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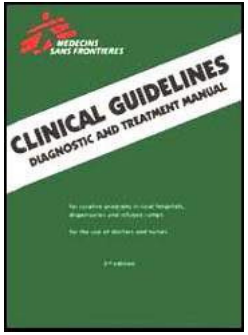

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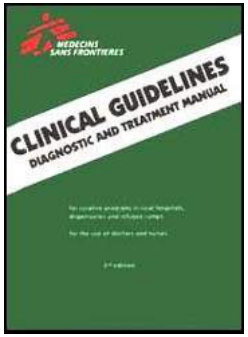

- for curative programs in rural hospitals, dispensaries and refugee camps
- for the use of doctors and nurses

1993 - THIRD EDITION

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 CHARACTERS IN TEXT AND 1 OUT OF 200 to 300 DIGITS IN TABLES).

DOSES OR MEDICAL ACTIONS MENTIONED HERE SHOULD BE CHECKED WITH THE COMMON MEDICAL SCIENTIFIC AND PHARMACEUTICAL KNOWLEDGE AND WITH THE ACTUAL LOCAL SITUATION AND PARTICULARITIES AS ASSESSED AND JUDGED BY A MEDICALLY TRAINED PERSON.

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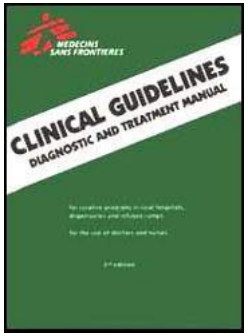

Clinical Guidelines and Treatment Manual (MSF, 1993, 319 p.)

Chapter 5 - Eye conditions

Conjunctivitis

- Acute inflammation of the conjunctivae which may be infectious (viral or bacterial), allergic or irritative.

- Infectious conjunctivitis is often endemic and may become epidemic in conditions of

poor hygiene. Secondary infection may lead to keratitis and subsequent blindness.

- Viral conjunctivitis is often preceded by a cold.

Clinical features

- "Red eye" (injected conjunctivae), either unilateral or bilateral. May be purulent discharge. Visual acuity intact.

- Pain and photophobia are signs of comeal involvement. Look for pericorneal injection and examine after fluoroscein staining if available. Examine carefully to exclude foreign body (corneal or conjunctival).

- Chronic pruritis is usually the allergic form.

Treatment

(dispensary)

- Usual picture

· Wash a several times a day to remove any discharge. Use cooled boiled water or normal saline.

· Then, apply:

tetracycline eye ointment 1 %: 4 times/day x 5 days
or
sulphacetamide 10 %.

· Always look for foreign bodies (sub-conjuctival or comeal) and remove.

· Never use topical steroids.

(hospital)

- Ophthalmia neonatorum (gonococcal)

It is bilateral and appears immediately after birth. If only after 3 days, it is likely to be chlamydia.

· Prevention

Formerly, a 1% solution of silver nitrate was used for all neonates. This product is effective but may be dangerous if poorly prepared or stored; evaporation in hot climates may greatly increase the solution's concentration and thus toxicity. The current WHO recommendation is to use: tetracycline 1% eye ointment: apply in each eye at birth.

· Treatment

Clean with normal saline or ringer´s lactate at least 4 times/day (danger of sticking).
+ tetracycline 1 % eye ointment applied 2 hourly initially.
+ penicllin G (IM): 100,000 IU/kg divided in 3-4 injections x 7 days.
Treat the mother.

- Allergic conjunctivitis
Treat as for simple conjunctivitis.
+ promethazine (PO): 75 mg/d divided in 3 doses
or chlorphenamine(PO): 12 mg/d divided in 3 doses

- Keratoconjunctivitis (corneal ulcers)

Same treament as for simple conjunctivitis: tetracyclin ointment. Never use ointments or

drops containing corticosteroids.

Give vitamin A in therapeutic doses and cover with an eye pad to relieve pain and photophobia. Oral analgesia as needed.

Consult ophthalmologist whenever one is available.
If too painful, adrenaline (epinephrine) can be given (dilution of 1 mg ampoule in 10 ml normal saline or ringer's lactate): apply several drops 4 times/day.

- Prophylaxis against the ocular complications of systemic conditions (e.g. measles and other febrile illnesses):

vitamin A in prophylactic doses.
Prophylactic eye toilet with 0.9 % ringer´s lactate solution.

Trachoma

- Keratoconjunctivitis due to Chlamydia trachomatis. It is the world's major cause of blindness.

- Endemic and contagious, its occurrence is associated with poor hygiene, lack of water and over crowding.

Clinical features

Trachoma evolves through four stages. Early forms (stages I and II) can be completely cured with appropriate therapy. Patients in endemic areas should be examined by everting the upper eyelid (have the patient look down and draw the eyelashes up while "tripping" the tarsal plate over a matchstick).

Follicles are the basic lesions; there are whitish granulations on an inflammatory base.

Staging is discussed below.

Treatment

Treatment is always local. WHO does not recommend systemic antibiotics, though these were formerly used. The regimen alters according to the staging of the illness.

STAGE I (dispensary)

- Bilateral follicular conjunctivitis, first present in the upper palpebral conjunctive (thus the need always to evert the upper lid).

- tetracycline 1% eye ointment 3 times/day x 4-6 weeks.

STAGE II (dispensary)

- Frank trachoma: as in stage I, plus vascular pannus across cornea.

- Same treatment as above, for 2 to 3 months.

STAGE III (dispensary)

- Scarring and infiltration of the palpebral and bulbar conjunctivae and of the cornea. Complete cure is no longer possible.

- Local disinfection and tetracycline ointment.

STAGE IV (dispensary)

- Scarring and contractures invert the edge of the lids producing an entropion.

- Irritation by eyelashes (trichiasis) causes more severe ulceration and scarring of the cornea. Blindness results.

- Only surgical treatment is effective in correcting the entropion. Surgery should be offered even if the patient is already blind, so as to reduce continuing irritation and pain.

- If infection remains active, administer tetracycline ointment.

Prevention

- Adequate quantities of soap and water

- Personal hygiene (hand washing, eye toilet)

- Health education

Vitamin A deficiency

Nutritional deficiency of vitamin A principally affecting infants and young children. Clinical manifestations are often precipitated by an acute febrile illness (measles, diarrhea etc) and signs may evolve very quickly (in hours).

Clinical features

STAGE I

Night blindness

Difficult to observe in infants and young children, but at nightfall they may stop playing or become fearful.

STAGE II

Xerophthalmia

Dryness (xerosis) affecting first the conjunctivae then the cornea.

Bitot's spots: foamy white patches on bulbar conjunctive.

STAGE III

Keratomalacia

Comeal opacities, quickly leading to blindness.

Treatment (dispensary)

Only stages I and II are completely reversible.

Give vitamin A at all stages of active xerophtalmia. Also give vitamin A to all children with measles. Corneal changes require urgent treatment.

- 100,000 IU stat PO for infants < 1 year on day 1, day 2 and day 8.

- 200,000 IU stat PO for older children and adults on day 1, day 2 and day 8.

Prevention

- Vitamin A

· Mother: 200,000 IU at the time of delivery or in the two months which follow. Fertile women must not receive more than 10,000 IU/d, except in the two months following a

delivery.

· Children from 6 to 11 months of age: 100,000 IU by mouth every 3 to 6 months.

· Children from 1 to 5 years of age: 200,000 IU by mouth every 3 to 6 months.

- Nutritional education: instruct mothers on locally available foods that are rich in vitamin A (e.g. yellow fruits, vegetables - especially papaya and carrots - red palm oil, green leafy vegetables, liver, eggs...).

Note: doses of vitamin A given should be marked on the health card. It is toxic so do not exceed the recommended dose.

Pterygium

- Whitish triangular membrane on the nasal aspect of the bulbar conjunctive progressing slowly towards the cornea.

- Associated with dry climates, dust and wind. Does not regress spontaneously.

Treatment (dispensary)

- Uncomplicated pterygium Symptomless, not encroaching across the pupil. No treatment.

- Progressive pterygium Vascular, encroaching across the pupil, causing discomfort, lacrimation and sometimes secondary infection:

· Disinfection: wash eye with normale saline, apply tetracycline ointment.

· Surgical excision: if skills and facilities are available locally.

Cataract

Bilateral opacities of the lens that cause a progressive loss of visual acuity

Cataract is common in tropical regions and occurs at a younger age than in Western countries. It is possibly associated with repeated episodes of dehydration.

Apart from surgery there is no treatment.

Onchocerciasis

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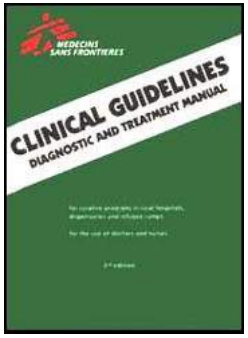


Clinical Guidelines and Treatment Manual (MSF, 1993, 319 p.)

Chapter 6 - Parasitic diseases

Schistosomiasis

Schistosomiasis *(blood flukes)*

PARASITE	MODE OF TRANSMISSION	SIGNS	TREATMENT	PREVENTION
S. Haematobium (Tropical and North Africa, Midle East)	Transcutaneous during contact with water contaminated with cercariae BULINUS SPP	Dysuria, haematuria Late : hydronephrosis Eggs in urine	***Metrifonate*** per os Adult : 600 mg Child : 10 mg/kg divided en 2 doses at 2 weekly intervals Alternative : ***praziquantel*** see S. Intercalatum	Avoid swimming Health education Vector control Mass chemotherapy
S. Mansoni (Tropical Africa, Latin America)	Transcutaneous during contact with water contaminated with cercariae BIOMPHALARIA SPP	Diarrhoea, cramps Late : portal hypertension Eggs in stools	***Oxamniquine*** per os Adult : 1 g Child : 20-40 mg/kg single dose Alternative : ***praziquantel*** see S. Intercalatum	As above
S. Intercalatum (Central and West Africa) Rare	Transcutaneous during contact with water contaminated with cercariae PHYSOPSIS SPP	Diarrhoea, cramps Late : portal hypertension Eggs in stools	***Praziquantel*** per os Adult : 2.4 g Child : 40 mg/kg single dose	As above
S. Japonicum *S. Mekongi* (SE Asia)	Transcutaneous during contact with water contaminated with cercariae ONCOMELANIA SPP	Disease often severe : portal hypertension, hepatomegaly, jaundice Epilepsy Eggs in stools	***Praziquantel*** per os Adult : 2.4 g Child : 60 mg/kg divided in 3 doses	As above

– Treatment of individuals can be helpful but in a endemic area there is constant reinfection unless preventive measures are taken. The medication is also relatively expensive.

Table

Intestinal protozoa

Intestinal protozoa

PARASITE	MODE OF TRANSMISSION	SIGNS	TREATMENT	PREVENTION
Entamoeba Hystolitica = Amoebiasis	Direct : person to person contact (dirty hands) Indirect : contaminated water or food	Amoebic dysentery Amoebic liver abscess (fever, large tender liver) Motile forms (not cysts) must be present in fresh stools to diagnose amoebic dysentery	***Metronidazole*** per os Adult : 1.5 g/d Child : 30-50 mg/d divided in 3 doses x 5 days + rehydration	Personal : hand washing, cut fingernails, boil water Community : hygiene, sanitation and supply of clean water, health education
Entamoeba Coli ***Endolimax nana*** ENTAMOEBA HARTMANI		Non-pathogenic	No therapy	
Trichomonas Intestinalis		Non-paghogenic	No therapy	
Trichomonas vaginalis	Sexual	Vaginitis Males usually no symptoms, or urethritis	***Metronidazole*** per os Adult : 750 mg/d divided in 3 doses x 5 days or 2 g in 1 single dose	Treat all sexual contacts (even if asymptomatic)
Giardia Lamblia	Direct : person to person contact (dirty hands) Indirect : contaminated water or food	Diarrhoea, cramps, malabsorption Motile forms seen in fresh stools	***Metronidazole*** per os Adult : 750 mg/d Child : 10-20 mg/kg/d divisided in 3 doses x 5 days Repeat 3 weeks later if necessary	Personal : hand washing, cut fingernails, boil water Community : hygiene, sanitation and supply of clean water, health education
Balantidium Coli (Central America, sometimes Africa)	Direct : person to person contact (dirty hands) Indirect : contaminated water or food	Often asymptomatic Dysentery Parasites in stools	If dysentery, ***Metronidazole*** per os : as for amoebiasis or ***tetracycline*** per os Adult : 1.5-2 g/d Child > 8 years : 50 mg/kg/d divided in 3-4 doses x 7 days	Personal : hand washing, cut fingernails, boil water Community : hygiene, sanitation and supply of clean water, health education

Therapy for amoebiasis or giardiasis should only be given if trophozoide forms are seen in a fresh stool specimen. Cysts do not necesarrily imply active disease.

Table

Nematodes

Intestinal nematodes *(round worms)*

PARASITE	MODE OF TRANSMISSION	SIGNS	TREATMENT	PREVENTION
Ascaris lumbricoides (round worm)	Feco-oral (dirty hands)	Often asymptomatic GIT symptoms Anorexia Asthma, allerty **Eggs in stools**	***Mebendazole*** per os 200 mg/d x 3 days or 200 mg stat Alternatives : ***piperazine*** per os 75 mg/kg/d (max 3.5 g/d) x 2 days ***pyrantel pamoate*** per os 10 mg/kg stat	Personal : hand washing, cut fingernails Community : hygiene, sanitation, sufficient clean water Health education
Ankylostoma duodenale *Necator americanus*	Transcutaneous : bare feet in contact with moist soil contaminated with larva	Allergic symptoms Epigastric pain Anemia **Eggs in stools**	***Mebendazole*** per os 200 mg/d x 3 days Alternatives : ***pyrantel pamoate*** per os : 20 mg/kg stat x 3 days ; ***levamisole*** per os 2.5 mg/kg stat ; repeat after 7 days	Personal : shoes Community : mass therapy ***mebendazole*** 200 mg stat Hygiene, sanitation, supply of sufficient clean water Health education
Enterobius vermicularis (pin worm)	Oral (dirty hands) Auto-reinfestation	Often asymptomatic Anal or vulval pruritus Irritability Eggs in stools and around anus ("scotch test")	***Mebendazole*** per os 100 mg stat Alternative : ***pipenzolate*** per os 30 mg/kg/d x 2 days (max 2.5 g/day)	Personal : hand washing, cut fingernails Community : hygiene, sanitation, sufficient clean water Health education
Strongyloide stercoralis	Transcutaneous : bare feet in contact with moist soil contaminated with larva Auto-reinfestation	Allergic syndrome Epigastric pain Anorexia **Larvae found in stools** (concentration method of Baermann)	***Thiabendazole*** per os 500 mg/10 kg stat Take at night Repeat dose 1 week later Side effects : nausea, vertigo, vomiting	Personal : shoes Community : hygiene, sanitation, sufficient clean water Health education
Trichuris trichiura (whipworm, trichocephalus)	Feco-oral (dirty hands)	Often asymptomatic Diarrhea in infants **Eggs in stools**	If symptoms : ***Mebendazole*** per os 200 mg/d x 3 days if diarrhea	Personal : hand washing, cut fingernails Community : hygiene, sanitation, sufficient clean water Health education
Trichinella spiralis Trichinosis (Asia, Africa) Rare	Insufficiently cooked pork meat (non-islamic)	Diarrhea, cramps, fever, myalgine edema, urticaria **Stools exam negative**	***Thiabendazole*** per os 25 to 50 mg/kg/d divided in 2 doses x 5 days Alternative : ***mebendazole*** per os 600 to 1,200 mg/d x 3 days, then 1.5 g/d x 10 days (divided in 3 doses)	Personal : cook pork meat well Community : veterinary inspection of herds, abattoirs

Table

Liver flukes

Intestinal, liver and lung flukes

PARASITE	MODE OF TRANSMISSION	SIGNS	TREATMENT	PREVENTION
Opisthorchis – Felinus *Clonorchis – Sinensis* Liver fluke (SE Asia)	Raw fish	Diarrhea, cramps, allergy, cholecystitis **Eggs in stools**	***Praziquantel*** per os 75 mg/kg/d divisded in 3 doses x 2 days	Cook fish well
Paragonimus *Westermani* Lung fluke (SE Asia, West Africa)	Raw crab	Cough, hemoptysis (mimics TB) **Eggs in sputum**	***Praziquantel*** per os 75 mg/kg/d divisded in 3 doses x 2 days	Cook crab well
Fasciola hepatica *et gigantia* Sheep or liver fluke (Europ)	Watercress	Urticaria Eosinophilia Cholecystitis **Eggs in stools**	***Praziquantel*** per os 75 mg/kg/d divisded in 3 doses x 2 days	Avoid watercress
Others *Heterophyes* *Metagonimus* *Yokogawai* *Fasciola Buski* (SE Asia)	Raw fish	Diarrhea, cramps Ofthe asymptomatic **Eggs in stools**	***Praziquantel*** per os 75 mg/kg/d divisded in 3 doses x 2 days	Cook fish well

Table

Cestodes

Adult tapeworms

PARASITE	MODE OF TRANSMISSION	SIGNS	TREATMENT	PREVENTION
Taenia saginata *Taenia solium*	Beef (T. Saginata) Undercooked pork (T. Solium)	Non specific GIT symptoms, irritability. Segments may be passed with stools. Eggs in stools	***Niclosamide*** per os Adult : 1 g, then 1 g again after 1 hour Child : 50 mg/kg stat Alternatives : ***praziquantel*** per os 10 mg/kg stat ***mebendazole*** per os 200 mg/d x 5 days	Personal : cook meat adequately Community : veterinary inspection of abattoirs
Hymenolepis Nana	Direct (dirty hands) Feco-oral Autoreinfestation	Often asymptomatic Non-specific GIT symptoms Eggs in stools	***Niclosamide*** per os Adult : 2 g/d x 5 days Child : 30 mg/kg/d x 5 days Alternative ***praziquantel*** per os 15 to 20 mg/kg stat	Personal : hand washing, cut fingernails Community : water, hygiene, sanitation Health education
Diphyllobothrium latum (Africa, South Asia, Australia, Japon)	Uncooked freshwater fish	Often asymptomatic GIT symptoms Sometimes anemia Eggs in stools	***Niclosamide*** per os Adult : 1 g, then 1 g again after 1 hour Child : 30 mg/kg stat If anemia : ***vitamin B12***	Personal : cook fish

Larval tapeworms

PARASITE	MODE OF TRANSMISSION	SIGNS	TREATMENT	PREVENTION
Hydatid cyst (North africa, South america +++)	Direct : contact with dog (feces) Indirect : via food contaminated by dog	Hydatid cyst of liver of lung	Surgery	Personal : avoid contact with dogs Community : control dogs, do not feed offal to dogs, inspect abattoirs
Cysticercosis (Taenia Solium)	Food contaminated by eggs of T. Solium Autoreinfestation	Nodules in muscle, subcutaneous tissue Ocular and cerebral signs (headache, fits, coma) Eosinophilia	Difficult ***praziquantel*** per os 50 mg/kg/d divided in 2 doses x 14 days – ***dexamethasone*** IM or IV 2 to 3 amp./d Alternative : ***thiabendazole*** per os (tab 500 mg) 50 mg/kg/d divided in 2 doses x 10 days	Personal : treat infected persons, hygiene, cook meat adequately Health education

Table

Filariasis

Group of conditions caused by infection with various nematodes, the most common being Wuchereria bancrofti, Brugia malayi, Onchocerca volvulus, Loa loa and Dracunculus medinensis. Adult forms of both sexes live and reproduce in human lymphatics, in the skin or in deep tissues. Their larvae, microfilariae, reach the blood or skin and are thus the infective form for biting vectors as well as being the form upon which diagnosis is based.

Transmission is by vector: mosquitoes for lymphatic filariasis (Bancroftian and Malayan), blackflies for onchocerciasis, Chrysops flies for loiasis and tiny crustaceans (Cyclops) for dracunculiasis (Guinea worm).

Clinical features and diagnosis

See table.

Symptomatic treatment

- Inflammatory symptoms: acetylsalicylic acid (PO): 3 g/d divided in 3 doses or indomethacin (PO): 75 mg/d divided in 3 doses

- If allergic symptoms develop (e.g. urticaria, pruritis) promethazine (PO): 75-100 mg/d divided in 3-4 doses; child: 1 mg/kg/d divided in 3 doses or chlorpheniramine(PO):12 mg/d divided in 3 doses

Antiparasitic treatment

LOIASIS AND LYMPHATIC FILARIASIS

The main drug used is diethylcarbamazine, often abbreviated to DEC. It is essentially a microfilariacide and may not kill all adult worms. Therapy with DEC should always be supervised as the drug is often poorly tolerated (allergic reactions). Dosages should start low and be increased progressively. DEC is contraindicated during pregnancy. Usual presentation is in 50 mg tablets.

LYMPHATIC FILARIASIS

Adult: commence with 25 mg/d divided in 2 doses (= 1/8 tab x 2/d). Increase progressively by doubling the dose each day until the 5th day, dose is 200 mg x

2/d=2 tab x 2/d) x 10 days.

Child: 3 mg/kg x 2/d x 10 days, to be reached progressively over 5 days.

A second therapeutical course can be repeated after 10 days.

LOIASIS

In this infection diethylcarbamazine can cause a fatal encephalitis or allergic shock. Much care is needed. Reinfection after treatment is very common, so if symptoms are mild, it may be better to withold therapy. Dosage can be adjusted to extent of infestation (beyond 50,000 microfilaria/ml blood: +++ caution).

Where treatment considered essential because of severity of infection: diethylcarbamazine

Adult: 3 mg x 2/d (= 1/32 tab x 2/d) the 1st day increasing progressively till in seven days 200 mg x 2/day (= 2 tab x 2/day) x 21 days.

Child: begin progressively to reach in seven days 3 mg/kg x 2/d x 21 days.

Always give antihistamines in association.

If promethazine does not control reactions to treatment, treat with prednisone (or prednisolone): 15-30 mg/d in a single dose x 3-5 days, then decrease progressively. If necessary, dexamethasone IV or IM: 4-20 mg / kg.

Note: where Loiasis is endemic (West Africa), all treatment with diethylcarbamazine, should commence with 3 mg/kg x 2 days (protocole for Loiasis) whatever form of filaria is being treated. This is to avoid the sometimes fatal complications of inopportune treatment where there is also unrecognised associated loiasis.

ONCHOCERCOSIS

The treatment of choice is ivermectin (Mectizar), microfilaricide, 6 mg tablets.

Dose:	150-200	micrograms/kg stat:
	15-25 kg:	1/2 tab
	26-44 kg:	1 tab
	45-64 kg:	1.5 tab
	65-84 kg:	2 tab

The recommended long term management of communities is one dose every 6 months the first year, then a single dose annually.

Contraindications: child < 5 years, pregnant women, women in their first week of breast feeding.

Side efects are due to lysis of microfilaria (allergic manifestations, pain, fever) and respond well to antihistamines and acetyl salicylic acid. Rarely orthostatic hypotension occurs but responds to injected cofficosteroids (single dose or 1-2 days).

There is no problem with associated filarias even Loiasis.

If ivermectin not available: diethylcarbamazine in dosage for lymphatic filariosis.

TREATMENT OF MACROFILARICIDES

This should be abandonned as too dangerous.

Prevention Prophylaxis

- See table.

- Individual chemoprophylaxis for Loiasis is possible, 100 mg diethylcarbamazine PO/week in a single dose (or 2 doses of 50 mg/week). It is indicated for non residents going to an endemic zone provided, they are not already infected with Loiasis (risk of serious reactions).

Filariasis *(Tissue roundworms)*

PARASITE	MICRO-FILARIAE	VECTORS	SIGNS	TREATMENT	PREVENTION
Lymphatic filariasis *W. Bancrofti* *Brugia Malayi* (Africa, Asia, Central America)	In blood Nocturnally periodicity	Anopheles, Culex, Aedes (night-biting species)	Acute : adenopathy, lymphangitis, orchitis, fever, headache, asthma, urticaria… Chronic : hydrocele, elephantiasis	Symptomatic : anti-inflammatories and / or anti-histaminics Antifilarial : *diethylcarbamazine* Elephantiasis : surgery	Mosquito control : Personal protection Destruction of breeding sites
Loiasis *Loa Loa* (West Africa)	In blood Diurnal periodicity	Chrysops (day-biting) ('mangoflies')	May be asymptomatic Pruritus, urticaria, subconjunctival of subcutaneous passage of the worm	None unless symptoms severe : *diethylcarbamazine* with great care	Difficult. Avoid standing in forest in endemic zones Sometimes : mass therapy with *diethylcarbamazine*
Onchocerciasis *Onchocerca Volvulus* (Tropical africa, South America)	In skin (diagnosis from lass skin scraping as for leprosy) Non periodic	Simulium spp (day-biting) (blackflies)	Skin : pruritus, lesions, subcutaneous nodules Eyes : uveitis, keratitis, chorioretinitis. End-stage is blindness.	*Diethylcarbamazine* replaced by *ivermectin*, except in pregnant women, breast-feeding and child under 5 years : 150 µg/kg single dose	Vector control by insecticide at breeding sites (rivers and streams)
Dracunculiasis *Dracunculus medinensis* (Tropical Africa, Middle East, India, Pakistan)	Ejected by female worm on contact with water	Fresh water crustaceans : Cyclops spp	Skin ulcer caused by exit of worm, often secondarily infected Subcutaneous lump Allergic reactions Arthritis	Toilet of ulcers (*cloxin* or *chlorhexidine-cetrimide* + *gentian violet*) Anti-tetanus prophylaxis Filarial extraction (traditional technique Antibiotics if surinfection : *penicillin* or *oxacillin* per os *chloramphenicol* per os	Health education : water filtration or boiling Protection of water sources (springs and wells) Vector control (molluscicide)

Table

Malaria

Parasitic infection due to protozoa of the genus Plasmodium transmitted by the female

anophylus mosquito. There are four plasmodial species: P. Falciparum, P. Vivax, P. Malariae, P. Ovale.

Clinical features

INCUBATION PERIOD

- 9 to 13 days for Falciparum.

- More than 15 days for the other three forms.

PRIMARY ATTACK

Continuous fever + malaise + headache +/- gastro-intestinal problems. Consider it in endemic zones.

SIMPLE MALARIAL ATTACK

Shivering, fever ("heat"), sweating, headache, bodyaches. Theoretically, every two days for Falciparum, Vivax, Ovale and every 3 days for Malariae

SERIOUS MALARIAL ATTACK

- Uniquely due to Falciparum

Occurs especially in the non-immune: new subjects, non-residents, children < 5 years, pregnant women, debilitated patients; or in subjects living in a zone of seasonal transmission.

- Associated, in varying degrees, with the following clinical signs

· Cerebral signs: mental clouding, coma (lasting more than 1/2 hour in children following a convulsion), convulsions (more than 2 times/24 heures in children in the age range for febrile convulsions), delirium, localising signs.

· Haemolysis (jaundice is rare in children), haemorrhagic syndrome (sometimes C.I.V.D.).

· Renal signs (rare in children) have bad prognosis: oliguria, anuria.

· Hypoglycaemia: especially in children and pregnant women.

· Pulmonary edema: especially in adults; almost always fatal.

· Hyperpyrexia: T > 40.5°C.

· Macroscopic haemoglobinuria.

CHRONIC MALARIA ("MALARIA CACHEXIA")

Due particularly to Falciparum, sometimes Vivax. Usually in children.

Associated with febrile episodes, severe anaemia with pancytopenia, wasting, constant splenomegaly.

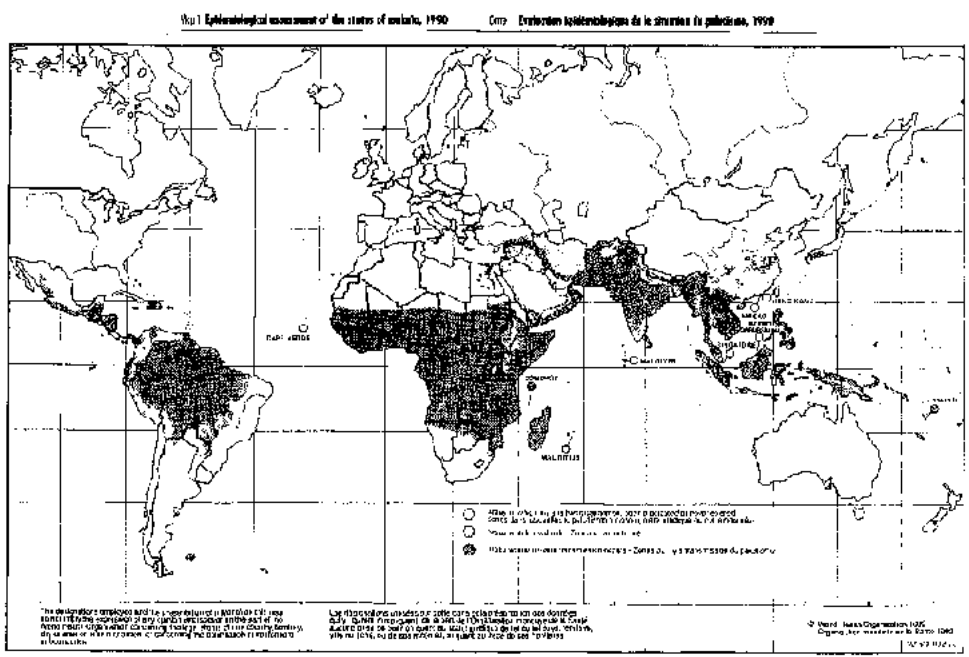
Necessary to make repeated staned slides as the protozoa are less numerous.

Diagnosis

Diagnosis is made by presence of protozoa in the blood: thick and thin slides should be made in endemic zones for every fever > 38.5°C.

Note that blood films may be negative, even in a severe attack

(pernicious) because of sequestration or parasites in the deep capillaries.



Geographic distribution adapted from W.H.O. (27)

Map

Principal antimalarials

- Quinine

· Tablets 100 to 500 mg

Indications: following IV treatment or a final trial (except in pregnant women inzones of

multiresistance).
Side effects: tinnitus, rarely giddiness, nausea, vomiting.
Not recommended for prophylaxis.

· Ampoules: available from 60 mg to 300 mg/ml. Never by IV, either infusion or IM (although IM injection can be given in cases absolute necessity, numerous complications can occur: sciatic nerve paralysis, muscle necrosis, infection).
Indications: try to reserve quinine by injection for serious cases of malaria.
No contraindications.

- Chloroquine(Nivaquine)

· Tablets 100 and 150 mg base
Indications: Vivax, Malariae, Ovale and uncomplicated attacks of sensitive Falciparum.
Side effects: pruritis is common in black skinned patients (non-allergic and unresponsive to antihistamines), rarely gastro-intestinal disorders.
Used for prophylaxis.

· Ampoules 40 and 50 mg base/ml. Never by IV, either IM or SC or infusion.
Note: the doses for injection are weaker than oral doses.
Indications: severe vomiting or serious chloroquine-sensitive malarial. No contraindications.

- Amodiaquine(Flavoquine)

· Tablet 200 mg
Active against some chloroquine-resistant varieties. Abandoned because of its toxicity (agranulocytosis, hepatitis).
Must not be used for prophylaxis.

- Pyrimethamine-sulphadoxine(Fansidar)

· Tablet with 500 mg of sulphadoxine + 25 mg of pyrimethamine, orally

· Ampoule with 200 mg of sulphadoxine + 10 mg of pyrimethamine/ml (= 400 + 20/amp of 2 ml); IM (never IV)

Indications: treatment of simple attacks of Falciparum (in zones of intermediate resistance as 1st or 2nd choice.

Side effects: rare but serious: Lyell syndrome, Stevens-Johnson syndrome, agranulocytosis, especially when used for prophylaxis.

Contraindications: pregnancy or breast feeding, children < 2 years (avoid before 5 years).

Should be abandoned as prophylaxis. Not to be given in association with chloroquine (antagonism) or with mefloquine.

- Mefloquine (Lariam) (veryexpensive)

· Tablets 50 and 250 mg

Indications: simple attacks of multiresistant Falciparum (as 1st choice in zone III as 2nd or 3rd choice elsewhere).

Side effects: giddiness and digestive disturbances are common; rarely, acute psychosis, encephalopathy with convulsions, transitory but serious.

Contraindications: epilepsy, history of psychiatric disturbances, avoid in pregnant women.

Its use for prophylaxis is limited by its side effects.

- Halofantrine (Halfan) (very expensive)

· Tablet 250 mg

Tablets should be taken with a fatty accompaniment
Indications: simple attacks of multiresistant Falciparum (as 1st choice in zone III, as 2nd or 3rd choice elsewhere)

Side effects: unobstrusive (pruritis, gastro-intestinal disturbances).

Contraindications: pregnancy or breast feeding.

Unusable for prophylaxis.

- Tetracyclin

· Tablet 250 mg

Indications: associated with quinine in areas where the Plasmodium

Falciparum is becoming less sensible to quinine (zone III), use only in severe malaria when the patient is able to swalow.

Side effects: nausea, vomiting, photosensitization.
Contraindications: pregnancy and breast feeding, children < 8 years old.

Cannot be used as prophylaxis.

- Doxycyclin

· Tablet 100 mg Indications, side effects, contraindications: idem tetracyclin.

Usable for prophylaxis.

- Proguanil(Paludrine)

· Tablet 100 mg
Only usable for prophylaxis in association with chloroquine including pregnant women and children.
Very few side effects. No contraindications.

- Primaquine: gametocytocide

· Tablet 15 mg
Indications: avoidance of relapses of Vivax and Ovale. Toxic: methaemoglobinaemia, haemolysis where G6PD deficiency exists
(common in Africans,Asiatics and those of Mediterranean origin).
Contraindications: pregnancy and in G6PD deficiency.
In practice, few indications (expatriates leaving an endemic zone or where demanded by national rules, especially as resistance to it has been described).

Drug resistance of P. Falciparum

RESISTANCE TO CHLOROQUINE

- Before speaking of resistance, verify:

· that treatment has in fact been taken,

· that the correct dose for weight has been prescribed,

· the absence of important diarrhoea and whether there has been vomiting within one hour of taking medication,

· the expiry date of the medication,

· that there has not been under-dosage due to confusion between the expression of the dosage as a chloroquine base and as a chloroquine salt(1).

