Somali Treatment Guidelines in line with Essential Package of Health Services

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Hospital and Referral Health Centre Guidelines

November 2015

Somali Health Authorities
World Health Organisation

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Preface

After decades of political turmoil and the collapse of Somalia's public health system, important achievements were made over the last years, resulting in the development of important strategic directions to achieve the common goal of ensuring equitable, affordable and effective essential health services for all people in Somalia, as we stated in our first Health Sector Strategic Plan.

One of the milestones has been the development of the Essential Package of Health Services (EPHS), a framework for service delivery that had been adopted as our flag ship framework for the health sector.

The EPHS is being rolled out to more and more people. However, the quality and safety of services and the irrational use of medicines, especially in the growing private sector remains a major concern. There is no strategic approach to address the increasing numbers of non-communicable diseases such as cardio-vascular conditions and cancer as well as mental illnesses; prevention and control programmes, especially at Primary Health Care level, are not in place.

This edition of the Somali standard treatment guidelines presents an important step towards the standardization of health care and better quality of care. They are aligned to the core components of the EPHS and should be applied by all health workers providing services at primary health units, health centres, referral health centres and hospitals. They should be part of training institutions' curricula. They may be expanded in the future as it becomes possible to treat more diseases within the package of essential health services.

Somali Health Authorities

Author's note

Writing a standard treatment guideline is not easy. Every doctor or nurse has their preference of one medicine over another, but how do we know which treatment is the best for a person and at the most affordable price? Fortunately, much research has been carried out looking at first line medicines, building up an evidence base of best practice in treating certain diseases. Much of this best practice is used as a base on which many disease-specific guidelines are written.

These STGs bring together all the Somali best-practice treatment guidelines developed by MOHs, UN agencies and THET into one book and also draw on a large body of treatment guidelines from WHO, UNFPA, UNICEF, GAVI, the Global Fund and other international agencies, as well as specialist groups such as the British National Institute of Clinical Evidence (NICE) and Primary Care International.

Many Somali clinicians and partner agencies have participated in drafting and editing these guidelines to ensure that they relate to Somali clinical practice, and the availability of medicines. The following have provide invaluable inputs into the drafting of these STGs:

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Where possible, the layout of the STGs is designed to link to the core and additional EPHS programmes to facilitate use by prescribers. Categorising medical conditions is not easy, so an alphabetical list of conditions and of medicines is given at the end to help users quickly find the appropriate page.

Dr Nigel Pearson

STG Developer

List of abbreviations

ANC	Antenatal care
ARI	Acute respiratory illness
ARV	Antiretroviral
AS+SP	Artesunate + sulfadoxine-pyrimethamine
BEmONC	Basic emergency obstetrical and neonatal care
BP	Blood pressure
CEmONC	Comprehensive emergency obstetrical and neonatal care
CHW	Community health worker
COC	Combined oral contraceptive
COPD	Chronic obstructive pulmonary disease
CS	Cesarian section
CSB	Corn soya blend
CV	Cardiovascular
CVA	Cerebrovascular accident (stroke)
D&C	Dilatation & curettage
DOT	Directly Observed Therapy
DVT	Deep vein thrombosis
EC	Emergency contraception
EPHS	Essential Package of Health Services
FANC	Focussed antenatal care
FEV1	Forced expiratory volume in 1 second
FVC	Forced vital capacity
G6PD	Glucose-6 phophate dehydrogenase
GI	Gastrointestinal
H	Hospital
HC	Health centre
HEI	HIV exposed infants
iPT	Intermittent presumptive treatment
iCCM	Integrated community care management
IMCI	Integrated Management of Childhood Illnesses

IUD	Intrauterine contraceptive device
IUS	Intrauterine system
MAM	Moderate acute malnutrition
MI	Myocardial ischaemia/ infarction
mHGap IG	Mental Health Gap Intervention guide (WHO 2010)
MMN	Multiple micronutrient
MOH	Ministry of health
MUAC	Mid-upper arm circumference
MVA	Manual vacuum aspiration
NCD	Non-communicable disease
ORS	Oral rehydration solution
OTP	Outpatient therapeutic programme
PHU	Primary health unit
PMTCT	Prevention of moter-to-child transmission
POP	Progestogen-only contraceptive
RHO	Regional health office
RUTF	Ready-to-use therapeutic food
SAM	Severe acute malnutrition
SC	Stabilisation centre
RDT	Rapid diagnostic test
RHC	Referral health centre
RHO	Regional Health Office
SFP	Supplementary feeding programme
STG	Standard treatment guideline
STI	Sexually-transmitted infection
UNIMIX	A dry ration given as part of a SFP

Abbreviations used for treatments

DOTS	Directly Observed Treatment Short course
dpm	drops per minute
g	gram
IM	intramuscular
IU	international units
IV	intravenous
kg	kilogram
mcg	microgram
mg	milligram
ml	millilitre
per	for each
PO	Per os (by mouth)
SC	subcutaneous
x	times (eg four times for each day = 4 x per day)

Introduction

A health system without treatment guidelines is like a transport system without rules. If drivers could drive as fast as they liked, put in any fuel, drive on any side of the road and have as noisy and polluting cars as they liked, then the number of accidents and deaths would spiral. It would become much more dangerous to pedestrians and other drivers than if drivers followed the simplest of rules, and the net effect would be more harm than good. It is the same with a health system. If clinicians prescribe whatever they like with no guidance then they are likely to cause great harm to patients, resulting in more suffering and even deaths than from the original disease for which they consulted.

Health systems need rules, and above all the use of medicines needs to be very carefully controlled. All medicines are developed by pharmaceutical companies because of their potential benefits and impact on saving millions of lives. But used in the incorrect way, these agents of humankind can exacerbate suffering and even provoke premature death.

That is why health professionals need to be very well trained in the use of medicines, treatment guidelines and diseases protocols. Ministries of health are responsible to ensure that people prescribed treatments by health professionals receive the most effective medicine for the indication with the fewest side effects. And with limited budgets and wanting to limit the bills that patients pay, health ministries have to constantly look for the most cost-efficient treatments as well as those that are the most effective.

The purpose of the STGs

These STGs outline principles for prescribing, and list the best treatments that are currently available at affordable prices. The application of these guidelines for Somali nationals brings huge benefits to the health status and well-being of Somalis, limits potential harm that incorrect prescribing can cause and eases the task of the thousands of health professionals navigating their way through dozens of manuals and protocols. Developed as pocket guides for different levels of the Somali health system in line with the EPHS, the availability of STGs greatly simplifies the task of health professionals in prescribing and ensures that those using the health system know that they are getting the best treatments with the least chance of side effects at low cost. With STGs, the use of medicines becomes rational.

STGs bring everyone involved in medicines onto the same page. They are used by *policy makers* in the health ministries to set standards and regulate practices. *Supply chain managers* consult them to ensure affordable generic medicines are available in line with the STGs. *Prescribers* (health professionals) consult them to ensure all their prescribing is appropriate, evidence-based, and affordable. *Dispensers* (pharmacists and those authorised to dispense) check that health professionals are prescribing correctly and not duplicating medicines unnecessarily or using inappropriate or expensive medicines. Dispensers also check that prescribed medicines are in line with the formulary for that level facility. *Patients* benefit from the application of the STGs in knowing that they are receiving the best evidence-based, effective and affordable medicines, greatly improving the quality of treatment they receive and limiting any out of pocket expenses.

The scope of the STGs

The STGs are the authoritative medicine prescribing guide for policy makers, managers, dispensers and health professionals in territories governed by the governments of Federal Somalia, Puntland and Somaliland.

This is the first time national guidelines have been produced for clinical specialities in hospitals. This first edition aims to cover the majority of conditions that hospital prescribers and dispensers are treating. The next edition will be more comprehensive and include guidelines for more internal medical and surgical conditions, include anaesthetics

and rarer conditions such as cancers, metabolic conditions and dialysis for which few centres currently offer treatment.

The concept and format of the STGs

These STGs are written in a format designed to be concise, clear and easy to use by dispensers in pharmacies and by health professionals during consultations, at the bedside, in the operating theatre or on a home visit. Unlike national treatment guidelines in some countries, the STGs have been "stripped back" to include just treatments and a few points related to the treatment indication, dosage and key important side effects and interactions. The STGs are not diagnostic guidelines or clinical protocols, and do not provide detailed descriptions of disease. This information can be found in other documents including training manuals, reference text books, on-line resources and disease-specific protocols. To have included this information would have made the STGs much longer and not as easy to reference during consultations. The STGs are primarily about medicines and when and how to best use them. In the future clinical protocols may be produced to accompany the STGs.

The Authority of the STGs

The STGs are developed, approved and adopted by the Ministries of Health of the Federal Government of Somalia, Puntland and State health authorities. They are the standardised treatments that should be followed at each level of the health system. Application of the STGs brings huge benefits for patient well-being, reduces the harm caused by inappropriate prescriptions and brings large cost savings for health facilities and the Somali population. Only health professionals *licenced to practice* (whether in the public or private sector) by health ministries and Somali health professional bodies are authorised to use these guidelines. The guidelines assume that the health professional at each level has been trained to use the treatment described. Each set of guidelines outlines which professionals are authorised to prescribe which treatments.

These guidelines must not be used by someone who has not been trained to give a treatment or by someone who is not authorised by the health ministry to work in a health facility.

The STGs are based on the current evidence-based prescribing practices from around the world, with cost-effectiveness taken into account. In medicine the evidence is constantly changing as new high-class research is carried out. At times health ministries may issue statements on small adjustments to be made to these STGs based on new evidence about a medicine, but with budgetary constraints the full STGs will only be updated every few years.

Principles of prescribing and dispensing

Principle	Explanation of principle
Efficacy	The best known treatment is given for the appropriately diagnosed medical condition.
Evidence-based	Treatments are selected based on their efficacy and credibility as proven by research from around the world.
Updated	As the evidence changes, health ministries may issue small adjustments to the STGs.
Cost-effective	The most effective and affordable options are chosen. Generic names are used instead of brand names.
Harm-limiting	All medicines have negative as well as positive effects. Treatments are selected that are likely to be as safe as possible, causing the fewest side-effects to patients.
Professional	Only registered health professionals are authorised by health ministries to prescribe. Prescribers and dispensers behave with the utmost professionalism in adhering to treatment guidelines and in following ethical codes of conduct. They are not influenced by medicines branding or by the advertising pressure of pharmaceutical companies.
Quality-controlled	All medicines dispensed are supplied from quality-controlled procurement and supply chains.

Standard National Treatment Guidelines (STGs) for Hospitals (Hs) and Referral Health Centres (RHCs)

Danger signs

Hospital and RHC staff must be very attentive to any child or adult presenting with danger signs. Appropriate action must be taken and relevant life-saving medication given as appropriate. These signs include the following:

Signs of severe infection

- high fever (over 40°)
- drowsiness, blue or very pale colour
- convulsions
- stiff neck

Signs of severe dehydration

- Lethargic or unconscious
- Sunken eyes
- Not able to drink or drinking poorly
- Skin pinch goes back very slowly (children and young adults only)

Signs of severe pneumonia

- very rapid or noisy breathing
- chest indrawing

Signs of shock

- Fast feeble pulse
- Low BP
- Cold, clammy skin
- Pallor or blue colour
- Drowsiness or unconscious

Standard precautions for avoiding transmission of HIV and other pathogens in health facilities.

Standard precautions of infection prevention and control must be taken routinely with all clients at all times:

- Use safe injection techniques, with 1 injection given by one person, and dispose of syringe and needle.
- Handle and clean instruments safely
- Handle and dispose sharps safely in safety box
- Use personal protective materials
- Handle and dispose of waste safely
- Manage needle-stick and other workplace exposure to HIV

Prescribing paracetamol

Paracetamol is the most common medicine used in the health system. It helps reduce fever, pain and symptoms associated with the

common cold such as cough and congestion[1]. For fever it is given if the temperature is over 38.5°. It is given for many of the conditions described in the STGs. Paracetamol should not be given more than every 6 hours (not more than 4 x per day). There are three preparations commonly available - syrup (120mg/ml), 500mg tablets and 100mg tablets, so it is very important that the right amount is given for each preparation.

Like all medicines, paracetamol is effective in the prescribed dosage but may be very dangerous if this dose is exceeded. If a patient accidentally takes too much, or a parent has accidentally given a child more than double the recommended dosage, then hospitalise immediately. Depending on the history, and on serum paracetamol levels if available, a specific antidote (acetylcysteine – see 4.2) may need to be given.

Aspirin is also sometimes used for treating fever but must never be given to children under 12 years. The following dosage table is used whenever "*Give paracetamol*" is mentioned in the STGs.

Medicine	Age	Dose	Duration	Side effects
Paracetamol	Infants < 2 months	Do not give		**Common:** no common **Rare:** skin reaction. Very dangerous in over-dosage, refer all cases.
	Infants 2 – 6 months	60mg 4 x per day (2.5mls of 120mg/ 5mls syrup or ½ 100mg tablet)	2 to 5 days	
	Children 6 months to 3 years	120mg 4 x per day (5mls of 120mg/5mls syrup or 100mg tablet)	2 to 5 days	
	Chilren 3 years to 7 years	240mg 4 x per day (10mls of 120mg/5ml syrup or 2 x 100mg tablet or ½ x 500mg tablet)	2 to 5 days	
	Children 8 to 11 years	500mg 4 x per day (1 x 500mg tablet)	2 to 5 days	
	Children 12 to 15 years	750mg 4 x per day (1½ 500mg tablet)	2 to 5 days	
	Adults (16 years and over)	1000mg per day (2 x 500mg tablets)	2 to 5 days	

Prescribing tip: **Infants:** Best to give in syrup form and measure carefully with measuring spoon. **Older children:** can crush tablets if syrup not available

1 A medicine used for pain control is called an analgesic and a medicine used for fever is called an antipyretic.

Clinical programme
(linked to EPHS core and additional programmes)

1. Reproductive health

1.1 Maternal

Antenatal care

Full focussed antenatal care (FANC) guidelines should be followed. A minimum of 4 ANC visits are recommended for all women, but women with complications or chronic medical problems will need more visits as appropriate to their treatment needs. The 4 FANC visits are timed as follows < 16 weeks, 16-28 weeks, 28-32 weeks and 32-40 weeks. The objectives of the visits are:

- Detection and treatment of problems
- Prevention of complications using safe, simple and cost-effective interventions
- Preparation for birth
- Promotion of health

The following is a summary of key treatments that are given during ANC.

Tetanus prevention

Administration of tetanus toxoid by staff specifically trained to give immunisations:

Tetanus toxoid	
Type of vaccine	**Toxoid**
Number of doses	At least two primary doses
Schedule	See next table
Contraindications	Anaphylactic reaction to previous dose
Adverse reactions	Mild local or systemic reactions are common and increase in frequency with increasing numbers of doses, and may constitute a contraindication to further doses
Dosage	0.5ml
Injection site	Outer upper arm
Injection type	Intramuscular
Storage	Store between 2°C–8°C. Never freeze

Between 0 and maximum 3 doses of tetanus toxoid immunisation (TT2+) are given during pregnancy depending on previous immunisation history. The following table is consulted:

Dose	Time of administration	Duration of protection
TT1	At first contact	No protection
TT2	4 weeks after TT1	Three years
TT3	At least 6 months after TT2	Five years
TT4	At least one year TT3	Ten years
TT5	At least one year after TT4	For thirty years (throughout a woman's reproductive life)

Malaria prevention
Intermittent preventive treatment (iPT) is not currently given to non-immune women in areas of low transmission. It is however given to reduce the incidence of severe malaria and low birth weight in semi-immune women in areas of moderate to high P. falciparum transmission.

Areas of medium to high transmission only:
Give 3 tablets of sulfadoxine-pyrimethamine by mouth once in the 2nd trimester and once in the 3rd trimester.

Micronutrients – Antenatal
Ensure pregnant women take 1 multiple micronutrient tablet per day (1 MMN tab per day). Hospital staff may liaise with peripheral centres so that women can receive top-up supplies of MMN.

Micronutrients - Postnatal for mother
Vitamin A 200,000iu single dose within 6 weeks for mothers (1 red capsule or 2 blue capsules single dose) and 1 multiple micronutrient tablet per day (1 MMN tab per day) each day for 6 months. Hospital staff may liaise with peripheral centres so that women can receive top-up supplies of MMN.

Deworming
400mg (1 tablet) of Albendazole is given as a single dose once during pregnancy in the 2nd or 3rd trimester.

Nutrition programme for pregnant and lactating women with Acute Malnutrition
Staff screen women with MUAC bands at ANC, and any women with Severe Acute Malnutrition (SAM) are enrolled in either for outpatient therapeutic care or the inpatient therapeutic centre if they have

complications. Supplementary feeding programme (SFP) may be set up (usually in health centres) for women and children with MAM, with *Plumpysup*® distributed to pregnant women and lactating mothers with MAM. Full protocols, guidance and supervision will be issued by the RHO.

Women enrolled in an SFP are given take-home dry rations or supplementary Plumpy®. The quantities given are monitored as part of any SFP that nurses may be involved in, and clear instructions are given to parents on how to give supplementary Plumpy® or prepare CSB or UNIMIX at home.

Prevention of mother-to-child transmission of HIV
All women are offered voluntary counselling and tests for HIV and other diseases as part of routine bloods in the ANC. All women who test + for HIV or syphilis are enrolled in the appropriate treatment programme (*see 6.1 and 6.2*). See Programme 6 for full details of PMTCT.

Antenatal care for women with HIV
Any women previously diagnosed with HIV or diagnosed during routine testing at ANC are enrolled to initiate ARV and for integrated management. These women will also treated for common illnesses or pregnancy-related problems. (*See 6.2*)

Intensified case finding for TB
Ask if a pregnant women if she has ONE of the following currently:
- Cough for any duration
- Fever for any duration
- Night sweats
- Weight loss OR failure to gain weight in pregnancy

If so she should have sputum investigation for TB. If positive she will need to be enrolled for TB treatment (see 6.4).

In addition, full infection control measures for TB are implemented in the ANC as per PMTCT guidelines.

Care for diseases and complications during pregnancy

Malaria

Treatment of uncomplicated malaria in pregnancy

All pregnant women with symptomatic malaria and RDT+ve should receive urgent treatment. Quinine is used in the first line treatment

during pregnancy. AL may be used as second line treatment during pregnancy, but check national malaria treatment guidelines.

1st trimester first line treatment: Give oral quinine 600mg (2 x 300mg tablets) 3 x per day (every 8 hours) for a total of 7 doses.

Precaution: Quinine can induce hypoglycaemia.

Medicine	Age	Dose	Duration	Side effects
Quinine 300mg tablet	Adults 38 – 52kgs	450mg (1½ x 300mg tablets) every 8 hours (3 x per day)	for 7 doses (just over 2 days)	**Common:** hearing impairment, ringing in ears, headache, nausea **Rare:** hypoglycaemia, agitation, confusion, diarrhea
	Adults > 52kgs	600mg (2 x 300mg tablets) every 8 hours (3 x per day)	for 7 doses (just over 2 days)	
Prescribing tip: Infants: Older children:				
Advice: Take some sugar in drinks or food during the course of treatment.				

2nd line treatment: AL may be used as second line treatment in the 2nd and 3rd trimesters of pregnancy but consult national malaria treatment guidelines.

Artemether–lumefantrine

Each tablet contains a combination of 20 mg artemether and 120 mg lumefantrine. A six-dose regimen of artemether–lumefantrine is administered twice a day for 3 days.

Body weight (kg)	Number of tablets of artemether–lumefantrine					
	Day 0		Day 1		Day 2	
	1st dose	2nd dose	3rd dose	4th dose	5th dose	6th dose
5–14	1	1	1	1	1	1
15–24	2	2	2	2	2	2
24–34	3	3	3	3	3	3
≥35	4	4	4	4	4	4

Side effects: Common: Weakness, dizziness, headache
Rare: Palpitations, jaundice, rash, prolonged QT interval

A thick film should be taken and examined for all patients with persisting symptoms of malaria. (a second RDT should NOT be done as it will remain + for 21 days following infection). If the thick film is + for malaria, if AL was given as the first line treatment, then second line treatment with quinine needs to be given.

Management of severe malaria in pregnancy

Severe malaria is very dangerous, particularly in later pregnancy, with increased maternal and perinatal mortality. Hypoglycaemia, acute pulmonary oedema, hyperpyrexia, postpartum haemorrhage, premature delivery and perinatal death are particular risks. If any danger signs of severe malaria (unable to drink, repeated vomiting, anaemia, jaundice, convulsions, unconscious, passing no urine, weak or rapid pulse, severe dehydration, bleeding, difficulty breathing) then treat with IV or IM artesunate (*see 3.3*).

Treatment of anaemia

Symptoms and signs include irritability, tiredness and pallor of the conjunctivae, lips, tongue, nail beds and palms. The haemoglobin is taken. If the Hb is 7 – 11g/dl without symptoms of severity, iron folate can be given. Severe anaemia with Hb < 7g/dl can present with breathlessness and these cases may need a blood transfusion (*see 4.2*).

