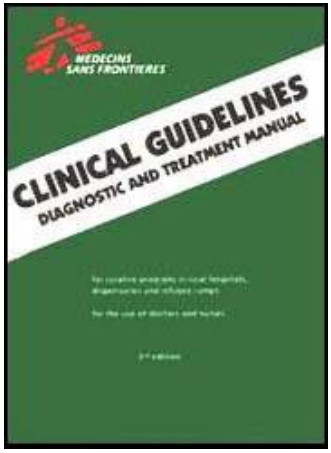

Clinical Guidelines and Treatment Manual (MSF, 1993, 319 p.)

Introduction

In a health program adapted to the needs of a developing country, the curative care is an important component. Initially however, more important measures have to be implemented to provide the foundations for all programs aimed at improving the health of a

community. These measures are related to:

- **sanitation,**
- **nutrition,**
- **hygiene,**
- **immunization,**
- **maternal and child health,**
- **health education,**
- **health workers training,**
- **community awareness and participation.**

These measures should interact and complement the curative care component of the health program.

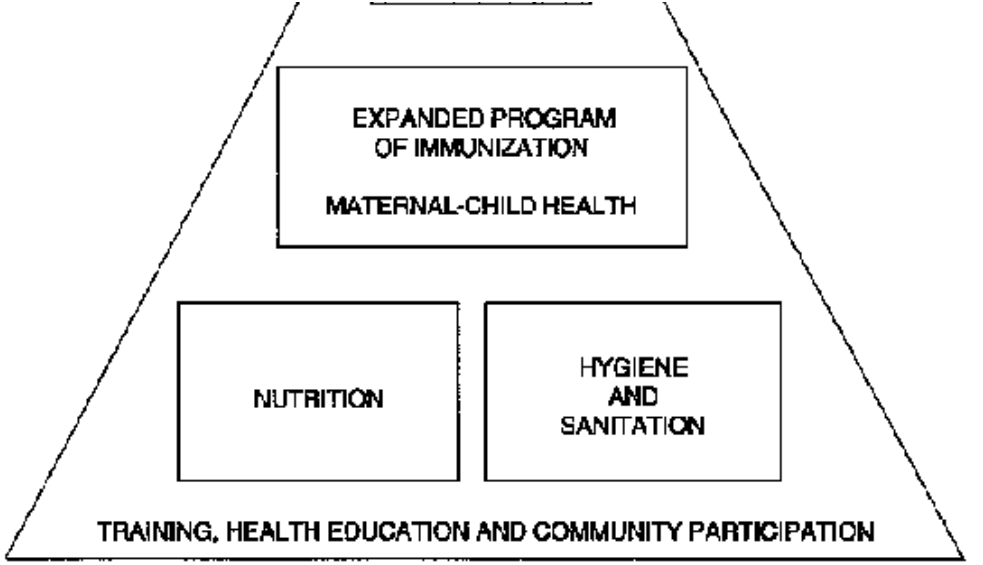

Figure 1
Structure of a health service

Figure 1

Objectives for a curative health program

At the individual level

The objective is to cure the patient and to minimize or prevent the consequences of illness (eg. transmission).

At the community level

The objectives are to reduce the mortality and morbidity attributable to the common severe illnesses in the community.

For a few infectious endemic diseases

Curative care can reduce transmission of certain diseases (e.g. TB, leprosy, trypanosomiasis, bilharzia) provided a high proportion of the infected community is treated.

Strategy

In developing countries there are enormous needs and limited resources. The resources should be aimed at the diseases, amenable to effective treatment in the field, which are causing high mortality and morbidity (priority diseases).

Priority diseases can vary from one geographical region to

another, but a standard epidemiological profile remains. In order to get an accurate profile an initial assessment is necessary. It should be qualitative (descriptive), and if possible, quantitative (incidence, morbidity and mortality rates). This evaluation will characterise the most common diseases (e.g. diarrhoea, acute respiratory infections...) and will identify the exposed and high risk groups in the population (e.g. children < 5 years, pregnant women...). These diseases and high risk groups should be the targets of the program. This does not mean that curative care should be limited to these diseases and groups of people, but rather that the resources, particularly at the primary health care level, should be targeted at these groups.

In some instances (e.g. displaced or isolated persons) a complete evaluation is necessary. In other instances, such as a rehabilitation program or a study to reinforce an existing program, the Ministry of Health (MOH) may already have qualitative or quantitative data available and only a partial evaluation may be necessary.

The health care program can be defined and carried out as soon as priorities have been defined, and health policy and local resources

identified (e.g. essential drug list, MOH management protocols, medical personnel and their training and the medical structure).

This manual, "Essential drugs - practical guidelines" and "Principales conduites a tenir en dispensaire" are additional tools to help evaluate, define and establish a health care program (e.g. management protocols, training, guidelines...).

Health care organization

In certain situations (e.g. displaced populations, refugees), a program has to be created, whereas in others, an existing program is evaluated so it can be improved.

Infrastructure and medical staff

Health centers, dispensaries, medical centers and hospitals are run by personnel with different skills and different levels of competence (e.g. community health workers (C.H.W.), medical auxiliaries, nurses, midwifes and doctors).

The evaluation should clarify their technical level. In refugee

camps, most of the staff will have no previous training.

Medicines

Selection of medicines depends on the targets and needs identified in the epidemiological profile. However, are other restraints: cost, stability, administration route, duration of treatment and whether single or multiple drug doses are required.

The W.H.O. list of essential drugs (appendix 3), is the basic framework for establishing an essential drug list. A drug list should be defined in accordance with objectives, target diseases, epidemiological profile, medical staff competence and whether it is possible to refer severe cases. The quantitative and qualitative drug lists of the Emergency Health Kit (for 10.000 persons for 3 months) recommended by the W.H.O. and Medecins sans Frontieres are given as an example in appendix 4.

Drugs are listed under their Intemational Nonproprietary (generic) Names: INN.

Therapeutic protocols

These protocols are the foundation stone of any curative health program and should be standardised in order to have an effective impact on the target diseases.

The therapeutic protocols should:

- Give clear accurate instructions.

- Include the therapeutic uses and dosages of drugs, and the duration of treatment.

- Choose the most effective drug with least side effects.

- Be supported by epidemiological and clinical data and should be discussed and agreed by the users.

- Be practical, simple, understandable and adapted to the field.

- Encourage the training and retraining of medical staff.

- Encourage the organization of medical infrastructure (e.g. pharmacy, management...).

- Be periodically re-evaluated.

- Always use the national recommendations of the country.

The therapeutic protocols should be adapted to the skill and knowledge of the medical staff. They should cover: drug prescription, curative and preventive measures, cases which should be notified (e.g. epidemic threats: cholera, typhoid), and the grounds for referral to a superior level hospital.

Protocols should be adapted to:

1) The skill and knowledge of the medical staff

A doctor is trained in terms of diseases and syndromes (e.g. pneumonia, liver abscess) whereas a Community Health Worker (CHW) is trained in terms of symptoms (e.g. cough, fever). These two approaches are presented in Chapter 2 "Respiratory Diseases", with an introduction of the WHO program on respiratory conditions which is founded on a symptomatic approach.

2) The cultural milieu and environment

For example, if it is the custom to treat children with diarrhea with rice water, or for children with fevers to remain clothed, do not reprimand their parents.

3) The pharmaceutical supplies and local dosages of drugs

Dosages are often different between countries (e.g. chloroquine 100 mg or 150 mg tablets).

4) The improvement of patient treatment and compliance

It is recommended that prescribed treatments are short (< 5 days) and, if possible, in single or twice daily doses. "Stat dose" treatments, although less effective pharmacologically, do not rely on patient compliance (e.g. treat amoebiasis with a single dose of 8 metronidazole tablets (tab 250 mg) instead of a 7 day course). For the same reasons, the prescription should be limited to a maximum of 2 prescribed drugs. Injections should be avoided to reduce HIV transmission or B hepatitis.

Protocols should avoid classical mistakes like recommending the boiling of water when energy resources (e.g. wood) are limited.

Recommendations and examples of therapeutic protocols can be found in:

- The protocols from the "New Emergency Health Kit" (CHW level) to target diseases (see appendix 4).

- The clinical and treatment sections of this manual.

Diagnostic methods

These methods depend on the structure of the organization and on the technical expertise of the staff. Staff expertise directly influences protocol formulation and drug list contents.

As a rule, diagnosis is based on the clinical examination and basic laboratory investigations (as it is defined in WHO).

Clinical examination

The principles here described are for trained medical staff. The

approach for the CHW is similar but simpler.

Quality history taking and clinical examination is vital. If poor, the process from syndrome etiology to diagnosis will likewise be poor, and the treatment inappropriate. It is important to master a technique of clinical assessment that is methodical, complete and rapid. A method is all the more necessary because in field conditions the laboratory support may be rudimentary and the practitioner may have to communicate with the patient via an interpreter.

The following examination framework should be adapted to conditions. It emphasizes the advantages of a methodical approach.

CIRCUMSTANCES OF THE EXAMINATION

- Routine, as in a MCH clinic for prenatal women and well babies. The emphasis of the examination will depend upon local circumstances eg prevalence of anemia, malnutrition.

- With respect to a complaint, the commonest of which tend to be

pain, fever, cough, diarrhea, fatigue...

APPROACH TO HISTORY AND PHYSICAL EXAMINATION

- A methodical approach is vital. This will save time and reduce omissions.

- An interpreter will usually be necessary. He/she must have received prior training and there must be good rapport between the clinician and the interpreter. Eventually, a good interpreter takes a very active role in the clinical process and becomes far more than a simple translator. Choosing an interpreter requires thought; the person must be acceptable to the community and appropriate for the specific role (eg a woman for obstetrics and gynaecology).

- Learning the local words for major symptoms and diseases will allow the clinician to check that an interpreter, unfamilar to him or her (such as a relative), is giving an accurate rendition of the patient's complaints.

FRAMEWORK OF A CLINICAL ASSESSMENT

- History

· history of the present illness
· the circumstances
· past history, family history
· current medications, allergies

- Examination
The patient should be undressed if possible.

· General appearance: nutrition (weight and height of children), hydration, temperature, pallor; does the patient look sick ?
· Examination by systems: respiratory, cardiovascular, etc. This part of the examination in particular should be rigorously methodical.

- Laboratory Tests: if necessary.

- Diagnosis: This is a synthesis of all information gathered from the history, physical examination and laboratory tests. A diagnosis should be etiological but may of necessity be only symptomatic.

- Treatment

· etiological, ie treating the cause. This may have to await the results of laboratory results;
· symptomatic;
· advice to the patient, whether or not a treatment is given.

- All important clinical data should be recorded, either on a card or in a family health booklet. Especially note positive and significant negative clinical signs, laboratory results, and treatment given (generic name, dose, duration).

Role of the laboratory

A basic medical laboratory of the type described by WHO can play an important role. Nevertheless, there are special constraints upon the operation of a laboratory, which should not be underestimated. There are staff constraints (necessity of trained and competent technicians), logistic constraints (supply of reagents and other equipment), time constraints (a minimum of time is necessary for each examination) and quality constraints. If attention is not paid to the above considerations, the laboratory will loose its accuracy

and therefore its useful purpose.

Two levels of examination should be considered:

BASIC EXAMINATION

- Stool exams direct and stained with Lugol's iodine solution, for parasites (ova, cysts, protozoa...).

- Blood slides: thick and thin smears (for malaria, trypanosomiasis, filiariasis, relapsing fever, screening for leucocytes): GIEMSA stain.

- Hemoglobin (Lovibond method).

- Urine exam:

· urine analysis: dipsticks for glucose and proteins.

- Sputum exam: Ziehl - Nielsen stain.

- Urethral and vaginal swabs: slides for gonococcus and trichomonas.

- CSF exam

COMPLEX EXAMINATIONS

Certain more complex examinations may be provided according to the specific program.

A laboratory can be used in two complementary ways:

- Clinically: examinations can be requested for individual patients according to the clinical picture. The aim will be to assist the practitioner in:

· diagnosis orientation (e.g. leucocytosis in blood count);
· etiological diagnosis (e.g. stool exam for parasites, malaria smear…).

- Epidemiologically: the aim will be to construct or to validate clinical and therapeutic protocols. One can investigate a sample of patients presenting with a particular clinical picture (symptoms and syndromes) specify the etiology of that clinical picture and thus arrive at an appropriate standardized therapeutic

management protocol.

For example:

· Fever and chills: are they due to malaria ? Rather than being obliged to perform blood slides on every febrile patient, choose at random 100 patients presenting with these symptoms and investigate them. If a significant proportion of the blood slides are positive, such cases can henceforth be presumed to be malaria and treated according to an appropriate protocol.

· Bloody or mucusy diarrhea with no fever: the same approach can be used to determine if this clinical presentation is synonymous with amoebiasis and/or another intestinal parasite.

· This epidemiological method of using a laboratory is especially appropriate in responding to priority needs. It can be used in emergency or "normal" conditions. Bibliographical references n° 2 and 19 give two examples for malaria, one in a refugee camp, another one in Malawi.

The training

Training or retraining of medical staff should be directed at program objectives and means (e.g. target diseases, list of essential drugs, management protocols) and should take into consideration the technical level of the staff (to be evaluated). The training program should be defined according to local needs.

Community awareness and participation

It is necessary for curative care to cover the whole population and target diseases. Coverage should be as wide as possible.

For many reasons (e.g. ignorance, different cultural perception), a large proportion of severely ill patients may present late or may pass through the system without being cured. Coverage can be improved by increasing awareness, improving health education, encouraging the exchange of information at all levels and by improving the quality of care.

Management

Consider how to efficiently and effectively manage available resources. Figure 2 gives an example of organization of an out-

patient department.

Evaluation

The evaluation of the common diseases and their effects on the community directly influence the nature of a program.

Program evaluation should be performed at the following levels:

- Level of functioning

Activity assessment, quantity of drugs used, prescription management, correct use of protocols, pharmacy management (orders, reports and stock keeping), all of this information should be used as indicators in program management. The morbidity rate at the dispensary level and its analysis is a useful epidemiological observation. Target disease variation in the community can be followed according to time, place, and population concerned (eg.: morbidity survey, appendix 2).

- Level of coverage

The aim is to determine what proportion of all patients affected by target diseases are reached by the program. Good coverage is an essential factor. The evaluation should be done on a representative sample of a target population (see below).

- Level of community impact

This aspect is difficult to evaluate. The evaluation relates to the objectives and should be expressed in terms of a decrease in morbidity and/or mortality. A mortality survey of a community can be conducted over a defined period of time. If the total population is known, a mortality rate can be determined.

Sample protocols for community surveys are available and have been used for evaluations (e.g. WHO, diarrheal disease program, but they require much organization and need to be repeated to give evidence of a trend).

