STANDARD TREATMENT GUIDELINES FOR HEALTH STATIONS

TABLE OF CONTENTS

STANDARD TREATMENT GUIDELINES FOR HEALTH STATIONS

FOREWORD

It is gratifying to announce and introduce the completed standard treatment guidelines for Hospital Level.

This 1st edition of the Standard treatment guidelines is aimed at all levels of health care both public and private through out the country and will assist health care professionals in their treatment choices.

The standard treatment guidelines is a commendable achievement to address the major health problems in our country and set the stage for ensuring equits in health care delivery, as well as providing for rational prescribing and dispensing. This guideline is developed with the frame work of the essential drug program and it also serves as an effective way of containing cost of treatment for both patients and the health sector and should also be used as a training material for health care providers.

Finally, I would like to take this opportunity to thank all members of the technical task force expert groups and Institutions for their valuable input

ACKNOWLEDGEMENTS

The Standard Treatment Guidelines have been compiled after a lengthy consultative process. They include materials from many sources and recommendations and advice from numerous individuals and groups. The groups included task forces, expert committees, medical schools, professional societies listed below

A. Task force members

Dr. Eyasu Mekonnen - Pharmacologist (member and secretary)

Dr. Kibrebeal Melaku - Internist and Pulmonologist (member)

Dr. Negussu Mekonnen - Pharmacalogist (Chairman)

Prof. Yemane Berhane - Epediomologist (member)

B. Expert group

Dr. Amha Gebremedhin - Internist and Haematologist

Dr. Bekele Alemayehu - Internist

Dr. Bogale Worku - Paediatrician

Dr. Dagnachew Shibeshi - Dermatologist and Venerologist

Dr. Zenebe Melaku - Internist, neurologist and Rheumatologist

Dr. Zufan Lakew - Gyne-obstetrician

. C. Work shop Participants

Dr. Abebe Melaku - ENT Surgeon

Dr. Abrham Deneke - Surgeon

Dr. Ali Hassen - Paediatrician

Dr. Berhan Feleke - Internist

Dr. Damte Shibru - Paediatrician

Dr. Daniel Arega - Internist

Dr. Fikre Abate - Surgeon

Dr. Gebeyehu Kassa - ENT Surgeon

Dr. Gedion Hailemariam - General Practitioner

Dr. Gizaw Erene - Cardiologist

Dr. Hailemariam Legesse - Paediatrician

Dr. Hamza Abdu - Internist

Dr. Lukman Yossuf - Gyne-obstetrician

Dr. Mengistu Alemayehu - Internist

Dr. Mesfin Hunegnaw - Dermatologist

Dr. Messay Mekonnen - Surgeon

Dr. Mohammed Haji - Com. Psychatrist

Dr. Shitaye Alemu - Internist

Dr. Sisay Mengistu - General Practitioner

Dr. Solomon Dabi - General Practitioner

Dr. Tefera Muche - Psychatrist

Dr. Tesfaye Berhe - General Practitioner

Dr. Teshale Seboxa - Internist

Dr. Tollera Wolde Eyesus - Internist

Dr. Wondowossen Desta - Paediatrician

Dr. Yewndossen Tadesse - Internist + Nephrologist

Dr. Yonas Getachew - Gyne-obstetrician

Dr. Biru Mengesha - General Practitioner

Mr. Edmealem Ejigu - Pharmacist

Mrs. Rukia A/Wech - Health Assistant

*Commonly used Abbreviations/notations**

ADR	Adverse drug reaction
b.i.d.	Medication to be given Twice daily
C/I	Contraindication
DACA	Drug Administration and Control Authority
D/I	Drug interaction
D/S	Dextrose in saline solution for intravenous use
D/W	Dextrose in water solution for intravenous use
g	Gram
GI	Gastro Intestinal

Hrs/h	Hour
i.m.	Medication to be given intramuscular
i.v.	Medication to be given intravenous
IU	International Unit
kg	Kilogram
mg	Milligram
ml	Milliliter
MOH	Ministry of Health
N/S	Normal Saline solution for intravenous use
Oby/gyn	Obstetrics and gynecology
p.o.	Medication to be given per mouth
prn	Drug administered as necessary by the patient when there are symptoms
q.i.d.	Medication to be given four times a day
S/E	Side Effect
Stat	Medication to be given in only one dose
STG	Standard Treatment Guidelines
t.i.d.	Medication to be given three times a day

- Other abbreviations are defined in the text in places they are first used.

STANDARD TREATMENT GUIDELINES FOR HEALTH STATIONS

INTRODUCTION

The irrational use of drugs has become a serious problem in Ethiopia. One of the causes for irrational drug use is the absence of a standard treatment guideline for the most common diseases in the country. Only a limited number of diseases, such as malaria, tuberculosis and sexually transmitted diseases have adapted standard treatment guidelines. This has led both prescribers and dispensers to prescribe and dispense different drugs for the same disease, making treatment non-uniform and paving the way for irrational drug use. A collaborative effort among prescribers, dispensers and drug consumers is required to address the problem. The formulation of a standard treatment guideline is one of the most important measures that could be taken to promote the rational use of drugs.

The present STG contains guides to general and special prescribing; specific treatment guidelines for a large number of common health conditions in Ethiopia, and relevant annexes that are useful for treatment and prevention. Diseases are classified into sections: infectious, noninfectious, common pediatric problems, common obstetric/gynecological problems, common skin conditions and acute/emergency problems. Every disease has a brief description on the disease pattern, including ways of diagnosis and treatment. Both non-drug and drug treatments have been given whenever applicable. With regard to drug treatment, both first line and alternatives drugs are listed for the treatment of a given disease. Under drug treatment, information on doses, course of therapy, dosage forms, side effects, contraindications and drug interactions are given for first line and alternative drugs.

These standard treatment guidelines are designed to be used as a guide to treatment choices and as a reference book to help in the overall management of patients.

It is emphasized that the choices described here have the weight of scientific evidences to support them, together with the collective opinion of a wide group of recognized national experts.

The content of these treatment guidelines will undergo a process of continuous review comments or suggestions for improvement are well come. Those comments or suggestions for addition of diseases should include evidence of prevalence as well as a draft treatment guideline using the format set one in this guidelines. In the cases of a request for a new drug or replacing a listed product with another product, the evidence base must be clearly defined and included with the request .

These comments or suggestions should be sent to

The Drug Administration and Control Authority (DACA) of Ethiopia P.O.Box 5681

Addis Ababa, Ethiopia

General Guidance

A. Rational Use of Drugs

Effective treatment of patients requires rational use of drugs. Drugs should only be prescribed when they are necessary, and in all cases the benefit of administering the medicine should be considered in relation to the risks involved. Bad prescribing habits lead to ineffective and unsafe treatment, exacerbation or prolongation of illness, distress and harm to the patient, and higher cost. Thus, it is very important that steps are taken to promote the rational use of drugs in order to effectively promote the health of the public and to use meager resources maximally. One way of promoting such practice is developing standard treatment guidelines.

Rational approach to therapeutics requires careful evaluation of the health problem and selecting appropriate therapeutic strategies. Making the right

diagnosis is the cornerstone for choosing the right kind of therapy. Based on the diagnosis, health workers may select more than one therapy and the selected therapy should be agreed with the patient. The selected treatment can be non-pharmacological and/or pharmacological. It is important to take into account the total cost of all therapeutic options in the selection process.

It is important to bear in mind that the patient does not always need a drug for treatment of his/her condition. Very often, health problems can be resolved by a change in life style or diet, use of physiotherapy or exercise, provision of adequate psychological support, and other non-pharmacological treatments.

The selection process must consider benefit/risk/cost information. This step is based on evidence about maximal clinical benefits of the drug for a given indication (efficacy) with the minimum occurrence of adverse effects (safety). It is well known that most drugs have adverse effects, but much of the adverse effects observed throughout the world are caused by inappropriate selection of drugs. The prescriber must check whether the active substance chosen is suitable for the particular patient. As far as possible, drug treatment should be individualized to the needs of each patient.

B. Prescription writing

A prescription is an instruction from a prescriber to a dispenser. The prescription is the link between the prescriber, the pharmacist (or dispenser) and the patient. A properly written prescription is the basis for giving appropriate information, instructions and warning to the patient. It ensures adherence to therapy and protects the patient from unnecessary harm related to therapy

The prescriber is not always a doctor; he/she could be a paramedical worker, such as a medical assistant, a midwife or a nurse. Likewise, the dispenser is not always a pharmacist, but can be a pharmacy technician, an assistant or a nurse. In any setting, it is important to ensure that prescriptions are correctly interpreted and leave no doubt about the intention of the prescriber. The prescription should be clear, legible and indicate precisely what should be given. The prescriber's name

and address must be indicated on the prescription form. This will allow either the patient or the dispenser to contact the prescriber for any clarification or potential problem with the prescription. The following details should be shown on the prescription:

- Date of the prescription
- Name, form and strength of the drug; the International Nonproprietary Name of the drug should always be used
- The pharmaceutical form (for example tablet, oral solution, or ointment) should also be stated
- The strength of the drug should be stated in standard units that are consistent with the Systeme Internationale (SI). Abbreviations that are not standard should be avoided. Avoid decimals whenever possible; if unavoidable, a zero should be written in front of the decimal point.
- Directions specifying the route, dose and frequency should be clear and explicit; use of phrases such as take as directed or take as before should be avoided.
- The quantity of the medicinal product to be supplied should be stated. Alternatively, the length of treatment course may be stated.

C. Adherence (compliance) with drug treatment

It is often assumed that once the appropriate drug is chosen, the prescription correctly written, and the medication correctly dispensed, the drug will be taken correctly and treatment will be successful. Unfortunately, this is very often not the case, and physicians overlook one of the most important reasons for treatment failure - poor adherence (compliance) with the treatment plan.
There are sometimes valid reasons for poor adherence, as with the case of a drug that may be poorly tolerated, may cause obvious adverse effects or may have been prescribed in a toxic dose. Failure to adhere with such a

prescription has been described as intelligent non-compliance. Bad prescribing or a dispensing error may also create a problem, which patients may have neither the insight nor the courage to question. Even with rational prescribing, failure to adhere to treatment is common. Factors may be related to the patient, the disease, the doctor, the prescription, the pharmacist or the health system and can often be avoided.

In general, women tend to be more adherent than men, while younger patients and the very elderly are less adherent. People living alone are less adherent than those with partners or spouses. Conditions with a known worse prognosis (for example cancer) or painful conditions (for example rheumatoid arthritis) elicit better adherence rates than asymptomatic perceived as 'benign' conditions such as hypertension. Health workers may cause poor adherence in many ways by failing to inspire confidence in the treatment offered, by giving too little or no explanation, by thoughtlessly prescribing too many medications, by making errors in prescribing, or by their overall attitude to the patient. Many aspects of the prescription may also lead to non-adherence. It may be illegible or inaccurate; it may get lost; it may not be refilled as intended or instructed for a chronic disease. And it may be too complex; it has been shown that the greater the number of medications, the poorer the adherence. Multiple doses also decrease adherence, especially if more than two doses per day are given. Not surprisingly, adverse effects like drowsiness, impotence or nausea negatively influence adherence and patients may not admit the problem.

The pharmacist's personality and professional manner, like that of the doctor, may have a positive impact, supporting adherence, or a negative one, raising suspicions or concerns. This has been reported especially in relation to generic drugs when substituted for brand name drugs. Pharmacist information and advice can be a valuable reinforcement, as long as it tallies with the doctor's advice. The health care system may also be the biggest hindrance to adherence. Long waiting times, uncaring staff, uncomfortable environment, exhausted drug supplies, etc, are all common problems in developing countries, and have a major impact on adherence. An important problem is the distance of the clinic from the patient and its accessibility. Some studies have confirmed the obvious, that patients furthest from the clinic are least likely to adhere to treatment in the long term.

A good health worker-patient understanding is important for effective adherence to therapeutic regimens. Adequate time must be given to explaining the health problem and the reason for the drug treatment. Health workers must keep treatment regimens simple and write appropriate notes for patients. Teamwork and collaboration with pharmacists is important when advising the patient. It may be appropriate to Involve the partner or another family member, when necessary.

D. Adverse Drug Reactions

An adverse drug reaction (ADR) may be defined as any response to a drug which is noxious, unintended and occurs at doses normally used for prophylaxis, diagnosis, or therapy. ADRs are, therefore, unwanted or unintended effects of a medicine, including idiosyncratic effects, which occur during its proper use. They differ from accidental or deliberate excessive dosage. It is well recognized that clinical trials, however thorough, cannot be guaranteed to detect all adverse effects likely to be caused by a drug. Health workers are thus encouraged to record and report to their national pharmacovigilance center any unexpected adverse effects with any drug to achieve faster recognition of serious drug-related problems. One of the common predisposing patient factors to ADRs is extreme age. The very old and the very young are more susceptible to ADRs. Drugs which commonly cause problems in the elderly include hypnotics, diuretics, non-steroidal anti-inflammatory drugs, antihypertensives, psychotropics and digoxin. Children, and particularly neonates, differ from adults in the way they respond to drugs. Some drugs are likely to cause problems in neonates (for example morphine), but are generally tolerated in children. Other drugs (for example valproic acid) are associated with increased risk of ADRs in children of all ages. Other drugs associated with problems in children include chloramphenicol (grey baby syndrome), antiarrhythmics (worsening of arrhythmias), aspirin (Reye's syndrome).

Another common factor is the presence of co-existing illness. If besides the condition being treated the patient also suffers from another disease, such as kidney, liver or heart disease, special precautions are necessary to prevent ADRs. Also, the genetic make-up of the individual patient may predispose him/her to ADRs.

E. Drug Interactions

Interactions may occur between drugs that compete for the same receptor or act on the same physiological system. They may also occur indirectly

when a drug-induced disease or a change in fluid or electrolyte balance alters the response to another drug. Interactions may occur when one drug alters the absorption, distribution or elimination of another drug, such that the amount which reaches the site of action is increased or decreased. Drug interactions are some of the commonest causes of adverse effects. When two drugs are administered to a patient, they may either act independently of each other, or interact with each other. Interaction may increase or decrease the

effects of the drugs concerned and may cause unexpected toxicity. As newer and more potent drugs become available, the number of serious drug interactions is likely to increase. It is important to remember that interactions which modify the effects of a drug may involve non-prescription drugs, non-medicinal chemical agents, and social drugs such as alcohol, marijuana, and traditional remedies, as well as certain types of food.

The physiological changes in individual patients, caused by such factors as age and gender, also influence the predisposition to ADRs resulting from drug interactions. Patients who have been or are taking traditional herbal remedies may develop ADRs. It is not always easy to identify the responsible plant or plant constituent

F. Incompatibilities between drugs and IV fluids

Drugs should not be added to blood, amino acid solutions or fat emulsions. Certain drugs, when added to IV fluids, may be inactivated by P^H changes, by precipitation or by chemical reaction. Benzylpenicillin and ampicillin lose potency after 6 –8 hours if added to dextrose solutions, due to the acidity of these solutions. Some drugs bind to plastic containers and tubing, for example diazepam and insulin. Aminoglycosides are incompatible with penicillines and heparin. Hydrocortisone is incompatible with heparin, tetracycline, and chloramphenicol.

G. The Effect of Food on Drug Absorption

Food delays gastric emptying and reduces the rate of absorption of many drugs; the total amount of drug absorbed may or may not be reduced. However, Some drugs are preferably taken with food, either to increase absorption or to decrease

the irritant effect on the stomach. It is important to refer to the specific conditions for properly advising the patient.

H. Narcotics and controlled substances

The prescribing of medicinal product that is liable to abuse requires special attention and may be subject to specific legal requirements. Authorized health workers must use these drugs with a full sense of responsibility. The strength, directions and the quantity of the controlled substance to be dispensed should be stated clearly. Required details must be filled in the prescription form carefully to avoid alteration and abuse.

How to Use this Standard Treatment Guideline

This Standard Treatment Guideline is prepared to improve the treatment practice of health workers at all levels. It does not however, provide all the necessary references to establish the diagnosis of the disease/illness for which the patient is visiting the health care system. It assumes that health workers at various levels have the required training and competence to make diagnosis that is appropriate for that level. In light of this the guideline has been organized by level of use, from Zonal Hospital to Health Station.

Once diagnosis is established, the guideline is useful to administer the most appropriate drug, in the Ethiopian context, using the right dose of drug for the right duration of treatment. It also gives the recognized side effects, contraindications and other useful information about each drug. All drugs included in the Standard Treatment Guideline are those that are included in the current National Drug List for Ethiopia.