Iron folate for treating anaemia

Medicine	Age	Dose	Duration	Side effects
Iron & folate tablets (60mg iron + 400 micrograms folate)	Pregnant women	2 tablets per day (2 x 60mg + 1 x 400 micrograms folate)	3 months	Common: Abdominal discomfort; constipation

Bleeding in pregnancy

Bleeding in the first trimester is referred to as a threatened abortion (or miscarriage) and bleeding in the 2nd and 3rd trimesters is called an antepartum haemorrhage. Bleeding throughout pregnancy can present with shock from severe blood loss and hypovolaemia for which IV fluids are rapidly needed.

Threatened abortion

The BEmONC guide outlines the management of threatened abortion. Medical treatment does not reduce the chances of a threatened abortion leading to an abortion, so medicines should *not be given* except for pain control. An ectopic pregnancy can also present with vaginal bleeding and abdominal pain. If an ectopic pregnancy is suspected the woman must be assessed immediately by the surgical team, with an IV fluid line in place.

Management of threatened abortion

- Admit if more than light bleeding.
- Monitor vital signs frequently
- Rest, but some activity and gentle walking must be maintained to avoid thrombosis
- Give paracetamol for pain control if needed.
- Maintain fluid intake and meals.
- Give IV fluids if heavy bleeding, moderate to severe abdominal pain, and assess by surgical team. Blood group and x match. Transfusion is considered if > 1 litre of blood loss (see 4.2). If the woman is Rhesus –, consider if there is a possibility of rhesus incompatibility.

Management of inevitable and incomplete abortion

The cervix is dilated and products of conception are still in the uterus (either intact or partial), or there is a possibility of a molar pregnancy. There is a danger of severe bleeding leading to shock.

- Give IV fluids. Take blood for Hb, Group and x match 2 units of blood.
- Removal of retained products of conception: If less than 12 weeks then do a manual vacuum aspiration or give either misoprostol 600mcg orally or 400mcg sublingually as a single dose. If more than 12 weeks then MVA.

- Dilatation and curettage is only needed in cases of missed abortion or when products of conception have remained in the uterus for several days.
- Give paracetamol for pain control 1 – 2 x 500mg tabs 30 mins before procedure.
- Give prophylactic antibiotics: ampicillin 2g IV plus metronidazole 500mg IV.
- Follow CEmONC guidelines (includes paracervical block with 1ml of 0.5% lignocaine solution).

Septic abortion

If there is a septic abortion with presence of badly-smelling discharge, fever or a history of a provoked abortion then the woman's life is at risk and antibiotics are urgently needed. For these cases:

- Give antibiotics: Ampicillin 2g IV every 6 hours AND metronidazole 500mg or 400mg IV or PO every 8 hours AND gentamicin 5mg/kg IM once every 24 hours. Change to oral amoxicillin and metronidazole once there are no signs of infection. Continue antibiotics until the woman has been fever free for two days. If the woman is allergic to penicillin or amoxicillin give erythromycin instead of amoxicillin.
- If staphylococcal infection is suspected, add: cloxacillin 1g IV every 6 hours, or (if not available, ceftriaxone 2g IV once every day).

Bleeding in pregnancy, 2nd and 3rd trimester

This is known as an antepartum haemorrhage when there is > 500ml blood loss (whereas bleeding in the first trimester is known as a threatened abortion). Causes include beginning of labour, placenta previa, placental abruption, uterine rupture, local lesions of the vagina or cervix or bleeding disorders. Placental abruption and uterine rupture may be accompanied by severe pain and other indications. Uterine rupture normally occurs after a prolonged labour but may occur early after contractions have started if there is a previous cesarian section scar in which case the onset of labour might not have been diagnosed.

For any bleeding in the 2nd and 3rd trimester apart from a "show" marking the onset of labour:

- Give an IV with 500ml ringers lactate or 0.9% sodium chloride.
- Vaginal examination is not performed in case further haemorrhage is provoked. Do an US if available.
- If the woman is bleeding heavily and is in shock, the perfusion

can be given rapidly in 10 minutes. If she still has signs of shock a further 500ml is given.
- Blood group and x match. Transfusion is considered if > 1 litre of blood loss (see 4.2).
- Urgent surgical assessment and intervention as appropriate.

Bed rest is needed for placenta praevia. Delivery by CS if a complete placenta praevia after 37 weeks (or before if severe bleeding). For placental abruption, assess clotting status and transfuse as necessary as blood loss is always more than the observed amount. Deliver the woman as soon as possible by whatever method is appropriate.

Raised blood pressure in pregnancy

There are three principle mechanisms of raised BP in pregnancy – chronic hypertension dating from before the pregnancy, gestational hypertension that develops during the pregnancy and pre-eclampsia. For chronic hypertension for a woman wanting to conceive, aim for normal weight, do not use ACE inhibitors, or chlorthiazide, but change to other antihypertensive.

Pre-eclampsia is diagnosed with raised BP (> 140/90) AND proteinuria. It can worsen very rapidly. Pre-eclampsia is a leading cause of maternal death and stillbirth so regular ANC attendance is vital and the *BP should always be measured*.

Management of women with high BP before conception (*chronic hypertension*) or during pregnancy (*gestational hypertension*)
- Monitor BP at every visit
- Give aspirin 75mg 1 x per day from 12 weeks to reduce risk of pre-eclampsia.
- If low calcium in diet, 1.5-2g of calcium a day may reduce risk of pre-eclampsia.
- Aim to keep BP under 140/90 but diastolic above 80.
- Do NOT advise bed rest (no benefit and increases DVT risk)
- Advise stopping smoking.
- If BP < 150/100, monitor BP and urine for protein weekly.
- If BP > 150/100 start daily oral medication and monitor twice a week.
- FBC, U&Es, LFTs if available when drugs started and weekly to monitor.
- If proteinuria, manage as pre-eclampsia below.

- If BP > 160/110 admit. Start or increase medication, monitor BP 4 x per day.

Management of raised BP > 140/90 in pregnancy, proteinuria present (*pre-eclampsia*)

- Once pre-eclampsia diagnosed no need to repeat urine for protein again.
- Admit and monitor regularly.
- If BP < 150/100 monitor in accommodation near hospital, at 3 x per week.
- If BP > 150/100 keep in hospital. Start daily oral medication.
- FBC, U&Es, LFTs if available 3 x a week to monitor.

Symptoms of pre-eclampsia include a headache that doesn't go away with paracetamol, flashing lights, severe pain in the liver area, new or worsening oedema in the feet and hands. Blood changes to look out for in pre-eclampsia: low platelet count, rising haematocrit, renal failure, electrolyte imbalance, rising liver enzymes.

Medication for raised BP in pregnancy

- Methlyodopa PO 250mg 2 – 3 x per day, maximum 3g/day
- Labetalol PO 100mg 2 x per day, maximum 2400mg/day (but don't give if asthmatic)
- Hydralazine PO 25mg 2 x per day. Maximum 50mg 2 x per day

Side effects of methyldopa: indigestion, dry mouth, dizziness. *Rarely*: hepatitis, blood disorders

Emergency treatment of pre-eclampsia and eclamptic fits

If unconscious:

- Check her airway
- Put her in the recovery position on her left side

If she is also convulsing

- Put her in the recovery position on her left side
- Protect her from injuries (fall) but do not restrain her
- A member of staff must stay with her at all times
- Give magnesium sulfate by slow IV injection and also give by IM injection

Once the convulsions have been controlled, emergency delivery will be needed by whatever method is most appropriate.

Treatment with magnesium sulfate.

Preparation of magnesium sulfate injection: Mix 8ml of Magnesium Sulfate 500mg/ml (50% solution) from ampoule with 12ml of water for injection or normal saline (0.9% sodium chloride from a perfusion bag).

Loading dose: Give 4g of magnesium sulfate by slow IV injection over 10 to 15 minutes timed on a clock. Then give 10g by deep IM injection, 5g into each buttock, adding 1ml of 2% lignocaine.

Maintenance dose (normally given in RHC or hospital): 5mg Mag Sulp + 1ml of 2% lignocaine every 4 hrs into alternate buttocks.

Withhold Mag Sulph if any of the following:

- Respiratory rate < 16 per minute
- Urinary output < 30ml per hour
- Patellar reflex is absent

ONLY if magnesium sulfate is not available, give IV or rectal diazepam. Either give slow IV Diazepam 10mg or give rectally.

Follow this with IV infusion by mixing 40mg of diazepam from 4 x 2ml ampoules into 500ml of 5% Dextrose given as a continuous infusion over 24 hours.

Hydralazine for treating high blood pressure of pre-eclampsia

Hydralazine, 5 – 10mg in 10ml sodium chloride 0.9% by slow IV injection. May be repeated after 20 minutes timed on a clock.

Preparation of hydralazine injection: Mix 20mg of hydralazine from ampoule with 20ml normal saline (0.9% sodium chloride from a perfusion bag) but only give 5 to 10ml of the mixed solution.

Premature rupture of the membranes (PROM)

PROM > 37 weeks. If the woman is at term, then labour is augmented over the next 24 hours with oxytocin drip if there are no contraindications to its use.

PROM < 37 weeks. If there are no contractions, give antibiotics. If between 24 and 32 weeks also give steroids.

- Antibiotics to prevent infection. Give amoxicillin PO 500mg 3 x day and erythromycin PO 250mg 3 x per day for 7 days..
- Steroids to promote maturity of the fetal lungs to prevent respiratory distress syndrome if between 24 and 32 week. Give

dexamethasone IM 6mg every 12 hours for 2 days (4 doses, no more) or predinisolone PO 20mg 1x day for 2 days.
- Salbutamol relaxes the myometrium to prevent contractions. Give salbutamol PO 4mg 3 x day for 2 days. Do not give for longer than this.

Treatment note: Corticosteroids should not be used in the presence of frank infection.

Vaginal delivery
All women should deliver with a skilled birth attendant either in a HC, RHC or hospital. All maternities are staffed and equipped to offer full basic emergency obstetrical and newborn care (BEmONC), which consists of 24 hour care provide by trained midwives for normal deliveries, with emergency referral available at all times to RHC or hospital where Comprehensive emergency obstetrical and newborn care (CEmONC) is provided (with safe blood transfusion, augmentation of labour, assisted delivery, cesarian section). Midwives are not permitted to arrange to do routine home deliveries but must encourage all women to come to the HC, RHC or hospital to give the best chance of safe delivery. Full BEmONC guidelines are followed for delivery care and active labour is charted on a partograph (once the cervix is 4 or more cm dilated). The use of oxytocin, misoprostol or rupture of the membranes to augment labour are only permitted at RHC and hospital level. If the pregnancy is > 41 weeks, the woman can be referred to be observed while awaiting delivery and for consideration of induction.

Episiotomy
is not routinely carried out. Midwives support the perineum during normal vaginal delivery to limit potential tearing during delivery of the head. Episiotomy is only considered in case of complicated vaginal delivery, but usually for women with a specific complication such as for breech presentation, for failure to progress, for fetal distress or previous scarring from female genital cutting or poorly healed third degree tears. Note that staff are forbidden by Somali law from re-stiching up the vagina in a case of FGM (known as re-infibulation). This is part of the move by the government to ban the practice of FGM practice by health workers.

PMTCT
Full PMTCT guidelines are followed and adhered during labour as during antenatal care.

Pethidine for pain control during labour

If pain control is needed during labour, pethidine IM may be used with care. Pethidine should only be used if naloxone is available in case of respiratory depression in the newborn.

- Give prochlorperazine 5mg to prevent nausea from pethidine.
- Give IM injection of 50mg pethidine.
- Assess after 30 minutes and if analgesia not adequate and no side effects may repeat IM injection.
- Further IM injection may given 3 – 4 hours later but not before.

Treatment note: Onset of action of IM pethidine within 10 -20 min and lasts for 2-4 hours.

Precaution: Do not exceed dose. May cause depression of breathing of fetus and mother. Must not give more than 400mg pethidine in 24 hours. *Do not give* if woman has any difficulty breathing or any fetal distress.

Medicine	Age	Dose	Duration	Side effects
Pethidine 50mg/ml in 1ml vials	Adults	1 x 50mg vial given by deep IM injection in buttock.	1 x 50mg IM can be repeated after 30 minutes if pain control not adequate. Injection can be repeated after 3 to 4 hours.	**Common:** nausea & vomiting, lower BP, faster or slower heart beat, drowsiness **Rare:** depression of breathing (increases with dose), palpitation

Induction and augmentation of labour

Augmentation of labour with oxytocin is only used in CEmONC centres (RHC and H) by experienced staff where on-site operative delivery is available but not if the woman has had a previous CS. Assisted delivery with vacuum extractor (ventouse) may only be performed by staff trained in the technique following CEmONC guidelines. Oxytocin may be used if the cervix is favourable (Bishop score > 6) and the membranes are ruptured.

Induction of labour:

Either Insertion of Foley (balloon) catheter in cervix for 12 hours, followed by amniotomy and oxytocin.

Or Oral misoprostol 25 micrograms every 2hrs maximum 12 doses or vaginal misoprostol 25 micrograms every 6hrs maximum 4 doses.

Augmentation of labour:
Use oxytocin 5iu in 500ml 0.9% sodium chloride. Commence at 15 drops per minute and increase by 15dpm every 30mins to a maximum of 60dpm. Aim to produce 3 contractions in 10 minutes lasting 40-45secs. Reduce rate as sensitivity to oxytocin usually increases as labour progresses.

If hyperstimulation occurs, stop the infusion. If necessary give salbutamol 5mg in 500ml normal saline perfusion at 10dpm if available. Do not give salbutamol my mouth as the prolonged effect my stop contractions for a longer period of time.

Active management of the third stage of labour

- Oxytocin 10 IU given IM single dose is given after the baby has been delivered for all women (ie when the second stage is completed but before the placenta has been delivered).
- Where oxytocin is unavailable, misoprostol may be used instead but after the placenta has been delivered. A dose of 600 micrograms (3 x 200 microgram tablets) single dose is given either orally, or under the tongue or rectally.
- Controlled cord traction (CCT) is optional and depends on clinical decisions relating to the third stage of each delivery.
- Early cord clamping is not usually carried out so as to allow the newborn to get the maximum amount of blood from the placenta, unless the newborn is asphyxiated and needs to be resuscitated in which case the cord is clamped and resuscitation initiated.
- Continuous uterine massage is not recommended, but uterine tonus is observed frequently through palpation.
- If the placenta is not delivered within 30 minutes, if uterine contraction is still very poor (atonic uterus) or if there is a postpartum haemorrhage, intervention may be needed.

Treatment note: Oxytocin is the choice medicine used for improving uterine tone, aiding delivery of the placenta and preventing postpartum haemorrhage, and is used in preference to misoprostol. If misoprostol is used, common side effects are diarrhea and nausea, and sometimes vomiting.

Complications during labour

Depressed fetal heart rate.

If the fetal heart rate is falling below 120 per minute, take all appropriate action as per EmONC guidelines. Type 1 dips of the fetal heart rate with a return to normal at the end of the contraction are normal, but if there is any delay in return to normal (type 2 dip) this is a sign of fetal distress. This may be accompanied by meconium staining of the liquor. If the head is engaged and the cervix fully dilated, then normal vaginal delivery can be carried out (or labour assisted by ventouse if any delay and further dips). If the head is not engaged, the cervix not fully dilated, or there are any other complications, then operative delivery is indicated by CS. While awaiting assessment or operation the woman is placed on her left hand side with an IV perfusion of ringers lactate (or normal saline, unless there is pre-eclampsia when no IV fluid is given).

Caesarean section

Follow CEmONC guidelines.

- Start IV infusion (ringers or normal saline), take blood for Hb, Group and X-match 2 units.
- General, regional or local anaesthesia according to MOH and hospital guidelines, with ketamine or spinal preferred.
- With ketamine by IV bolus or infusion, diazepam is not given until after delivery of the baby.
- IV oxytocin 5iu is given slowly after deliver of the baby, and the placenta delivered by controlled cord traction (less risk of endometritis than from manual removal).

Management of postpartum haemorrhage

- Give IV ringers or 0.9% sodium chloride (not dextrose). Add oxytocin 40iu to 500ml.
- Insert 2 large bore IV cannulas and test Hb, blood group, and X-match blood.
- Massage the uterus
- Follow full CEmONC guidelines for PPH. Repair any tears (cervical, vaginal). If retained placenta or incomplete delivery of placenta then manual removal of placenta is needed and IV antibiotics given. After removal give oxytocin 10iu in 500ml perfusion at 60dpm. If bleeding continues, give misoprostol 600 micrograms rectally.
- Transfuse as necessary while conducting correct surgical procedures as per guidelines. For management of DIC see 4.2.

Care after delivery for the woman

After delivery, the woman is monitored closely in the maternity for any signs of further bleeding or anaemia, ensuring that the uterus remains well contracted. The BP is monitored and signs of infection are monitored. For raised BP and anaemia refer to the guidelines previously in this section on maternal health.

Treating postpartum infection

- Diagnosis is made based on continued bleeding, fever, offensive discharge, abdominal pain, poorly contracted uterus, or burning on urination.
- If there is fever in a malarial area, RDT it done. If RDT + treat for malaria as well as the below steps.
- **Give antibiotics:** Ampicillin 2g IV or Amoxicillin PO 2g every 8 hours AND metronidazole IV or PO 500mg or 400mg every 8 hours AND gentamicin 5mg/kg IM once every 24 hours. If the woman is allergic to penicillin or amoxicillin give erythromycin instead of amoxicillin.
- Put up IV fluids, 500ml ringers lactate.

A combination of antibiotics is given until the woman is fever-free for 48 hours. If fever is still present 72 hours after starting the antibiotic regime outlined above, the doctor will re-evaluate the woman and her treatment.

Breast infection

Breast infection is a common problem 2 to 4 weeks after delivery, and can present as mastitis (fever, breast pain and tenderness) or a breast abscess (collection of pus in the breast). Women with extensive mastitis and systemic signs or a breast abscess must be referred, but women with early mastitis confined to a small area of the breast can be treated. For women with cracked nipples apply glycerine gel or vaseline after feeding the newborn.

Treatment of mastitis

- Give antibiotic:
  - cloxacillin 500mg 4x per day for 7 – 10 days **OR**
  - co-amoxiclav 500mg/125mg 3 x per day for 7 - 10 days. **OR** (If there is penicillin allergy) erythromycin 500mg 4 x per day for 7 – 10 days.
- Give paracetamol for pain control.

- Continue breast feeding from the good breast and either encourage breast feeding on the affected side if not too painful or gently express milk.
- Support breasts with bra or other support.
- If abscess, give first dose of antibiotic, pain control and may need incision and drainage.

PMTCT

Full PMTCT guidelines are followed and adhered to after delivery for mother and baby in referral centres. Women not previously tested are given pre-test counselling, and have voluntary testing for HIV, followed by post-test counselling. Any women with HIV and HIV exposed infants (HEI) who had not previously been referred before or during labour needs initiation of ARV and appropriate interventions.

Postnatal depression and psychosis

Depression can affect one in ten women after delivery and can present soon after giving birth and can last for months. Symptoms include sadness, low mood, loss of interest (including in her baby) and loss of energy. The woman may cry frequently or not bond well with her baby, have no sense of humour or neglect her appearance. Postnatal psychosis is much rarer and presents with the woman feeling depressed one moment then very happy, or saying things that are obviously untrue (delusions), often related to the baby or hearing voices. For the treatment of depression and psychosis *see 8.1 & 8.2*.

1.2 Immediate care for newborns

Steps in the routine care of the newborn after birth

- Immediate drying with a towel, clean cloth or gauze
- For babies not spontaneously breathing: initial stimulation by rubbing the back 2 -3 times
- Routine nasal or oral suction should not be done even if there is meconium staining.
- Late cord clamping after 1 to 3 minutes while other care continues.
- Newborns without complications should be kept in skin-to-skin contact with their mothers during the first hour after birth to prevent hypothermia and promote breastfeeding. Breastfeeding should be initiated as soon as possible, when the mother and baby are clinically stable and the newborn able to suck.

- All newborns, including those with complications, should be given 1 mg of vitamin K IM one hour after birth.
- Clean, dry cord care (antiseptic not routinely used)
- Keeping the newborn warm. Bathing is delayed for 24 hours except in HIV exposed babies. Wrap one or two layers of clean dry clothes and a cap/ hat put on. The mother and baby are together at all times.
- Growth monitoring – the newborn's birth weight, height and head circumference are measured and plotted on a growth chart.