- There must evidently be a Falciparum positive blood slide on the first and third days of treatment, slides which have been theoretically quantified. There is no chloroquine resistance with
P. Vivax, Malariae or Ovale.

- If resistance is suspected, follow the recommendatios for the country concerned.

WHO has done in vivo testing which is rarely possible in routine practice.

- WHO classifies resistance to chloroquine into 3 types. Schematically:

· Early and late R 1: total disappearance followed by reappearance of the parasite

· R 2: noticeable fall without diseappearance of the parasite

· R 3: parasite level almost unchanged, indeed, increased

- Zones of resistance: see map. There is resistance to chloroquine almost everywhere where Falciparum rages and is more or less frequent depending on the country. Schematically, 3 zones can be distinguished:

· Zone I
Chloroquine sensitivity retained. Certain West African countries, Central America except for Panama.

· Zone II

Spreading pockets of resistance, often of low level (R1). East Africa, Northern India, part of West Africa.

· Zone III
Numerous chloroquine resistant areas of raised level (R2-R3). Multiresistances. South East Asia, part of India and Pakistan, Polynesia, South America.

RESISTANCE TO SULPHADOXINE-PYRIMETHAMINE

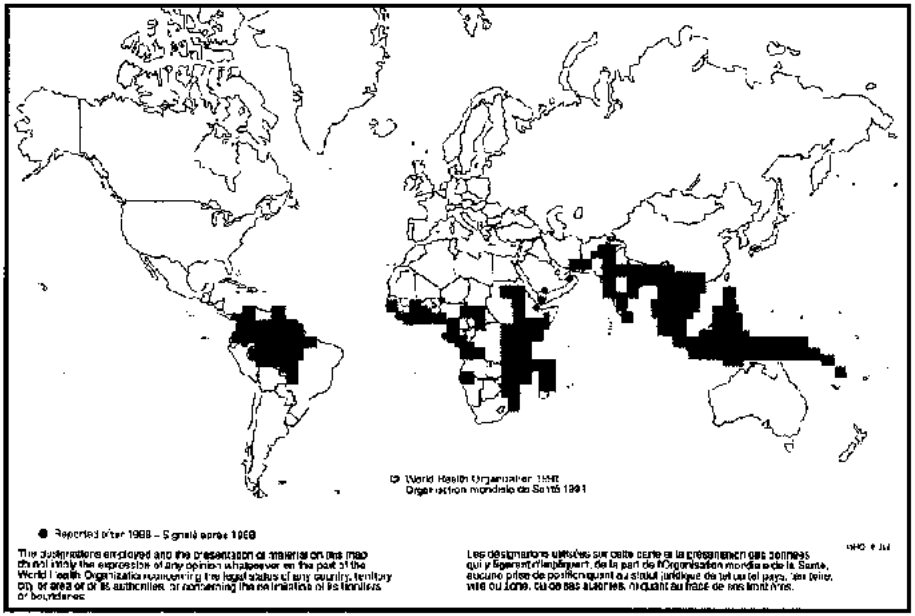
- Resistance to sulphadoxin-pyrimethamine (Fansidar), although less frequent, has for several years followed closely the distribution of chloroquine resistance. Very extensive in South East Asia and Brazil.

RESISTANCE TO QUININE AND MEFLOQUINE

- Resistance to quinine (type R1) and mefloquine, also exist principally in South East Asia.

Map 3 Areas where chloroquine-resistant *Plasmodium falciparum* has been reported

Carte 3 Zones dans lesquelles une résistance de *Plasmodium falciparum* à la chloroquine a été enregistrée



Map

Treatment of primary or uncomplicated attack

- Always use national guidelines. This is essential in countries where drug resistance occurs.

- For Vivax, Malariae, Ovale and for Falciparum in zone I (chloroquine-sensitive): chloroquine.

Adult: 600 mg base then 300 mg base at H6, D2 and D3
Child: 10 mg base/kg then 5 mg base/kg at H6, D2 and D3
Or a total of 1.5 g for an adult and 25 mg/kg for a child.

- For Falciparum in zone II (intermediate resistance)

· either chloroquine as first choice (eventually 10 mg/kg on D1, D2 then 5 mg/kg on D3, D4, D5) and in case of failure, sulphadoxine-pyrimethamine:

Adult: 3 tab in a single dose
Child: 1/2 tab/10 kg in a single dose

· or sulphadoxine-pyrimethamine as first choice. Theoretically, mefloquine or halofantrine are only used in cases of chloroquine and/or sulphadoxine-pyrimethamine failure, with quinine as the last recourse. In practice, account must be taken of national guidelines, availability and cost.

- For Falciparum in zone III

· either mefloquine
Adult and child: 15 mg/kg then 10mg/kg 8 hours later; repeat the dose if vomiting occurs less than one hour after medicament taken.

In children, if the temperature is lowered before taking the medicine (antipyretics, cold bath), this will decrease the frequency of early vomiting.

· or (especially in pregnancy): quinine: 30 mg/kg/d divided in 3 doses x 7 days
in association with tetracyclin:

Adult: 1.5-2g/d x 7 days

Child > 8 years: 50 mg/kg/d x 7 days

Tetracyclin is usually contraindicated in pregnancy or breast feeding and children < 8 years, but the vital risk serious malaria makes this a secondary consideration.

· or halofantrine (rarely available becaue of cost)

Adult: 3 doses of 500 mg at 6 hourly intervaals
Child: 3 doses of 8 mg/kg at 6 hourly intervals

It should be reserved for cases where resistance has been proven.
The ingestion of halofantrine concurrently with fats doubles or trebles its absorption.

Treatment of serious malaria

- Quinine as an infusion remains the treatment of choice in every zone. Commence with a loading dose of 20 mg/kg in an isotonic solution (if possible 5 % glucose) over 4 hours, then 10 mg/kg every 8 hours (or better, 4 hours with quinine, 4 hours through indwelling venous needle), until such time as the patient can swallow. Then change to oral medication for the remainder of the 7 days.

- SIf the patient has received quinine or mefloquine in the previous 24 hours without vomiting a loading dose will not be given (cardiac toxicity).

- If injection is not possible, use quinine IM in zones II or III in the same doses.

- In zone III, complete therapy with tetracycline.

- In zone I, chloroquine as IM (antero-lateral thigh) or SC can be used in place of quinine. Dosage: 3.5 mg base/kg every 6 hours or as an infusion: 10 mg/kg in an isotonic solution over 8 hours, then 5 mg/kg/8 hours. Transfer to oral therapy as soon as possible. The

total dose should be 25 mg/kg.

COMPLEMENTARY TREATMENTS

- Convulsions: diazepam IV or IR (see "Convulsions"). For prevention, use with phenobarbital.

- Infusion: guard against excessive hydration if not sure of the integrity of renal function. Do not exceed 2,000-2,500 ml/days in adults and 40-50 ml/kg in children, except where there is presenting dehydration which needs to be corrected.

- Transfusion where there is profound or porrly tolerated anaemia (Hb < 5 mg/ml or haematocrit < 15 %). Check for HIV if possible.

- Safe position and nursing in case of coma, nasogastric feeding.

- Record urine output: if < 400 ml/day in adults or 12 ml/kg/day in children; regard patient as anuric. This normally requires fluid restriction. To avoid decreasing the perfusion rhythm and therefore the planned doses of quinine, attempt to initiate a diuresis with frusemide IV (ampoule 10 mg/ml, 2 ml) at the rate of 2 ampoules of 20 mg as required (do not exceed 250 mg in 100 ml of 5 % glucose administered over 20-30 minutes in adults; in children, the dose is 1 mg/kg/inj. repeated every 4-6 hours depending on the evolution).

- Hypoglycaemia: when an doubt, especially in children or pregnant women, give 20-50 ml of 30 % or 50 % glucose. Hypoglycaemia often relapses. In practice, in children, the perfusion of 80 ml/kg/day of 5 % glucose prevents the hypoglycaemia induced by quinine.

- OAP: frusemide.

- Antipyretics as necessary.

Specific case: treatment of a simple infection in a non-immune subject (expatriate) and in pregnant women

- Falciparum infection

· In sensitive zones: chloroquine.
either

Adult: 600 mg base then 300 mg base at H6, D2, D3, D4 and D5 (= 2.1 g)
Child:10 mg base/kg then 5 mg base/kg at H6, D2, D3, D4 and D5 (= 35 mg base/kg)
or
Adult: 500 mg base/ d x 5 days (= 2.5 g)
Child: 10 mg base/kg/d x 5 days (= 50 mg base/kg)

· In resistant zones
either mefloquine: the protocol is the same as for protected subjects except for adults > 60 kg who must take 750 mg, 500 mg, 250 mg at 8 hourly intervals (= 3 tab, 2 tab, 1 tab).
or halofantrine: the same protocol as for protected subjects.

· Pregnant women

- In sensitive zones: chloroquine
- In resistant zones: quinine (follower by mefloquine if this fails)

- Vivax, Malariae or Ovale infections chloroquine

Prophylaxis

INDIVIDUAL

- Reserved for expatriates, and depending on the national protocol, for pregnant women.

- Depends on the region to which they are going: see the maps which follow.

- Depends on the length of stay, the season (transmission or not), the presence or absence of resistant Falciparum.

- Protection against anopheles:
These measures must assume increasing importance:

· mosquito sprays impregnated with pyrethrinoid (permethrine or deltamethrine),

· long sleeves, long trousers and dark clothing at night,

· repellents,

· slow combustion anti mosquito coils.

- Information regarding prevention.

- Chemoprophylaxis: does not prevent infection with malaria but may avoid a serious attack. Commence the eve or day of departure and always continue for 6 weeks after return.

· In zone I
chloroquine: 100 mg base/day, 6 days each week, or 300 mg in a single dose each week.

· In zone II
chloroquine: 100 mg base/day, 6 days each week, in association with Proguanil 200

mg/day (in 1 or 2 doses).

· In zone III
Several possibilities depending on the situation. There is no 100 % efficacious drug. nor any without side-effects.

either take mefloquine 250 mg (1 tab) 1 time/week only during the transmission season, or throughout the entire stay if this does not exceed 12 weeks; or where the stay does not exceed 1 month, take doxycyclin 100 mg (= 1 tab) each day, every day;

or take nothing, but carry at all times an effective treatment (mefloquine, halofantrine, quinine) to be taken if any symptoms suggestive of malaria appear.

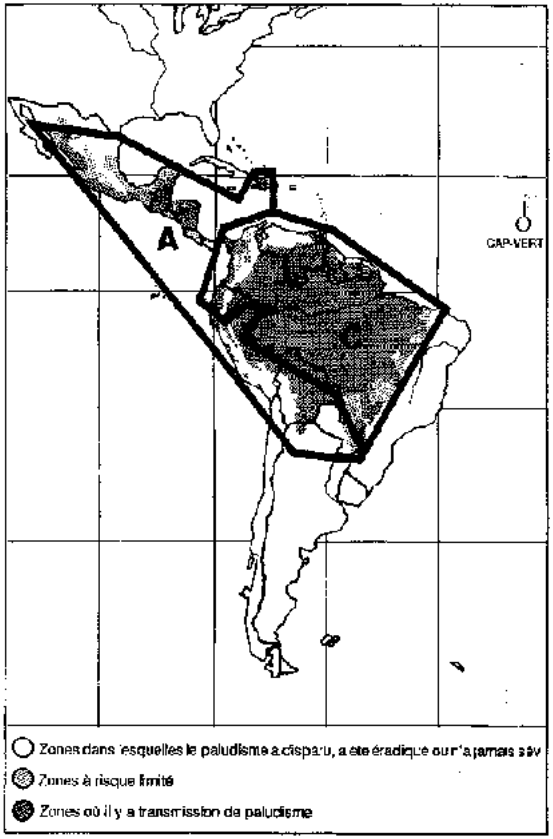
Check with microscopic examination of the blood any time this is possible.

- Chemoprophylaxis incorrectly taken means lack of protections.

- Prophylaxis with sulphadoxine-pyrimethamine must be abandoned.

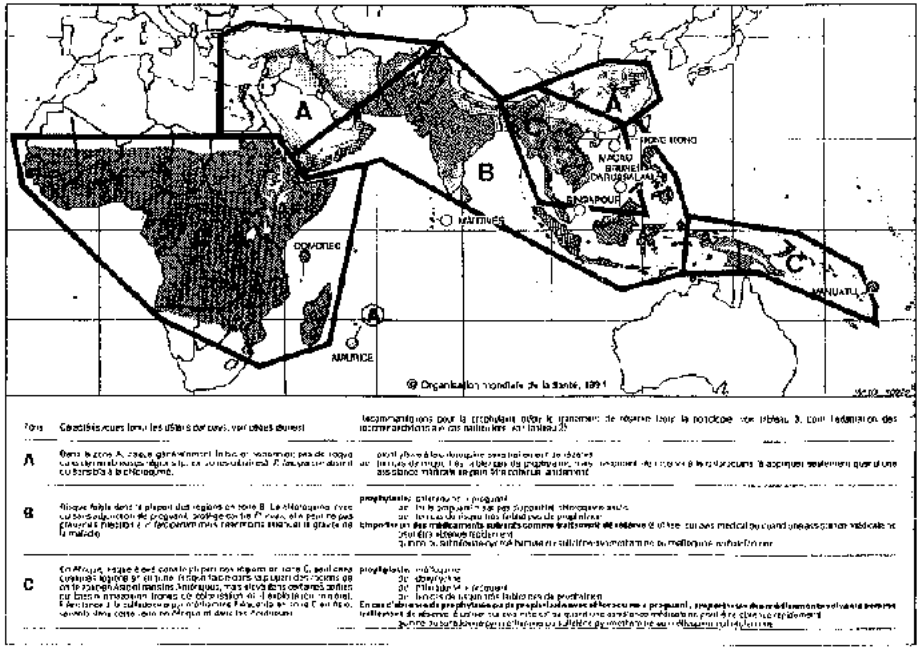
COLLECTIVE

It is necessary to carry further the battle against the anopheles mosquito, since mass chemoprophylaxis is no longer recommended (development of resistance, slowing or suppression of protection), except in pregnant women.



Adapted from W.H.O. (28)

Map



Adapted from W.H.O. (26)

Map

Trypanosomiasis

African trypanosomiasis = sleeping sickness

- African trypanosomiasis is caused by a flagellated protozoan, which is transmitted to humans by the tsetse fly (Glossina spp)

- There are two species of the parasite, each having a different geographical distribution:

· Trypanosoma brucei gambiense (West Africa)
· T. b. rhodesiense (East Africa)

Clinical features

Clinical manifestations of infections with the two species are similar, except that T. b. rhodesiense infections tend to run a more rapid course.

- Primary stage: sometimes a painless chancre appears at site of bite. Incubation period very variable (days to years).

- Blood stage: fever, adenopathy, hepatosplenomegaly and facial edema. Presence of trypanosomes in blood and in lymph: gland puncture, blood film

- Cerebral stage: chronic meningoencephalomyelitis

· "Sleeping sickness": psychiatric, motor and sensory signs

· Disturbed sleep pattern: hepatosplenomegaly and adenopathy may resolve, blood film becomes negative for trypanosomes, specific serology positive, CSF (raised numbers of lymphocytes (> 5/mm3), raised protein, sometimes presence of trypanosomes, CATT test on serum, Elisa or CSF).

- Other manifestations: T. b. rhodesiense infections may be complicated by a fatal myocarditis.

Prevention

A trypanosomiasis control program must only be conducted in coordination with national health authorities. Consult specialized documents or monographs. Elements:

- Active case detection and treatment.

- Vector control.

- Notification of cases to health authorities (surveillance).

Treatment

The choice of regimen is based upon the results of CSF examination. If CSF is normal, the disease is considered to be in the blood stage. Abnormal CSF indicates cerebral involvement.

Table 13 : *Treatment of trypanosomiasis*

Stage / Form	Blood / Lymphatic	Cerebral
Rhodesiense (T.R.)	***Suramin*** IV : 20 mg/kg, do not exceed 1 g/injection For a 50 kg adult : D1 : 0.25 g D2 : 0.5 g D5, D11, D17, D23, D30 : 1g Attain this dosage progressively.	***Melarsoprol*** Amp. IV 3.6 % = 36 mg/ml strict IV only : 1 ml/10 kg/inj., do not exceed 5.5 ml (dry syringe) Begin with : ***Suramin*** (T. Rhod. or T. Gam.) D1 : 0.25 g D2 : 0.8 g or ***Pentamidine*** (T. Gam.) D1 : 4 mg/kg then, for a 50 kg adult : D 5 : 2.5 ml D 6 : 3.3 ml D 7 : 3.5 ml D14 : 3.5 ml D15 : 4.0 ml D16 : 4.5 ml D23 to D25 : 5 ml **Complementary treatments** Hydration after the injection of melarsoprolol Corticotherapy : ***Prednisolone*** per os D1 to D7 : 10 mg D8 to D14 : 2/3 initial dose D15 to D21 : 1/2 initial dose Good nutrition, vitamins, iron
Gambiense (T.G.)	***Pentamidine*** 4 % IM 4 mg/kg, do not exceed 300 mg from D1 to D7 Suramin can also be used except where onchocerciasis is endemic.	

Table 13

Therapy should of course follow national guidelines. Refer also to the WHO monograph (Technical Report Series 739).

Where resistance to melarsoprol develops, use nifurtimox according to national guidelines or DFMO.

Ameriacan trypanosomiasis = Chagas' disease

Disease caused by Trypanosoma cruzi, transmitted to humans through the feces of infected reduviid bugs, which live in cracks in walls. T. cruzi infects humans via skin lesions (scratches, or bug bite) or mucus membranes, especially the conjunctivae.

Clinical features

- Incubation:10 to 20 days

- Acute phase:

· Chagoma: chancre, often on face
· Unilateral edema of the eyelid and adenopathy
· Persistent fever, generalized adenopathy
· Acute myocarditis: chest pain, CCF
· Hepatosplenomegaly
· Meningoencephalitis: paralyses, convulsions

- Chronic phase (after a long latent period):

· Chronic cardiomyopathy: arrythmias, CCF, angina
· Megacolon, megaesophagus

Diagnosis

- Acute phase:

· blood slide: often difficult to find the parasite.

· Xenodiagnosis: examination of the feces of reduvid bugs that have fed upon the patients blood.

- Chronic phase: serology.

Treatment (dispensary - hospital)

- In spite of progress, treatment for T. cruzi infections is not entirely satisfactory. The drug of choice is at present: nifurtimox(PO): 8 to 10 mg/kg/d divided in 3 doses x 3-4 months.

· No alcohol during therapy (Antabuse effect)

· Give prednisone ou prednisolone (PO): 1 to 2 mg/kg/day at the same time and taper off gradually.

NB: this use of corticosteroids is controversial: some sources claim it can exacerbate the disease.
Side effects (may be severe): gastritis, agitation, convulsions, tremor, paraesthesiae.

· Contraindications: pregnancy, history of convulsions.

- benzonidazole(PO): 5 to 8 mg/kg/day x 30 days.

· Side effects: rash, peripheral neuritis

Indications for therapy

- Both drugs are active during the acute phase.

Only benzonidazole has an effect during the chronic phase.

- Give supportive treatment of convulsions, CCF and pain.

Prevention

- Mosquito nets.

- Vector control (insecticides): residual insecticides.

- Improved housing: plastered walls, corrugated iron rooves, cemented floors all reduce the vector habitat (thatch, small cracks in mud).

Leishmaniasis

Parasitic infection of humans and certain animal hosts caused by flagellate protozoans, Leishmania spp, transmitted by the bite of infected female Phlebotomus sandflies. Two major forms:

- Cutaneous and mucocutaneous leishmaniasis

· Old World, also known as oriental sore (also by many other local names). Occurs in the Middle East, Mediterranean, Ethiopia, India.

· New World, also known as espundia or mucocutaneous form, occurs in South America and Africa (Ethiopia...).

- Visceral leishmaniasis, or Kala-Azar

· Occurs in the Middle East, Mediterranean, India, East Africa, China, Latin America.

Clinical features

**CUTANEOUS LEISHMANIASIS (ORIENTAL SORE)
AND MUCOCUTANEOUS LEISHMANIASIS (ESPUNDIA)**

- Incubation 2 to 4 months; single or multiple lesions appear on exposed areas of skin. Starts as a papule, which then extends in circumference and depth to form a crusty ulceration (dry form).

- Wet forms tend to evolve more quickly.

- Lesions tend to resolve spontaneously, leaving a scar.

- Lesion can extend to mucus membranes (mouth, nose, conjuntivae) and can be very mutilating (mucocutaneous form).

KALA-AZAR

- Persistent fever, pallor, anemia, weight loss, hepatomegaly, splenomegaly; sometimes adenopathy, diarrhea and hemorrhage.

- Raised ESR, raised gammaglobulins.

- If untreated, is invariably fatal.

- Serology: test for Kala-Azar (direct agglutination, clot Elisa. Always confirm by looking directly for parasites. Serology is of no value in cutaneous forms (false -, false +).

Diagnosis

- By indentification of Leishmania from skin lesions (cutaneous forms), or from blood,

bone marrow, lymph nodes or spleen (kala-azar).

- May-Grunwald-Giemsa stain: parasites are intracellular and seen within histiocytes.

Treatment

- The main drugs are antimony compounds:
meglumine antimonate(amp 5 ml = 1.5 g in IM): 50 mg/kg/d x 10 to 15 days
sodium stibogluconate (amp. 1 ml = 100 mg in IM or IV):

Adult:	6ml/day
Child under 5 years:	2 ml/day
Child 5 to 14 years:	4 ml/day

Duration of 30 days, except with Indian kala-azar which is treated for 6 days only.

· Idiosyncratic reactions: fever, chills, cough, myalgia and rash. These reactions can be fatal so stop therapy if any of these symptoms appear.

· Therapy must be closely supervised as toxicity may appear late and is serious. Signs of toxicity are: fever, chills, cough, rash, polyneuritis, cardiac failure and renal failure.

- pentamidine (amp. 3 ml = 120 mg in IM): 2 to 4 mg/kg x 6 injections every 48 hours The patient should be supine during and after the injections as they can cause either hypoglycaemia or hyperglycaemia.

Indications (hospital)

- Cutaneous leishmaniasis
Both meglumine antimonate and sodium stibogluconate promote healing but are not

without danger.

· Systemic meglumine antimonate (course of IM injections) can be reserved for serious cases.

· For single lesions, or a small number of small lesions, local therapy can be tried instead. Give 1 to 3 ml of meglumine antimonate injected around and beneath the lesion, to be repeated if necessary.

- Visceral leishmaniasis

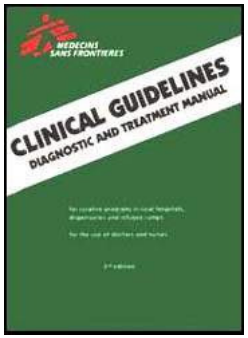
Either meglumine antimonate or sodium stibogluconate are given systematically as described above. Strict supervision is necessary.
In case of poor response or idiosyncratic drug reaction, use pentamidine.

Prevention

Vector control and, in some cases, control of animal reservoir.

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

Clinical Guidelines and Treatment Manual (MSF, 1993, 319 p.)
Chapter 7 - Bacterial infections
Meningitis
Pertussis
Tetanus
Plague



- **Leptospirosis**
- **Relapsing fever**
- **Rickettsioses**
- **Brucellosis**
- **Typhoid fever**

Clinical Guidelines and Treatment Manual (MSF, 1993, 319 p.)

Chapter 7 - Bacterial infections

Meningitis

Acute inflammation of the meninges usually of bacterial origin with risk of progressing to encephalitis.

Clinical features

ADULT AND CHILD OLDER THAN 1 YEAR

- Classical meningeal syndrome with fever, meningism, neck stiffness, Budzinski and Kernig's signs positive: the patient lying extended, involuntarily flexes the knees when the neck is flexed or when the legs are raised vertically with the knees in extension.

- If severe: febrile coma, convulsions, localising signs, purpura fulminans.

CHILD UNDER 1 YEAR

Diagnosis much more difficult as classical meningeal signs are often missing. Always think of it in a sick child:

- refusal to eat, fever with diarrhoea, vomiting, drowsiness, plaintive crying, unusual behaviour;

- generalised or focal convulsions, coma;

- infant may be hypotonic, neck is often not stiff, fontanelle bulging even when not crying;

Localising signs:

- purpura may be minimal;

- slide tests negative;

- fever may be absent.

Differential diagnosis

Where malaria is endemic, it is vital to consider cerebral malaria (thick and thin slides).

Lumbar puncture

Do lumbar puncture whenever in doubt.

Cerebro spinal fluid (CSF) normal: clear, cells < 5/mm3, proteins < 0.40 g/1 (Pandy -).

In meningitis: polymorphs > 500/mm3, proteins = about 1 g/1 (Pandy +). CSF cloudy

"rice water" = meningitis.

Whenever possible, ask for gram staining and direct microscopy for white blood cells.

Causative agents

MORE THAN 3 YEARS OLD

- Meningococcus (dry season)

- Pneumococcus (often linked with another focus: pneumonia, RTI)

- Rare other pathogens

2 MONTHS TO 3 YEARS OLD

- Haemophilus Influenzae

- Pneumococcus (often linked with another focus: pneumonia, RTI)

- Meningococcus (dry season)

- Rare other pathogens

LESS THAN 2 MONTHS OLD

E. Coli Listeria, Salmonella, Streptococcus B.

MENINGITIS OUTBREAK

Meningococcus A or C, mainly in Sahel areas, but sometimes elsewhere (Rwanda, Brazil). Outbreaks occur in dry season.

Antibiotic treatment in well equiped hospital

With the exception of oil based chloramphenicol IM, the antibiotic utilisable IV (chloramphenicol, ampicillin, penicillin) are short acting which necessitates IV injections every 6 hours. If this cannot be done then 1 injection every 8 hours. The important thing is that injections are given at regular intervals.

Choose the antibiotic effective against the invading pathogen.

MENINGOCOCCUS (GRAM-COCCUS)

- During an epidemic

The treatment of choice is oil based chloramphenicol IM, 1 single injection, to be repeated 24-48 hours later.

Dosage: 100 mg/kg/injection without exceeding 3 g/injection, giving half into each buttock according to the table.

Age (years)	1	2	6	10	15
Dose	0.5g	1 g	1.5 g	2 g	2.5 g	3 g

Table

If clinical signs fail to resolve by 3rd day of oil based chloramphenicol, change to ampicillin IV.

If necessary, chloramphenicol per os can be used: 100 mg/kg/d divided in 3-4 doses x 7 days.

- When no epidemic

chloramphenicol IV

Adult: 5-6 g/day
Child: 100mg/kg/day

in 3-4 IV regularly spaced; change to oral treatment as soon as possible; total duration 7 days.

Other treatments are more expensive:
ampicillin IV

Adult: 10-12 g/day
Child: 200 mg/kg/day

in 3-4 IV regularly spaced; change to oral treatment as soon as possible; total duration 7 days.
or
penicillin G IV

Adult: 20 MIU/day
Child: 200,000 IU/kg/day

in 3-4 IV regularly spaced; change to PPF IM at the same dose in 1 IM/d (it is not possible to change to oral penicillin V); total duration 7 days.

PNEUMOCOCCUS (GRAM + ENCAPSULATED DIPLOCOCCUS)

- ampicillin IV

Adult: 10-12 g/day
Child: 200 mg/kg/day in 3-4 IV regularly spaced
or
- chloramphenicol IV
Adult: 5-6 g/day
Child: 100 mg/kg/day in 3-4 IV regularly spaced

In both cases, change to oral treatment as soon as possible; total duration 8-10 days.

HAEMOPHILUS INFLUENZAE (GRAM-BACILLI)

- chloramphenicol IV

Adult: 5-6 g/day
Child: 100 mg/kg/day in 3-4 IV regularly spaced
or
- ampicillin IV
Adult: 12-14 g/day
Child: 200-400 mg/kg/day in 3-4 IV regularly spaced

In both cases, change to oral treatment as soon as possible; total duration 8-10 days.

If lumbar puncture is not sterile on 3rd day, treatments can be combined. The chloramphenicol must be given 1 hour after the ampicillin, otherwise antagonism will occur.

Management in isolated conditions

- Lumbar puncture if in doubt. If CSF is cloudy, it is bacterial meningitis.

- Begin treatment without delay. Prognosis depends on the speed of initiating treatment.

· If available: oil based chloramphnicol IM (see doses above). Give 2 injections while preparing to transfer to a well equiped centre.

· If not, ampicillin IV or IM, ou chloramphenicol IV or IM, or penicillin IV or IM, or PPF IM. Give same dosage as for meningococcus.

Supportive therapy

-Ensure adequate nutrition and hydration (infusions, gastric tuve if necessary).

-Convulsions: diazepam IV or IR (see "convulsions").

-Coma: nursing +++ (care against bedsores, care of mouth and eyes).

-Purpura associated with shock: treat shock by restoring blood volume (see "Shock"), plus dexamethasone IV:

Adult: 16-20 mg
Child: 0,5 mg/kg

to be repeated as necessary.

Epidemic meningitis

-In risk zones (Sahel in dry season), check weekly incidence of meningitis.

-Decide the critical treshold at which point outbreak is considered an epidemic: either twice the usual weekly incidence (difficult to ascertain) or a level of 20 cases/100,000 inhabitants/weeks (20/100,000/week).

-Inform the local authorities in order to decide public health measures to be instituted.

-Identify the causative meningococcalagent (A or C) by a rapid agglutination test.

-Mass vaccination (vaccine anti A or anti A+C), with all its associated logistic problems, can be decided for the target population: 6 months to 15 years or 25 years. A single injection is sufficient to protect for 3 years. No contraindications. The vaccine is quite stable to heat.

-WHO advises against chemoprophylaxis (sulphonamides, rifampicine). For those who have been in contact with de disease: vaccination, information and supervision +++.

-Treatment: oil based chloramphenicol IM (see above).

Pertussis

Whooping cough is a childhood disease characterized by paroxysmal cough and tenacious sputum and caused by Bordetella pertussis. In developing countries it contributes to malnutrition.

Clinical features

Figure 3 : *Clinical course of pertussis*

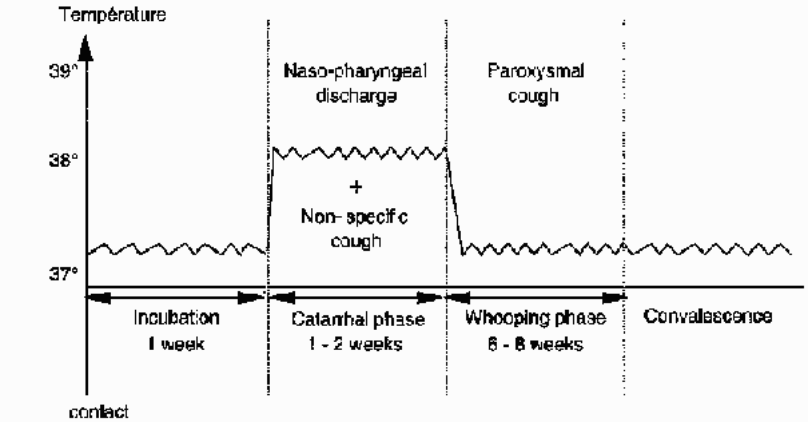


Figure 3

- The cough can recur up to one year after the initial infection.

- Infants less than 3 months may develop apneic episodes or periods of hypoxia (cyanosis) without cough which may be fatal.

COMPLICATIONS

- Anorexia may precipitate protein-calorie malnutrition.

- Sub conjunctival hemorrhages, epistaxis, hemoptysis.

- Secondary infections of the upper and lower respiratory system.

- Encephalitis.

Treatment

(dispensary)

- Some authorities recommend antibiotic treatment during the prodromal (catarrhal) stage. This will not alter the course of the disease, but may reduce the period of infectivity and thus reduce transmission.

This is not practical except during epidemics, when all "colds" can be assumed to be prodromal pertussis.

erythromycin(PO): 50 mg/kg/d divided in 3 doses x 7 days
or
chloramphenicol(PO): 50 mg/kg/d divided in 3 doses x 7 days

- During the paroxysmal stage, antibiotics are of no use. Advise the mother to ensure adequate hydration, to humidify the air if possible, to remove the tenacious strands of sputum from the oropharynx, and, most important, to continue good nutrition, in spite of the child's anorexia and even if there is vomiting with each coughing spasm (feed the child again after the episode of vomiting).

(hospital)

- Secondary infections: antibiotics PO, IM or IV depending on severity:

ampicillin (PO): 100 mg/ kg/ d divided in 3 doses x 5-10 days
or
chloramphenicol(PO): 50 to 75 mg/kg/d divided in 3 doses x 5-10 days
or
cotrimoxazole (PO): 40 mg of SMX/kg/d divided in 2 doses x 5-10 days

- Infants less than 3 months of age should be admitted to hospital, if possible, and observed 24 hours a day.

Prevention

- Immunization (part of the routine program).

- During epidemics selective immunization of non-immune infants not manifesting clinical illness who have been in contact with pertussis cases.

Tetanus

Disease characterized by involuntary muscle spasms, usually fatal if untreated, caused by the tetanus bacillus. The portal of entry is either a wound, or in the case of neonates, the umbilical stump if this has been sectioned with a contaminated instrument. The tetanus victim is usually not immunized (importance of mass immunization programme).

Clinical picture

- Incubation period from 2 to 60 days following wound contamination.

- Trismus, muscle spasms, dysphagia.

- The least stimulus can incite paroxysmal muscle spasms.

Portals of entry

- Dirty wounds.

- Traditional practices during childbirth (e.g. circumcision, ear piercing).

- Surgery.

- Obstetric interventions; neonatal (2-14 days after delivery) and obstetric forms.

- Unsterile intramuscular injections.

Prevention (dispensary)

- Neonatal tetanus

· Sterile instruments for delivery and cutting of the cord.

· Training of and provision of equipment for traditional birth attendants.

· Immunization: 2 injections during pregnancy, the first as early as possible (during the first antenatal visit) and the second at least 1 month after the first and no later than 1 month before delivery.

- Routine immunization of all children (EPI).

- Correct wound toilet.

- Prophylaxis: often tetanus antiserum or booster doses of tetanus toxoid are not readily available. When they are, however, apply the following protocol:

· Patient fully immunized, having had a booster within the 10 previous years: no further treatment necessary.