Figure 2 : *organization of curative service* (in order to simplify the diagram, the laboratory is not shown)

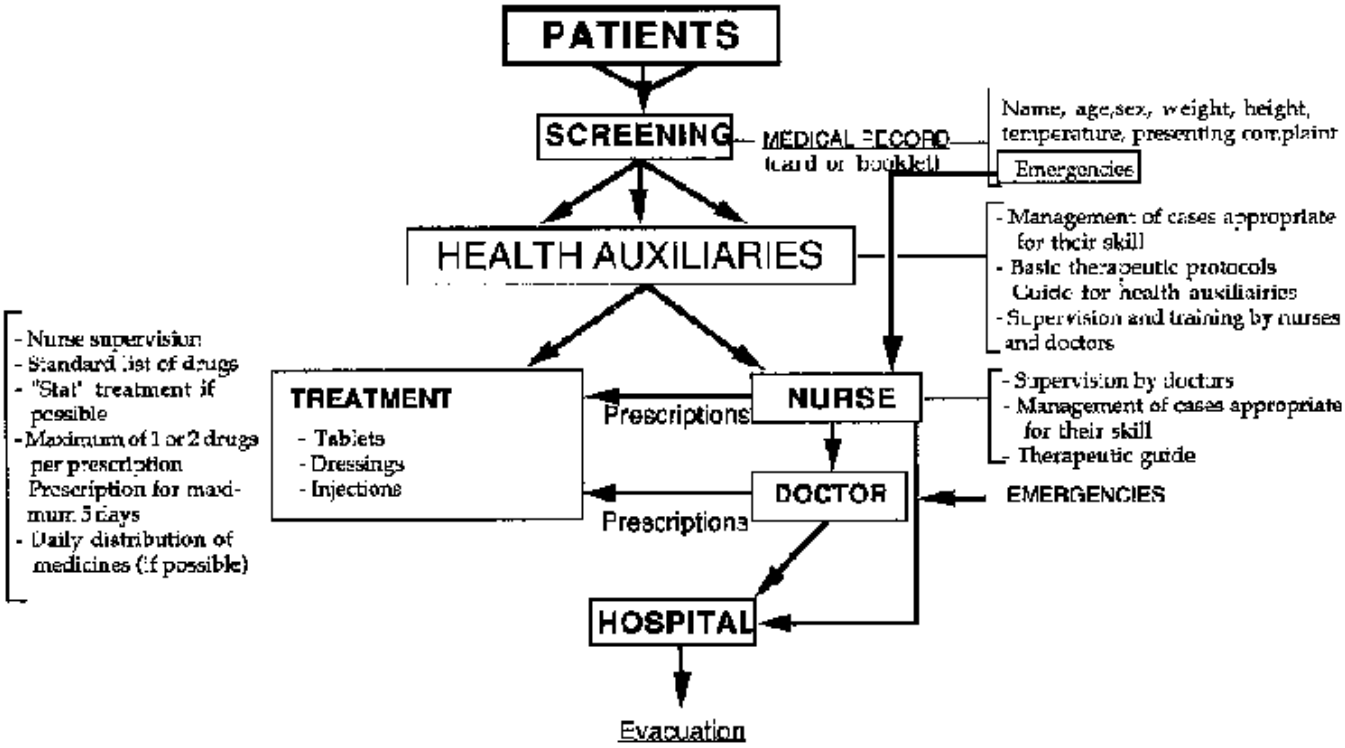

Figure 2

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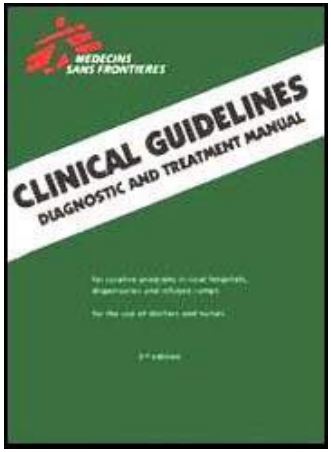

Clinical Guidelines and Treatment Manual (MSF, 1993, 319 p.)

Chapter 1 - A few symptoms and syndromes

Fatigue

Fatigue is one of the commonest presenting complaints. The term includes various subjective symptoms (lassitude, lack of energy etc), that are both physical and mental. In most of cases there is no pathological basis to be found, however it must not be forgotten that many diseases may present as fatigue. The symptom, as much as any other, requires a full, methodical clinical assessment.

Clinical features

The history and physical examination must define:

- Mode of onset: sudden or progressive, old or recent, isolated or associated with other symptoms, life situation (work, intense activity, recent illness, refugee displacement…).

- Nature of the fatigue: physical, intellectual, sexual…; whether it comes on in the morning (often psychosomatic) or evening (more usual).

- Any associated clinical features:

· Systemic features: anorexia, weight loss, fever, anaemia, all of which suggest a probable organic basis.

· Localizing features linked to a particular organ system, eg cough and haemoptysis in TB, dyspnea in cardiac failure or anaemia, abdominal pains in parasitoses, jaundice in hepatitis.

· Physical findings: the examination must be comprehensive:

· Nutritional status: weight (signs of recent loss), anaemia, signs of vitamin deficiency diseases…

· Cardiopulmonary: pulse, BP, chest auscultation…

· Abdomen: including liver, spleen…

· Lymph nodes

· Skin and mucus membranes

· Affect: anxiety, depression.

Diagnosis and Treatment (dispensary)

- If the fatigue is part of a syndrome, treat the cause.

- If there seems to be no organic basis, assume the complaint is psychosomatic. Advise the patient to consult a traditional healer, who is usually in a far better position to help. Depending on national recommendations, a placebo may be prescribed, give: multivitamins: 1 tab x 3/d x 5 days.

Pain

Pain is a common presenting symptom and of course may be caused by a range of conditions. Pain is a subjective experience. The same degree of pain will be expressed differently from patient to patient. There are also cultural differences. The assessment of the severity of pain in a given patient is thus difficult. The solution is to address the problem with a clinical approach that is both methodical and comprehensive.

Clinical features

The history of the pain elicited from the patient must define:

- Onset: sudden, subacute or progressive.

- Duration.

- Localization and radiation.

- Nature of the pain: colicky, burning, sharp, constricting, like a weight; and whether intermittent or continuous.

- Factors that induce or relieve the pain: posture, coughing, deep breaths, meals, specific foods, movement etc.

- Associated systemic features: fever, fatigue, weight loss, etc.

- Associated focal features: cough, diarrhea, vomiting, burning during micturition...

The physical examination should be oriented towards the organ system or region where the pain seems to be localized. The synthesis of the clinical data provides the diagnosis and orients therapy, both etiological and symptomatic.

Treatment

ETIOLOGICAL

That is, treatment of the cause of the pain.

SYMPTOMATIC (dispensary)

According to the nature of the pain.

- Headache

acetylsalicylic acid(PO): 3 g/d divided in 3 doses x 3-5 days
or
paracetamol (PO): 1.5 g/ d divided in 3 doses x 3-5 days

- Psychosomatic pains: consider this diagnosis if pains are multiple, fleeting, or shifting. Treat as for headache or refer to a traditional healer.

- Joint pains

acetylsallcyllc acid (PO):
Adult: 3 g/ d divided in 3 doses x 3-5 days
Child: 50 mg/kg/d divided in 3 doses x 3-5 days

- Inflammatory: tends to be worse at night. Look for an infectious cause (may require surgical drainage and antibiotics).

If acetylsalicylic acid is ineffective, treat with:

indomethacin (PO):
Adult: 50 to 150 mg/d divided in 3 doses x 3-5 days

- Joint pain (especially monoarticular): exclude septic arthritis. Note that periarticular and bone pains with swelling and loss of function of the limb may be due to scurvy: look for bleeding from the gums and treat with:

Ascorbic acid (vitamin C) (PO):
Adult: 500 to 1,000 mg/d divided in 3 doses until recovery
Child: 100 to 300 mg/d divided in 3 doses until recovery
Give dietary Advice.

- Colic

· Gastrointestinal: exclude a parasitic infection. Do not give acetylsalicylic acid (possibility of ulcer).

Depending on severity:

N-butylhyoscine (PO):
Adult: 30-60 mg/d divided in 3 doses x 3-5 days
or
atropine (SC):
Adult: 0.5 to 1 mg by injection
Child: 0.01 to 0.02 mg/kg by injection

· Renal or biliary colic: same as above. If necessary: noramidopyrine (IM or IV):

Adult: 500 mg by injection

- Very severe pain

noramidopyrine (IM or PO)
Adult: 500 mg as necessary
Or, if ineffective: pentazocine (IM or PO): 30 mg IM or 50 mg PO as necessary

Fever

Fever is common, and usually, related to an infection of viral, bacterial or parasitic origin. The type and duration of fever helps determine the diagnosis. Note that fever in the newborn has its own complications.

Fever may be defined as a rectal temperature above 37°C in the morning, and above 37°5C in the evening.The corresponding axillary temperature would be above 37°5C and 38°C. This definition is practical in hospital but not as satisfactory in a dispensary. Several factors have to be considered in taking a patient's temperature: the technique (axillary, oral, rectal), the quality of measurement, the patient compliance, and the time available. One usually considers that axillary temperature under estimates the core temperature by 0°5C.

- Clinically: any hyperthermia, even if it is only slightly above normal, could be significant (e.g. nocturnal febrile stage in tuberculosis). On the other hand, at dispensary and primary health care level, a higher threshold only should be considered (ea. axillary temperature > 38°C after 5 mins).

At hospital level, a finer thresh-holds can be adopted.

In all cases, it is essential to define these thresholds.

- Fever to be treated:

· In the infant and new born: over 38°C rectal temperature, and/or if there are signs of intolerance.

· In the adult: above 38°5C and/or if the patient is uncomfortable.

Clinical features

- The following complications can be brought about by fever in newborns and infants:

· Convulsions
· Dehydration
· Malignant hyperthermia (collapse and coma)

They should be investigated and treated but moreover they should be prevented (see treatment).

- Clinical assessment is the main method of investigating the cause of fever. Epidemiological environment should also be considered.

If available, a laboratory could be useful. The following guidelines are helpful. They should be adapted to the epidemiological context, level of medical staff and diagnostic methods.

FEVER AS A SERIOUS SYMPTOM OF INFECTION

- High fever, shivering, sweating, malaria endemic area (falciparum), headache, consciousness desorders (even minor) indicate severe malaria. Without treatment, it can cause death.Take a malaria smear and treat.

- High fever with general health impairement, with or without other signs indicates typhoid fever.

- High fever, stiffness and neurological signs indicate meningitis or meningocephalitis.

- High fever with:

· A hemorragical syndrome indicates meningococcemia, or hemorragic fever, or in an endemic area, relapsing fever, rickettsiosis, dengue…

· Icterus indicates a hepatitis…

· Associated icterus and renal signs (oliguria…) indicates yellow fever, leptospirosis…

- Fever with shock indicates septicemia.

- Fever with respiratory insufficiency indicates pneumonia, bronchiolitis, epiglottitis…

- Fever during last month of pregnancy (major risks to fetus and mother) indicates falciparum malaria, pyelonephritis…

- Fever in the new born is always serious.

- Fever in the young adult with general health impairement, adenopathies, chronic diarrhea… indicates a severe opportunistic infection in an AIDS patient.

FEVER ASSOCIATED WITH FOCAL SIGNS

Here, diagnosis is easier, for example:

- Pharyngeal signs in tonsillitis

- Pulmonary signs in pneumopathy

- Cutaneous rash or Koplick spots in measles

- Dysentery in shigellosis

- Urinary signs in pyelonephritis

- Painful swelling of an abcess or an osteomyelitis...

- Icterus in hepatitis...

- Painful large liver in amoebic abcess

FEVER WITH NO OBVIOUS FOCAL SIGNS

- Depending on the endemic area and associated clinical picture:

· Trypanosomiasis during blood stage
· Bilharzia during invasive stage
· Visceral leishmaniasis (Kala-Azar)

· Trichinosis during invasive stage
· Brucellosis
· Arbovirus infection: dengue, scrub typhus...

- Prolonged fever:

· Tuberculosis, Brucellosis, collagen disease...

"PUO" PYREXIA UNKNOWN ORIGIN

No sign leads to a diagnosis.

When there is a high rate of PUO, an epidemiological survey is necessary. However, it is recommended to take stock of the situation with the local health authorities, as they have experience of the local conditions and often have the answer to the problem.

Treatment (dispensary)

- Causative: cause of fever following the established diagnosis of the disease.

- Symptomatic

· Get the patient undressed.

· Either wet the skin with a tepid sponge (body temperature, not cold) and leave to cool by evaporation, or give a bath at 37°C for a few minutes.

· Antipyretic treatment (see table 1):
paracetamol (PO):

Adult: 2 g/d divided in 4 doses
Child: 30 mg/kg/d divided in 4 doses
or acetylsalicylic acid (A.S.A.) (PO):
Adult: 3 g/d divided in 3-4 doses
Child: 50 mg/kg/d divided in 3-4 doses

- Keep the patient well hydrated and breast fed.

- Maintain good nutrition, even if anorexic. Convince the mother to keep feeding.

- With convulsions: diazepam: 0,5 mg/kg to be given rectally (use the parenteral solution)

- With diarrhea, give same dose by slow IV injection. Repeat after 10 minutes if necessary.

Antipyretic Dosage

Table 1 : *Dosage of acetylsalicylic acid (A.S.A.) and paracetamol by age and weight*

AGE	0	1 month	12 months	5 years	15 years	Adult
WEIGHT	0	4 kg	8 kg	15 kg	35 kg	Adult
A.S.A. tab 500 mg	–	–	3 x 1/4 tab	3 x 1/2 tab	3 x 1 tab	
A.S.A. tab 300 mg	–	–	3 x 1/2 tab	3 x 1 tab	3 x 2 tab	
A.S.A. tab 75 mg	–	–	3 x 2 tab			
Paracetamol tab 500 mg	–	–	3 x 1/4 tab	3 x 1/2 tab	3 x 1 to 2 tab	
Paracetamol tab 100 mg	3 x 1/4 tab	3 x 1/2 tab	3 x 1 tab	3 x 2 tab		

Table 1

Notes

- Acetylsalicylic acid (A.S.A.)

· When used as an anti-inflammatory, the maximum daily dose can be doubled:

Adult: 6 g
Child: 100 mg/kg

· In some countries, acetylsalicylic acid is contraindicated in children. Use paracetamol if available.

- Paracetamol

· Does not have an anti-inflammatory effect.
· Use in patients with a history of ulcer or gastric problems, in those allergic to acetylsalicylic acid (some asthmatics), in infants and pregnant women.

Anaemia

Anemia is defined as an abnormally low concentration of hemoglobin in the blood (below 12 g/lOOml in males, 11 g/lOOml

in females). There are three mechanisms: impaired RBC production, RBC loss from bleeding, and increased RBC destruction (haemolysis).

– Three major causes:

· Malaria

· Nutritional deficiencies in iron and/or folic acid, especially in children and women of childbearing age.

· Hookworm

– Other causes:

· G6PD deficiency: crisis of haemolytic anaemia precipitated by certain drugs: chloroquine (perhaps), primaquine, sulfonamides, sulfones, nitrofurans, chloramphenicol, tetracyclines (perhaps), nalidixic acid, acetylsalicylic acid, noramidopyrine, probenecid, niridazole, vitamin K, quinidine…

· Sickle cell disease, thalassemia

· Leishmaniasis

· Bleeding (e.g. gastric ulcer)

Clinical features

- Pallor of conjunctivae and mucus membranes, fatigue, dizziness, dyspnea, tachycardia, edema, cardiac murmur...

- If possible, determine hemoglobin or hematocrit.

- A blood film will show red cell morphology (but this is difficult to interpret).

- Stool examination to exclude hookworm; or else in an endemic area treat presumptively with mebendazole.

Treatment

IRON DEFICIENCY ANEMIA (dispensary)

ferrous sulphate (PO)
Adult: 0.6 - 1.2 g/d divided in 3 doses x 2 months

Child: 15 to 30 mg/kg/d divided in 3 doses x 2 months

- Often associated with a nutritional deficiency in folate:
folic acid (PO)

Adult: 10-20 mg/d single dose x 15-30 days
Child: 5-15 mg/d single dose x 15-30 days

- Combination tablets can also be used, though the dose of folic acid is low:
ferrous sulphate + folic acid (PO): as for ferrous sulphate tabs.