Detecting danger signs in newborns

The following signs are assessed when the newborn is in the maternity and when seen on postnatal visits and the family should be encouraged to seek health care early if they identify any of the following danger signs in-between postnatal care visits:

- Unable to suck or feed well
- convulsions
- fast breathing (breathing rate ≥60 per minute), severe chest in-drawing
- no spontaneous movement
- fever (temperature >37.5 °C)
- low body temperature (temperature <35.5 °C)
- any jaundice in first 24 hours of life, or yellow palms and soles at any age
- bulging fontanelle
- bleeding or infection of umbilical stump
- any signs of congenital abnormality
- not passing urine or stools

Resuscitation of the newborn with a low apgar score

The key to successful resuscitation of babies born with asphyxia and low apgar scores in correct use of the newborn bag and mask by experienced staff. Medicines are not needed for resuscitation. Oxygen is freely available at a concentration of 21% in the air around us. This is administered via the bag and mask. Suction of the nose and mouth is not conducted (even if there is meconium staining) unless they are full of secretions. In this case suction is carried out with a sterile bulb syringe. *Consult EmONC guidelines*.

Naloxone for respiratory depression in newborn

Naloxone is only stocked if pethidine is authorised for use for pain control during labour. It is only used to reverse the effect of pethidine.

- If apgar score < 7 at birth or if breathing decreases after birth there may be respiratory depression caused by pethidine.
- Continued breathing support is given with a mask and ambubag to the newborn
- If spontaneous respiration has still not established after continued ambubag use, naloxone may be needed.
- If indicated, give Naloxone 0.1mg/kg IM single dose.
- Continue with bag and mask if needed

Treatment note: Measure the naloxone very carefully. It usually comes in vials of 0.4mg in 1ml. For 2kg baby give 0.2mg (0.5ml) naloxone. 3kg baby give 0.3mg (0.75ml). 4kg baby give 0.4mg (1ml) naloxone.

Medicine	Age	Dose	Duration	Side effects
Naloxone 0.4mg in 1ml	Newborn 2kg Newborn 3kg Newborn 4kg	0.2mg (0.5ml) IM 0.3mg (0.75ml) IM 0.4mg (1ml) IM	Single dose	**Common:** fast heart rate **Rare:** vomiting

Infection in newborns

Prevention of infection

Newborns at risk of infection (premature rupture of membranes, maternal fever, offensive amniotic fluid) are treated with antibiotics benzyl penicillin and gentamicin for 2 days. If they develop signs of infection a full course is needed.

Treating signs of infection in newborns

Newborns at risk of infection (premature rupture of membranes, maternal fever, offensive amniotic fluid) or with signs of infection (fever, very fast heart > 140/minute, fast breathing > 60/ minute, floppy, blue colour or pallor, bulging fontanelle) are treated with antibiotics benzyl penicillin and gentamicin. If a newborn has pustules on the skin antibiotics are given. Diagnosing the site of infection is difficult and meningitis, pneumonia and septicaemia may present with these similar signs.

Treatment with benzylpenicillin

Medicine	Age	Dose	Duration	Side effects
Benzylpenicillin 600mg pdr/inj vials	Newborns < 7 days	25mg/kg IM 2 x day (every 12 hours)	2 days for prevention 10 days for treatment	**Rare:** allergy, mild or severe reaction,
	Newborns 7 – 28 days	25mg/kg IM 3 x day (every 8 hours)		
Prescribing tip: Dosage must be calculated very carefully.				

Treatment with gentamicin

Medicine	Age	Dose	Duration	Side effects
Gentamicin 80mg vials (40mg/ml)	Newborns < 7 days	2.5mg/kg IM every 12 hours (2 x day)	2 days for prevention 7 days for treatment	**Rare:** vomiting, deafness, kidney damage
	Newborns 7 – 28 days	2.5mg/kg IM every 12 hours (2 x day)		
Prescribing tip: Dosage must be calculated very carefully.				

For treatment of conjunctivitis in the newborn *see 10.2*

Immunisation

BCG and polio vaccine are given before the newborn leaves the health centre after birth. A single dose of BCG is given to prevent tuberculosis. The oral polio birth dose is called the zero dose as it does not count toward primary series but is vital in contributing towards polio eradication. Currently immunisation against hepatitis B is given as part of the pentavalent vaccine from 6 weeks. In the future there may be a separate hepatitis B vaccine that could also be given shortly after birth.

BCG	
Type of vaccine	Live bacterial
Number of doses	One
Schedule	As soon as possible after birth
Booster	None
Contraindications	Symptomatic HIV infection
Adverse reactions	Local abscess, regional lymphadenitis; rarely, distant spread to osteomyelitis, disseminated disease

Special precautions	Correct intradermal administration is essential. A special syringe and needle is used for the administration of BCG vaccine
Dosage	0.05ml
Injection site	Outer upper left arm or shoulder
Injection type	Intradermal
Storage	Store between 2°C–8°C (vaccine maybe frozen for long-term storage but not the diluent). Discard if > 6 hours after reconstitution.

OPV	
Type of vaccine	Live oral polio vaccine (OPV)
Number of doses	Four in endemic countries (including birth dose)
Schedule	At birth*, 6, 10, 14 weeks
Booster	Supplementary doses given during polio eradication activities
Contraindications	None
Adverse reactions	VAPP (paralysis) occurs very rarely (approximately 2 to 4 cases per million children vaccinated)
Special precautions	Children known to have rare congenital immune deficiency syndromes should receive IPV rather than OPV.
Dosage	2 drops by mouth
Storage	Store between 2°C–8°C (maybe frozen for long-term storage)

Postnatal and essential newborn care after discharge from the maternity

It is recommended that a woman stays for at least 24 hours in the maternity after delivery. Women are encouraged to mobilise as soon as appropriate after birth. After returning home, she should be come back for postnatal visits to see the midwife on:

- day 3
- between the 1st and 2nd week
- around the 6th week

Her health is reviewed together with her baby's. Midwives also do home visits. During these clinic appointments and home visits midwives follow the full postnatal and essential newborn care guidelines. They guide the mother on exclusive breastfeeding, washing and clothing the

baby, on care of the umbilical stump, on signs of illness, on danger signs, on growth and immunisations

They do first line interventions, look out for, and admit to the RHC or H any women with serious complications such as pelvic inflammation, haemorrhage, raised BP, DVT and postnatal depression in the mother or any danger signs in the baby.

1.3 Special care for newborns

Care of preterm and low birth weight babies

Low birth weight (LBW) < 2500g and premature babies should be provided *kangaroo care* for at least the first week of life. Babies > 1500g able to suckle normally and with no complications can be observed on the post-delivery ward. All babies < 1500g (*very* LBW) should be moved immediately to the special care baby unit, maintaining kangaroo care during transfer and ensuring breast milk has been given (expressed, using a cup and spoon) or glucose. Kangaroo care is the most reliable and safest way of keeping LBW babies warm and protected. Incubators should only be used if there is a guaranteed 24 hour power supply, the incubators are fully maintained and staff are fully trained and supervised to use them, but even when using incubators, kangaroo care should be used whenever possible.

Newborn seizures

Seizures in newborns should only be treated if they last longer than 3 minutes or are repeated. Glucose is given to all babies with seizures by staff who are trained to give it (5ml/kg of 50% glucose given IV). If there are other signs of infection, antibioitics are given.

Jaundice of newborns

Newborns with jaundice appearing on the first day or deeply coloured enough to appear on palms and soles usually needs treating. If there is very mild yellow colouration of the conjunctiva that appears after the first day and there are no signs of infection or illness the baby may be initially observed.

<u>Treatment of newborns with jaundice (from indirect hyperbilirubinaemia)</u>

- Treatment with phototherapy can only be carried out *by staff specifically trained* to do this following hospital standard operating procedures (SOPs)
- Treat underlying causes of hyperbilirubinaemia and factors that increase risk of kernicterus (sepsis, hypoxia, etc.).

- Hydration.
- Initiate phototherapy. Flitered sunlight is as effect as artificial light but must be administered according to strict hospital protocols, using a filter, and monitoring and correcting any possible decrease or increase in temperature.
- Monitor bilirubin levels if available
- Give exchange transfusion when indirect serum bilirubin levels reach maximum levels, or severe clinical jaundice

Haemolytic disease of the newborn

Haemolytic disease of the newborn (HDN) is caused by antibodies that are produced by the mother which can cross the placenta and destroy the baby's red cells. HDN due to ABO incompatibility between mother and infant does not affect the fetus in utero, but is an important cause of neonatal jaundice. HDN due to Rh D incompatibility is an important cause of severe fetal anaemia. The fetal red cells are haemolysed, causing severe anaemia or death in utero, brain damage after birth from high levels of bilirubin.

Screening and management in pregnancy and after delivery.

The ABO and Rh D group of all pregnant women should be determined when they first attend for antenatal care if testing is available. If no antibodies are detected at the first antenatal visit, the pregnant woman should have a further antibody check at 28–30 weeks gestation.

- Anti-Rh D immunoglobulin prevents the sensitization and production of antibodies in an Rh D negative mother to Rh D positive red cells that may have entered the maternal circulation.
- Postpartum prophylaxis is the most common approach to the prevention of Rhesus disease.
- Give anti-Rh D immunoglobulin in a dose of 500 mg/IM to a Rh D negative mother within 72 hours of delivery if the fetus is Rh D positive.

If any sensitizing event occurs during the antenatal period, give:

- 250 mg of anti-Rh D immunoglobulin IM up to 20 weeks gestation
- 500 mg of anti-Rh D immunoglobulin IM from 20 weeks to term.

Antenatal prophylaxis

- If available, the following can be given to all pregnant women who are Rh D negatve:
- 500 mg anti-Rh D immunoglobulin IM at 28 and 34 weeks OR a single larger dose: 1,200 mg IM early in the third trimester.

Exchange transfusion for treating haemolytic disease of the newborn

This can only be carried out by staff specifically trained to do this following hospital standard operating procedures, and consult page 149 – 151 of *"WHO (2002) The clinical use of blood"*

- Use a group O blood unit that does not carry the antigen against which the maternal antibody is directed: For HDN due to anti-D: use group O Rh D negative
- An exchange transfusion of two times the neonate's blood volume (about 170 ml/kg) is most effective to reduce bilirubin and restore the haemoglobin level; this can usually be carried out with one unit of whole blood, but calculate according to the WHO guidelines or hospital SOP.

Neonatal intensive care

Guidelines will be included in the next edition of the STGs on neonatal intensive care and on conditions that affect premature babies.

1.4 Birth spacing

Birth spacing is one of the most important practices to maximise the health and nutrition of women, young children and families. The use of modern methods of birth spacing has a huge impact in reducing deaths of women and babies. Birth spacing empowers families to decide how many children they would like and helps them plan the timing of the next child. Birth spacing helps provide couples with reproductive choices. Contraceptives should be provided to clients by providers who have been trained to provide that method and in line with the *National Birth Spacing Guideline for Service Providers*. Birth spacing counselling and services are provided during the continuum of care from antenatal through postnatal periods, and includes counselling on both natural contraceptive methods and modern contraceptive methods. Hormonal contraceptives are highly effective, safe and convenient. The combined pill containing oestrogen is not advisable for women who are breastfeeding as this can suppress milk production, whereas the progestogen-only pill is ideal for breast-feeding mothers.

Hormonal contraception is the most effective method of birth spacing, but with major and minor side effects for some groups of women. IUDs are highly effective but may produce local undesirable side-effects, and should not be used in women with an increased risk of pelvic inflammatory disease. Barrier methods alone (male and female condoms) are less effective but can be reliable for motivated couples. Natural contraceptive methods are perfectly safe but much less reliable.

Women living with HIV are advised to use dual method (Condom and another contraceptive method). The condom prevents re-infection with other HIV strains or STIs. Women with HIV can use most methods of birth spacing apart from spermicides, the diaphragm or caps with spermicide.

Modern contraceptive methods

1. Condoms
2. Combined oral contraceptive pill (COC)
3. Progestogen-only pill (POP)
5. Progestogen-only contraceptive injection
6. Intrauterine contraceptive device
7. Implant
8. Emergency contraception (EC)

Precaution: People prescribing the COCP and POP, or fitting the IUD or implant should be specially trained and follow the full protocol: the guidance given here is only a brief treatment summary.

1. Condoms

Counselling is given on condom use at appropriate moments in consultations with men, women and adolescents in line with training and national birth spacing guidelines. Condoms must be used correctly to prevent STIs and to reduce pregnancies. The risk is greatest when condoms are not used with every act of sex.

2. Combined oral contraceptive pill (COC)

The COC is reliable and reversible, reduces heavy and painful periods, and reduces pre-menstrual tension. The COC is sometimes prescribed by doctors for women with very heavy periods and other gynaecological disorders. Many preparations of COC are manufactured. There is no evidence that any one COC is better than another in terms of effectiveness, although some have higher thrombotic risk than others.

Only one generic is included here, but alternatives may in the future also be recommended for use in the national program.

Women with HIV can safely use the COC unless they are on the ARV ritonavir. Condoms are also advised to help prevent HIV transmission.

Treatment steps

- Counselling on all contraceptive options
- If breast feeding, offer POP instead and not COC, because estrogen suppresses milk production.
- Ensure no history of heart, breast or liver disease, of sickle cell disease, or history of a deep vein thrombosis, pulmonary embolus or stroke, or of migraine headaches. (The COC should not be given if any of these are positive in the history).
- Check BP to ensure it is normal
- Give 3 packs for 3 months and fully explain how to take it.
- Review in 3 months, ask about side effects, check BP. If all is well a further 6 months treatment (6 packs) can be given.

Treatment note: Take first pill on first day of the menstrual cycle. Each tablet should be taken at about the same time each day. Tablets are taken either continuously (28 pack, with 21 active and 7 "dummy" pills) or with a 7 day break (21 pack). If changing from injectable progesterone (Depot-Provera) to the COC, a woman can start the pill on the day the next injection would have been due but should use extra precautions for the first 7 days ('quick starting').

Advice:

- **Missed pill.** Must be taken at the same time each day. If a woman forgets, then she should take the pill as soon as she remembers even if it is near the time of taking the next days pill, which should still be taken. If more than 24 hours late, or misses 2 or more pills, she should take a pill and other precautions (condoms) should be used for the next 7 days or abstain from sex. In addition, the next 21 days of the pill should be taken without the usual 7 day break.
- **Vomiting and diarrhea.** If a woman taking the pill vomits within 2 hours, she should take another pill. If she continues vomiting or has diarrhea for more than 24 hours she should continue taking the pill but use other precautions (condoms) for the next

7 days or abstain from sex.

- There is only a *very* small increased risk of breast and cervical cancer from prolonged taking of the COC but the risk disappears 10 years after stopping the pill. There is a *reduced* risk of cancer of the ovary and uterus when on the COC.

Precaution: The COC should be prescribed with caution in smokers and for women with obesity, and smoking-cessation advice or weight-reduction advice should be given.

The COC should be stopped if there is sudden severe chest pain, sudden breathlessness, unexplained swelling in the calf, severe stomach pain, severe headache or migraine or neurological effects, hepatitis or raised BP and the woman admitted immediately, investigated and treated for possible DVT, PE or other pathology. The COC should be stopped before surgery.

Medicine	Age	Dose	Duration	Side effects
Ethinylestradiol + Levonorgestrel 30mcg + 150mcg tablet, 28 pack with 7 inactive tabs	Women and adolescent girls	1 tablet per day	Continuous; take next pill packet without a break.	**Common:** shorter, lighter periods, nausea, breast changes, mood changes, acne (improve or worsen), migraine **Rare:** deep vein thrombosis (in calf of leg) can also cause pulmonary embolus (but DVT risk less than in pregnancy)

Medicine	Age	Dose	Duration	Side effects
Ethinylestradiol + Levonorgestrel 30mcg + 150mcg tablet, 21 pack	Women and adolescent girls	1 tablet per day	Take for 21 days then have a 7 day break	**Common:** shorter, lighter periods, dizziness, nausea, breast changes, mood changes, acne (improve or worsen), migraine **Rare:** deep vein thrombosis (in calf of leg) can also cause pulmonary embolus (but DVT risk less than in pregnancy)

3. Progestogen-only pill (POP)

POPs are a good alternative to COCs when estrogens are contraindicated (for breast-feeding mothers, in those with a history of DVT or migraine, in very obese women or those with raised BP, those with sickle cell disease). POPs can also be taken before and after major elective surgery. Irregular or heavy periods are more common on the POP but often resolve with continued treatment. The POP needs to be taken within 3 hours of the same time each day otherwise the contraceptive effect may be lost, making it not so good for women who find it difficult to remember. Many preparations of POP are manufactured. Only one generic is included here, but alternatives may in the future also be recommended for use in the national program.

Women with HIV can safely use the POP unless they are on the ARV ritonavir. Condoms are also advised to help prevent HIV transmission.

Treatment steps

- Counselling on all contraceptive options
- Do not give if continued vaginal bleeding or severe hypertension.
- Check BP
- Give 3 packs for 3 months and fully explain how to take it, at the same time each day and without a break.
- Review in 3 months, ask about side effects, check BP. If all is well a further 6 months treatment (6 packs) can be given.

Treatment note: Take first pill on first day of the menstrual cycle. Each tablet should be taken at about the same time each day. Tablets are taken continuously. If changing pills from COC there should be no 7 day break, the POP is taken the day after 21 days of the COC has been completed. If it was a 28 pill pack, then the woman also starts the POP after 21 days and the 7 inactive pills are not taken.

Advice:

- If starting less than 3 weeks postpartum, condoms are not needed; if more than 3 weeks postpartum then condoms should be used for sex or abstinence in the first 2 days after starting the POP.
- If the pill is missed by more than 3 hours then the contraceptive effect may be lost. The pill is taken but condoms should be used or abstinence for the next 2 days.
- Vomiting and diarrhea. If a woman taking the pill vomits within 2 hours, she should take another pill. If she continues vomiting or has diarrhea for more than 24 hours she should continue taking

the pill but use other precautions (condoms) for 2 days after recovery or abstain from sex for those 2 days.

Medicine	Age	Dose	Duration	Side effects
Levonorgestrel 30mcg 28 pack	Women	Take 1 per day	Continuous treatment.	**Common:** irregular periods (may spot or bleed throughout cycle); nausea, headache **Rare:** vomiting, breast discomfort, depression, skin disorders

4. Progestogen-only contraceptive injection - DMPA (depot medroxyprogesterone acetate)

Injectable contraception is safe and reliable and the contraceptive effect is as good as the COC. Injections are useful for those who often forget to take an oral pill or who do not want to take a pill every day. Injectable contraception usually causes an absence of menstrual periods, which may an advantage for some women. Other advantages include reducing the incidence of sickle cell crises, can help with some conditions of the uterus, reduce the risk of an ectopic pregnancy and help reduce iron-deficient anaemia in those who formerly had heavy periods. There is usually a delay in the return of fertility of 3 to 4 months after a next injection would have been due, but there is no evidence of permanent infertility. However a woman must be warned that from when the next injection is due, if she doesn't have it she may ovulate and become pregnant before having a period. It can be used postpartum but is not the first choice of contraception within 6 weeks of birth to breastfeeding mothers because it may cause irregular bleeding (but can still be given if this side effect is explained).

Women with HIV can safely use the contraceptive injection. Condoms are also advised to help prevent HIV transmission.

Treatment steps

- Counselling about all contraceptive options.
- The first dose is given by deep IM injection in the first 3 days of the menstrual period
- Continued contraception with deep IM injection given every 3 months
- Continue to advise on alternative contraception

Treatment note: DMPA (depot medroxyprogesterone acetate) is given

every 3 months, but can be given 2 weeks earlier or up to 4 weeks later than the due date.

Advice: Return for next injection in 3 months.

Precaution: Because of its prolonged effect, and delayed return to fertility after discontinuation, it should only be given after full counselling and discussion of alternatives. Do not give to women with unusual or undiagnosed vaginal bleeding.

Medicine	Age	Dose	Duration	Side effects
Depo-medroxyprogesterone acetate DMPA (Depo.Provera) 150mg injection	Women	1 deep IM injection every 3 months	One injection lasts 3 months	**Common:** absence of periods, or irregular periods; delayed return to fertility **Rare:** prolonged bleeding

5. Intrauterine contraceptive device (IUD)

An IUD is a flexible device fitted inside the uterus by a specially trained service provider. They are normally safe and very effective and provide long-acting contraception. The most effective IUD is the intra-uterine system (IUS) that are plastic devices with slow release progestogen, but these are expensive and not normally available. More widely available is the copper IUD (Cu-IUD), (currently the *Copper T380A*) made of plastic in a "T" shape, with copper sleeves on the arms and copper wire wrapped around the stem. It provides protection from pregnancy for as long as 12 years. Return of fertility is not delayed after an IUD is removed. Breastfeeding women can have an IUD fitted two days after delivery if there is no infection (except for the intrauterine system (IUS) which should not be fitted until one month postpartum). Women who have had pelvic-inflammatory disease, or a repeat history of STIs, *should not have* an IUD inserted. If available, the intrauterine system (IUS) offers very effective contraception and significantly lessens menstrual bleeding (or may stop it).