· Patient fully immunized but last booster was more than 10 years ago: give single booster dose of tetanus toxoid (0.5 ml).

· Patient never fully immunized:
equine antitetanus immunoglobulin 250 to 1,500 IU given SC. (Different sources give very different doses.) At the same time start a full course (2 to 3 injections) of tetanus toxoid.

-If serotherapy is not available, when there is a dirty wound in an non-immunized or inadequately immunised subject, clean and protect the wound, plus peni V or procaine penicillin in the usual doses for 5 days.

Treatement (hospital)

-Nurse the patient in a place with minimal sensory stimuli.

-IV fluids: maintain proper hydration.

-Nasogastric tube feeding.

-Equine tetanus immunoglobulin

Adult: 10,000 IU SC or IM. Start with a small challenge dose in case of allergic reactions.
Child: half the adult dose
Neonate: 1,500 IU SC or IM

Equine tetanus immunoglobulin is sometimes given intrathecally: e.g. for neonates, 1,500 IU via either lumbar or suboccipital puncture.

Reactions to equine tetanus immunoglobulin are treated with: dexamethasone (IV): 4 mg as needed.

-Penicillin G is given in order to eliminate any tetanus bacilli still releasing toxin in the wound:

penicillin G (IV): 100,000 IU/kg/d divided in 4 injections

-Control of muscle spasms:

diazepam (IV): 1 to 5 mg/kg/d by infusion

Further sedation if needed:

phenobarbitone (PO): 3 mg/kg/d divided in 2 doses by nasogastric tube.

Plague

- Zoonosis infecting many rodents and transmitted to man by fleas.

Plague was formally responsible for pandemics in Europe which caused high mortality.

- Large animal reservoirs persist: South-East Asia, Central Asia, East Africa, Madagascar, South America, USA. Human infection is becoming less common.

- Transmission to humans can be:

· direct, by the bite of an infected rodent,

· vector-bome (flea) from a rodent host. Both these modes of transmission give rise to sporadic cases only.

· Epidemics, however, arise when interhuman transmission occurs via flea vectors or, more important, by direct air-borne spread (pneumonic plague).

Clinical features

-Incubation

· 1 to 6 days for bubonic plague
· several hours to 2 days for pneumonic plague

-Bubonic form

High fever; painful buboes (adenitis) which are often inguinal (as fleas tend to bite the lower limbs) and produce a sero-sanguineous discharge. Without treatment the case fatality rate is high.

-Septicemic form

A rapidly fatal complication of the bubonic form.

-Pneumonic form

Severe pneumonia with hemoptysis, rapidly fatal. Highly contagious. Occurs either as a complication of the bubonic form or subsequent to primary air-borne pulmonary infection.

Diagnosis

-Identification of Yersinia pestis (staff must take great care not to innoculate themselves accidentally) by:

· aspiration of a bubo,
· sputum examination,
· blood culture.

-Serology becomes positive early.

Treatment (hospital)

- Sulphonamides, streptomycin, tetracyclines and chloramphenicol but not the penicillins.

- Usual choice:
streptomycin (IM)

Adult: 500 mg every 4 hours for the first 2 days, then every 6 hours x 5-7 days
Child: 10 mg/kg every 4 hours for 2 days, then every 6 hours for 5 days

- If therapy is begun early the prognosis is good.

- chloramphenicol IV can also be used
60 mg/kg/d divided in 3-4 injections x 10 days

Prevention

- If cases are suspected, it is vital to:

· confirm the diagnosis bacteriologically,
· advise local health authorities.

- Where possible plague patients should be isolated.

- Conduct concurrent and terminal disinfection of bedding, clothes...

- Take extreme care when handling exudates and cadavres.

- Give chemoprophylaxis for household contacts and health personnel during the entire period of exposure:

sulphonamides (PO): 40 mg/kg/d during period of contact
or
tetracycline (PO): 20 mg/kg/d during period of contact

- Use appropriate insectides to control fleas.

- There is a plague vaccine which is effective for 6 months. Protection begins 7 days after vaccination.

- Long term prevention requires rat control, sanitation and good public hygiene.

Leptospirosis

- A zoonosis due to certain spirochetes also known as Weil's disease. In humans it may cause a febrile illness and acute hepatorenal failure.

- The main reservoir is animal usually rodents (especially the sewer rat), cattle, pigs, dogs, horses, wild animals.

- Infected rats, whether diseased or healthy carriers, excrete leptospirae in their urine and thus contaminate water and soil (bathing, poor hygiene and sewers...). The portal of entry being either mucous membranes, cuts or scratches on the skin.

Clinical features

-Incubation period of 7 to 10 days. Illness often biphasic. Fever, jaundice, meningism, proteinuria, hematuria and oliguria, hepatosplenomegaly, polyadenopathies.

-Can be associated with:

· Pulmonary symptoms: cough, pneumonia, hemoptysis;

· diffuse haemorrhagic disorder: purpura, ecchymosis, epistaxis...;
· severe renal insuficciency: oligo-anuria;
· cardiac insufficiency (cardiac collapse).

-The meningeal signs may predominate (the CSF is macroscopically clear with raised lymphocytes and raised protein of 1 g/l). May progress to encephalitis.

Figure 4 : *Clinical course of leptospirosis* (17)

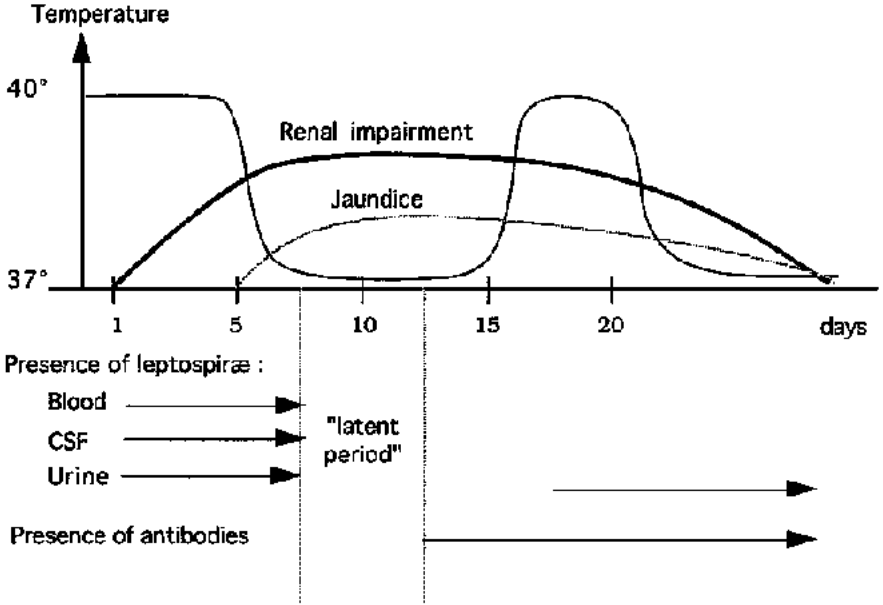


Figure 4

Diagnosis aids

- WBC: frank leucocytosis excludes viral hepatitis.

- Urine: proteinuria, abundant pus cells, hematuria, and casts.

- Diagnosis is confirmed if spirochaetes are found in blood, urin or CSF; direct examination difficult; possible with fresh specimen using dark ground microscopy or very low light levels; otherwise Giemsa stain.

- Serodiagnosis: immunofluorescence or Elisa.

Treatment (hospital)

- Rest.

- Treat fever with paracetamol (not acetysalicylic acid, owing to risk of hemorrhagic disease).

- Antibiotics:
Must be commenced early in the illness if they are to be effective:

Oral penicillin (or IV when serious neurological symptoms). Not IM because of risk of haematoma

Adult: 5-6 MIU / d divided in 3 doses x 7 days
Child: 100,000 IU/kg/d divided in 3 doses x 7 days

If allergic:
tetracycline (PO)

Adult: 1.5-2 g/d divided in 3 doses
Child > 8 years: 50 mg/kg/d divided in 3 doses

or
erythromycin: same doses as above x 7 jours

Prevention

- Rat control, sanitation and hygiene.

- Avoid swimming in endemic regions

- A vaccine exists for highly exposed individuals (farm workers etc).

Relapsing fever

Relapsing fever or borreliosis is a febrile illness caused by spirochaetes and transmitted to humans by lice or ticks. Immunity does not exceed 1 year.

There are two forms of the disease:

- Louse-borne caused by Borrelia recurrentis, worldwide distribution and transmitted by body lice. The reservoir is infected humans. The diseases tends to spread in epidemic fashion under conditions of crowding and hardship (e.g. war, refugees, cold and poor hygiene). Pockets notably in Ethiopia, Rwanda and Burundi.

Pockets notably in Ethiopia, Rwanda and Burundi.

- Tick-borne caused by many different strains of borrelia which are specific for each geographical region. Reservoir are humans but more importantly infected rodents. Spread by the bites of various ticks and therefore tends to present sporadically rather than

epidemically.

Louse-borne fever is often associated with typhus (see Rickettsioses).

Clinical features

LOUSE-BORNE FEVER

Relapsing syndrome of fever, malaise, gastro-intestinal disturbances, jaundice, petechiae, meningism and hepatosplenomegaly.

Figure 5 : *Temperature curve of louse-borne fever*

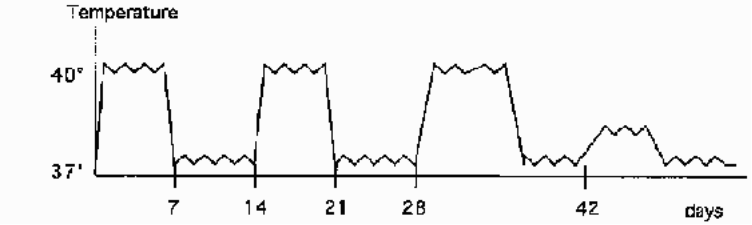


Figure 5

Complications: hepatorenal syndrome, encephalitis, myocarditis, hemorrhage and miscarriage.

TICK-BORNE FEVER

Similar clinical picture.

Diagnosis

Thick and thin blood films during the fever peaks (Giemsa stain).

Treatment (dispensary - hospital)

- Same therapy for both forms: either tetracycline, chloramphenicol or erythromycin.

tetracycline (PO)

Adult: 1.5 g/d divided in 3 doses x 7 days
Child: 50 mg/ kg / d divided in 3 doses x 7 days

In severe disease, or < 8 years:
chloramphenicol (PO)
75 ma/ kg/ d divided in 3 doses x 7 days

Single dose of doxycycline (PO) is also effective:

Adult: 200 mg
Child: 50 mg

For pregnant women:
penicillin V: 1.2 MIU/d divided in 3 doses x 7-10 days (beware of procaine penicillin: risk of haematoma).

- Therapy sometimes induces a Herxheimer reaction after the first dose of antibiotics with fever, hypotension and neurological disturbances. Therapy should therefore be supervised. Reactions are treated with:
dexamethasone: 20 mg IM or IV
and/or
digoxine (IV) (see "Cardiac failure")

The following regimen may reduce the chance of reaction:
Day 1: PPF(ou procain penicillin): 400,000 IU (IM)
Days 2 to 7: tetracycline (PO) as above.

Prevention

LOUSE-BORNE FEVER

- Control of body lice: powder body and clothes with an effective insecticide, usually:
1% lindane

If resistance, use:
malathion (powder) 1 %
or
propaxur (Baygon)
or
deltamethine (K-othrine)

Use extreme care with these substances (toxic); handlers need instructions and supervision. Ask the MOH for guidance.

- In order to be effective the above measure should be applied to the entire population and repeated once after two weeks. This obviously requires good organization.

- Chemoprophylaxis:
doxycycline (PO): 200 mg/week in single dose during epidemic.

Note that healthy carriers of relapsing fever are at risk of developing a Herxeimer reaction under chemoprophylaxis.

TICK-BORNE FEVER

Control of ticks: insecticides and personal protection.

Rickettsioses

- Group of diseases caused by Rickettsia spp, transmitted to humans by an arthropod vector.

- Transmission depends on the presence of:

· Reservoir of infection: human or animal.

· Vector: e.g. body lice, often associated with conditions of poor hygiene and sanitation.

· Crowding: such as in refugee camps.

Table 14 : *The two commonest rickettsioses*

	Louse-borne typhus	Flea-borne typhus
Causative agent	R. Prowazeki	R. Mooseri
Reservoir	humans, squirrels, livestock	rats
Vector	lice	fleas
Transmission pattern	epidemic	endemic
Geographical distribution	worldwide (Ethiopia...)	worldwide (Asia, Africa, South America)

Table 14

There are numerous other rickettsioses:

- scrub typhus

- Rocky Mountain spotted fever

- boutounneuse fever

- Q fever…

Their occurrence may be sporadic or epidemic.

Clinical features

-The different forms have a certain common core of clinical features

· high fever of sudden onset,
· severe headache, chills, body pains,
· macular rash,
· prostration and coma.

-Evolution of the illness can be cyclical. After 2 weeks, there is a terminal crisis when the signs become more severe then resolve.

-Without therapy, grave and sometimes fatal complications may ensue: encephalitis, myocarditis and hemorrhagic disease.

Diagnosis

Confirmation can only be made by serology.

Treatment (hospital)

- Symptomatic for fever, dehydration… Not aspirin.

- Antibiotics:
tetracycline (PO)

Adult: 1-1.5 g/d divided in 3 doses x 7 days
Child: 50 mg/kg/d divided in 3 doses x 7 days

or
cloramphenicol (P O)

Adult: 2 g/d divided in 3 doses x 7 days
Child: 50 mg/kg/ d divided in 3 doses x 7 days

- Epidemic louse-borne typhus can be managed by giving a single oral dose of doxycycline: 200 mg (but risk of relapse).

- Therapy of typhus should not normally provoke a Herxheimer reaction (see louseborne relapsing fever) however, in some regions such as Ethiopia, the two diseases may sometimes co-exist in the same patient and a reaction is thus possible.

Prophylaxis

LOUSE-BORNE TYPHUS

- Control of body lice

· Powder body and clothes with an effective insecticide, usually 1% lindane.

· If resistance, use 1% malathion.

· Use extreme care with these substances: handlers need instructions and supervision. Ask the MOH for guidance.

· In order to be effective, the above measure should be applied to the entire population and repeated after two weeks. This obviously requires good organization.

- Chemoprophylaxis
doxycycline (PO): 200 mg/week in a single dose during epidemic.
Risk of Herxheimer reaction in asymptomatic carriers of relapsing fever.

FLEA-BORNE TYPHUS

Control of rats and fleas.

Brucellosis

- A systemic illness due to the gram negative Brucella. Transmitted to humans from infected cattle, sheep, goats or pigs, either by direct contact with infected tissues or by ingestion of milk.

- Often underdiagnosed, it is probably frequent among animal herders. It tends to occur predominantly among young males, who often have most contact with animals.

Clinical features

- Incubation period from 5 to 30 days.

- Acute brucellosis with septicemia
Oscillating fever, sweats, flitting pains in the bones, joints and muscles.
Fever then plateaus at 39 to 40°C, with tachycardia.
Defervescence after 10 to 14 days.

Hepatosplenomegaly and generalized adenopathy occur often with a group of nodes gathered around a single larger one.

- Subacute brucellosis with focalization
Localized foci of infection that persist and evolve autonomously. But mainly osteoarticular (sternocostal, knee, tibia, spine, sacro-iliac).
Also meningeal and encephalitic foci occur.
Note: brucellosis can minic Pott's disease, osteitis or tuberculosis meningitis.

- Chronic brucellosis
Low grade fever, fatigue, vague pains and sometimes infectious foci (such as arthritis).

Diagnosis

- Leucopenia with relative lymphocytosis

- Reaction to intradermal antigen

- Serology: rising titres in Wright's haemagglutination test or the Rose Bengal card test.

Treatment

ANTIBIOTICS

- Tetracycline (PO)

Adult: 2-3 g/ d divided in 3 doses
Child > 8 years: 50 mg/kg/d divided in 3 doses

- Cotrimoxazole (PO): tab 400 mg of SMX + 80 mg of TMP

Adult: 6 cp/ d divided in 2 doses
Child: 60-70 mg of SMX/kg/d (or 15 mg of TMP/kg/d) divided in 2 doses

- Streptomycin(IM)

Adult: 1 g/d in 1 injection
Child: 15 mg/kg/d in 1 injection

- Rifampicine (PO)

Adult: 900 mg/d in 1 dose
Child: 20 mg/kg/d in 1 dose

- Doxycycline and chloramphenicol also effective. Streptomycin can be replaced by gentamicin. Never use streptomycin or rifampicine alone.

RECOMMENDED MANAGEMENT

1. First treatment: tetracyclines x 6 weeks + streptomycin for first 3 weeks.
2. Second treatment: cotrimoxazole for 2-3 months.
3. Third treatment: tetracyclines+ rifampicine x 45 days.

INDICATIONS

- Acute brucellosis
Use first treatment.

- Brucellosis affecting bones
Use first treatment but continue tetracyclines a further 45 days or better: tetracyclines+ rifampicine for 3 months when possible.

- Neurologic attack
Add rifampicine to combined tetracyclines-streptomycin.

- Pregnancy, breast feeding or children < 8 years
Use cotrimaxazole, or rifampicine + streptomycin (if illness does not resolve).

- Relapse
Use first treatment if not already tried. If used before, add rifampicine or change to cotrimoxazole (never use cotrimoxazole and rifampicine together: antagonism).

- Chronic brucellosis
Only give antibiotic therapy if persistent focus of infection, otherwise only analysis.

Prophylaxis

- Veterinary measures.
- Washing of hands and clothes after contact with animals.
- Boil milk, avoid fresh cheeses and partially cooked meat in endemic zones.

Typhoid fever

Systemic illness caused by Salmonella typhi with foci of infection in the lymph and intestine. Transmitted either directly (unwashed hands) or indirectly (contaminated food or water).

Clinical features

- High fever, severe headache, insomnia, prostration, epistaxis.

- Either diarrhea or constipation, abdominal pain, bloated abdomen

- Splenomegaly, rose spots, pulse not in accord with fever.

- Complications (which may appear even during convalescence under therapy): GIT perforation or hemorrhage, peritonitis, septicemia, myocarditis, encephalitis.

- Leucopenia.

- Widal test (serology) becomes positive around the 8-lOth day (for the O antigen non-specific test).

- S. typhi can be isolated from blood or stool during the first two weeks.

Treatment (hospital)

- Close observation for complications.

- Treat fever and hydrate.

- Oral antibiotics are more effective than IV or IM (since the focus of infection is in the lymph nodes of the small intestine).

· First choice
chloramphenicol (PO)

Adult: 2 g/d divided in 3-4 doses
Child: 75 to 100 mg/kg/d divided in 3-4 doses

Start initially with half the dose the first day, and increase progressively.

· Alternatives (if resistance or contra-indication to chloramphenicol):
ampicillin (PO) (progressive dose)

Adult: 4 to 6 g/ d divided in 3-4 doses
Child: 100 mg/kg/d divided in 3-4 doses

cotrimoxazole (PO) (1/2 dose and increase progressively over 3-4 doses)

Adult: 1,600 mg of SMX / d divided in 2 doses
Child: 40 mg of SMX/kg/d divided in 2 doses

- If patient cannot take antibiotics by mouth give IV initially but change to oral route as soon as possible.

- Continue treatment for 2 weeks after patient is apyrexial.

Prevention

- Isolation of cases
- Disinfection of excrete with chlorine solution 2% or cresol 4%.
- Personal hygiene: hand washing and careful food preparation.
- Community hygiene: water, sanitation and health education.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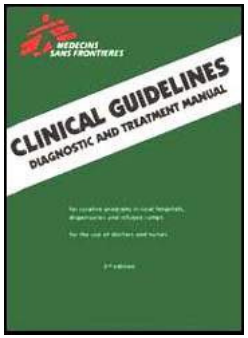

- **Rabies**
- **Hepatitis**
- **A.I.D.S. and infection by VIH**

Clinical Guidelines and Treatment Manual (MSF, 1993, 319 p.)

Chapter 8 - Viral infections

Measles

- Also called rubeola and morbilli, it is one of the commonest childhood infectious exanthems. Among children in developing countries it is a serious illness with high mortality, especially when associated with malnutrition. Measles often precipitates acute malnutrition. Prevention by universal immunization of young children must always be a high priority.

- Measles is never subclinical, however recent studies have shown that the severity of the disease is related to the infective dose of virus. Crowding tends to increase mortality.

Clinical features

Figure 6 : *Clinical course of measles*

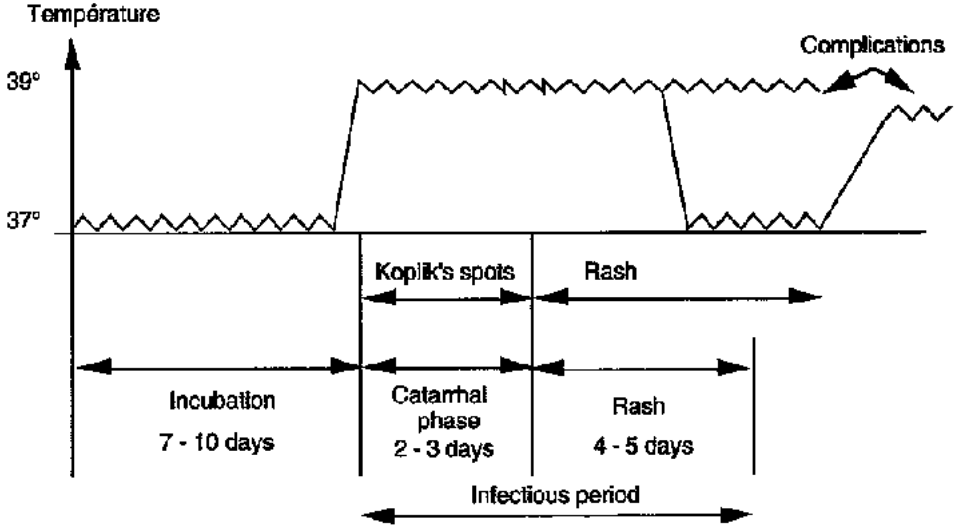

Figure 6

Complications

These must be looked for in all patients.

- Serious signs: persistent fever with darkening of the rash ("black measles") and subsequent desquamation.

- Stomatitis: compromises sucking and eating.

- Laryngitis: distinguish a benign prodromal laryngitis from that due to a secondary

infection, which may be severe.

- Croup and otitis media.

- Bronchopneumonia: usually severe; gram negatives or staphylococcus.

- Diarrhea: either due to virus or from a secondary infection.

- Vitamin A deficiency: keratoconjunctivitis. Measles increases the con-sumption of vitamin A and often precipitates xerophthalmia.

- Encephalitis: caused by the measles virus itself; it occurs on about the 5th day of the rash.

- Malnutrition: precipitated by anorexia, stomatitis, fever, vomiting, diarrhea and other complications. Also important are frequent harmful cultural taboos that impose fasting upon a child with measles.

Treatment

(dispensary)

- Active case-finding during epidemic, if practical (home visits).

- Treat the fever.

- Keep well hydrated.

- Observe closely for complications.

- Give prophylaxis against conjunctivitis: drops or ointment.

- Give prophylaxis against xerophthalmia: vitamin A

Infants:	100,000 IU in single dose on day 1, day 2 and day 8
After 1 year:	200,000 IU in single dose on day 1, day 2 and day 8

- Encourage good oral hygiene.

- Maintain adequate protein-calorie intake: educate mothers (especially if cultural taboos against feeding exist), continue breast feeding, provide supplementary feeding if available (but do not admit to a feeding center until after infectious period).

- Antibiotics are often given prophylactically:
penicillin V (PO): 100,000 IU/kg/d divided in 3 doses x 5 days
or
cotrimoxazole (PO); 60 mg of SMX/kg/d divided in 2 doses x 5 days

(dispensary - hospital)

- Treat secondary infections with antibiotics:

ampicillin: 100 mg/kg/d divided in 3 doses or (per os, IM or IV according
chloramphenicol: 75 mg/kg/d divided in 3 doses to gravity x 7-10 days) or cotrimoxazole: 60 mg of SMX/kg/d divided in 2 doses

-Give supportive therapy for meningoencephalitis:
Adequate hydration, good nursing, nasogastric feeding and control convulsions with diazepam.

Prevention

- Education of mothers must be part of the MCH program.

- Immunization:

· A single injection gives good protection. Ideally should be given at the age of 9 months, but is often given later.

· Measles immunization is one of the highest priorities in refugee settings and other situations where crowding, poor hygiene and precarious nutritional status combine to encourage both transmission and the emergence of complications.

· There is an Oxfam/WHO measles immunization kit that is designed for emergency situations. Newly arrived refugee populations should be immunized during the first days of the emergency and all new arrivals should be immunized on entering. The target age-group is children from 9 months to 12 years (up to 5 years if resources are very scarce).

Poliomyelitis

- Acute infection due to the three strains of poliovirus affecting infants and young adults. It is endemic in developing countries but may occur in seasonal epidemics among non-immune persons. Transmission is feco-oral.

- Polio should disappear when immunization is universal. A very high proportion of cases are asymptomatic and these healthy carriers are the reservoir of infection: only 0.1% of infections give rise to paralysis. Polio occurs endemically in developing countries but seasonal epidemics can also occur.

Clinical features

- Febrile flu-like illness, often with diarrhea.

- Sometimes aseptic meningitis.

- Paralytic forms: paralysis is of sudden onset (often noted on waking in the morning), asymmetrical and hypotonic. It is associated with fever, hyporeflexia, risk of respiratory paralysis and eventual muscle wasting.

Treatment (hospital)

Is supportive only:

- Treatment of the fever and diarrhea.
- Rest, nursing care for paralytic cases.
- Physiotherapy once signs have stabilized.

Prevention

- Immunization with live attenuated trivalent oral polio vaccine (OPV) with first dose at birth (new WHO recommendation) and then 3 more doses at the 6th, 10th and 14th weeks.

- Salk injectable killed vaccine at the 6th, 10th and 14th weeks.

- Theorically, boosters 1 year later and 5 years after that.

Public health measures

Community-level management:

- A paralytic case signifies that the virus is in circulation.

- Confirm the diagnosis serologically (rising titres).

- The immunization status of the community should be determined: date of the most recent program, coverage...

- If necessary, plan and implement a mass immunization program for children aged from 3 months to 5 years and carry out an "outbreak investigation".

Arbovirus diseases

Viral illnesses that usually have an animal reservoir and are trans-mitted to humans by mosquito vectors. They occur either sporadically or in epidemics.

Clinical features

Different viruses have different manifestations; however there are four main syndromes:

- Flu-like viral illness: e.g. dengue fever (SE Asia and the Pacific).

- Encephalitis: fever, neurological signs, convulsions, coma, sometimes meningism with a clear CSF. E.g. Japanese B encephalitis (SE Asia).

- Hepatorenal syndrome: fever, jaundice, oliguria, albuminuria, sometimes hemorrhages. E.g. yellow fever (West Africa, South America).

- Hemorrhagic fever: clinical picture of severe dengue fever plus shock and hemorrhagic manifestations in skin and mucosae. E.g. dengue hemorrhagic fever (usually only seen in children in SE Asia); also diseases such as Lassa fever, Ebola and Marburg virus, which have caused fulminant and deadly epidemics in Africa.

Treatment (hospital)

There is no causal therapy. Treatment is supportive.

Prevention

- Immunization: only a vaccine for yellow fever is available. A single injection protects for 10 years.

- Personal protection: mosquito nets, adequate clothing.

- Vector control: sanitation, destruction or management of vector breeding sites (e.g domestic refuse, water containers for urban AEdes aegypti, the vector of yellow fever).

- Epidemic management:

· Confirm the diagnosis: virological and serological studies in the nearest reference laboratory. One should collect detailed clinical and epidemiological information.

· Alert the local authorities.

· Plan control measures with the local authorities: vector control, public education and an immunization campaign.

Rabies

Viral zoonosis transmitted to humans in the saliva of an infected animal.
Innoculation can be by:

- bite: dog, cat, wild animal, vampire bats (South America),
- licking open skin lesions: cats, dogs, goats...

Principles of preventive tberapy

- The risk of exposure to rabies is higher in developing countries because of the high

prevalence of the disease in stray animals.

- Clinical rabies in humans is invariably fatal but can be prevented with vaccine and antiserum after exposure.

- The incubation period in humans is from 2 weeks to several months depending on the severity and site of innoculation.

- An infected animal sheds rabies virus in its saliva before it develops signs of disease (14 days for dogs and cats).

Table 15 : *Treatment according to animal exposure* (3)

Guide to prophylaxis after exposure

The following recommendations are self-explanatory. The decision to treat depends on the type of animal involved, the circumstances fo the bite, the vaccination status of the victim and the prevalence of rabies in the area. In in doubt, consult the local health authority.

Type of animal	Condition of animal at time of exposure	Treatment vaccination or serum + vaccination
Domestic cat or dog	Normal and can be observed for 10 days	None unless anima develops rabies
	Abnormal / ? rabies	Yes
	Unknow	Yes
Carnivorous wild animals	Consider the animal has rabies unless there is biological proof to the contrary	Yes
Other animals (cattle, rodents)	Consider case by case Usually consider animal is free of rabies unless there is biological evidence to the contrary	Yes according to case

Table 15

- There are two types of exposure:

· Benign: contact of saliva with scratches on the skin; minor bites on the trunk or proximal limbs.

· Serious: contact of saliva with mucus membranes; bites on the face, head, neck, hands,

feet, genitals; and bites from a wild animal.

Management of a person exposed to rabies (dispensary)

AFTER BITE

- Wash wound with soap, rinse, then dry thoroughly.

- Clean wound with chlorhexidine-cetrimide or other antiseptic and do not suture.

- Give tetanus prophylaxis.

- Capture and observe the animal for 15 days.

- Treatment:

· antirabies serum (Pasteur): prepared from horse immunoglobin.
· rabies vaccine (Pasteur): human diploid cell vaccine (HDCV).

- Note: the old vaccines (e.g. duck embryo) require several injections (7-14) and have allergic and neurological complications.

INDICATIONS FOR VACCINATION

- Depends on the condition of the animal at the time of the bite and after 15 days.

- There are two regimens:

· Benign exposure: simple rabies vaccination 1 dose (SC or IM) on day O (the start of the schedule), day 3, day 7, day 14, day 30 and day 90.

· Serious exposure: serum + vaccination Day O (as soon as possible after the bite): give serum 20-40 IU/kg IM Then Day 1, 8, 15, 30 and 90: give 1 dose of rabies vaccine.

Preventive measures for exposed personnel

Personnel who may be exposed to rabies (e.g. veterinarians, technicians) should be given 3 doses of rabies vaccine (HDCV) on days 1, 7, 21 or 28 and a booster dose after 6 months.

Table 16 : *Rabies prophylaxis*

Nature of exposure	Condition of animal		Prophylaxis
	At time of exposure	14 days later	
1. *Saliva in contact with skin, but not skin lesions*	Healthy	Healthy Rabid	No therapy
	Suspect	Healthy Enragé	No therapy
2. *Saliva in contact with skin that has lesions (scratches...), minor bites or trunk or proximal limbs*	Healthyn	Healthy Rabid	No therapy Vaccination
	Suspect	Healthy	Vaccination : stop course if animal healthy after 5 days
		Rabid	Vaccination
		Rabid or unknow (wild animal or domestic animal cannot be observed)	Vaccination
3. *Saliva in contact with mucosa, serious bites (face, head, fungers or multiple bites)*	Domestic or wild animal, rabid or suspect, or animal cannot be observed		Vaccination Antirabies serum Stop therapy if still healthy after 5 days

W.H.O. (30)

Table 16

Hepatitis

Several viral infections come under the heading viral hepatitis, each having its own epidemiology, clinical characteristics, immunology and prognosis. Hepatitis A, B, D and E occur in the tropics. The geographic distribution of hepatitis C is not yet known. All hepatitis, when they resolve, result in life long immunity, but not shared immunity.

The old terminology, non A-non B (A like-B like) has now been changed to hepatitis C and E. The "defective" virus D needs the presence of virus B to develop.

Principle characteristics are summarized in table 17.

Clinical features

ACUTE HEPATITIS

Nausea, fever, fatigue, abdominal discomfort, followed by the appearance of jaundice having an element of biliary obstruction, dark urine and stools more or less pale.

SUBCLINICAL INFECTION

Mild or anicteric infection is the most common but exposes the sufferer to the same risks.

FULMINANT HEPATITIS

Severe acute infection that leads to necrosis and liver failure. It is associated with high mortality.

CHRONIC ACTIVE HEPATITIS

May lead to cirrhosis and eventually hepatoma.

Treatment

- Symptomatic: rest, caution in prescribing analgesics (ea. acetyl salicylic acid, paracetamol), correct but not specific diet and hydration.

- Avoidance of corticosteroid therapy. Several medications are contraindicated.

Vaccination

Plan to include anti-B vaccine in the Expanded Program of Immunization (EPI).

Table 17 : The different forms of viral hepatitis

	HEPATITIS A	HEPATITIS B	HEPATITIS C	HEPATITIS D	HEPATITIS E
Incidence	Childhood	Young adult	Young adult	Young adult	Young adult
Incubation period	2-6 weeks	4-30 weeks (average 10 weeks)	2-25 weeks	Co-infection B-D : consequence of hepatitis B Superinfection of carrier chronic B about 5 weeks	2-8 weeks
Infectious period	Precedes signs Brief : < 10 days after the appearance of jaundice. Maximal at the end of incubation period	Precedes signs Lasts whole of active period Can persist in chronic carriers	Precedes signs Duration poorly understood, seems identical with virus B. Could persist beyond normalisation of transaminases	Precedes signs Duration poorly understood. Seems identical with virus B	Precedes signs Duration poorly understood (10-15 days after the appearance of jaundice)
Transmission	Faeco-oral Contaminated water and food Rarely transfusion	Blood and its derivatives Sexual. Contaminated blood products Vertical (rare when to mother)	Blood and its derivatives Sexual : weak Contaminated blood products : weak Probably vertical	Blood and its derivatives Sexual (especially homosexual). Contaminated blood products Vertical possible	Faeco-oral Contaminated water and food
Fulminant forms	0.2 - 0.4 %	1 to 3 %	Rarer than hepatitis B	Much more common in the case of superinfections in a carrier of B than in the case of co-infection B-D	Mortality 10-40 % in pregnant women
Long term prognosis	No chronic forms	Chronicity : 0.2-10 % of which 5-15 % progress to cirrhosis Hepatoma possible	Chronicity : up to 50 % of which 10-25% progress to cirrhosis Hepatoma possible	Chronicity : 2-5 % of co-infections B-D and > 90% of superinfections in a B carrier (rapid cirrhosis)	No chronic forms
Personal prevention	Non-specific immunoglobulin injections	Specific immunoglobulins anti HBS Safe sex (condoms)	Anti HBS immunoglobulins can be effective	Same as for hepatitis B (virus D can only develop with B)	Specific immunoglobulins for pregnant women
Vaccination	New vaccine	Anti-hepatitis B	Non existant	Anti-hepatitis B	Non existant
Community prevention	Hygiene, sanitation	Problems of transfusion (limitation, detection in blood banks), disposable transfusion materials			Hygiene, sanitation

Table 17

A.I.D.S. and infection by VIH

AIDS, or Acquired Immune Deficiency Syndrome,is the most serious form, the end stage of infection by HIV (Human Immune-deficiency Virus). The virus attacks the immune system by infecting and then destroying the T4 lymphocytes.