Diseases are categorized according to the nature of the disease, the population most affected by the disease, and other conditions requiring special attention. Thus it contains major infectious and noninfectious disease according to the first criteria; major obstetric/gynecological and pediatric diseases according to the second criteria; and other conditions such as sexually transmitted diseases, skin disorders and acute emergencies as per the third criteria. One can search the document and obtain the necessary information based on the above criteria. For quick reference, the list of diseases included in the STG and the drugs recommended are organized in the index at the end of the guideline.

This is the first attempt to formulate a Standard Treatment Guideline for the country. Your comments and Suggestion on the use of the guideline could go towards improving subsequent editions, and therefore, you are requested to send these to the Drug Administration and Control Authority.

STANDARD TREATMENT GUIDELINES FOR HEALTH STATIONS

CHAPTER 1

INFECTIONS DISEASES

AMEBIASIS

Amebiasis is both an acute and chronic cause of diarrheal disease caused by the protozoa *Entamoeba hystolytica*. It is transmitted by the faeco-oral route and infection is usually caused by ingestion of cysts from contaminated food and drink. Its manifestations vary from asymptomatic carrier state to severe fulminating illness with mucosal inflammation and ulceration. The diagnosis should also be considered when a patient with bloody diarrhoea fails to show improvement following treatment for shigellosis.

Diagnosis is made by identification of the RBC ingesting trophoizites by direct stool examination.

INTESTINAL AMOEBIASIS

Treatment

First line*:*

Metronidazole, 750 mg p.o.. tid for 5-7 days. For children: 7.5 mg/kg p.o. tid, for 5 days.

S/E: metalic taste, nausea and vomiting;

C/I**:** epilepsy, hepatic malfunction, pregnancy several means including and hematological disorders.

D/I: with disulfiram, confusion; with alcohol, disulfiram like reaction; with cimetidine, decreased metabolism; with phenobarbital, increased metabolism.

Dosage forms: Tablet, capsule, 250mg,; Oral suspension, 125 mg/5ml; Syrup, 4% W/V, 250mg/5ml; intravenous infusion, 5 mg/ml in 100 ml

OR

Tinidazole, 2g p.o. stat for 3 consecutive days. For children: 50-60 mg/kg daily for 3 days. (For ***S/E*** and ***C/I***, see under metronidazole).

Dosage forms: tablet, 150 mg, and 500 mg

Alternative:

Metronidazole, 750 mg p.o. tid for 7 days. For children: 7.5 mg/kg p.o. tid for 5 days.(For ***S/E***,***C/I*** and **dosage forms** , see page 1)

OR

Tinidazole, 2g p.o. stat, for 3 consecutive days. For Children: 50-60 mg/kg daily for 3 days (For ***S/E*****,** ***C/I*** and **dosage forms**, see page 1)

PLUS

Diloxanide furoate, 500 mg, tid for 10 days. For children over 25 kg, 20 mg/kg daily in 3 diveded doses for 10 days.

S/E: flatulence, vomting, urticaria, pruritis.

C/I: pregnancy.

Dosage forms: tablet, 500 mg

BACILLARY DYSENTERY

Bacillary dysentery is a kind of diarrhea caused by bacteria, which invades and destroys the intestinal epithelium. It is often caused by *Shigella* spp. Other less important causes are *Campylobacter* species, non-typhoidal *Salmonella* species and entero-invasive *Escherichia coli*. Transmission occurs via contaminated water or food. Common clinical manifestations include severe abdominal cramps, fever, mucoid or bloody diarrhoea.

Diagnosis. Direct stool examinations and stool culture

Treatment

Supportive treatment

- Correct dehydration with ORS or i.v fluids
- Relieve pain and fever if necessary.

Drug treatment

First line:

Sulfamethoxazole+trimethoprim, 800 mg/160 mg p.o. bid, for 5-7 days. For children 6 weeks – 5 months, 100/20 mg; 6 months – 5 yrs, 200/40 mg; 6 – 12 yrs, 400/80 mg bid.

***S/E*:** nausea, vomiting; rash; blood disorders including neutrpenia, thrombocytopenia and rarely agranulocytosis; antibiotic associated colitis.

C/I: hepatic failure, porphyria; blood disorders.

Dosage forms: Mixture, 200 mg +40 mg in each 5 ml, Tablet (pediatric), 100 mg + 20 mg; Tablet (adult), 400 mg + 80 mg; 800 mg + 160 mg.

BRONCHITIS (ACUTE)

Acute infection of the trachea and the bronchi is often caused by viruses. Therefore, treatment is often symptomatic. Anti-microbial treatment is indicated when patients develop high-grade fever and purulent sputum.

Treatment

For cough: Drug treatment should not be routinely employed

First line*:*

Dextromethorphan hydrobromide, 15 – 30 mg p.o. 3 to 4 times a day. For children: 6-12 yrs, 7.5-15 mg; 2-6 yrs, 7.5 mg 3-4 times a day.

S/E: sedation

C/I: hepatic disorder, severe asthma.

Dosage forms: tablet, 15 mg; syrup, 5 mg, 7.5 mg, 15 mg/5ml; drops, 15mg/ml.

For productive cough

Guaifenesin, 200- 400 mg p.o. qid; for children: 6-12 yrs, 100-200 mg; 2-Yrs, 50-100 mg p.o. qid.

Dosage forms: tablet, 100 mg, 200 mg; capsule, 200 mg; syrup, 100 mg/5ml**.**

Treatment when bronchitis is complicated by bacterial infections

Ampicillin, 500 mg p.o. daily, in 4-divided dose for 5-7 days.

***S/E*s**: allergy

***C/I*s:** Known hypersensitivity reactions to penicillins or cephalosporins

Dosage forms: drop, 100 mg/ml; capsule, 250 mg, 500 mg; injection, 250mg, 500mg, 1mg in vial; oral suspension, 125 mg/ml, 250 mg/ml.

OR

Amoxicillin, 250- 500 mg tid p.o., for children: 20 – 40 mg/kg/day p.o. in 3 divided doses.

S/E: hypersensitivity reactions including urticaria, fever, joint pans rashes, angioedema, anaphylaxis, parasthesia, with prolonged use, diarrhea and antibiotic associated colitis.

C/I: Penicillin hypersensitivity.

Dosage forms*:* capsule, 250 mg, 500 mg; syrup, 250 mg/5ml.

OR

Tetracycline, 250-500 mg qid, for 5-7 days

S/E: teeth discoloration, hypersensitivity reactions, GI disturbances

D/I: forms complexes with drugs like antacids and iron preparations, which decreases its absorption.

C/I: children under 8 yrs.

Dosage forms: tablet, 500 mg; capsule, 250 mg, 500 mg,

OR

Sulfamethoxazole + trimethoprim, 800mg/160 mg. p.o. bid for 7 days. For children 6 weeks – 5 months, 100/20 mg; 6 months – 5 yrs, 200/40 mg; 6 – 12 yrs, 400/80 mg bid. (For ***S/E*** **and** ***C/I*** and **dosage forms**, see page 3).

CHOLERA

Cholera is an acute diarrheal disease that can cause severe dehydration and death in a matter of few hours. It is caused by *Vibrio cholera* and often causes epidemics under conditions of poor hygiene. It is often diagnosed based on clinical grounds. Sudden onset of explosive diarrhoea is the hallmark of the disease. The diarrhoea is classically voluminous, non-offensive, and somewhat looks gray or "rice water". Fever is absent. Direct stool examination by dark field microscopy or preferably stool culture will confirm the **diagnosis.**

Treatment

Non-Drug Treatment

The promotion of adequate hygienic condition in the community is important to prevent an outbreak and spread of the disease.

Symptomatic/supportive therapy: For dehydration in mild case give ORS, prn; for children: < 2yrs: 50-100ml; 2-10yrs: 100-200ml after each loose stool. For severe cases Ringer lactate i.v. drips (alternatively Normal Saline) should be given 50 - 100 ml/min until shock is reversed; thereafter, according to fluid loss. KCl solution 20 - 40 mmol/litre may be added as required.

In the absence of i.v. drips aggressive rehydration with ORS is vital.

Drug (Curative) therapy:

Sulfamethoxazole + trimethoprim, 800 mg/160 mg p.o. bid. for 5 days. For children 6 weeks – 5 months: 100/20 mg; 6 months – 5 yrs: 200/40 mg; 6 – 12 yrs: 400/80 mg bid all for 5 days. (For ***S/E, C/I*** and **dosage forms**, see page 3).

GASTRO-ENTERITIS (FOOD-POISONING)

Gastro-enteritis (food poisoning) is characterized by a brief but explosive diarrheal illness in subjects following exposure to a common food source contaminated with bacteria or bacterial toxin. Common organisms include *S .aureus*, *Salmonella*, *Clostiridium perfringes* and *Bacillus cereus*, which are i responsible for more than 90 % of cases.

Diagnosis is often made by history. Stool examination is also helpful to exclude other diagnosis and to guide the right antibiotic choice. Except in special cases (e.g. Botulism), isolation of the toxin is not cost effective.

Treatment

Supportive Treatment: is often adequate for milder cases

- Correct dehydration, if any
- Give pain killer, if required

Antibiotic treatment is indicated for more severe cases:

***First line*:**

Sulfamethoxazole + trimethoprim, 800mg/160 mg p.o. bid., for 5-7 days. For children 6 weeks – 5 months: 100/20 mg; 6 months – 5 yrs: 200/40 mg; 6 – 12 yrs: 400/80 mg bid. (For ***S/E*, *C/I*** and **dosage forms**, see page 3)

Alternative

Chloramphenicol, 500mg, p.o. qid, for 7 days: For children: 25 mg/kg/d.

S/E: bone marrow depression, grey baby syndrome.

***C/I*:** impaired hepatic function, bone marrow depression.

D/I: inhibits hepatic metabolism of several drugs like phenytoin and warfarin.

Dosage forms: capsule, 250 mg; injection 1g in vial; oral suspension, 125 mg/5ml.

GIARDIASIS

Giardia lamblia is a ubiquitous gastrointestinal protozoa that results in clinical pictures ranging from asymptomatic colonization to acute or chronic diarrheal illness. *Giardia lamblia* infects humans through ingestion of as few as 10 cysts. The infection is more prevalent in children than adults. The most common presentation is diarrhea, weight loss, crampy abdominal pain and failure to thrive.

Diagnosis is established by identifying *Giardia lamblia* trophozoite or cyst from fecal or duodenal samples.

Treatment

First Line

Metronidazole, 500 mg three times a day for five days. For children, 1-3 years: 500 mg daily; 3-7 years: 600-800 mg daily; 7-10 years: 1 g daily, all for 3 days **(**For ***S/E, C/I and dosage forms,*** see page 1)

Alternative

Tinidazole, single oral dose of 2 g. For children, 50-75 mg/kg as a single dose (may be repeated once if necessary). **(**For ***S/E, C/I and dosage forms,*** see page 1).

INTESTINAL PARASITIC INFESTATIONS

These are infections caused by intestinal worms (nematodes and cestodes), which are commonly associated with poor personal and environmental hygiene. Although they may not be fatal, they contribute to malnutrition and diminished work capacity. Clinical manifestations include abdominal cramps, nausea, abdominal bloating, anorexia, anemia etc.

Diagnosis: is mainly by direct stool microscopy

Treatment: see table 7

Table 7 . Treatment of common intestinal parasitic infestations

NAME OF INFECTION; ETIOLOGY; MODE OF TRANSMISSION	TREATMENT	REMARK
Ascariasis ***Ascaris lambricoids*** Ingestion of the larvae of the parasite together with food	**First line**: **Piperazine,** 4 g in a single dose: For children: 9 – 12 years, 3.75 g; 6 – 8 yrs, 3 g; 4-5 yrs, 2.25 g; 1 – 3 yrs, 1.5 g, ≤1yr, 120 mg/kg as a single dose. **S/E:** nausea, vomiting, colic, diarrhea; allergic reactions; drowsiness, confusion. **Caution**: known hypersensitivity, epilepsy, and renal or hepatic impairment. D/I: piperazine and pyrantel are antagonistic. **Dosage forms:** tablet (adipate), 300mg; elixir (citrate), 500mg/5ml, 622.5mg/5ml, 706mg/5ml, 750mg/5ml, 937.5mg/5ml, 1gm/5ml **Alternatives:** **Levamisole, 120 – 150 mg** (3 – 4 tablets) p.o. to be taken as a single dose **S/E:** mild nausea and vomiting **Dosage form:** Levamisole tablets, 40 mg **Albendazole,** 400 mg p.o. as a single dose, for children: 1 – 2 years, 200 mg as a single dose. (For **S/E**, **C/I** and **dosage forms** , see page13). **Or** **Mebendazole,** 100 mg bid p.o. for 3 days or 500 mg as a single dose. (**S/E , C/I** and **dosage forms**, see page 13). **Or** **Pyrantel**, 700 mg p.o. as a single dose, **S/E**: minor GI disturbances, **C/I**: known hypersensitivity. **D/I**: piperazine and pyrantel are antagonistic. **Dosage forms**: tablet, 125 mg; oral suspension, 250 mg base/5 ml.	Presence of migrating larvae in the lungs can provoke pneumonia
Enterobiasis ***Enterobius Vermicularis*** Ingestion of the eggs of the parasite together with food	**First line**: **Mebendazole,** 100 mg bid p.o. for 3 days or 500 mg as a single dose. **(S/E, C/I** and **dosage forms,** see page 13**).** **Alternatives*:*** **Albendazole,** 400 mg p.o. as a single dose, for children: 1 – 2 years, 200 mg as a single dose. (For **S/E , C/I** and **dosage forms**, see page 13) Or **Piperazine,** 4 g in a single dose: For children: 9 – 12 years, 3.75 g, 6 – 8 yrs, 3g, 4–5 yrs, 2.25 g, 1 – 3 yrs,	Common in children and auto infection may occur

	1.5 g, <1yr, 120mg/kg as a single dose. (For **S/E, C/I** and **dosage forms,** see page9**).**	
Hookworm infestation ***Necator americanus or Ancylostoma duodenale*** Penetration of the larvae of the parasite through skin	**First line:** **Mebendazole,** 100 mg bid p.o. for 3 days or 500 mg as a single dose. **(**For **S/E** , **C/I** and **dosage forms,** see page 13). **Alternatives:** **Albendazole,** 400 mg p.o. as a single dose, for children: 1 – 2 years, 200 mg as a single dose. **(**For **S/E ,C/I** and **dosage forms**, see page 13). Or **Pyrantel**, 700 mg p.o. as a single dose, **(S/E, C/I and dosage forms**, see page 10)	Treat concomitant anemia if any
Strongyloidosis ***Strongloidexs stercoralies*** Penetration of the larvae of the parasite through skin	**First line**: **Thiabendazole,** 1500 mg, p.o. bid, for children: 25 mg/kg p.o. for two consecutive days. **S/E**:dizziness, nausea, voiting, drowsiness, pruritis, headache, neuro-psychiatric disturbances, hepatitis and hypersensitivity reactions. **Caution**: hepatic and renal impairment	Larvae migrate to the lungs where they cause tissue destruction and bleeding. Treat concomitant anemia if any

Trichuriasis ***Tricuris trichiua*** Ingestion of the eggs of the parasite together with food	**First line:** **Mebendazole**, 100 mg bid p.o. for 3 days or 500 mg as a single dose. (For **S/E C/I,** and **dosage forms**, see page 13). **Alternative:** **Albendazole,** 400 mg p.o. as a single dose, for children: 1 – 2 years, 200 mg. As a single dose. (For **S/E , C/I and dosage forms**, see page 13).	Heavy infestation leads to bloody diarrhea, bleeding and weakness

Tapeworm infestation **Taenia saginata** **or** **Taenia solium** **Or** ***Hymenolepis nana*** Ingestion of raw or undercooked meat containing the larvae of the parasite	**First line:** **Niclosamide,** 2 g in a single dose p.o. **S/E**: minor GI upset, and purities. **Dosage forms**: chewable tablet, 500mg **Or** **Albendazole,** 400 mg in a single dose p.o. **S/E**: occasional diarrhea and abdominal pain. **C/I:** pregnancy. **Dosage forms:** tablet, 200 mg; syrup, 100 mg/5 ml **Or** **Alternatives:** **Praziquantel**, 600 mg in a single dose p.o. **S/E**: minor Gastero–intestinal upset. **C/I**: ocular cysticercoids. **Dosage forms**: tablet, 600 mg. **Mebendazole,** 100 mg bid for 3 days p.o. **S/E:** occasional diarrhea and abdominal pain**.** **C/I**: pregnancy. **Dosage forms:** tablet, 100 mg; oral suspension, 100 mg/5 ml	*T. solium* (pork tapeworm) may cause fatal cysticercosis

MALARIA

Malaria is a parasitic infection. There are four main species known to affect humans. The most serious and life-threatening disease occurs from *Plasmodium Falciparum* infection, which usually presents with acute fever, chills, sweating and headache progressing to icterus, coagulation defects, shock, renal and liver failure, acute encephalopathy, pulmonary and cerebral edema, coma and death. It is a possible cause of coma and other CNS symptoms in any person who has recently traveled to malarius areas. Prompt treatment is essential even in mild cases. The other species, *Plasmodium vivax* (benign tertian), *Plasmodium malarea* (quartan) and *Plasmodium ovale*, are not life-threatening, except in the very young, very old and immuno-deficeint cases.