Treatment steps

- Counselling about all contraceptive options.
- Only specially trained service provider to counsel and fit IUDs.
- Eligibility criteria for the IUD are checked.

Eligibility criteria:

- Do not fit an IUD in the first week after birth
- if any infection postpartum or after abortion.
- if there is unexplained vaginal bleeding.
- If there is any gynaecological condition
- If the woman has HIV or a chronic infection
- If the woman has high risk of STIs
- If the woman is pregnant

Treatment note: Only specially trained service providers may fit IUDs. They follow the protocol with a full infection-prevention technique. This includes giving ibuprofen or paracetamol 30 minutes before insertion to reduce pain and cramping. Aspirin must not be given.

Precaution: The copper IUD (Cu-IUD) may make periods may last longer and become heavier and as a result may be more painful, and there may be break-through bleeding.

There is a small risk of uterine perforation.

6. Implant

The implant contraceptive is a flexible rod containing a progestogen that is inserted subdermally (within the skin) in the lower surface of the upper arm. It provides contraception for 3 years and is highly effective. Earlier replacement is recommended in heavier women. The contraceptive effect is rapidly reversed by removal. Implants have similar side effects to injectable progestogen-only contraceptives, having a positive effect in reducing the risk of ectopic pregnancy and help reduce iron-deficient anaemia by reducing menstrual periods.

Women with HIV can safely use the implant for contraception. Condoms are also advised to help prevent HIV transmission.

Only nurses, midwives and doctors who are fully trained in counselling women and in fitting implants are authorised to fit implant contraceptives. They should advise women and potential changes to their menstrual cycle and bleeding pattern. Implants are usually inserted within the first 7 days of the menstrual cycle. They can be inserted from 6 weeks postpartum.

7. Emergency contraception (EC)

Emergency contraception is the use of certain contraceptives to prevent pregnancy after women have had unprotected sex. Emergency hormonal contraceptives must be taken within 3 to 5 days of unprotected sex, but the sooner they are taken the more likely they are to be effective. EC should not be used as an alternative to regular contraception. Because it is taken only once EC is safe for all women to take.

EC with POP

The POP levonorgestrel can be used as EC if taken within 5 days but efficacy decreases with time and is much less effective in the 5th day. It may cause menstrual irregularities for the month afterwards.

Treatment: 2 tablets of levonorgestrel 750mcg (1500mcg) are taken as a single dose as soon as possible after unprotected sex.

EC with COC

The COC ethinlyestradiol + levonorgestrel can be used as EC if taken within 5 days but efficacy decreases with time and is much less effective in the 5th day. It may cause menstrual irregularities for the month afterwards.

Treatment: 4 tablets of ethinlyestradiol 30mcg + levonorgestrel 150mcg (120mcg ethinylestradiol + 600mcg levonorgestrel) are taken as a single dose as soon as possible after unprotected sex.

1.5 Gynaecology

Menstrual disturbances

These can be absence of regular menstrual bleeding (amenorrhoea), heavy bleeding (menorrhagia), increased frequency of bleeding (polymenorrhoea), intermenstrual bleeding (IMB), painful periods (dysmenorrhoea) or pre-menstrual tension (PMT). When bleeding is not thought to be related to the menstrual cycle (IMB or persisting bleeding, bleeding in post-menopausal women) it may need urgent investigation to exclude cancer of the cervix or uterus.

Painful periods (dysmenorrhoea)

Painful periods can be treated with paracetamol or ibuprofen. If periods continue to be very painful despite these treatments then the woman may choose to go on the COC or POP, or have an implant fitted.

Heavy bleeding (menorrhagia)

Menorrhagia can be treated with a Non-steroidal anti-inflammatories (NSAID). When menorrhagia is more severe, then tranexamic acid can be given. If periods continue to be very painful despite these treatments then the woman may choose to go on the COC or POP or have an implant fitted (if bleeding is much less on the POP). If available, then an intrauterine system (IUS) could be fitted if there are no contraindications (the IUS is a coil with slow-release progestogen).

NSAIDs can be used to treat both painful and heavy periods, but should not be given to people with a known history of gastritis or upper GI ulcer, and should normally be taken after food. Give Ibuprofen 200mg to 400mg 1 to 3 x per day. Ibuprofen may also be given a day before the period is due to lessen symptoms. Side effects include GI disturbance, hypersensitivity, can worsen asthma (so should not be given to asthmatics) and may damage kidneys in people with dehydration.

Tranexamic acid inhibits fibrinolysis, supporting clot formation and therefore lessens bleeding in heavy periods. It is given orally as 1g 3 x per day (not more) once periods have started but for more no more than 4 days in total. Side effects include GI disturbances and dermatitis.

Endometriosis can cause abdominal pain, including pain during sexual intercourse and menorrhagia. It is usually diagnosed during laparotomy but may be suspected on ultrasound. It can be treated by a specialist with the COC, or the progestogen norethisterone PO 10 to 15mg 3 x per day for 4 to 6 months, starting on day 5 of the cycle.

Delaying a period

If a woman wants to *delay a period* for a few days, give norethisterone PO 3 x per day for up to 10 days. It should be started 3 days before the period is due.

Premenstrual tension (PMT)

PMT includes up to 200 different physiological and psychological symptoms that may present before and during a woman's menstrual period and that affect women to different degrees. Some symptoms may be triggered by ovulation. Symptoms are absent for at least a week after menstruation. For most women and girls all that is needed is good lifestyle advice and stress reduction. Many treatments are of

unproven benefit. For more severe symptoms, a woman may want to go on the COC. Alternatively a low dose antidepressant (fluoxetine, *see 8.1*) is sometimes (but rarely) given if moods are very low. If fluid retention is a significant problem (and diagnosed on examination by the clinician), then spironolactone is occasionally given, 100mg a day from mid cycle until the bleeding has stopped, but must not be taken if conception is a possibility.

Pelvic inflammatory disease
For the treatment of lower abdominal pain and urethral discharge in women and PID *see 6.1*

Infertility
The management of infertility in women and men will be included in the next edition of the STGs.

Menopause
The management of the menopause will be included in the next edition of the STGs.

2. Child health

2.1 Immunisations

Immunisation

The health centre is the key site where children under five and pregnant women are immunised against preventable diseases but RHC and H staff should ensure all children are fully immunised and give doses if these have been missed. Routine doses are given to pregnant women and newborn children (*see 1.1 & 1.2*). Staff promote immunisation, encouraging parents to ensure children follow the full immunisation schedule. Tetanus toxoid is given up to 5 times to all women of reproductive age, with doses administered in the ANC. At birth, the oral polio vaccine is given and BCG (*see 1.2*). From 6 weeks onwards, three doses of the pentavalent vaccine are given, to immunise children against tetanus, diphtheria, whooping cough, hepatitis B and haemophilus influenza B. Oral polio is given at the same time. Measles is given at 9 months and a further dose given.

Information on immunisation is available in the guide: *Expanded programme of immunisation (EPI). Guide for health workers. MOH, WHO, UNICEF 2014*. Only staff trained to give vaccines are authorised to do so. They must carefully follow the detailed instructions for each vaccine in the EPI guide, which includes how to store vaccines at the right temperature, how to reconstitute vaccines with diluent, the multi-dose vial policy, how to administer vaccines, contraindications to vaccines and adverse events after immunisation.

Somali Immunisation Schedule

	BCG	OPV	IPV	DTP-Hep B-Hib	Measles
Birth	X	X			
6 weeks		X		X	
10 weeks		X		X	
14 weeks		X	X	X	
9 months					X
Further measles booster					X

Measles	
Type of vaccine	Live attenuated viral
Number of doses	One dose.
Schedule	At 9–11 months of age in countries where measles is highly endemic
Booster	A second opportunity for measles immunization is recommended (routine or campaign)
Contraindications	Severe reaction to previous dose; pregnancy; congenital or acquired immune disorders (not HIV infection)
Adverse reactions	Malaise, fever, rash 5–12 days later; idiopathic thrombocytopenic purpura; rarely, encephalitis, anaphylaxis
Special precautions	None
Dosage	0.5ml
Injection site	Outer mid-thigh/upper arm depending on the age
Injection type	Subcutaneous
Storage	Store between 2°C–8°C (vaccine maybe frozen for long-term storage but not the diluent)

DTP-HepB-Hib	
Type of vaccine	Pentavalent vaccine
Number of doses	Three
Schedule	6, 10, 14 weeks of age
Booster	None
Contraindications	Do not use as a birth dose
Adverse reactions	Mild local and systemic reactions are common
Special precautions	Do not use as a birth dose, usually not given over 6 years of age
Dosage	0.5ml
Injection site	Outer mid-thigh
Injection type	Intramuscular
Storage	Store between 2°C–8°C. Never freeze

OPV	
Type of vaccine	Live oral polio vaccine (OPV)
Number of doses	Four in endemic countries (including birth dose)
Schedule	At birth*, 6, 10, 14 weeks
Booster	Supplementary doses given during polio eradication activities
Contraindications	None
Adverse reactions	VAPP (paralysis) occurs very rarely (approximately 2 to 4 cases per million children vaccinated)
Special precautions	Children known to have rare congenital immune deficiency syndromes should receive IPV rather than OPV.
Dosage	2 drops by mouth
Storage	Store between 2°C–8°C (maybe frozen for long-term storage)

RHC and H staff may also be involved in immunisation campaigns during epidemics. Immunisation as part of outbreak response is subject to availability of vaccines, but vaccines will be available for measles and polio, and may sometimes be available for meningitis.

2.2 Malnutrition

Malnutrition

All clinical staff provide a vital role in preventing, detecting and treating malnutrition. Comprehensive guidance[2] and training is given to staff following the manual: *Somali guidelines for management of acute malnutrition Somali MOHs, UNICEF, 2010.*

All staff are involved in the following key nutrition activities:

- **Promoting good nutrition:** teach parents about infant and young child feeding (IYCF) and exclusive breastfeeding, and how to give micronutrient supplements. Staff are also trained with a check list for home visits of children who may be malnourished and to give key nutritional messages on prevention and treatment.
- **Detecting malnutrition:** Staff are routinely and actively detecting acute malnutrition by measuring a child's mid-upper arm circumference (MUAC) using the MUAC band, by assessing the presence of bilateral oedema and by looking for wasting and weakness. The height and weight should be measured of any child or pregnant woman thought to have malnutrition.
- **Treating malnutrition and Anaemia:** Staff may be involved in providing outpatient feeding programmes (OTP) for children

2 Somali guidelines for management of acute malnutrition Somali MOHs, UNICEF, 201

and pregnant women with SAM and in supplementary feeding programmes (SFP) for children and pregnant women with MAM if programmes are set up in the RHC or community. Stabilisation centres (SC) may be set up in either H or RHC providing inpatient therapeutic care. Severe Anaemia may need to be treated with blood transfusion.

Micronutrients

Young children are given multiple micronutrients (MMN) and vitamin A to help prevent chronic and acute malnutrition and anaemia, to provide the vital micronutrients they need for their growth and development and to help reduce the impact and likelihood of getting infections. These are normally given in HCs or PHUs, but should be given in the RHC and H if the child has not yet received them.

Vitamin A

Infants 6 – 11 months 100,000 IU. Give a single dose every 4 – 6 months. Give 3 drops from red capsule or 1 blue capsule.

Children 12 to 59 months (1 to 5 years) 200,000 IU. Give a single dose every 4 - 6 months. 1 red capsule or 2 blue capsules.

MMN

1 RNI each day, children aged 6 – 59 months

Anaemia

Anaemia is a reduction in the amount of red blood cells. Symptoms and signs include irritability, tiredness and pallor of the conjunctivae, lips, tongue, nail beds and palms. Any suspected case of anaemia is diagnosed by taking the haemoglobin. The normal range varies with age, but on average, normal haemoglobin is > 11g/dl, moderate anaemia is between 7 and 10.9g/dl and severe anaemia is < 7g/dl. In women, the haemoglobin should be > 11.5g/dl and in young children aged 6 months to 2 years the normal range is > 10.5g/dl (but check a more detailed age-specific chart). Severe Anaemia can present with breathlessness and these cases may need urgent blood transfusion. Treatment for moderate and mild cases is with iron folate tablets.

Many of the EPHS disease programmes help prevent anaemia. These include micronutrient supplementation and the prevention and

treatment of malaria. Children with thalassemia and sickle cell disease will need regular follow up.

Deworming medication is given regularly to young children to prevent and treat all worms including the hookworms which cause anaemia. Deworming medication is usually given once to pregnant women during an ANC visit from the 2nd trimester.

Treatment steps

- Test the hemoglobin for all suspected cases of anaemia. Cases of breathlessness from anaemia may need urgent blood transfusion.
- Give iron folate for 3 months if anaemia diagnosed in the health centre.
- Do not give iron if the person has sickle cell anaemia or thalassemia (see 7.7).
- Micronutrient and malaria control programmes help prevent and treat anaemia.
- All young children receive deworming medicine if they have not already received it at PHU or HC
- Pregnant women are given deworming medicine at the ANC.
- Reinforce all prevention measures, including handwashing, exclusive breastfeeding, infant & young child feeding (IYCF) and the best food for children and pregnant women.

Iron folate for treating anaemia

Medicine	Age	Dose	Duration	Side effects
Iron & folate tablets (60mg iron + 400 micrograms folate)	Children < 2 years	½ tablet per day (30mg iron + 200 micrograms)	3 months	**Common:** Abdominal discomfort; constipation **Rare:**
	Children 2 to 12 years	1 tablet per day (60mg iron + 400 micrograms folate)	3 months	
	Adults including pregnant women	2 tablets per day (120mg + 400 folate)	3 months	

Advice slot: Follow up can be in the HC if they can check Hb.

Precaution: Pregnant women: Albdendazole must not be given in the first trimester of pregnancy. It is not given to women who are breastfeeding in case they are in early pregnancy.

Blood transfusion for severe Anaemia

A person with severe anaemia may have adapted to having a very low haemoglobin. However the pulse and respiratory rate may well be raised. When the person can no longer cope (the anaemia becomes *decompensated*), other signs develop such as rapid breathing and signs of respiratory distress, difficulty eating, poor capillary refill, enlarged liver and spleen and signs of left and right heart failure.

Treatment steps for severe decompensated anaemia

- Sit the person up, not lying down
- Give oxygen from a concentrator if available
- Urgently test and crossmatch blood
- Give paracetamol if fever
- Treat signs of heart failure with furosemide 2mg/kg by mouth or 1mg/kg IM.
- Treat any infection
- Transfuse (*see 4.2*).

Thalassemia and sickle cell disease (*see 7.7*)

Deworming medicine

Medicine	Age	Dose	Duration	Side effects
Albendazole tablet	Infants < 12 months	Do not give any deworming medicines.		**Common:** Abdominal discomfort **Rare:** Diarrhoea, dizziness
	Children 12 to 23 months	½ tablet (200mg) of Albendazole 400mg	Single dose	
	Children 24 months and older	1 tablet (400mg) of Albendazole 400mg	Single dose	
Prescribing tip: Children: Children over 1 year old should have deworming medicine once a year.				
Advice slot: Mebendazole can be given as an alternative to albendazole.				

Severe acute malnutrition (SAM) without complications

National therapeutic care protocol – with outpatient therapeutic programme (OTP). If part of the programme, an OTP may be set up in the RHC. Ready-to-use therapeutic food is given parents to take home for their children, with Plumpynut the most commonly used preparation. Staff are *specially trained and monitored to do this* if an OTP is set up

in the RHC and follow national guidelines. Routine medication is given routinely within an OTP, including folate, amoxicillin, and vitamin A, albendazole and measles immunisation if not recently received. Iron is not routinely given but may be needed if the child is anaemic. Children in the OTP are all tested for malaria with RDT. Several additional medicines may also be given to children in the OTP to treat other medical problems. For information on RUTF and Plumpynut dosage, consult national *Guidelines on acute malnutrition*.

Severe acute malnutrition (SAM) with complications

Inpatient stabilisation centre (SC) may be set up in RHC or H as required by the RHO. The management of severe acute malnutrition in the inpatient setting is divided into three phases:

Phase 1 covers nutrition and medical stabilization, treatment of medical complications and oedema, and commences nutritional rehabilitation.

Transition Phase covers a gradual increase in diet leading to some weight gain while preventing complications of over-feeding. Transfer to transition only if medical complications treated, oedema is decreasing and an NG tube is no longer needed.

Phase 2 is a rapid weight-gain phase (catch-up growth). It is most often implemented at the OTP but can be done at the in-patient facility under some circumstances.

- **Phase 1** is a rapid weight-gain phase (catch-up growth). It is most often implemented at the OTP but can be done at the in-patient facility under some circumstances.
- **Transition Phase** Patients normally remain in Transition Phase for two to three days. F75 is replaced with F100 or a locally made-up milk of the equivalent nutritional value. The patient's diet is increased from 100kcal/kg/day to 130kcal/kg/day for children. The quantity of milk remains the same, but the calorie content changes by changing milk formulas from 75kcal to 100kcal per 100ml of milk.
- **Phase 2** Patients move from Transition Phase into Phase 2 when they have a good appetite, are tolerating the diet given, have no major medical complications and oedema is resolved. In Phase 2, the patient receives F100 at 200kcal/kg/day or the equivalent in the form of RUTF. Recovered patients are discharged for supplementary feeding if available at the nearest health facility.

The same medicines are given as in the OTP, but iron is added to food phase 2 and antibiotics are also given to all inpatients because of bacterial overgrowth in the small bowel in children with SAM (selection based on severity). They are given throughout phase 1 and then for an additional 4 days.

1st line: Oral amoxicillin

2nd line: Oral chloramphenicol or IM gentamicin 5mg/kg 1 x day.

3rd line: Oral fluconazole for severe sepsis or oral candidiasis

Any infants < 6 months are kept in a separate area of the SC. They are exclusively breastfed unless unable to do so. In this case they are given F100 *diluted* and NOT normal F100. If they have oedema they are given F75 until the oedema has resolved. Breastfeeding resumption is encouraged.

Moderate acute malnutrition (MAM)

Staff in the RHC may play an active role if there is a targeted feeding programme for treating moderate acute malnutrition in children aged 6 – 59 months in a supplementary feeding programme (SFP) and in following up those discharged from an OTP.

Children and women enrolled in an SFP are given take-home dry rations or supplementary Plumpy®. The quantities given are monitored as part of any SFP that nurses may be involved in, and clear instructions are given to parents on how to prepare CSB or UNIMIX at home. In addition, children enrolled in the SFP may routinely be given vitamin A, albendazole and iron folate, and may be immunised against measles. But this is administered only in the context of the SFP protocol if a programme is operating in the HC.

2.3 Paediatric conditions

Medical conditions affecting children are included in all sections of these STGs. More detailed guidelines on treating children and conditions more common in childhood will be included in the next edition of the STGs.

3. Communicable diseases

3.1 Diarrhoea

Diarrhea

Diarrhea is the presence of runny stools three times or more a day. Commonly it is caused by viruses, sometimes by bacteria or other organisms and sometimes by other illness in the body. It is a sign of disease with many causes. The danger is that it causes *dehydration*, kidney failure and death, so the priority of treatment is urgently giving fluids (rehydration). Sometimes diarrhea can be very watery (acute watery diarrhea or cholera), and sometimes diarrhea can have blood in it (dysentery). Most diarrhea will get better in a few days but extra fluids always need to be given.

Treatment steps

- Give extra fluids (rehydration)
- Give zinc supplements
- Give vitamin A for children if prolonged diarrhea and if vitamin A not recently given.
- Continue feeding infants and children and adults encouraged to eat light diet.
- Give antimicrobials for diarrhoea with blood (dysentery) according to diagnosis of chronic or acute dysentery.
- Malnourished children and people with HIV and diarrhea may need special treatment.

Treatment note: People with diarrhea are in danger of becoming dehydrated through fluid loss in the stools. Treatment is aimed at giving extra fluids to keep the person well hydrated. Zinc supplements are also given to reduce the severity of the diarrhea. Most diarrhea does not need antibiotic treatment.

Dehydration from diarrhea is graded for treatment by IMCI as Plan A (green), B (yellow) or C (red). If there is no dehydration (A) the child can be treated by parents at home following the consultation. If there is some dehydration (B), the child is treated with ORS and observed in the HC. If there is severe dehydration (C) the child is given IV fluids and referred if there is no improvement within 4 hours. A similar grading can be used for older children and adults, but skin elasticity cannot be used as a sign of dehydration in adults as it can be for young children.

Precaution: Do not give ibuprofen to dehydrated children because it can damage their kidneys.

1. Give extra fluid (rehydration)
The person needs fluids. Infants should continue breastfeeding and children over 6 months and adults water, clear soup, home-made oral rehydration solution (ORS) or ORS sachets. Any water should be clean water (boiled and cooled or treated).