Infection by HIV develops as a function of time, schematically:
- Incubation period

From infection by the virus to the appearance of specific anti-HIV antibodies, lasts on average 6 weeks, sometimes marked by a non specific febrile syndrome (pseudo influenza syndrome).

- Asymptomatic period

This is the seropositive phase which can last years. The diagnosis depends on the detection of specific anti-HIV antibodies in the blood. On average, 50 % of seropositives progress to AIDS in 10 years (with actual decline).

- Symptomatic period

The immune deficiency syndrome is manifested clinically, it is the clinical AIDS phase. The pre-AIDS syndrome which was at a certain time defined by the term ARC (AIDS-related complex), is les and less recognised as a physiopathological entity. This is why there is no mention made of it here.

Epidemiology

HIV/AIDS infection is pandemic, occurring in epidemic form on 5 continents: however, not all populations are uniformly affected in one country or another or in the midst of the same country.

PREVALENCES

- Seropositives

In April 1991, WHO estimated that 8-10 million adults in the world had been infected by the virus since the beginning of the epidemic. Of these more 60 % were in Sub-Saharan Africa and around 1 million were children.

- Clinical AIDS

In April 1991, WHO estimated the number of clinical AIDS cases to be 1.5 million since the beginning of the epidemic (345,000 notified cases), 500,000 cases were children.

- Serotypes
Two serotypes have been identified: HIV 1 and HIV 2.
HIV 1 is the most widespread.
HIV 2 is particularly found in West Africa and spreads less rapidly than HIV 1. However, the modes of transmission and the clinica1 picture do not differ from one serotype to the other.

HIV TRANSMISSION

- Sexual transmission

During improtected homosexual and heterosexual relations. 70 % of the world's HIV infections result from heterosexual transmission.

- Blood transmission

By transfusions, contaminated surgical instruments, contaminated syringes and needles, by contact of even a minimal wound with contaminated blood (surgery or childbirth delivery without gloves, injury or prick with a needle or instruments contaminated with infected blood).

- Materno-faetal transmission

During pregnancy or delivery.

Note: transmission breast feeding is possible: nevertheless, the relationship between

benefits and risks is such tnat WHO continues to recommend this form of feeding.

- HIV is not transmitted by saliva, mosquitoes, air, water, food, skin contacts, clothing, cooking utensils, the movement of general daily life.

Table 18 : *Gangraphic distribution and principal modes of transmission*

	TRANSMISSION	COUNTRIES WITH MAJOR INCIDENCE (countries having a system of surveillance, known data)
Africa	Heterosexual +++ Perinatal ++ Transfusions +	East and Central : Kenya, Uganda, Rwandi, Burundi, Zambia, Tanzania, Malawi, Zaire, RCA... West : Ivory coast, Congo, Guinea-Bissau...
Asia	Heterosexual +++ Drug-addict +++ Transfusions + Perinatal +	Thailand, India... Others...
Latin America The Carribbean	Homosexual +++ Heterosexual +++ Drug-addict ++ Transfusions + Perinatal +	Brazil, Mexico, Haïti... Others...
Western Europe Australia North America	Homosexual +++ Drug-addict +++ Heterosexual + Perinatal +	USA, France, Switzerland, Denmark...

Table 18

Projections

- Groups at risk: heterosexual transmission is the origin of 70 % of cases of infection in 1991, the groups at risk for the decade 1990-2000 will be heterosexual populations with multiple partners.

- Geography: 90 % of cases will survive in developing countries, Sub-Saharan Africa, Asia and Latin America.

Clinic factors

Table 19 : *Clinical definition of AIDS – WHO (Bangui, 1985-1986)*

ADULT	CHILD
Major signs – Loss of weight ≥ 10 % – Chronic diarrhoea ≥ 1 month – Persistant fever ≥ 1 month	*Major signs* – Loss of weight or growth retardation – Chronic diarrhoea ≥ 1 month – Persistant fever ≥ 1 month
Minor signs – Persistant cough ≥ 1 month – Generalized pruritic dermatitis – Relapsing herpes zoster – Oropharyngeal candidiasis – Progressive, generalized, chronic hepatic infection – Generalized lymphadenopathy	*Minor signs* – Persistant cough – Generalized dermatitis – Repeated minor infections – Oropharyngeal candidiasis – Generalized lymphadenopathy – Confirmation of maternal HIV infection
In the absence of cancer severe, malnutrition or another recognized cause of immunodepression, AIDS is defined : – By the presence of at least 2 major signs and at least 1 minor sign – Or by the presence of a generalized Kaposi sarcoma – Or by the presence of cryptococcal meningitis	In the absence of cancer severe, malnutrition or another recognized cause of immunodepression, AIDS is defined : – By the presence of at least 2 major signs associated with at least 2 minor signs
Performance of the definition : This varies according to the clinical context and the prevalence of AIDS in each country. It must therefore be notified by these. – Average sensitivity = 60 to 70 % – Average specificity = 80 to 90 %	Performance of the definition : The paediatric definition of AIDS is much less sensitive and specific than that for adults, but is at present the only one utilisable.

Table 19

This exclusively clinical definition is intended for developing countries lacking laboratory facilities (culture and/or histology). It is, above all, an indispensable tool in the surveillance of AIDS (notification of cases) and an elaborate clinical tool permitting clinicians to make a diagnosis with the maximum precision.

Table 20 : *Clinical forms of AIDS in Africa*

GENERAL MANIFESTATIONS

Persistant fever without specific characteristics
Excessive sweating frequently noted
Anorexia is very frequent
Early weakness (asthenia)
Loss of weight is almost constant
Cachexia

SYSTEMATIC MANIFESTATIONS

Digestive forms (50 % of cases)
Diarrhoea (70 to 80 % of cases)
Oesophageal candidiasis

Respiratory system
Pneumocystosis
Tuberculosis
Kaposi's sarcoma
Pneumonopathies of CMV
Minor bacterial infections

Neurological/psychiatric forms
Violent cephalitis, resistant to analgesics
Meningo-encephalitic syndrome (cryptococcosis, tuberculosis, toxoplasmosis, HIV encephalitis)
Neurological deficit syndrome
Psychiatric syndrome (confused behavour, hallucinations)
Peripheral myopathy and neuropathy

Cutaneomucous forms (50 % of cases)
Pruritis
Buccal and cutaneous candidiasis
Buccal leucoplasia
Other mycoses
Herpes zoster (relapsing ++)
Kaposi's sarcoma
Chronic herpes

Lymphatic forms
Generalized lymphadenopathy

Others
Extrapulmonary tuberculosis
Generalized atypical mycobacterioses

Table 20

Serological diagnosis of HIV infection/AIDS

In conditions in the field, the diagnosis of HIV infection in the asymptomatic adult can only the serological, i.e. the presence of specific anti-HIV antibodies in the blood is the sign of infection.

SEROLOGICAL TESTS

Table 21

	INDICATIONS
Simple test (rapid) = small series of blood samples	Blood samples before transfusion Epidemiological supervision Voluntary and confidential blood samples
Elisa = large series of blood samples	Blood samples before transfusion Epidemiological supervision Voluntary and confidential blood samples
Western Blott = reference laboratory	Epidemiological supervision Confirmation of seropositivity

Table 21

In practice, the serological diagnosis of suspected AIDS is of no therapeutic interest. It can be justified for certain suggestive clinical tables of AIDS, but without satisfying the criteria of WHO clinical definition.

PRINCIPLES OF SEROLOGICAL DIAGNOSIS

To prescribe a serological test and announce the result negative or positive, for an HIV test, it must be combined with all the following conditions:

1. The patient must have received appropriate information about the consequences of a positive result and have given prior permission to be tested for anti-HIV antibodies.

2. Positive results from a blood sample must be confirmed by Western-Blott.

3. The seropositive individual must be able to benefit from further medical care and advice +++.

4. Confidentiality.

Treatment of HIV infection and AIDS

ANTIRETROVIRAL THERAPY

The only molecule in current commercial production is AZT (Azidothymidine). Its cost (2,000 - 3,000 US$/year) and the necessary techniques for therapy prevent, at present, its general use in developing countries.

TREATMENT OF OPPORTUNIST OR ASSOCIATED INFECTIONS (WHO GUIDELINES)

See tables 22a, 22b and 22c.

Table 22a

SYNDROME	DEFINITION AND ETIOLOGY	GUIDELINES FOR MANAGEMENT	TREATMENT	
Chronic diarrhoea (bloody or not)	More than 3 liquid stools/day either permanent or in episodes of more than one month ***Infection*** : Cryptosporum Isospora Giardia Shigella Salmonella Entamoeba hyst. ***Neoplasia*** : Kaposi Lymphoma ***Idiopathic*** : (HIV ?)	1. Dehydration prevention +–++ treatment ++++ cf chap. 3 "Diarrhoea" 2. Nutrition –+–+ 3. Examination of stools Make at least 3 examinations	1. Clinical/lab. suspicion = bacterial infect. ***cotrimoxazole*** 480 mg : 2 tab x 2/day for 5 days If no response : ***metronidazole*** 500 mg x 3/day for 7 days 2. Clinical/lab. suspicion = parasitic infect. ***metronidazole*** 500 mg x 3/day for 7 days If no response : ***cotrimoxazole*** 480 mg : 2 tab x 2/day for 5 days 3. No clinical/lab. orientation = empirical treatment ***cotrimoxazole*** or/ or ***metronidazole*** ***mebendazole*** 500 mg x 3/day for 7 days (Enterobiides) ***erythromycin*** 2 g/day for 5 days (Campylobacter)	If no improvement (and no contra-indications = bloody diarrhoea) : symptomatic treatment : ***loperamide*** 4 mg initial dose + 2 mg after each liquid stool (max. 16 mg/day) If after improvement the diarrhoea recurs within 4 weeks : reconvalescence treatment for 6-12 weeks
Buccal plaques	Presence of white deposits on an erythematous base on the buccal mucosa, the dorsum of the tongue, the gums, the palate or the pharynx Candida Albicans	1. Lab. examination if necessary to confirm 2. Look for dysphagia, pain on swallowing = suspect oesophageal candidiasis	1. Moderate buccal candidiasis Application to entire area of ***gentian violet*** 1 % 2 x/day or ***nystatin*** per os 500,000 IU x 3/d for 7 days 2. Severe buccal candidiasis/ resistant local treatment ***ketoconazole*** 200 mg x 2/d for 7 days or ***fluconazole*** 50 mg/d for 7 days 3. Oesophageal candidiasis ***ketoconazole*** 200 mg x 2/d for 14 days or ***fluconazole*** 100 mg/d for 7 days	If no improvement, differential diagnosis leucoplasia CMV oesophagitis herpetic infection The duration of treatment is only suggested ; it must be followed up to the disappearance of signs and symptoms

Table 22a

Table 22b

SYNDROME	DEFINITION AND ETIOLOGY	GUIDELINES FOR MANAGEMENT	TREATMENT	
Respiratory conditions	Cough and/or thoracic pain and/or persistent dyspnoea in patient suffering from symptomatic HIV infection *Infection* : CMV, Pyogene, Toxoplasmosis, Mycobacterium tuberculosis, Mycobacterii, Pneumocystis carinii, Endemic mycoses, others *Neoplasia* : Kaposi's sarcoma Lymphoma *Other* : Interstitial pneumonopathy lymphoidea	1. Examination of sputum 3 especimens looking for Koch's bacillus 2. X-Ray chest (lungs) TB = hilar adenopathies and / or mediastinal + infiltration of middle or inferior lobes (cavities and infiltration of upper lobes are rare in H.V sufferers) Pneumocystosis = bilateral interstitial infiltrations	1. If sputum examination positive or X-Ray of thorax suggests tuberculosis Antituberculer treatment (cf chap.2) 2. If sputum examination negative and X-Ray of thorax suggest a pyogenic infection ***penicillin*** 250 mg 2 tab x 3/d for 10 days o ***ampicillin*** 500 mg 2 tab x 3/d for 10 days 3. If sputum examination negative and X-Ray of thorax suggest a pneumocystosis ***cotrimoxazole*** 480 mg 3-4 tab x4/d for at least 14 days and preferably 21 days or ***pentamidine isethionate*** 3-4 mg/kg/day	The risk of severe reaction to ***thiacetazone*** is increased in the patient with HIV infection If no improvement by day 3, change the antibiotic ex. ***cotrimoxazole*** 480 mg 2 tab x 2/d for 10 days Improvement from day 7, secondary prophylaxis is recommended ex. ***cotrimoxazole*** 480 mg 1 tab x 2/d for 3 days/week (watch for side-effects)
Lymphadenopathy	1. Adenopathy in a patient suffering from symptomatic HIV infection 2. Chronic generalized lymphadenopathy – more than 3 lymph gland beds, at least 2 ganglions ≥ 1.5 cm/site, plus a month without other local or contiguous cause of infection is generally due to AIDS infection *Infection* : TB, Syphilis Histoplasmosis Toxoplasmosis *HIV infection* *Neoplasia* : Kaposi's sarcoma Lymphoma ***Dermatological :*** Seboutteic dermatitis Chronic prodermitis	1. Clinical Suspect TB or syphylis 2. Suspicion of TB : needle biopsy of lymph node + search for Koch's bacillus. X-Ray thorax 3. Suspicion of syphilis Serology, direct examination 4. If negative Biopsy is rarely indicated	1. Tuberculosis Treatment see chap. 2 Where TB is suspected, give treatment on trial for 4 weeks, if improvment continues 2. Syphilis ***Benzatine penicillin*** 2.4 MIU in a single dose	Tuberculosis in a patient suffering from HIV infection is often extrapulmonary The diagnosis of chronic generalised lymphadenopathy in an asymptomatic patient requires neither other investigations nor treatment The biopsy of a lymph node may be indicated to exclude lymphoma, Kaposi's sarcoma or a fungal or mycobacterial infection

Table 22b

Table 22c

SYNDROME	DEFINITION AND ETIOLOGY	GUIDELINES FOR MANAGEMENT	TREATMENT	
Cephalitis	The cephalitises in subjects suffering from symptomatic HIV infection are often persistent, severe, resistant to usual treatments *Infection* : TB meningitis Cryptococcal meningitis Méningo-encephalitic toxoplasmosis Neurosyphilis Viral meningo-encephalitis (CMV) Chronic HIV meningitis Multifocal leuco encephalitic *Neoplasia* : Lymphoma Kaposi's sarcoma Common causes of encephalitis	1. Neurological evaluation : Altered psychol. state Focal attacks Convulsions Signs of meningism Intracranial hypertension 2. Look for malaria (if a fever) Thick and thin films 3. Lumber puncture if no contraindication Diagnosis of TB, cryptococcus, bacterial meningitis	1. Where focal signs exist, treat for toxoplasmosis for 6 weeks : ***pyrimethamine*** : loading dose 75-100 mg, then maintenance dose 25-50 mg/ day + ***sulfadiazine*** 4-6 mg/ day in 4 doses + ***folinic acid*** 15 mg/ day 2. If thick-thin films are positive, treat for malaria (see chap. 5) 3. If lumper puncture positive Bacterial meningitis : see chap. 7 TB meningitis : see chap. 2 Cryptococcal meningitis ***amphotericine*** 0.4-1 in mg/ kg/ d IV for 6 weeks or ***fluconazole*** 200-400 mg x 4/ d orally-IV for 10 weeks 4. Cephalitis without recognisable etiology : symptomatic treatment beginning with simple analgesics	If treatment of toxoplasmosis effective, long term prophylaxis is recommended : ***pyrimethamine*** 25 mg/ day + ***sulfadiazine*** 2-4 mg/ day If cryptococcal meningitis long term prophylaxis is necessary : ***fluconazole*** or ***ampho B***
Dermatological conditions	***Bacterial*** : Furunculosis Impetigo Pyodermitis Hydradenitis Pyomyositis ***Viral*** : Herpes Herpes zoster Condyloma ***Neoplasia*** : Kaposi's sarcoma ***Parasitic*** : Cutaneous urticaria Seborrheic dermatosis Generalized erythroderma Psoriasis ***Medication related*** ***Sexually transmitted diseases***		1. Viral infection Herpes zoster : local antiseptic treatment + ***zovirax*** 800 mg x 5/ d for 10 d + analgesics Herpes : see chap. 4 Condyloma : see chap. 9 2. Bacterial infection Furunculosis, impetigo, pyodermitis, folliculitis : local treatment + ***penicillin*** for 10 days Suppurative blisters : local treatment + ***tetracyclin*** 500 mg x 2/ day for 6 weeks Pyomyositis : surgical drainage + antibiotics 3. Fungal infection Candidiasis : ***gentian violet*** or ***nystatin*** Fungal infections : see chap. 4	

Table 22c

Prevention of transmission of HIV infection and AIDS

DURING SEXUAL INTERCOURSE

Systematic use of condoms is the only reliable prevention.

DURING TRANSFUSION

Strict respect for the indications for transfusion and systematic serological sampling of blood donors constitute the essential principals for the safety of transfusions.

See M.S.F. practical guide: "Practical transfusion in isolated surroundings - prevention of transmission of HIV"

IN MEDICAL FACILITIES

The prevention of the transmissin of HIV infection in the course of treatment takes place by reinforcement and strict respect for classical measures of hygiene:

- correct sterilization and disinfection of medical material,
- avoidance of injections which are not strictly necessary,
- precautions to avoid accidental contamination with soiled instruments,
- precautions to avoid contact with potentially infected biological liquids.

See M.S.F. practical guide: "Recommendafions to prevent HIV transmission in health care facilities in developing countries "

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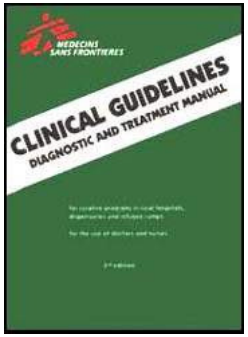
Clinical Guidelines and Treatment Manual (MSF, 1993, 319 p.)
Chapter 9 - Other conditions
Cardiac failure
Hypertension
Acute glomerulonephritis
Nephrotic syndrome



- **Lithiasis**
- **Pyelonephritis**
- **Prostatitis**
- **Sexually transmitted diseases (STD)**
- **Vaginitis**
- **Endometritis and Salpingitis**
- **PV bleeding**
- **Toothache: different syndromes**
- **Dental infections**
- **Endemic goitre**

Clinical Guidelines and Treatment Manual (MSF, 1993, 319 p.)

Chapter 9 - Other conditions

Cardiac failure

Syndrome characterized by the failure of the myocardium to maintain an adequate cardiac output. Often called congestive cardiac failure, or CCF.

Clinical features

- Exertional and paroxysmal nocturnal dyspnea (pulmonary edema).
- Hepatomegaly (tender liver on palpation).
- Ankle edema.
- Tachycardia with gallop rhythm.
- Basal crepitations on auscultation of both lung fields.

There are 3 forms of cardiac failure:

- Left ventricular failure

· Dyspnea: either exertional, recumbent (as in paroxysmal nocturnal dyspnea), or fulminant (acute pulmonary edema).

· Crepitations (rales) in the lung bases on auscultation (may be absent in infants); sometimes pleural effusion.

· Tachycardia, gallop rhythm.

- Right ventricular failure

· Edema: especially of the ankles and lower legs.
· large, tender, sometimes pulsatile liver.
· Raised jugular venous pressure.

- Biventricular failure: combination of right and left sided signs.

Symptomatic treatment (hospital)

- Half-sitting position, oxygen if available.
- Exclude salt from diet.
- Drain any pleural effusion.
- Diuretics:
· Acute pulmonary edema
furosemide (IV)

Adult: 20 to 40 mg/IV, repeated as needed
Child: 1 mg/kg/IV, repeated as needed

Compensated cardiac failure
furosemide (PO)

Adult: 20 mg/ d divided in 2 doses
Child: 1 to 2 mg/kg/d

Furosemide therapy depletes potassium and therefore the patient should be supplemented:
potassium chloride: 1 g/day, 5 days out of 7

If furosemide is ineffective, use an aldosterone antagonist:
spironolactone (PO)

Adult: 100-200 mg/day in single dose
Child: 3 mg/kg/day

· If furosemide or spironolactone are not immediately effective in acute pulmonary edema, two measures can reduce the load on the failing myocardium:

- Rotating tourniquets

- Venesection: bleed 200 to 400 ml; ensure first that significant anemia is not contributing to the cardiac failure.

- For left ventricular failure only

· In urgent situations (e.g. acute failure) digoxin (IV)

Adult:	loading: 0.25 mg/injection, 3-4 injections in first 24 hours
	maintenance: 0.25 mg/24 hours in 1 injection

Child:	loading: 0.010 mg/kg/injection, 3-4 injections in first 24 hours
	maintenance: 0.010 mg/kg/24 hours in 1 injection

In non urgent situations digoxin (PO)

Adult:	loading: 0.5 -1 mg/d divided in 2-3 doses x 2-3 days
	maintenance: 0.25 mg/ d, for 5 days out of 7
Child:	loading: 0.015 mg/kg/dose: 3-4 doses/24 hours x 2-3 days
	maintenance: 0.015 mg/kg/d in a single dose, for 5 days out of 7

- Treatment should be supervised: weight, dyspnea.

- Complications of treatment are bradycardia, arrhythmias and embolism.

- Pneumonia sometimes precipitates or complicates CCF. Treat with appropriate antibiotics.

Always seek a treatable cause.

The regimens below will usually be supplemented by symptomatic therapy of the CCF.

- Anemia: if severe enough to cause CCF may need transfusion. Great care is needed because of the danger of fluid overload: usually furosemide is given at the same time as any transfusion.

- Beri-beri: think of this, especially in SE Asia thiamine (vitamin B1)

Adult:200 mg IM or IV/day
Child:50 to 100 mg IM or IV

Continue with at least 200 mg / day PO for several weeks.

- Endocarditis
penicillin G (IV): 100,000 IU/kg
+ gentamicin (IM): 3 mg/kg/day

- Chagas'disease.

Acute rheumatic fever: myocarditis may lead to CCF in the acute stage.
penicillin G or PPF (IM): 100,000 IU/kg/d x 10 days.
prednisolone (PO): 2 mg/kg/d x 3-5 days, then decreasing dose regimen over 7 to 10 days.

Prophylaxis:
benzathine penicillin (IM): 1.2 - 2.4 MIU every 2 to 4 weeks.
< 15 years: 1.2 MIU every 2 weeks
> 15 years: 2.4 MIU every 2 weeks
for several months if possible.

Hypertension

- Before diagnosing hypertension, the BP must be checked several times with the subject resting.

- Drug therapy should only be instuted for BP consistently above 160/90 mm Hg (or 140/9Ofor pregnant women).

- Therapy must be closely supervised, otherwise side effects can be serious.

Treatment

ESSENTIAL HYPERTENSION (dispensary)

No evident cause, in a non-pregnant subject.

- Low-salt diet: follow-up one week later.

- If BP still > 160/90: drug therapy.
hydrochlorthiazide (PO): 50 mg/ d, best taken in the morning.
Give potassium supplement (e.g. advise bananas in diet).

- If no improvement after one week give in addition:
methyldopa (PO): commence with 250 mg/d divided in 2-3 doses, total dosage to be attended progressively 750 to 1,500 mg/d divided in 3 doses (upper limit).
or
hydralazine (PO): 100 mg/d divided in 3-4 doses, if necessary can be increased till 200 mg/day

- Alternative:
propanolol(PO): 40 mg/d (start with a low dose and increase slowly as needed. Do not let PR drop below 50-60 /min).

HYPERTENSION OF PREGNANCY

Along with albuminuria and edema it is part of the syndrome of pre-eclampsia. This is a condition of late pregnancy and is associated with severe complications: eclampsia, abruptio placentae and premature labour.

(dispensary)

- Rest, normal diet (do not restrict salt), encourage good protein intake.

- Sedation if necessary:
diazepam (PO): 15 mg/d divided in 3 doses

- Observe regularly: BP, weight, albuminuria, edema, fetal heart sounds and movements, fundal height.

- If no improvement after one week:
hydralazine(PO): 100 mg/d divided in 3-4 doses (up to double this if needed)
or
methyldopa (PO): 750 to 1500 mg/ d divided in 3 doses

(hospital)

Severe cases (very high BP, edema, headache, nausea, convulsions), i.e. preeclampsia:
diazepam (IV): 40 mg in 500 ml 5 % glucose infusion (to avoid risk of convulsions and lower BP).

Definitive treatment: delivery, vaginal if possible.

- Eclampsia
hydralazine(ampoule de 20 mg/ml, 1 ml) in infusion, protect from light, 4 ampoules of 20 mg in 500 ml 5 % glucose, delivered at 30 drops/minute, until normal BP achieved.
Monitor rest of drip according to BP level.
Convulsions: diazepam in infusion (see above).
Nursing
Obstetrical management: eventual caesarian.

Acute glomerulonephritis

- An auto-immune inflammahon of the renal tubules.

- Most often occurring as a complicahon of an otherwise benign shreptococcal infection. Usually manifests itself 1 to 5 weeks following an episode of pharyngitis or impetigo.

- Affects mainly children over 3 years of age and adults.

Clinical features

- Proteinuria and hematuria.
- Hypertension, sometimes becoming malignant (encephalopathy).
- Edema.
- Occasionally cardiac failure.

Treatment (dispensary - hospital)

- Bed rest during the early period.

- Low salt diet.

- Furosemide (PO) if necessary: see above.

- Treat the hypertension.

- Treatment against the streptococci:

· Acute phase: as for strep pharyngitis
· Prophylaxis against relapse: as for rheumatic fever

Nephrotic syndrome

- A syndrome that in its uncomplicated form comprises:

· proteinuria (> 3 gram/24 hours),
· hypoalbuminemia (< 30 gram /litre),
· edema.

- These simple forms generally resolve completely. If complications are present (hematuria, hypertension, or renal failure), the disease has a poorer prognosis.

Treatment (dispensary - hospital)

- Rest.
- High protein diet.
- Restricted salt and water intake.
- Diuretics:
furosemide (PO)

Adult:160 mg/d divided in 3-4 doses
Child:4 mg/kg/d divided in 3-4 doses

Adapt dosage according to clinical response.

For nephrotic syndrome in children, consider
prednisone or prednisolone (PO): 2 mg/kg/day x 5 days, then reduce dose progressively

Cystitis

- Infection of the bladder and urethra, most often due to Escherichia coli.

- Very frequent in women.

Clinical features

- Painful micturition (burning, scalding).
- Polyuria, nocturia.
- Urine cloudy and malodorous (sometimes hematuria).
- No fever.

Treatment (dispensary)

- Increase fluid intake: 3 to 4 litres/day, to flush out the bladder.

- Immediate antibiotic regimens (at the latest 3 days of beginning attack; ensure no surgical operations or urinary infections during the last 3 months): cotrimoxazole (PO): 1.6 g of SMX in a single dose.

- Standard antibiotic regimen:
ampicillin (PO): 2-3 g/d divided in 3 doses x 5-7 days
or
cotrimoxazole (PO): 1.6 g of SMX/d divided in 2 doses x 3 days

- Exceptions

· pregnant women:
ampicillin (PO): 2 g/ d divided in 3 doses x 10 days

· If signs of ascending infection (fever, chills, pain), treat as pyelonephritis.

- Recurrent cystitis: think of schistosomiasis, urinary tuberculosis, a bladder stone or gonorrhoea.

Otherwise, give antibiotic therapy for 10 days.

Lithiasis

The formation of stones (calculi) in the urinary tract, which may cause varying degrees of obstruction.

Clinical features

- Renal colic: intense lumbar or pelvic pain, which may be either intermittent or constant.
- Hematuria, gravel in the urine, passing of a calculus.
- Microscopy: many red cells, sometimes some pus cells.
- Secondary infection is common: presents as cystitis or pyelonephritis.

Treatment (dispensary)

- Encourage copious oral fluids: at least 3 to 4 litres /day.

- Analgesia:
noramidopyrine (PO) (provided drug if prescribed list of the country): 1.5 g/d divided in 3 doses x 3 days
+ butylhyoscine (PO): 30-60 mg/d divided in 3 doses x 3 days

- Antispasmodic: noramidopyrine (IV) (provided drug if prescribed list of the country):500 mg as required
+ atropine (IM): 1 mg as required

- Secondary infections: treat appropriately.

Pyelonephritis

Urinary tract infection involving the renal parenchyma, most often due to Escherichia coli.
Clinical features

- High fever (this may be the only sign in neonates).

- Chills, loin pain, dysuria, cloudy and sometimes bloody urine.
- Microscopy: abundant pus cells, red cells and bacteria on gram stain.

Treatment (dispensary - hospital)

- Treat the fever.
- Encourage abundant oral fluids (3 to 4 litres/day).
- cotrimoxazole(PO)

Adult: 1.6 g of SMX/d divided in 2 doses x 10 days
Child: 40 mg of SMX/kg/d divided in 2 doses x 10 days

- If very ill, or if cotrimoxazole ineffective after 3-4 days:
ampicllin (IV): 100 mg/kg/d divided in 4 injections for several days, then change to oral treatment (total:10 days)
+ gentamicin (IM): 3 mg/kg/d divided in 2-3 injections x 5-7 days.

Prostatitis

- Acute infection of the prostate gland.
- Usually due to gram negative bacteria.

Clinical features

- Scalding pain on urinating, polyuria, low grade fever and perineal pain.
- Tender on PR examination.
- Urine: pus cells, with occasionnal red cells.

Treatment (dispensary)

- Difficult to effect cure so often becomes a chronic infection.

- Encourage abundant oral fluids (3 to 4 litres/day). cotrimoxazole (PO): 1.6 g of SMX/d divided in 2 doses x 2 weeks to 1 month.

- If this ineffective:
ampicillin (PO): 2 g/d divided in 3 doses x 10 days

Sexually transmitted diseases (STD)

ATTENTION
All patients suffering from sexually transmitted disease are likely candidates for HIV (i.e. practising non protected sexual intercourse).

Urethritis

Sexually transmitted infection of the urethra, most often gonococcal or chlamydial (the two may co-exist), occasional due to Trichomonas vaginalis or stanphylococci.

Clinical features

- Incubation period 3 to 8 days.

- Often asymptomatic in females.

- Morning discharge from urethra with dysuria in males.

- Microscopic examination of fresh specimen of urethral discharge using gram stain (intracellular gram - diplococci). Always check partner(s).

Treatment (dispensary)

Whenever possible do a gram stain of the urethral discharge before starting treatment.

GONOCOCCUS (GRAM-DIPLOCOCCI ON GRAM STAIN)

- cotrimoxazole(PO): 4 g of SMX/d in 1 dose x 3 days (= 10 tab 480 mg x 1 x 3 d)
- or chloramphenicol(PO): 2.5 g/d in 1 dose x 2 days (= 10 tab 250 mg x 1 x 2 d)

of if available and recommended in regulations:

- spectinomycine IM: 2 g in a single dose
- or kanamycine IM: 2 g in a single dose

Then:

- tetracycline (PO): 1.5-2 g/d divided in 3-4 doses x 7 days
(except in pregnant or breast feeding women)

- or doxycycline (PO): 200 mg/d divided in 2 doses x 7 days (except in pregnant or breast feeding women)

- or erythromycin (PO): 1.5-2 g/d divided in 3-4 doses x 7 days

In region where gonococcal resistance is still rare:

- PPF IM: 4.8 MIU in a single dose (half given into each buttock)
- or amoxicillin (PO): 3 g in a single dose
plus:

- probenecid (PO): 1 g in a single dose
probenecid is contraindicated in pregnant or breast feeding women.
then:

- tetracycline, or doxycycline, or erythromycin (see above).

TRICHOMONAS VAGINALIS

- metronidazole(PO): 2 g in a single dose (= 8 tab 250 mg)

- or metronidazol(PO): 750 mg/d divided in 3 doses x 7 days (= 1 tab 250 mg x 3 x 7 d)
Metronidazole is contraindicated in the first trimester of pregnancy.

NO ORGANISM FOUND ON LABORATORY TESTING

Treat as a chlamydial infection:

- tetracycline (PO): 1.5-2 g/d divided in 3-4 doses x 10 days

- or doxycycline(PO): 200 mg/d divided in 2 doses x 10 days

- or, like for pregnant or breast feeding women: erythromycin(PO): 1.5-2 g/d divided in 3-4 doses x 10 days

If no laboratory available, use one of the gonorrhaea treatment regimens above.

Always trace and treat all sexual contacts. Advise sexual abstinence or use barrier methods of contraception during treatment.

Evolution

If neglected, Ask of re-infection and serious complications: prostatitis, salpingitis, pelvic peritonitis, septicaemia, arthritis and eventually infertility in females.

Syphilis

A sexually transmitted disease due to Treponema pallidum.

Clinical features

Primary syphilis:

- Incubation period of 3 weeks (range 10 to 50 days).

- Single painless ulcer on the genitals with rounded, well-defined edge and indurated base. Sometimes there is inguinal adenopathy.

- Diagnosis often missed in women.

- Diagnosis by examining serous discharge from ulcer under dark-ground microscopy and by serology (VDRL, TPHA), Giemsa stain not advised because of other saprophyte treponemes in genito-perineal region.

- If untreated will evolve through secondary and tertiary stages.