- Deworming

mebendazole (PO): 200 mg in a single dose for all ages.

FOLIC ACID DEFICIENCY (rarely occurs on its own) (dispensary)

folic acid (PO)

Adult: 10-20 mg/d single dose x 15-30 days
Child: 5-15 mg/d single dose x 15-30 days

HEMOLYTIC ANEMIA (MALARIA, HAEMOGLOBINOPATHIES) (dispensary)

Give folic acid only. Do not give iron unless there is a proven associated deficiency (iron from haemolyzed RBCs remains in the body and is reutilized).

SEVERE ANEMIA WITH SIGNS OF DECOMPENSATION: HAEMATOCRIT LESS THAN 15% OR SIGNS OF CARDIAC FAILURE (hospital)

- Transfusion: avoid whenever possible because of risk of transmission of HIV and Hepatitis B viruses. If anaemia is very severe, however, transfusion is life-saving. Use grouped compatible blood; use packed cells rather than whole blood if possible.

Volume to be transfused:

Adult:	2 to 4 bags of packed cells (double volume if whole blood)
Child:	packed cells: increase in haematocrit desired x weight in kg. E.g.

	13kg child with Hct of 14%: to bring Hct up to, say, 30%, need to transfuse (30 -14)
	x 13 = approx. 200 ml packed cells = approx 400 ml whole blood.
	whole blood: above volume x 2
	Rate of transfusion: 2 drops/minute/kg

- Observe very closely (risk of pulmonary edema).

Note: Prevalence of HIV contra-indicates blood transfusion (in the absence of donor blood screening test). Before transfusing measure the risk. Quote: "Transfusions that are not absolutely indicated are contra-indicated".

Prevention

SHORT TERM

- Prophylaxis for pregnant women and malnourished children:

ferrous sulphate + folic acid (PO)
Adult: 200 mg + 15-30 mg/d single dose
Child: 60 mg + 2.5 mg/d single dose

- Dietary Advice

LONG TERM

- Malaria control

- Deworming

- Nutrition education

- Hygiene and sanitation, health and nutritional education, national and local nutrition policy.

Convulsions

- Paroxysmal involuntary movements of cerebral origin with loss of consciousness, often accompanied by biting of the tongue and urinary incontinence.

- Two priorities:

· Stop the convulsion.

· Make an etiological diagnosis quickly and treat the cause. This necessitates a good clinical examination, a blood slide for malaria and possibly a lumbar puncture.

Supportive Treatment

THE PATIENT HAS STOPPED FITTING

- Put in the coma position (lying on left side and upper leg flexed), maintain clear upper airway (remove any secretions or vomitus).

- Treat any fever.

- Prepare a syringe of diazepam in case of further convulsions.

THE PATIENT IS STILL FITTING

- diazepam (IV)

Adult: 10 mg by slow IV injection (over 2-3 minutes).
Child: 0.5 mg/kg rectally (use the injectable form) and inject by means of a syringe without a needle, if possible with the help of a nasogastric tube cut to 2-3 cm length. If

rectal route impractical because of diarrhea, give same dose by slow IV. If still fitting after 10 minutes, repeat same dose. Child may need to be ventilated if there is respiratory insufficiency secondary to IV diazepam.

Do not repeat dose if there is no means of ventilation

- Put in coma position, clear out upper airways.

- Treat any fever.

REPEATED GRAND MAL CONVULSIONS

Convulsions which follow each other rapidly or do not cease, carry the risk of respiratory arrest or serious neurological consequences.

- Try diazepam 10 mg by slow IV and continue with 40 mg in 500 ml 5 % glucose infused over 24 hours. Theoretically, barbiturates IV and assisted ventilation..

- Ensure adequate nutrition and hydration nursing.

REPEATED CONVULSIONS

These can be prevented by oral phenobarbital (possibly with gastric tube) or IM if available.

> **Adult and Child: 3-5 mg/kg/d in 1 or 2 doses without exceeding 200 mg/d.**

Injectable phenobarbital must be given through a glass syringe.

Treatment of the Cause

(only causes amenable to treatment are discussed)

INFECTIOUS

· Hyperthermia: treat the fever.

· Cerebral malaria (falciparum).

· Meningitis.

· Meningo-ncephalitis (e.g. measles, arbovirus): supportive treatment as for coma: feeding-hydration, nursing.

METABOLIC

- Hypoglycemia: may occur in severe malnutrition, neonate or patient being treated with IV quinine. Treat with:

> **30-50 % solution of hypertonic glucose (IV): 1 g/kg stat followed by 5 % glucose infusion.**

- Hypocalcemia: rickets, malnutrition, neonatal period. Treat with: calcium gluconate (ampoule 10 ml = 1 g)

> **Adult: 1 g by slow IV injection (= 1 amp)**
> **Child: 0.04 g/kg by slow IV injection (= 0,4 ml/kg)**

Never use calcium chloride IV.

EPILEPSY

Once commenced, phenobarbital treatment must never be abruptly interrumpted: risk of grand mal convulsions. The longer the treatment has lasted, the more gradual it should be stopped.

In the ambulatory patient, it is often better to leave him with some

attacks than risk abrupt interrumption.

phenobarbital (PO):
Adult and child: 3-5 mg/kg/d in 1 dose, to be reached gradullay.

If this is insufficient, but only it is available on the spot, the following can be added:

phenytoin (PO):
Adult: 2-6 mg/kg/d divided in 1-2 doses
Child < 10 years: 3-8 mg/kg/d divided in 1-2 doses

These doses are reached gradually, commencing with 2-3 mg/kg/d in 2 doses. The same risk with abrupt interrumption.

RECURRENT FEBRILE CONVULSIONS IN CHILDREN

Discuss preventive treatment with diazepam. Avoid phenobarbital.
diazepam (PO): 0.25 to 0.5 mg/kg/d divided in 3-4 doses

ECLAMPSIA

- diazepam: 10 mg slowly IV, plus 40 mg in 500 ml 5 % glucose infused over 24 hours.

- Treatment of hypertension: hydralazine IV or infusion (see "Hypertension).

- Obstetrical management (see "Obstetrique en situation d'isolement", Medecins Sans Frontieres, 1992).

- Feeding, hydration, nursing.

Shock

Acute circulatory failure, characterized by a rapid fall in blood pressure which reduces perfusion of the vital organs, causing anoxic damage and preventing the elimination of metabolic waste.

Etiology and Pathophysiology

There are three main mechanisms, more than one may be active in a shocked patient: hypovolaemia, cardiogenic shock, and

vasodilatation.

HYPOVOLAEMIA

- Hemorrhage: trauma, peptic ulcer, ectopic pregnancy, antepartum or postpartum hemorrhage, uterine rupture, etc.

Loss of up to 10-20% of the blood volume may be well tolerated.

Loss of more than 20% of the blood volume does not permit maintenance of adequate blood pressure to perfuse the vital organs.

- Dehydration: prolonged diarrhea and vomiting, cholera, burns, intestinal obstruction, diabetic coma, etc.

- Burns

- Hemolytic crises: malaria, G6PD deficiency and certain medications (see anaemia).

CARDIOGENIC SHOCK

- Myocardial infarction, terminal congestive cardiac failure.

- Compromised left ventricular filling or emptying: tachyarrythmias, haemopericardium, pericardial tamponade, tension pneumothorax, massive pulmonary embolism.

VASODILATATION

- Septic shock: septicemia, release of bacterial endotoxins.

- Anaphylactic shock: release of histamine and other vasodilators.

Clinical features

HYPOVOLEMIC OR CARDIOGENIC SHOCK

- Patient usually conscious, but apathetic.

- Palor, marbled skin, cold and clammy extremities.

- Rapid thready pulse (rate >120), blood pressure low or undetectable.

- Rapid breathing.

- Oliguria or anuria.

SEPTIC SHOCK

- Early: fever, chills, warm extremities.

- Rapid pulse, variable BP.

- Hyperventilation.

SIGNS RELATED TO SPECIFIC ETIOLOGIES

- Loss of skin elasticity: dehydration.

- Chest pain: infarction, pulmonary embolism.

- Abdominal guarding: peritonitis, distension due to obstruction.

- Melaena: GIT hemorrhage.

Management (hospital)

- Lie patient down, keep warm, elevate legs.

- Establish IV line: large vein, large bore needle (16 or 18G for adult).

- Cardiac arrest: extemal cardiac massage.

- Respiratory arrest: endotracheal intubation, manual ventilation.

- Close monitoring of vital signs: pulse, BP, respiratory rate, urine output.

Treatment of the cause (hospital)

HYPOVOLEMIA

-Hemorrhage

Rapid transfusion of as many units of crossmatched blood (which has been HIV tested) has necessary to maintain a stable blood pressure. Meanwhile, prepare to surgically treat the cause of the hemorrhage.

Note: the absence of HIV testing, refer to note.

- Acute dehydration

Infusion of Plasmion or Haemacel: 1 to 2 bottles (child: 10 to 20 mg/kg), given in a jet thann: ringer lactate solution

> **Adult and child: 100 ml/kg over 4 hours, then 100 ml/kg in the next 20 hours.**

CARDIOGENIC SHOCK

- Cardiac failure and acute pulmonary edema

· half-sitting position, legs lower than body.

· furosemide: 40 to 80 mg IV stat. Higher doses sometimes needed. Observe pulse, BP and urine output.

· digoxin (only if no cardiac arrythmia):

> **Adult: 0.25 mg IV stat**
> **Child: 0.01 mg/kg IV stat**

· Beri-Beri may be a cause of cardiac failure. Treat with Thiamine (IM):

Adult: 200 mg IM or IV /d for a few days then PO
Child: 50 -100 mg IM or IV /d for a few days then PO

· If furosemide not available, rapid blood letting through basilar vein (300-400 ml in the absence of a severe anaemia) in severe cases.

- Tamponade (due to acute constrictive pericarditis, often tuberculous). Requires urgent pericardial tap.

- Myocardial infarction: rare in tropical countries.

· Treat the pain with pentazocine: 30 mg IM.
· Nitrite derivatives if available.

- Tension pneumothorax: urgent pleural aspiration.

VASODILATATION

- Septic shock

· Find the focus of infection: abscess, RTI, digestive system, gynaecology).

· Antibiotics:
ampicillin: 100 to 200 mg/kg/24 hours, divided in 3-4 IV injections/24 hours

· Plus, if available:

gentamicin: 3 mg/kg/24 hours, IM, without exceeding 180 mg/24 hours or 3 IM injections/24 hours

· Controversial: corticosteroids.

- Anaphylactic shock

Determine and remove the cause (e.g. insect sting, drug).
epinephrin (adrenaline):

Adult: 0.5 to 1 mg diluted in 10 ml isotonic solution (glucose, normal saline, ringer lactate) by slow IV infusion.

Child: 0.25 mg diluted in 10 ml isotonic solution (glucose,

normal saline, ringer lactate) by slow IV infusion.

Note that the management of a shocked patient must always include very close monitoring of vital signs and clinical progress. All parameters should be noted on an observation form.

Severe protein-energy malnutrition

Malnutrition occurs because of a prolonged discrepancy between food consumption and nutritional needs.

To understand malnutrition requires first a knowledge of the prevalence in the childhood population and second a study of the individual causes (pathology, weaning problems) or collective causes (famine, drought, economic problems) in order to determine appropriate treatment measures.

How to determine nutritional state

CLINICAL SIGNS

Marasmus

Muscle wasting and loss of sub-cutaneous tissue.
Loss of appetite.
Reduced growth.
Irritability.

Kwashiorkor

Weight loss,
Œdema of extremities (and the face).
Loss of appetite.
Skin changes. Apathy.
Changes of the heir and nails.

Maras-Kwashiorkor

Two classes of signs: muscle wasting and oedema.

CLASSIFICATION

There are several types of classification. It is helpfull to use anthropometric measurements to determine the severity of the malnutrition.

The most frequently used indicators are:

- Classification of weight/age

Weight of the subject / Normal weight of a child of the same age.
80 - 60 %: moderate malnutrition
< 60 %: severe malnutrition

- Classification of weight/height

Weight of the subject / Normal weight of a child of the same height.
80 - 70 %: moderate malnutrition
< 70 %: severe malnutrition

- Arm circumference
Measure the arm circumference in the middle of the upper arm of a child aged 1 to 5 years.
13,5 cm -12,5 cm: moderate malnutrition
< 12 cm: severe malnutrition

- Presence of tibial oedema

This indicates severe malnutrition.
Beyond their use to study the prevalence of malnutrition in the population, anthropometric indicators establish the criteria for entry to and exit from the feeding center.

Example (weight/height):

· criteria for entry = < 70 % W/H

· criteria for exit = > 85 % W/H for two consecutive measurements, improving general state and disappearing oedema.

Different types of treatment

FEEDING CENTER FOR THE SEVERELY MALNOURISHED

First establish a system adapted to needs which depends on the number of cases: establish a specific structure = center of therapeutic recuperation (intensive), or indeed a pediatric service if the numbers are not too large.

Treatment continues on a 24 hour cycle 7 days a week. The

treatment center is essential and depends on the active participation of the mothers under the supervision of trained personnel. A medical center is indispensable.

The principle of treating the malnourished persons is to progressively give calories and protein at appropriate stages of treatment:

- Acute phase

· reanimation and initiation of dietary cure
· maintenance

- Recuperahon phase

· enhanced growth
· return to family meals

ACUTE PHASE

- Reanimation and initiation of dietary cure

Reanimation is the medical treatment of the complications of

malnutrition, in particular dehydration.

Initiation of a cure leads at the same time to reanimation.

Nutrition must be progressive and not agressive. Give small frequent meals because these reduce the risk of diarrhea, vomiting, hypoglycemia and hypothermia. Always adapt treatment to the individual.

Infants are given oral nourishment (by spoon, never by bottle) or by nasogastric tube if anorexic or there is severe vomiting.

The regime should be max 80 to 100 Kcal/kg body weight in the first days with a minimum of protein.

- Maintenance

A phase of stabilisation occurs during treatment: at the stage, attempts should be made to "recuperate" the weight lost.

Note a reduction of the oedema or stagnation in kwashiorkor.

This phase continues until the appetite returns.

If the child is still being breast fed, it is necessary to continue and encourage this method of nutrition.

The following protocol can be used for example:

20 g (45 ml) DSM (dry skimmed milk) 100 g (100 ml) sugar 40 g (40 ml) oil	reconstitute with 1 liter of water: 100 Kcal and 0.6 g of protein/100 ml

Table A

Treatment of acute phase	Number of meal/day	Volume of meal (ml/kg)	Protein g/kg/day	Energy Kcal/kg/day
Initiation				
Day 1 and 2	12	10	0.6	100
Day 3 to 5	8	15	0.6	100
Maintenance				
Starting on the 6th day	6	20	0.6	100

Table

Meals are given every two hours. Gorging of food can be used, this is practiced on day 1 and 2, under the surveillance of a nurse or other health worker.

The acute phase lasts for 7 days with marasmus. For a child with oedema, the progression from initial treatment to cure must be slow and the maintenance phase prolonged. The oedema decreases and the general state improves with the stage of rehabilitation (about 15 days).

RECUPERATION PHASE

- Enhanced growth

The objective is to achieve no more weight for height as quickly as possible.

The speed of weight gain is directly proportional to alimentary consumption. Minimal requirement corresponds to 150-200 Kcal/kg/day and 4 to 5 g of protein/ kg / day.

The principle occupation at the stage is to institute concentrated

high energy alimentation because a child of less than 5 years only absorbs illimited amount.