Diagnosis can be confirmed by demonstration of malaria parasites in the blood film. Often, repeated microscopic examinations may be necessary. It is also helpful to estimate the degree of parasitemia, which is extremely useful not only to predicate severity but gauge response to treatment as well.

I. Treatment

A. P. Falciparum

i. Uncomplicated *P. Falciparum* malaria

First line:

Chloroquine sensitive:

Chloroquine phosphate, 25 mg base/ kg over 3 days p.o. (4 tablets p.o. stat, followed by 2 tablets after 8 hours, then 2 tablets per day for two consecutive days.).

Children: 10 mg/kg initially, then 5 mg/kg 6, 24 and 48 hrs after the first dose.

S/E: dizziness, GI discomfort and pruritus.

C/I: alcoholism, history of hypersensitivity, epilepsy and psoriasis.

D/I: antacids reduce absorption and cimetidine reduces metabolism.

Dosage forms: tablet, 150 mg base; syrup 50 mg base /5ml.Injection, 150 mg base in 5 ml ampoule.

Alternative:

Sulfadoxine 500 mg + pyrimethamine 25 mg

- 3 tablets orally once. If parentral preparation is required, 2 ampoules of the injectable form (e.g. Fansidar) can be given IM or IV slowly.

Note: The total 24 hours dose should not exceed 2000mg.Oral therapy should be started as soon as the patient regains consciousness.

- Children's dose: depends on age:

a. Less than 3 years: ½ tablet (250 mg Sulfadoxine + 25 mg Pyrimethamine

b. 4-11 years: 1 tablet = (500 mg Sulfadoxine + 25 mg Pyrimethamine)

c. 12-15 years: 2 tablets = (1000 mg Sulfadoxine + 50 mg Pyrimethamine

Parentral Sulfadoxine 500 mg + pyrimethamine 25 mg is given as follows:

Depends on age:

a. 0-4 years: 0.5-1.5 ml (1/4ampoule).

b. 5-8 years: 1.5-2 ml (3/4-1 ampoule)

c. 9-14 years: 2-3 ml (1-1 ½ ampoule)

S/I: Depression of hematopoiosis with high doses, rashes and insomnia.

Caution: Hepatic or renal impairment, folate supplement in pregnancy, breast feeding, blood counts required in prolonged use, infants less than 2 months, hepatic or renal dysfunction.

Dosage forms: tablet, sulfadoxine (500 mg) + pyrimethamine (25 mg); injection, sulfadoxine (500 mg) + pyrimethamine (25 mg) in 2.5 ml ampoule

Quinine dihydrochloride,600 mg (2 tablets) can be given 8 hourly for 7 days if **Sulfadoxine + pyrimethamine** fails.

S/E: Cinchonism, including tinnitus, headache, nausea, abdominal pain, rashes, visual disturbances, confusion, blood disorders (including thrombocytopenia and intra-vascular coagulation), and acute renal failure.

C/I: Hemoglobinuria, optic neuritis

Dosage forms: tablet (dihydrochloride or sulphate), 300mg, and 600mg; injection, 300mg/ml in 1 ml ampoule.

ii. Severe and complicated *P. falciparum* malaria

Non-Drug treatment:

- Clear and maintain the airway.
- Position semi-prone or on side.

- Weigh the patient and calculate dosage.
- Make rapid clinical assessment.
  - Exclude or treat hypoglycemia (more so in pregnant women).
  - Assess state of hydration.
- Measure and monitor urine output.
  - If necessary insert urethral catheter.
  - Measure urine specific gravity.
- Take blood for diagnostic smear, monitoring of blood sugar ('stix' method), haematocrit and other laboratory tests.
- Plan first 8 h of intravenous fluids including diluents for anti-malarial drug, glucose therapy and blood transfusion.
- If rectal temperature exceeds 39°C, remove patient's clothes, use tepid sponge,
- Lumbar puncture to exclude meningitis or cover with appropriate antibiotic.
- Consider other infections.
- Consider need for anti-convulsant treatment

Drug Treatment

Quinine dihydrochloride:

Loading dose: 20 mg/kg in 500 ml of isotonic saline or 5 % dextrose over 4 hours (4 ml/minute). The pediatric dose is the same but the fluid replacement must be based on body weight.

Maintenance dose: should be given 8 hours after the loading dose of 10 mg / kg to be give 8 hourly diluted in 500 ml of isotonic saline or 5 % dextrose over 4 hours. The parentral treatment should be changed to p.o. as soon as the patient condition improves and if there is no vomiting. Treatment should be given for an average of seven days. (***For S/E and Dosage foms,*** see page 15)

PLUS

Doxycycline, 200 mg p.o. four times daily for 7 days

S/E: nausea, vomiting, hepato-toxiciy, hypersensitivity reactions.

C/I: renal impairment, pregnancy and breast-feeding.

***Dosage forms*:** Capsule,100 mg; tablet,100mg.

N.B.

If there is no improvement in the patient's condiction, refer to the nearby district hospital.

P. Vivax

Chloroquine phosphate, 1 g, then 500 mg in 6 hours followed by 500 mg daily for 2 days, or 1 g at 0 and 24 hrs followed by 0.5 g at 48 hrs p.o

(For ***S/E, C/I*** and ***dosage forms***, see page 14)

Followed by

Primaquine, 15mg base as a single dose daily for 14 days p.o.

S/E: Nausea, vomiting anorexia, and less commonly hemolytic anemia, especially in patients with G6PD deficiency.

Caution: In patients with G6PD deficiency; systemic diseases associated with granulocytopenia, e,g. rheumatoid arthritis, and pregnancy and breast feeding)

Dosage forms: Tablet, 7.5mg base, 15mg base

II. Chemo-prophylaxis

P. Falciparum

Chloroquine sensitive:

First Line

Chloroquine phosphate, 300 mg (as base) p.o. weekly:

For Children, **Chloroquine** 5mg/kg p.o weekly.

Length of Prophylaxis: Preferably taken 1 week before travel and until 4 weeks after return.

(For ***S/E, C/I* and dosage forms**, see page 14)

Chloroquine resistant: Refer to nearby Health center

PNEUMONIA

Pneumonia refers to acute inflammation of the lungs. The clinical presentation and the etiology vary greatly depending on the age, the infecting organism, the geographical location, the immune status and site of acquisition. The most important pathogens which cause community acquired pneumonia in immuno-competent adults includes *Strep. Pneumoniae,* followed by *mycoplasmal pneumonea, Chlamydia Pneumoniae, Legionella spp* and others**.** It is also important to remember that *Pneumocystis carini* and *Mycobacterium Tuberculosis* have now become a common cause of community acquired pneumonia in immuno-compromised individuals.

Hospital acquired pneumonia refers to the type of pneumonia, which occurs after 48 hours of admission to a hospital. Multi-resistant bacteria such as staphylococci, enterococci, enterobacteria, *peudomonas aeroginosa* and other aerobic bacteria may be responsible for such infections. This is more so in those who acquired the infection 5-7 days after hospitalization.

The most important symptoms include cough, fever, chest pain and tachypnoea. Extra-pulmonary features such as confusion or disorientation may be the only signs in the elderly, immuno-compromised patients and malnourished children.

Diagnosis: Gram stain of the sputum remains the main stay of diagnosis. Blood culture may be positive in ¼ to 1/3 of cases and is important to isolate the causative agent for proper antibiotic choice. Chest X-ray may also be helpful not only to confirm the diagnosis, but also to estimate the extent of the lesion and to exclude other diagnosis.

Treatment:

Drug treatment:

I. Community acquired ambulatory patients (Mild Pneumonia):

First line

Amoxicillin, 500 mg p.o. every 8 hours for 5 to 7 days.

(For ***S/E, C/I*** and **dosage forms** see page 4).

Alternative

Procaine penicillin, 800,000 I: U i.m. daily for 5-7 days.

S/E: hypersensitivity reactions including urticaria, fever, joint pans rashes, angio-edema, anaphylaxis, parasthesia, with prolonged use, diarrhea and antibiotic associated colitis.

C/I: Penicillin hypersensitivity.

Dosage forms: injection, 1million I.U, 5 million I.U, 10 million I.U. 20 million I.U, in vial.

N.B.

Patients who are allergic to penicillin should be referred to the nearby health center or district hospital

RELAPSING FEVER

Relapsing fever is a louse-borne disease that is caused by the spirochaetes, *Borrelia recurrentis.* The disease is common among the homeless and in those living in overcrowded living conditions. It is endemic in our country but outbreaks do also occur from time to time. It is characterized by recurrent acute episodes of spirochetemia and short febrile periods alternating with spirochetal clearance and pyrexia. Other febrile diseases like thyphus, thyphoid fever, malaria and meningitis should be considered in the differential diagnosis of relapsing fever.

Diagnosis is made by blood film microscopic examination.

Treatment

Non Drug treatment

- Delousing
- Shaving of the scalp

Drug treatment

First line

Procaine penicillin, 400,000 units i.m. stat. For children: 25,000-50,000 units. (For ***S/E, C/I***, and ***dosage forms***, see under Benzyl penicillin, page 19)

Check blood film after 12 hours of treatment. If negative, give tetracycline 250 mg three times daily for three consecutive days. If the blood film remained positive, repeat the same dose of procaine penicillin and continue with tetracycline later as described above.

Alternative

Tetracycline hydrochloride, 500mg p.o. stat. The same dose could be repeated the following day (For ***S/E***, ***C/I*** and **dosage forms**, see page 5)

N.B

1. Some patients may develop a kind of reaction following treatment with antibiotics. It is known as the Jarisch-Herxheimer reaction and is believed to be due to a rapid clearance of the spirochetes. In severe cases, significant arterial hypotension with pulmonary edema may supervene. Such complications require prompt and appropriate cardio-vascular support.

2. In resistant cases, consider other concomitant infection like thyphus.

SINUSITIS

Sinusitis is an inflammation of the mucosal lining of the paranasal sinuses. It could be caused by viruses, bacteria or could be allergic in nature. The most common bacteria that cause sinusitis are *Streptoccocus pneumonae* and *Hemophilus influnenza*. Clinical presentation varies with the specific sinus involved. In general, it includes a purulent nasal discharge, feeling of fullness or pain over the face, and head ache. The affected sinus may be tender and swollen.

Diagnosis is mainly clinical, but X-rays of the sinuses may be helpful particularly in chronic cases.

Treatment

Non-drug treatment: steam inhalation

Drug treatment:

For bacterial infection:

First line:

Amoxicillin, 250- 500 mg tid p.o. For children: 20 – 40 mg/kg/day p.o. in 3 divided doses for 7 days. (For ***S/E* and *C/I* and dosage forms**, see page 4).

OR

Sulfamethoxazole + trimethoprim, 800mg/160 mg p.o. bid, for 7 days. For children 6 weeks – 5 months, 100/20 mg; 6 months – 5 yrs, 200/40 mg; 6 – 12 yrs, 400/80mg bid. (For ***S/E*, *C/I* and *Dosage forms***, see page 3)

Chronic sinusitis: Most cases requires surgical drainage, besides antibiotic treatment as outlined above.

TONSILLITIS

It is an acute inflammation of the tonsils, usually due to Group *A streptococcus* or, less commonly, to viruses. Sore throat and pain on swallowing are the characrestic features. Most patients will also have headache, malaise and fever.

Diagnosis is often clinical. Throat culture may help to establish the specific etiology.

Treatment:

Drug treatment:

If viral*:*

Only symptomatic therapy.

Paracetamol, 500 mg p.o 1-2 tablets 6 hourly on p.r.n basis.

***S/E*:** hypersensitivity skin reactions

***C/I*:** hepatic and renal disease

Dosage forms: tablet, 100mg, 500mg

If bacterial:

First line

Amoxicillin, 250-500 mg tid, p.o. for 7 days. For children: 20-40mg/kg/day in 4 divided doses. (For ***S/E*** and ***C/I***, see page 4).

Dosage forms: capsule, 250mg, 500mg; syrup, 250mg/5ml.

OR

Ampicillin, 500mg, qid, p.o. for 7 days. For children: 50-100mg/kg/day in 4 divided doses. (For ***S/E* and *C/I*** and, see page 4).

Dosage forms: Capsule, 250mg, 500mg; oral suspension, 125mg/5ml, 250mg/5ml; injection,(sodium), 250 mg, 500mg,1 g in vial.

OR

Procaine penicillin, 800,000 IU i.m daily for 5-7 days

(For ***S/E, C/I and dosage forms***, see, page 19).

Prophylaxis

Benzathine penicillin, 1.2 million units im once monthly. For individuals with known valvular heart disease and rheumatic fever, such treatment should continue for a prolonged period.

*(*For ***S/E C/I* and *Dosage forms*** see under procaine penicillin page 19)

TRACHOMA

Refers to a chronic form of conjunctivitis caused by *Chlamidia trachomatis*. It is characterized by a progressive conjunctival follicular hyperplasia, corneal neo-vascularization, and scarring of the conjunctiva, cornea and eyelids. Trachoma is the most important preventable cause of blindness in the world.

Diagnosis: is often made on the typical physical signs. Two of the following four criteria are diagnostic:

- Lymphoid follicles on the upper tarsal conjunctiva
- Typical conjunctival scaring
- Vascular pannus
- Limbo follicles

Chlamidia trachomatis may be isolated from culture of the conjunctival discharge. .

Non-Drug treatment.

- Wash and keep the eye clean
- Limit irritation from glare

Drug treatment

First line:

Tetracycline eye ointment, 1%, or **Tetracycline eye drops, 0.5 – 1%** twice daily for 6-8 weeks. (Drops: apply 2 drops into each eye twice daily)

(For ***S/E* and *C/I* ,** see page 5)

Dosage forms: Drops -6ml (0.5%, 1%). Ointment -3.5gm (1%).

Alternative:

Chloramphenicol eye drops, 0.5 % 4-6 hourly or Chloramphenicol eye ointment, 1 % 4-6 hourly for the same duration mentioned above. ***(***For ***S/E* and *C/I,*** see page 7)

Dosage forms: Drops-5ml, 10ml (0.5%).

In severe cases refer to the nearby district hospital.

TYPHUS

Thyphus is a *ricketisial* disease, which causes an acute febrile illness characterized by an abrupt onset of fever, severe headache and prostration. Important differential diagnosis includes relapsing fever, bacterial meningitis, and thyphoid fever. It is a disease commonly seen among destitute individual with poor personal hygiene.

Diagnosis is by Weil Felix serology test.

Treatment

Tetracycline, 250mg, qid p.o. for 7 days

(For ***S/E*, *C/I*** and **dosage forms,** see page 5)

OR

Chloramphenicol, 500mg p.o. qid, for 7 days: For children: 25mg/kg.

(For ***S/E*, *C/I*** and **dosage forms,** see page 7)

CHAPTER 2

SEXUALLY TRANSMITTED DISEASES

Genital ulcer syndrome

Inguinal bubo

GENITAL ULCER SYNDROME

Genital Ulcer syndrome is diagnosed when a man or a woman complains a sore/ulcer on the genitals. Examine the patient for genital ulcer and any other STD that may be present. If there is a genital ulcer, treat the patient for both syphilis and chancroid. When available, laboratory tests can be done to make a specific diagnosis.

Treatment

Non-Drug Therapy:

Provide education, promote the use of condoms and ask the patient to return in seven days if symptoms have not improved.

I. Drug Treatment

Benzathine penicillin G, 2.4 million units i.m stat.

(For ***S/E, C/I*** and **dosage forms** , see under procaine penicillin page 19).

OR

(in penicillin allergy)

INGUINAL BUBO

Inguinal bubo is a swelling of inguinal lymph nodes as a result of sexually transmitted infections. Careful evaluation of the patient is important as infections from lower extremities or in the perineum can produce swelling of the lymph nodes in the inguinal region.

Treatment

Non-drug treatment:

Educate, promote and provide condoms, and discuss partner referral and treatment.

Drug treatment:

Benzathine penicillin G, 2.4 million units intramuscularly at a single session (because of the volume of this dose, give it as two injections at separate sites)
(S/E, C/I and **dosage forms:** see under procaine penicillin page 19)

PLUS

Sulfamethoxazole+trimethoprim, 800mg/160 mg p.o. bid., for 15 days. For children 6 weeks – 5 months, 100/20 mg; 6 months – 5 yrs, 200/40 mg; 6 – 12 yrs, 400/80mg bid.
(For ***S/E and C/I*** see page 3).
Dosage forms:; Tablet (adult), 400mg + 80mg; 800mg + 160mg.