1.1 No dehydration (Plan A):
Home-made ORS

You need:
- ½ teaspoon or small measure of salt (or a good pinch. The amount you can pick up between your fingertips)
- 6 teaspoons of sugar (or 2 handfuls. A handful is the amount you can hold with four fingers)
- 1 litre of the cleanest water you have, boiled if possible and cooled

What to do:
- Wash your hands with soap and water
- Mix the salt, sugar and water together in a clean jug
- Stir until the salt and sugar is dissolved
- Use in the same ways as ORS from a packet.

ORS from a packet - Give the parent 2 sachets to make up at home.

ORS exists in two different sizes of packet. One has to be diluted in 1 litre of water. The other has to be diluted in ½ litre. Check carefully which size you have and check the expiry date has not been passed.

- Wash your hands with soap and water
- Pour all the powder into a clean container e.g. jar, bottle or bowl
- Use the cleanest water you have, boiled and cooled if possible
- Pour 1 litre of water into the container for a 1 litre packet, ½ litre of water for a ½ litre packet and mix well until the powder is dissolved

How to give ORS

- Give in frequent small sips. Use a small spoon or cup
- Throw away the solution after one day and make up more in a clean container
- If a person vomits, try again 10 minutes later but give more slowly
- Give extra fluids and breastfeed infants until the diarrhoea stops.

- Show the carer/parent how much fluid to give in addition to the usual drinks:
  Up to 2 years: 50 to 100 ml after each loose stool

  2 years or more: 100 to 200 ml after each loose stool

1.2 Some dehydration (Plan B):

Give recommended amount of ORS over a 4-hour period:

Treatment with ORS over a 4 hour period for children under 5 years

Weight	< 6 kg	6 - 10 kg	10 - 12 kg	12 - 19 kg
Age	Up to 4 months	4 months to 12 months	12 months to 2 years	2 years to 5 years
Amount in mls to give over a 4 hour period	200 - 450	450 - 800	800 - 960	960 - 1600

Use the child's age only when you do not know the weight. The approximate amount of ORS required (in ml) can also be calculated by multiplying the child's weight (in kg) times 75.

If the child wants more ORS than shown, give more. For infants under 6 months who are not breastfed, also give 100 - 200 ml clean water during this period.

Show the parent how to give ORS:
- 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 2 to 4 hours:
- Reassess the child and classify the child for dehydration. Select the appropriate plan to continue treatment. If there is no improvement, *refer*.
- If improving, begin feeding the child in clinic.

For children over 5 and adults in plan B, aim to give 2000mls by mouth over 4 hours. Give an additional 200 – 400mls fluid after each loose stool and give

1.3 Severe dehydration (Plan C)

Give ORS, give fluids by IV.

IV fluids for severe diarrhea:

Give 100 ml/kg Ringer's Lactate Solution (or, if not available, normal saline), divided as follows:

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

* Repeat once if radial pulse is still very weak or not detectable.

For older children and adults, give an initial 20ml/kg IV followed by maintenance therapy according to clinical response.

Reassess 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 person can drink. Reassess after 3 hours. Reclassify dehydration.

Severely malnourished children with shock should be managed in the stabilisation centre (SC). During transfer the child may need an IV infusion. In this case, the fluid diluted and given more slowly: either the same volume of 0.9% sodium chloride *or* ringer's lactate perfusion is mixed with 5% dextrose perfusion. This is given at 15ml/ kg over 1 hour.

2. Give zinc supplements

Medicine	Age	Dose	Duration	Side effects
Zinc	Infants < 6 months	10mg (½ 20mg tablet) per day	14 days	**Rare:** Nausea, sore mouth/ throat, indigestion
	Children > 6 months	One 20mg tablet per day	14 days	
	Adults	One 20mg tablet per day	14 days	
Prescribing tip: Infants: Tablets can be dissolved in ORS or breast milk. Older children can chew whole; or tablets can be crushed and dissolved in a spoon of water				
Advice: give zinc for 14 days even when the child is better				

3. Give Vitamin A

if prolonged diarrhea in children. Give vitamin A 50,000 IU for infants 2 – 6 months; 100,000 units for infants 6 – 11 months and 200,000 units for children > 1 year (see 2.2).

4. Continue nutrition

Infants who are sick need to continue breast feeding and eating. For infants over 6 months and children parents may need to crush food or make porridge or soups and give with a cup and spoon. Adults need to take in a light diet once they are not vomiting.

5. Give antimicrobials for diarrhoea with blood (dysentery) .

If there is blood in the diarrhea (dysentery) with no fever or abdominal pain, treat the dehydration and do stools microscopy test. If amoeba are found, then treat with metronidazole. If there is blood in the diarrhea with fever and abdominal pain (acute dysentery caused by bacteria) treat the dehydration and treat with ciprofloxacin. In hospital they will need a 5 day course of ciprofloxacin but stool samples will be sent to confirm diagnosis and test antibiotic sensitivity. Antibiotics lessen the risk of serious complications and death, shorten the duration of symptoms and reduce the elimination of shigella in the stools, limiting the spread of infection. They also reduce the worsening of malnutrition that dysentery can cause. The regional health office RHO must be immediately informed of any case of bloody diarrhea with fever.

Treatment steps

- Rehydrate with ORS.
- If no fever or abdominal pain, do microscopy. If amoeba found, treat with metronidazole. If diarrhea cases with giardia found on stool microscopy, treat with metronidazole.
- If fever and abdominal pain, treat with ciprofloxacin for acute dysentery
- Inform immediately RHO of all cases of dysentery with fever.

Treatment of amoebic dysentery with metronidazole.

Medicine	Age	Dose	Duration	Side effects
Metronidazole 250mg tablet	Infants < 12 months	Do not give		**Common:** nausea **Rare:** vomitng
	Children aged 1 – 5 years	125mg (1/2 tablet) 3 x per day	5 days	
	Children aged 5 – 12 years	250mg (1 tablet) 3 x per day	5 days	
	Children over 12 years	500mg (2 tablets) 3 x per day	5 days	
	Adults	750mg (3 tablets) 3 x per day	5 days	

If *giardia* is found in the stools and the person has symptoms (diarrhea, abdominal discomfort, nausea), then a single treatment oral of albendzole can be given or tinidazole if available. Or a course of metronidazole:

Treatment of diarrhea caused by giardia with metronidazole.

Medicine	Age	Dose	Duration	Side effects
Metronidazole 250mg tablet	Infants < 12 months	Do not give		**Common:** nausea **Rare:** vomiting
	Children aged 1 – 5 years	125mg (1/2 tablet) 2 x per day	3 days	
	Children aged 5 – 12 years	250mg (1 tablet) 2 x per day	3 days	
	Children over 12 years	500mg (2 tablets) 2 x per day	5 days	
	Adults	500mg (2 tablets) 3 x per day	5 days	

Ciprofloxacin for diarrhea with blood and fever (acute dysentery)

Medicine	Age	Dose	Duration	Side effects
Ciprofloxacin 250mg tablet	Infants < 12 months	Do not give		**Common:** nausea **Rare:** vomiting
	Children aged 1 – 5 years	125mg (1/2 tablet) twice a day for 5 days		
	Children aged 5 – 12 years	250mg (1 tablet) twice a day for 5 days		
	Children over 12 years	500mg (2 tablets) twice a day for 5 days		
	Adults Do NOT give to pregnant women	500mg (2 tablets) twice a day for 5 days		

6. Treatment of children with SAM and dehydration

Children with SAM and diarrhoea and moderate dehydration should not be given normal ORS but given ReSoMal instead. The fluid must be given slowly over time to prevent complications such as overload or heart failure. The child must be monitored very closely.

- Give ReSoMal orally or by NG tube
- Give: 5ml/kg every 30 minutes for first two (2) hours
- Give 5-10mls hourly until weight gain has been achieved
- Breastfeeding is continued

Children with SAM and severe dehydration need IV fluids in the SC.

- Use ringer lactate with 5% dextrose, half strength 0.9% sodium chloride with 5% dextrose (ie an equal quantitiy of 5% dextrose with either ringers lactate or 0.9% sodium chloride).
- Give 15ml/kg IV over the first hour, then reassess.
- If there is no weight gain then repeat the 15ml/kg iV over the next hour. This is continued until there is weight gain.
- If there is weight gain but no clinical improvement the child may have septicaemia or other complications which must be treated.
- Once the pulse rate drops to a normal level, then stop the IV fluids and treat with ReSoMal 10mg/kg/hour.

3.2 ARI

Acute Respiratory illness

ARI is an infection in either the upper airway or lower airway and include the following common diseases:

Upper airway: common cold, croup, tonsillitis, ear infection, sinusitis, epiglottis, flu

Lower airway: pneumonia, bronchitis, bronchiolitis (in infants)

Common cold, croup and tonsillitis may present with a sore throat and cough. Ear infection may present with earache. It is common for a person to have a common cold with an ear infection. Both common cold and pneumonia can present with cough. But only pneumonia or other dangerous diseases present with fast breathing.

Common cold

The common cold is caused by more than 200 different viruses, including the rhinoviruses. Symptoms include runny or blocked nose, sneezing, sore throat, cough, mild fever, headache. Paracetamol is given to ease pain and reduce temperature and symptoms. Those affected are encouraged to drink more fluids. Many treatments and supplements are advised, but there is not yet convincing evidence that they are effective, and some are harmful.

Treatment steps

- Give paracetamol for symptom relief (see Prescribing paracetamol).
- Advise to drink more fluids.
- Breastfeed infants frequently and clear a blocked nose.
- If fast, difficult or noisy breathing, consider pneumonia or croup. Investigate if chronic cough of more than 14 days.

Treatment note: Advise that there are no medicines that cure the cause; paracetamol eases symptoms. Most colds resolve in 7 to 10 days.

Croup

Croup is the name for an inflammation of the upper airway and larynx in children mainly caused by respiratory viruses. It presents with a characteristic hoarse voice and "barking" cough. Severe episodes are more likely to present in children < 2 years and may present with stridor and decreased oxygenation (blueness of the lips).

Mild and moderate cases are treated with supportive measures similar to the common cold (encourage fluids and give paracetamol). Antibiotics do not help mild or severe cases as the cause is viral.

Steroids for severe croup

In severe cases, steroids may need to be given, and in very severe cases emergency measures may need to be taken to open the airway (intubation or emergency tracheostomy). Steroids are given orally where possible (for severe cases only) as parenteral administration (IM or IV) may increase distress and may provoke closure of the airway). The administration of oxygen may also upset the child and cause airway closure so is not usually given.

Steroid tablets (prednisolone) are crushed in water and given by mouth.

Child 1 mg/kg oral prednisolone x 1. Repeat > 12 hours if necessary

Precaution: Do not give steroids in croup caused by measles. This may make the measles infection worse.

Tonsillitis

Most throat infections are caused by viruses. Sometimes the tonsils may be enlarged, and this may be caused either by a virus or bacteria. If the tonsils are a moderately swollen with no pus then analgesia can be given alone. A generalised inflammation of the back of the throat is known as pharyngitis and can normally be treated with analgesia alone. If the tonsils are very enlarged, very red with pus and there is fever and swollen lymph nodes then penicillin can be given, or erythromycin in case of allergy to penicillin. The reason for treating is to reduce symptoms and reduce the duration of the disease, but also to reduce the chance of someone developing rheumatic heart disease.

Treatment steps

Pain and fever control. Mild tonsillitis is treated with analgesia alone for pain and fever. For children, give paracetamol as first choice, ibuprofen as second choice for analgesia; for adults, give ibuprofen or paracetamol for pain and fever. Ibuprofen is more effective than paracetamol for pain control in tonsillitis in adults.

Penicillin for severe tonsillitis. Penicillin can be given when the tonsils are very large and inflamed with white spots. If allergic to penicillin, give erythromycin.

Advice: Review if there is no improvement after two days or any new symptoms. Encourage a child to continue to eat and drink plenty. It may help to crush food and give soups. When prescribing suspensions, a plastic measuring spoon usually comes with the medicine. If this is not available, it is important to show the parent how to measure a similar quantity using a tea spoon.

1. Pain and fever control

Give paracetamol or ibuprofen (but do not give ibuprofen if a child is asthmatic). Do NOT give children aspirin.

Medicine	Age	Dose	Duration	Side effects
Ibuprofen	Infants < 2 months	Do not give		**Common:** nausea and abdominal pain **Rare:** allergic reaction; ulcer in stomach; damage to kidneys & liver
	Infants 2 to 1 year	50mg (2.5mls (1/2 spoon) of 100mg/5ml syrup) 3 x per day	2 – 5 days	
	Children 1 to 4 years	100mg (5mls (1 spoon) of 100mg/5ml syrup) 3 x per day	2 - 5 days	
	Children 5 to 8 years	200mg (10mls (2 spoons) of 100mg/5ml syrup) 3 x per day	2 - 5 days	
	Children 9 to 15 years	300mg (15mls (3 spoons) of 100mg/5ml syrup) 3 x per day	2 - 5 days	
	Adults	400mg – 800mg (1 – 2 tablets) 3 x per day	2 - 5 days	
Prescribing tip: If children or adults have indigestion after taking ibuprofen then paracetamol should be given instead.				
Advice: Give after food				

Precaution: Do not give ibuprofen to dehydrated children because it can damage their kidneys

2. Antibiotics for severe tonsillitis
Penicillin for tonsillitis if not allergic to penicillin

Medicine	Age	Dose	Duration	Side effects
Penicillin V (Phenoxymethylpenicillin) 250mg tablet	Infants 6 to 11 months	62.5mg (1/4 tablet) 4 x per day	10 days	**Common:** none **Rare:** allergic rash, allergic reaction (anaphylaxis)
	Children 1 to 5 years	125mg (½ tablet) 4 x per day	10 days	
	Children 6 to 11 years	250mg (1 tablet) 4 x per day	10 days	
	Children over 12 and Adults	500mg (2 tablets) 4 x per day	10 days	
Prescribing tip: Older children: tablets can be crushed. A full 10 days is recommended for tonsillitis to stop recurrence.				
Advice: Give for the full 10 days				

Treatment note: Penicillin V is the best way of giving penicillin in tonsillitis to prevent complications, but if it would be difficult for a child to take 10 days of oral penicillin, a single dose of benzathine penicillin IM is sometimes given:

Adults: Benzathine penicillin G 1.2 million U IM once

Children: Benzathine penicillin G 25,000 U/kg IM once (maximum 1.2 million U)

Precaution: Ask the parent if the child is allergic to penicillin. If the child has had a previous reaction give erythromycin instead. Do not give ibuprofen to dehydrated children because it can damage their kidneys

Erythromycin for tonsillitis, ear infection or pneumonia in case of resistance to penicillin.

Medicine	Age	Dose	Duration	Side effects
Erythromycin 250mg tablet	Infants 6 to 11 months	62.5mg (1/4 tablet) 4 x per day	10 days	**Common:** nausea, vomiting, indigestion **Rare:** rash, jaundice
	Children 1 to 5 years	125mg (½ tablet) 4 x per day	10 days	
	Children 6 to 11 years	250mg (1 tablet) 4 x per day	10 days	
	Children over 12 and Adults	500mg (2 tablets) 4 x per day	10 days	
Prescribing tip: Older children: tablets can be crushed. A full 10 days is recommended for tonsillitis to stop recurrence.				
Advice: Give for the full 10 days				

Ear infection

Middle ear infections may be caused by bacteria or viruses. They present with earache and fever, and children may rub their ears. Sometimes the ear drum may be very red and there may be pus discharge if the ear drum perforates. Usually antibiotics are not needed. If there is moderate pain and fever then analgesia can be given alone. If the child has a higher temperature and has severe earache the amoxicillin can be given or erythromycin in case of allergy to penicillin/ amoxicillin.

Treatment steps

- Pain and fever control. Mild to moderate earache and fever is treated with analgesia alone for pain and fever. For children, give paracetamol as first choice, ibuprofen as second choice for analgesia; for adults, give ibuprofen or paracetamol for pain and fever. Ibuprofen is more effective than paracetamol for pain control in ear infection in adults.
- Amoxicilln for severe earache. Amoxicillin can be given when there is severe earache and fever. Give erythromycin if allergy to penicillin/ amoxicillin.
- Admit and treat approprately if there is fast or difficult breathing, or if a child is drowsy, has a rash or is very unwell.

Treatment note: Most people with ear infection get better without antibiotics.

Advice: Review if there is no improvement or any new symptoms. Make sure the child continues to eat and drink plenty.

1. Pain and fever control

Give paracetamol *or* ibuprofen.

Medicine	Age	Dose	Duration	Side effects
Ibuprofen, syrup 100mg/5ml; 200mg and 400mg tablets	Infants < 2 months	Do not give		**Common:** nausea and abdominal pain **Rare:** allergic reaction; ulcer in stomach; damage to kidneys & liver
	Infants 2 to 1 year	50mg (2.5mls (1/2 spoon) of 100mg/5ml syrup) 3 x per day	2 – 5 days	
	Children 1 to 4 years	100mg (5mls (1 spoon) of 100mg/5ml syrup) 3 x per day	2 - 5 days	
	Children 5 to 8 years	200mg (10mls (2 spoons) of 100mg/5ml syrup) 3 x per day	2 - 5 days	
	Children 9 to 15 years	300mg (15mls (3 spoons) of 100mg/5ml syrup) 3 x per day	2 - 5 days	
	Adults	400mg – 800mg (1 – 2 tablets) 3 x per day	2 - 5 days	
Prescribing tip: If children or adults have indigestion after taking ibuprofen then paracetamol should be given instead.				
Advice: Give after food.				

Precaution: Do not give ibuprofen to dehydrated children because it can damage their kidneys. Do not give ibuprofen to children with asthma as it can cause an exacerbation.

2. Amoxicillin for severe earache

Amoxicillin for severe earache if not allergic to amoxicillin or penicillin

Medicine	Age	Dose	Duration	Side effects
Amoxicillin 125mg/5ml suspension or Amoxicillin 250mg tablet/ capsule. (May also come in 250mg/5ml suspension and in 500mg capsules)	Infants 2 months to 1 year	125mg (5ml or ½ tablet) 2 x day	5 days	**Common:** diarrhea **Rare:** allergic rash, allergic reaction (anaphylaxis)
	Children 1 to 5 years	250mg (10ml or 1 tablet) 2 x per day	5 days	
	Children 6 to 11 years	500mg (20ml or 2 tablets) 2 x per day	5 days	
	Children over 12 and Adults	750mg (3 tablets) 2 x per day	5 days	
Prescribing tip: Older children: tablets can be crushed.				

Precaution: Ask the parent if the child is allergic to amoxicillin or penicillin. In case of allergy, give erythromycin.

Sinusitis

Sinusitis is an infection of the sinus spaces of the front part of skull, most commonly in the maxillary or ethmoid sinuses. It is usually caused by viruses, but may be caused by bacteria. As well as symptoms of a viral cold, the person may have pain and tenderness over these sinuses, with a yellow pus discharged. Normally it can be managed with pain control medicine (ibuprofen or paracetamol) alone. In more severe cases nasal steroids may help (beclomethasone nasal spray. Give 2 puffs both nostrils 2 x per day). When the sinus is very tender or there is a large amount of pus discharge, antibiotics may be needed. Very rarely sinusitis can cause complications such as meningitis or an abscess in the brain.

Antibiotics for severe sinusitis

Give doxycycline to adults (not to pregnant women), 100mg 1 x day for 7 days or erythromycin 500mg 4 x day for 7 days.

Flu

Flu starts as an upper airway infection by the influenza viruses. It presents a bit like the common cold with runny nose and sore throat but is usually accompanied by high fever, muscle pains, headache and exhaustion. Most symptoms last less than a week, but the cough

can continue for two weeks. In children there may also be nausea and vomiting. Complications of flu include a viral pneumonia or secondary bacterial pneumonia, sinusitis and exacerbations of asthma. It can cause death in young children, older people or those with chronic disease. It is more dangerous for those who are pregnant. The treatment is supportive, giving paracetamol and encouraging the person to take more oral fluids. Any signs of pneumonia are treated.

Outbreaks of the Influenza A strain of flu may come in large epidemics, which can be very dangerous depending on the particular sub-strain of virus. Bird flu and pig or swine flu are variants of the influenza A virus that predominantly infect these animals but can also infect humans. Immunisation may become available in the country if there are new epidemics and epidemic control measures put in place. Antiviral medication is expensive, does not help the majority of cases and is not routinely available in the country.

The flu vaccine may be available. If so this can be given during the seasonal epidemic to elderly people and those with chronic lung diseases and those on ARVs.

Pneumonia and difficult breathing

Pneumonia is an infection in the lung, in the lower airway caused mainly by bacteria. The signs of pneumonia are fast and difficult breathing, chest indrawing, cough, fever, sputum. It is a very dangerous disease. Antibiotics are needed for pneumonia. The IMCI guide can be followed.