Use high energy concentrated alimentation: oil, sugar... and continue to give as many small meals as possible per day.

A possible formula for high energy alimentation is:

90 g (200 ml) DSM 60 g (60 ml) sugar 80 g (80 ml) oil 800 ml water	1000 ml

128 Kcal and 3.2 g of protein/100 ml
192 Kcal and 4.8 g of protein/100 ml

Many of the formulas are available, notably that of Oxfam

6 volumes of powder milk 2 volumes of oil 1 volume of sugar	premix

premix = dry mixture
H.E.M. = premix + water (H.E.M. = high energy milk)

1 volume of premix + 4 volumes of water-> H.E.M.
100 ml of H.E.M. = 100 Kcal + 4 g of protein (1 ml = 1 Kcal)

- Return to family meals

The move to family meals is an important step in recuperation.

Meals should be introduced progressively. Insist on the importance of the participation of mothers and their education in nutrition.

Medical feeding center

ASSOCIATED PATHOLOGIES

The associated pathologies must be treated:

- Diarrhea:
ORS

- Bacterial infections
antibiotics

- Buccal candidiasis
gentian violet

- Intestinal parasites
mebendazole: 200 mg/d x 3 days

- Anti-malaria prophylaxis
chloroquine: 10 mg/kg/week

- Skin lesions
zinc oxide ointment

- Look for tuberculosis.
Tuberculosis should always be suspected if, after several weeks of treatment, a child is not recovering.

SPECIFIC NUTRIENT DEFICIENCIES

These should be corrected if possible:

- Potassium:5mmol/kg/day

- Magnesium:2mmol/kg/day

- Zinc:2 mg/kg/day

- Multivitamin preparation and vitamin C

- Vitamin A: according to WHO recommendations

- Iron: from the reanimation phase

- Folic acid: 5 mg/day

FLUID REQUIREMENTS

- It is important to give water to the malnourished infant, several times a day, between meals, especially if the outside temperature is high, or if the infant has a fever, and educate the mother to this effect.

- It is necessary however to use ORS with discrimination: only if there is diarrhea and, if it is poorly tolerated, cut the volume to

1/2 or 1/3.

Surveillance

Pay particular attention to the changing state of each case, in particular by following the weight gain and by medical examination.

All personnel in the feeding center must be able to analyse cases and act appropriatly.

This surveillance must be organised:

- Control the allocation of meals and their preparation.

- Regularly gather information: register weight (especially during acute phase).

- Repeated medical consultations, register medications.


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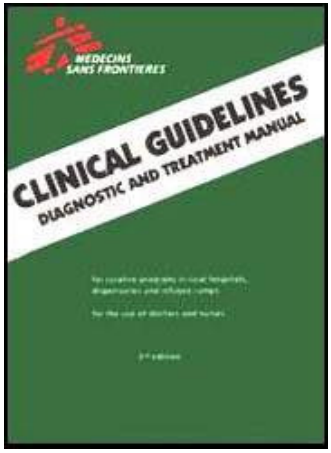


Clinical Guidelines and Treatment Manual (MSF, 1993, 319 p.)

Chapter 2 - Respiratory diseases

- Strategy for the control of acute respiratory infections in developing countries
- Common cold
- Pharyngitis and Tonsillitis
- Acute otitis
- Chronic otitis
- Acute laryngitis
- Sinusitis
- Bronchitis
- Pneumonia and Bronchopneumonia
- Staphylococcal pneumonia
- Bronchiolitis
- Asthma

Tuberculosis

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

Chapter 2 - Respiratory diseases

Strategy for the control of acute respiratory infections in developing countries

In developing countries, lower respiratory tract infections are one of the main causes of mortality in children under 5 years of age. A large proportion of these infections are bacterial. Prompt treatment with an appropriate antibiotic will therefore assist in decreasing child mortality. At the peripheral dispensary 1evel, simple, reliable clinical criteria are needed to allow health workers to decide whether:

- to give antibiotics for moderate cases;

- to refer severe cases to a doctor or hospital.

This chapter is based upon the WHO (38) strategy which aims to define these criteria. This chapter only deals with lower

respiratory tract infections.

Management of the child with a cough

Cough is always present in upper or lower respiratory tract infections (rare exceptions). Diagnosis and treatment are based on cough.

WHEN DOES A CHILD WITH A COUGH NEED ANTIBIOTIC TREATMENT?

Most of coughing children do not need antibiotics. But association of cough and some other signs indicates that A.R.I. should be treated with antibiotics.

- Positive criteria
If one or several of those following criteria exist, antibiotic treatment:

· Tachypnea > 50 respirations/minute
· Alar flare (dilatation of the nostrils with each inspiration)
· Chest indrawing (sternal or intercostal recession)

· Cyanosis
· Child unable to drink
· Child malnourished (< 70% weight-for-height or kwashiorkor)
· Post-measles

- Criteria that are not useful at a dispensary level

· Fever (since viral infections also cause fever)
· Yellow sputum (difficult symptom to assess in a young child)
· Chest auscultation (needs a doctor, difficult in tiny children)

WHEN SHOULD A CHILD BE REFERRED TO HOSPITAL?

Although tachypnea is the best predictor of the presence of pneumonia, the severity is best judged by chest indrawing.

- Chest indrawing (sternal or intercostal recession), except if child is less than 1 month of age or child has asthma, as in these two conditions chest indrawing can be present even with mild disease. In these cases, use tachypnea as the main criterion.

- Tachypnea > 60 respirations/minute.

- Cyanosis.

- Child unable to drink.

- Respiratory fatigue or apnoeic periods.

- Clouded consciousness.

- Stridor

- Convulsions

WHICH ANTIBIOTIC SHOULD BE CHOSEN TO TREAT PNEUMONIA IN A CHILD UNDER 5 YEARS OF AGE?

Account should be taken of bacterial activity, effectiveness, ease of availibility (price, supplies...) and side effects.

Dispensary: according to the situation and to availability, the choice should be made from the following four antibiotics:

1. cotrimoxazole per os x 5 days	: 40 mg/kg/d of SMX divided in 2 doses	X 5 days

2. amoxcillin per os x 5 days 3. ampicillin per os x 5 days 4. PPFIM (or procain penicillin) 5. chloramphenicol per os	: 50 mg/kg/d divided in 3 doses : 100 mg/kg/d divided in 3 doses : 50,000 to 100,000 IU/kg once daily avoid in children less than 1 year of age : 50 to 75 mg/kg/d divided in 3 doses	

Choice is determined by the national recommendations of the country.

Hospital: the same antibiotics as above. Two special situations:

- Serious cases, or need for parenteral administration

ampicillin (IM - IV)	: 100 mg/kg/d divided in 3 injections / 24 hours
chloramphenicol(IM - IV)	: 50 to 75 mg/kg/d divided in 3 injections / 24 hours

Treat for 7 days. If possible, switch to oral forms after 72 hours.

- Neonatal pneumonia

ampicillin IV:	100 mg/kg/d divided in 3 injections x 7 days

Depending on gravity, combine this with:

gentamicin IM:	< 10 days: 4 mg/kg/d divided in 2 injections x 7 days
	10 days to 1 year: 6 mg/kg/d divided in 2-3 injections x 7 days

Note: in situations where the patient will only be seen once (such as mobile clinics, or with nomads), one can use a slow-release depot preparation, oil chloramphenicol: 100 mg/kg in 1 IM injection, repeated after 48 hours if possible.

Table 2 : *Comparison of different antibiotics used to treat respiratory infections*

Antibiotics	Spectrum (main pathogens)	Cost FF* Child 10 kg / 5 days	Side effects	Ease of use Number of doses/day
ORAL				

Penicillin V	Pneumococcus	1.25	Penicillin allergy	3 doses/d
Ampicillin or ***Amoxycillin***	Pneumococcus Haem. Influenzae Gram – bacilli	3.60 2.50	Penicillin allergy	3 doses/d 3 doses/d
Cotrimoxazole	Pneumococcus Haem. Influenzae Staphylococque aureus Chlamydia Pneumocystis	0.50	Rare but may be fatal : Stevens-Johnson synd. Contraindicated in infants < 2 months	2 doses/d
Erythromycin	Chlamydia Mycoplasma Pneumococcus	3.60	Few : GIT	3 doses/d
Chloramphenicol	Haem. Influenzae Pneumococcus Staphylo. aureus Gram – bacilli	1.35	Agranulocytosis grey syndrome (rare but serious) Contraindicated in infant < 2 mth	3 doses/d
Tetracyclines	Haem. Influenzae Pneumococcus Chlamydia Mycoplasma	0.60	GIT : staining of teeth and bones Contraindicated in children < 8 years and pregn.	3 doses/d
IM / IV				
Benzyl Peni PPF or ***Procain Peni***	In adequat dosage, active against Pneumococcus Haem. Influenzae	34.00 2.50	Penicillin allergy	4 inj./d 1 inj./d
Ampicillin or ***Amoxycillin***	as above	12.30	Penicillin allergy	3 inj./d

Chloramphenicol	as above	8.00	Agranulocytosis	3 inj./d
Gentamicin	Gram – Staphylococci	1.00	Nephrotoxic ototoxic	2 to 3 inj./d

* Average price of generic drug in 1988.

Table 2

SUPPORTIVE THERAPY

Oxygen

- **Expensive, difficult to procure, questionable effectiveness.**
- **Reserve for cyanosed asthmatic children or those with RR > 70.**
- **Administer by intranasal catheter, flow rate 1 litre/min.**

Food and fluids

- **Imperative to continue breast feeding.**
- **Encourage oral fluids; use nasogastric tube if necessary.**
- **Encourage child to eat.**

Keep nose clear

- **Lavage with syringe and normal saline (Nacl 0.9 % or ringer**

lactate) in hospital.

· Show mother how to use a clean piece of cloth at home.

Temperature

· Treat any fever above 38°C.
· Treat for malaria in an endemic zone.

Humidify air: If possible: wet sheet across top of cot...

Do not give antitussive medicines: expensive and sometimes dangerous.

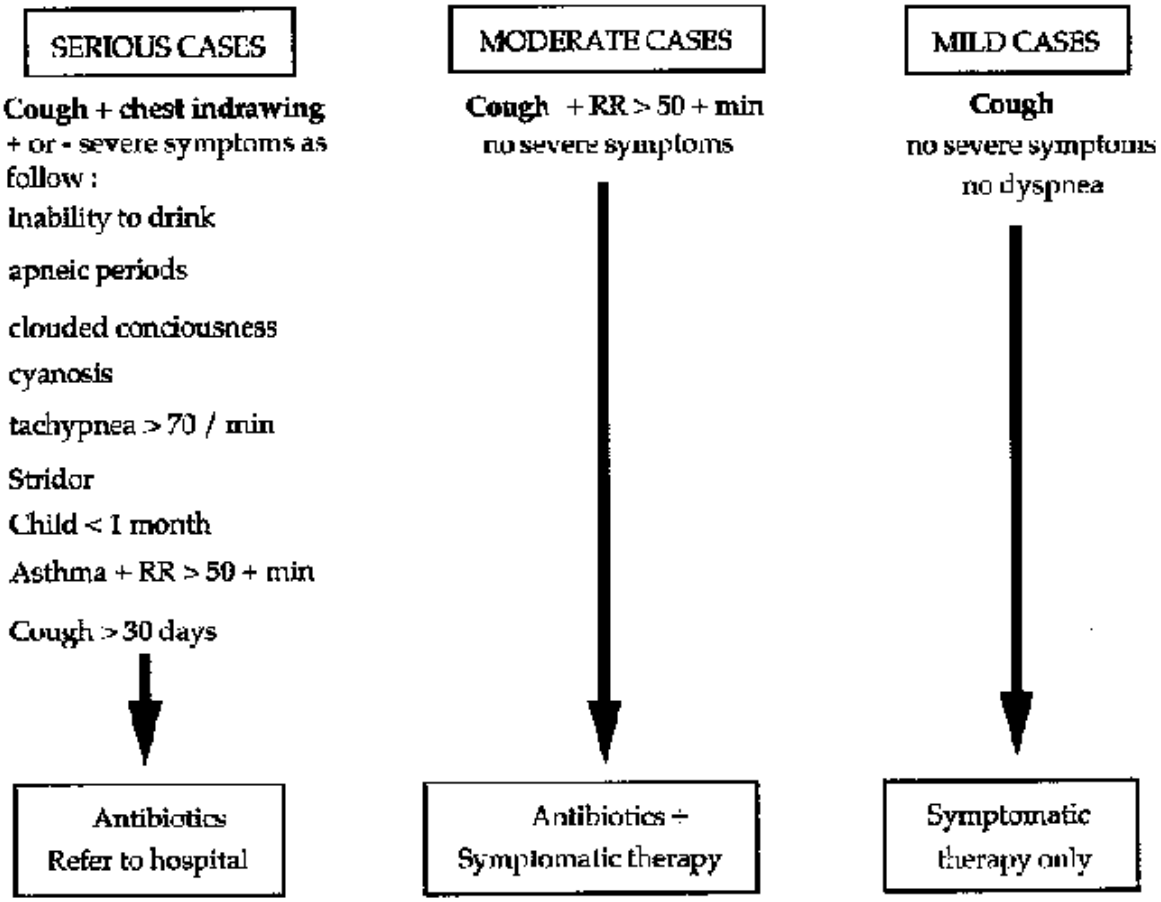
MANAGEMENT BY A HEALTH AUXILIARY OF UNDER-FIVES WITH LOWER RESPIRATORY TRACT INFECTIONS

(the health auxiliary should have received at least 6 months training)

When an antibiotic is needed it should be given as early in the illness as possible.

The auxiliary must be able to decide properly when to refer to hospital. (See table B).

Table B


SERIOUS CASES
Cough + chest indrawing
+ or - severe symptoms as follow :
Inability to drink
apneic periods
clouded conciousness
cyanosis
tachypnea > 70 / min
Stridor
Child < 1 month
Asthma + RR > 50 + min
Cough > 30 days
Antibiotics
Refer to hospital
MODERATE CASES
Cough + RR > 50 + min
no severe symptoms
Antibiotics +
Symptomatic therapy
MILD CASES
Cough
no severe symptoms
no dyspnea
Symptomatic
therapy only

Table

Some upper respiratory tract infections require antibiotic treatment:

- Acute laryngitis: because of the severe dyspnea, this condition will be classified as a serious case and will receive antibiotics.

- Tonsillitis et otitis media: cough is often associated for antibiotic indication.

MEASURES FOR PRESENTING LOWER RESPIRATORY TRACT INFECTIONS IN THE UNDERFIVES

- Improve environment (better housing, less crowding).

- Bedding, blankets, clothing.

- Better nutrition.

- Immunization against measles, pertussis and diphtheria: Expanded Program of Immunization (EPI).

Common cold

Viral infection of the nasopharyngeal mucosa which are frequent and seasonal. Person to person transmission is usually airborne.

Clinical features

- Runny nose, often with fever and cough.

- May be the prodrome of influenza or measles.

- Sometimes accompanied by conjunctivitis.

Treatment (dispensary)

- Nasopharyngeal lavage using a syringe filled with normal saline (or clean water with ORSadded, 1 sachet/litre), 4 to 6 times a day.

- Treat fever.

- Treat or take preventive steps against conjunctivitis.

- If allergic component (morning sneezing fits):

promethazine (PO)

Adult: 75 mg/d divided in 3 doses x 3-5 days
Child: 1 mg/kg/d divided in 3 doses x 3-5 days
or
chlorphenamine: 12 mg/d divided in 3 doses x 3-5 days

Follow-up

Risk of secondary infection and acute otitis media in infants. Always check the tympanic membranes of an infant with a cold.