CHAPTER 3

COMMON SKIN PROBLEMS

Eczema
Folliculitis
Fungal infections
Impetigo Contagiosa
Scabies
Urticria

ECZEMA

Atopic dermatitis is a chronically relapsing skin disease of early infancy, childhood, adolescence and to a lesser extent also seen in adults. It consists of erythematous papules and vesicles with a tendency to rupture and in chronic cases is characterised by lichenification. AD is associated with severe pruritus and resolves without leaving trace or sequelae.

Diagnosis: Clinical

Treatment

Drug treatment:

General Principles

A. Topical

In general oozing lesions should be treated with **saline** compresses or 1% **Genitian violet** 2-3 times daily until the lesions dry (usually 2 days). Then topical creams, pastes and ointments containing **corticosteroids** should be applied once or twice daily until the lesion heals (at least one or two weeks). It is necessary to avoid non-specific irritants (like woollen clothes).

B. Systemic

- Consists of anti-allergic treatment with **anti-histamines** e.g. **promethazine, terfenadine**, (for dosage see treatment of urticaria) and in severe cases systemic corticosteroids.

- Sometimes, it may be necessary to use drugs acting on the nervous system: neuroleptic drugs (e.g. **thioridazine, chlorpromazine - for dosage, S/E and C/I see treatment of schizophrenia**) or **anxiolytic drugs** (e.g. diazepam).
- There are some reports of good results of PUVA therapy in certain centres (for resistant cases).

In general, the treatment of eczematous dermatitis depends upon the **clinical stages** of the disease (acute, subacute and chronic):

i) Acute lesions require wet dressings, and application of 1% **Genitian violet** 2-3 times daily usually for 2 days to be followed by topical steroids.

ii) Sub-acute and chronic lesions should be referred to the nearby health center.

FOLLICULITIS (Superficial pustular folliculitis)

Folluculitis is an inflammatory state involving the superficial exit of the follicles .If left untreated, it may involve the whole of the follicles and its surroundings (folliculitis, perifolliculitis)

Treatment

Non-Drug treatment:

Thorough cleaning of the affected area with antibacterial soap and water twice daily.

Drug treatment:

Amoxicillin, 500 mg tid for 7 days

S/E, C/I *and* ***Dosage forms***: see page 4

OR

Procaine penicillin, 800,000 IU i.m. daily for 5-7 days. Children: 50,000 IU/Kg/24 hours in a single dose for 7-10 days .

(S/E, C/I *and* ***Dosage forms***: see page 19)

FUNGAL INFECTIONS

Fungal Infections (superficial) usually affect all parts of the skin from head to toes. These include:

1. Infection of the scalp, *Tinea capitis*
2. Infection of the skin of the trunk and extremities, *Tinea corporis*
3. Infection of the axillae, groin, *Tinea cruris*
4. Infection of the nails, *Tinea unguium* (Onychomycosis)
5. Infection of the palms and soles, *Tinea palmo-plantaris*
6. Infection of the clefts of the fingers and Toes, *Tinea interdigitalis*

Treatment:

i.Topical

The application of topical anti-fungals is usually enough for *Tinea corporis* and *cruris*)

First line:

Whitfield's ointment applied twice a day until the infection clears (usually for 2-3 weeks).

***S/E*:** photosensitivity.

Dosage forms*:* Ointment, 3% salicylic acid with 6% benzoic acid in 25 gm pack

OR

Clotrimazole cream or ointment. Same dose as for candidiasis

S/E: local irritation, burining, oedema, erythema.

Dosage forms : cream/ointment; 1%, vaginal cream, 10% ; vaginal tablet, 100mg, 200mg

If there is no improvement, refer to the nearby health center.

IMPETIGO CONTAGIOSA

Impetigo contagiosa is a contagious superficial infection of the skin consisting of vesicles and bullae that soon rupture to form honey yellow crust. It is caused by streptococci or staphylococci or by both organisms. Infection is acquired either from external sources by direct contact or through objects or from internal infection, e.g. nasopharyngeal sources. Impetigo contagiosa is highly infectious and is common in children.

Diagnosis is mainly clinical:

- the existence of flaccid vesicul-opustules which rupture rapidly and heal without scarring
- distribution over the exposed surface of the face
- its sudden onset
- short course

Treatment

Non-Drug treatment:

Careful removal of crusts by bathing with **normal saline** or **hydrogen peroxide** ensures a more rapid healing.

Drug treatment:

i. Topical:

Genitian violet, applied 2- 3 times daily for a couple of days (for oozing lesions helps as an antiseptic and drying agent. amount determined by the physician depending on the extent of the lesion)

Note: Bacterial ointments are usually applied after the wet lesion has dried.

S/E: stains clothes and skin; mucosal ulcerations

Dosage forms: solution, 0.5%, 1%

ii. Systemic

First line:

Amoxicillin, 500 mg tid for 7 days

S/E, C/I *and* ***Dosage forms***: see page 4

SCABIES

Scabies is a persistent and intensely itchy skin eruption due to the mite *Sarcoptes scabiei*. The disease is commonly seen in people with low socio-economic status and poor personal hygiene. Clinical findings consist of red papules and burrows in the axillae, groin and digital web spaces associated with complaints of nocturnal pruritus. In infants, the face, palms and soles are often involved and blisters may develop.

Diagnosis is made on the basis of clinical findings described above.

Drug Treatment:

First line:

Benzyl Benzoate, applied to the entire body, neck to toe for 3 to 5 consecutive evenings. For children 12.5%. Bath should be taken before the first and after the last application.

S/E: skin irritation, burning sensation especially on the genitalia, excoriations, occasionally rashes.

Dosage forms: lotion, 25% in 500 ml

OR

Sulphur, thinly applied to the entire body for 3 consecutive nights. The patient should wash thoroughly before each new application and 24 hours after the last treatment.

S/E: skin irritation.

C/I: pregnancy or lactation, children younger than 2 years

Caution: avoid contact with eyes, mouth and mucous membranes.

Dosage forms: ointment, 5%, 10%.

Note:

1. Washing clothes in hot water or ironing after normal washing are important means of decontamination.
2. Any person who has close contact with the infected patient should be treated.
3. If itching persists one week after treatment, it is worth repeating the treatment for the 2nd time. If it persists one week after the second treatment, one can use crotamiton or calamine cream or lotion and systemic antihistamines.
4. Secondary bacterial infections should be treated accordingly.

URTICARIA (Wheals, hives)

Urticaria is a common vascular reaction pattern in which the primary lesion is characteristically a wheal, itchy transient swelling which may be rose coloured or porcelain-like. The lesion occurs quickly and disappears within some hours without leaving any trace. Urticaria is associated with itching and there are many varieties of urticaria. The causes of urticaria are many: food, food additives, drugs, aspirin, infections (bacterial, virus), infestations (parasites), emotional stress, physical factors (cold, heat, light (UV), menthol –(found in cigarettes, candy and mints, cough drops, aerosol sprays and topical medications); inhalants, alcohol, collagen vascular diseases and neoplasms.

Diagnosis is established by:

1) observation of monomorphic wheals,
2) short time course
3) presence of pruritus and
4) healing of the lesion without leaving any trace.

Treatment :

Drug treatment:

Chlorpheniramine, 8-12mg once daily or twice daily. Children: 0.5mg/kg/24 hours.

S/E: drowsiness, headache, psychomotor impairment, and anti-muscarinic effects

C/I: should be used with caution in prostatic hypertrophy, urinary retention, glaucoma, and hepatic disease

***Dosage Form*:** Syrup 2mg/5ml; tablet 4mg,10mg**.**

CHAPTER 4

NON-INFECTIOUS DISEASES

Anemia

Anxiety Disorder

Bronchial asthma

Constipation

Epilepsy

Migraine

Nausea and Vomiting

Nonulcer dyspepsia

Osteoarthritis

Peptic ulcer

Rheumatoid arthritis

ANEMIA

IRON DEFICIENCY ANEMIA (IDA)

Iron deficiency denotes a deficit in total body iron resulting from iron requirements that exceed its supply. IDA is a manifestation of an underlying disease condition and is not in itself a complete diagnosis. Common causes of IDA include: increased iron requirements (growth-spurt, pregnancy and lactation), blood loss (blood donation, frequent phlebotomy, chronic bleeding), worm infestation (hookworm), and inadequate iron supply (malnutrition, malabsorption). The symptoms of IDA include fatigue, giddiness, headache, tinnitus, palpitations, sore tongue and dysphagia and are not specific to IDA.

Diagnosis: clinical

Treatment*:*

Drug Treatment

Ferrous sulfate, 325 mg tablets (65 mg elemental iron), or any other iron salt, taken tid between meals to maximize absorption is the treatment of choice. Treatment is continued for at least 3 months following correction of the anemia to replenish iron stores.

S/E: Nausea, abdominal cramps and dyspeptic symptoms, constipation or diarrhea. For patients who do not tolerate ferrous sulfate tablets, they may be advised to take it with meals, or to start a smaller dose, or to change the brand to ferrous gluconate or fumarate tablets or elixir forms.

D/I: Antacids, tetracyclines, chloramphenicol, and quinolone antibiotics interfere with the absorption and metabolism of iron.

N.B.

In severe cases, refer to the near by Health center

ANXIETY DISORDER

Anxiety Disorder is a pathological state characterized by a feeling of dread accompanied by somatic signs that indicate a hyperactive autonomic nervous system. It is differentiated from fear, which is a response to a known cause. Psychosocial stress may occur without any apparent cause**.**

Diagnosis: Clinical, DSM-IV criteria

Treatment:

Non-drug treatment:

- Psychotherapy especially cognitive -behaviour psychotherapy

Drug treatment:

First line

Diazepam, 2.5 mg, p.o. tid for not more than 4 weeks, 2-10 mg i.v. for acute agitation

S/E: drowsiness, fatigue, hypotension, paradoxical excitement .

***C/I*:** acute pulmonary insufficiency.

S/P: long-term use can cause physical dependence.

Dosage forms: tablet, 2 mg, 5 mg, 10 mg; suppository, 5 mg, 10 mg; injection, 5mg/ml in 2ml ampoule.

BRONCHIAL ASTHMA

Bronchial asthma is a chronic respiratory problem associated with reversible airflow obstruction. It has now become an established fact that airway inflammation plays a major role in the pathogenesis of asthma. Clinically it is characterized by episodic shortness of breath, usually accompanied by wheezing and coughing. Common precipitating factors include exposures to cold weather, upper respiratory tract infections, bad smells, exercise, ingestion of drugs like aspirin and beta-blockers…etc. The course of an acute asthmatic attack is often unpredictable. Therefore, one should never underestimate the severity of a given asthmatic attack and close monitoring and appropriate management should be employed until the patient clearly comes out of the attack. Concerning the chronic form of the disease, one should always try to classify the disease based on severity before initiating treatment Accordingly, it is classified as intermittent or persistent asthma. The latter is again divided into mild, moderate and severe persistent asthma.

Diagnosis

- Suggestive clinical history
- Objective tests by using peak flow meters and spirometers are essential not only to make the diagnosis for certain but also to grade severity of the disease.

Treatment

Non-drug treatment

Prevention of exposure to known allergens and inhaled irritants.

Drug treatment

Drugs are required for the treatment of acute asthmatic exacerbations as well as for the treatment of chronic asthma.

TREATMENT OF ACUTE ASTHMA ATTACKS IN ADULTS:

General measures:

- Patient's condition should be carefully monitored to assess severity, and to detect signs of improvement or deterioration. In the absence of blood gas monitoring facilities, clinical evaluation by using some important physical

signs, such as the respiratory rate, pulse rate, use of accessory muscles, color, paradoxical movement of the diaphragm, speech, level of consciousness are essential.

- Humidified oxygen by mask at high concentration (6 litres/min) is important.
- Rehydrate the patient if necessary.
- Antibiotics should not be routinely given unless there is a convincing evidence for bacterial respiratory infection, such as fever, pleuritic chest pain and bronchial breath sound or chest x-ray evidence of consoldation.

Drug Treatment

I. INITIAL MANAGEMENT

First line

Salbutamol, MDI, 200 micrograms by aerosal inhalation. Could be repeated every 20 minutes for the first hour.

S/E: headache, nervousness, dizziness, palpitation, tachycardia, fine tremor, muscle cramp, paradoxical broncho-spasm.

C/I*:* cardiac arrythmias

Dosage forms: Oral inhalation (aerosol) preparation, 100mcg per dose; tablet, 2 mg, 4mg; syrup, 2 mg/5ml; nebulizer solution, 5 mg/5 ml, 20 ml ampoule.

OR

Aminophylline, 5mg/kg by slow i.v push over 5 minutes. The same dose could be repeated after 30 minutes.

S/E: GI disturbances, headache, irritability, nervousness, insomnia, and tremor

C/I: hypertension, ischemic heart disease, epilepsy, hyperthyroidism, congestive cardiac failure

Dosage forms: Tablet, 100mg, 225mg, 350mg; injection, 250mg/10ml in 10 and 20 ml ampoule

OR

Salbutamol, 2.5-5 mg undiluted could be given via a nebulizer over 3 minutes, repeat every 20 minutes for the first one hour

(For ***S/E, C/I*** *and* ***Dosage forms,*** see above page 39)

Alternatives

Adrenaline, 1:1000, 0.5ml sc. Repeat after ½ to 1 hour if patient doesn't respond.

S/E**:** headache, nervousness, dizziness, cardiac arrythmias

C/I*:* cardiac arrythmias

Dosage forms: injection, 0.1% in 1 ml ampoule

II.IF POOR RESPONSE TO INITIAL THERAPY OCCURS: refer to the nearby Health Center

III. MAINTENANCE THERAPY FOR CHRONIC ASTHMA IN ADULTS:

Requires prolonged use of anti-inflammatory drugs mainly in the form inhalers.

1.INTERMITTENT ASTHMA:

First line:

Salbutamol, inhalation - 200 microgram/puff, not more than 3 times a week (For (***S/E, C/I*** *and* ***Dosage forms,*** see page 39)

Alternative:

Ephedrine + Theophylline (11mg + 120mg) p.o. 100 mg, two to three times a day

S/E: GI disturbances, headache, irritability, nervousness, insomnia, tremor

C/I*:* hypertension, ischemic heart disease, epilepsy, hyperthyroidism, congestive cardiac failure

Dosage forms: Tablet, 120 mg theophylline + 11 mg ephedrine; syrup, 0.30% theophylline + 0.24% ephedrine; elixir, 30 mg theophylline + 6 mg ephedrine per 5 ml

2. PERSISTENT MILD ASTHMA:

Refer to the nearby Health center

GENERAL COMMENT ON TREATMENT OF ASTHMA:

Increasing intensity: When asthma is not brought under control with current treatment even though treatment has been taken correctly; medication dose is doubled with each step.

Decreasing intensity: When the objective of treatment have been reached and maintained over some weeks; medication dose is halved at each step; the minimum treatment needed must be determined.

CONSTIPATION

Constipation is difficult to define. In general it may be defined as infrequent or seemingly incomplete evacuation. It may be caused by either organic or functional disorders. A diligent search for the underlying cause should be performed before resorting to symptomatic treatment.

Diagnosis: Clinical

Treatment

Non-drug treatment:

- Removal of the underling cause
- More fiber diet intake
- High residue diet intake,
- Increased fluid intake

Drug treatment:

Only for severe cases *(Not recommended for children less than 4 years old.)*

Cascara, 40mg, p.o. at night.

***S/E**:* mild

C/I: insignificant

Dosage forms: tablet, 125mg

OR

Bisacodyl, 5 – 10mg, p.o. at night or 10mg rectally in the morning. For children (above 4 years): 5mg rectally in the morning.

S/E: mild

C/I: insignificant

Dosage forms: tablet, 5mg; suppository, 5mg, 10mg.

OR

Glycerin suppository 1 gm , rectally at night after moistening with water

***S/E**:* loose stool

***C/I**:* insignificant

Dosage forms: suppository, 1g, 1.36g, 2g, 2.76g

OR

Liquid paraffin, 10ml, p.o., every 8-12 hrs as required.

S/E: loose stool

C/I: insignificant

Dosage forms: semi-liquid preparation.

EPILEPSY

Epilepsy is a paroxysmal neurologic disorder characterized by a sudden onset of sensory perception or motor activity with or without loss of consciousness due to aberrant cortical electrical activity. Its etiology is often unknown. Secondary causes include congenital, perinatal injuries, intra cranial tumors, vascular, metabolic and others.

Diagnosis: Clinical and EEG. Additional investigations like CT scan are required if there is suspicion of secondary causes.