Treatment steps

- Assess the patient for fast breathing, signs of consolidation and danger signs, and a child for chest indrawing and danger signs. Decide if a child is in IMCI phase Red, Yellow or Green.
- If a patient has severe pneumonia (IMCI red) then admit and give antibiotics. If the yellow phase, they should be observed closely.
- If the child or adult is wheezing then treat for asthma (give antibiotics as well if there is a productive cough and/or signs of consolidation).
- If a patient has pneumonia without severe signs (IMCI red) then *treat with amoxicillin*. Treat with erythromycin if allergy to penicillin. Give paracetamol if fever > 38.5° and do and RDT.
- Give paracetamol for fever > 38.5° and do RDT.
- If available check pulse oximetry and give oxygen by nasal prongs or nasal catheter if oxygen concentration < 95%.

- Give Vitamin A 50,000 IU for infants 2 – 6 months; 100,000 units for infants 6 – 11 months and 200,000 units for children > 1 year (for dose see Micronutrients in STGs).

Advice: Advise a person treated in outpatients to come back day or night if the child is not improving and the breathing is getting faster.

IMCI guide for Cough and difficult breathing
Red: Any danger sign. Danger signs include: Very fast breathing. Noisy breathing (not coming from the nose). Chest indrawing in children. Consolidation. Blue colour to the lips and tongue. Drowsiness. Convulsion. Inability to eat or drink. This may be severe pneumonia.

Child

Give ampicillin 30mg/kg IV 4 x day for 5 days and gentamicin 5mg/kg IM 1 x day for 5 days.

Adult and children over 5 years

Give ampicillin 1g IV 4 x day for 5 days and gentamicin 5mg/kg IM 1 x day for 5 days.

Change ampicillin to amoxicillin PO when the person is able to take by mouth.

If the person is not rapidly responding to ampicillin and gentamicin, then Ceftriaxone may be needed instead.

Ceftriaxone slow IV injection Adults 2g 1 x day then once improving 1g 1 x day for 7 to 10 days; Children: 100mg/kg 1 x day then 50mg/kg once improving 1 x day the following days for 7 to 10 days.

Yellow:

Fast breathing. May have cough and fever. May have mild chest indrawing.

This may be pneumonia. Amoxicillin should be given (or erythromycin in case of allergy to penicillin) and the person closely monitored.

Green:

Cough and cold. No fast breathing. The child does not have pneumonia and should be treated as for the common cold guidelines. If the child has earache or sore throat then the guidelines for ear infection and tonsillitis should also be followed.

If the child is:	Fast breathing is:
2 months up to 12 months	50 breaths per minute or more
12 Months up to 5 years	40 breaths per minute or more
Older children and adults	30 breaths per minute or more

The treatment dose for pneumonia

Medicine	Age	Dose	Duration	Side effects
Amoxicillin 125mg/5ml suspension or Amoxicillin 250mg tablet	Infants 2 months to 1 year	250mg (10ml (2 spoon) or 1 tablet) 2 x per day	5 days	**Common:** diarrhea **Rare:** allergic rash, allergic reaction (anaphylaxis)
	Children 1 to 5 years	500mg (20ml (4 spoons) or 2 tablets) 2 x per day	5 days	
	Children 6 to 11 years	750mg (30ml (6 spoons) or 3 tablest) or 2 x 250mg tablets 2 x per day	5 days	
	Children over 12 and Adults	1g (4 tablets) 2 x per day	5 days	
Prescribing tip: Older children: tablets can be crushed.				
Advice: Come back if a rash develops.				

Precaution: Ask the parent if the child is allergic to amoxicillin or penicillin. If an adult or child has allergy to penicillin/ amoxicillin then give erythromycin.

Bronchiolitis

Bronchiolitis is a common infection caused by the respiratory syncytial virus (RSV) in infants, presenting with fast breathing, wheeze and loose cough. On listening to the chest there are often widespread fine crackles but not focal consolidation.

Treatment of bronchiolitis

- Give more oral fluids/ breastfeeding.
- Paracetamol if fever of distressed
- Antibiotics are not needed if the clinician is confident it is not pneumonia.
- Give amoxicillin if any chest indrawing, course crackles, consolidation or other sign of pneumonia.
- If severe bronchiolitis, hospitalise. If available check pulse oximetry and give oxygen by nasal prongs or nasal catheter if oxygen concentration < 95%. Gentle nasal suction may be required.

3.3 Malaria and fever management

Malaria

Malaria is caused by a parasite that is injected into the body through the bite of infected anopheles mosquitos which spread the disease. The parasite destroys the red blood cells and causes fever and symptoms of malaria such as headache, chills, sweating, body pains. In children it commonly presents with vomiting and diarrhea. Malaria is a very dangerous disease that causes complications including anaemia, miscarriage, enlarged spleen, convulsions and death. It is diagnosed by a history of fever and confirmed with the Rapid Diagnostic Test, RDT and/or thick film. RHC and H staff should do everything to support prevention programmes in the community. Malaria is more common in some parts of the country and may come in seasons especially after the rain.

First line treatment for malaria with artemether–lumefantrine (AL)

- Make clinical diagnosis based on symptoms of fever.
- Take temperature. If > 37.5° or history of fever, then do a RDT, and microscopy if available..
- If RDT +ve, treat with artemether–lumefantrine (AL), first dose under DOT and follow up doses at home. Give quinine not AL to treat pregnant women in the first trimester (*see 1.1*). If RDT –ve do not give antimalarials.
- Give one dose of primaquine by mouth on day 1 for all cases of Plasmodium falciparum
- If RDT + for P. vivax, request Pv treatment from malaria programme.
- Give paracetamol if fever above 38.5°. Other causes of acute febrile illness should also be looked for.
- Give fluids. Patients with fever need more fluids. Encourage mothers to provide extra breastfeeding. If there is diarrhea, assess and treat as per the diarrhea guidelines.
- Ask the patient to come back immediately in case of danger signs or after 2 days if persisting fever.
- Treat for severe malaria if any danger signs (unable to drink, repeated vomiting, anaemia, drowsiness, jaundice, convulsions, unconscious, passing no urine, weak or rapid pulse, severe dehydration, bleeding, difficulty breathing, neck stiffness).
- If not improving on the treatment given but no danger signs, change treatment to oral quinine.

Treatment note: The patient should be stay in the RHC of H for about 30 minutes after the first dose under DOT in case he or she vomits up the medication. If so another dose should be given but counted as the first dose and observed. Hospitalise if further vomiting.

Advice: Children and adults with fever need to drink more and need food. This is hard when they don't want to eat. Parents should give children small amounts of fluid by cup and spoon more often and make food that are easy to eat (like soups and porridge). Adults are encouraged to drink more.

Precaution: AL should not be given to women in early pregnancy or infants aged less than 2 months and to people with known allergy to AL. Instead they are treated with quinine (see 1.1).

Artemether–lumefantrine

Each tablet contains a combination of 20 mg artemether and 120 mg lumefantrine. A six-dose regimen of artemether–lumefantrine is administered twice a day for 3 days.

Body weight (kg)	Number of tablets of artemether–lumefantrine					
	Day 0		Day 1		Day 2	
	1st dose	2nd dose	3rd dose	4th dose	5th dose	6th dose
5–14	1	1	1	1	1	1
15–24	2	2	2	2	2	2
24–34	3	3	3	3	3	3
≥35	4	4	4	4	4	4

Side effects: Common: Weakness, dizziness, headache
Rare: Palpitations, jaundice, rash, prolonged QT interval

Treatment with primaquine

Give all adults with P falciparum a single dose of primaquine by mouth, 15mg tablet, on day 1 of treatment with AL. This treats the early form of the malaria parasite. Give children a single dose, 0.25mg/kg, primaquine by mouth. Note that primaquine should not be given to anyone previously diagnosed with G6PD deficiency.

Treatment of persisting malaria

A thick film should be taken and examined for all patients with persisting symptoms of malaria. (a second RDT should NOT be done as it will remain + for 21 days following infection). If the thick film is + for malaria they need treatment with quinine.

Treatment with quinine if treatment not successful with AL

Medicine	Age	Dose	Duration	Side effects
Quinine 300mg tablet	Infants < 6 months	Do not give		**Common:** hearing impairment, ringing in ears, headache, nausea **Rare:** hypoglycaemia, agitation, confusion, diarrhea
	Infants 7 – 11kg (6 – 18 months)	75mg (¼ x 300mg tablet) every 8 hours (3 x day) for 7 doses (just over 2 days).	7 doses over 3 days	
	Children 12 – 23 kg (2 – 6 years)	150mg (½ x 300mg tablet) every 8 hours (3 x per day) for 7 doses (just over 2 days)	7 doses over 3 days	
	Children 24 – 37kgs (6 – 12 years)	300mg (1 x 300mg tablets) every 8 hours (3 x per day) for 7 doses (just over 2 days)	7 doses over 3 days	
	Children and adults 38 – 52kgs	450mg (1½ x 300mg tablets) every 8 hours (3 x per day) for 7 doses (just over 2 days)	7 doses over 3 days	
	Adults > 52kgs	600mg (2 x 300mg tablets) every 8 hours (3 x per day) for 7 doses (just over 2 days)	7 doses over 3 days	
Prescribing tip: Infants: Older children:				
Advice: Take some sugar in drinks or food during the course of treatment.				

First line treatment of severe malaria with artesunate

If any danger signs are present, then treat with artesunate.

Giive artesunate 2.4 mg/kg body weight IV or IM given on diagnosis, repeated 12 hours later then once the next day, then change to oral AL unless the patient is still in a critical state and unable to take oral medication. Mix the vial of artesunate powder with 1 ml of 5% sodium bicarbonate solution (provided) and shake for 2–3 minutes. The solution should be prepared freshly for each administration and should not be stored. Then:

IV administration: add 5 ml of 5% glucose or normal saline to make the concentration of artesunate as 10 mg/ml and administer by slow infusion, giving 2.4mg/kg IV.

Example, if a patient weighs 30 kg, the required dose can be calculated as:

- 2.4 mg/kg × 30 kg body weight = 72 mg This patient will then need 7.2 ml given IV.

IM administration: add 2 ml of 5% glucose or normal saline to make the concentration of artesunate 20 mg/ml.

Example, if a patient weighs 20 kg, the required dose can be calculated as:

- 2.4 mg/kg × 20 kg body weight = 48 mg. This patient will then need 2.4 ml given IM.

Alternatively if the parenteral preparation is not available, use rectal capsules. Give 10 mg/kg of artesunate rectal capsules, and repeat the dose if the capsule is expelled within 1 hour. Repeat the dose after 24 hours if it is not possible to refer the patient.

Dose chart by age for artesunate 50 mg and 200 mg rectal capsules as suppositories

Body weight (kg)	Age	No. of artesunate capsules (50 mg) given as single dose	No. of artesunate capsules (200 mg) given as single dose
5–10	3 months – 2 years	1	–
15–20	2 – 5 years	2	–
20–30	5 – 8 years	3	–
30–50	8 – 12 years	–	2
50–60	Adult & > 12 years	–	3

Prescribing tip: artesunate rectal capsules remain stable in temperatures of up to 40°C and therefore require cool – but not cold – transport and storage. They have to be inserted at least 2 cm into the rectum.

Second line treatment of severe malaria with quinine

If artesunate is not available or a person is allergic to artesunate, then the second line treatment with quinine is given instead.

- **Loading dose:** 20 mg quinine/kg. Omit the loading dose if the patient has had an adequate dose of quinine (>40 mg/kg) in the previous 2 days. The loading dose should be given as an IV infusion over 4 hours.
- **Maintenance dose:** 10 mg quinine/kg. The maintenance dose must be given every 8 hours. The maintenance dose should be gi–ven as slow infusion over 4 hours.
- If IV therapy is still required after 48 hours, the maintenance dose should be reduced to 7 mg/kg to avoid the risk of accumulation.
- A minimum of three doses of IV quinine should be given before changing to follow-on oral treatment with AL.

- Quinine can be diluted in 5% dextrose, 10% dextrose or normal (0.9%) saline
- Dilute quinine to a total volume of 10 ml/kg (the same volume is used for both loading and maintenance doses) and infuse over 4 hours
- Quinine can cause hypoglycaemia, therefore blood glucose should be monitored every 4 hours

Follow-on treatment of severe malaria with AL

Once the patient can tolerate oral medication, or after at least 24 hours of parenteral treatment, stop artesunate and complete treatment with a full course of AL.

Cerebral malaria

is a form of severe malaria that may present with coma and convulsions. The treatment is as for severe malaria. If there are convulsions, then treat these with diazepam (*see 4.1*). Do not give steroids or any other medication. Follow hospital standing operating procedures for managing a patient in coma.

3.4 Measles

Measles is a dangerous illness with a high mortality caused by a virus in children who have not been immunised, presenting with a typical viral rash, conjunctivitis, sore throat, cough, mouth ulcers and ear infection, with serious complications such as diarrhea, pneumonia (50% with secondary bacterial infection), malnutrition, meningitis and blindness. Measles is a *notifiable disease* and is *highly contagious*. It is rarely seen in infants under 3 months as they have some protection from maternal antibodies.

Treatment of mild and moderate measles

- If measles is suspected, hospitalise all cases with complications with the child kept isolated from other children and notify the RHO.
- Give supportive measures for the symptoms. These are: ORS, other fluids, zinc, paracetamol for fever and distress, gentian violet in the mouth for ulcers and tetracycline ointment for conjunctivitis. For dosage see the relevant section.
- Give vitamin A 50,000 IU for infants 2 – 6 months; 100,000 units for infants 6 – 11 months and 200,000 units for children > 1 year.
- If the child already has signs of pneumonia treat with antibiotics.
- Begin all measures for control of an epidemic, guided by the RHO.

Treatment note: All children with measles should be followed up and the RHO must be informed.

Advice: Parents must take the child to the HC, RHC or H immediately and bring any other children that may have a similar illness. All children must be immunised to prevent this dangerous disease.

Precaution: Measles is dangerous and contagious. It is important the care and rapid referral of the child is a top priority.

Treatment of severe measles

Follow the guidelines given in other sections of this manual for the management of the following complications of measles:

- **Pneumonia**: Give antibiotics for pneumonia to all children with measles and signs of pneumonia
- **Otitis media**
- **Diarrhoea:** Treat dehydration, bloody diarrhoea or persistent diarrhoea.
- **Measles croup**. Give supportive care. Do *not* give steroids.
- **Eye problems.** Conjunctivitis and corneal and retinal damage may occur due to infection, vitamin A deficiency or harmful local remedies. In addition to giving vitamin A, treat any infection present. Clean the eyes with a clean cloth dipped in clean water. Apply tetracycline eye ointment three times a day for 7 days.
- **Mouth ulcers.** If the child can drink and eat, clean the mouth with clean, salted water (a pinch of salt in a cup of water) at least four times a day.
  - Apply 0.25% gentian violet to sores in the mouth after cleaning.
  - If the mouth ulcers are severe and/or smelly, give IM or IV benzylpenicillin (50 000 U/kg every 6 h) and oral metronidazole (7.5 mg/kg three times a day) for 5 days.
  - If the mouth sores result in decreased intake of food or fluids, the child may require feeding via a nasogastric tube.
- **Neurological complications.** Convulsions, excessive sleepiness, drowsiness or coma may be symptoms of encephalitis or severe dehydration. Assess the child for dehydration and treat convulsions accordingly. Intensive nursing care.
- **Severe acute malnutrition:**

3.5 Meningitis & septicaemia,

For treatment of life-threatening infections, see 4.1.

3.6 Viral hepatitis

Viral hepatitis is an inflammation of the liver caused by five viruses, A, B, C, D and E. WHO estimate that there are 1.45 million deaths a year from hepatitis B. Hepatitis A and E are transmitted by the faecal-oral route, and B, C and D by infected blood and poor sterilisation techniques, by sexual spread and (hepatitis B and possibly C and D), vertical spread from mother to child.

Clinical presentation: There is usually an acute phase infection, presenting with jaundice, anorexia and vomiting, fatigue, dark urine, enlarged tender liver, although this phase can be without symptoms, particularly with hepatitis B in children. All forms can cause a fulminant hepatitis in the acute phase. Hepatitis B and C, but not A or E, can cause a chronic active hepatitis with progression to cirrhosis and liver cancer (hepatoma), but more than 90% of healthy adults who are infected with the hepatitis B virus will recover naturally from the virus within the first year. Hepatitis B can be diagnosed with a surface antigen test.

Prevention: Hepatitis B is an important occupational hazard for health workers which can be prevented by safe and effective vaccine. The mainstay of prevention in the country is immunisation of all children via the EPI programme given as part of the five (pentavalent) vaccine three times at 6, 10 and 14 weeks. The complete course gives protection for at least 20 years and is probably lifelong.

Treatment: There is no specific treatment for acute hepatitis B. Care is aimed at maintaining comfort and adequate nutritional balance, including replacement of fluids lost from vomiting and diarrhoea. Drugs should be *avoided* for symptomatic treatment (including for pain and fever control, antimicrobials, antiemetics) in the acute phase as they may aggravate symptoms and worsen the prognosis. Steroids are not indicated.

Chronic hepatitis B infection can be treated with oral antiviral agents. Treatment can slow the progression of cirrhosis, reduce incidence of liver cancer and improve long term survival. If available, WHO recommends the use of oral tenofovir PO 245mg 1 x day for long term use (good efficacy and few side effects). However it needs to be taken long term for viral suppression and there is currently no regular funding to support this treatment.

Outbreaks of Hepatitis E can occur in camps of displaced people or when water and sanitation are poor. The acute illness is indistinguishable from other viral hepatitis types. The jaundice usually persists for 1–6 weeks and then gradually resolves with most of the affected persons recover completely. A few people develop fulminant hepatitis with a high mortality. It particularly affects pregnant women, with up to 20% mortality. Postpartum haemorrhage in particular should be looked out for. For outbreak response *see 3.12*. Hepatitis E can be prevented by ensuring clean water and sanitation are available and used. In camps with displaced people one of the most urgent priorities is to install clean water and sanitation and promote hygiene to prevent the spread of water-borne disease like hepatitis E.

3.7 Typhoid fever

While being a very dangerous disease, typhoid is also the *most over-diagnosed disease* in Africa. This is because of misinterpretation of antibody tests.

Typhoid is a systemic disease caused by ingestion of food or water contaminated with Salmonella typhi or paratyphi, or contracted from persons who are acutely ill with or healthy carriers (1 – 3% of those who recover) of the disease. It presents with fever and headache, diarrhoea or constipation, anorexia and nausea. 50% of patients have enlargement of the liver and spleen. The rose spots are difficult to see. Complications include intestinal bleeding and perforation, pneumonia, myocarditis, convulsions and meningitis.

Diagnosis should be made primarily clinically. Antibody tests should be used to confirm a clinical presentation and not the other way round as in clinical trials antibody tests correlate poorly with blood culture results. Many healthy people have antibodies from previous infection with one of the 200 related salmonella organisms that cause mild diarrhoeal disease.

Treatment of typhoid fever is difficult because the organism has become resistant in many areas to antibiotics that have been used (chloramphenicol, co-trimoxazole and ciprofloxacin). When a new case presents one of these may still be used in the first line but stool samples should be sent off under the surveillance programme so that antibiotic sensitivity can be identified. If the disease is known locally to be sensitive from previous experience to chloramphenicol, then this

can be used. If resistance patterns are not known, then ciprofloxacin can be given as first line treatment.

- Chloramphenicol PO 500mg (or 12.5mg/kg per dose) 4 x per day for 14 to 21 days *or*
- Ciprofloxacin PO 500mg (or 7.5mg/kg per dose) 2 x per day for 14 to 21 days

These are not normally given to pregnant women who should be treated initially with amoxicillin if the organism may be sensitive or a cephalosporin. If typhoid is resistant to both these then azithromycin or cefotaxime may be needed if available.

3.8 Leishmaniasis

Leishmaniasis is caused by protozoan that are transmitted to humans by the bites of infected female sandflies. There are three main forms of the disease: cutaneous, visceral and mucocutaneous with some cases of the visceral form and occasional cases of the cutaneous form seen in the country. Visceral leishmaniasis (VL, also known as kala-azar) is fatal if left untreated. It is characterized by irregular bouts of fever, weight loss, enlargement of the spleen and liver, and anaemia. VL can occur in outbreaks. People with VL may also develop post-kalar-azar dermal leishmaniasis, PKDL, that appears as a macular, papular or nodular rash usually on face, upper arms, trunks and other parts of the body.

The treatment of visceral leishmaniasis is for those with experience in treating the disease and in monitoring for side effects of treatment. The national guidelines must be followed (Treatment of visceral leishmaniasis in Somalia WHO/MOH 2012.) where details of managing treatment relapses can be found. Care also requires treatment of concurrent infections and malnutrition. Patients are registered in the national treatment programme.

The objectives of VL treatment are:

- to reduce parasites to “below the level of detection”;
- to support the patient’s nutrition and hydration;
- to treat complications;
- to prevent development of drug resistance, and to reduce or interrupt transmission of infection in the community

<u>First line regimens for primary VL</u>

Combination therapy with sodium stibogluconate IM (20mg/kg 1 x per day) and paromomycin IM (15mg/kg 1 x day) for 17 days. Alternatively if

paromomycin is not available, stibogluconate is given as monotherapy at the same dose for 30 days.