Pharyngitis and Tonsillitis

Infection and inflammation of the pharynx and tonsils accompanied by fever, dysphagia and adenopathy.

Treatment

The two main objectives of therapy are to recognise and treat the tonsillitis of diphtheria and to reduce the complications of streptococcal throat infections (acute rheumatic fever and cardiac

lesions).

Table 3 : *Etiology and treatment of pharyngitis and tonsillitis according to appearance of the throat*

Throat & Tonsils	Other signs	Likely cause	Treatment
Red ± exudate *(dispensary)*	Fever ++ Dysphagia ++	After 3 years : Streptococcal	After 3 years : ***Peni V*** Ad. : 1.5 to 3 MIU in 3 doses x 7 d Child : 50,000 U/kg/d in 3 doses x 7 d If allergic : ***Erythromycin*** per os Ad. : 1 g/d divided in 3 doses x 7 d Child: 50 mg/kg/d x 7 d
		Before 3 years : Viral, sometimes streptococcal-	Before 3 years : Treat severe cases or those with adenopathy as above
Ulcerated necrotic *(dispensary)*		Fusospirochaetes (Vincent's bacilli)	***Penicillin*** or If allergic : ***Erythromycin***

False membranes (grey, adhere to mucosa, extensive) *(hospital)* *(hospital)*	Alterated general state, Croup Cardiac signs Unimmunized ...	Diphtheria	*PPF* IM : 100,000 U/kg/d x 7 d *Serotherapy* IM (equine antitoxin) Adult : 60 -120,000 U Child : 30 - 60,000 U

Table 3

- Always treat the fever and keep well hydrated (dysphagia).

- Patients with infectious mononucleosis will almost always present with an allergy to ampicillin. Stop the treatment.

- Follow-up to exclude acute rheumatic fever (polyarthritis, cardiac signs) and glomerulonephritis (edema, proteinuria, hypertension, hematuria).

- In case of diphteria, procede a survey in the patient neighbourhood. Contacts should be systematically treated with penicillin or erythromycin.

Note

Test the sensitivity to the equine antitoxin (SC 0.1 ml), wait 20 minutes to check an adverse reaction before complete treatment.

Acute otitis

Otitis externa

Infection of extemal auditory meatus (sometimes due to a foreign body).

Clinical features

- Pain, elicited especially by traction upon the pinna.

- Redness of meatus + abscess.

- May be an exudate.

- Drum normal.

Treatment (dispensary)

- Analgesia: acetylsalicylic acid or paracetamol.

- Local: if exudate ravage with normal saline. Apply gentian violet with a cotton bud for 3-5 days.

- If present, remove the foreign body.

Otitis media

Acute infection of the middle ear. Usually bacterial, tracking up from the nasopharynx: streptococcal, pneumococcal, Hemophilus influenzae in children under 5 years.

Clinical features

- Fever, severe pain, crying, agitation, vomiting, diarrhea.

- Ear drum: becomes progressively congested, inflamed, bulging, and finally perforates with release of pus.

Treatment (dispensary)

- Treat for fever and pain.

- If upper respiratory tract infection: nasopharyngeal ravage

(ringer lactate).

- Rehydration if necessary.

-Antibiotherapy:

Over 5 years

Adult:	penicillin v(PO): 2 MIU/d divided in 3 doses x 10 days
Child:	penicillin V(PO): 100,000 IU /kg/d divided in 3 doses x 10 days
	or
	PPF (ou procain penicillin): 100,000 IU/kg/d IM x 3 days, then peni V per
	os: same dose divided in 3 doses/day (total treatment: 10 days)

If allergic to penicillin:
erithromicin (PO):

Adult:	1.5-2 g/d divided in 3 doses x 10 days
Child:	50 mg/kg/d divided in 3 doses x 10 days

Under 5 years

ampicillin (PO): 100 mg/kg/d divided in 3 doses x 10 days
or
cotrimoxazole (PO): 60 mg/kg/d SMX divided in 2 doses x 10 days

- Paracentesis: is indicated if the ear drum is bulging but not yet perforated. Should be done in the infero-posterior quadrant.

Aspirate the pus and prescribe an antibiotic as above.

Prognosis

If neglected, acute otitis media may become chronic. There is also a risk of mastoiditis.

Chronic otitis

Chronic infection of the middle ear with perforation of the tympanic membrane.

Clinical features

-Chronic discharge (otorrhea)

-Occasional acute re-infection: fever + pain, usually associated with an obstruction to drainage through the perforated drum with secondary infection by streptococci, pneumococci or gram negative organisms.

Treatment (dispensary)

-Do not prescribe antibiotics.

-Only if acute re-infection occurs give:

ampicllin
or
cotrimaxozole

in the same doses as for acute otitis media.
Lavage with normal saline and aspirate with a syringe.

-Always put a little dry cotton wool or small wick in the ear to absorb the discharge; change 3-4 times/day til dried up.

Prognosis

-Risk of deafness in affected ear.

-Risk of mastoiditis and meningitis during acute re-infections.

Acute laryngitis

Acute infections of the laryngeal mucosa often associated with viral infections (e.g. colds, measles...).

Prognosis

The prognosis is good. However, patients sometimes develop partial respiratory obstruction, and it is important to identify these "high risk' situations and to take the necessary precautions.

ADULT

- Usually associated with a "hoarse" voice and a cold. The etiology is viral. Symptomatic treatment: A A.S. or paracetamol(PO).

- Rarely, epiglottitis from H. influenzae, diphtheria or

retropharyngeal abscess. In these cases, use the same methods as for treating children.

- Tuberculous laryngitis.

CHILD

There is a risk of respiratory obstruction.

Signs of distress

Inspiratory stridor, with or without intercostal recession, pallor, with or without cyanosis with cough and "croupy" voice.

There are 2 distinct clinical features.

1. Progressive dyspnea (1 or more days)

In a child < 3 years, if other causes have been eliminated (e.g. diphtheria, retropharyngeal abscess, foreign body), the dyspnea is probably due to mild subglottic obstruction from a viral infection (laryngo-tracheobronchitis).

It is important to watch the child carefully, to keep him calm and to provide humidified air.

Antibiotics are unnecessary except for secondary infections (use PO ampicillin or cotrimoxazole). Steroids are not useful.

If the dyspnea worsens, intubation or tracheostomy may be necessary.

2. Rapid onset dyspnea (several hours)

Carefully examine the patient in a sitting position. Do not lie them down.

-Foreign body: if the dyspnea becomes labored, remove foreign body rapidly, in surgical surroundings.

-Acute epiglottitis from Haemophilus influenzae

· Child of 3 - 8 years: sudden onset dyspnea, high fever, stridor, dysphagia (drools saliva), breathes through mouth, cervical lymphadenopathy.

· Do not lie the patient down and avoid examining the larynx as these actions may precipitate respiratory obstruction.

· Keep the child sitting in a humid atmosphere. Give:
ampicillin (IV): 200 mg/kg/24 hours divided in 3-4 injections, reverting to oral treatment as soon as possible; total duration: 7 days
or
chloramphenicol(IV): 100 mg/kg/d divided in 3-4 injections, reverting to oral treatment as soon as possible; total duration: 7 days

· Severe distress or obstruction: tracheostomy.

-Recurrent laryngitis

· Child of 2-4 years with a cold or measles.
· Nocturnal dyspnea with no fever.
· Place the infant in humidified atmosphere.
· Eventually, give: promethazine(PO): 75 mg/kg/d divided in 3 doses x 5 days
or

chlorphenamine (PO): 12 mg/d divided in 3 doses x 5 days

-Diphtheria: false membrane in the throat

· Unvaccinated children.
· Sometimes the false membrane is extensive an adherent.
· Poor general condition.
· Treatment:

diphtheria antitoxin
penicillin G or PPF IM

· Tracheostomy if necessary.

Sinusitis

Infection of the sinus mucosae with purulent nasal discharge. May originate from:

- the nose: rhinitis, allergic rhinitis, nasal obstruction (e.g. mal-formation, trauma);

- the teeth: caries with arthritis and /or osteitis.

Clinical features

Associated with pain and a purulent nasal discharge.

ADULT

- Pain

· Periorbital: frontal sinusitis.
· Facial: maxillary or ethmoidal sinusitis.

- Purulent unilateral nasal discharge on the affected side with nasal obstruction and a moderate fever.

- Examination:

· Exquisite tenderness can be elicited over these points.
· Rhinoscopy: inflamed mucosa with purulent exudate.

Bacteria responsible are Haemophilus influenzae in persons < 5 years and pneumococcus in older persons.

INFANTS

Acute ethmoiditis: high fever, edema of lower eyelids and the bridge of the nose with purulent rhinorrhea.

Danger of spread to bone or orbit. Treat vigorously.

Bacteria responsible are Haemophilus, pneumococcus and staphylococcus.

Treatment (dispensary)

- Nasopharyngeal lavage with removal of foreign body (if found).

- A.A.S. or paracetamol for fever and pain.

- If dental focus of infection, extract tooth under antibiotic cover.

- Antibiotic:

cotrimoxazole (PO): 60 mg of SMX/kg/d divided in 2 doses x 10 days
or
ampicillin (PO): 100 mg/kg/d divided in 3 doses x 10 days

- Ethmoiditis

ampicillin (IV): 200 mg/kg/d divided in 3 or 4 injections stat until cured. Change to PO as soon as possible.
or
chloramphenico/(IV or IM): 100 mg/kg/d divided in 3 or 4 injections, then change to PO as soon as possible.

Prognosis

Acute sinusitis may become chronic, so always exclude other pathology (e.g. foreign body, allergy, dental caries…).

Bronchitis

Acute bronchitis

Acute infection of the bronchial mucosa

Clinical features

- Often preceded by an upper respiratory tract infection.

- Cough, dry at first, then productive.

- Low grade fever.

- No marked dyspnea.

- Scattered rhonchi.

Treatmert (dispensary)

-In basically healthy patient following rhino-pharyngitis or flu.

· Keep well hydrated, treat fever, humidified air if possible.

· Nasopharyngeal lavage with isotonic solution(normal saline or ringer lactate).

· No antibiotics (mostly viral).

-In patient with poor basic health (malnutrition, measles, rickets, anaemia, chronic bronchitis, cardiac disease, elderly…) or dyspnea > 50 mn or other serious signs.

In these cases, superinfection is probable (haemophilus, gram - bacilli, pneumococcus). Treat with:
cotrimoxazole (PO)

> **Adult: 1,600 mg/ d of SMX divided in 2 doses x 5-7 days**
> **Child: 60 mg/kg/ d of SMX divided in 2 doses x 5-7 days**
> **or**
> **ampicillin (PO): 100 mg/kg/d divided in 3 doses x 5-7 days**
> **or**
> **chloramphenicol (PO): 50 mg/kg/d divided in 3 doses x 5-7 days**

- Where wheezing occurs, treat as asthma.

Chroniques

Chronic inflammation of the bronchial mucosa of irritant (tobacco) or allergic (asthma) origin, progressing towards chronic respiratory failure.

Part of the syndrome of chronic obstructive airways disease (COAD).

Clinical features

- Morning cough, clear sputum, bronchial rales.

- If secondary infection: fever and purulent sputum.

- Always exclude TB: sputum smear for AFB.

Treatment (dispensary)

- Discourage cigarette smoking.

- No antibiotics unless secondary infection. In this case, see acute bronchitis.

Pneumonia and Bronchopneumonia

Infection of pulmonary alveoli and bronchial mucosa.

Cause:

- viral
- bacterial: pneumococcus, Haemophilus influenzae, mycoplasma

pneumonia
- parasitic: pneumocystis carinii (AIDS)

Clinical features

- High fever (> 39°), cough, respiratory distress, chest pain and tachypnea (> 50/min).

- Examination: dullness to percussion, diminished vesicular breath sounds, crepitations and sometimes bronchial breath sounds.

Treatment

Depends on age and presence of respiratory distress tachypnea (> 60/mn in infants less than 2 months, > 50/mn from 2 to 12 months, > 40/mn from 1 to 5 years), intercostal recession, alar flare, stridor, cyanosis, respiratory pauses, xyphi-sternal recession.

Other serious extrapulmonary signs can be present.

ABSENCE OF SERIOUS SIGNS

- Classical pneumonia in adults and children < 5 years

Localised crepitation, sometimes bronchial breathing or localised dullness to percussion = pneumococcus. By far the most common germ after 5 years of age.

Treatment (dispensary)

penicillin V(PO):
Adult: 2,4-3,6 MIU/d divided in 3 doses (tab 250 mg = 0.4 M1U: 2-3 tab x 3/d) x 5 days
Child: 50 000 IU/kg/divided in3 doses x 5 days
or
cotrimoxazole (PO):
Adult: 1600 mg of SMX/divided in2 doses x 5 days
Child: 50 mg of SMX/kg/divided in 2 doses x 5 days

- Pneumonia in child of 2 months to 5 years
H. Influenzae common at this age. Therefore, first line of treatment:

cotrimaxazole(PO): 50 mg of SMX/kg/d divided in 2-3

doses x 5 days
or
ampicillin(PO):100 mg/kg/d divided in 3-4 doses x 5 days
or
amoxycillin (PO): 50 mg/kg/d divided in 3 doses x 5 days, depending on availability

- Pneumonia in infant < 2 months

Hospitalize (risk of rapid decompensation).
ampicillin PO if possible (if not IM): 100 mg/kg/d divided in 3-4 doses x 7 days

Always treat fever and ensure adequate hydration and nourishment. Always review the patient 2 days later.

PNEUMONIA WITH RESPIRATORY DISTRESS: HOSPITALIZE

- Adult and child > 5 years

· If clinical evidence favours pneumococcus (one or several systematic foci with crepitation and/or decreased vesicular breath

sounds, sometimes bronchial breathing or dullness to percussion):
PPF IM:

Adult:	3-4 MIU/d in 1 injection x 2-3 days
	then commence oral therapy with peni V: 3-4 MIU/d divided in 3-4
	doses to complete 7 days
Child:	50.000 UI/kg/d in 1 dose x 2-3 days
	then commence oral therapy with peni V: 50.000 IU/kg/d divided in 3-4
	doses to complete 7 days

or
chloramphenicol IV-IM:

Adult:	3-4 g/d divided in 3-4 doses over several days, then commence orally
	(same dosage) to complete 7 days
Child:	100 mg/kg/d divided in 3-4 doses over several days, then commence
	orally (same dosage) to complete 7 days

	orally (same dosage) to complete 7 days

· In all other cases:
chloramphenicol IV or IM:

Adult:	3-4 g/d divided in 3-4 doses over 2-3 days
Child:	100 mg/kg/d divided in 3-4 doses over 2-3 days, then in both cases
	change to oral treatment with the same dosage to complete 7 days

or
ampicillin IV or IM:

Adult:	3-4 g/d divided in 3-4 doses over 2-3 days
Child:	100 mg/kg/d divided in 3-4 doses over 2-3 days, then in both cases
	change to oral treatment with the same dosage to complete 7 days

Where no improvement with ampicillin after 2 days, combine with gentamicin IM:

Adult:	160 mg/d divided in 2 doses
Child:	3-6 mg/kg/d divided in 2 doses x 7 days

- Child of 2 months to 5 years

chloramphenicol IV or IM: 100 mg/kg/d divided in 3-4 doses; change to oral treatment as soon as possible in the same dosage to complete 7-10 days
or
ampicillin IV or IM: 100 mg/kg/d divided in 3-4 doses; change to oral treatment as soon as possible in the same dosage to complete 7-10 days

When possible, combine with gentamicin IM: 6 mg/kg/d divided in 2 doses during 7-10 days

In the absence of improvement or when deterioration occurs at the end of properly conducted treatment, think about staphylococcal pneumonia.