Treatment:

Non-drug treatment:

- Advice on a healthy lifestyle with good sleep habits and the avoidance of excessive alcohol and caffeine.
- The patient should know the name and the dose of his medication and should be warned of the consequences of poor compliance

Comments:

- Epileptics are not allowed to drive a motor vehicle unless the patient has had a two-year attack-free period.
- Refer all adult onset epilepsy, complicated or atypical epilepsy, and if there is a progressive increase in uncontrollable attacks.
- Pregnancy is better avoided in patients with difficult to control epilepsy.

Drug Treatment:

Tonic-clonic, partial focal, or partial Complex seizure with and without Secondary Generalization:

First line

Phenobarbitone, 60-180 mg/day p.o. in divided doses

***S/E*:** sedation, skin rash, decreased libido, confusion, ataxia

***C/I*:** acute intermittent porphyria

Caution*:* impaired renal or hepatic function, during pregnancy and lactation, in the elderly.

Dosage forms: Tablet, 15mg, 30mg, 100mg; elixir, 20mg/5ml; injection (sodium), 25mg/ml, 100mg/ml,

Comments:

- The aim is to use monotherapy i.e. a single anticonvulsant, until the seizures are controlled or intolerable side effects occur.
- Therapy should not be initiated after 1 attack only and only if evidence of epilepsy has been established.
- Anti-convulsants may make oral contraceptives ineffective.
- Monitor plasma levels for efficacy and toxicity, if possible
- Increase gradually to maintenance dose.

HEMORRHOIDS

Hemorrhoids can be external or internal. As a rule ***external hemorrhoids*** are asymptomatic until the complication of thrombosis or rupture supervenes. In either case, the presentation is severe pain with a peri-anal lump, often after straining. ***Internal Hemorrhoids*** are painless and often manifested with bright red rectal bleeding (usually with or following bowel movements), which is the most common symptom of this condition. Prolapse with defecation or other straining activities are also common.

Diagnosis: Clinical

Treatment

Non-drug treatment:

- Personal hygiene,
- Avoid constipation.

Drug treatment:

First line

Bismuth subgallate, insert one suppository in the rectum bid, or use topical application, bid for five days.

S/E: rare

Dosage forms: Suppository, bismuth subgallate (59mg) + bismuth oxide (24mg) + Peru Balsam (49mg) + zinc oxide (296mg); ointment, Bismuth Subgallate (2,25%) + bismuth oxide (0.875%) + Peru Balsam (1.875%) + zinc oxide (10.75%)

MIGRAINE

Migraine is a paroxysmal recurrent headache unilateral or bilateral lasting 4-72 hours. Often preceded by aura and accompanied by nausea and/or vomiting. Its etiology is unknown. Serotonin metabolism abnormalities may play a role.

Diagnosis: Clinical

Treatment:

Non-drug treatment:

- Patients should be reassured that this is a benign condition.
- They should attempt to identify foods or drinks and other situations, which precipitate the attack and try to diminish patterns of tension.

Drug Treatment:

ACUTE TREATMENT, MILD ATTACKS:

First line

Acetylsalicylic acid, soluble, 600-900 mg p.o. once, followed by 300 mg half hourly up to a maximum dose of 1800 mg

S/E: Dyspepsia, fatigue, nausea, and diarrhea

C/I: Hypersensitivity, active peptic ulcer disease

Dosage forms: tablet, 100mg (soluble), 300mg, 500mg (enteric coated)

Alternative

Paracetamol, 500-1000 mg p.o. 4-6 hourly, p.r.n (For ***S/E, C/I and Dosage forms,*** see page 22)

Comments:

- **Initiate therapy during the attack or at the very onset of the headache**

If nausea and vomiting is troublesomean anti-emetic, e.g.**Metoclopramide, p.o. 10 mg** 3 times daily can be used.

S/E: drowsiness, fatigue, dizziness, weakness

C/I*:* epilepsy, pheochromocytoma, and mechanical bowel obstruction, concomitant administration of atropine like drugs.

***S/P*:** concomitant administration of phenothiazines.

Dosage forms: tablet, 10mg; syrup, 5mg/5ml; injection, 5mg/ml in 2ml ampoule; drop, 0.2mg/drop.

NAUSEA AND VOMITING

Nausea refers to the feeling of an imminent desire to vomit where as vomiting refers to the forceful oral expulsion of gastric contents. They may occur independently of each other but generally are closely related. They are common manifestations of many organic and functional disorders. One should therefore look for and correct any underlying causes. Effective therapy usually depends on correction of the underlying cause.

Treatment

Non-drug treatment:

Removal of the underlined cause, correct dehydration, if any

Drug treatment:

Metoclopramide, 10mg, p.o. tid or im or iv 1 – 3 times a day. For children: maximum 0.5 mg/kg daily

(For ***S/E*, *C/I*** and ***Dosage forms***, see page 47)

OR

Chlorpromazine, 12.5 - 25 mg IM 12 hrly.

S/E: bone marrow suppression, drowsiness, apathy, alteration in liver function, cutaneous reactions, occasionally tardive dyskinesia.

C/I: bone marrow depression, coma caused by CNS depressants.

Dosage forms:Tablet, 25mg, 50mg, 100mg; drop, 25mg/ml in 10ml bottle, 40mg/ml in 10ml and 30ml bottles; syrup, 25mg/5ml; injection, 25mg/ml in 1ml and 2ml ampoules, 50mg/ml in 2ml ampoule.

NON-ULCER DYSPEPSIA

Non-ulcer dyspepsia is a chronic, recurrent, often meal-related epigastric discomfort, pain or fullness. The location of the pain and the relationship to meals resembles the classic description of PUD except that no evidence for ulcer will be found by either endoscopy or barium studies.

Diagnosis is often made on clinical grounds but endoscopy or barium meal studies might be required to exclude ulcer.

Treatment

First line:

Mixtures of Aluminiumhydroxide and Magnesium trisilicate, 10 - 30 ml or 2 – 4 chewable tablets p.o. taken between meals prn.

S/E*:* rare and mild

C/I*:* insignificant

Dosage forms: suspension, 310 mg + 620 mg in 5 ml; tablet (chewable), 120 mg + 250 mg; 250 mg + 500 mg.

OR

Mixtures of Magnesium hydroxide and aluminium hydroxide, 10 - 30 ml or 2 – 4 chewable tablets, p.o. between meals prn.

Dosage forms: chewable tablet, 400mg + 400 mg, 195mg + 220mg in 5 ml.

OR

Magnesium trisilicate 2 – 4 chewable tablets, p.o. between meals prn.

Dosage forms: chewable tablet, 500 mg.

OR

Magnesium hydroxide, 10 - 30 ml or 2 – 4 chewable tablets, p.o. between meals PRN.

Dosage forms: chewable tablet, 300mg + 311mg; Mixture, 375mg/5ml, 7.75%.

OSTEOARTHRITIS

Osteoarthritis is a progressive loss of joint cartilage with reactive changes at joint margins and subchondral bone. The exact cause is unknown, but biomechanical as well as biochemical factors are implicated in the pathogenesis.

Diagnosis: Clinical and X-ray studies of affected joints

Treatment:

Non-drug treatment:

- Patient and family education
- Attend to predisposing factors such as weight reduction, exercise
- Rest during acute painful episodes
- Support and alleviate weight bearing in affected joints.
- Physiotherapy
- Surgery

Drug Treatment:

First line

Paracetamol, 500-1000 mg p.o.as needed (4-6 times daily) is the treatment of choice when only pain relief is needed

(For ***S/E, C/I*** and ***Dosage forms***, see page 22)

Alternatives

Low dose NSAIDs e.g. Ibuprofen, 600-1,200 mg/day p.o.in divided doses as needed

S/E: Gastritis, gastrointestinal bleeding

C/I*:* Active peptic ulcer disease

Dosage forms: tablet, 200mg, 400mg; capsule, 300mg; syrup, 100mg/5ml.

OR

Combination of **Paracetamol and NSAID** can also be given.

Intra-articular steroid such as Methyl predinsolone acetate when there is evidence of persistent inflammation with joint swelling.

(For S/E, C/I and ***Dosage forms,*** see page 21)

Comments:

- As pain relief is the main objective, in the absence of inflammation (osteo-arthrosis), NSAID's should be avoided, as these patients often have concomitant conditions for which NSAIDs may be contra-indicated. The elderly and those with cardiovascular or gastrointestinal disease or renal function impairment are especially at risk.

- Referral criteria includes: Pathological fracture/dislocation, intractable pain, infection**,** doubtful diagnosis and when joint replacement is considered.

RHEUMATOID ARTHRITIS

Rheumatoid Arthritis is a chronic systemic inflammatory disease of unknown etiology with predilection for joint involvement. Its etiology is not known, but is presumed to involve autoimmune reactions.

Diagnosis: American College of Rheumatology criteria: 4 of the 7 criteria must be present.

Treatment:

Non-Drug treatment:

- Should be managed by co-ordinated multidisciplinary care (including Physiotherapy and Occupational therapy).
- Acute flare-ups: Rest affected joints, use of day and/or night splints

Drug Treatment:

First line

Non-steroidal anti-inflammatory Drugs

Aspirin, 600-1200mg p.o. tid daily

S/E: gastritis, gastrointestinal bleeding, salicylism (tinnitus, decreased hearing, vertigo)

C/I: gastric, duodenal ulcers, haemorrhagic diathesis, hypersensitivity to salicylates and other similar substances.

Dosage forms: tablet, 100mg (soluble), 300mg, 500mg(enteric coated)

OR

Ibuprofen, 400-800 mg p.o. 3 times daily

(For ***S/E, C/I*** *and* ***Dosage forms,*** see page 36)

Comments:

Reduced NSAID doses have to be used in the elderly and inpatients with impaired renal function. Concomitant use of more than one NSAID only increases toxicity, and has no additional benefit.

If no improvement, refer the nearby district hospital.

CHAPTER 5
OBSTETRICS AND GYNECOLOGICAL CONDITIONS

ANEMIA IN PREGNANCY

Hemoglobin (Hgb) level below 11 gm /dl in the first and third trimesters of pregnancy and below 10.5 gm/dl in the second trimester of gestation. The causes are the same as in non-pregnant women. Iron demand is increased by a factor of 4-5 during pregnancy. Iron deficiency anemia is the most common kind of anemia in pregnancy.

Diagnosis Clinical: Nonspecific symptoms like weakness, dizziness, palpitation, shortness of breath. Physical examination may reveal significant pallor of the conjunctiva and other parts of the body.

Laboratory: Hgb < 11

Treatment: Depends on the severity of anemia

Non drug treatment:

Iron rich diet

Drug treatment:

Ferrous sulphate, 300 mg p.o. tid for 1-3 months.

(For ***S/E, C/I*** *and* ***Dosage forms,*** see page 36)

PLUS

Folic acid, 5mg /day, p.o.

C/I: Folate-dependent malignancies

Dosage Form: Tablet, 200 mcg, 1 mg, 5 mg; injection, 5 mg/ml in 1 ml ampoule.

Caution: Folic acid should never be given without vitamin B_{12} in undiagnosed megaloblastic anemia or other vitamin B_{12} deficiency states.

Severe anemia: Refer to the nearby District Hospital

Prevention

- Avoid frequent childbirth
- Prevent hemorrhage during pregnancy & childbirth
- Advise on adequate nutrition
- Prevent malaria

- Treat hookworm infection
- Supplement iron/folic acid to all pregnant women

CONTRACEPTIVES

Contraceptives include different kinds of methods used to prevent the occurrence of pregnancy. Natural methods, barrier methods, intrauterine contraceptive devices, hormonal methods and permanent methods of contraception exist for use. Hormonal contraceptives are one of the most effective methods that are prescribed to a client based on informed choice.

HORMONAL CONTRACEPTIVES

1. Combined Oral Contraceptives (COC):

A group of contraceptive medications composed of synthetic estrogens & progesterone in different doses; 20 mcg or 50 mcg of estrogen and 0.15 -1 mg of progesterone in each tab

S/E: Gastro intestinal disturbance, loss of libido

C/I: Pregnancy, Cardiac illness, Thromb-embolic conditions, genital tract malignancies, Hepatic dysfunction, Migraine headaches.

Drug interaction: -Care needs to be taken while prescribing anticonvulsants, hypnotics, antibiotics and antacids to a women using COC since these drugs may reduce the effectiveness of COC. COC may reduce the effectiveness of drugs like anti convulsants, anticoagulants, antidepressants, steroids, sedatives and hypoglycemic agents

Dose: One tab /day starting from the first day of menses

Dosage forms:

levonorgesterol+ethnylestradiol and iron:

tablet, 0.15mg + 0.03mg; 0.25mg + 0.05mg; 0.5mg + 0.05mg; 0.3mg + 0.03mg

Norethindrone + ethnylestradiol: tablet, 0.5mg + 0.035mg

Norethindrone + mestranol and iron: tablet, 1mg + 0.05mg

2. Progesterone Only Contraceptives*:*

Indicated in case of estrogen contraindication as in lactating mothers, Diabetics, Hypertensives

S/E: Irregular vaginal bleeding, head ache, mood changes, weight changes, Acne, functional ovarian cysts

***C/I*:** Pregnancy, Genital malignancies, cardiovascular diseases, hepatic disease

2-1. Progesterone only pills:

Lynestrenol, 0.5 mg

Dosage form: tablet, 0.5mg,

DYSMENORRHOEA

Dysmenorrhoea is pain during menses. It occurs in about 50 % of menstruating women. It may be primary or secondary**.** Primary Dysmenorrhoea is believed due to increased endometrial prostaglandin production. Whereas secondary Dysmenorhoea is due to outflow obstruction, pelvic tumors, infections, endometriosis etc.

Diagnosis: Clinical

Treatment:

Primary dysmenorrhoea :

Non Drug: Reassurance

First line: **NSAID**

Acetylsalicylic acid, 600 mg, P.O. every 8 hrs for 2- days

(For ***S/Es, C/Is, D/Is*** *and* ***Dosage forms,*** see page 47)

OR

Ibuprophen 400 mg, p.o. every 8 hrs

(For ***S/Es, C/Is, D/Is*** *and* ***Dosage forms,*** see page 50)

Note: The drugs have to be administered prior to the onset of menses or at the onset of pain every 6 to 8 hours.

Alternative

Monophasic Combined oral contraceptive pills. If Contraception is also needed (For **S/E, C/I and Dosage forms, s**ee on page 55)

Secondary dysmenorrhoea : Refer to the nearby district hospital

NAUSEA AND VOMITING IN PREGNANCY

Nausea and vomiting are common complaints in the first trimester of pregnancy affecting about 50% of mothers. Severe in multiple gestations and gestational throphoblastic diseases. Protracted vomiting associated with dehydration, starvation, weight loss, electrolyte disturbances, acidosis and ketonuria is known as **hyperemesis gravidarum.** The cause is not exactly known.

Diagnosis of Hyperemesis gravidarum: -

Clinical: History and Physical Examination

Laboratory*:* - Ketonuria

Screen for UTI, GTD, & Multiple gestation

Treatment:

Non-Drug treatment:

For uncomplicated nausea and vomiting of pregnancy give reassurance, advice on small, high calorie frequent feeding & emotional support.

Drug treatment:

Hyperemesis gravidarum need admission for in-patient care**.**

- Rehydrate with N/S, Ringers lactate, D/W, D/S eight hourly
- Calorie replacement: 40% Glucose 2 vials (40 ml) in each bag.
- Add Vit. B complex 2 ampoules in each bag
- Control vomiting:

First line

Chlorpromazine,12.5 - 25 mg i.m. 12 hrly. Until vomiting is controlled and then p.o. (For ***S/E, C/I*** *and* ***Dosage forms,*** see page 48)

Alternative

Promethazine 25 mg 12 hrly, 25 mg tabs PO 12 hourly.

S/E: drowsiness.

Dosage forms: injection, 25 mg /ml 1 ml & 2 ml ampoules; tablet, 10 mg, 25 mg, elixir 5mg/5ml and Suppositary 25mg, 50mg

OR

Metclopromide, 10 mg IM 12 hrly.

(For ***S/E, C/I, D/I*** *and* ***Dosage forms,*** see page 47)

URINARY TRACT INFECTION IN PREGNANCY

There are different types of urinary tract problems that need special attention during pregnancy. These include asymptomatic bacteruria, cystitis and pyelonephritis.

E.coli is the most common cause of urinary tract infection in pregnancy.

ASYMPTOMATIC BACTERURIA

Diagnosis

Laboratory:

- Urine analysis,
- Urine culture

Treatment

Drug treatment

Best when the choice of antibiotics is based on culture and sensitivity result

First line:

Amoxicillin, 500 mg p.o. 8 hourly for three days

(For ***S/E, C/I, D/I*** *and* ***Dosage forms,*** see page 4)

Alternative*:*

Trimetoprim + sulphamethoxazole 2 tabs 12 hrly for three days.

