex 7
Useful addresses

World Health Organization, Avenue Appia, CH-1211 Geneva-27, Switzerland. Telephone 41.22.7912111; telex 27821; telefax 41.22.7910746

United Nations High Commissioner for Refugees, Palais des Nations, CH-1211 Geneva-10, Switzerland. Telephone 41.22.7398111; telex 27492; telefax (general) 41.22.7319546; telefax (supplies) 7310776

UNICEF (UNIPAC), Arhusgade 129, Freeport, DK 2100, Copenhagen, Denmark. Telephone 45.31.262444; telex 19813; telefax 45.31.269421

OXFAM, 274 Branbury Road, Oxford OX2 7DZ, United Kingdom. Telephone 44.865.56777; telex 83610; telefax 44.865.57612

Mdecins Sans Frontires, 8 Rue Saint-Sabin, 75011 Paris, France. Telephone 33.1.40212929; telex 214360; telefax 33.1.48066868

International Committee of the Red Cross, 17 Avenue de la Paix, CH-1202 Geneva, Switzerland. Telephone 41.22.7346001; telex 22269; telefax 41.22.7332057

League of Red Cross and Red Crescent Societies, P.O.Box 372, CH-1211 Geneva-19, Switzerland. Telephone 41.22.7345580; telex 22555; telefax 41.22.7330395

Christian Medical Commission of the World Council of Churches, P.O.Box 66, CH-1211 Geneva-20, Switzerland. Telephone 41.22.7916111; telex 23423; telefax 41.22.791.03.61

London School of Hygiene and Tropical Medicine, Keppel Street, London WC1E 7HT, United Kingdom. Telephone 44.1.6368636; telex 8953474; telefax 44.1.4365389

International Dispensary Association, P.O.Box 3098, 1003 AB Amsterdam, The Netherlands. Telephone 31.2903.3051; telex 13566; telefax 31.2903.1854