- Infant < 2 months

ampicillin IV or IM: 100 mg/kg/d divided in 3-4 doses; change to oral treatment as soon as possible in the same dosage to complete 7-10 days
plus gentamicin IM: 6 mg/kg/d divided in 2-3 doses x 7-10 days (for neonates < 10 days old: 4 mg/kg/d in 2 doses))

When no improvement occurs or there is deterioration after 4 days of correct treatment, think about a staphylococcal pneumonia (see "staphylococcal pneumonia").

In all cases, treat the temperature, ensure adequate nutrition and hydration (gastric tube if necessary). If oxygen available, use by means of nasal tube at the rate of 1 litre per minute when there is respiratory distress.

REFRACTORY PNEUMONIA IN ADULTS OR OLDER CHILDREN

Consider atypical pneumonia (mycoplasma) or tuberculosis.
Alternative therapies to try: tetracycline

Adult: 1.5-2 g/ d divided in 3-4 doses x 7-10 days
Child > 8 years: 50 mg/ kg/ d divided in 3-4 doses x 7-10

days
or
erythromycin: same dosages as for tetracycline
or
cotrimoxazole
Adult: 1600 mg of SMX/d divided in 2 doses x 7-10 days
Child: 50 mg of SMX/kg/d divided in 2 doses x 7-10 days

If at the end of 3 courses of therapy the signs persist, consider tuberculosis (see "Tuberculosis").

Staphylococcal pneumonia

Staphylococcal pneumonia often occurs in an infant that is otherwise unwell (malnutrition, skin sepsis…).

Clinical features

- Fever, pallor, fatigue.

- Signs similar to those of severe bronchiolitis, with vomiting, diarrhea, abdominal distension, often skin abscesses.

- Auscultation: asymmetrical chest signs + pleural effusion.

- Neutrophilia.

- Chest X-ray: bullae, pleural effusion.

Treatment (hospital)

- Antibiotics, if available:

cloxacillin (IV): 100 mg/kg/ d divided in 4 injections x 10 days
and
gentamicin (IM): 3-6 mg/kg/d divided in 2 injections x 10 days

Otherwise:

chloramphenicol(IV): 100 mg/kg/d divided in 3 injections x 10 days

- Hydration: oral or IV.

- If there is a significant effusion, a pleural tap may be necessary or, if severe, an intercostal catheter with underwater drain.

Prognosis

Danger of complications of suppurative pleurisy, pneumothorax and pyo-pneumothorax.

In a pediatric ward where staphylococcal pneumonia are expected to be managed, health workers should be trained to perform urgent pleural tap. Adequat equipment should always be available.

Bronchiolitis

- Acute viral infection of the bronchioles occurring in infants under 10 months of age which can lead to fatal acute respiratory failure.

- Tends to occur in epidemics during the cold season.

Clinical features

- Onset often follows a cold.

- Low grade fever, cough, variable degree of respiratory distress with tachypnea, alar flare and chest indrawing (stemal and intercostal recession).

Cyanosis if severe.

- Hyperinflated chest, hyper-resonant to percussion.

- Auscultation can be normal or reveal rhonchi (wheezes) and crepitations.

Treatment (hospital)

- Close monitoring: very important.

- Sitting position (propped up or held by mother).

- Keep well hydrated but avoid fluid overload.

Humidified air.

- Bronchodilators: try salbutamol as a therapeutic test if available. The least dangerous is the spray (see "Asthma", see 67). Make two

attempts at 15 minutes intervals, then wait. If there is improvement, continue; if not, do not persist.

- Corticosteroids not effective.

- Antibiotics to prevent secondary bacterial infection:

cotrimaxazole (PO): 40 mg of SMX/kg/day in 2 divided doses x 5 days
or
ampicillin (PO or IM): 100 mg/kg/d divided in 3 doses x 5 days

- If cardiac decompensation (gallop rhythm, rate > 160): digoxin (IV): 0.01 mg/kg stat every 6-8 hours for the first 24 hours thence same dose once daily as maintenance. furosemide(IV):1 mg/kg

- Respiratory fatigue: if possible, intubation and manual ventilation.

Prognosis

- May have high mortality rate.

- Possibility of recurrence.

Asthma

Paroxysmal reversible airways obstruction due to a combination of bronchospasm, peribronchial edema and hypersecretion. Often allergic in origin.

Clinical features

- Wheeze (prolonged expiratory phase).

- Cough, dyspnea.

- Auscultation: expiratory rhonchi (wheezes) in both lung fields.

- 3 forms:

· simple attack,
· unstable asthma: repeated attacks,
· status asthmaticus: prolonged, severe attack.

Treatment

Certain intestinal parasites during their invasive phase can cause allergic phenomena such as urticaria or asthma. Always think of this and treat in an endemic area: hookworm, strongyloides, ascaris, schistosomes, filaria.

SIMPLE ATTACK (dispensary)

- Half-sitting position, reassurance, hydration, oxygen if available.

- Aminophylline (PO): 5 mg/kg every 6 hours as necessary (contra-indicated in children under 2 years).

- Child < 2 years: commence with salbutamol if available (the spray is the least dangerous), if not adrenaline (epinephrine) (see "alternative treatments"). Aminophylline should only be used as a last recours at this age.

SEVERE CASES = STATUS ASTHMATICUS (hospital)

- Aminophylline (IV): 5 mg/kg diluted in 100 ml of 5% glucose,

injected over 20 to 30 minutes, then 5 mg/kg over 6-8 hours depending on the clinical result.

- Never inject aminophylline undiluted (risk of convulsions and cardiac arrest).

- Combine with:

· Infusions (alternative glucose end ringer lactate)
· salbutamol spray if avaiblable.

dexamethasone (IV):

Adult: 16-24 mg/d divided in 4-6 injections
Child: 0.1-0.5 mg/kg/d divided in 4-6 injections

Adjust the dosage to clinical state and decrease progressively.

- Antibiotics:

Adult: peni V PO or PPF IM: 3-4 MIU/d x 5 days
Child < 5 years: chloramphenicol IVor PO: 100 mg/kg/d divided in 3-4 doses x 5 days

or
ampicillin IV or PO: 100 mg/kg/d divided in 3-4 doses x 5 days

- After 2-3 hours aminophyllin infusion, when no improvement, return if possible to salbutamol or adrenaline.

UNSTABLE CASES

- Attacks which stop and recur despite treatment.

- Institute the following
aminophylline (PO)

Adult and child: 8-12 mg/kg/d divided in 3 doses, reduce dose progressively over several days

Duration depends on clinical state; decrease must be very gradual every 4-5 days.

Or better, but rarely available:

salbutamol(PO)

Adult: 12-16 mg/d divided in 3-4 doses x 5 days
Child: 0.2 mg/kg/d divided in 3-4 doses x 5 days, then decrease very gradually (every 4-5 days)

- In case of failure, consider short term, corticosteroid therapy. If used, it is essential to exclude underlying pulmonary infection (if in doubt: peni Vor cotrimoxazole).
Give prednisone (or prednisolone) per os
Adult: 30 mg/d in a single dose x 3-4 days
Child: 1 mg/kg/d in a single dose x 3-4 days.
Then decrease very gradually every 3-4 days depending on the clinical state.

ALTERNATIVE TREATMENTS

- salbutamol spray: a double puff if an attack occurs, without exceeding 3-4 doses per day.

- salbutamol IV: difficult to control (tachycardia +++). Begin with 0.1 mg/10 kg in 100 ml 5 % glucose, over 20 minutes. Watch pulse, blood pressure. Continue with 1 mg/hour (0.25-1.5 mg/h) for adult; in child, 0.3-0.6 mg/10 kg/ hour. Change to oral

treatment after 24 hours. Reserve for refractory cases in children or status asthmaticus.

- epinephrine (adrenaline) SC: use 0.1 % (1 mg/ml) solution.

> **Adult: 0.5 ml SC, repeat if necessary 30 minutes later; do not exceed 4 injectionsper day.**
> **Child: 0.01 ml/kg SC without exceeding 0.5 ml/injection, repeat after 30 minutes if still necessary; do not exceed 4 injections per day; exercise extreme caution (+++) in infants less than 1 year old.**

Watch pulse, blood pressure (tachycardia +++).

Adrenaline can be utilised in case of simple attack.

Tuberculosis

Disease of variable manifestations caused by Mycobacterium tuberculosis. It is important to understand the distinction between:

- Tuberculous infection: presence of M. tuberculosis in the organism, manifested by a positive skin test. Is very often asymptomatic.

- Tuberculous disease: affects about 10% of the infected population. Clinical disease can take very diverse forms:

· meningitis,

· pulmonary TB: the commonest form and the main source of transmission ("open" cases coughing up large numbers of AFB),

· lymphadenitis,

· osteo-articular, Pott's disease,

· intestinal, renal, peritoneal, cutaneous

- Transmission and maintenance of endemicity depend upon:

· the number and sources of infection: open pulmonary cases can be easily identified by 3 consecutive daily sputum examinations (direct smear for AFB);

· living conditions: crowding, hygiene,

· susceptibility of the population (e.g. malnutrition).

- Individuals with low immune defences (e.g. malnourished, infants, elderly, AIDS patients) are more susceptible to the very severe forms (TB meningitis, miliary TB).

Note: not all cases of hemoptysis are necessarily TB. It is important not to forget other causes, especially if sputum smears are negative: paragonimiasis and meliodosis in Southeast Asia; systemic mycoses; histoplasmosis; and bronchogenic carcinoma.

- An active pulmonary TB is considered as an opportunistic among AIDS or HIV infected patients. thus TB can be the initial step of AIDS.
Control of tuberculosis

ENVIRONMENT

Improvement of living conditions in a community lessens the risk of contagion (e.g. ventilation, light, no crowding…).

BCG AND CHEMOTHERAPY

- The BCG vaccination confers limited individual protection, and is mainly effective against infantile TB meningitis. It does not protect against most other forms of TB and does not confer herd immunity upon the population.

- The chemotherapy of TB is a complex issue. Certain fundamental rules must always be followed:

- Chemotherapy is only effective if rigorously organized and controlled. On an epidemiological level, a poorly organized program may be worse than no program at all. Poor treatment compliance leads to chronic, refractory cases and encourages the emergence of drug resistance.

- The success of a program depends less upon the intrinsic quality of the chosen treatment regimen than upon rigorous supervision and follow-up of patients during the entire duration of therapy.

· The program should be designed specifically for the local social, cultural and economic conditions.

· TB control is almost always co-ordinated at a national level. Foreign medical beams must adhere strictly to the national guidelines.

Practical organization

- The objective is to reduce transmission. The way to achieve this is to find and to treat sputum-positive cases.

- Clues to the identification of infectious patients are:

· cough of more than 3 weeks duration,
· hemoptysis, chest pain,
· weight loss,
· night sweats?

- Chest X-ray is not a pafficularly useful criterion for deciding upon treatment; only sputum-positive and extrapulmonary cases should be commenced on therapy.

- The laboratory must be capable of carrying out direct smears for AFB, otherwise a control program cannot be envisaged. Active

case detection is important, but only if a mechanism for effective treatment and follow-up exists.

- The main issue is to establish the mechanisms (infrastructure, trained personnel, transport, supplies) that will ensure good treatment compliance and follow-up, whatever the particular regimen. Without this, the program will fail. The availability of sophisticated drugs (such as rifampicin) is an issue of much lesser importance.

Three examples of treatment regimens

Low COST

Cost of full course < $US 20; 12 months duration.

- isoniazid(5mg/kg/d) + thioacetazone(2.5mg/kg/d) combination= INH+ TB1

Adult: tab 300 mg INH + tab 150 mg TB1
Child (< 6 years): tab 100 mg INH + tab 50 mg TB1 each day by mouth for 12 months with an initial supplement of 2

months of streptomycin (IM): 20 mg/kg

HIGH COST

Cost of full course > $US 175; 6 months duration.

- isoniazid:

Adult: 5mgtkg/d
Child: 10 to 20 mg/kg/d
+ rifampicin: 10 mg/kg/d
+ pyrazinamide: 25 mg/kg/d for first 2 months only
+ ethambutol: 20 mg/kg/d for first 2 months only.
INTERMEDIATE COST

Cost of full course approx. $US 85; 8 months duration.

- First 2 months: isonazid: 5 mg/kg/d
+ rifampicin: 10 mg/kg/d
+ pyrazinamide: 25mg/kg/d
+ streptomycin(IM): 20 mg/kg/d

- Next 6 months: isoniazid + thioacetazone: 5 mg/kg/d of INH.

Note

- Consult other documents on tuberculosis control programs, especially concerning case detection and short-course regimens (40).

- Hemoptysis is not always caused by tuberculosis. Other causes if AFB -; paragonimosis and melioidosis in South East Asia; deep mycosis: histoplasmosis; bronchopulmonary cancer.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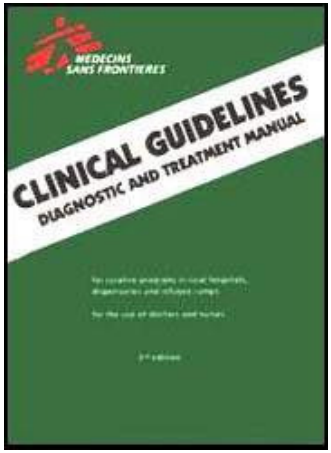


Acute diarrhoea

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

Chapter 3 - Gastro-intestinal diseases

Stomatitis

Inflammation of the oral mucosa, with or without infection, frequently found in infants.

If severe can contribute to malnutrition. Always treat carefully, and explain treatment to the mother.

Clinical features

- Sore mouth, dysphagia, anorexia, nausea, vomiting.

- Depending on etiology: red mucosa, aphthous or other ulcers, vesicles, white plaques.

Etiology and treatment

CANDIDA ALBICANS ("THRUSH") (dispensary)

- Common in infants.

- White plaques.

- Clean the mouth with a gauze swab soaked in sodium bicarbonate, then apply gentian violet with a cotton bud. Show the mother how to do this and have her repeat it 6 times a day.

- Often associated with gastro-intestinal candidosis. Treat all cases of oral thrush with: nyststin(PO): 100,000 to 200,000 IU/d divided in 3 doses x 5 to 10 days.

(Use the vaginal tablets if only these are available.)

- Educate the mother about oral hygiene.

- In severe forms, think of HIV infection.

HERPES SIMPLEX (dispensary)

Commoner in older children and adults. Infection causes pain and difficulty eating. Transmission is via microdroplets of saliva. Attacks are often precipitated by a febrile illness or stress.

- Oral toilet and apply gentian violet.

- Continued feeding and ensure good hydration.

- Treat any underlying illness (e.g. malaria, pneumonia).

With a secondary infection (rare if good oral toilet):

cotrimoxazole (PO)
Adult: 1,600 mg/d of SMX divided in 2 doses x 5 days
Child: 40 mg/kg/d of SMX divided in 2 doses x 5 days

or
chloramphenicol(PO): 50 mg/kg/d divided in 3 doses x 5 days

SCURVY (dispensary)

Hemorrhagic stomatitis with bone and joint pains in the lower limbs (due to subperiosteal hemorrages). Caused by dietary vitamin C deficiency.