(For ***S/E, C/I*** *and* ***Dosage forms,*** see page 3)

VULVO VAGINAL CANDIDIASIS

Vulvo vaginal candidiasis is a common cause of pruritic vaginal discharge. The main manifestations include pruritis vulvae, whitish curd like vaginal discharge, vulval irritation, dyspareunia, and splash (external) dysuria. It is commonly caused by *Candida albicans.*

Diagnosis: Laboratory: KOH test, Culture

Treatment:

Drug treatment

First line:

Clotrimazol, 100 mg vaginal tabs 1 /day for 6 days or 2 times /day for three days or 200mg 1/day for 03 days

or 500m vaginal tabs single dose

or 1% cream-5 gm 10-14 days (For ***S/E, C/I*** **and** ***Dosage forms*** , see page 31)

CHAPTER 6

PEDIATRIC DISEASES

STANDARD TREATMENT GUIDELINES FOR HEALTH STATIONS

COMMON PEDIATRIC DISEASES

AMEBIASIS

Food and drinks contaminated with *Entameba histolytica* cyst and direct fecal oral contact are the most common means of infection. Most infected individuals are asymptomatic. The most common clinical manifestations of amebiasis are due to focal invasion of the intestinal epithelium and dissemination to the liver. Diarrhea is frequently associated with tenusmus, stools are blood stained and contain a fair amount of mucus with a few leukocytes. Occasionally amebic dysentery is associated with sudden onset of fever, chills and severe diarrhea. Hepatic amebiasis is a very serious manifestation of disseminated infection.

Diagnosis is based on detecting the organism in stool samples or tissue biopsy samples or rarely in aspirates of liver abscess.

Treatment

Metronidazole, 15 mg/kg three times a day for 10 days.

(For ***S/E, C/I, D/I*** *and* ***Dosage forms,*** see page 1)

BRONCHIAL ASTHMA

Asthma is a disease characterized by reversible airway obstruction, airway inflammation and increased airway responsiveness to a variety of stimuli (hyper-reactive airway). The onset of childhood asthma is before the age of 5 years in more than half of the patients. Approximately one half of children "out grow" their asthma by adolescence, but recurrence is common in adulthood. There is no single diagnostic test for asthma in young children, although a number of challenge tests may be helpful in older children and adults.

Diagnosis is mainly clinical. Chronic and recurrent episodes of coughing and wheezing, specially if aggravated or triggered by exercise, viral infection or inhaled allergens, are highly suggestive of asthma.

Treatment:

Asthma therapy includes basic concepts of avoiding allergens improving vasodilatation, and reducing mediator–induced inflammation.

Acute asthma

Epinephrine, 0.01-0.02ml/kg sc, and repeat the dose every 20 minutes for three days.

***S/E*:** transient headache, palpitation, anxiety, and dysarrythemia.

Dosage forms: injection, 0.1% in 1ml ampoule

AND/OR

Salbutamol: 0.1-0.2mg/kg(1-2 puffs) 3-4 times a day or 0.075-0.1mg/kg p.o. 3 times a day. (For ***S/E, C/I, D/I*** *and* ***Dosage forms,:*** see page 39)

Status Asthmaticus:

Refer to district hospital

CONJUNCTIVITIS

1. NEONATAL CONJUNCTIVITIS

Conjunctivitis in the newborn is commonly due to infection with *Neisseria gonorrhoeae* or *Chlamydia trachomatis*. The etiologic agent can sometimes be distinguished by the timing of infection: infection with gonococcus typically occurs on day 2 to 5, while infection with Chlamydia occurs between 5 to 14 days. Gram stain and culture of the exudates from eye discharge should be performed. Conjunctivitis in the newborn might have occurred from prophylactically administered silver nitrate drops; in this case the inflammation occurs within the first days of life. Gonococcal conjunctivitis (ophthalmic neonatorum) is a serious infection in neonates and, if untreated, it progresses to corneal ulceration and deeper infection of the globe, leading to blindness.

Treatment

Drug Treatment: Locally acting as well as systemic drugs are used.

1. Topical Drugs

First Line

Tetracycline eye drops, 1%

(For ***S/E and C/I,*** see page 5)

***Dosage forms*:** eye drops, 1%; tetracycline eye ointment, 1%.

Second line

Chloramphenicol eye drops, 0.5%

(For ***S/E and C/I,*** see page 7)

Dosage forms: eye drops, 0.4%, 0.5%, 1%, 5%; eye ointment, 1%, 5%

2. CONJUNCTIVITIS IN INFANTS AND CHILDREN

Acute purulent conjunctivitis is characterized by more or less generalized conjunctival hyperemia, edema, muco-purulent exudates and a varying degree of ocular discomfort. It is usually a result of bacterial infection.

Diagnosis is clinical.

Treatment

Non-drug Treatment:

Acute purulent conjunctivitis usually responds to warm compression.

Drug Treatment: Frequent topical instillation of antibiotic eye drops is useful.

Tetracycline, 2 drops every 4 hours;, apply ointment 2-4 times every 24 hours.

(For ***S/E and C/I,*** see page 5)

Dosage forms: Eye drops,0.5%, 1%; Ointment, 1%

OR

Chloramphenicol, 2 drops every 4 hours; apply ointment 2-4 times per day.

(For ***S/E and C/I,*** see page 7)

Dosage forms : Eye drops,0.5%; Ointment, 1%

DIARRHEAL DISEASE (ACUTE)

Acute diarrheal disease is a common problem in infants and children and its complications - dehydration and malnutrition - are major causes of morbidity and mortality in developing countries. Clinically it is useful to distinguish two syndromes produced by gastrointestinal infection: watery diarrhea and bloody diarrhea. The leading cause of diarrhea in infants is the rotavirus followed by enteric adenoviruses. Shigella is most frequently a pathogen in children between 1 to 5 years with bloody diarrhea. Other bacterial pathogens include *campylobacter*, *salmonella* and *Escerichia Coli.*

Classification

1. **No dehydration: No enough sign to classify as "some" or "severe" dehydration.**
2. **Some dehydration: if there are two of the following signs,**
   - Restless irritable
   - Sunken eyes
   - Drinks eagerly, thrusty
   - Sikn pinch goes back slowly
3. **Severe dehydration: If there are two of the following signs,**
   - Lethargic or uncouncious
   - Sunken eyes
   - Not able to drink or drinking poorly
   - Skin pinch goes back very slowly
4. **Severe persistent dirrhoea: if diarrhoea lasts for 14 days or more and dehydration is present.**
5. **Persistent diarrhoea: diarrhoea lsting for 14 days or more and there is no dehydration.**
6. **Dysentry: if there is blood in the stool.**

Diagnosis: Clinical; severety should be graded.

Treatment

Non-Drug Treatment: Since the major morbidity relates to dehydration and malnutrition, emphasis in management should focus on rehydration and nutrition.

Drug Treatment:

Specific treatment depends on the degree of dehydration

1. If no dehydration, follow plan A: treat diarrhoea at home.

Counsel the mother on the three rules of home treatment:

Give extra fluid, Continue feeding and Advise the mother when to return.

a. Give extra fluid (as much as the child will take)

- Tell the mother:

  - breastfeed frequently and for longer at each feed\

  - if the child is exclusively breastfed give ORS or clean water in adition to beast milk.

  - if the child is not exclusively breastfed, give one or more of the following: - ORS solution,food based fluids(such as soup,rice water, and yoghurt drinks or clean water.

- It is especially important to give ORS at home when the child has been treated with plan B or plan C during this visit
- The child cannot return to a clinc if the diarrhoea gets worse.
- Teach the mother how to mix and give ORS; give the mother two packets of ORS to use at home.
- Show the mother how much fluid to give in addition to the usual fluid intake:

  - Upto two years - 50 to 100 ml after each loose stool
  - Two years or more - 100 to 200 ml after each loose stool

Tell the mother to:

Give frequent small sips from a cup

If the child vomits, wait 10 minutes, then continue but more slowly

Continue giving extra fluid until the diarrhoea stops

b. Continue feeding

c. Council the mother on when to return.

2. Treatment plan B. Treat some dehydration with ORS

Give in clinic recommended amount of ORS over 4-hour period

DETERMINE AMOUNT OF ORS TO GIVE DURING FIRST 4 HOURS

Age	Upto 4 Months	4 Months up to 12 months	12 months up to 2 years	2 years up to 5 years
Weight	6 kg	6-10 kg	10-12 kg	12-19 kg
ORS in ml	200-400	400-700	700-900	900-1400

- Use the child's age only when you do not know the weight. The approximate mount of ORS required (in ml) can also be calculated by multiplying the child's weight (in kg) times 75.
- If the child wants more ORS than shows, give more.
- For infants under 6 months who are not breastfed, also give 100-200 ml clean water during this period.

SHOW THE MOTHER HOW TO GIVE ORS SOLUTION.

- Give frequent small sips from a cup.
- If the child vomits, wait 10 minutes. Then continue, but more slowly.
- Continue breastfeeding whenever the child wants.

AFTER 4 HOURS:

- Reassess the child and classify the child for dehydration.
- Select the appropriate plan to continue treatment.
- Begin feeding the child in clinic.

IF THE MOTHER MUST LEAVE BEFORE COMPLETING TREATMENT:

- Show her how to prepare ORS solution at home.
- Show her how much ORS to give to finish 4-hour treatment at home
- Give her enough ORS packets to complete rehydration. Also give her 2 packets as recommended in Plan A.
- Explain the 3 Rules of Home Treatment:

1. GIVE EXTRA FLUID

See plan A for recommended fluid

2.CONTINUE FEEDING

3.TELL THE MOTHER WHEN TO RETURN

3.Treatment plan C: treat severe dehydration quickly.

Follow the Arrows. If Answer is "Yes", go Across. If "No", go Down.

Follow the arrows. If Answer is "Yes", go Across. If "No", Go Down

START HERE

Can you give intravenous (IV) fluid immediately?

Yes

- Start IV fluid immediately. If the child can drink, give ORS by mouth while the drip is set up. Give 100 ml/kg Ringer's Lactate Solution (or, if not available, normal saline), divided as follows:

AGE	First give 30 ml/kg in:	Then give 70ml/kg in:
Infants (Under 12 months)	1 hour*	5 hours
Children 12 months up to 5 years)	30 minutes*	2 ½ hours

- Repeat once if radial pulse is still very weak or not detectable.
- Reassess the child every 1-2 hours. If hydration status is not improving, give the IV drip more rapidly
- Also give ORS (about 5 ml/kg/hour) as soon as the child can drink: usually after 3-4 hours (infants) or 1-2 hours (children).
- Reassess an infant after 6 hours and a child after 3 hours. Classify dehydration. Then choose the appropriate plan (A,B, or C) to continue treatment

No

is IV treatment available nearby (within 30 minutes)?

Yes

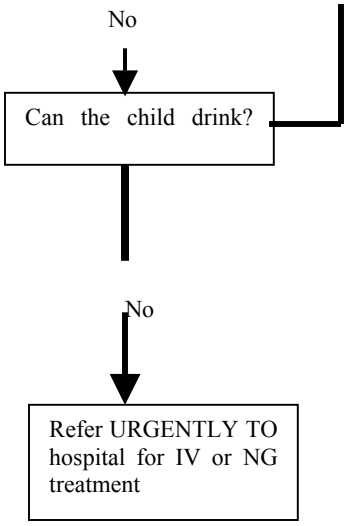
- Refer URGENTLY to hospital for IV treatment
- If the child can drink, provide the mother with ORS solution and show her how go give frequent sips during the trip

No

Are you trained to use a naso-gastric (NG) tube for rehydration?

Yes

- Start rehydration by tube (or mouth) with ORS solution give 20 ml/kg/ hour for 6 hours (total of 120 ml/kg).
- Reassess the child every 1-2 hours:
  - If there is repeated vomiting or increasing abdominal distensionn, give the fluid more slowly.
  - If hydration status is not improving after hours, send the child for IV therapy
- After 6 hours, reassess the child. Classify dehydration. Then choose the appropriate plan (A, B, or C) to continue treatment.



NOTE

- If possible, observe the child at lesst 6 hours after rehydration to be sure the mother can **maintain** hydraiton giving the child ORS solution by mouth.

GIARDIASIS

Giardia lamblia is a ubiquitous gastrointestinal protozoa that results in clinical pictures ranging from asymptomatic colonization to acute or chronic diarreal illness. Giardia lamblia infect humans through ingestion of as few as 10 cysts. The infection is more prevalent in children than adults. The most common presentation is diarrhea, weight loss, crampy abdominal pain and failure to thrive. Diagnosis is established by identifying Giardia Lamblia trophozoite or cyst from fecal or duodenal samples obtained from infected children.

Treatment.

Metronidazole, 15 mg/kg three times a day for five days. (For ***S/E, C/I, D/I*** *and* ***Dosage forms,*** see page 1)

Alternative

Tinidazole, single oral dose of 50 mg/kg.

(For ***S/E and C/I,*** see under metronidazole, page 1)

Dosage forms: tablet 150mg, 500mg.

HYPOGLYCEMIA

Hypoglycemia in the newborn is defined as a blood glucose level less than 40mg/dl irrespective of gestation and day of life.

Diagnosis is made by determining blood glucose level (see above).

Treatment

Drug Treatment:

Dextrose 10% solution, give a minimum bolus of 2 ml/kg i.v. over one minute, continue infusion at a rate of 6 mg/kg/minute; check the blood glucose after 15 minutes. If normal, continue the at the same infusion rate; if low, increase the infusion rate by 2 mg/kg /minute. If blood glucose still remains low, keep on increasing the glucose infusion rate by 2 mg/kg/minute every 15 minute to a maximum of 12-14 mg/kg /minute.

N.B. Both symptomatic and asymptomatic newborn infants have to be treated with glucose. While treating hypoglycemia don't forget to consider and treat associated problems like polycythemia, sepsis, etc.

Prevention of hypoglycemia is by initiation of early breast feeding.

MEASLES

Measles, which is caused by the measles virus, is a highly contagious infection that spreads by droplets. The incubation period is about 2 weeks. Infected children are contagious 4 days before and 4 days after the appearance of the rash. Children with measles have fever, conjunctivitis, coryza, cough, Koplik spots (small white spots on the buccal mucosa) and a generalized erythematyous maculopapular rash. The complications of measles include otitis media, croup, pneumonia, diarrhea and encephalitis.

Diagnosis is clinical.

Measels could be classified as:

1. Severe commplicated measles: this classification is considered when when there is clouding of the cornea deep or extensive mouth ulcres in a patient who has history of measles during the last three months.

2. Measles:the classification of measles is made when there is only measles now or with in the last three months.

Treatment

Non-Drug Treatment: Bed rest and fluid intake. Isolate child from school for 10 days

Drug Treatment

1. Symptomatic: for pyrexia and pain use **Paracetamol** ***(***For ***S/E, C/I*** and ***Dosage forms,*** see page 22).

2.Vitamin A, 50,000 IU, for children less than 6 months; 100,000 IU for 6-12 months; 2000,000 IU for greater than 12 months, once per day for two days p.o.

S/E: diarrhea, vomiting, irritability, drowsiness

C/I: renal impairment

D/I: cholestyramine or colestipol reduces its absorption

Dosage forms: capsule, 25,000 IU, 50,000 IU, 100,000 IU; oral suspension, 150,000 IU/ml(concentrate), 50,000 IU/ml: tablet, 50,000 IU, 100,000 IU, 200,00 IU; injection, under 200,000 IU/ml

NB: Prevention is important by active immunization of children > 1 year old who have not had the disease.

OTTIS MEDIA (ACUTE)

Acute Otitis Media is characterized by inflammation and/or accumulation of fluid in the middle ear. The most common bacterial causes are Streptococcus pneuminiae, nontypable Haemophilus influenzaw, and Moraxella Caterrhalis.

Diagnosis: History of upper respiratory tract infection and ear pain. Examination of the ears shows red, bulging tympanic membranes or pus discharging ears.

Treatment

Non-drug treatment:

Dry the ear by wicking

Drug treatment:

First line *:*

Amoxicillin, 20-40 mg/kg/24 hours divided into 3 doses p.o. for five days

(***S/E, C/I*** and ***dosage forms***: see page 4)

Chronic otitis media: discharging ear for more than two weeks.

Treatment

Treatment is usually non-drug, such as dry the ears with frequent wicking.