If there is severe vomiting from treatment, stibogluconate is stopped for 2 to 5 days. If a patient has ascites, the dose is reduced by subtracting 5kg from the weight of an adult or 2kg from the weight of someone weighing 24 – 40kg and 1kg from a child weighing between 10 – 23kg. Liver function tests are monitored during treatment and an ECG taken. Treatment is stopped if there is continued vomiting, if there is excessively high LFTs, hepatitis, pancreatitis or signs of cardiac toxicity.

As second line treatment for those who could not tolerate first line treatment, in pregnant women or those co-infected with HIV, Liposomal amphotericin B is given as monotherapy instead at a dose of 3-5mg/kg by IV infusion 1 x per day for 6 – 10 days to a total dose of 30mg/kg. PKDL requires a longer course of treatment.

Treatment of concurrent infections and malnutrition

People with VL present with other infections as their immunity is suppressed by the disease, and with malnutrition. They are tested for malaria and treated appropriately, and given (unless pregnant) vitamin A, amoxicillin for 5 days, tinidazole for 3 days or metronidazole for 7 days, treatment of acute malnutrition and/or treatment with iron folate, vitamin C and multivitamins (unless good quality food available). They are discharged with 30 days of iron folate and a single treatment of albendazole for worms.

3.9 Schistosomiasis

Schistosomiasis, a waterborne parasitic infection, is caused by several species of trematode worms of which two forms may occur in the country, intestinal schistosomiasis caused by Schistosoma mansoni and urinary schistosomiasis caused by S.haematobium. Intestinal schistosomiasis can present with abdominal pain, diarrhoea and blood in the stool, and liver enlargement and ascites in advance cases. Urinary schistosomiasis presents with blood in the urine (haematuria). Fibrosis of the bladder and ureter and kidney damage are long term consequences and squamous cell cancer of the bladder.

Treatment of schistosomiasis

Praziquantel is usual effective in a single dose. It can be of particular value in patients with helminth (worm) infections. It is well tolerated and wellsuited for mass treatment control programmes.

Praziquantel Tablet: 600 mg. Give 40-60mg/kg by mouth as a single dose

Side effects: may include abdominal discomfort, nausea, vomiting, headache and rarely hypersensitivity reactions.

Schistosomiasis control focuses on reducing disease through periodic, large-scale population treatment with praziquantel; a more comprehensive control approach is also needed in increasing availability of drinking water, adequate sanitation and snail control.

3.10 Leprosy

Cases of leprosy are infrequent but staff should be vigilant when examining new rashes, and test for loss of sensation. People with leprosy may present with ulcers on hands and feet from the loss of sensation. Like tuberculosis, leprosy is a mycobacterium that is treated with multidrug therapy (MDT), with two regimes, one for paucibacillary (PB) leprosy and one for multibacillary (MB) leprosy. Medicines come in blister packs, for adults and children. These can be requested from the MOH and from WHO's programme for neglected tropical diseases (NDT). Patients are registered in the national treatment programme.

MDT can be given to HIV-positive patients, those on antiretroviral treatment and to patients on treatment for TB. If a leprosy patient is treated for TB, the MDT regimen should omit rifampicin as long as the TB regimen already contains rifampicin. PB patients need two drugs for six months while MB patients need three drugs for 12 months. Every effort must be made to ensure regularity of drug intake so that PB cases complete their treatment in six months and MB cases in 12 months. Relapse and default cases are treated as new cases.

Adult treatment regimen for MB leprosy. Duration: 12 months (12 blister packs)

- Rifampicin: 600 mg 1 x per month
- Clofazimine: 300 mg 1 x per month, and 50 mg 1 x per day
- Dapsone: 100 mg 1 x per day

Adult treatment regimen for PB leprosy. Duration: 6 months (6 blister packs)

- Rifampicin: 600 mg 1 x per month
- Dapsone: 100 mg 1 x per day

Child (age 10-14) treatment regimen for MB leprosy. Duration: 12 months (12 blister packs)

- Rifampicin: 450 mg 1 x per month
- Clofazimine: 150 mg 1 x per month, and 50 mg 1 x every other day
- Dapsone: 50 mg x per day

Child (age 10-14) treatment regimen for PB leprosy. Duration: 6 months (6 blister packs)

- Rifampicin: 450 mg 1 x per month
- Dapsone: 50 mg 1 x per day

For children under 10 years of age, follow same regime with following dosages:

- Rifampicin: 10 mg/kg; Clofazimine: 1 mg/kg; Dapsone: 2 mg/kg

Common drug side-effects include reddening of the urine and darkening skin are inevitable. Dapsone can cause anaemia so iron folate is given. Allergy can occur to both dapsone and rifampicin in which case they should be stopped. If rifampicin causes jaundice it should also be stopped. Leprosy reactions can occur, and can be treated. They include the skin rash becoming red and swollen again, pain or numbness in the limbs, weakness of hand or feet, loss of vision, pain or redness of the eyes. Any limb with loss of sensation must be protected to prevent ulceration, and shoes worn to protect feet. Full support for disability prevention and management is given in the community.

3.11 Rabies

Rabies is a zoonotic viral disease spread by the bits of dogs and other animals Once a person has contracted the disease it is always fatal. The virus spreads through the central nervous system causing a progressive, fatal inflammation of the brain and spinal cord.

There is currently no veterinary prophylaxis, nor prophylactic immunisation for humans available in country, and so for any cases of dog bite, post-exposure prophylaxis is adopted. Immediate wound cleansing and immunization within a few hours after contact with a suspect rabid animal can prevent the onset of rabies and death.

Post-exposure prophylaxis (PEP)

Local treatment of the wound, initiated as soon as possible after exposure. Recommended first-aid procedures include immediate and thorough flushing and washing of the wound for a minimum of 15 minutes with soap and water, detergent, povidone iodine or other substances that kill the rabies virus. Do not suture the wound except to stop bleeding. Dress with a dry gauze.

A course of potent and effective rabies vaccine that meets WHO recommendations (intramuscular or intradermal, see below).the administration of rabies immunoglobulin, if indicated

Categories of contact with suspect rabid animal	Post-exposure prophylaxis measures
◆ touching or feeding animals, licks on intact skin	None
◆ nibbling of uncovered skin, minor scratches or abrasions without bleeding	Immediate vaccination and local treatment of the wound
◆ single or multiple transdermal bites or scratches, licks on broken skin; contamination of mucous membrane with saliva from licks, contacts with bats	Immediate vaccination and administration of rabies immunoglobulin; local treatment of the wound

Treatment note: if rabies immunoglobulin is not immediately available, give vaccine and give immunoglobulin up to 7 days after exposure.

Either Immunisation with tetanus toxoid with the 5 dose intramuscular regime One dose of the vaccine should be administered on days 0, 3, 7, 14 and 28:

- Given in the deltoid region of the upper arm or, in small children, into the anterolateral area of the thigh muscle.

Or Immunisation with tetanus toxoid with the 4 dose intradermal regime (if PVRV (Verorab™) and PCECV (Rabipur™) are available which have been proven to be safe and efficacious by the ID route using 0.1 mL per ID site):

- One dose of vaccine, in a volume of 0.1 ml is given intradermally at two different lymphatic drainage sites usually in the deltoid muscle on the left and right upper arm and suprascapular area
- Given on days 0, 3, 7 and 28.

Human rabies immunoglobulin is given at a dose of 10 iu/kg. Infiltrate as much of this by injection in the depth and around the edges of the wound site and give the rest by IM injection.

3.12 Water, sanitation and hygiene (WASH)

Core WASH activities are conducted from the referral health centre, hospital and into communities. Staff teach core hygiene messages as appropriate. Minimum water, hygiene and sanitation standards are applied in all activities. These are outlined in in the EPHS and in separate WASH protocols. Water treatment sachets or aquatabs may be distributed from the RHC as outlined in the WASH programme in each region.

3.13 Outbreaks

Hospital staff are all involved in active surveillance programmes and report any cases of notifiable epidemic diseases immediately to the RHO. Staff follow the national communicable disease surveillance protocols. If an epidemic response is initiated, staff may be called to assist in all targeted vaccination campaign, case identification and prevention activities.

Outbreak response steps

- Prepare for an outbreak.
- Verify the diagnosis and confirm the existence of an outbreak.
- Define a case and conduct case-finding.
- Tabulate and orient data: time, place, person.
- Take immediate control measures.
- Communicate findings.
- Implement and evaluate control measures.

4. Emergency care

4.1 Emergency medical care

Triage

Triage is the process of rapidly screening a sick person soon after their arrival at the HC, in order to identify:

- those with *emergency signs*, who require immediate emergency treatment;
- those with *priority signs*, who should be given priority in the queue so that they can be assessed and treated without delay; and
- non-urgent cases, who have neither emergency nor priority signs.

Emergency signs include:

- obstructed or absent breathing
- severe respiratory distress
- central cyanosis (blue colour of lips and tongue)
- signs of shock (cold hands, capillary refill time longer than 3 seconds, high heart rate with weak pulse, and low or unmeasurable blood pressure) coma (or seriously reduced level of consciousness)
- convulsions
- signs of severe dehydration in a person with diarrhoea (lethargy, sunken eyes and in children: very slow return after pinching the skin or any two of these).

People with these signs require *immediate* emergency treatment to avert death.

Assess the ABC – Airway, Breathing, Circulation

- Airway
  - Assess patient
  - Establish a patent airway
  - Stabilize cervical spine with rigid collar if injured
- Breathing
  - Assess patient
  - Administer oxygen from concentrator if available
  - Assist ventilation, if indicated
  - Alleviate tension pneumothorax or massive haemothorax with chest drain
  - Seal open chest wound (pneumothorax)

- Circulation and control of haemorrhage
  - Cardiopulmonary resuscitation (**CPR**) if required (*see Somali CPR guidelines*)
  - Direct pressure to bleeding site
  - Assess patient
  - Intravenous access and blood samples
  - Fluid resuscitation
  - Transfusion, if indicated

Assess the airway and breathing (A, B)

Does the person's breathing appear to be obstructed? Look at the chest wall movement, and listen to breath sounds to determine whether there is poor air movement during breathing. Stridor indicates obstruction.

Is there central cyanosis? Determine whether there is bluish or purplish discoloration of the tongue and the inside of the mouth.

Is the person breathing? Look and listen to determine whether the person is breathing.

Is there severe respiratory distress? The breathing is very laboured, fast or gasping, with chest indrawing, nasal flaring, grunting or the use of auxiliary muscles for breathing (head nodding). The person is unable to eat because of respiratory distress and tires easily.

Other emergency measures to secure airway if necessary by staff experienced in these techniques:
- Forward jaw thrust
- Insert oro/nasopharyngeal airway
- Endotracheal intubation
- Cricothyroid puncture
- Tracheostomy

If there is obstructed or absent breathing, central cyanosis or severe respiratory distress:

- Manage airway if there is obstruction with a foreign body (see training manual on how to manage the choking infant, child and adult).
- Give ventilation with bag and mask if absent respiration.
- *Refer immediately* if person is able to breath but has very rapid breathing or has cyanosis.

Assess circulation (for shock) (C)

People in shock are lethargic and have cold skin, prolonged capillary refill, fast weak pulse and hypotension.

- *Check the pulse* (very fast) *and the BP* (very low). If the radial pulse is strong and not obviously fast, the child is *not* in shock. If you cannot feel the radial pulse, feel the carotid pulse.
- *Check whether the person's hand is cold*. If so, determine whether the child is in shock.
- *Check whether the capillary refill time is longer than 3 s*. Apply pressure to whiten the nail of the thumb or the big toe for 5 s. Determine the time from the moment of release until total recovery of the pink colour. *If capillary refill is longer than 3 s, check the pulse*. Is it weak and fast?

Treatment of shock:

- Stop any bleeding
- Put them in Trendelenburg position (with head lower than body)
- Give IV fluids (ringers lactate or 0.9 sodium chloride). But if a child has severe acute malnutrition, give IV 5% glucose instead)
- Keep person warm

IV fluids for treating shock

Replacement fluids are used in hypovolemic shock to replace abnormal losses of blood or extracellular fluids by increasing the volume circulating in the blood vessels. Initial treatment with these fluids may be life-saving and provide some time to control bleeding and obtain blood for transfusion, if it becomes necessary. Crystalloid solutions with a similar concentration of sodium to plasma (normal saline or balanced salt solutions) are effective as

colloid replacement fluids. Dextrose (glucose) solutions do not contain sodium and are poor replacement fluids so *should not be used*. Crystalloid replacement fluids should be infused in a volume *three times* the volume lost in order to correct hypovolaemia. Colloid solutions (albumin, dextrans, gelatins) are replacement fluids but are not better than crystalloids in resuscitation. If used at all, colloid solutions should be infused in a volume equal to the blood volume deficit.

If there is severe acute malnutrition do not give ringers lactate or 0.9% sodium chloride but start with 5% dextrose instead and follow guidelines for replacement in people with SAM.

Age (weight)	Volume of Ringer's lactate or 0.9% sodium chloride (20 ml/kg)
2 months (< 4 kg)	50 ml
2–< 4 months (4–< 6 kg)	100ml
4–< 12 months (6–< 10 kg)	150ml
1–< 3 years (10–< 14 kg)	250ml
3–< 5 years (14–19 kg)	350ml

For the clinical use of blood, see 4.2. For treatment of convulsions and severe dehydration, see under Child Health.

Management of major surgical, traumatic or obstetrical haemorrhage

Major bleeding from whatever cause needs urgent management with initial measures to ensure survival including fluid replacement and blood transfusion. Consult surgical and obstetrical protocols.

Treatment steps for major bleeding.

- Head down tilt/raise legs (Trendelenburg position).
- Give oxygen if available from concentrator.
- Establish intravenous access with 2 large-bore cannulae (14 g or 16 g).
- Infuse crystalloid replacement fluids (0.9% sodium chloride or ringers lactate) as rapidly as possible. Restoration of normal circulating volume is a priority.
- Identify the cause of the bleeding and do appropriate first measures to reduce blood loss if possible while preparing for appropriate surgical intervention according to cause.
- Send sample to blood bank for matching of further blood, but do not wait for crosmatched blood if there is serious haemorrhage. Do a haemoglobin or order full blood count if available.
- Give group O negative antibody-screened blood (and/or uncrossmatched group specific blood from the blood fridge) until fully crossmatched blood has been prepared.
- Continuously monitor pulse rate, blood pressure, respiratory rate and conscious level.
- Insert urinary catheter and measure hourly output.

Blood salvage

Blood salvage is the collection of shed blood from a wound, body cavity orjoint space and its subsequent reinfusion into the same patient. It can be used in emergency or trauma surgery using blood taken from a previously closed cavity (e.g. from a ruptured ectopic pregnancy or ruptured spleen) if the blood is clean. It must not be used if the blood is contaminated with bowel contents, bacteria, fat, amniotic fluid, urine or malignant cells. Blood that has been shed for more than 6 hours should not be used (the blood will be haemolysed and there is risk of hyperkalaemia and infection).

Method of blood salvage by gauze filtration

This method is inexpensive and suitable for the salvage of blood from body cavities.

- At operation and using an aseptic technique, collect blood from the cavity using a sterild ladle or small bowl.
- Mix the blood with anticoagulant.
- Filter the blood through gauze and reinfuse into the patient.

Treatment of anaphylaxis

A person may develop shock as an acute allergic reaction to a medicine, a bee sting or snake bite, or after eating a food that they are allergic to. They present with fast rapid pulse, low BP, may be pale, cold and clammy and may have an urticarial allergic rash or severe wheezing. They need immediate ABC life-saving measures and treatment with adrenaline and IV fluids (ringers lactate or 0.9% sodium chloride).

Treatment steps for anaphylaxis

- Restoration of blood pressure (lay the patient down, raise the legs or put in recovery position)
- Give IM adrenaline (epinephrine) injection.
- Give IV fluids, ringers lactate or 0.9% sodium chloride. (500mls for adults; 20mls/kg for children, see above); may need to be given in 10 – 20 minutes depending on response in BP and pulse.
- Monitor pulse and BP and repeat adrenaline dose if necessary
- Give IV or IM hydrocortisone
- If severe asthma, give inhaled salbutamol 8 puffs via a spacer
- If the heart stops beating, cardiopulmonary resuscitation is needed by specially trained staff.
- When able to take by mouth, give oral chlorphenamine (see under Ch 5 for dose).

Treatment note: Adrenaline is given IM on the anterolateral aspect of the middle third of the thigh.

Adrenaline for anaphlyaxis

Medicine	Age	Dose	Duration	Side effects
Adrenaline (epinephrine) 1mg/1ml (1 in a 1000)	Children < 6 years	150 micrograms, 0.15ml IM	Single dose may need to be repeated days	**Common:** nausea, vomiting, headache **Rare:** irregular heart beat, hypertension, urinary retention
	Children 6 to 12 years	300 micrograms, 0.3ml IM		
	Adults & chldren > 6 years	500 micrograms, 0.5ml IM		
Prescribing tip: Nurses should be trained to give adrenaline in emergencies, and must follow the indications and the dose very carefully.				

Hydrocortisone for anaphylaxis

Medicine	Age	Dose	Duration	Side effects
Hydrocortisone 100mg/1ml	Infants < 6 months	25mg IM	Single dose	Few side effects on one off dose
	Children 6 months to 6 years	50mg IM		
	Children 6 to 12 years	100mg IM		
	Adults & children > 12 years	200mg IM		

Severely malnourished children with shock should be managed in the RHC or hospital. During transfer the child may need an IV infusion. In this case, the fluid diluted and given more slowly: either the same volume of 0.9% sodium chloride *or* ringer's lactate perfusion is mixed with 5% dextrose perfusion. This is given at 15ml/ kg over 1 hour.

Fever management

Fever is a temperature of over 37.5° and is a response by the body to underlying infection and disease. Fever is a positive reaction by the body in its fight against infection.

Treatment steps

- Take the temperature of all patients complaining of being unwell or with history of fever.
- *Refer* all patients with high fever (> 40°) and danger signs – including drowsiness, pallor, convulsions, signs of shock, severe dehydration, signs of meningitis. Give first dose treatment with antibiotic if severe infection suspected and give paracetamol.

- Do a RDT (and/or thick film) on all patients with fever over 37.5° If +, treat for malaria.
- Ask other questions to establish cause of fever and treat underlying cause. Other causes of fever include ARI, viral illness, UTI. *Refer* cases of hepatitis, measles, meningitis and typhoid fever.
- Give paracetamol. In the absence of other signs or symptoms and if the patient is otherwise well, no other treatment is needed, but they should be told to come back if not improving.
- Repeat the RDT after 3 days if fever persists. If RDT+, treat as per STGs. If RDT – then refer child.

Treatment note: Do not give antibiotics if there is mild fever but no obvious cause.

Advice: Do not overdress or underdress a child with fever. Sponging a child with water may initially reduce the temperature but should not be done if it is likely to upset the child.

Treatment of life-threatening infection

Children and adults with life-threatening infections like meningitis, severe pneumonia and septicaemia, may present with very high fever (> 40°), with very rapid breathing, stiff neck, dark purple rash, vomiting, bulging fontanelle in infants, drowsiness or unconscious and have fits. They need to be referred immediately but life-saving support my need to be given.

- Put in recovery position if unconsious
- Give rectal diazepam if prolonged convulsion
- Give fist dose antibiotic
- Give IV fluids

Antibiotic for life-threatening infection (septic shock)

The first line treatment is IV Ampicilin Adults 1g 3 x day; children 50mg/kg 4 x day for 7 days Gentamycin IM: 5 mg/kg 1 x day for 7 days.

When there is no improvement after 24H hours of this treatment, switch to:

- **When origin of infection is unknown:** Continue Ampicillin and Gentamicin AND add Cloxacillin IV Adults: 1g 3 x day; Children: 30mg/kg 3 x day
- **When gastro-intestinal, or gynaecological origin:** Gentamycin IM: 5 mg/kg 1 x day for 7 days AND Ceftriaxone slow IV Adults 2g

1 x day then 1g 1 x day; Children: 100mg/kg 1 x day then 50mg/kg 1 x day the following days AND Metronidazole IV Adults 500mg 3 x day; Children: 7 - 10mg/kg 3 x day

- **When of cutaneous origin:** Cloxacillin IV Adults 1g 3 x day; Children: 30mg/kg 3 x day AND Gentamycin IM: 5 mg/kg 1 x day for 7 days
- **When of pulmonary, urinary and other origin:** Ceftriaxone slow IV Adults 2g 1 x day then 1g 1 x day; Children: 100mg/kg in 1 x day the 1st day, then 50mg/kg 1 x day AND Ciprofloxacin PO Adults 500mg 2 x day; Children 10mg 2 x day for 7 days

Also add oral anti-fungal drugs if necessary (including for cryptococcal meningitis). Fluconazole PO. Adult 200mg 1 x day; Children 6mg/kg 1 x day for 14 days.