Treatment (dispensary)

- benzathine penicillin: 2.4 MIU IM, repeated after 2 weeks.

- Trace and treat all sexual contacts.

- If allergic to penicillin:
tetracycline or erythromycin (PO): 2 g/d divided in 34 doses x 14 days

Prognosis

- If promptly treated, cure is complete.
- Untreated: evolution through secondary and tertiary stages.

Chancroid

Sexually transmitted disease of which the causative agent is the Ducrey bacillus, Haemophilus ducreyi.

Clinical features

- Incubation period of 3 to 5 days (range 1 to 15 days).

- Lone or multiple ulcers on the genitals (deep, painful, with a soft irregular base).

- Tender inguinal lymphadenopathy. Fistula formation may follow.

- Diagnosis is by smear from the ulcer (May- Grun-Wald-Giemsa stain).

Treatment (dispensary)

- Cotrimoxazole(PO): 1.6 g of SMX/d divided in 2 doses x 10-15 days
or erythromycin: 2 g/d divided in 3-4 doses x 10-15 days

- Trace and treat all sexual contacts.

Note: the ulcer may show sign of healing at the end of a week's treatment. If not suspect:

1. diagnostic error or tablets incorrectly or not taken;
2. drug resistance;
3. association with syphilis or AIDS.

Lymphogranuloma venereum

A sexually transmitted disease, often abbreviated LGV, also known as Nicholas-Favre

disease, and caused by Chlamydia trachomatis, especially in men, may be latent in women.

Clinical features

- Incubation period of 1 to 6 weeks.

- Small genital ulcer, not always present.

- Inguinal lymphadenopathy (nodes suppurate, ulcerate and communicate, forming fistulae).

Treatment (dispensary)

- tetracycline (PO): 1.5-2 g/d divided in 4 doses x 21 days
- Trace and treat all sexual contacts.
- Alternatives:

· erythromycin: 1.5-2 g/d divided in 34 doses x 21 days
· cotrimoxazole: 1.6 g of SMX/d divided in 2 doses x 21 days

- Never incise or drain lymph nodes as this retards healing. If necessary, aspirate fluctuant glands with a syringe through overlying healthy skin.

Donovanosis or granuloma ingninale

Sexually transmitted disease also known as granuloma inguinale and due to Calymmatobacterium granulomatis. Much less common than LGV, it occurs in southern India, tropical and subtropical Africa, Papua New Guinea, South America and the Caribbean.
Non sexual contamination can occur (young children).

Clinical features

- Chronic painless granulomatous lesion of genitals.
- May also be inguinal or perineal.
- Develops over years if not treated.

Treatment (dispensary)

- Local disinfection.
tetracycline(PO): 2 g/d divided in 3-4 doses
or ampiclllin (PO): 2-3 g/d divided in 3-4 doses
or cotrimoxazole(PO): 1600 mg of SMX/d divided in 2 doses
Therapy should continue until lesions healed (if not relapse occurs). Alternative therapy.
Minimal course:14 days.

- WHO recommends the systematic use of tetracycline with:
streptomycine IM: 1 g/d in single dose x 14 days

If this fails:
chloramphenicol(PO): 1.5 g/d divided in 3 doses
+ gentamicin (IM): 3 mg/kg/d divided in 3 doses
for 3 weeks

Genital herpes

Sexually transmitted disease caused by herpes simplex virus

Clinical features

- Multiple vesicles which evolve into tiny painful ulcers of the genitals.

- Attacks recur periodically.

- A benign condition except when it affects a pregnant women at delivery when there is a risk of disseminated infection in the neonate.

Treatment (dispensary)

- Reassure.

- Local disinfection with chlorhexidine-cetrimide solution or chloramine solution (preparation: see table 25).

- Apply gentian violet solution.

- Can relapse.

Condyloma acuminatum

Raised wartlike lesions, found on the vulva or under the foreskin or on the skin of the anus.
Benign growth (papillomas).
Sexually transmitted viral infection.
Can deteriorate when atypical or pigmented condyloma, biopsy.

Clinical picture

- Incubation period is several months.

- Single condylomatous lesion at beginning, which multiplies and grows and can become infected. Diagnosis is often missed in women.

Treatment

- Difficult to cure (frequent relapses).

- Previous local disinfection.

- Cautiously apply podophylline 10 or 20 % only to the growth. Leave it for 4 hours, then clean. Repeat every day for 3 to 4 days/week x 1.5 month maximum.

- Untimely and excessive treatment can cause painful ulcerations.

- Podophylline can be replaced by trichloracetic acid 80-90 % in same regime. Powder with talc or bicarbonate to remove excess acid.

- Podophylline and trichloracetic acid are contraindicated for cervical condylomas for which cryotherapy, electrocoagulation or surgical ablation should be used.

Vaginitis

Infection of the vaginal mucosa caused by various pathogens: Candida albicans, Trichomonas vaginalis, Neisseria gonorrhaeae, Chlamydia trachomatis and others.

Clinical features

- White offensive vaginal discharge with itching, burning or discomfort.

- Diagnosis by direct smear (trichomoniasis, candidiasis) and gram stain (gonococcus).

Treatment (dispensary)

- Candida albicans

· Douche with an alkaline solution: sodium bicarbonate or lemon juice or diluted vinegar (one teaspoon of vinegar in 1 liter of water).
Or an antiseptic solution (chlorhexidine-cetrimide)

· Apply gentian violet solution for 14 days.

· Use nystatin vaginal pessaries: insert 1 each night x 10 days.

- Trichomoniasis

· metronidazole (PO): 2 g in single dose (gynaecological tablets are inefflcient)

· In case of failure, metronidazole(PO): 1 g/d divided in 2 doses x 7 days

- Gonorrhaea and chlamydia
Treat as for gonococcal urethritis.

- Non-specific vaginitis

· Douche several times daily with: chloramine solution diluted 1 in 2 (see table 25) or povidone iodine (10 % concentrated solution) diluted 1 in 20 for a few days

· If no improvement after a few days: cotrimoxazole(PO): 1.6 g of SMX/d divided in 2 doses x 7 days Pregnant women: ampicillin(PO): 2 g/d divided in 3 doses x 7 days

- Treat all sexual partners.

Endometritis and Salpingitis

A bacterial infection of the uterus (endometritis) or Fallopian tubes (salpingitis), sometimes causing pelvic peritonitis and septicemia. Often termed PID, the condition

includes infections of both puerperal and venereal origins.

Clinical features

- Fever, abdominal pain, offensive discharge and sometimes bleeding.
- Vaginal exam: enlarged tender uterus.
- Speculum: pus emerging from the cervical os.
- Signs of peritonitis on abdominal palpation.

Etiological treatmetnt

PUERPERAL SEPSIS (hospital)

Endometritis following delivery, miscarriage or abortion.

- Post-partum sepsis with no evident cause, retained placenta with secondary infection: usually streptococcal or gram negative.

· ampicillin (IV): 100 mg/kg/24 hours divided in 4 injections/24 hours

· Observe progress closely, if no improvement: gentamicin (IM): 3 mg/kg/24 hours divided in 3 injections/24 hours

· Manual evacuation of the retained placenta. Wait until defervescence under antibiotics.

- Abortion (induced) (sometimes Clostridium perfringens).
penicillin G (IV): 100 000 IU/kg/24 hours divided in 4 injections x 10 days
+ metronidazole (PO): 1.5 g/d divided in 3 doses x 10 days.

VENEREAL INFECTIONS (hospital)

- Same clinical picture as above, or else an isolated salpingitis, either gonococcal or chlamydial.

- Laboratory confirmation is preferable.

- Give IV antibiotics:
Penicllin G (IV): 100,000 IU/kg/24 hours divided in 4 injections/24 hours x 3 to 5 days, then continue with once daily PPF(or procain penicilline)
or
ampicillin (IV): 100 mg/kg divided in 4 injections/24 hours

- For chlamydia:

tetracycline (PO): 2 g/d divided in 3 doses x 10 days.
or
erythromycin (PO): 50 mg/d divided in 3 doses x 10 day

- If in doubt, give:

penicillin G with tetracycline
or
ampicillin or erythromycin

IN CASES OF PUERPERAL SEPSIS AND VENEREAL INFECTION WITH NO BACTERIAL CONFIRMATION

- In the absence of bacteriological confirmation and if there are signs of peritonitis, give:
ampicillin (IV): 100 mg/kg/24 hours divided in 3 injections x at least 10 days
+ gentamicin (JM): 3 mg/kg/24 hours divided in 2 injections x 8 days
+ metronidazole (PO): 1.5 g/d divided in 3 doses x 10 days

- At the end of the treatment, continue with:
tetracycline (PO): 1.5 g/d divided in 3 doses x 10 days

- In cases of an abscess in the pouch of Douglas, pyosalpinx or diffuse peritonitis, hospitalizefor surgical treatment.

PV bleeding

- Vaginal bleeding other than during menstruation. The origin may be vaginal, cervical or uterine.

- If chronic, anemia may occur.

- If hemorrhage is profuse, shock is likely. Nurse patient supine, observe pulse and BP, establish IV line, check hematocrit and restore blood volume.

Bleeding in the non-pregnant patient

PRE-PUBERTAL GIRLS (dispensary)

- Eliminate:

· trauma or foreign body,
· vaginal tumour (rare).

- Treat appropriately: remove foreign body and suture traumatic wounds.

WOMEN OF CHILDBEARING AGE (dispensary)

Diagnosis depends on clinical examination of the vagina with/without speculum.

- Cervicitis or ectropion: inflamed cervix, sometimes associated with vaginitis. Exclude cervical cancer, take a smear for bacteriological diagnosis and treat as for vaginitis.

- Cervical cancer: surgery if available.

- Normal cervix with enlarged uterus: exclude pregnancy.

- If uterine fibroids:
norethisterone (PO): 5 to 10 mg/day from the 10th till the 25th day of the menstrual cycle for 3 cycles, then adapt according to response.
Surgery if no improvement.

- Normal cervix, normal uterus with adnexial mass: exclude ectopic pregnancy. Chronic: ovarian cyst, hydrosalpinx. Surgical referral.

- Normal examination:

· With an oral contraceptive or *Depo-Provera bleeding can be due to poor compliance or poor tolerance.

· Uterine polyp.

· Functional menorrhagia or endometrial hypertrophy, consider: norethisterone (PO): 5 to 10 mg/day from the 10th till the 25th day of the menstrual (PO): 5-10 mg/day from day 15-25 of menstrual cycle

· Schistosomiasis: check for eggs of S. haematobium in the urine

MENOPAUSAL WOMEN

- Endometrial carcinoma (uterus sometimes enlarged). Hysterectomy if surgical facilities

available.

N.B.:
In all of the above situations anemia must be prevented or corrected with: ferrous sulphate + folic acid (PO): 6 tab/d divided in 3 doses x 1-2 months.

Bleeding during pregnancy

FIRST TRIMESTER (hospital)

Miscarriage (spontaneous aborhon): contractions and bleeding.

- Establish IV line, restore volume if shocked, observe pulse and BP.

- 3 stages:

· Cervix closed (threatened miscarriage). Bed rest, monitor vital signs.

· Cervix open, sometimes with expulsion of products (inevitable abortion). If does not progress, curettage may be necessary (digital after 2 months gestation).

· Uterus involuted, products expelled (completed abortion).

Curettage if suspicion of retained products of conception.

- Antibiotic prophylaxis:
PPF(or procain penicillin) (IM): 4 MIU/d x at least 5 days.

Induced abortion (patient may deny it)

- Manage as for miscarriage plus broad-spectrum antibiotic cover:

ampicyllin (IV): 100 mg/kg/d divided in 4 injections x 7 days
or
chloramphenicol (IV): 75 mg/kg/d divided in 4 injections x 7 days.

- If a clostridium perfringens infection is suspected, treat with:
penicillin G (IV): 100,000 IU/kg/ /24 hours divided in 4 injections x 10 days
+ medronidazole(PO): 1500 mg/d divided in 3 doses x 10 days

Ectopic pregnancy: bleeding, pelvic pain, malaise and shock.

- The uterus is of normal size or a little enlarged.
- PV exam: marked adnexial tenderness and in pouch of Douglas.
- There is a danger of rupture leading to hemoperitoneum, exsanguination and death.
- IV line, resuscitation, transfusion as needed.
- Urgent laparotomy.

Hydatidiform mole (relatively common in North Africa and Asia)

- Shortly after conception there is bleeding and often severe nausea and vomiting, and the uterus is larger than expected.

- Grape-like vesicles may be expelled.

- IV line, suction or digital curettage (not instrumental, as danger of perforation).

- Prolonged follow-up because of risk of choriocarcinome: pregnancy tests or HCG levels if available, initially every fortnight, then monthly for at least a year. Provide effective contraception during this period.

Third trimester

(hospital)

Premature labour: scanty bleeding, contractions before term, cervix may be open and effaced, uterus non-tender, examination otherwise normal

- Bed rest.

- salbutamol infusion: 3 mg (6 amp of 0.5 mg/ml) in glucose or normal saline over 24 hours. Monitor the rate of infusion, pulse and BP, and foetal heart rate.

- Continue therapy for 24 hours after the contractions cease.

(hospital)

Placenta praevia: profuse painless hemorrhage

- Patient supine, establish IV line. Monitor pulse, BP, blood loss and foetal heart rate. Transfusion as needed (consider HIV).

- If in premature labour, treat accordingly (see above).

- If full term and in labour and partial placenta praevia only, rupture membranes and attempt vaginal delivery.

- If bleeding intractable, or if complete placenta praevia, deliver by caesarian section.

Abruptio placentae: also known as accidental hemorrhage or retro-placental hematoma.

It is caused by premature separation of a normally inserted placenta. Frequent antecedents are pre-eclampsia or trauma (road accident or a beating). Bleeding may only be minimally evident vaginally and the amount seen bears little relation to actual blood

loss. There is severe continuous abdominal pain, shock and a hard uterus. The fetus is often dead. Disseminated intravascular coagulation may occur as a complication.

- Establish IV line, transfuse to maintain stable vital signs.

- Live fetus perform a caesarian section.

- If vital signs are stable and labour is advanced or there is a dead fetus, vaginal delivery should be attempted.
Rupture membranes.
Give analgesia:
pentazocine (IM): 30 mg
+ butylhyoscine (IV) as needed.
Induction and augmentation:
oxytocin: 5 IU in 500 ml 5% glucose, adapt rate of infusion in terms of response.
Forceps or vacuum extraction may be necessary.
Beware of post-partum hemorrhage.

(hospital)

Post-partum hemorrhage (PPH)

- After all deliveries the pulse, BP and blood loss should be monitored. Normal loss is less than 500 ml.

- If there is PPH (> 500 ml).

- Establish IV line. Restore blood volume as necessary with plasma volume expanders or whole blood.

- Careful examination to determine cause of hemorrhage:

· Retained placental tissue.

· Uterine atony: if uterus not contracted, exclude retained placenta (requires manual removal).

· Lacerations: perineum, vagina, cervix (inspect the cervix by drawing it gently forward with the help of a scrubbed assistant using three sponge forceps).

· Coagulopathy.

- Treatment:

· Manual exploration of the uterine cavity whenever there is the slightest doubt (anesthesia, full aseptic technique) followed by: methylergometrine: 0.2 mg IV thence IM 2 or 3 times/day
+ ampiclllin prophylaxis.

· Suture any bleeding lacerations.

· Replace blood losses by transfusion where available. If coagulopathy is suspected, transfuse with fresh blood.

· Follow-up with ferrous sulphate + folic acid for 2 months.

Late PPH: subacute bleeding accompanied by fever is probably due to a retained placenta with secondary infection.

-Treat appropriately.

Toothache: different syndromes

Toothache is a common complaint. The causes are multiple but there are seven identifiable syndromes:

- Pain induced by cold (rather than heat), by acidic foods, by sugar, and relieved once the stimulus is removed, is caused by dental caries.

- Pain spontaneous, intermittent and radiating, is caused by a nerve exposed by advanced caries.

- Pain induced by cold, heat, acidic foods, sugar and persisting for several minutes after suppression of the stimulus is due to pulpitis.

- Pain which is spontaneous, continuous, intense, throbbing, exacerbated by heat and percussion on the affected tooth, not relieved by ordinary analgesics, is caused by a dentoalveolar (periapical) abscess.

- Congestive or suppurative pericoronitis, with pain, redness, and swelling of the gum, and sometimes pus, is caused by the eruption of teeth (e.g. wisdom teeth).

- Shooting pains exacerbated by movements of the tongue and swallowing, with localized swelling, are due to a suppurative cellulitis.

- Pains of variable intensity associated with bleeding gums are due to gingivitis, irritation or scurvy.

Treatment (dispensary)

All patients should receive scaling and simple instructions on dental hygiene. Specific therapy (see table 23).

Table 23 : *Dental conditions and treatment*

Clinical Forms	Conservative treatment	Extraction	Analgesic	Antibiotic	Anti-Inflammatory
Dental caies	If possible				
Exposed nerve and pulpitis	If possible	Immediate			
Dentoalveolar (periapical), abscess	If possible	Immediate or after 24 h of antibiotic	***Paracetamol*** per os Ad. : ? g/d divided in 4 doses Ch. : 30 to 50 mg /kg/d divided in 4 dosess Avoid acetylsalycilic acid in case extraction becomes necessary	***Ampicillin*** per os Ad. : 2 g/d divided in 3 doses for 6 days Ch. : 50 to 100 mg/kg/d divided in 3 doses for 6 days	***Indomethacin*** per os Ad. : 75 mg/d divided in 3 doses x 3 days Ch. 3 years and + (15 kg) : 37.5 mg/d divided in 3 doses Ch. 5 years (20 kg) 50 mg/d divided in 3 doses Ch. 10 years and + (30 kg) : same as adult
Malaligned erupting teeth		After 24 hours of antibiotic if infected			
Localized cellulitis		After 24 hours of antibiotic			
Gingivitis	Treat the cause (scurvy ?)			If infected	If infected

Table 23

Dental infections

Infection arising as a complication of inflammation of the dental pulp.

There are three main syndromes.

LOCALIZED INFECTIONS

Dentoalveolar or periapical abscess.

- Acute: intense continuous throbbing pain, looseness of the affected tooth with expression of pus.

- Chronic: apical granuloma, sometimes with cyst formation. May be asymptomatic (incidental X-ray diagnosis) or be tender to percussion. May become reinfected.

CIRCUMSCRIBED INFECTIONS

Less localized than a periapical abscess.

- Acute serous cellulitis: swollen gum around tooth, pulsatile, mobile, with no fluctuation.

- Acute suppurative cellulitis: fever, malaise, gum swollen and very tender, with fluctuation.

- Acute gangrenous cellulitis: as with suppuration, plus crepitations on palpation.

- Chronic cellulitis: burnt out but may become secondarily infected. Marked by a painless nodule.

DIFFUSE INFECTIONS

Cellulitis that spreads through the adjacent facial and cervical tissues. May lead to necrosis and septicemia.

Dental infections may metastasize to distant sites. Think of a dental focus in cases of bacterial endocarditis, prolonged PUO, or abscess of organs.

Treatment (dispensary)

Table 24 . *Dental infections and treatment*

	Root canal therapy (dentist)	Extraction	Incision and drainage	Antibiotic	Anti-inflammatory
Acute peri-apical abscess	If possible	Immediate	No	***Ampicillin*** per os	***Indomethacin*** per os
Chronic peri-apical abscess	If possible	Immediate	No	Adult : 2 g/d divided in 3 doses for 5 days	Adult : 75 mg/d divided in 3 doses for 3 days
Cellulitis	If possible without antibiotic	24 hours after of A.B. treatment	No	Child : 50 to 100 mg/kg/d divided in 3 doses for 5 days	Child : 3 years and : 37.5 mg/d divided in 3 doses > 5 years (20 kg) : 50 mg/d divided in 3 doses > 10 years (30 kg) : as adult x 3 days
Cellulitis with abscess	If possible without antibiotic	24 hours after of A.B. treatment	24 hours after of A.B. treatment		
Gangrenous cellulitis	No	24 hours after of A.B. treatment	24 hours after of A.B. treatment with lavage using A.B.	As for diffuse cellulitis (below)	
Diffuse cellulitis	No	Infusion IV (***glucose*** 5 %) ***ampicillin*** IV 4 x 1 g Supervision +− If necessary : ***gentamicin*** IM 3 mg/kg divided in 2 IM/d x 5 to 7 days As soon as possible, ***ampicillin*** IM or per os			

Table 24

Endemic goitre

Goitre is a swelling of the neck due to enlargement of the thyroid gland.

This may be due to problems of thyroid function (genetic deficit, hypophysohypothalamic control desorders) or a tumor.

However, the main cause of goiter in tropical countries is dietary iodine deficiency. Moreover, some food contains goitergenic factors: manioc and cruciferous (cabbage...).

Goitre is an adaptive process. The deficit in thyroid hormone synthesis due to iodine lack is compensated by a hypertrophy of the gland. Most cases of goiter are euthyroid.

Clinical features

The WHO proposes a classification according to the type of enlargement. The different grades of this classification are as follows:

- Group 0: thyroid is non palpable or palpable, but volume of the lobes is smaller than the distal phalange of the patient's thumb.

- Group 1 a: thyroid is easily palpable. The volume of the lobes is larger than the distal phalange of the patient's thumb.

- Group 1 b: as above, thyroid is visible in an extended neck, but not in normal position.

- Group 2: thyroid easily visible when the head is in normal position.

- Group 3: thyroid enlargement visible at a distance of 5 meters.

Meantime, one could also classify goiter according to its diffuse, nodular or multinodular

characteristics.

Complications

- Locally: swallowing disorders, collateral circulation, tracheal compression, severe respiratory disorders, sudden enlargements especially during puberty and pregnancy. Rarely cancerous.

- Complications of subclinical hypothyroidism in pregnancy include: Low birth weight, congenital malformations and high perinatal mortality. Fetus, newborn and infant can present with hypothyroidism (cretinism with mental retardation neurological disorders and retarded psychomotor development).

Treatment

Goitre is an adaptation to a chronic lack of iodine.

Surgery should not be considered except in cases with severe complications (rare).

Prevention

The aim is to reduce the complications in new borns and infants. Prevention in the long term would have an impact on the rate of goiter in the population. There are 3 methods:

- Iodising cooking salt with iodure or potassium iodate

This technique is used in several countries and its effectiveness has been proved, but it requires a large program at national level.

- Intramusculary iodine oil injection

It has been shown that 1 ml iodine oil injections (+/- 0.48 g iode) in adults and 0.5 ml in children make goiters regress. It normalizes the thyroid function and prevents cretinism in the new-born for a period of 3 to 5 years.

For this treatment to have an impact on the community, a global program is necessary. It should not be used for individual treatment as it is relatively expensive.

- Oral iodine solution (Lugol)

Adult: 2 ml PO
Child < l year: l ml PO

This treatment is covering needs for 1 to 2 years.

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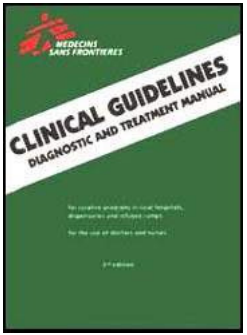


Clinical Guidelines and Treatment Manual (MSF, 1993, 319 p.)

Chapter 10 - Medical and minor surgical procedures

Dressings

Dressing is a set of procedures for treating a wound. A wound is an interuption in the continuity of the skin secondary to trauma or surgery.

Objectives

- Protection

· To prevent contamination from the external environment.
· To protect against possible trauma.

- Cicatrisation
To favour tissue regeneration.

- Absorption
To absorb serous discharge.

- Disinfetion
To destroy pathogenic organisms.

- Compression
To stop hemorrhage.

Warning: a dressing occludes a wound and in certain conditions (humidity, heat) can encourage multiplication of pathogenic organisms.

Equipment

- 1 box of sterile instruments

· 1 set of dissection forceps
· 1 set of Kocher forceps
· 1 pair of scissors

- 1 dressing tray (clean)

- 1 drum of sterile gauze pads

- 1 kidney dish

- Cotton wool (for equipment disinfection only, never use cotton wool directly on a wound)

- Adhesive tape

- Flasks containing antiseptics: chloramine and/or chlorhexidine-cetrimide, and polyvidone iodine
(dilution: see table 25).

N.B.: Never use polyvidone iodine with soaps containing mercurial derivatives. Solution preparation should be rigorous. Solutions should be renewed every week (every 3 days for chloramine).

General rules of asepsis

- A room should be kept for dressings. It should be carefully cleaned everyday and dressing tables should be disinfected between each patient.

- Use a sterile box of instruments for each dressing, or at least for each patient.

- Always start from the clean area and move to the dirty one.

- Wash hands carefully after each dressing, and after removing bandages or adhesive tape.

Technique

EQUIPMENT AND INSTRUMENT PREPARATION

- Cleaning of the dressing tray with chlorhexidine-cetrimide.

REMOVAL OF THE PREVIOUS DRESSING

- Removal of bandages and adhesive tape (not the gauze pads).

- Hand washing (clean water + soap).

- Removal of gauze pads, using Kocher forceps

· If the dressing adheres, soak it with sodium chloride solution or an antiseptic.

· Act gently not to remove the granulating epidermis.

WOUND EXAMINATION

- Sutured wound and/or aseptic wound

· Check the stage of cicatrization if wound is weeping, has a hematoma, or is infected.

- Septic wound

· Check the nature of secretions and if there are new fleshy pimples.

· A bluish pus indicates the presence of pyocianic (quickly spreading, very resistant bacillus spreading very quickly).

· Look for any signs of lymphangitis.

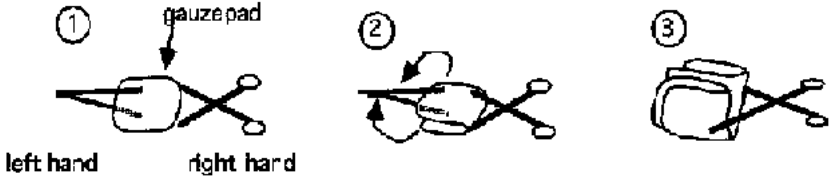
· Use new forceps after removal of the dirty dressing and the first cleaning of the wound.

CLEANING OF THE WOUND

- Use the sterile dissection forceps to remove sterile gauze pads from the container, and place them on the tray.

- To make a sterile sponge fold the pads twice using the Kocher and dissection forceps (as illustrated).

forceps (as illustrated).



Figure

- Pour an antiseptic solution on the pad (infected wound, burns, abcess, ulcers: chlorhexidine-cetrimide; non infected surgical wound: polyvidone iodine; see table 25).

- Clean the periphery of the wound either with a circular movement, or from top to bottom. Change gauze pads as often as necessary.

- Clean the wound from top to bottom with a new tampon.

- Dry the periphery of the wound and then the wound itself with different gauze pads.

DRESSING A WOUND

- Apply one or several gauze pads to the wound.

- Apply strips of adhesive tape:

· perpendicularly to the axis of the limb or the body;
· Leave the central part free to avoid maceration.

N.B.: When sterile disposable material is limited, sterile pads should be reserved for aseptic and surgical wounds.

Frequency of dressings

- Surgical wounds, or non infected sutures

· First day dressing should be well protected.
· Further dressings, every 48 to 72 h (check the process of recovery).

- Infected wounds

· Dress every 24 h.

- Deep or large burns

· Dress on the first day, then leave until the 7th day (unless obvious infection).

- Phagedenic ulcers

· Dress every 24 h, with hospitalisation if possible.

Associated antibiotic treatment

As a rule, systemic antibiotic treatment should not be prescribed routinely.

- Deep and soiled wounds, to prevent gas gangrene procain-penicillin (IM): 4 or 5 IU per day x 5 days at least.

- Abcess
Antibiotic treatment is useless before incision.

- Burns
Only if they are infected.

- During conflicts or other disaster relief conditions, where access to health care and patient's follow-up are hazardous, the systematic use of PPF(or procain-penicillin) should be considered.

Wastes

All soiled disposable materials (gauze, coton, dressings, etc...) should be collected and bumed daily.

Choice and use of antiseptics and disinfectants

See table 25.

Abscess

A collection of pus in the soft tissues. An abscess cavity is not accessible to antibiotics. Treatment is thus surgical only.

Indications

Incision and drainage (I & D) should be performed once the abscess is "ripe" i.e. fluctuant upon gentle palpation.

Material

- Sterile scalpel blade and handle.

- Surgical gloves.

- Plain curved forceps (Kelly forceps).

- Sterile corrugated drain.

- Antiseptic solution e.g. chloramine solution or chlorhexidine-cetrimide solution (preparation: see table 25).

- 5 or 10 ml syringe.

Anesthesia

Anesthesia of an abscess by local infiltration with lidocaine is not very effective. Furthermore, the act of traversing wider areas of tissue with a needle may spread the infection further. Regional anesthesia is preferable where possible: e.g. ring block of a finger. Otherwise, the skin can be briefly numbed using ethyl chloride spray.

General anesthesia may be necessary for an abscess that is large or deep such as some

breast abscesses, "injection" abscesses of the buttock, and pyomyositis: ketamine 1-2 mg/kg by slow IV or 5-10 mg/kg IM. The smaller IV dose acts more rapidly and for a shorter time than an IM dose and may thus be preferable.

Technique

- Scalpel: the correct way to hold a scalpel is between the thumb and forefinger with the handle resting against the palm (see Figure 7a). It should not be held as one holds a pen. The plane of the scalpel blade should be perpendicular to the plane of the skin.

- Incision: the free hand immobilizes the wall of the abscess between thumb and forefinger. Incise in the long axis of the abscess with a single stroke to breach the skin. The incision should be long enough to allow insertion of an exploring finger.

- Precautions: take care not to incise too deeply if the abscess overlies major blood vessels (the carotid, axillary, humeral, femoral and popliteal regions). After breaching the skin, blunt dissect down to the cavity using Kelly's forceps.

Figure 7a
Position of the hands for incision of an abscess

Figure 7b
Exploration of the cavity with a finger in order to break down loculations

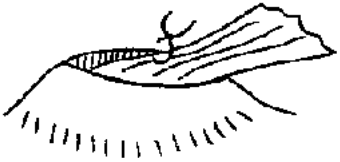


Figure 7c
Drain fixed to the skin

Figures 7 : *Technique for incision and drainage of an abscess*

figure

· Explore the cavity with the forefinger, breaking any loculating adhesions and evacuating the pus (see Figure 7b).

· Abundant lavage of the cavity using a syringe filled with chloramine solution or chlorhexidine-cetrimide solution (preparation: see table 25).

· Insert a drain, if possible fixing it with a single suture at the edge of the incision. The drain is withdrawn progressively then removed altogether after 3 to 5 days (see Figure 7c).

BREAST ABSCESS

(see Figures 8a to 8d)

- The management of breast abscess is slightly different. Usually the abscess is superficial but deep ones, when they occur, are more difficult to diagnose and to treat.

- Early in the infection, before the infection loculates (mastitis), non-surgical measures should be applied:

· Antibiotics:
ampicillin(PO): 100 mg/kg/d x 5 days
or
chloramphenicol (PO): 75 mg/kg/d x 5 days.

· Anti-inflammatories:
indomethacin (PO): 75 mg/d divided in 3 doses x 3 days

· Hot compresses, a constricting bandage to reduce lactation in the affected breast and

expression of milk to avoid engorgement.

Material
- Same material as for other abscesses (see above).

Technique
- Incision:

· for superficial abscess: radial
· for abscess near nipple: pert-alveolar
· for deep abcess: beneath the breast

- Gentle exploration with finger or Kelly forceps.
- Abundant ravage with chloramine solution or chlorhexidine-cetrimide solution.
- Insertion of drain.

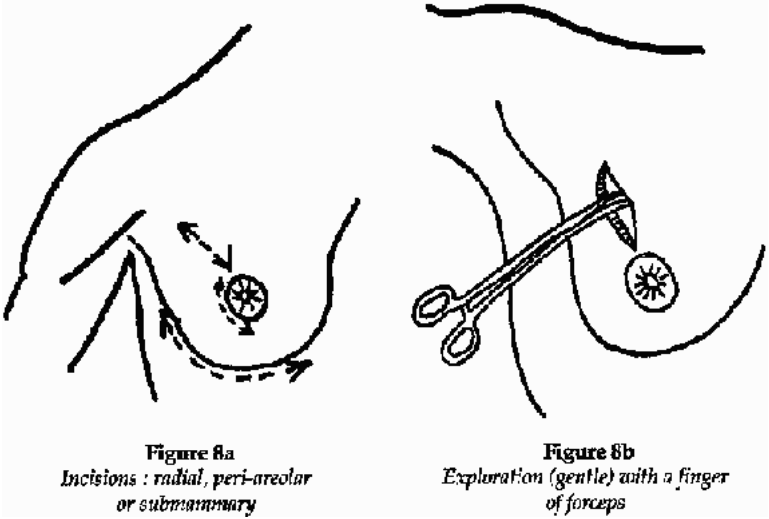


Figure 8a
Incisions : radial, peri-areolar or submammary

Figure 8b
Exploration (gentle) with a finger of forceps

Figure 8a and 8b

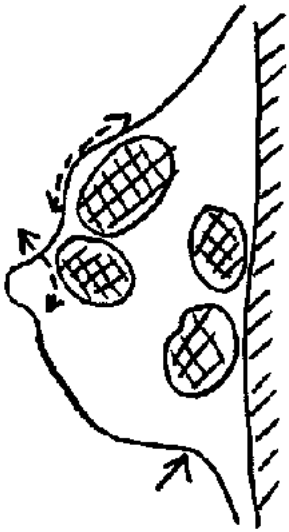


Figure 8c
Common sites for breast abscess

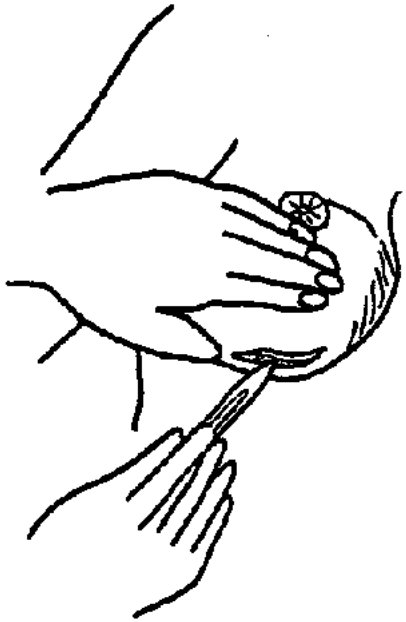


Figure 8d
Submammary incision

Figure 8c and 8d

ABSCESS IN THE PAROTID REGION

There is a danger of sectioning the branches of the facial nerve. The incision should be over the caudal part of the abscess and parallel to the lower border of the maxilla (see Figure 9).