PNEUMONIA IN CHILDREN

Pneumonia defined as inflammation of lung parchayma, is caused virtually by every classes of microorganisms and a specific etiologic diagnosis is often difficult in children. Viruses and mycoplasma pneumoniae are the primary agents causing pneumonia followed by bacteria. WHO recommends diagnosis of pneumonia when children under five have acute on-set cough with tachypnea. Pneumonia can be classified as severe pneumonia, pneumonia or no pneumonia.

Severe Pneumonia is diagnosed when there is cough or difficult breathing plus at least either of the following signs: lower chest in drawing, nasal flaring, or grunting in young infants. Fast breathing or abnormal breath sounds may also be present.

Pneumonia is diagnosed when a coughing child also develops fast breathing but no signs for severe pneumonia.

No pneumonia cough or cold; if no sign for pneumonia or severe pneumonia.

Diagnosis is clinical and chest X ray. The decision to treat a child who has pneumonia is usually made clinically. Antibiotic therapy is directed at the most likely pathogens as suggested by the child's age, clinical presentation (including severity of illness).

Treatment

1. No pneumonia but only cough or cold

Soothe the throat, relieve the cough with a safe remedy.

Non drug treatment:

Safe remedies to recommend:

Breast milk for exclusively breast-fed infants

Home fluids such as tea with honey, fruit juices

Harmful remedies to discourage: cough syrups containing diphenyl hydramine and or codeine

Drug Treatment:

Paracetamol, 10-15 mg /kg up to 4 times a day for the relieve of high fever equal to or above 39 ^{0}C .

(For S/E, C/I and dosage forms: see page 22)

2. Pneumonia

Drug treatment:

First line

Cotrimoxazole (4-mg/kg-trimethoprim-20mg/kg sulphamethaxozole twice a day for five days.

S/E: headache, mental depression, nausea, voming, diarrhea, hypersensitivity, Stevens Johnson's syndrome.

***C/I*:**infants under 6 weeks (risk of kernicterus), jaundice, hepatic failure ,blood disorder,porphyria

Dosage forms:Pediatric tablet-trimethoprim 20mg and sulphamethoxazole 100mg;Tablet trimethoprim 80 and sulphamethoxazole 400mg;Suspension trimethoprim 40 and sulphamethoxazole 200mg; Ampoule 5ml (trimethoprim 80mg and sulphamethoxazole 400mg).

Alternative

Amoxicillin, 15 mg /kg PO three times daily. (For ***S/E*** and ***C/I*** see page 4)

Dosage: ***capsule***, 250mg, 500mg; Injection, 250mg, 500mg in vial; Syrup, 250mg/5ml.

3. Severe Pneumonia

Drug treatment:

Benzyl penicillin 50,000units/kg/24hrs IM or IV every 6 hours for at least 3 days. (For ***S/E*, *C/I* and *Dosage forms*, see** page 19).

When the child improves switch to oral **Amoxicillin**: 15-mg/ kg 3 times a day. The total course of treatment is 5 days**.**

If the child doesn't improve with in 48 hours, switch to **Chloramphenicol** 25 mg/kg every 8 hours IM/IV until the child has improved and continue orally for the total course of 10 days (***S/E, C/I** and **dosage forms***: see page 7)

SINUSITIS

Sinusitis, inflammation of the sinuses, probably occurs with most cases of viral nasopharyngitis. Acute purulent sinusitis should be suspected in children with severe or prolonged viral upper respiratory tract infection. *S. pneumoniae*, non typable *H.influenzae* and *M.catarrhalis* are the common bacterial pathogens. In addition to fever and purulent nasal discharge, children with acute sinusitis may have headache localized focal tenderness and periorbotal edema. The complication of acute sinusitis includes orbital cellulites and cavernous sinus thrombosis. Diagnosis can be made by radiological examination reveals calcification of sinuses with air fluid level. Complicated sinus requires drainage

Treatment:

Drug treatment:

First line

Cotrimoxazole, Trimethoprim 4 mg/kg sulfamethoxazole 20 mg/kg PO twice per day.

(***S/E and dosage forms,*** see page 3)

Alternative

Amoxicillin, 15 mg /kg PO three times daily.

(For ***S/E***, ***C/I*** and **dosage forms**, see page 4)

STREPTOCOCCAL PHARYNGITIS/

EXUDATIVE TONSILLITIS

Streptococcal pharyngitis (sore throat) is a common occurrence and the basis of numerous physician contacts. If signs and symptoms of upper respiratory tract (URI) are present it is suggesting a viral etiology. In children with sore throat and fever who do not have URI symptoms, the major pathogen of concern is group A beta hemolytic streptococcus, which causes acute morbidity and can produce both supurative (e.g. peritonsilar abscess) and non supurative complications (glomerulonephritis and rheumatic fever).

Diagnosis: In infants, the disease is usually manifested by the classic syndrome of fever headache and sore throat. Examination of the pharynx usually reveals an intensely red tonsils with moderate to marked exudates.

Drug Treatment:

Antibiotics shorten the clinical course if administered early. Treatment also is effective in preventing acute rheumatic fever.

First Line:

Benzathine penicillin, i.m as a single dose according to age: children under 2 years of age, 300,000IU; 2-6 years 600,000IU; 7-10 years 900,000 IU; and over 10 years, 1.2 million IU. ***S/E, C/I*** *and* ***dosage forms***: see page 19

PLUS

Paracetamol, 10-15 mg /kg p.o. up to 4 times a day for the relieve of high fever. (For ***S/E, C/I*** and ***Dosage forms*****,** see page 22)

Caution: Aspirin should not be used because of its association with Reye's syndrome in children with influenza virus or varicella infection

TRACHOMA

Refers to a chronic form conjunctivitis caused by *Chlamidia trachomatis*. It is characterized by a progressive conjunctival follicular hyperplasia, corneal neo-vascularization, and scarring of the conjunctiva, cornea and eyelids.

Diagnosis: is often made on the typical physical signs. Culture from the conjunctival discharge may also isolate *C.trachomatis*.

Non-Drug treatment.

Wash and keep the eye clean.

Limit irritation from glare

Drug treatment

First line:

Tetracycline eye ointment, 1%, twice daily for about 6-8 weeks. Drops 2-drops

(For ***S/E, C/I*** and ***dosage forms***: see page 5)

Alternative:

Chloramphenicol eye drops 0.5 % 4-6 hourly or Chloramphenicol eye ointment, 1 % 4-6 hourly for the same duration mentioned above.

(For ***S/E, C/I*** and ***dosage forms***: see page 7)

In sever and complicated cases, refer to an opthalmologist.

CHAPTER 7

ACUTE /EMERGENCY CONDITIONS

Animal bites

Burns

Poisoning

Shock

Wound

ANIMAL BITES

Dog bites are the most common kind of animal bite, followed by cat bites; other bites are from snakes and rarely humans. Infected dog and cat bites are usually characterized by a localized cellulitis and pain at the site of injury. Infections from dog and cat wound bites are predominantly due to *Pasteurella multocida* and *Staphylococcus aureus*.

Diagnosis: clinical

Principles of Management:

- document the mechanism of injury; unprovoked animal bites are particularly dangerous as such animals may have rabies
- if possible, obtain an immunization history of the animal; if no history is available, observe the animal for 10 days. If the animal is a suspect for rabies or lost, administer:
    - **Human rabies immunoglobulin**
    - **Human diploid cell strain vaccine (HDCSV)** (for details see under Rabies)
- determine the patient's tetanus immune status; if status is inadequate or unknown, administer:
    - Tetanus immune globulin in TAT
    - Tetanus toxoid (for details see under Snake Bites and Scorpion Stings)
    - Close observation of the patient's condition
    - Psychological support and reassurance
    - Ventilatory and cardiovascular support, if required (it may be necessary to refer the patient if such facilities are not available)
    - Wounded extremities should be immobilized and elevated.
    - Puncture wounds and bites are usually not sutured (stitched) unless they involve the face.

Note:

Local wound infection may develop in as little as 24 hours.

Non-Drug Treatment

All bite wounds require immediate, thorough cleansing with fresh tap water. The wound must be scrubbed with soap and water to remove foreign material. Dead tissue from the wound should be removed with a sterile scissors or scalpel.

Drug Treatment

Cleansing with a sterile solution of **Normal Saline**,

OR/AND

Disinfectants and Cleansing Agents,e.g. **Chlorhexidine + Cetrimide** solution

S/E: occasional sensitivity

For secondary infection:

Give appropriate antibiotic**,** e.g. **Amoxicillin + Clavulanate**. Treatment should be given for 10-14 days (For **doses, S/E** , **C/I** and **dosage forms,** see page 4)

For Pain:

Give NSAIDs, e.g. **Paracetamol**, p.o 500-1000 mg as needed (4-6 times daily)

BURNS

Burn is an area of tissue damage caused by heat (including electricity), by caustic chemical, or by radiation. Burns are classified according to the depth of tissue damage: first-degree burns produce a redness of the skin, and they heal without scarring; Second-degree burns cause the destruction of deeper structures within the skin, resulting in blistering; Third-degree burns destroy the full thickness of the skin, leaving an open area. Large areas of burnt skin cause the loss of body fluid into the surrounding tissues, which can lead to dehydration and the rapid onset of shock, particularly in children.

A. Supportive measures

- Stabilize vital signs and support vital organs
- Wound management:
  - Assess degree (depth) and surface area (extent)
  - Irrigate with tap water and clean with soap and water, or cleanse with **chlorhexidine + cetrimide** or other cleansing agent
  - Chemical burns should be flushed with water until all burning pain has stopped, and all contaminated clothes should be removed.
  - Debride dead and necrotic tissue
- Oxygen

Drug treatment

1. Minor burns

- Treated in an outpatient setting
- The wound is debrided of all loose skin blisters are better not excised in First Degree burn and open wound management is preferred.
- All dirt is removed by cleansing with mild soap and irrigation with isotonic saline solution
- The wound is then covered with **Silver sulfadiazine** and properly dressed
- The first dressing change and dressing evaluation are performed 24-48 hrs after injury

2. Moderate and Severe burns

Refer to the nearby district hospital

WOUND MANAGEMENT

See under *Minor burns*

- Apply local antibiotic or Vaseline coated dressing
- Oral antibiotics are usually recommended in case of definite infection. If infection develops, continue antibiotics for at least 5 days after all signs of infection have cleared.

POISONING

Poisoning refers to the development of harmful effects following exposure to chemicals. Poisoning may be local (to they eyes, skin, lungs or gastro-intestinal tract); systemic, or both, depending on dose, absorption, distribution, potency and host susceptibility. Exposures most frequently involve cleaning agents, analgesics, cosmetics, plants, cough and cold preparations and hydrocarbons. Most exposures are acute, accidental, and occur at home resulting in minor or no toxicity; children up to the age of 6 are most frequently affected. Sometimes poisoning results from suicidal attempts.

Diagnosis is made by identifying, and if possible, quantifying the poison by the substance container, laboratory tests and clinical features. Every attempt should be made to obtain detailed information from the patient or his attendant about the circumstances of poisoning.

Note: Neurologic or endocrine diseases, including hypoglycemia, should be ruled out in comatose poisoned patients.

General Principles of Management

A. Supportive Measures

- Avoid further exposure to the poison by removing clothes and washing the body (for external exposure), or by inducing emesis by mechanical means or with the help of an emetic agent (for systemic exposure)
- Treatment should address the "ABCs" (*a*irway, *b*reathing, *c*irculation) without delay; asses the level of consciousness of the patient, and, where appropriate, perform assisted ventilation and oxygenation. Correct hypotension and hypoglycemia with appropriate iv infusions
- Maintain body temperature
- Transport the patient head downwards on a stretcher and nurse in this position in the ambulance.

  Control seizures, e.g. with **Phenobarbital** (For **doses, S/E** and **C/I** and **dosage forms** see page 44)

B. Removal of Poison

1. Emesis

Ipecacuanha (Ipecac) syrup, 15-30 ml p.o. (10-20 ml for children), followed by 2-3 glasses of water. The dosage may be repeated once (after 20-30 minutes) if emesis has not occurred.

S/E: excessive vomiting and mucosal damage; cardiac effect if absorbed

C/I: avoid in poising with corrosive or petroleum products owing to risk of aspiration; unconscious patient.

Caution: Emesis should not be done on a patient who is comatose, convulsing, or when corrosive substances like strong acids or alkali, or petroleum products have been ingested. Ipecac syrup should not be used for strychnine poisoning.

Dosage form: syrup, 7% powdered ipecac

Note:

Gastric lavage is an effective alternative if poison has been swallowed not more than 6 hours ago. Gastric lavage could be followed by the use activated charcoal.

2.Use of Adsorbents

Activated charcoal, 50-100 g suspended in 100-150 mL water

S/E: constipation

Dosage forms: activated charcoal tablets, 125 mg, 250 mg

Note:

Activated charcoal must be administered after ipecacuanha syrup, when these agents are used together (if activatd carbon has been used before ipecac, it is wise to use the drug again when emesis has been accomplished). Some substances are not well adsorbed by activated charcoal (i.e., lithium, iron, lead, methanol).

SHOCK

Shock is a state in which there is failure of the circulatory system to maintain adequate cellular perfusion, resulting in reduction of delivery of oxygen and other nutrients to tissues.

Non-drug Management

- Maintain airway; intubation may be required
- Cardiorespiratory resucitation, with monitoring of vital parameters

Drug treatment

Anaphylactic shock

First Line:

Adrenaline 1:1000, SC or deep IM 0.5-1 ml; may be repeated every 10 min until improvement in blood pressure and pulse rate occurs (maximum dose: 5 mg/day)

OR

Adrenaline 1:10000, IV, 3-5 ml given **slowly**

(For **doses, S/E** and **C/I,** see page 40)

Dosage form: injection, 0.1% in 1 ml ampoule

PLUS

Sodium chloride solution 0.9% (normal saline)

Hypovolemic shock, not due to hemorrhages:

Infusion of fluid (**Normal Saline or Ringer lactate**); if hemorrage, refer to the nearby District hospital for blood transfusion.

Note:

Cardiogenic shock should be treated in specialized units, with constant monitoring wth ECG

WOUND

Drug treatment

For infected wounds:

Wounds

A wound is a break in the structure of an organ or tissue caused by an external agent. Bruises, grazes, tears, cuts, punctures, and burns are all examples of wounds.

The management of wound depends on the type of wound (dry, exuding, necrotic) and the stage of healing process (cleansing, granulation, vascularisation, epithelialisation).

Drug Treatment

Disinfectants and Cleansing Agents:

Chlorhexidine + Cetrimide solution

OR

Hydrogen peroxide 6% - for disinfection, cleansing and deodorizing wounds and ulcers

C/I: large and deep wounds

OR

Iodine Solutions (**Iodine solution** 2%)

OR

Povidone iodine solution 4%, 7.5%, 10% – for minor cuts, wounds and infections of the skin. Apply twice a day.

S/E: hypersensitivity reactions (rare); may interfere with thyroid function tests.

C/I: thyroid disorder, patients on lithium

Note:

Concurrent use of a systemic anti-infective agent may be required for a deeper kin infection

For infected wounds use appropriate **topical anti-infective agent**

ANNEXES

ANNEX 1 : RECOMMENDED IMMUNIZATUION SCHEDULE

Recommended schedule for immunization according to EPI program

Age	Vaccination
Birth	BCG OPV-0
2 months	OPV-1 DPT-1
3 months	OPV-2 DPT-2
4 months	OPV-3 DPT-3
9 months	Measles

Recommended schedule of immunization for children attending clinic at later age but before 5 years.

Age	Vaccination
First visit	BCG if mantoux test is negative OPV-1 DPT-1
Second visit (after one month)	OPV-2 DPT-2
Third visit (after one month)	OPV-3 DPT-3 Measles

Hepatitis B vaccine (Engrix B 10 microgram)is also available and three doses are recommended (at birth, at one month and at six months of age) Booster dose is given after 10 years.

Vaccine	Type of vaccine	Route of administration	Adverse reaction
BCG	Life attenuated	Intradermal	
DPT	Toxoid (DT) Inactivated bacteria (P)	IM	Fever, anaphylaxis, crying, & shock
OPV	Life attenuated virus	Oral	Paralysis
Measles	Life attenuated virus	Subcutaneous	Fever

ANNEX 2: FEEDING PROBLEMS

Feeding of normal baby:

Mother should be told to start feeding the baby with in one to two hours after delivery. First feed should be the breast milk and there is no need for any test feed with water or dextrose. First few feeds should be supervised and records of feeds should be documented.

Feeding of a preterm, small for date (SGA) and infants of diabetic mothers (IDM):

Infants less than 1500 grams should receive all the fluids and calories intravenously for the first 24 hours. SGA and IDM babies should be started feeding by one hour of age, First few feeds may be given by NG tube and they should be fed at least two hourly if sucking is poor. Once sucking is well established and blood sugar is normal these babies should be given to the mother for supervised breast feeding.