Local treatment: oral toilet and gentian violet

Curative treatment
ascorbic acid (vitamine C)

Adult: 500-1000 mg/d divided in 3 doses during 2 to 3 weeks
Child: 100-300 mg/d divided in 3 doses during 2 to 3 weeks

Preventive treatment
ascorbic acid (vitamine C)

Adult: 100mg/d
Child: 30-50mg/d

Nutritional education and supplementation with fresh fruit.

Other causes

Vincent's angina

Measles (Koplik's spot)

Diphtheria

Scarlet fever (strawberry tongue): a streptococcal infection.
Treatment:

PPF(or procain penicillin): 100,000 IU/mg/d in a single injection x 5 days
then
penicillin V(PO): same dose divided in 3 doses/d x 10 days

Angular stomatitis of the lips: deficiencies in iron and various vitamins:

multivitamins
and/or
ferrous sulphate +folic acid.

Gastritis and Peptic Ulcer

Inflammatory or ulcerative lesions of the gastro-duodenal mucosae.

Clinical features

- Epigastric burning pain, sometimes made worse and sometimes relieved by food (especially milk) but recurring about two hours after meals.

- Acid regurgitation, nausea.

- Abdomen soft and non-tender (unless perforation).

- Exclude parasitosis (strongyloides): stool examination.

Treatmert (dispensary)

- Diet: avoid spices, alcohol, tobacco, carbonated drinks. Encourage regular meals, dairy products.

- Antacids: aluminium hidroxide (PO): 300 to 500 mg in a single dose, taken 1 hour after each meal or during attacks of pain

- Reassure the patient: anxiety may be a causative factor. If needed: diazepam (PO): 15 mg/d divided in 3 doses for a brief period (5-10 days)

- If severe pain continues, exclude perforation: examine abdomen for peritonism, PR exam for rectal blood (melena on glove), keep under observation, surgical referral if necessary.

Give: atropine (IM or SC): 1 mg stat.

(hospital)

- If hemorrhage:

· establish IV line,
· give plasma volume expander (Haemacel…),

· nasogastric tube: to observe if hemorrage continues,
· transfuse if possible and refer to a surgical unit.

NB: acetylsalicylic acid and other non-steroidal anti-inflammatories are contraindicated in patients with a history of peptic ulcer.

Acute diarrhoea

Loose, frequent stools. Different cultures have different definitions, but as a guide, diarrhea means at least 3 loose or watery stools in a day.

Major complications:

- Dehydration: the principal reason for the mortality attributable to diarrhea

- Negative effect on nutritional status

Clinical assessment of the patient

HISTORY

- Duration of illness.

- Frequency and consistency of stools (blood, mucus).

- Frequency and duration of vomiting.

- Output, colour and quantity of urine.

- Fever or convulsions.

- Type and quantity of fluids and food ingested.

- Presence of blood or mucus in the stool.

- Presence of other cases in the household.

PHYSICAL EXAMINATION

- Temperature (rectal if possible).

- Respiration (acidosis: Kussmaul breathing).

- Weight:

· as a baseline to monitor rehydration,
· as an indicator of degree of dehydration.

- Nutritional status.

CLINICAL EVALUATION OF DEGREE OF DEHYDRATION

See table 4.

STOOL EXAMINATION

Direct smear, if available, to look for trophozoites of entamaeba hystolitica or giardia lamblia.

Table 4 : *Clinical evaluation of dehydration*

SYMPTOMS AND SIGNS	MILD DEHYDRATION	MODERATE DEHYDRATION (2 signs present)	SEVERE DEHYDRATION (2 signs present)
General appearance – Young children	*Thirsty*, anxious, *alert*	*Thirsty, alert* or quiet but irritable when disturbed	*Drowsy*, floppy, cold, clammy, cyanosis, sometimes coma
– Older children and adults	Thirsty, alert	Thirsty, alert	Generally conscious, anxious, cold extremities, clammy, cyanosis, wrinkled skin of fingers, muscle cramps, dizzy if standing
Pulse	Normal	Rapid	Rapid, thready, sometimes absent
Respiration	Normal	Deep, sometimes rapid	Deep and rapid
Anterior fontanelle (6 to 18 months)	Normal	*Depressed*	*Severely depressed*
Systolic BP	Normal	Normal	Low, sometimes unmeasurable
Skin elasticity	*Normal : fold of pinched skin disappears at once*	*Decreased*	*Fold disappears very slowly* (> 2 seconds)
Eyes	Normal	*Sunken*	*Severely sunken*
Tears	Present	Absent	Absent
Mucous membrance (test mouth with a clean finger)	Moist	Dry	Very dry
Urine output	Normal	*Reduced, urine dark*	*Anuria, empty bladder*
% of body weight lost	1 – 5 %	6 – 9 %	10 % and more
Estimated fluid deficit	10 - 50 ml/kg	60 - 90 ml/kg	100 ml/kg

Table 4

Etiology

Table 5

ETIOLOGY		SYMPTOMS AND SIGNS	CAUSATIVE AGENTS	TREATMENT
Entero-invasive	Bacteria	Dysentery, blood and mucus in stools, cramps, tenesmus, fever	Shigella Salmonella Escherichia Coli (EIEC strains)	*Cotrimoxazole* *Ampicillin* *Chloramphenicol* *Tetracycline*
			Campylobacter jejuni	*Erythromycin* *Tetracycline*
			Yersinia Enterolitica	*Chloramphenicol* *Tetracycline* *Cotrimoxazole* *Gentamicin*
	Parasites	As above, but usually no fever (except with amoebic liver abscess)	Entamoeba hystolitica Giardia lamblia	*Metronidazole*
			Balantidium Coli	*Metronidazole* *Tetracycline*
Enterotoxic bacteria		Cholera-like illness: profuse watery diarrhoea (rice water stools), often vomiting	Vibrio cholerae	*Tetracycline* *Erythromycin* *Furazolidone*
			Other vibrios	As above
			Enterotoxic E. coli (ETEC strains)	*Cotrimoxazole* *Ampicillin* *Chloramphenicol*
			Clostridium perfringens Botulinum Staphylococcus	No treatment (toxins preformed in foodstuffs)

		Acromonas Céreus bacilli	
Viral (60 % of cases)	Liquid diarrhoea, no mucus, sometimes fever. Commonest in infants and young children	Rotavirus, Enterovirus, Adenovirus, Astrovirus, Coronavirus	Antibiotic treatment no recommended
Fungal	Diarrhoea often associated with oral thrush. Fungi evident on stools microscopy	Candida Albicans	*Nystatin*

Table 5

Treatment

Basic principles:

- Prevent dehydration.

- Replace fluid if dehydration already exists.

- Maintain nutrition.

PREVENTION OF DEHYDRATION

Cases of diarrhea with no signs of dehydration:

- Advise increasing fluid intake (water, soup, juices, rice water).

- Encourage the use of home-made sugar / salt solutions.

- Continue breast feeding and normal diet.

- Warn mother to bring child back if:

· signs of dehydration appear (explain),
· diarrhea persists.

FLUID REPLACEMENT

- Two tasks:

· Rehydration: correct the deficit in water and electrolytes.
· Maintenance: replace continuing losses (diarrhea and vomiting).

- Two methods of fluid replacement:

· ORS: for mild to moderate dehydration, give by mouth or by

nasogastric tube if child unable or unwilling to drink.

· Ringer's lactate: for severe dehydration or if there is intractable vomiting.

- Quantities of fluid are calculated according to the condition of the patient (see tables 6 and 7). As a general rule, for severe dehydration 200 ml/kg/day should be given with the first half during the first 4 hours. For moderate dehydration, give 100 ml/kg/day with first half given during first 4 hours.

- Mild cases can be treated as outpatients, after the mother has been shown how to use ORS. Moderate and severe cases require supervision as to the evolution of the diarrhea and progress of rehydration.

- If it is impossible to place an IV line in a severely dehydrated child, fluids are sometimes given intraperitoneally or subcutaneously. However these techniques should not be encouraged, as they are less safe and no more effective than giving ORS by nasogastric tube.

Note: solution of salt-sugar: 2 pinches of salt (3 g), 4 tablespoons of sugar, or 8 pieces (40 g), dissolved in 1 liter of boiled water, cooled and with added fruit juice.

Table 6: Rehydration protocol

- The volumes indicated are guides only.

- Before using this table, consider all of the following:

· Rehydration must be evaluated in terms of clinical signs, not in terms of volume of fluids given.

· If necessary, the volumes given below can be increased or else the initial high rate of administrahon can be maintained until there is clinical improvement.

· Periorbital edema is a sign of fluid overload in infants.

· Maintenance therapy (table 7) should begin as soon as signs of dehydration have resolved, but not before.

Table 6

DEGREE OF DEHYDRATION	TYPE OF LIQUID	VOLUME TO GIVE
Mild	*ORS*	As needed (do not force) Theorically, 50 ml/kg in 4 hours
Moderate	*ORS*	100 ml/kg/d of which half (50 ml/kg) in first 4 hours and rest (50 ml/kg) in following 20 hours[a]
	Ringer or *Hartman*[b]	100 ml/kg/d of which half (50 ml/kg) in first 4 hours and rest (50 ml/kg) in following 20 hours
Severe	*Ringer* or *Hartman*[b]	200 ml/kg/d of which half (100 ml/kg) in first 4 hours and rest (100 ml/kg) in following 20 hours

(a) Initially, adults can usually ingest up to 750 mg o ORS/hour, and children about 300 ml/hour.

(b) If ringer's lactate (Hartman's solution) is not available, use :

- Half strength Darrow's solution
- normal saline with sodium bicarbonate and potassium chloride added
- normal saline diluted to half strength with 5 % glucose (dextrose)

None of these solutions is as effective as ringer's lactate.

W.H.O. (36)

Table 6

Table 7: Maintenance therapy

Notes:

- fluids to be given after correction of dehydration;

- adapt re-hydration treatment to the clinical status of the patient;

- to avoid hyrpernatremia altemate ORS and water.

Table 7

SEVERITY OF DIARRHOEA	FLUID	ADMINISTRATION	QUANTITY
Mild diarrhoea (no more than 1 stool every 2 hours, or less than 5 ml/kg of stools per hour)	ORS	Orally : at home	Infants and children under 5 years[a] : 100 ml/kg/day until diarrhoea ceases

			Older children and adults: as much as desired[b]
Severe diarrhoea (more than 1 stool every 2 hours, or more than 5 ml/kg of stools per hour)	***ORS***	Orally: at the health care facility	Replace the same volume that is lost through continuing diarrhoea. If stool volumes cannot be measured, give as for moderate diarrhoea.
Severe diarrhoea with ***reappearance*** of signs of ***dehydration***	Treat as for severe dehydration (see table 6)		

(a) As weel as ORS give the breast on demand. Other liquids such as plain water can also be given. ORS should consitute about two thirds of the fluid intake until diarrhoea ceases.

(b) Thirst is the best guide for maintenance fluid therapy in older children and adults. They should drink as much ORS (and other liquids) as they desire.

W.H.O. (36)

Table 7

MAINTAIN NUTRITION

It has been shown that there is no physiological reason for discontinuing food during bouts of diarrhea and that continued nutrition is beneficial to both adults and children. Continued feeding should be encouraged.

Table 8 : *Infant feeding*

AGE	BREAST FEEDING	OTHER FOODS
0 – 3 months	Begin breast feeding immediately after delivery Feeding on demand	Nil (unless mother cannot breast feed)
4 – 6 months	Continue	Add at least two other food* .... Twice a day
6 – 12 months	Continue	Add other foods* as well ....

		Four times a day
After 1 year	Continue till about 2 years of age	All foods Four to six times a day

* These "weaning foods" (a poor term, as breast feeding must continue) should include : energy-rich porridges (staple carbohydrate with oils and sugar added if possible), vegetables, fruit and animal protein.

W.H.O. (36)

Table 8

MEDICINES

- Remember that 50-60 % of acute gastro-enteritis is viral (see table 5).

- Certain antibiotics are used to treat specific intestinal infections.

Table 9 : *Antibiotics used in the treatment of diarrhoea*

ETIOLOGY	FIRST CHOICE	ALTERNATIVES
	Tetracycline per os Adult : 1.5-2 g/d divided in	*Furazolidone* or *Nitrofurantoin* per os

Cholera	3 doses x 2-3 days Child : 50 mg/kg/d divided in 3 doses x 2-3 days or ***Doxycycline*** per os Adult : 300 mg single dose	Adult : 400 mg/d divided in 3 doses x 3 days Child : 5 mg/kg/d divided in 3 doses x 3 days or ***Cotrimoxazole*** per os Adult : 1,600 mg of SMX/d divided in 2 doses x 3 days Child : 50 mg of SMX/kg/d divided in 2 doses x 3 days
Shigella dysentery	***Cotrimoxazole*** per os Adult : 1,600 mg of SMX/d divided in 2 doses x 5 days Child : 50 mg of SMX/kg/d divided in 2 doses x 5 days	***Nalidixic acid*** per os Adult : 3 g/d divided in 3 doses x 5 days Child : 60 mg/kg/d divided in 3-4 doses x 5 days or ***Ampicillin*** per os Adult : 3-4 g/d divided in 3-4 doses x 5 days Child : 100 mg/kg/d divided in 3-4 doses x 5 days
Intestinal amoebiasis (acute amoebic dysentery)	***Metronidazole*** per os Adult : 1.5-2 g/d divided in 3 doses x 5 days Child : 30-50 mg/kg/d divided in 3 doses x 5 days (10 days for severe amoebiasis)	
Giardiasis	***Metronidazole*** per os Adult : 750 mg/d divided in 3 doses x 5 days Child : 15 mg/kg/d divided in 3 doses x 5 days	

W.H.O. (36)

Table 9

- Other anti-diarrhoea indications (e.g. absorbents) are contraindicated in children.

- Always treat the fever and consider other causes for the diarrhoea (e.g. malaria, otitis, pneumonia).

Prevention of diarrhea

HEALTH EDUCATION

Directed at mothers in dispensaries, MCH clinics and feeding centers, at the time ORS is prescribed.

Take-home messages:

1) Breastfeeding:

· on its own up to age 4 months
· continue up to age 2 years

2) Solid foods ("weaning foods" is a very poor term): introduce these from about age 4 months

3) Food preparation

4) Drinking water

5) Hygiene

SANITATION

- Provision of safe drinking water in sufficient quantities

- Disposal of feces

MASS CHEMOPROPHYLAXIS

- This is only ever considered in cholera epidemics. It is of doubtful efficacy in controlling an outbreak and can only be justified in a sequestered populations: a ship, a medium size where the attack rate is high (more than 2 %) and where it is possible to administer an effective prophylactic dose under supervision to the whole group concerned.

- In endemic situation, it can be given to close family contacts.

- Doxycyclineshould be choosen.

Note

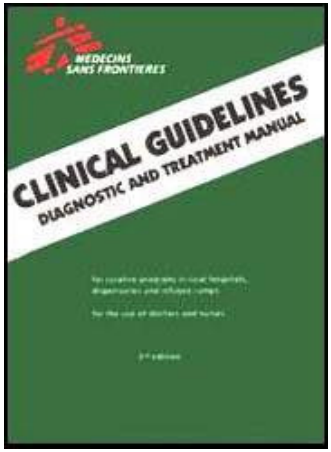
Composition of ORS sachets (to be dissolved in 1 litre of clean water (do not tell mothers to boil the water as this is very expensive in terms of time and fuel, and also unnecessary). (See table C).