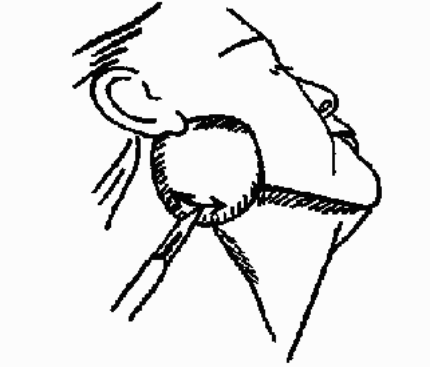


Figure 9 : *Horizontal incision for parotid abscess*

Figure 9

Pyomyositis

Infection and eventually abscess formation within muscde, most often due to Staphylococcus aureus.

At the start of infection, when the muscle is swollen, hot and painful, medical treatment may prevent abscess formation: immobilize, give antiinflammatory medication (indomethacin (PO): 75 mg/d divided in 3 doses x 5 days) and antibiotics (ampicillin (PO): Adult: 4 g/d in divided 3 doses;

Child:100 mg/kg/d divided in 3 doses x 7 days).

Indication

If the swelling becomes fluctuant conduct an exploratory puncture with a large-bore

needle which will reveal thick pus.

Material

The same that for an abscess.

Anesthesia

Use ketamine (IM) if needed.

Technique for abscess drainage

- Generous skin incision, avoiding underlying neurovascular tracts, and incision of the fascia and muscle sheath, also with the scalpel (see Figure 10a).

- Blunt dissection with Kelly forceps down to the abcess cavity (see Figure 10b).

- Exploration with a finger to break adhesions and evacuate the pus (see Figure 10c).

- Abundant ravage with chloramine solution or chlorhexidine-cetrimide solution.

- Where possible, counter-incision of the skin near the edge of the abcess, cutting down onto a finger that is inserted deep in the cavity. The counter-incision should be anatomically posterior to the abscess to allow gravity drainage (assuming the patient will be supine during recovery). A strip of corrugated drain is threaded through the two incisions (see Figure 10d), fixed with a suture to the edge of the incision and withdrawn around the 5th day.

Note: Myositis of the right psoas muscle may present in a manner identical to that of acute appendicitis. Surgical evacuation is necessary.

Figure 10a
Generous incision

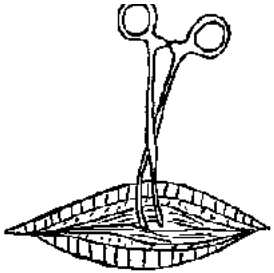


Figure 10b
Blunt dissection of muscle using Kelly forceps : insert closed then withdraw slightly opened

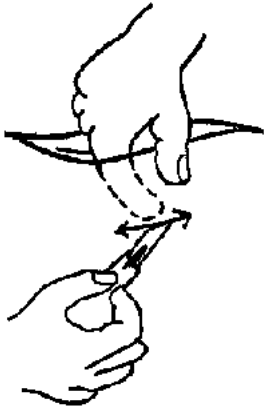


Figure 10c
Counter-incision for drain, cutting down into finger inserted deep in cavity

Figure 10d
Drain passing through the two incisions

Figures 10 : *Technique for incision of muscle abscess*

Figure 10

Burns

Thermal trauma to the skin, mucosa and deeper tissues. Burns are classified according to depth and extent.

Any burn that affects greater than 10 % of the body surface area is considered extensive and is thus serious because of fluid loss, cata-bolism, anemia and the risk of secondary infection. Burns are very comon in rural societies, particularly among children who fall onto or roll into cooking fires.

Clinical features

The extent of a burn is expressed as a percentage of total body surface area involved, easily estimated by the "rule of nines" (Table 26). The degree is a function of the depth to which tissue damage penetrates (Table 27).

A patient with extensive burns is likely to be in shock and requires appropriate resuscitation. Among children, the younger the patient the graver the danger presented by a burn of given extent and degree.

Table 26 : *"Rule of nines" for calculating percentage of body surface burned*

Body area	Adult (%)	Child (%)
Entire head	9	18
Upper limb	9	9
Anterior or posterior surface of trunk	18	18
Lower limb	18	14
Perineum	1	1

Table 26

Table 27 : *Depth of burns*

1st degree	Skin red and tender
2nd degree superficial	Skin red with blistering, tender to touch
2nd degree deep	Skin white, dry and soft Diminished sensibility to touch or pin-prick
3rd degree	Black skin, diminished sensibility to touch or pin prick

Table 27

Treatment

FIRST AID

- Immerse in cold water; this provides good analgesia and also arrests on-going trauma due to the heat retained in the tissues.

- Apply gentian violet.

- Do not cover.

RESUSCITATION

- Calculate the fluid requirements for the first 24 hours: weight x 5% of surface burn x 2 = quantity of fluid required in rnls.
e.g.: 60 kg (wt) x 20 % (extent of burn)
60 x 20 x 2 = 2,400 ml

- 75 % of fluid should be given or ringer's lactate, the remainder as volume expanders or blood transfusion.

- During the first 24 hours, half the fluid requirements should be given in the first 8 hours.

FIRST DRESSING OF THE BURN

- Analgesia (pentazocine IM: 30 mg) and sedation if necessary (diazepam IM: 10 mg).

- Tetanus prophylaxis if available.

- Strict aseptic technique: drapes, gloves and instruments all sterile (Figure 11).

- Clean the burn with normal saline or ch/orhexidine-cetrimide solution (see table 25).

- Use a scalpel to debride blisters and non-viable tissue.

- Apply sterile vaseline gauze, then on top of that two layers of unfolded sterile gauze swabs. Do not use either antibiotic ointment or gauze impregnated with antibiotics or corticosteroids.

- Apply a bandage, not tightly. Do not wrap limbs, especially at the flexures as this will encourage contractures. Bandage each finger separately, never together.

- Immobilize limbs in the position of function.

- Alternatively: "open method": after wound cleaning leave the burn uncovered with the patient protected by a mosquito net.

SUBSEQUENT DRESSINGS

- Unless infection ensues, the first dressing should be left undisturbed for 5 to 7 days.

- Analgesia aseptic technique as for the first dressing.

- Remove any black eschars (which may hide purulent areas) and use scalpel to excise any necrotic tissue: skin, aponeurosis, muscle or tendon.

- Systemic antibiotics if obvious infection (not antibiotic ointment):
PPF(or procain penicillin) (IM):

Adult: 4 MIU/d x 5 days at least
Child: 100,000 IU/kg/d x 5 days at least

- Same dressing as the first time. Again, this should not be removed for 5 to 7 days. Healing is signaled by granulation tissue: pink, mat and clean.

PATCH GRAFTING

(Figure 12)

- Skin grafting is necessary when the wound is slow to heal: often the case with deep second degree and third degree burns. Patch grafting is a simple technique and can also be used for treating tropical ulcers once the base is clean and granulating.

- Aseptic technique. Shave the donor area (usually anterior thigh or forearm) and prep with povidone iodine (see table 25). Infiltrate with lidocaine 1%.

- Lift up a patch of skin with fine toothed forceps and excise it with a scalpel. It should be full-thickness i.e. epidermis plus dermis. Take other patches from different parts of the donor site, leaving areas of intact skin between each excision.

- Spread each patch out on a sterile swab dampened with normal saline.

- Once a sufficient number of patches are excised, apply them carefully to the wound. Do not place them too close together: further healing will bridge the gaps and this allows a larger area to be grafted.

- Dress the donor and graft sites with sterile vaseline gauze, then layers of swabs and a non-compressive bandage.

- The graft will take within 7 days, during which time the dressing should not be removed and the patient should remain as immobile as possible.

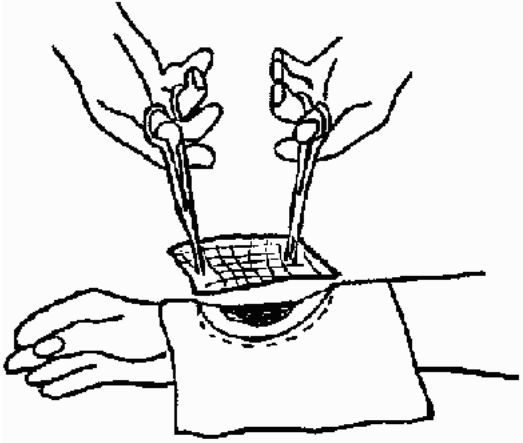


Figure 11
Dressing a burn : sterile technique, use of vaseline-gauze

Figure 11

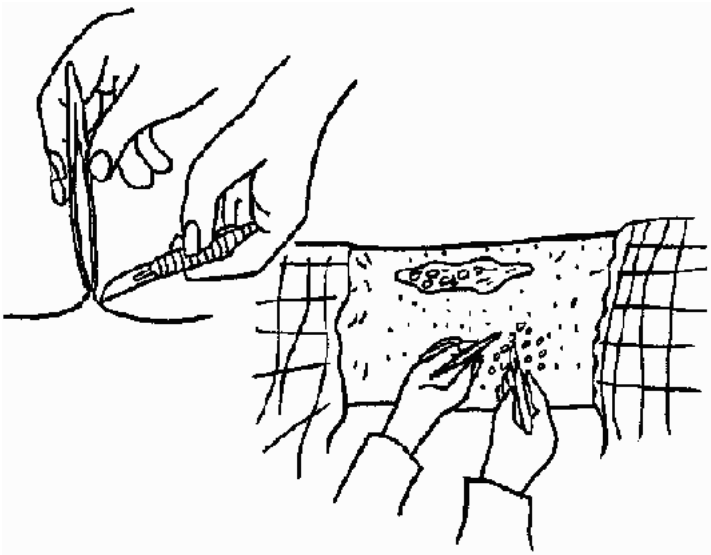


Figure 12
Full-thickness patch skin graft :
sterile technique, taking of donor patches using a fine toothed forceps and a scalpel

Figure 12

Wounds

General principles

This chapter concerns only wounds that can be treated at a dispensary level. For major trauma, refer to a surgical manual.

- Immediate ("primary") closure of wounds is desirable but not always practicable and in some circumstances it may be dangerous (risk of infection).

- Classically, it is said that a wound of greater than 6 hours should not be sutured. In isolated rural practice, however, patients often present late because of distances and this limit may be extended up to 24 hours, provided the patient can be observed during the following days for signs of infection.

- An infected wound should never be sutured.
- War wounds, animal and human bites should not be sutured.
- Any break in the skin overlying a fracture is an "open fracture".
- A wound that communicates with a joint is an open joint wound.
- Always give antitetanus prophylaxis if available.

The following are steps in the treatment of a wound: preparation, exploration, debridement, closure, drainage, and finally removal of sutures.

Preparation

WOUND TOILET

Shave if necessary, then clean the wound and its periphery with polyvidone iodine (see table 25).

MATERIAL

(Figures 13a to 13c and 14a to 14d)

- Sterile gloves and fenestrated drapes.

- Lidocaine, needle and syringe.

- Suture material.

- Suture set (sterilized box of instruments): needle holder, needles, scalpel blade and handle, one or two artery forceps, fine curved scissors with rounded ends, plain scissors for cutting sutures, retractors.

LOCAL ANESTHESIA

- Only necessary for large or deep wounds requiring more than 2 stitches.
- Lidocaine 1% without adrenaline.
- Infiltrate subcutaneously via the wound edges.

Exploration

Once anesthetized, the wound can be explored and thoroughly cleaned of any debris.

Have a gloved assistant using retractors if necessary. Be careful to exclude the following:

- Foreign body.
- Underlying fracture.
- Involvement of nerves, major blood vessels, tendons or joints.
- For scalp wounds: underlying fracture (if serious may contain brain tissue).

Closure

- Use interrupted sutures (not continuous).

- Non-resorbable sutures such as silk for skin, resorbable thread (chromic catgut, Vicryl...) for subcutaneous tissues.

- Some suture material is already mounted on a needle by the manufacturer ("atraumatic

needles").

- A curved needle is easier to manipulate.

- For skin use a "cutting" needle (triangular in cross-section); for subcutaneous tissues use a "round" needle (circular in cross-section).

Table 28 : *Suture materials recommended for different wounds*

Skin of face	Nylon (no resorbable)	dec. 2.5 (– 3/0*)
Skin of scalp	Nylon (no resorbable)	dec. 3 (– 2/0)
Skin of limbs or trunk	Nylon (no resorbable)	dec. 2.5 or 3 (= 3/0 or 2/0)
Subcutaneous tissue	Resorbable synthetic**	dec. 3 (– 2/0)
Aponeurosis	Resorbable synthetic	dec. 3 (= 2/0)
Muscle	Resorbable synthetic	dec. 3 (= 2/0)

* From 0 to 3/0 the suture becomes increasingly fine in caliber.
** Resorbable synthetic : resorbs slowly (over 3 weeks), e.g. vicryl®...

Table 28

Drainage

- Use a strip of corrugated rubber drain.

- Never use a drain for wounds of the face.

- Always insert a drain in wounds of the scalp and whenever a hematoma can be expected to form.

Removal of sutures

Face: day 5; other wounds: day 7 or 8.

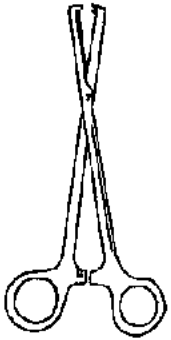


Figure 13a
Kocher forceps
toothed

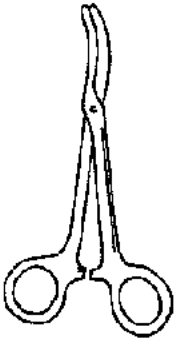


Figure 13b
Kelly clamp
curved, untoothed

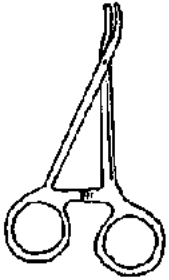


Figure 13c
Mosquito forceps curved and untoothed

Figure 13d
Retractor (Farabeuf type)

(also called artery clamp or hemostat)

Figures 13 : *Different instruments*

Figure 13

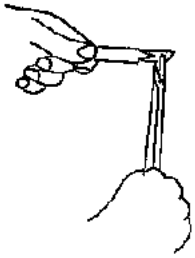


Figure 14a
Always mount a scalpel blande using a needle holder
Change blades for each different operation (even on the same patient).

Figure 14b
Dissecting (toothed) forceps should not be held in the palm
but between the thumb and index finger. They should be used on skin only.

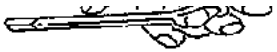


Figure 14c
Insert the thumb and the ring finger into the handle of a needle holder (or scissors), and stabilize the instrument using the index finger.

Figures 14 : *How to hold instruments*

Figure 14

Figure 15a
Debridement of a contused, messy wound : straightening of wound edges with a scalpel. Be very careful on the face.

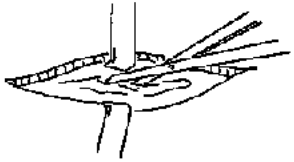


Figure 15b
Excision of torn edges of aponeurosis to avoid necrosis.

Figure 15c
Excision of torn or contused muscle.

Figures 15 : *Debridement*
(this should be sparing, limited to excision of severely contused or lacerated tissue that is evidently destined for necrosis.)

Figure 15

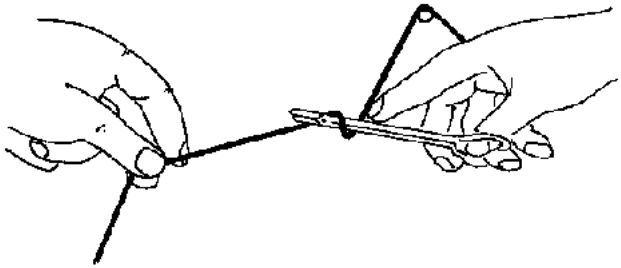


Figure 16a
Loop the suture material around the needle-holder in one direction (e.g. "over towards me") and remember this direction.
Take the loose end with the needle holder and pull it through to make the first knot

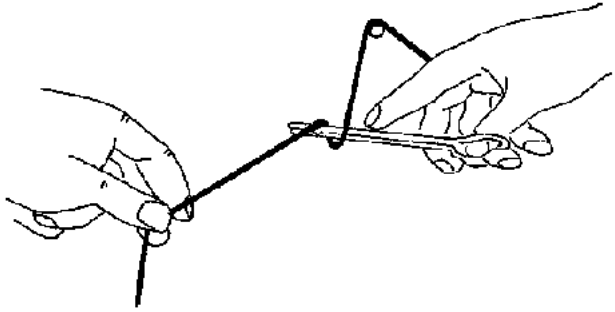


Figure 16b
The second loop should be in the opposite direction ("under towards me").
Repeat a third knot, changing direction once again.

Figures 16 : *Practice with knots*

Figure 16

Figure 16c
The first knot should be flat.

Figure 16d
Second knot : opposite direction.

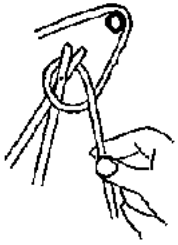


Figure 16e

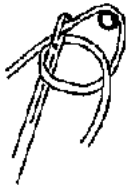


Figure 16f
Catching the loose end with the needle-holder.

Figure 16g

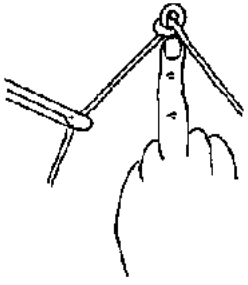


Figure 16h
Slip the knot up towards the nail using the hand that holds the free end, holding the other length of suture with the needle-holder.

Figures 16 : *Practice with knots* (continued)

Figure 16

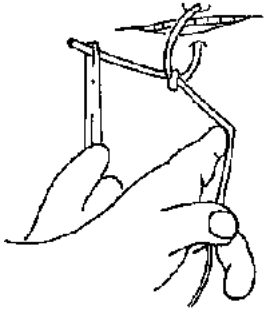
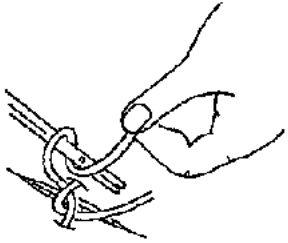


Figure 17a
First knot flat

Figure 17b
Tighten without causing ischemia (pallor)



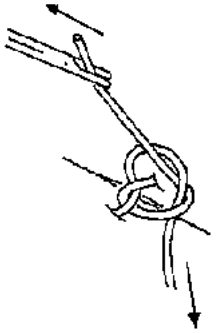
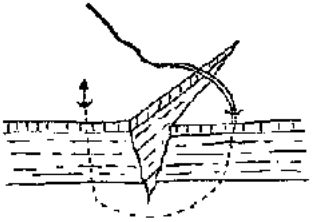


Figure 17a
Loose end pulled through

Figure 17b
Second knot in opposite direction

Figures 17 : *Tying knots on skin*

Figure 17



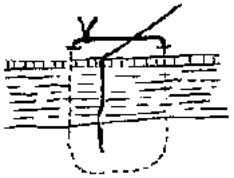
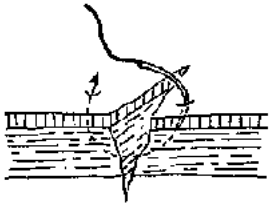


Figure 18a

Figure 18b
The "bite" taken must be sufficiently deep.



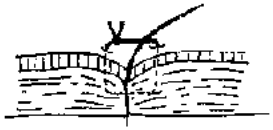
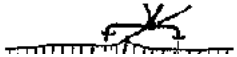


Figure 18c

Figure 18d
Incorrect : bite too shallow, so the edges invaginate.



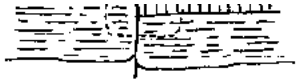


Figure 18e
Incorrect : poor opposition of the edges

Figure 18f
Incorrect : the knot should be beside the wound, not over it.

Figures 18 : *Particular problems*

Figure 18

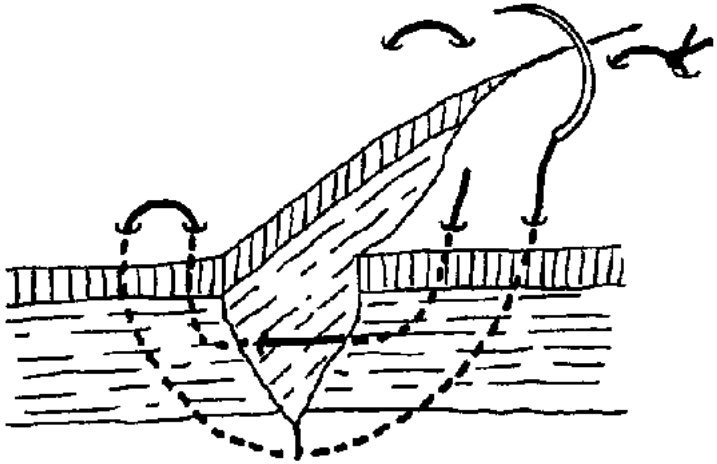


Figure 19 : *Vertical mattress suture (also called Blair-Donati technique)* : allows good apposition of the wound edges.

Figure 19

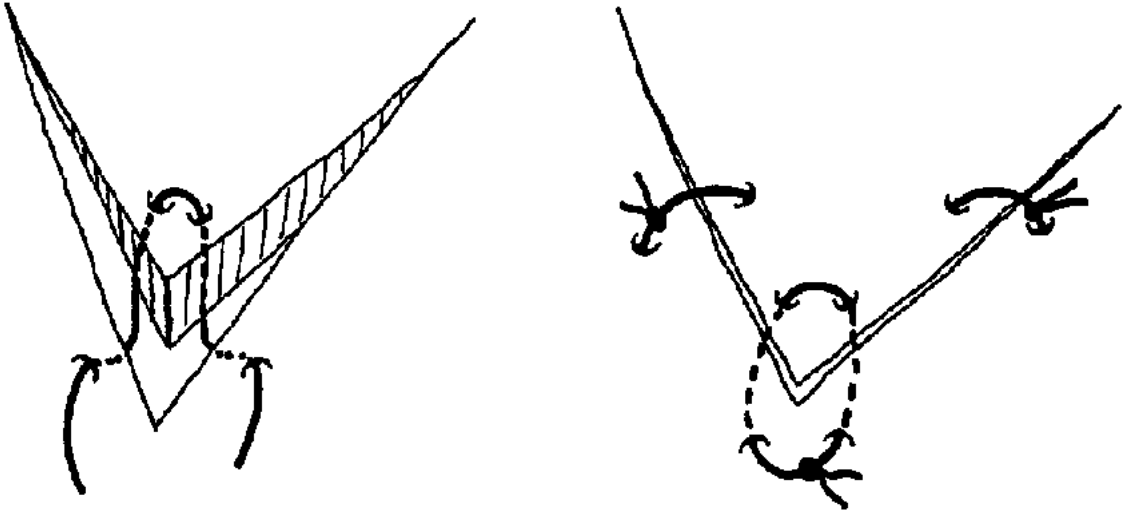


Figure 20 : *Closing a corner*

Figure 20

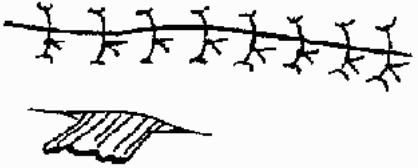


Figure 21
Close skin using interrupted silk or nylon.
In case of deep wound, a drain is usually advisable (emerging via a counterincision) to avoid hematoma.

Figure 21

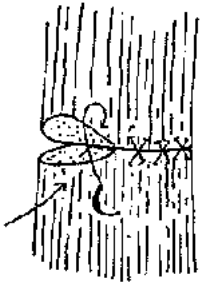


Figure 22
Repair of muscle using interrupted sutures throuth the full thickness.
Use chromic (or Vicryl…) crossed in X.

Figure 22

Bites and stings

Trauma caused by venomous animals; bites are inflicted by the mouth-parts (e.g. snakes, spiders), stings by the hindparts (e.g. bees, scorpions).

Treatment (hospital)

ENVENOMATION BY INSECTS, SCORPIONS AND SPIDERS

- Stings by bees, wasps...
Usually benign, but in susceptible individuals may provoke either laryngeal edema or anaphylactic shock:
adrenaline (epinephrine) (SC):

Adult: 1 mg
Child: 0.01 mg/kg

dexamethazone (IV): 4 mg stat. Repeat if required
plus a perfusion of ringer´s lactate or volume expander.

- Spider bites and scorpion stings

Gravity depends upon the particular species, however the majority of such envenomations are either benign or else cause local tissue damage only. If a truly toxic species is thought to be responsible apply first aid and supportive measures as for snakebite (see below). Otherwise, therapy is limited to analgesia, local wound toilet and reassurance.

Clean and disinfect wound:
noramidopyrine (IM) (or any other analgesic): 500 mg in 1 injection IM
If pain very severe:
pentazocine (IM): 30 mg in injection IM
or lidocaine 1% (without adrenaline) infiltrated around the wound gives good relief for

very painful scorpion stings.

SNAKEBITE

It is most often not possible to identify the snake reponsible. In any case, the principles of management are the same: first aid and supportive therapy as indicated from close monitoring of the victim's clinical condition. Antivenenes are costly, difflcult to store, difficult to use, sometimes dangerous (anaphylaxis), and moreover of arguable efficacy.

- First aid: the "pressure-immobilization method". The object is to confine the venom to the site of the bite, thus allowing time for the body to metabolize it and for attendants to transport the victim to a health care facility. Venom diffuses mainly via the lymphatics, not via blood, tourniquets are thus of little use.

· Apply firm constant pressure to the site of the bite.
· Apply a crepe bandage (or substitute) firmly to the entire limb.
· Immobilize the limb with a splint.
· Immobilize the patient.

- Supportive therapy: see table.

Table 29 : *Snake-bite*

Time since bite	Clinical pictures	Treatment
5 minutes	Bite visible Pain	First aid (see text)
15 minutes	Anxiety Numbness Nausea Dyspnea	Establish IV line Antitetanus prophylaxis Observation
30 minutes to 3 hours	Shock	Rapid IV infusion (plasma volume expanders if available)
	Paralysis Respiratory failure	Endotracheal intubation Manual ventilation
	Haemorrhagic syndrom Shock (due to hemolysis and disseminated intravascular coagulation)	Transfusion of fresh blood
	Edema Local inflammation	***PPF*** (or ***procaine penicillins***) Adult : 4 MIU/d IM Child : 100,000 IU/kg/d for at least 5 days ***Dexamethasone*** IV or IM : 6 to 12 mg/d for 3 days
More than 3 hours	No symptoms	Reassurance, home
	Necrosis	Daily dressings Continue ***PPF*** Debride, graft as needed Amputation if needed

Table 29

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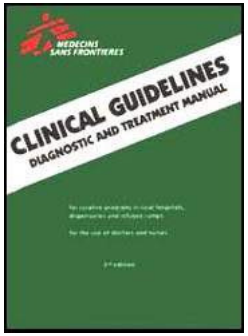


Clinical Guidelines and Treatment Manual (MSF, 1993, 319 p.)

Appendix

Disinfection and Sterilization of medical equipment and supplies

- Sterilization = elimination of all micro-organisms (viruses, microscopic fungi, bacteria, both vegetative and spore forms).

- Disinfection = elimination of most micro-organisms present on a surface or object.

- Decontamination = disinfection of object soiled by infectious material (pus, blood, excrete...).

General rules

All equipment or supplies:

- coming into contact with sterile parts of the body (injection equipment, surgical instruments, some dressings, catheters...).

- used for perfusion.
should be sterilized and kept sterile until utilization.

All reusable items, which do not correspond to the above definition, but which come into contact with mucus membranes, or get soiled with pus, blood, lymphatic or vaginal secretions, should be sterilized or subjected to a high level disinfection (effective among others against HIV and hepatitis B virus).

All soiled, non reusable equipment should be incinerated (warning: never recap needles after use = main cause of accidental needlestick).

To carry out proper sterilization is not always easy in the field conditions of isolated rural medical centers. It requires proper appliances (autoclave, hot air sterilizer), and an energy source.

In practice, one is often obliged to use alternative procedures which are not wholly satisfactory as they produce disinfection rather than sterilization (They are however compulsory if one cannot do better) (see following chapters).

Disinfection and sterilization of medical equipment is not enough to prevent iatrogenic infections (resulting from medical practice). It is obvious that basic hygienic and asepsis techniques ought to be applied: cleaning and disinfection of surfaces and premises, personal hygiene of the staff, aseptic handling of sterilized instruments...

Cleaning of reusable equipment

Soiled items and instruments should be carefully cleaned before being sterilized or subjected to a final disinfection.

The presence of organic matter could protect germs against the action of a disinfectant or sterilizing agent, or could react against it, rendering it ineffective.

INSTRUMENTS

Cleaning can be done either with water alone, with water and soap (or detergent), or with water and a compound of disinfectant/detergent.

Cleaning with a disinfectant chemical aims mainly to reduce the risks of contamination for the staff, but it does not eliminate them completely.

The staff in charge of instrument cleaning should be aware of the contamination risks (AIDS, hepatitis B), they should wear thick plastic or rubber gloves, and be careful when they handle sharp instruments.

After use and before cleaning, all instruments and items should be soaked in water to avoid deposits drying up. A disinfectant could be added for a first decontamination (chloramine 20 g/1, lysol 50 g/1).

Metallic instruments can be damaged if they are left in water too long (over several hours) or if the disinfectant concentration is too high.

Note

Needles and syringes for immunization should be soaked and cleaned with water alone, as traces of soap and disinfectant can inactivate vaccines.

After cleaning, instruments and items should be rinsed thoroughly with water and dried,

then sterilized, boiled or disinfected (with a high level disinfectant) depending on their use and the local sterilizing facilities.

LINEN AND DRESSING

To decontaminate linen and dressings, one should wash them with an ordinary washing powder (ea. OMO) and boil them if possible (5 minutes).

If boiling is not possible, linen should be washed, rinsed and soaked for 30 minutes, in a 0.1 % chlorine solution (hypochlorite, bleach, chloramine), or 5 % lysol solution. It should then be rinsed abundantly and dried.

Theatre linen should be sterilized in an autoclave or ironed depending on local facilities.

Sterilization methods and alternatives

AUTOCLAVING

Sterilisation by steam under pressure in an autoclave.

Autoclaving is the most reliable sterilization method and the only one that allows effective sterilization of all medical equipment and supplies (especially linen and rubber). But relatively sophisticated appliances and energy source (electricity, kerosene or gas) are needed.

It is based on the same principle as a kitchen pressure cooker. Because water is heated in a closed container, temperatures above 100°C can be reached.

In the absence of air (air is purged at the beginning of sterilization), the temperature can be regulated by controlling the pressure.

According to the type of supply to be sterilized, sterilisation is carried out at 121°C (1 atmosphere over atmospheric pressure) or at 134°C (2 atm. over atmospheric pressure).

Items to be sterilized	Temperature		Pressure*		Duration **
	°C	°F	Atm., Bar or kg/cm²	PSI	
Instruments, syringes, plastic, glass, rubber	121	250	1	15	30'
Dressing (swabs), linen (gowns, drapes...)	134	275	2	30	20'
	Otherwise 121	250	1	15	40'

* Over atmospheric pressure

** Add 5 minutes per 1000 meters above sea level

Table

Note:

- Do not forget to expell air (purge) while increasing the pressure (otherwise the temperature in the autoclave will not be sufficient).

- Drums or boxes holding objects to be sterilized must be open, never closed (unless fenestrated). The sliding windows in the special autoclave boxes should also be open during sterilization.

- Count the sterilizing time from the moment the required temperature or pressure is reached, not from the start of the heating phase.

DRY HEAT (IN HOT AIR STERILIZER OR OVEN - CALLED A POUPINEL IN FRENCH)

Sterilization by hot air (dry heat) at 160°C (320°F) for 2 hours or at 170°C (340°F) for 1

hour.

Reliable method provided it is carried out in a good electric appliance with working thermometer (an air circulation device is needed in large ovens).

This method is convenient for metal, heat resistant glass, and vaseline, but is not convenient for linen or gauze swabs. The oven method is quite simple but consumes more energy than an autoclave.

Ovens heated by charcoal fires or kerosene heaters are not reliable because they do not produce a sufficiently high temperature.

Time should be calculated from the moment the required temperature is reached (this is very important).

Notes

- Begin heating with the door open to expel any humidity (which could rust instruments).

- Do not exceed 170°C (could damage metallic instruments).

- It is better to place items in closed boxes. However, large boxes should be left halfopen to allow the material to more rapidly achieve the correct temperature.

BOILING

Boiling for 20 min (adding 5 minutes for 1000 altitude) provides high level disinfection, but not sterilization because it does not destroy bacterial spores (eg.: tetanus, gangrene).

Boiling is nevertheless essential when autoclaving or hot air sterilization are not possible. It is particulary useful for needles and syringes (it destroys HIV and hepatitis B virus).

After needles and syringes have been boiled, they should be kept dry and not left in the water (which can easily become recontaminated).

FLAMING

- In a flame: Effective if instruments are made red hot. This method should only be used in exceptional circumstances as it damages metal.

- With alcohol: Instruments are dipped in alcohol and set alight. This method is unreliable, expensive and in the long term damages instruments.

IRONING

Surgical drapes and gauzes can be ironed if an autoclave is either unavailable or too small to hold large operating drapes.

Iron on a table or bench covered with a sheet that has itself just been "sterilized" by ironing.

Dampen each item slightly with filtered boiled water.

The iron should be very hot and passed several times over each side of the linen/gauze.

However, if it is available, autodaving is always the preferred method.

IMMERSION IN "HIGH LEVEL" DISINFECTANTS

Immersion (of clean equipment) in the following disinfectant solutions destroys bacteria and virus including HIV and hepatitis B virus. The bacterial spores are generally not destroyed.

This process could be used as an alternative to sterilization when autoclaving or hot air sterilization are not possible.

Boiling however is always preferred. The effectiveness of chemical disinfection can always be impaired by dilution errors, by bad storage conditions, or by prolonged utilization of the same solution (solutions should be renewed at least once a day).