Feeding of term asphyxiated infants:

Mildly asphyxiated infants should feed like any healthy baby but must be closely supervised for the first 12 hours.Babies with severe asphyxia should be started with 2/3 maintenance IV fluids and strict intake records should be maintained routinely.

Evidence for adequate nutrition

Weight gain should be 20 – 30 g/kg/day for premature infants and 10 g/kg/day for full term infants

Adequate growth requires:

100-120 kcal / kg/day in term infants

115-130 kcal /kg/day for preterm infants

150 kcal /kg/day for very low birth weight infants.

ANNEX 3: FLUID AND ELECTROLYTE

Normal maintenance requirements (volume of fluid/kg/day)

Day 1	60 m1/kg/day
Day 2	80 m1/kg/day
Day 3	100 m1/kg/day
Day 4	120 m1/kg/day
Day 5	140 m1/kg/day

Day 6 & above 150 m1/kg/day

Additional allowance:

1. Increase insensible water loss:
   a. Radiant warmer 20 m1 /kg / day
   b. Photo therapy 20 m1 /kg / day
   c. Increase body temperature 10-20 m1 /kg/ day
2. Increase loss water from other roots:

   Example: neonatal entrocolitis , GI aspirates , diarrhea. The loss in the above conditions are variable, they should be replaced volume for volume.

Stomach contents should be replaced with half saline with KCL loss small intestinal contents is replaced with normal saline and KCL.

ANNEX 4: THE KANGAROO MOTHER CARE

Kangaroo Mother Care (KMC), is defined as early, prolonged and continuous skin to skin contact between a mother and her low birth weight infants (LBWI), both in hospital and after early discharge until at least the 40th week of postnatal gestational age. KMC does not need sophisticated equipment, and for its simplicity it can be applied almost everywhere including peripheral hospitals. Kangaroo Mother Care also contributes to the humanization of neonatal care and the containment of cost, for these features, it may also be attractive for neonatal units in high-income countries.

Kangaroo care a program of skin-to-skin contact between mother (any family members) and a LBWI, is part of the revolution in the care of premature infants. Since its first description in 1983 in Bogota, Colombia, KMC has drawn the attention of international agencies and the scientific community leading to a publication of more than 200 papers and abstracts.

The Multi center study including the neonatal unit of Addis Ababa, Ethiopia showed that LBWI in KMC had better growth, early discharge from hospital, lower cost, acceptable by both hospital staff and mothers when compared to the conventional method of care. KMC is not only feasible but also easily grasped by the hospital staff and accepted by the community. The feasibility of the KMC is also testified by the growing number of reported experiences and by its inclusion in national guidelines for perinatal care. The neonatal unit of Tikur Anbessa hospital also uses KMC as a routine care for all babies weighing less than 2000 grams since 1997.

The benefits of Kangaroo Mother Care: Many studies showed that Kangaroo Mother Care offers the preterm infants many physical and emotional benefits, which includes:

- A stable heart rate
- More regular breathing
- Improve dispersion of oxygen throughout the body

- Prevention of cold stress and also warming babies who are already in cold stress, Kangaroo transportation where transport incubators are not there to keep the warm chain
- Longer period of sleep (during which the brain matures)
- More rapid weight gain and earlier discharge from hospital
- Reduction of purposeless activity which simply burns calories at the expense of infants growth and health
- Decreased crying
- Opportunities to breast feed and enjoy all the healthful benefits of breast milk
- Earlier bonding

The KMC works so beautifully because of three factors affecting the infant:

1. It creates conditions similar to those with which the infant had become familiar in Utero, such as the proximity of the mother's heart beat sounds and her voice couples with the gentle rhythmic rocking of her breathing
2. It provides containment and allows for flexion and prevent heat loss and provides heat from the skin to skin contact
3. Protects the infant and offers him a re-prieve from the stressful elements of NICU

When to Discharge from Kangaroo position:

The decision of discharging from Kangaroo position is made by the baby it self (at about the 40th week of postnatal gestational age and weight of about 2000 grams). The baby will be restless and the mother could not maintain the Kangaroo position any more then this is the time to go out of the kangaroo "pouch"

ANNEX 5: THE ETHIOPIAN AIDS CASE DEFINITION FOR SURVEILLANCE IN PEDIATRICS

[REVISED FEBRUARY 2002]

I. AIDS in a child <12 years of age is defined with evidence of positive HIV test in the presence of 3 major signs alone in the absence of other known causers of immunosuppression.

II. AIDS in a child <12 years of age is defined without laboratory evidence of HIV infection in the presence of: 2 major and 2 minor signs or 3 major and 1 minor sign in the absence of other known causes of immunosuppression

III. AIDS in a child < 12 years of age is defined if patient fulfills the 1987CDC surveillance case definition

Major signs /disease

1. Failure to thrive
2. Repeated /persistent lower respiratory tract infection (LRTI)
3. Chronic recurrent diarrhea for more than 1 month (continuous /intermittent).
4. Unexplained prolonged fever.1month (continuous /intermittent). Fever should not be counted as a major sign in the presence of lower respiratory tract infection {LRTI).

Minor signs/disease

1. Generalized lymphadenopathy
2. Repeated or persistent common infections
3. Unexplained neurological disorders or developmental delay and/or microcephaly.
4. Hepatosplenomegally/or splenomegally
5. Extensive varicella infections or molluscum contagiousum.
6. Confirmed maternal HIV infection

ANNEX 6: WHO RECOMMENDATIONS ON MULTIPLE DRUG THERAPY FOR LEPROSY (TABLE 1-4)

The basic WHO recommendations on multiple drug therapy for leprosy, using adult doses (Technical report series 675, 1982)

Table 1. Multibacillary leprosy (adult dosage)

Duration	A minimum of 2 years (or 24 monthly doses within a 36-month period) in all cases, but wherever possible until slit-skin smears are negative
Number of drugs used	three: Rifampcin, Dapsone and clofazimine.
Dosage: Rifampicin Dapsone Clofazimine	 600mg once - monthly, supervised 100mg daily, self-administered 300mg once - monthly, supervised and 50mg daily, self-administered.
Surveillance	minimum of 5 years after stopping treatment, with clinical, and bacteriological examination at least every 12 months

Note: Ethionamide/prothionamide, in a daily self-administered dose of 250-375mg, may be used if the skin pigmentation or other side effects of clofazimine render this drug totally unacceptable.

Table 2. Paucibacillary leprosy (adult dosage)

Duration	6 months (or 6 monthly doses within a 9 month period).
Number of drugs used	Two: Rifampicin and Dapsone
Dosage: Rifampicin Dapsone	600mg once - monthly, supervised 100mg daily, self-adminstered.
Surveillance	Minimum of 2 years after stopping treatment with clinical examination at least every 12 months

Dosages based on age for children

Table 3. Multibacillary leprosy (3 drugs - Dapsone, Rifampicin Clofizimine

Age groups	Dapsone daily dose, Unsupervised	Rifampicine Monthly dose, Supervised	Clofazimine Unsupervised dose	Clofazimine Monthly dose Supervised
Upto 5 years	25mg	150-300mg	100mg once weekly	100mg
6 -14 years	50-100mg	300-450mg	150mg once weekly	150-200mg
15 years and above (i.e use adult dose)	100mg	600mg	50mg daily	300mg

Table 4. Paucibacillary Leprosy (2 drugs-Dapsone and Rifampicin)

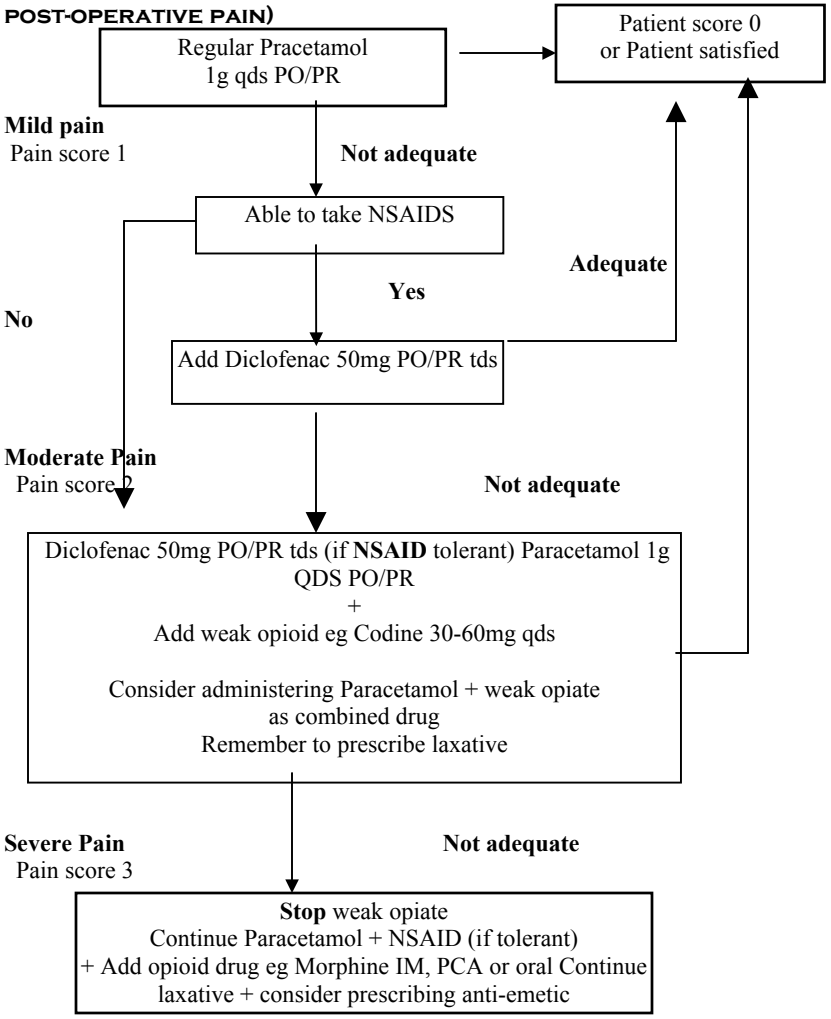
Age groups	Dapsone: daily dose, unsupervised	Rifampicin, monthly doses supervised
Upto 5 years	25mg	150-300mg
6-14 years	50-100mg	300-450mg
15 years and above i.e. use adult dose	100mg	600mg

ANNEX 7: PERCENTAGE OF ADULT DOSE REQUIRED AT VARIOUS AGES AND BODY WEIGHT

Age	Mean weight for age (Kg)	Percentage of adult dose
Newborn (full term)	3.5	12.5
2 months	4.5	15
4 months	6.5	20
1 year	10	25
3 years	15	33.3
7 years	23	50
10 years	30	60
12 years	39	75
14 years	50	80
16 years	58	90
Adult	68	100

Note: The percentage method is derived from the surface area formula for children. This table is to be used only for drugs with a high therapeutic index. The clinical response of the child, age- or disease-related changes in drug clearance and any adverse effects that might present should be given due consideration when calculating doses.

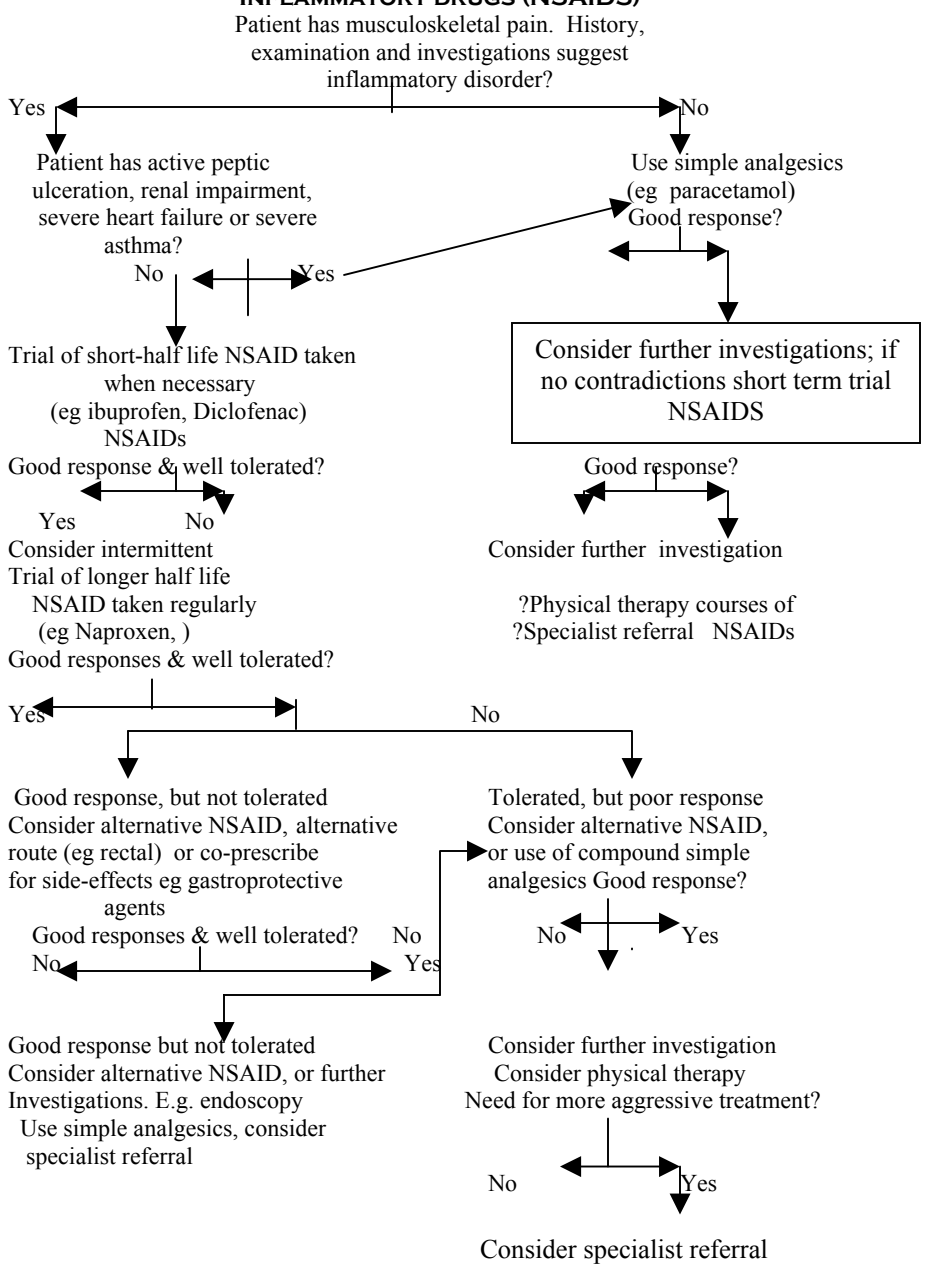
ANNEX 8: GUIDELINES FOR THE MANAGEMENT OF PAIN (INCLUDING POST-OPERATIVE PAIN)



Pain score should be assessed after asking the patient to take a deep breath, cough and move.

0 + No pain
1 Mild pain- able to continue with whatever patient is doing
2 Moderate pain- beginning to interfere with activities, less able to concentrate
3 Severe pain - unable to think of anything else

ANNEX 9: GUIDELINES FOR USING NON-STEROIDAL ANTI-INFLAMMATORY DRUGS (NSAIDS)



STANDARD TREATMENT GUIDELINES FOR HEALTH STATIONS

ANNEX 10. SYMPTOMS AND FINDINGS WHEN POISONED WITH SOME COMMON DRUGS

	Symptoms and physical findings	Laboratory Findings	Antidote
Paracetamol	Nausea, vomiting, malaise, right upper quadrant abdominal pain, jaundice, confusion, somnolence; coma may develop later	After 24 hrs, increased AST (>1,000 IU/L is characteristic), increased ALT, increased bilirubin	n-Acetylcysteine
Tricyclic antidepres-sants	CNS excitability, confusion, blurred vision, dry mouth, fev mydriasis, seizures, coma, arrhythmias, hypotension, tachycardia, respiratory depression; physical conditio can rapidly change	ECG findings of increased QRS interval > 0.10 seconds, sinus tachycardia, conduction abnormalities	Bicarbonate
Benzodia-zepines	Drowsiness, lethargy, dysarthria, ataxia, hypotension, hypothermia, coma, respiratory depression with severe overdoses	No characteristic findings	Flumazenil
Narcotics (opioid)	Drowsiness, nausea, vomiting, miosis, respiratory depression, cyanosis, coma, seizures, bradypnea, noncardiac pulmonary edema	With severe respiratory depression, hypoxemia, hypercarbia, respiratory acidosis, rhythm disturbances, pulmonary edema	Naloxone

AST=aspartate aminotransferase; ALT=alanine aminotransferase; CNS=central nervous system; ECG=electrocardiogram.

Index