Table C

Ingredients	*Grammes*
Sodium chloride	3,5
Sodium bicarbonate	2,9
or	
Trisodium citrate	2,5
Potassium chloride	1,5
Glucose	20,0

Table

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



Leprosy

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

Chapter 4 - Skin conditions

Dermatology

Infections and infestations are by far the most frequent forms of skin pathology in tropical countries. As well as treating affected individuals, it is important to consider these conditions as indicators of the general standard of hygiene and sanitation and to define appropriate public health interventions (provision of water that is adequate in quality and quantity, health education, soap...).

Clinical assessment of the patient

The physical examination:

- Describe the basic lesions:

- **macules**
- **papules**

· vesicles
· bullae
· abscess
· pustules
· squames
· weeping lesions
· crusts...

- Look for pruritis.

- Look for regional or systemic manifestations: lymphangitis, adenopathy, fever, septicemia, metastatic infection...

- Look for a cause: mosquito bite, jewelry, allergy, scabies, lice, otitis media.

- Consider the nutritional status and the general health of the family, particularly for infectious dermatosis.

Patients with dermatological conditions often present late. At this stage, initial and specific signs are often replaced by infection. In these cases, treating the overlying infection is not enough.

Patients should be re-examined after the treatment of infection.

Impetigo and other purulent dermatoses

Highly contagious skin infection (streptococcal or staphylococcal affecting mainly children of school age).

Clinical features

-Initially lesions located around orifices.

- Multiple crusty lesions, sometimes associated with pustules (one to several). Lesions are extended by scratching

- Acute impetigo produces bullous lesions.

- Streptococcal lesions are superficial, staphylococcal lesions are deep.

Treatment (dispensary)

- Cut fingernails, instruct mother to wash child daily with soap.

- Clean lesions with a disinfectant (chloramine or chlorhexidine-cetrimide solution; preparation: see table 25). Remove crusts, incise any abscesses.

- Apply gentian violet solution twice daily.

- On the scalp look for head lice or ringworm (tinea capitis).

- Explain treatment to the mother and treat other members of the family as necessary.

- Do not give antibiotics unless there are signs of regional or systemic spread. If so:

penicillin V(PO)
Adult: 2.4 MIU/d divided in 3 doses x 5 days
Child: 100,000 mg/kg/d divided in 3 doses x 5 days

If no improvement or extensive abscesses, staphylococcal infection is likely. If available give: erythromycin (PO): 50 mg/kg/d divided in 3 doses x 5 days
or

cloxacillin(PO): 100 mg/mg/d divided in 3 doses x 5-7 days

- Carbuncles on the face. There is a danger of intracerebral metastasis, so treat vigorously for 5-7 days.
If available:

cloxacillin (IV or PO): 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
or
ampicillin (IV): 100 mg/kg/d divided in 4 injections x 7 days
+gentamicin (IM): 3 mg/kg/d divided in 2 or 3 injections x 7 days

Herpes simplex, Herpes zoster

Herbes simplex

Relapsing vesicular eruption due to Herpes simplex virus affecting

the mucus membranes and skin. Facial infections may be serious if they involve the eye.

Treatment (dispensary)

- Clean the lesions with an antiseptic such as chlorhexidine-cetrimide solution (dilution: see table 25).

- If affecting buccal mucosa then treat as for stomatitis.

- If affecting the face encourage ocular hygiene.

- If generalized bacterial super infection, treat as for staphylococcal impetigo.

Herpes zoster

Acute dermatosis due to resurgence of the varicella-zoster virus, which also causes chickenpox. Preceded by severe neuralgic pain, the eruption is vesicular on an erythematous base and is almost invariably unilateral, occupying the dermatome of a peripheral nerve.

Treatment (dispensary)

As above, plus analgesia.

Scabies

Contagious skin infestation caused by a mite, Sarcoptes scabiei. Its occurrence is closely related to a lack of water and poor hygiene.

Clinical picture

- Nocturnal itching, scratch marks, burrows between the fingers (made visible by applying ink, then washing it off), and papules.

- Secondary infection (from scratching) resembles impetigo.

- Whole family is often infested.

- Often localised to: genital region, axillae, chest, breasts, hands and thighs.

Treatment (dispensary)

- Wash the whole body with a mild soap and dry, then apply 25 % benzyl benzoate emulsion (BBE) to the whole body except head and neck. Use a broad paint brush if available. Allow to dry, then put on the same clothes.

- Repeat for 3 days.

- If a secondary bacterial infection occurs, treat as for impetigo for 4 to 5 days. Only apply benzyl benzoate emulsion once all lesions are closed (is very irritant).

- Treat the whole family. After the treatment, boil and air all clothes and bedding.

- Warn patients that itching may persist for several weeks. This represents an allergic reaction to the dead mites, not treatment failure.

Leg ulcer

Erosive lesion of the skin, usually occurring on the lower leg caused by:

- vascular (venous and/or arterial) insufficiency,

- bacterial or parasitic infection,

- underlying metabolic disorders.

Phadegenic ulcers have no apparent cause, they extend and become chronic.

Treatment (dispensary)

- Clean with chlorhexidine-cetrimide or chloramin solutions (dilution: see table 25).

- Excise necrotic edges.

- Daily dressing.

- Rest with leg elevated.

- Give oral antibiotics if local treatment fails:
penicillin V(PO):

Adult: 2.4 MIU/d divided in 3 doses x 5 days
Child: 100,000 IU/kg/d divided in 3 doses x 5 days

If no improvement, give:
erythromicin (PO): 50 mg/kg/d divided in 3 doses x 7 days

- Skin graft if ulcer is large. Only graft after local treatment has rendered it clean and flat with red granulation tissue in the base.

Note

- Think of Guinea worm in endemic zones.

- Give tetanus toxoid.

Fungal infection

Infant's thrush

Clinical features

Erythema of the buttocks and perineum, sometimes "weeping". Caused by infection with Candida albicans.

Treatment (dispensary)

- Clean with usual soap or an antiseptic (chloramine or chlorhexidine-cetrimide; preparation: see table 25).

- Apply gentian violet solution twice daily.

- Avoid damp clothing (leave buttocks bare).

- Intestinal thrush often co-exists:

Nystatin (PO): 4-600,000 IU/d divided in 3 doses x 10 days (vaginal tabs might be used for this purpose)

Dermatoses

Highly contagious fungal infections. Prevalence is associated with the level of personal hygiene.

Clinical features

BODY

There are several different forms:

- "Ringworm"

- Pityriasis versicolor with depigmented patches.

- Erythematous lesions in the skin folds (e.g. axillae and groin).

HEAD

Associated with loss of hair. Highly contagious in families.

Treatment

BODY (dispensary)

- Wash, dry and then apply whitfield's ointment twice a day.

- Use griseofulvin only in extensive cases (see below).

HEAD (dispensary)

- Cut hair and then shave the head.

- Wash, dry and then apply gentian violet twice a day for several weeks.

- If treatment fails use:
griseofulvin (PO)

Adult: 500 mg to 1 g/d divided in 3 doses
Child: 10 mg/kg/d divided in 3 doses

Treat for 10 days (sometimes treatment has to be continued for 1 month).

- Examine all the family.

- A short course of griseofulvin may be effective for adults:

griseofulvin: 1.5 g taken at the same time as a greasy meal.

However, there is a risk of digestive problems and vertigo.

Anthrax

A bacterial zoonosis of herbivorous mammals that is transmitted

to humans by skin contact with carcasses or animal products, and rarely by ingestion of undercooked infected meat.

Clinical features

- Pustule that develops into a black eschar surrounded by vesicles and an inflamed area, with regional adenopathy. Painless.

- May cause fatal septicemia.

- Intestinal and pulmonary forms exist.

Treatment (hospital)

penicillin: PPF(or procain penicilline) IM

Adult: 4 MU / d in a single injection x 5 days
Child: 100,000 U/kg/d in a single injection x 5 days
or
penicillin V
Adult: 4 MU/d divided in 3 doses x 7 days
Child: 100,000 U/kg/d divided in 3 doses x 7 days

or
chloramphenicol per os
Adult: 1.5-2 g/ d divided in 3 doses x 7 days
Child: 75 mg/kg/d divided in 3 doses x 7 days
or
tetracycline per os
Adult: 1.5-2 g/d divided in 3-4 doses x 7 days
Child > 8 years: 50 mg/kg/d divided in 3-4 doses x 7 days

Prevention

Look for the source of contamination and take measures to prevent further transmission.

Other skin conditions

Eczema (dermatitis)

- Erythema with crusting, scaling, itching, and desquamation.

- Look for a cause (e.g. irritants, allergic, fungal, family history).

Treatment (dispensary)

- Apply gentian violet solution. If infected, treat as for impetigo.

- If chronic, consider an eczematized scabies infestation and treat appro-priately.

Urticaria

- Rapidly developing itchy papules.

- Look for a cause (e.g. insect bites, drug allergy, invasive stage of a parasitic infection of ascaris, hookworm, strongyloides, schisto-somiasis or loa-loa).

Treatment (dispensary)

- Intense itching:

promethazine (PO): 75 mg/d divided in 3 doses x 5 days
or
chlorphenamine (PO): 12 mg/d divided in 3 doses

- Angiedema (laryngeal or pharyngeal involvement). dexamethasone (IV): 4 mg (repeat if necessary)

- If anaphylactic shock, see "Shock".

Kwashiorkor

- Multiple lesions: desquamation, bullas...

- To prevent secondary infection, clean lesions with either chloramine or chlorhexidine-cetrimide solution and apply gentian violet (see table 25).

Pellagra

Dermatosis affecting sun-exposed skin due to a dietary deficiency in niacin and/or tryptophane. Commonest in populations whose staple carbohydrate is maize.

Clinical features

- Classically, "three D's": dermatitis, diarrhea and dementia.

- The dermatitis is painful, more marked in sun-exposed areas of forehead, neck, forearms and legs... symmetrical.

- Diarrhoea and neurological symptoms indicating serious illness.
Treatment (dipensary)

Use:

nicotamide (vitomin PP)
Adult: 300 mg/d
Child: 300 mg/d until healing is complete and in conjunction with a rich protein diet.

If unavailable, use:
multivitamins (PO)

Adult: 6 caps/d divided in 3 doses x 15 days
Child: 3 caps/d divided in 3 doses x 15 days

Provide nutritional education (e.g. diversify staples, advise vegetables such as beans and lentils).

Note

Leprosy may in some instances resemble a chronic dermatosis such as eczema or pityriasis versicolor. Whenever there is the slightest doubt, perform a full examination of the peripheral nerves and take specimens for microscopy.

Endemic syphilis, Yaws & Pinta

Non-venereal treponematoses, affecting bone, skin or mucosa and spread by direct contact. Their occurrence is associated with over crowding and poor hygiene.

Table 10 : *The treponematoses*

	VENERAL SYPHILIS	BEJEL	YAWS	PINTA
– *Causative agent*	T. Pallidum (veneral)	T. Pallidum (endemic)	T. Pertenue	T. Carateum
– *Mode of transmission*	Veneral sometimes	Contact	Contact (flies)	Contact (black flies)
– *Age*	Adult	Child	Child	All ages
– *Distribution*	Cosmopolitan	Deserts Plains	Tropical forest	Latin America

– ***Primary infection***	Genital chancre	0	Non genital chancre	"Pseudomycotic" lesion
– ***Secondary infection***				
skin	Rash lesions	Lesions	Wart-like lesion changes Hyperkeratosis	Pigmentary
mucus membranes	Mucous patches	Mucous patches	Gangosa	0
bone	Osteitis	Osteitis +	Osteitis ++	0
– ***Tertiary infection***				
skin	+	+	+	0
gumma	+	+	+ gangosa	0
osteitis	+	+	+	0
cardio-vascular	+	+	0	0
CNS	+	+	0	0
– ***Congenital transmission***	+	0	0	0

Adapted from M. Gentilini (10)

Table 10

Treatment (dispensary)

- benzathine penicillin (IM)

Adult: 1.2 MIU in a single injection
Child: 600,000 IU in a single injection

- Note that syphilis (both primary and secondary) must be treated with double this dose of benzathine penicillin: 2.4 MIU IM stat.

- If allergic to penicillin: tetracycline or erythromycin (PO): 2 g/d or 50 mg/kg/d divided in 3 doses x 5 days (14 days for syphilis)

Prophylaxis

For all household contacts:
benzathine penicillin (IM)

Adult: 600,000 IU in a single injection
Child: 300,000 IU in a single injection

Leprosy

A chronic infectious disease caused by the Hansen bacillus (Mycobacterium leprae) and affecting the skin, mucosae and

peripheral nerves.
Humans are the only significant reservoir of infection.

Clinical features

COMPLETE CLINICAL EXAMINATION

- Patient must be undressed.

- The entire skin surface must be examined.

- Note the appearance of any lesions.

- Test the sensation (fine touch and pin-prick) of the lesions.

- Palpate the main peripheral nerves to detect any hypertrophy.

- Examine peripheral nervous function: motor, sensory and proprioception.

- Examine the nasal mucosa to detect any chronic rhinitis.

MICROBIOLOGICAL EXAMINATION

Ziehl-Nielsen stain

- Scraped incision method to obtain tissue juice but no blood. Pinch a fold of skin with a Kocher forceps so as to make it bloodless, incise and saape the scalpel blade along the inside of the incision.

· one specimen from the edge of a lesion.
· one from the earlobe.

- Also take a nasal swab.

CLASSIFICATION (RIDLEY-JOPLING SYSTEM) (See table D)

CLASSIFICATION (RIDLEY-JOPLING SYSTEM)

FEW BACILLI			MANY BACILLI	
Tuberculoid	Borderline Tuberculoid	Borderline	Borderline Lepromatous	Lepromatous
T.T.	B.T.	B.B.	B.L.	L.L.

Table

Principles of management

The increasing frequency of strains of M. leprae resistant to dapsone poses a serious threat to leprosy control programs. The strategy of multiple drug therapy must be instituted in order to combat this problem.

It is patients with multibacillary forms of leprosy (BL and LL) who are most exposed to the risk of drug resistance and who are also most infectious to their household contacts.

The treatment of lepromatous leprosy has three objectives:

1. to reduce transmission

2. to cure the patient

3. to prevent the emergence of resistant strains of M. leprae

Patients with tuberculoid leprosy are less infectious but are more likely to suffer paralysis of peripheral nerves. The main objective of their treatment is to preserve function.

Patients under therapy are exposed to the risk of developing severe reactions. For this reason, as well as to ensure compliance, supervision is necessary. The program must be well planned, organized and adequately staffed.

Treatment

"Partially supervised" regimens work best. Daily doses of dapsone can be taken at home by the patient, but monthly doses of rifampicin should be administered by a health worker. The worker must ensure that the patient swallows the medication.

LEPROMATOUS LEPROSY (dispensary)

rifampicin (PO): 600 mg once per month, supervised
dapsone (PO): 100 mg daily, at home
clofazimine (PO): 300 mg once per month, supervised and 50 mg daily, at home

Duration of therapy: 2 years or more, depending upon progress

TUBERCULOID LEPROSY (dispensary - hospital)

rifampicin (PO): 600 mg once per month, during 6 months
dapsone (PO): 100 mg daily during 6 months (1-2 mg/kg/day)

- rifampicin must always be taken under supervision.

- dapsone may be taken at home. If treatment is interrupted, a full 6 months regimen should be completed after the medication has been discontinued.

REACTIONS

- Either reversal reactions (upgrading: shift towards TT end of spectrum) or erythema nodosum leprosum (ENL).

- Treat with clofazimine(PO): 100 to 300 mg/d

- If severe, use corticosteroids:
prednisone (or prednisolone) PO: 80 mg D1; 75 mg D2; 70 mg D3; 65 mg D4; 60 mg D5...then decrease 5 mg every day.