Chemical disinfection should never be recommended for syringes and needles.

	Recommended concentration	Preparation	Minimal contact	Note See below
Hypochlorites	0.1 % of active chlorine (1,000 ppm)	see note 1	15 min.	2
Tosylchloramide Chloramine T	2 %	20 g / litre	15 min.	3
Polyvidone iodine [Povidone iodine, PVI]	2,5 %	1 part 10 % concentrated solution + 3 parts water	15 min.	3
Ethanol	70 %	8 parts ethanol 90 % + 2 parts water	15 min.	4
Isopropanol	70 %	7 parts isopropanol + 3 parts water	15 min.	4
Formaldehyde	4 %	1 part formalin + 3 parts water	30 min.	5
Glutaraldehyde	2 %	Addition of the activator supplied with the solution	30 min.	5

Table

1. Hypochlorite solution (0.1 % or 1,000 ppm-1 ppm=1part per million=1mg/l- available chlorine) is prepared either from liquid bleach recently manufactured (< 3 months) or from calcium hypochlorite or from sodium dichloroisocyanurate (NaDCC, "Javel tablets", Javel solid, Stafilex, Actisan…), diluted according their respective available chlorine content.

Fresh liquid bleaches contain 3 to 15 % available chlorine (sometimes expressed in chlorometric degrees, 1° chlorom. = approx. 0.3 % available chlorine). Calcium hypochlorite contents from 30 to 70 % available chlorine. The NaDCC based tablets content generally 1.5 g available chlorine per tablet (1 tablet per litre = 1,500 ppm available chlorine).

NaDCC withstands heat much better than bleach and calcium hypochlorite.

2. As hypochlorite solutions are corrosive for metal, these solutions are convenient only for good quality stainless steel. The soaking should not exceed 1/2 hour and should be followed by thorough rinsing.

3. If instruments are used immediatly after soaking, it is not necessary to rinse the chloramine or the polyvidone iodine solution.

4. Ethanol and isopropylic alcohol (isopropanol) should be used at 70 % (70°) for the best effectiveness (more concentrated solutions are less effective). The prices, transportation and importation problems limit the use of these alcohols.

5. Immersion for several hours in aldehyde solutions, formaldehyde (formalin) and glutaraldehyde (Cidex), provides proper sterilization (destruction of all germs). These solutions however have many disadvantages: thorough rinsing compulsory (toxic residues), toxic vapours (formalin), high cost (glutaraldehyde).

Notes

- In order to obtain effective disinfection, eguipment must be cleaned before immersion in all these solutions...

- Aqueous solutions of cetrimide (Cetavlon), chlorhexidine (Hibitane), Savlon, HAC, Dettol

and other common detergent and disinfectant solutions do not provide sufficient disinfection.

Soaking instruments in these solutions with the aim of "sterilization" should be avoided. This only provides an illusive feeling of safety and could in fact be a source of contamination.

STERILIZING GASES

- Ethylene oxide.

This method cannot be considered in field conditions because of its cost and of the special installation it requires (ethylene oxide is very toxic).

- Formol vapour (paraformaldehyde or trioxymethylene or "formol" tablets and Aldhylene)

Formol autoclaving also cannot be considered in the field. However formol vapour is often used for "makeshift" sterilization of instruments. The instruments are thoroughly cleaned and dried, then placed in a airtight container for at least 24 hours (minimum temperature of 20°C), either along with formol tablets 5 tablets for 1 litre container), or with formol alcoholic solution (Aldhylene) (1 ml for 1 litre container). Afterwards instruments are rinsed with sterile water. This is often impracticable, but it is absolutely compulsory if there is any visible deposit.

Users should be cautious during manipulation as vapors are toxic and highly irritative.

This method is not suitable for linen or gauze swabs as they absorb formaldehyde, which is toxic and necroses skin and mucus membranes.

This method is not totally reliable and has many disadvantages. It should be abandoned. If

it is used an effective disinfection method against HIV (AIDS virus) (eg. boiling) should always be carried out before hand.

Equipment and metbods recommended

DISPENSARIES

Recommended equipment

- 1 small autoclave pressure cooker type (volume 15 to 20 litres)
- 1 powerful kerosene stove (or electric hot-plate)
- 1 metal mesh basket
- Appropriate fenestrated containers (drums)

Recommended methods

- Instruments, syringes, glass, rubber, plastic, gauze swabs, small drapes: autoclave.

- Large drapes, gowns: wash with soap powder, boil if possible, then "sterilize" by ironing.

MOBILE TEAMS

Recommended equipment

If possible same equipment as for dispensaries.

Otherwise:

- 1 container for boiling
- Chloramine T or Polyvidone iodine (Betadine)

Recommended methods

As for dispensaries if possible.

Otherwise:

- Metal instruments: boiling (best), otherwise sodium dichloroisocyanurate (NaDCC) or chloramine T or polyvidone iodine (exceptionally, after boiling and drying, instruments may be kept with formol tablet or Aldhylene until utilization)

- Needles, syringes: boiling

- Swabs: use disposable supplies

HOSPITALS WITH SURGICAL FACILITIES

Recommended equipment
Same equipment as for dispensaries and:

- 1 large autoclave (interior dimensions about 40 x 60 cm), operating with electricity, gas or kerosene according to local conditions.

- 2 mesh baskets

- Several fenestrated drums (number according to activity)

- Several fenestrated instrument boxes
If electric current is available continuously for at least 3 hours per day:

- 1 electric hot air sterilizer

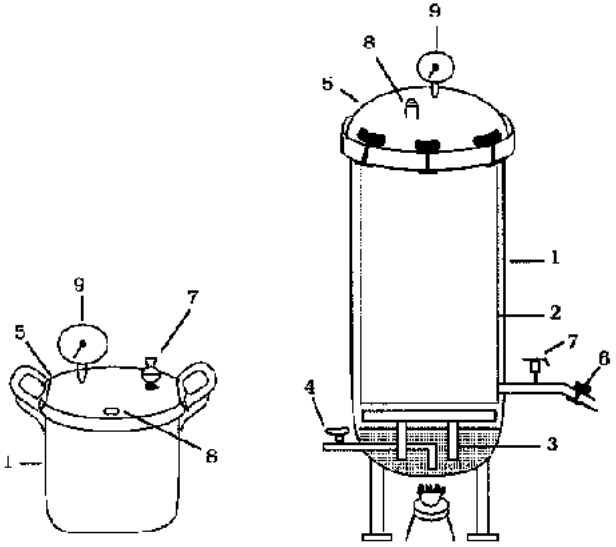
Recommended methods

- Metal instruments, glass: hot air sterilizer if good electric apparatus available, otherwise autoclave

- Swabs, linen (gowns, drapes): large autoclave

- Rubber, plastic items, syringes: small or large autoclave (at 121°)

Directions for use of an autolcave



1. Body of the autoclave
2. Mesh basket to contain packages to be sterilized
3. Metal base to support basket, drums above water
4. Drain tap
5. Lid, usually with a rubber seal and bolt-type catches
6. Tap or valve to allow purging of air during heating phase
7. Pressure valve : regulates the pressure by allowing excess vapour to escape
8. Safety valve
9. Pressure gauge

Figure

1. Body of the autoclave

2. Mesh basket to contain packages to be sterilized

3. Metal base to support basket, drums above water

4. Drain tap

5. Lid, usually with a rubber seal and bolt-type catches

6. Tap or valve to allow purging of air during heating phase

7. Pressure valve: regulates the pressure by allowing excess vapour to escape

8. Safety valve

9. Pressure gauge

Note

In small autoclave, pressure cooker type, there is no purging tape, one uses the valve for purging.

The safety valve should not be manipulated during autoclaving (it will function only in case of excessive pressure rise).

Pressure gauge shows a pressure scale and sometimes a temperature scale. Pressure could be indicated in different manners.

One may consider that 1 bar = 1 kg/cm2 = 1 atmosphere = 15 psi

Temperature could be indicated in °C ou °F (135°C = 275°F; 121°C = 250°F).

OPERATION

1. Put the require quantity of water in the autoclave before each sterilization (dry heating could damage the autoclave): the level is usually marked or the quantity indicated by the manufacturer. If possible use distilled water or filtered rain water.

2. Place the objects to be sterilized in the mesh basket or onto the support, leaving enough room for vapour to circulate freely. The sliding "windows" on drums or containers must be open. Do not overload the autoclave.

3. Close the lid by tightening the bolds in diametrically opposite pairs (as the wheel nuts of a vehicle).

4. With the purging tap or valve open, begin to heat.

5. When a continuous jet of vapour is coming out of this tap/valve, close it.

6. Allow the pressure to rise to 0.5 atm, then open the purge tap/valve for 10 seconds to purge air, then close it.

7. Repeat this purge at about 0.7 atm, then again at about 0.9 atm.After this, al1 air should have been expelled from the autoclave and only steam will remain.

8. When desired operating pressure (and thus temperature) is obtained, sterilization begins. Start to time it then, not before.

The pressure valve regulates the pressure inside the autoclave allowing excess steam

escape. There may be two interchangeable valves or positions to operate at either 1 or 2 atm.. If a lot of steam is being expelled, heat source should be lowered slightly.

9. After the required duration of sterilization, shut off the heat source.

10. Evacuate water and steam:

- For large autoclaves: through drain tap (to be connected outside).

- For pressure cooker type autoclaves: evacuate the steam by opening the purge valve. Once pressure drops to zero, open the lid, lift out the basket, pour out the water then replace the basket.

11. Allow to cool with the lid slightly open. Residual heat helps dry the sterilized items (the danger of contamination by ambient air is minimal).

12. Once items are dry, close the sliding windows on drums.

Note

If the autoclave is equiped with a drying system, follow the manufacturer's recommendations starting from paragraph 9.

PRESSURE OR TEMPERATURE AND DURATION REQUIREMENTS

Items to be sterilized	Temperature		Pressure*		Duration **
	°C	°F	Atm., Bar or kg/cm²	PSI	
Instruments, syringes, plastic, glass, rubber	121	250	1	15	30'
Dressing (swaps), linen (gowns, drapes...)	134	275	2	30	20'
	Otherwise 121	250	1	15	40'

* Over atmospheric pressure

** Add 5 minutes per 1000 meters above sea level

Table

OPERATION VERIFICATION

- The stove should be powerfull enough to obtain a minimum rise of pressure of 1 atmosphere (1 bar or 1 kg/cm2 or 15 Psi).

- If possible, use sterilization autoclave tests, for example, 3M Autoclave Tape should turn black, brown is insufficient).

Warning, do not confuse test tape for hot air sterilizers with that for autoclaves. They are very similar but not interchangeable.

Place tests (eg. strip of tape) in the middle of the load into the boxes or drums to ensure that sterilization (temperature, steam, duration) is completed.

PACKAGING OF ITEMS FOR STERILIZATION

- Packaging of items: either

· without package if items are to be used immediatly,
· fenestrated drums or boxes,
· heavy duty paper: wrapping paper, kraft paper or news paper (2 layers),
· closely-woven linen (2 layers),
· mixed (1 layer of paper, 1 layer of linen).

Paper plus linen is advisable if item is to be stored several weeks (because more resistant than paper alone and best barrier for germs than linen alone).

- Fenestrated containers should be equiped with a filter (a layer of heavy duty paper see above) accross the windows within the container or around the load to be sterilized so as to filter air during the drying phase after auto-craving. The paper should be checked and renewed regularly.

- If the autoclave is not equiped with a drying system, drying up of items inside boxes and drums is often unsastifactory. It is easier when the items are packed with paper or linen.

- Packed items should be placed vertically in the autoclave basket (not lying flat).

- Small packages and small drums are preferable to large ones.

- Needles and syringes: separate plunger and barrel of syringes and stick needles onto a gauze swab.

- Swabs and drapes should not be compressed inside boxes or drums.

Monthly epidemiological report

The goal of this report is to facilitate and standardize data collection for epidemiological surveys. It should record the monthly activities of the program and help in constructing

the three-month and yearly reports. This form is a frame work for data collection, it should be adapted to the specific program.

Identification

Country:	Month:
Place or site:	Year:

Population

MONTHLY REPORT

Source:

Total of previous month:

Arrivals:		+	-Departures:	
Births:		+	-Deaths:	
				Monthly report
	+ Subtotal:		- Subtotal:	

Average population= (total of previous months + monthly total)/2

AGE DISTRIBUTION

Source:		
Methodology of data collection: Survey Census		

Date of data collection:

	Male	Female	0-4 years	5-14 years	15-44 years	>=45 years	Total
%							100%
Number							

Medical staff

The "title" (diploma, qualification) of each member of the medical staff should be indexed in the table below:

	Total	Expatriates	Nationals	Refugees
Doctors (M.D.				
Nurses				
Midwives				
Medical auxiliaries (curative)				
Lab. technician Community health workers (preventive)				
Village birth attendants Other : dentists, surgeons, ophthalmologists, pharmacists				
Traditionnal healer Temporary staff...				
Others (specify) : – – – –				

Table

Mortality

The data collection should be carried out by the administration in charge of the civilian status in order to obtain the most representative date (counting death that occured outside of health structures).

The personnel in charge of death records (political authorities, administrative, religious...) should be trained. This training consists of describing the most frequent pathologies and how to create a new file. One is only concerned with the primary cause of death.

Source of data collection:
Table:

Possible cause of death	Age						Total
	Under 1 month	1 – 11 months	0 – 4 years	5 – 14 years	15 – 44 years	≥ 45 years	
Respiratory disease							
Diarrhea							
Malaria							
Measles							
Pregnancy related deaths							
Neonatal deaths							
Trauma							
Others (specify) : – – – – –							
Non documented deaths (unknown cause)							
TOTAL							

Table

Morbidity

Record of new cases diagnosed.

New cases	0 – 4 years	5 – 14 years	15 – 44 years	≥ 45 years	Total
Upper respiratory tract infections					
Lower respiratory tract infections					
Malaria					
Measles					
Eye infections					
Watery diarrhea					
Bloody diarrhea					
Skin infections					
Sexually transmitted diseases					
Jaundice					
Urinary tract infections					
T.B. : new cases					
Meningitis					
Traumas and burns					
Others (specify) : – – –					
Refered to hospital					
Reconsultations for one of above causes					
Total					

Table

Rules for morbidity data collection

- The information is collected at the O.P.D. by physicians, nurses, medical auxiliaries; the medical staff will be supervised to make sure that definitions are respected.

- Only the new cases are recorded: patients consulting again for the same reason, in the same month, will be recorded at the index "reconsultation".

- The diagnosis is the one mentioned at the consultation (only one diagnosis per patient).

Definition of the table index

- Fever is defined as temperature > 38°C (axilla).

- Upper respiratory tract infections: any nose ear throat infection (N.E.T.) (sinusitis, cold, otitis, pharyngitis, laryngitis...).

- Lower respiratory tract infections: any infectious episode below the larynx (bronchitis, pneumonia, bronchiolitis...).

- Malaria: any fever (complicated or not), related to malaria (specify the definition: clinical or proven by microscopic examiniation).

- Measles: fever, + rhinopharyngitis, + conjunctivitis, + one of the two following signs:

· koplick's spots
· skin eruption

- Eye infection: unilateral or bilateral conjunctival inflammation or infection of any other

part of the eye: conjunctivitis, trachoma, keratitis...

- Diarrhea: any episode with more than 3 watery stools per day.

· watery: is an estimation frequency of viral and choleriform diarrhea.

· bloody: estimates the frequency of entero-invasive diarrhea (bacillary and amoebic dysenteria).

- Cutaneous infection: any cutaneous infection due to a bacterial (impetigo, pyodermitis, abscess), viral (zone, herpes...), mycosal (ring worm...) or parasitic (scabies) infection.

- Sexually transmitted disease: genital infections, ulcerative or discharging (vaginitis, urethritis), apparently related to sexual contamination.

- Obstructive jaundice: yellow conjunctivitis, discolored stools, discolored urine and associated signs. It estimates the frequency of hepatitis.

- Urinary tract infections: burning on micturition associated with pollakiuria, whether there is fever, lumbar pain or not.

- Tuberculosis: the new cases begin their treatment during the month of diagnosis (bacteriological positive Ziehl's colouration for the pulmonary TB).

- Meningitis: any meningeal syndrome with fever, diagnosed by a physician.

- Trauma and burns: any consultation related to trauma (fight, fall, burn, wound...).

- Others: tetanus, poliomyelitis, diphtheria, whooping cough, typhus, leprosy, trypanosomiasis... adapt according to the situation. Each of these supplementary itemps will have to be defined by the team and the definition will be added to the one above.

List of essential drugs of WHO

(7th list, 1992)

1. Anaesthetics

1.1 GENERAL ANAESTHETICS AND OXYGEN
Diazepam (lb, 2) Ether, anaesthetic (2) Halothane (2) Ketamine (2)
Nitrous oxide (2) Oxygen Thiopental (2)

1.2 LOCAL ANAESTHETICS
Bupivacaine (2,9) Lidocaine

1.3 PREOPERATIVE MEDICATION
Atropine, Chloral hydrate, Diazepam (lb) Morphine (la)
Promethazine

2 Analgesics, antipyretics, non-steroidal anti-inflammatory drugs and drugs used to beat gout

2.1 NON-OPIOIDS
Acetylsalicylic acid, Allopurinol (4) Colchicine (7) Ibuprofen,
Indometacin, Paracetamol

2.2 OPIOID ANALGESICS
Codeine (1a)Morphine (l a)Pethidine (A) (la, 4)

3. Antiallergics and drugs used in anaphylaxis
Chlorphenamine, Dexamethasone, Epinephrine.Hydrocortisone,
Prednisolone

4. Antidotes and other substances used in poisonings

4.1 GENERAL
Charcoal, activated Ipecacuanha

4.2 SPECIFIC
Atropine,Deferoxamine, Dimercaprol (2) Methionine Methylthioninium chloride (methylene blue), Naloxone Penicillamine (2) Potassium ferric hexacyanoferrate (II) 2H2O (Prussian blue), Sodium calcium edetate (2) Sodium nitrite, Sodium thiosulfate

5. Antiepileptics
Carbamazepine, Diazepam (lb)Ethosuximide, Phenobarbital (lb)Phenytoin, Valproic acid (7)

6. Anti-infective drugs

6.1 ANTHELMINTHICS

6.1.1 Intestinal anthelminthics
Levamisole (8) Mebendazole, Niclosamide, Piperazine, Praziquantel, Pyrantel, Tiabendazole

6.1.2 Specific anthelminthics
Albendazole

6.1.3 Antifilarials
Diethylcarbamazine, Ivermectin, Suramin sodium (2, 7)

6.1.4 Antischistosomals
Metrifonate, Oxamniquine, Praziquantel

6.2 ANTIBACTERIALS

6.2.1 Penicillins
Amoxicillin (4) Ampicillie (4) Benzathine Benzyl penicillin (5) Benzylpenicillin, Cloxacillin Phenoxymethyl penicillin, Piperacillin, Procaine Benzylpenicillin

6.2.2 Other antibacterials
Chloramphenicol (7) Ciprofloxacin (B) Clindamycin (B) Doxycycline (B) (5, 6) Erythromycin, Gentamicin (2, 4, 7) Metronidazole, Nitrofurantoin (B) (4, 7) Spectinomycin (8) Sulfadimidine (4)
Sulfamethoxazole + trimethoprim (4) Tetracycline, Trimethoprim (B)

6.2.3 Antileprosy drugs
Clofazimine, Dapsone, Rifampicin

6.2.4 Antituberculosis drugs
Ethambutol (4) Isoniazid,Pyrazinamide, Rifampicin, Rifampicin + isoniazid, Streptomycin (4) Thioacetazone + isorniazid (A) (7)

6.3 ANTIFUNGAL DRUGS
Amphotericin B(4) Flucytosine (B) (4, 8)Griseofulvin

6.3 ANTIFUNGAL DRUGS
Ketoconazole (2)Nystatin

6.4 ANTIPROTOZOAL DRUGS

6.4.1 Antiamoebic and antigiardiasis drugs Chloroquine (B) Diloxanide, Metronidazole

6.4.2 Antileishmaniasis drugs Meglumine antimoniate,Pentamidine (5)

6.4.3 Antimalarial drugs a) For curative treatment, Chloroquine,Mefloquine (B),Primaquine,Quinine, Tetracycline (B), Sulfadoxine + pyrimethamine (B) b) For prophylaxis, Chloroquine,Mefloquine (B),Proguanil

6.4.4 Antitrypanosomal drugs a) African trypanosomiasis,Eflornithine (C),Melarsoprol (5),Pentamidine (5),Suramin sodium b) American trypanosomiasis Benzonidazole (7),Nifurtimox (2, 8)

6.5 INSECT REPELLENTS
Diethyltoluamide

7. Antimigraine drugs

7.1 FOR TREATMENT OF ACUTE ATTACK
Acetylsalicylic acid,Ergotamine (7),Paracetamol

7.2 FOR PROPHYLAXIS
Propanolol

8. Antineoplastic and immunosuppressant drugs

8.1 IMMUNOSUPPRESSANT DRUG
Azathioprine (2) Cidosporin (2)

8.2 CYTOTOXIC DRUGS
Bleomycin (2), Cisplatin (2), Cydophosphamide (2), Cytarabine (2), Dacarbazine (2), Dactinomycin (2), Doxorubici (2), Etoposide (2), Fluorouracil (2), Mercaptopurine (2), Methotrexate (2), Procarbazine, Vinblastine (2), Vincristine (2)

8.3 HORMONES AND ANTIHORMONES

Dexamethasone, Ethinylestradiol, PrednisoloneTamoxifen

9. Antiparkisonism drug.
Biperiden, Levodopa + Carbidopa (5, 6)

10. Drugs afecting the blood

10.1 ANTIANAEMIA DRUGS
Ferrous salt, Ferrous salt + Folic acid,Folic acid (2),Hydroxocobalamin (2), Iron dextran (B) (5)

10.2 DRUGS AFFECTING COAGULATION
Desmopressin (8), Heparin, Phytomenadione, Protamine sulfate, Warfarin (2, 6)

11. Blood products and plasma substitutes

11.1 PLASMA SUBSTITUTES
Dextran 70, Polygeline

11.2 PLASMA FRACTIONS FOR SPECIFIC USES
Albumin human (2, 8),Factor VIII concentrate(C) (2, 8) Factor IX complex concentrate (C) (2, 8)

12. Cardiovascular drugs

12.1 ANTIANGINAL DRUGS
Atenolol (B),Glyceryl trinitrate,Isosorbide dinitrate,Nifedipine,Propranolol

12.2 ANTIDYSRHYTHMIC DRUGS
Atenolol (B),Lidocaine,Procainamide (B),Propranolol,Quinidine (A),Verapamil (8)

12.3 ANTIHYPERTENSIVE DRUGS
Atenolol (B),Captopril (B),Hydralazine,Hydrochlorothiazide,Methyldopa (B) (7),Nifedipine,Sodium nitroprusside(C) (2, 8),Propranolol,Reserpine (A)

12.4 CARDIAC GLYCOSIDES
Digitoxin (B) (6) Digoxin (4)

12.5 DRUGS USED IN VASCULAR SHOCK
Dopamine

12.6 ANTITHROMBOTIC DRUGS
Acetylsalicylic acid, Streptokinase (C)

13. Dermatological drugs

13.1 ANTIFUNGAL DRUGS (TOPICAL)
Benzoic acid + salicylic acid,Miconazole, Nystatin, Sodium thiosulfate, Selenium sulfide (C)

13.2 ANTI-INFECTIVE DRUGS
Methylrosanilinium chloride (gentian violet), Mupirocin, Neomycin + Q Bacitracin, Silver sulfadiazine

13.3 ANTI-INFLAMMATORY AND ANTIPRURITIC DRUGS
Betamethasone (3) Calamine lotion, Hydrocortisone

13.4 ASTRINGENT DRUGS
Aluminium diacetate

13.5 KERATOPLASTIC AND KERATOLYTIC DRUGS
Salicylic acid,Dithranol, Fluorouracil, Coal tar, Benzoyl peroxide, Podophyllum resin (7)

13.6 SCABICIDES AND PEDICULICIDES
Benzyl benzoate, Permethrin

13.7 ULTRAVIOLET-BLOCKING AGENTS
Benzophenones, sun protection factor 15 (C) p-aminobenzoic acid, sun protection factor 15 (C), Zinc oxide (C)

14. Diagnostic agents

14.1 OPHTHALMIC DRUGS
Fluorescein, Tropicamide

14.2 RADIOCONTRAST MEDIA
Amidotrizoate, Barium sulfate, Iopanoic acid, Meglumine iotroxate (C), Propyliodone

15. Disinfectants and antiseptics

15.1 ANTISEPTICS
Chlorhexidine, Hydrogen peroxide, Iodine

15.2 DISINFECTANTS
Calcium hypochlorite, Glutaral

16. Diuretics
Amiloride (4, 7, 8), Furosemide, Hydrochlorothiazide, Mannitol (C), Spironolactone (C)

17. Gastrointestinal drugs

17.1 ANTACIDS AND OTHER ANTIULCER DRUGS
Cimetidine, Aluminium hydroxide, Magnesium hydroxide

17.2 ANTIEMETIC DRUGS
Metoclopramide, Promethazine

17.3 ANTIHAEMORRHOIDAL DRUGS
Local anaesthetic, astringent and antiinflammatory drug

17.4 ANTI-INFLAMMATORY DRUGS
Hydrocortisone, Sulfasalazine (2)

17.5 ANTISPASMODIC DRUGS
Atropine

17.6 CATHARTIC DRUGS
Senna

17.7 DRUGS USED IN DIARRHEA

17.7.1 Oral rehydration
Oral rehydration salts (for glucose-electrolyte solution):
Sodium chloride 3.5 g/1, Potassium chloride 1.5 g/1, Trisodiurn citrate dihydrate 2.9 g/1, Glucose 20 g/1

17.7.2 Antidiarrheal (symptomatic) drugs
Codeine (la)

18. Hormones, other endocrine drugs and contraceptives

18.1 ADRENAL HORMONES AND SYNTHETIC SUBSTITUTES
Dexamethasone, Fludrocortisone (C), Hydrocortisone, Prednisolone

18.2 ANDROGENS

Testosterone (C)

18.3 CONTRACEPTIVES
Depot medroxyprogesterone acetate (B) (7, 8), Ethinylestradiol + levonorgestrel, Ethinylestradiol + Norethisterone, Norethisterone (B), Norethisterone enantate (B) (7, 8)

18.4 ESTROGENS
Ethinylestradiol

18.5 INSULINS AND OTHER ANTIDIABETIC AGENTS
Insulin injection (soluble), Intermediate-acting insulin, Tolbutamide

18.6 OVULATION INDUCERS
Clomifene (C) (2, 8)

18.7 PROGESTOGENS
Norethisterone

18.8 THYROID HORMONES AND ANTITHYROID DRUGS
Levothyroxine, Potassium iodide, Propylthiouracile

19. Immunologicals

19.1 DIAGNOSTIC AGENTS
Tuberculin, purified protein derivative (PPD)

19.2 SERA AND IMMUNOGLOBULINS
Anti-D immunoglobulin (human), Antiscorpion sera Antitetanus immuno globulin (human), Antivenom sera, Diphtheria antitoxin Immunoglobulin human normal (2), Rabies immunoglobulin

19.3 VACCINES

19.3.1 For universal immunization
BCG vaccine (dried)
Diphtheria-pertussistetanus vaccine, Diphtheria-tetanus vaccine, Measles-mumps-rubella vaccine, Measles vaccine, Poliomyelitis vaccine(inactivated), Poliomyelitis vaccine(live attenuated), Tetanus vaccine

19.3.2 For specific groups of individuals
Hepatitis B vaccine, Influenza vaccine, Meningococcal vaccine, Rabies vaccine,Rubella vaccine, Typhoid vaccine, Yellow fever vaccine

20. Muscle relaxants (peripherally acting) and cholinesterase inhibitors
Gallamine (2), Neostigmine, Pyridostigmine (B) (2, 8), Suxamethonium (2), Vecuronium bromide (C)

21. Ophthalmological preparations

21.1 ANTI-INFECTIVE AGENTS
Gentamicin, Idoxuridine, Silver nitrate, Tetracycline

21.2 ANTI-INFLAMMATORY AGENTS
Prednisolone

21.3 LOCAL ANAESTHETICS
Tetracaine

21.4 MYOTICS AND ANTIGLAUCOMA DRUGS
Aeetazolamide, Pilocarpine, Timolol

21.5 MYDRIATICS
Atropin Epinephrine (A)

22 Oxytocics and antioxytocics

22.1 OXYTOCICS
Ergometrine, Oxytocin

22.2 ANTIOXYTOCICS
Salbutamol (2)

23. Peritoneal dialysis solution
Intraperitoneal dialysis solution (of appropriate composition)

24. Psychotberapeutic drugs
Amitriptyline, Chlorpromazine, Diazepam (lb), Fluphenazine (5), Haloperidol, Lithium carbonate (2, 4)

25. Drugs acting on the respiratory tract

25.1 ANTIASTHMATIC DRUGS
Cromoglicic acid (B), Aminophylline (2), Beclometasone, Ephedrine (A), Epinephrine, Salbutamol

25.2 ANTITUSSIVES
Codeine (la)

26. Solutions correcting water, electrolyte and acid-base disturbances

26.1 ORAL REHYDRATION
Oral rehydration salts (for glucose-elecrolyte solution)

Potassium chloride

26.2 PARENTERAL
Compound solution of sodium lactate, Glucose, Glucose with sodium chloride, Potassium chloride (2) Sodium chloride, Sodium hydrogen carbonate

26.3 MISCELLANEOUS
Water for injection

27. Vitamins and minerals
Ascorbic acid (C), Calcium gluconate (C) (2, 8), Ergocalciferol, Iodine, Nicotinamide, Pyridoxine, Retinol, Riboflavin, Sodium fluoride (8), Thiamine

Many drugs included in the list are preceded by a square symbol to indicate that they represent an example of a therapeutic group and that various drugs could serve as alternatives. Numbers in parentheses following the drug names indicate:

(1) Drugs subject to international control under: a) the Single Convention on Narcotic Drugs (1961), b) the Convention on Psychotropic Substances (1971), or c) the Convention on Illicit
Traffic in Narcotic Drugs and Psychotropic Substances (1988).

(2) Specific expertise, diagnostic precision or special equipment required for proper use.

(3) Greater potency or efficacy.

(4) In renal insufficiency, contraindicated or dosage adjustments necessary.

(5) To improve compliance.

(6) Special pharmacokinetic properties.

(7) Adverse effects diminish benefit/risk ratio.

(8) Limited indications or narrow spectrum of activity.

(9) For epidural anaesthesia.

Letters in parentheses after the drug names indicate the reasons for the inclusion of complementary drugs:

(A) When drugs in the main list cannot be made available.

(B) When drugs in the main list are known to be ineffective or inappropriate for a given individual.

(C) For use in rare disorders or in exceptional circumstances.

The New Emergency Health 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, Medecins Sans Frontieres, the League of Red Goss 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 Medecins Sans Frontieres, 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.

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Chapter 1: Essential drugs and supli'es 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.

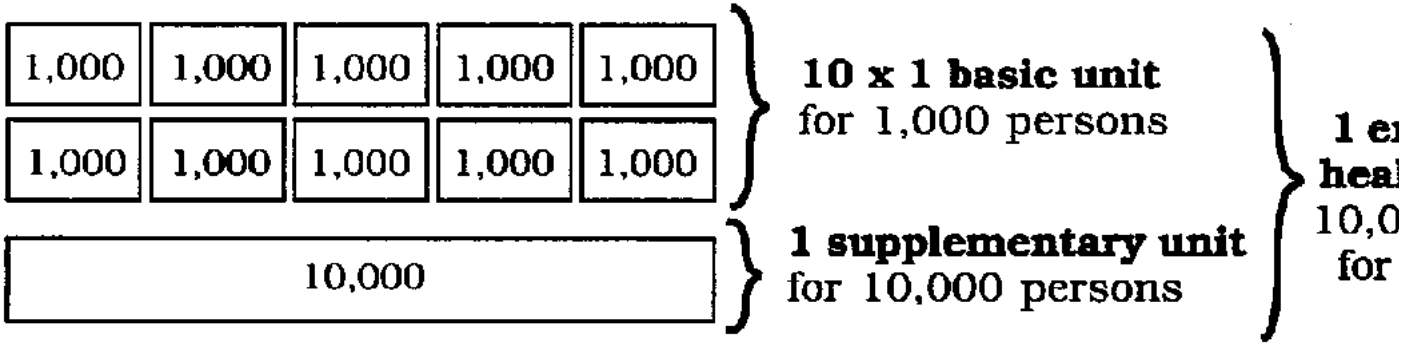
It must be emphasized that, although supplying drugs and medical supplies in the standard kits is convenient in the second phase of an emergency, specific local requirements need to be assessed as soon as possible and further supplies must be ordered accordingly.

Qunantification 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 of three lists: A-basic drugs; B-supplementary drugs; C-medical supplies and requirement for basic 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.



Table

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 Medecins sans Frontieres and WHO, is available from

Medecins sans Frontieres 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 Annexe 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 Annexe 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, ea. 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 bome 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. pneumoniae and H. influenzae 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

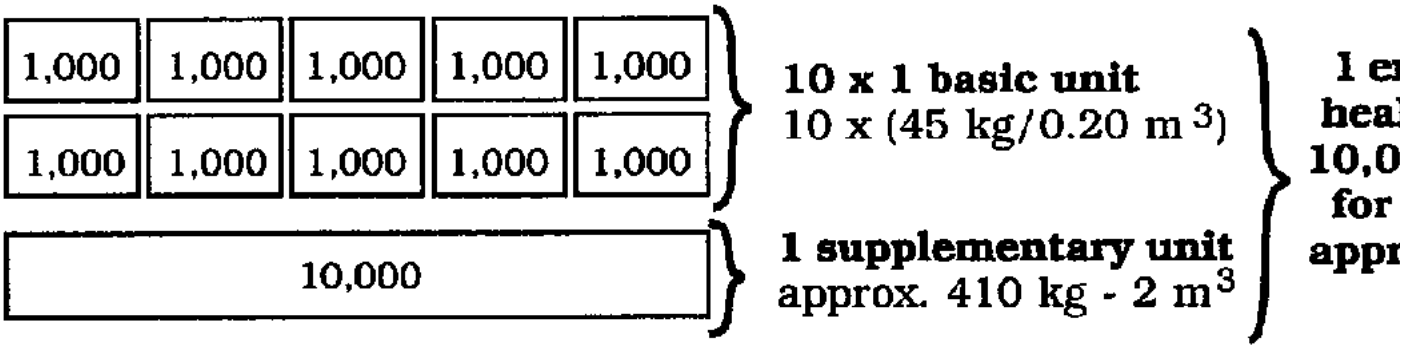
The New Emergency Health Kit consists of ten basic units and one supplementary unit.

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.



Table

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

1) Benzyl benzoate, lotion 25 %.....bottle 1 litre 1

2) 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 20Gauze bandage 7.5 cm x 10
m,.....roll 100Gauze compress 10 x 10 cm, 12 ply,
nonsterile..... unit 500Ballpen, blue or
black.....
.unit 10Exercise book A4
.....
.unit 43) Health card + plastic sachet.....unit 500Small
plastic bag for drugs.....unit 2,000Notepad
A6.....
.....unit 10Thermometer (oral/rectal) Celsius /
Fahrenheit..... unit 6Protective glove, nonsterile,
disposable..... unit
1004) Treatment guidelines for basic list..... unit 2

Equipment

Nail brush, plastic, autoclavable..... unit 2Bucket, plastic, approx. 20 litres.....unit 1Gallipot, stainless steel, 100 ml.....unit 1

1) According to WHO recommendations Benzyl henzoate solution 25 % concentration is being supplied. The use of 90 % concentration is not recommended.

2) Chlorhexidine 20 % needs distilled water for dilution, otherwise precipitation may occur. 5 % solution is WHO standard. Alternatives include the combination of chlorhexidine 1.5 % and cetrimide 15 %.

3) For a sample health card, see Annex 4.

4) For sample treatment guidelines, see Annexes 1, 2 and 3.
Kidney dish, stainless steel, approx. 26 x 14 cm..... unit 11) Dressing set (3 instruments + box)..... unit 2Dressing tray, stainless steel, approx. 30 x 15 x 3 cm..... unit 1Drum for compresses approx. 15 cm H, 0 14 cm..... unit 2 Foldable jerrycan, 20 litres..... unit 1Forceps Kocher, no teeth, 12-14 cm..... unit 2Plastic bottle, 1 litre .....unit 3Syringe Luer, disposable, 10 ml..... unit 1Plastic bottle, 125 ml..... unit 1Scissors straight/blunt, 12-14 cm.....unit 2

1) Dressing set (3 instruments + box):

- **1 stainless steel box approx. 17 x 7 x 3 cm**
- **1 pair surgical scissors, sharp/blunt, 12-14 cm**
- **1 Kocher forceps, no teeth, straight, 12-14 cm**

· 1 dissecting forceps, no teeth, 12-14 cm

Supplementary unit (for 10,000 persons for 3 months)

Drugs

Anaesthesics
Ketamine, inj. 50 mg/ml.....10 ml/vial 251) Lidocaine. inj. 1%.....20 ml/vial 50

Analgesics
2) Pentazocine, inj. 30 mg/ml..... 1 ml / ampoule 503) Probenecid, tab 500 mg
.....tab 500Recall from basic unit:Acetyl salicyclic acid, tab 300 mg..... (10 x 3,000) 30,000Paracetamol, tab 100 mg ..... (10 x 1,000J) 10,000

Anti-allergics
Dexamethasone, inj. 4 mg/ml
.....1 ml / amp 50Prednisolone, tab 5 mg..... tab 100Epinephrine (adrenaline), see "respiratory tract"
Anti-epileptics
Diazepam, inj. 5 mg/ml..... 2 ml / ampoule 200Phenobarbital, tab 50 mg
.....tab 1,000

Anti-infective drugs
4) Ampicillin, tab 250 mg
..... tab 2,0004) Ampicillin, inj. 500 mg /vial

..... vial 200Benzathine benzylpenicillin, inj. 2.4 MIU / vial..... vial 50Chloramphenicol, caps 250 mg..... caps 2,000Chloramphenicol, inj. 1 g / vial..... vial 500Metronidazole, tab 250 mg..... tab 2,0005) Nystatin, non-coated tablet .....100,000 IU / tab 2,000Phenoxymethylpenicillin, tab 250 mg .....tab 4,0006) Procain benzylpenicillin, inj. 3-4 MU / vial ..... vial 1,000

1) 20 ml vials are preferred, although 50 ml vials may be used as an alternative.

2) Because of narcotic drugs regulation, pentazocine has been chosen as an alternative to morphine or pethidine.

3) To be used with penicillin in the treatment of gonorrhoea.

4) Ampicillin tablets and injections to be used only in neonates and pregnant women.

5) For the treatment of oral candidiasis.

6) The combination of procaine benzylpenicillin 3 MU and benzylpenicillin 1 MU (procaine penicillin fortified) is used in many countries and may be included as an alternative.

1) Quinine, inj. 300 mg/ml ..... 2 ml / amp 100Quinine sulfate, tab 300 mg .....tab 3 ,0002) Sulfadoxine + pyrimethamine, tab 500 mg + 25 mg ..... tab 303) Tetracycline, caps or tab 250 mg .....caps or tab 2,000
Recall from basic unit

Mebendazole, tab 100 mg
..... (10 x 500) 5,000Cotrimoxazole, tab 400 + 80 mg
.....(10 x 2,000) 20,000Chloroquine, tab 150
mg..... (10 x
2,000) 20

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
4) Methyldopa, tab
250..... tab 500Hydralazine, inj.:20 mg/ml
.....1 ml / amp 20

Dermatological
5) Polyvidone iodine 10 %, sol., 500 ml
.....bottle 4
Zinc oxyde 10 % ointement.....
.....kg 2Benzoic acid 6 % + salicylic acid 3 % ointment..... kg 1
Recall from basic unit:
Tetracycline eye ointment, 1 %
.....(10 x 50) 500Gentian violet, powder 25
g..... (10 x 4) 40Benzyl benzoate, lotion 25 %,
litre..... (10 x 1)
10

Diuretics
Furosemide, inj. 10 mg/ml..... 2 ml / amp 20Furosemide, tab 40 mg
..... tab 200
Gastro-intestinal drugs
Promethazine, tab 25 mg
.....tab 500Promethazine, 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

1) For the treatment of cerebral and resistant malaria cases.
Intravenous injection of quinine must always be diluted in 500 ml glucose 5 %.

2) For the treatment of resistant malaria strains (check national protocols).

3) For the treatment of cholera and chlamydia infections.

4) For the treatment of hypertension in pregnancy.

5) Polyvidone iodine has been chosen because the use of iodine tincture in hot climates may result in toxic concentrations of iodine by partial evaporation of the alcohol.

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 100mg..... tab 1,000Aminophylline, inj. 25 mg/ml .....10 ml / amp 50Epinephrine (adrenaline), inj. 1 mg/ml ..... 1 ml / amp 50
Solutions correcting water, electrolyte and acid-base disturbances(because of the weight, the quantity of infusion included in the kit is minimal. Look for local supply, once in the field.)
Compound solution of sodium lactate (Ringer's Lactate),inj. sol., with giving set and needle..... 500 ml / bag 200Glucose, inj. sol. 5 %, with giving set and needle.....500 ml / bag 100(for dilution of quinine/injection)Glucose, inj. sol. 50 %..... 50 ml / vial 20Water 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 4,000Ascorbic acid, tab 250 mg ..... tab 4,000

Renewable supplies
Scalp vein infusion set, disposable, 25G (0.5 mm)..... unit 300Scalp vein infusion set, disposable, 21G (0.8 mm)..... unit 100IV placement canula,

disposable, 18G (1.7 mm)..... unit 15IV placement canula, disposable, 22G (0.9 mm)..... unit 15Needle Luer IV, disposable, 19G (1.1 mm x 38 mm)..... unit 1,000Needle Luer IM, disposable, 21G (0.8 mm x 40 mm)..... unit 2,000Needle Luer SC, disposable, 25G (0.5 mm x 16 mm)..... unit 100Spinal needle, disposable, 20G (64 mm - 0.9 mm) .....unit 30Spinal needle, disposable, 23G (64 mm - 0.7 mm)..... unit 30Syringe Luer resterilisable, nylon, 2 ml..... unit 20Syringe Luer resterilisable, nylon, 5 ml..... unit 100Syringe Luer resterilisable, nylon, 10 ml..... unit 40Syringe Luer, disposable, 2 ml ..... unit 400Syringe Luer, disposable, 5 ml ..... unit 500Syringe Luer, disposable, 10 ml ..... unit 200Syringe conic connector (for feeding), 60 ml .....unit 20Feeding tube, CH5 (premature baby), disposable..... unit 10Feeding tube, CH8, disposable..... unit 50Feeding tube, CH16, disposable..... unit 10Urinary catheter (Foley), n°12, disposable..... unit 10Urinary catheter (Foley), n°14, disposable..... unit 5Urinary catheter (Foley), n°18, disposable .....unit 5Surgical gloves sterile and resterilisable n °6.5..... pair 50Surgical gloves sterile and resterilisable n°7.5 .....pair 150Surgical 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)..... rol 2Chloramine, tabs or powder..... kg 2,5Thermometer (oral/rectal) dual Celsius / Fahrenheit..... unit 10Spare bulb for

otoscope.....
. unit 2Batteries R6 alkaline AA size (for otoscope)..... unit 6
Recall from basic unit:Thermometer (oral/rectal) celsius
/fahrenheit..... (6 units x 10) 60Ballpen, blue or
black..... (10 units x 10) 100Exercise book A4
..... (4 units x 10) 40Health card + plastic sachet
..... (500 units x 10)
5,000Small plastic baa for drugs
..... (2,000 units x 10)
20,000Notepad A6
.....(10 units x 10) 100
Urine collecting bag with valve, 2000 ml..... unit 10Finger stall 2 fingers, disposable..... unit 300

Suture, synthetic absorbable, braided, size DEC.2 (000) withcutting needle curved 3/8, 20 mm triangular..... unit 24
Suture, synthetic absorbable, braided, size DEC.3 (00) withcutting needle curved 3/8, 30 mm triangular..... unit 36Surgical blade (surgical knives) n°22 for handle n°4
..... unit 50Razor blade.....
..... unit 100Tongue depressor (wooden), disposable..... unit 100Gauze roll 90 m x 0.90 m..... roll 1,000

Recall from basic unit: Absorbent cotton wool..... (1 kg x 10) 10Adhesive tape 2.5 cm x 5 m..... (30 rolls x 10) 300Bar of soap (100-200 g/bar)
..... (10 bars x 10) 100Elastic bandage (crepe) 7.5 cm x 10 m
.....(20 units x 10) 200Ganze bandage 7.5 cm x 10 m
.....(100 rolls x 10)

1,000Gauze compress 10 x 10 cm, 12 ply, nonsterile..... (500 units x 10) 5,000

Equipment
Clinical stethoscope, dual cup..... unit 2Obstetrical stethoscope (metal) ..... unit 1Sphygmomanometer (adult)..... unit 1Razor non disposable .....uni t 2Scale for adult ....unit 1Scale hanging 25 kg x 100 g (Salter type) + 3 trousers ..... unit 3 Tape measure..... ..... unit 5Drum for compresses, h:15 cm, D14 cm..... unit 2 Recall from basic unit:Drum for compresses, approx. h:15 cm, 014 cm..... (2 units x 10) 20
Otoscope + disposable set of pediatric speculums..... unit 1Tourniquet .... unit 2Dressing tray, stainless steel, approx. 30 x 15 x 3 cm..... unit 1Kidney dish, stainless steel, approx. 26 x 14 crn ..... unit 1Scissors straight/blunt, 12-14 cm..... unit 2Forceps 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) 10Gallipot, stainless steel, 100 ml ..... (1 unit x 10) 10Dressing tray, stainless steel, approx. 30 x 15 x 3 an..... (1 unit x 10) 10Scissors straight/blunt, 12-14 cm ..... (2 units x 10) 20Forceps Kocher, no teeth, 12-14 cm..... (2 units x 10) 20
1) Abcess/suture set (7 instruments + box)..... unit 22) 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 1Additional rack Public Health Care 2ml/5ml, ref.Prestige 7531
..... unit 2Pressure sterilizer, 20-40 litres with basket (type UNIPAC 01.560.00)..... unit 1Kerosene stove, single burner (type UNIPAC 01.700.00)
..... unit 2Water filter with candles, 10-20 litres (type UNIPAC 56.199.02)
..... unit 3Nail brush, plastic, autoclavable
..... unit 2

Recall from basic unit:
Plastic bottle, 1
1itre..... (3 units x 10) 30Syringe Luer, disposable, 10 ml..... (1 unit x 10) 10Plastic bottle, 125 ml
.....(1 unit x 10) 10Nail brush, plastic nutoclavable
.....(2 units x 10) 20Bucket, plastic, approx. 20 litres
..... (1 unit x 10) 10Foldable 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
..... 1Guide clinique et therapeutique..... .... 1Guia clinica y terapeutica
..... 1

(Avaible at cost price from Medecins Sans Frontiers)

Annex 1

Basic unit: treatment guidelines

These treatment guidelines are intended to give simple guidance 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 — AGE	2 months	1 year	5 years	15 years	ADULT
	4 kg	8 kg	15 kg	35 kg	

➜ ***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.*

Table

The New Emergency Health Kit

DIAGNOSIS / SYMPTOM — AGE	2	1	5	15	ADULT
	4 kg	8 kg	15 kg	35 kg	

SYMPTOM		months	year	years	years
→ *Diarrhoea*					
Diarrhoea lasting more than 2 weeks or in malnourished or poor condition patient	Give *ORS* according to dehydration stage and **refer**				
Bloody diarrhoea[1] (check the presence of blood in the stools)	Give *ORS* according to dehydration stage and **refer**				
Diarrhoea with severe dehydration (Plan C, WHO) Annex 2d	*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 + 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	**Refer**	*Chloroquine*[2] tab 150mg base 1/2 tab at once, then 1/4 tab. after 6 h, 24 h and 48 h	*Chloroquine*[2] tab 150mg base 1 tab at once, then 1/2 tab. after 6 h, 24 h and 48 h	*Chloroquine*[2] tab 150mg base 2 tab at once, then 1 tab. after 6 h, 24 h and 48 h	*Chloroquine*[2] tab 150mg base 4 tab at once, then 2 tab. after 6 h, 24 h and 48 h
Fever with cough	**Refer**	See "Respiratory tract infections"			
Fever (unspecific)	**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*

Table

WEIGHT / DIAGNOSIS / AGE / SYMPTOM	4 kg 2 months	8 kg 1 year	15 kg 5 years	35 kg 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 3	**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*[2] tab 300 mg 1 tab x 3 for 3 days	*ASA*[2] 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[0]	*Cotrimoxazole* tab 400 mg SMX + 80mg TMP 1 tab. x 2 for 5 days[0]	*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	Clean 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.*

Table

The New Emergency Health Kit

DIAGNOSIS / SYMPTOM — WEIGHT / AGE	4 kg 2 months	8 kg 1 year	15 kg 5 years	35 kg 15 years	ADULT
➔ ***Measles***					
Measles	Treat respiratory tract disease according to symptoms. Treat conjunctivitis as "Red eyes". Treat diarrhoea 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*[1] Apply *Gentian Violet solution*[2] 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*[1] Apply *Gentian Violet solution*[2] twice a day. If not improved after 10 days : **refer.**				
Fungal infection	Apply *Gentian Violet solution*[2] once a day for 5 days				
Infected scabies	Bacterial infection : clean with clean water and soap or diluted *Chlorhexidine solution*[1] and apply *Gentian Violet solution*[2] twice a day. When infection is cured : Apply pain diluted				

	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 use at the same dilution.*

** *Dissolve gentian violet : 0.5 % concentration = 1 tea spoon of gentian violet powder per 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*

Table

The New Emergency Health Kit

WEIGHT / AGE / DIAGNOSIS / SYMPTOM	4 kg 2 months	8 kg 1 year	15 kg 5 years	35 kg 15 years	ADULT
➔ *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*[1] tab 150mg base 2 tab weekly, throughout pregnancy
➔ *Worms*					
Roundworm **Pinworm**		*Mebendazole* tab 100 mg 2 tab. once	*Mebendazole* tab 100 mg 2 tab. once	*Mebendazole* tab 100 mg 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] *Chloroquine 150 mg base is equivalent to 250 mg chloroquine phosphate or to 200 mg chloroquine sulfate.*

Table

Annex 2

Evaluation and treatment of diarrhoea

Assessment of diarrhoea patients for dehydration Annex 2a

Annex 2a

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

[1] *In some infants and children the eyes normally appear somewhat sunken. It is helpful to ask the mother if the child's eyes are normal or more sunken than usual.*

[2] *Dryness of the mouth and tongue can also be palpated with a clean finger. The mouth may always be dry in a child who habitually breathes through the mouth. The mouth may be wet in a dehydrated patient owing to recent vomiting or drinking.*

[3] *The skin pinch is less useful in infants or children with marasmus (severe wasting) or kwashiorkor (severe undernutrition with edema), or obese children.*

Source: *A manual for the treatment of diarrhoea* (WHO/CDD – 1990)

Table

Annex 2b

Treatment plan A to treat dirrhoea at home

Use this plan to teacb 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 tbree 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 sbould be given ORS solutions at bome, 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:

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.

Table

· Describe and show the amount to be given after each stool using a local measure.

Show the mother bow 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 2c

Treatment plan B to treat dehydration

APPROXIMATE AMOUNT OF ORS SOLUTION TO GIVE IN THE FIRST 4 HOURS:

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						

* *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.*

Table

· 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.

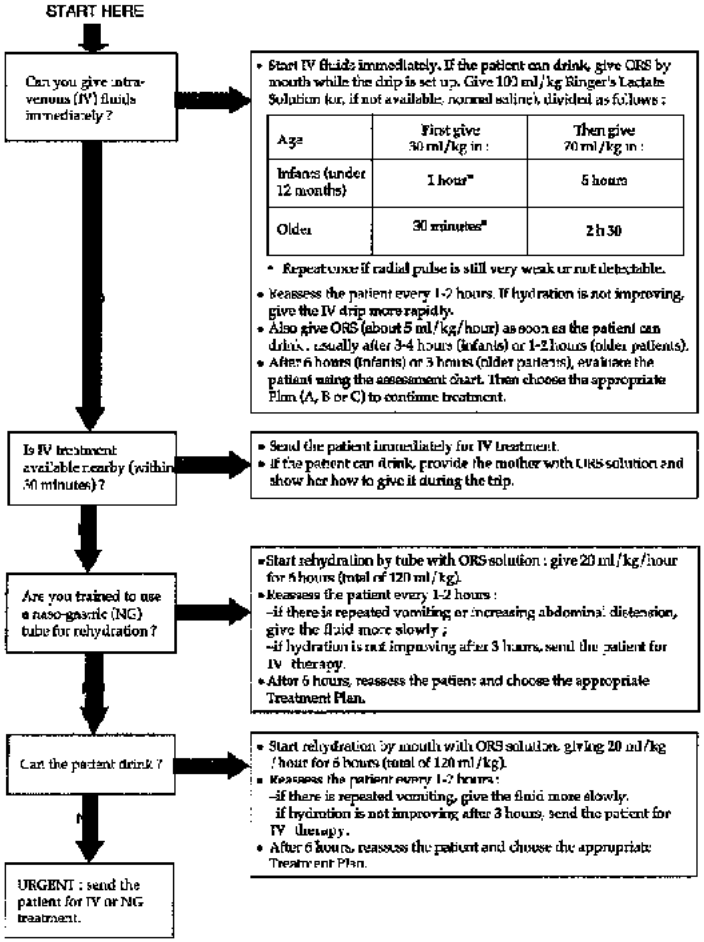
· Explain to her the three rules in Plan A for treating her child at home:

- 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

Fallow the arrows. If the answer is "yes", go across. If "no", go down.


START HERE
Can you give intravenous (IV) fluids immediately ?
• Start IV fluids immediately. If the patient can drink, give ORS by mouth while the drip is set up. Give 100 ml/kg Ringer's Lactate Solution (or, if not available, normal saline), divided as follows :
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.
Is IV treatment available nearby (within 30 minutes) ?
• 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.
Are you trained to use a naso-gastric (NG) tube for rehydration ?
•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.
Can the patient drink ?
• 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.
URGENT : send the patient for IV or NG treatment.

Table

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 difficutt 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 see Annex 3b
- who is not wheezing
- who is wheezing

-Treatment instructions
- Give an antibiotic
- Advise mother to give home care see Annex 3c
- 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.

Table

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

Table

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 retum 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

[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.

Table

- 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 my 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 :

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.

Table

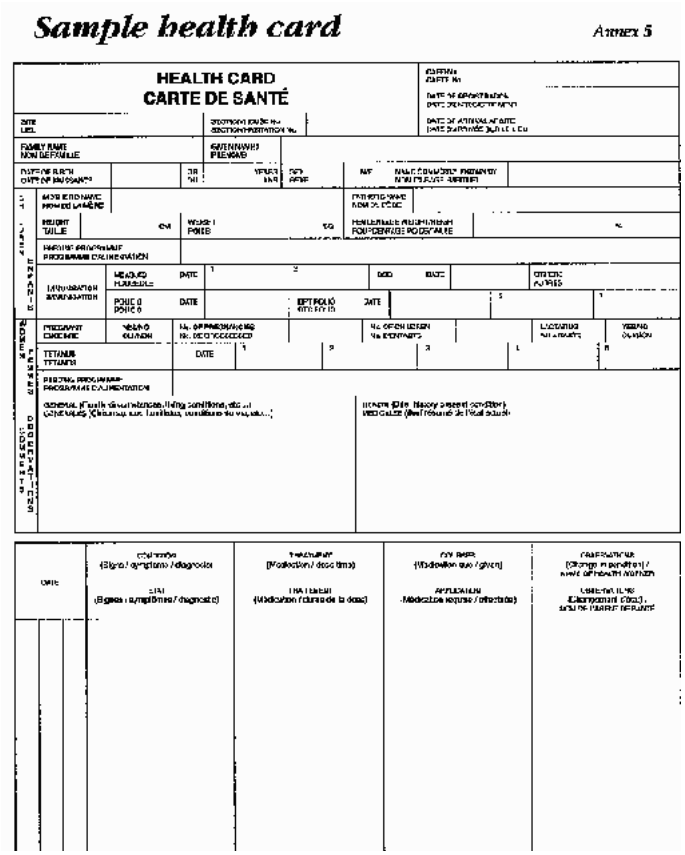
Annex 4

Sample monthly activity report *Annex 4*

Diagnosis / Symptom groups		months	months	years	years	Male	Fem	%
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	Anemia							
PREGNANCY	Malaria							
WORMS	Roundworm, pinworm							
	Hookworm							
Referred patients								
Repeated consultation for same diagnosis								
TOTAL								

Table

Annex 5



Sample health card *Annex 5*

HEALTH CARD
CARTE DE SANTÉ

Table

Annex 6

Guidelines for suppliers

Quality

1. The quality of the drugs must comply with internationally 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.

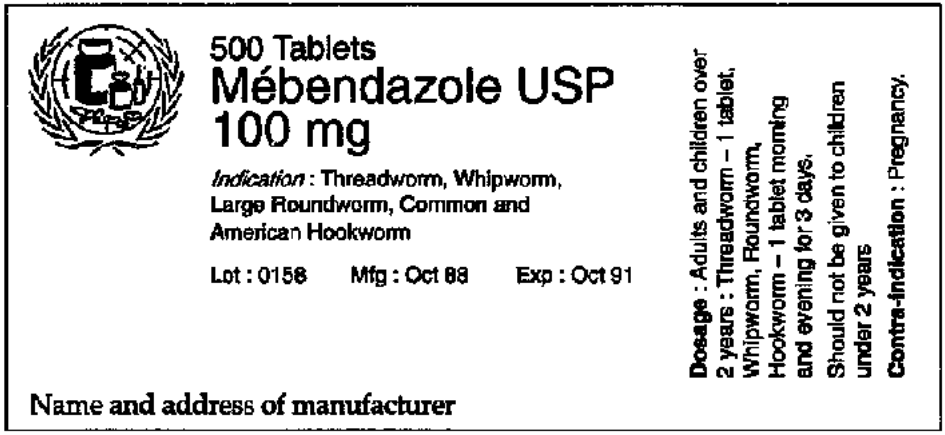
The full label should again appear on the collective package.

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 altemative.

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.

Example of label:

Example of label :



Figure

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 Medecins Sans Frontieres, 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

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- ***(introduction...)***
- **Acknowledgments**
- **Foreword**
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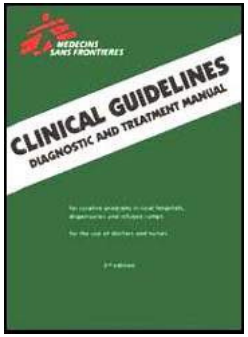

List of medications

(commercial and common names)

Acetylsalicylic acid = A.S.A., Aspirin

Adrenaline = Epinephrine = Levorenine

Aluminium Hydroxide

Aminophylline = Theophylline = Euphyllin

Amoxycillin = Amoxil, Clamoxyl

Ampicillin = Amfipen, Penbritin

Ascorbic Acid = Vitamin C, Redoxon

Benzathine Penicillin = Benzathine Benzyl penicillin = Penidural

Benzonidazole = Benznidazole = Radanil

Benzyl Benzoate = BBL

Benzyl Penicillin = Penicillin G = Crystapen

Calcium Gluconate

Chloramine = Tosylchloramide sodium = Clonazone

Chloramphenicol = Chloromycetin, Tifomycine

Chlorhexidine + Cetrimide = HAC, Savlon

Chloroquine = Nivaquine, Resochin

Chlorpheniramine = Chlorphenamine = Teldvin

Chlorpromazine = Largactil

Cimetidine = Tagamet

Clofazimine= Lamprene

Cloxacillin = 0rbenin

Cotrimoxazole = Sulphamethoxazole + Trimethoprim = Bactrim, Cotrim, Septrim

Dapsone = Avlosulfon

Dexamethasone = Decadron, Oradexon

Diazepam = Tensium, Valium

Diethylcarbamazine = Banacide, Notezine

Digoxin = Lanoxin

Doxycycline = Doxy 100, Granudoxy, Vybramycin

Epinephrine = Adrenaline = Levorenine

Ergometrine (methyl) = Methergin

Erythromycin = Erythrocin, Ilotycin

Ethambutol = Myambutol

Etionamide = Iridocin, Trecator

Ferrous sulphate = Eryfer, Ferro Grad, Resofero

Folic Acid = Folacin, Foldine

Furosemide = Frusemide = Frusid, Lasix

Gentamicin= Cidomycin, Garamycin, Gentallin

Gentian Violet = G.V.

Griseofulvin = Fulcin, Grisovin

Hydralazine = Apresoline

Hydrochlorothiazide = Dochlotride, Esidrex, HydroSaluric

Hydrocortisone = Efcortesol, Solu-cortef

Hyoscine (N-Butyl) = Butylscopolamine = Buscopan

Indometacin = Artracin, Indocid

Isoniazid = INH = Rimifon

Ivermectin = Mectizan

Levamizol = Tramisol

Lidocaine = Lignocaine = Xylocaine, Xylocard

Mebendazole = Vermox

Mefloquine antimoniate = Methy glucamide = Glucantime

Melarsopol = Arsobal

Methyldopa = Aldomet,Medomet

Ivermectin = Mectizan

Levamizole = Tramisol

Lidocaine = Lignocaine = Xylocaine, Xylocard

Mebendazole = Vermax

Mefloquine = Lariam

Meglumine antimoniate = Methy glucamine = Glucantime

Melarsoprol = Arsobal(g)

Methyldopa = Aldomet, Medomet

Metrifonate = Bilarcil

Metronidazole = Flagyl, Metrolyl, Zadstat

Miconazole = Dactarin

Niclosamide = Tredemine, Yomesan

Nifurtimox = Lampit

Nitrofurantoin = Furandantin, Urantoin

Noramidopyrine = Dypirone = Metamizol = Nolutil, Novalgin

Norethisterone = Norlutin, Primolut

Nystatin = Mycostatin, Nystan

Oral rehydration salt = 0RS = 0ralit

Oxamniquine = Mansil, Vansil

Oxytocin= Pitocin, Syntocinon

Paracetamol = D o l i p r an, Panadolt, Tylenol

Penicillin G = Benzyl penicilline = Crystapen

Penicillin V = Phenoxymethyl penicillin = Crystapen, Stabillin V-K, V-Cil-K

Pentamidine = Lomidine

Pentazocine = Fortal

Phenobarbital = Phenobarbitone = Gardena, Luminal

Phenytoin = Di-Hydan, Dilantin, Epanutin

Piperazine = Antepar, Pripsen

Potassium (Chloride or Gluconate) = Kalleorid

Povidone iodine = Polyvidone iodine = Betadin, Videne

Praziquantel = Biltricide

Prednisolone = Prednisone = Codesol, Deltastab, Prednesol

Primaquine

Probenecid = Benemid

Procain Penicillin = Procain Benzyl Penicillin

Promethazine = Phenergan

Propranolol = Angilol, Inderal

Pyrantel pamoate = Combantrin

Pyrazinamide = Zinamide

Pyridoxine = Vitamin B6 = Becilan

Pyrimethamine = Daraprim, Malocide

Quinine = Quinimax, Quinoforme

Retinol = Vitamin A = Ro-A-Vit

Rifampicin = Rifadin, Rimactane

Ringer Lactate = Hartmann's solution

Salbutamol = Albuterol = Salbulin, Salbutan, Ventolin

Sodium Stibogluconate = Pentostam

Spectinomycin = Trobicin

Spironalactone = Aldacton, Osiren

Streptomycin

Sulfacetamide

Sulphadoxine + Pyrimethamine = Fansidar

Suramin sodium = Antrypol, Moranyl

Tetracycline = Abfosan, Hexacycline, Tetramig

Thiabendazole = Mintezol

Thiacetazone= TB1

Thiamine = Aneurin = Vitamin B1 = Benerva, Bevitine

Trimethoprime + Sulphamethoxazole = Cotrimoxazole = Bactrim, Cotrim, Septrim

Vitamin A = Retinol = Ro-A-Vit

Whitfield's ointment = 3 % Salycilic Acid + 6 % Benzoic Acid

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(introduction...)

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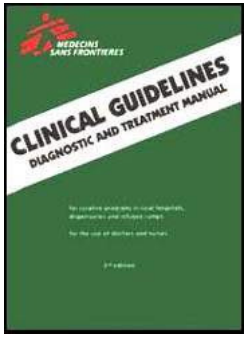

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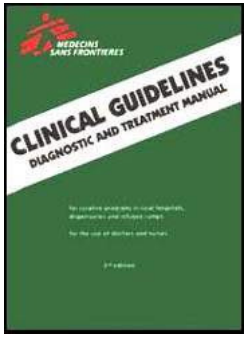
- **Clinical Guidelines and Treatment Manual (MSF, 1993, 319 p.)**
  - ***(introduction...)***
  - **Acknowledgments**
  - **Foreword**
  - **How to use these guidelines**
  - **Introduction**
  - **Chapter 1 - A few symptoms and syndromes**



Acknowledgments

Clinical guidelines

Diagnostic and treatment manual

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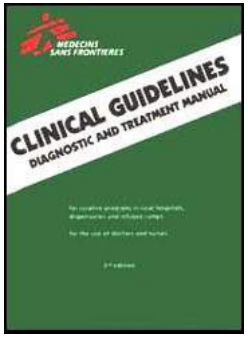

Foreword

This clinical manual is a collective work, for daily field practice.

We have tried to incorporate information from various sources: the field experience of Medecins sans Frontieres personnel, the recommendations from reference institutions such as World Health Organization (W.H.O.) and from text books and monographs most relevant to the domain of medical care in developing countries (see bibliography).

This manual is for doctors, nurses and other health professionals responsible for curative care in rural dispensaries and hospitals, as well as in displace people or refugee camps.

It covers the curative and to a lesser extent the preventive aspects of the main conditions encountered in the field. It should function as a supportive tool towards the elaboration of an adapted health policy. The introduction of this manual will emphasize the basis of such a policy.

With a view to future revisions and to keep the work as close as possible to field realities, the authors would be grateful for critical comments and suggestions from users of this manual.

Comments should be send to

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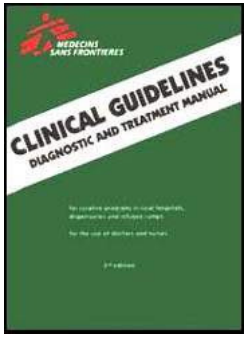

How to use these guidelines

Organisation

The information you are looking for can be found:

1. At the beginning of the manual in the table of contents: numbers of chapters with page numbers.

2. At the end of the manual in the alphabetical index whith the lists all diseases

Abbreviations used

mg = milligramme
g = gramme

kg= kilogramme
d = day
x = times
stat = at once; one single dose
AFB = acid fast bacilli
BP = blood pressure
CCF = congestive cardiac failure
CSF = cerebrospinal fluid
GIT = gastro-intestinal tract
Hct = haematocrit
MCH = maternal-child health
0RS = oral rehydration salts
0RT = oral rehydration therapy
PID = pelvic inflammatory disease
PO = per os (orally)
IM = intramuscular
IV = intravenous
SC = subcutaneous
IU = international units
MIU = million international units
PR = per rectum
PV = per vaginam
PUO = pyrexia of unknown origin
RBC = red blood cell
RR = respiratory rate
RTI = respiratory tract infection
spp = species
STD = sexually transmitted diseases
TB = Tuberculosis

WBC = white blood cell

- Cotrimoxazole = mixture of sulfamethoxazole (SMX) + Trimetoprim (TMP)
Usual dosage is: 400 mg SMX + 80 mg TMP

- Peni G = Benzyl penicillin = Crystalline penicillin G

- PPF = Fortified procaine penicillin = mixture of procain benzyl penicillin and Benzyl penicillin

Conversion °C into °F: remove 2, multiply by 2, add 30
Conversion °F into °C: remove 30, divide by 2, add 2

International non proprietary name for drugs

The International Non-proprietary Name (INN) of drugs is used in this manual. A list of equivalent commercial running name can be found.