Febrile convulsions in children

Children with high fever may have a *febrile convulsion* caused by the fever associated with an infection. Most febrile convulsions do not need diazepam unless they continue for more than 3 minutes.

Treatment steps

- Put the child on their left side in the recovery position.
- When recovered give fluids by mouth.
- Treat as per *Fever Management* and treat any cause of fever.
- If prolonged convulsion give rectal diazepam.

How to give diazepam rectally

- Draw up the dose from an ampoule of diazepam into a tuberculin (1-ml) plastic syringe. Base the dose on the weight of the child, when possible. Then remove the needle.
- Insert the syringe gently 3–4 cm into the rectum, and inject the diazepam solution.
- Hold the buttocks together for a few minutes.
- If convulsions continue after 10 min, give a second dose of diazepam
- Do not give more than two doses of diazepam

Precaution: If an infant or young child stops breathing after administering diazepam give artificial ventilation with bag and mask.

Medicine	Age (weight)	Dose - Diazepam given rectally 10 mg/2 ml solution. Dose 0.1 ml/kg (0.5mg/kg)	Duration	Side effects
Diazepam 5mg/ml 2ml ampules	2 weeks to < 2 months (<4kg)	0.3ml	Single dose.	**Common:** drowsiness, confusion **Rare:** stop breathing
	2 – < 4 months (4 - < 6kg)	0.5ml		
	4 - < 12 months (4–< 6 kg)	1.0ml		
	1 - < 3 years (6–< 10 kg)	1.25ml		
	3 - < 5 years (14 – 19kg)	1.5ml		
	5 – 12 years	2.0ml		
	Adult and child >12 years	3.0ml		

Prescribing tip: Must use a plastic syringe. Insert gently 3 – 4 cm into rectum via anus.

Treatment of convulsions

Treatment of convulsions causes like cerebral malaria and epileptic convulsions in children and adults (*for eclamptic fit see 1.1*)

Treatment steps

- Put the person on their left side in the recovery position.
- If prolonged convulsion give IV diazepam 0.3mg/kg (up to a maximum of 10mg) as a slow IV injection over 2 minutes or give rectal diazepam as above.
- If the patient continues to convulse, give further doses of diazepam every 10 minutes (up to a maximum of three doses).
- Treat patients who have multiple (three or more) or prolonged (lasting 30 minutes or more) convulsions or in *status epilepticus* with a loading dose of IM phenobarbital, 10–15 mg/kg (or IV at a rate of 100mg/minute)
- If convulsions continue give another drug if available (phenytoin 10mg/kg IV over thirty minutes and monitor for respiratory depression. Emergency intubation and assisted ventilation may be needed.
- When recovered give fluids by mouth.
- If fever treat as per *Fever Management* (see above).

4.2 Emergency treatment of poisoning

Some poisons have delayed action, leaving the person looking well soon after they first take the poison or medicine in overdose. These include paracetamol, aspirin, iron, tricyclic antidepressants and organophosphate pesticides. Close monitoring is needed. Some poisons can be absorbed, removed or eliminated, but the mainstay of treatment is to follow the general treatment steps for poisoning.

Removal or elimination of poisons

Absorption: Poisons toxic in small amounts like antidepressants can be absorbed using activated charcoal. It needs to be given as soon as possible to be effective, but at least within an hour of ingestion.

Repeat doses of activated charcoal may help with *elimination* of certain medicines like quinine, carbamazepine or phenobarbital. 50mg of activated charcoal (or less if not tolerated) is given in these cases to adults and children over 12 years initially and then every 4 hours, and an antiemetic given.

Gastric lavage is potentially very dangerous and should never be used for caustic substances like bleach or acids, kerosene or petrol/diesel. It should only be performed if the airway can be protected. Ipecacuanha should never be given for induction of emesis because of the increased risk of inhalation. It is only used when large amounts of substances like iron or lithium have been ingested.

General treatment steps for poisoning

- If unconscious put up IV 5% glucose.
- If in shock, put up IV ringers lactate.
- Immediately admit all cases of poisoning.
- Where possible establish the identity and dose of the poison.
- Manage symptoms as they arise.
- Poisons that depress consciousness also depress respiration. Both airway protection and assisted ventilation may be needed. The airway may be opened with jaw thrust or chin lift, or the use of an oropharyngeal airway. If this is not sufficient, then intubation and ventilation with a bag may be needed. Oxygen can also be used when giving assisted ventilation but the priority is ensuring adequate ventilation even with room oxygen.
- Oxygen should be given via a mask (or via assisted ventilation) if

there is poisoning by carbon monoxide or irritant gases.

- If there is hypotension (with systolic BP < 70 mmHg), the person should be put in left lateral position with the legs raised, and normal saline infused. They must NOT be lying on their back as this may increase the risk of aspiration.
- Heart arrhythmias may respond to treatment of underlying hypoxia and acidosis by ensuring adequate oxygenation and/ or ventilation. Su
- Hypothermia is managed by preventing further heat loss (covering person). Hyperthermia is managed by removing unnecessary clothing and fanning.
- Prolonged convulsions (> 5 minutes) should be treated with 10mg diazepam by slow IV injection into a large vein in adults, or a weight appropriate dose in children.
- For all cases of intentional poisoning (suicidal intent), full mental health assessment is needed and follow up for moderate to severe depression (see 8.1).

Paracetamol poisoning

In addition to the general measures of treating poisoning, a specific antidote, acetylcysteine, may be needed if more than 12 x 500mg tablets have been taken in an adult (or if plasma-paracetamol concentrations can be measured and are above the paracetamol treatment graph). Acetylcysteine is given in 3 consecutive IV infusions over 21 hours. Consult acetylcysteine dosage charts.

Organophosphate insecticide poisoning

In addition to the general measures of treating poisoning, atropine may be needed, but should only be given by a doctor experienced in treating organophosphate poisoning (and ideally an anaesthetist). Signs of poisoning include excessive salivation, bradycardia and

hypotension. A dose of 3 x 600 micrograms/1ml given as a single injection into the midlateral thigh. Five minutes after giving the atropine, recheck pulse, BP, sweating, and pupil size (which should dilate with atropine). If there is no change then the dose of atropine should be repeated, and again in a further 10 minutes. The aim is to get the pulse rate above 80/ minute and the systolic pressure about 80mmHg, usually with dilated pupils (if very dilated this indicates atropine toxicity). A smaller dose of atropine may need to be repeated over the next hours.

4.3 Blood transfusion

The following measures can reduce the need for blood transfusion:

- The prevention or early diagnosis and treatment of anaemia and the conditions that cause anaemia. The patient's haemoglobin level can often be raised by giving iron and vitamin supplements without the need for transfusion.
- The correction of anaemia and replacement of depleted iron stores before planned surgery. This also includes ensuring pregnant women have anaemia corrected so that they have normal haemoglobin when they go into labour.
- The use of intravenous fluid replacement with crystalloids (or colloids) in cases of acute blood loss.
- Good anaesthetic and surgical management, including using the best anaesthetic and surgical techniques to minimize blood loss during surgery and stopping anticoagulants and anti-platelet drugs before planned surgery, where it is safe to do so.

Blood loss is initially managed by fluid replacement with crystalloid fluids (*see 4.1*). If blood is still needed, then whole blood or packed cells are given depending on what is available either from a blood bank or directly from a donor.

Safe blood products, used correctly, can be life-saving but have risks. If standards are poor or inconsistent, transfusion may be extremely risky and transmit infections like HIV and hepatitis B. No blood or blood product should be administered unless all nationally required tests have been carried out (currently for HIV, syphilis and hepatitis B and C). Each unit should be tested and labelled to show its ABO and RhD group.

Whole blood

Whole blood is the most commonly given blood product in the country, usually taken directly from a donor when it is required, so that platelets and coagulation factors may still be active. A 450 ml whole blood donation ("one unit of blood") contains 450 ml donor blood and 63 ml anticoagulant-preservative solution.

Storage: If blood is stored, it is kept between +2°C and +6°C in an approved blood bank refrigerator, fitted with a temperature chart and alarm. If stored, changes occur in blood from red cell metabolism, and platelets and coagulation factors become inactive. Transfusion should be started within 30 minutes of removal from refrigerator.

Indications for blood transfusion

- Red cell replacement in acute blood loss with hypovolaemia and shock
- Severe anaemia
- Exchange transfusion in newborns with jaundice
- In disseminated intravascular coagulation (DIC) or other bleeding disorders when plasma and clotting factors are not available
- In septic shock when crystalloids are not sufficient to maintain circulation

Side effects of transfusion

- Transfusion reaction (including anaphylaxis and haemolysis)
- Risk of volume overload in patients with chronic anaemia and cardiac failure.
- Blood is not sterilized, so is capable of transmitting any agent present in cells or plasma which has not been detected by routine screening for transfusion, including HIV and hepatitis viruses, syphilis and malaria.
- Hypothermia in infants given blood that is not at body temperature

Administration

- Must be ABO and RhD compatible with the recipient
- Never add medication to a unit of blood
- Complete transfusion within 4 hours of commencement

Transfusion treatment steps

Only staff specifically trained may administer blood transfusion following national guidelines and hospital standard operating procedures.

- The volume of whole blood transfused should initially be 20 ml/kg, given over 3–4 h or rapidly (30 mins) if treating shock due to blood loss.
- Check that the blood is flowing at the correct speed.
- Look for signs of a transfusion reaction, particularly carefully in the first 15 min of transfusion.
- Record the person's general appearance, temperature, pulse and respiratory rate every 30 min (a staff member should always be in the room during a transfusion). Monitor for signs of heart failure, fever, fast breathing and respiratory distress, hypotension, acute transfusion reactions, shock haemolysis and bleeding from DIC.
- In children with severe anaemia who are being transfused, also give furosemide 1mg/kg IM.

Treatment of a transfusion reaction

Mild reaction (itchy rash)

- Slow the transfusion
- Give chlorphenamine 0.1mg/kg IM
- Continue transfusion after 30 minutes at normal rate if not progression of symptoms.

Moderate reaction (urticarial, flushing, fever, rigor, faster pulse)

- Stop the transfusion
- Give 200mg hydrocortisone IV
- Give bronchodilator if wheezing (*see 7.2*)
- If improvement, restart transfusion slowly with new blood

Life-threatening reaction (confusion, collapse and anaphylactic shock, rigor, fever, black or dark urine, fast pulse and breathing, unexplained bleeding (DIC))

- Stop transfusion and give 0.9% sodium chloride or ringers lactate infusion 20 - 30ml/ kg
- Give adrenaline (for dose *see 4.1*)
- Treat shock (*see 4.1*)
- Give a bronchodilator if wheezing (salbutamol by spacer or nebuliser or aminophylline 5mg/kg: *see 7.2*)
- Give furosemide 1mg/kg IV.
- Give antibiotics as for septicaemia.

Transfusion for severe anaemia

- Only give as much blood as necessary and not more to restore the clinical condition and not to correct all the anaemia.
- Patients with severe anaemia may be pushed into heart failure by transfusion, so the transfusion is given slowly over 3 - 4 hours and furosemide is given, 40mg IM for an adult or 1mg/kg IM for children. If packed cells are available give this in preference to whole blood as it gives less total fluid volume.
- Reassess and only give more blood if severe anaemia persists.

Transfusion for thalassaemia major

Transfusion is used as part of the spectrum of treatment for thalassaemia, that includes chelation therapy (associated with vitamin C), micronutrients (folate, vitamin D, calcium), immunisation (against pneumococcus and hepatits B) and long term penicillin. Splenectomy is sometimes performed to reduce the need for repeat transfusions in

adults and children > 6 years (not before as high rate in infections in those without a spleen).

Planned blood transfusions can save life and improve its quality by helping to avoid the complications of hypertrophied marrow and early cardiac failure. Give only essential transfusions to minimize iron overload, which eventually leads to iron accumulation, damaging the heart, endocrine system and liver. Aim to transfuse red cells in sufficient quantity and frequently enough to suppress erythropoiesis. Where the risks of transfusion are judged to be small and iron chelation is available, target haemoglobin levels of 10.0–12.0 g/dl may be applied. It is not advisable to exceed a haemoglobin level of 15 g/dl. Small transfusions are preferred because they need less blood and suppress red cell production more effectively.

Transfusion for sickle cell disease

Sickle cell disease is rare in the country. People with sickle cell disease often adapt to having a lower haemoglobin of 7 – 10 g/dl. Transfusions are needed to prevent crises and long term disability from strokes, to treat severe anaemia and sequestration and aplastic crises.

Disseminated intravascular coagulation

In disseminated intravascular coagulation (DIC), the clotting and fibrin systems are both activated, leading to deficiencies of the clotting factors, fibrinogen and platelets. Causes include obstetrical (eclampsia, placental abruption and retained products of conception or retained dead fetus), infection, cancer and trauma.

DIC presents with excessive, uncontrolled bleeding. The lack of platelets and coagulation factors causes bleeding from multiple sites, and thrombi (clots) causing organ problems including respiratory distress, coma, renal failure and jaundice. In the absence of lab tests for coagulation factors and platelets, the diagnosis is based on the clinical presentation and a test that can be done on the ward:

Clotting test for DIC

- Take 2–3 ml of venous blood into a clean plain glass test tube (10 x 75 mm).
- Hold the tube in your closed fist to keep it warm (i.e. body temperature).
- After 4 minutes, tip the tube slowly to see if a clot is forming. Then

tip it again every minute until the blood clots and the tube can be turned upside down.
- The clot will normally form between 4 and 11 minutes but, in DIC, the blood will remain fluid well beyond 15 to 20 minutes.

Blood transfusion for DIC

Rapid treatment or removal of the underlying condition is imperative. If DIC is suspected, do not delay treatment while waiting for the results of the clotting test. Treat the cause and give blood transfusion to help control bleeding. Transfusion is given to help control bleeding until the underlying cause has been dealt with and to maintain an adequate platelet count and coagulation factor levels.

Guidelines for the use of plasma and other blood products will be included in future editions of the STG when these products become available.

4.4 Anaesthesia

Anaesthetic drugs will be included in the next edition of the STGs

4.5 Emergency surgical care

Medicines used in surgical care, such as for surgical prophylaxis, will be included in the next edition of the STGs.

Surgery in anticoagulated patients

Any patients on regular anticoagulants need to have their anticoagulant stopped before surgery.
- Stop warfarin three days preoperatively
- Give heparin subcutaneously, if required.
- Stop heparin 6 hours preoperatively.
- Restart warfarin as soon as possible postoperatively.
- Give heparin as well for the first 3 days
- If emergency surgery and patient was still on warfarin, give vitamin K, 0.5–2.0 mg by slow IV infusion.

4.6 Trauma

Minor wound management

Only staff trained to suture are authorised to do so. Do not suture dirty wounds or wounds that are more than 6 hours old. These should be cleaned and covered. If they are closed then very dangerous infections such as gangrene (from Chlostridia welchii) may develop. Later

infections from poorly managed wounds include osteomyelitis (*see 5.4*).

- Clean wound with antiseptic (diluted chlorhexidine)
- Cover with sterile bandage
- Give tetanus toxoid IM
- Suture small wounds if clean and a recent injury (within 6 hours) with a sharp clean object like a knife. For any dirty injury or bite do not suture.
- Review every 2 – 3 days and remove sutures after 7 days.
- Surgical hemostasis of bleeding vessels.
- Delayed primary closure of the wound. This is done not less than after 3 days but only when the wound is clean and pink.

Major wound management

- Stop bleeding with pressure with sterile gauze.
- Treat with IV fluid if significant blood loss or signs of shock.
- Emergency debridement and trauma surgery
- Surgical hemostasis of bleeding vessels.
- Only wounds that are caused by a clean object and less than 6 hours old are closed.
- Delayed primary closure of the wound. This is done not less than after 3 days but only when the wound is clean and pink.

Bites

- Clean wound with antiseptic (diluted chlorhexidine)
- Do not carry out any customary practices associated with snake or other animal bites.
- Cover with sterile bandage
- Do not suture the wound.
- Give tetanus toxoid IM
- Admit all snake bites, dog bites or those of wild animals. Refer to national guidelines on use of antisnake venom. For the treatment of rabies, *see 3.11*.

Fractures

- Splint the fracture if trained to do so.
- If substantial bleeding or signs of shock, give IV ringers lactate.
- Emergency trauma management and fracture management.

Burns

Small superficial burns without blisters:

- Put the affected area into cold water for 15 minutes
- Apply silver sulphadiazine 5%
- Apply gauze dressing
- Give paracetamol
- Do not give antibiotics
- See daily until healing well.

Advice: give more fluids at home

Treatment of severe burns

The principles of managing burns are emergency trauma management, fluid replacement, preventing compression of circulation by escharatomy, pain control, adequate nutrition, promoting healing and infection control and preventing contractures. The severity of the burn is assessed by the time of the burn injury, the depth of the burn, the weight of the person and the % surface area that was burned (consult surgical guidelines for children and adults).

- Emergency trauma management of burns
  Emergency measures are taken to maintain the ABC.
- Fluid replacement
  Oral fluids (ORS and others) are given to all people with burns with patent airways and able to swallow. IV fluids are also needed if the burn covers more than 15% of the surface area of an adult or more than 10% of the surface of a child. The use of crystalloid fluids alone is safe and effective for burns resuscitation. Using the correct amount of fluid in serious burns injuries is much more important than the type of fluid used. The most useful indicator of fluid resuscitation is hourly monitoring of urine output. Blood transfusion is only needed if there are signs indicating inadequate oxygen delivery. Calculate fluid requirements of people with burns as follows:

  First 24 hours: Add together the fluid required due to burn (ml) = 3 x weight (kg) x % burned area plus the fluid required for maintenance (ml) = 35 x weight (kg)

  Give half this volume in the first 8 hours and the other half over the remaining 16 hours

Second 24 hours: Add together the fluid required due to burn (ml) = 1 x weight (kg) x % burned area plus the fluid required for maintenance (ml) = 35 x weight (kg)

Give this volume over 24 hours

Catheterisation and NG tube may also be needed for patients with > 20% burns.

- Preventing compression of circulation
  Any full-thickness circumferential burns may stop the circulation. The burns wounds may need to be incised by someone trained to do this (*escharatomy*) to ensure the area distal to the injury still receives blood flow.
- Pain control
  Adequate pain control is needed with morphine if available or tramadol. If not, then give paracetamol, and ibuprofen if also needed.
- Nutrition
  Severe burns increase the body's metabolic rate, protein breakdown resulting in weight loss and poor wound healing result. Morbidity and mortality can be reduced by a high-protein,

  high calorie diet. Vitamin supplements (multivitamins) and iron folate may be needed to prevent anaemia.
- Promoting healing and infection control
  Give anti-tetanus toxoid: it is essential for burned patients.

  Debride burn wounds of any dead tissue (the most effective way of stopping infection)

  Use an aseptic technique when dressing burns

  Apply silver sulphadiazine 5% and cover with clean bed linen or gauze dressing

  Give antibiotics only if wound is contaminated (give cloxacillin or co-amoxiclav) or there is cellulitis.

  Skin grafting may be needed once wound is clean with healthy granulation tissue.
- Preventing complications and contractures
  Physiotherapy is vital to prevent pneumonia, disability and contracture formation. It must be started at an early stage.

5. Musculo-skeletal and pain control

5.1 Musculoskeletal conditions

These include rheumatoid arthritis, osteoarthritis, gout, polymyalgia rheumatica, psoriatic arthritis, SLE and many others. Specific management of some of these conditions will be included in the next edition of the STGs. See below for analgesia and anti-inflammatories and use of steroids for disease suppression for some of these conditons.

Gout

Gout is characterised by sudden onset intense pain and swelling in joints such as (most commonly) the first metatarsal-phalangeal joint of the foot, the mid foot, ankle, knee, finger joints, wrist and elbow. It is associated with raised uric acid in the blood causing deposition of urate crystals in the joints. Crystals formed on the cartilage are shed into the joint space, causing pain.

Acute attacks of gout are treated with non-steroidal anti-inflammatories (NSAIDs), given for the shortest time and at the lowest dose to control symptoms. Ibuprofen 400 – 600mg 3 x per day by mouth (but reduce dose as soon as pain is controlled). Alternatives include indomethacin and diclofenac. All NSAIDs should be given after food and not if there is a history of gastritis/ peptic ulcer.

For the prevention of gout, weight loss and reduction of purine-rich foods are important (including meat, sweet drinks, coffee, milk and alcohol). Other risk factors should be assessed such as cardiovascular and diabetes risk, and the body mass index (BMI) and BP measured. For preventing repeat attacks, prescribe allopurinol initially 100 mg 1 x per day after food. The usual maintenance dose in mild conditions 100–200 mg daily, in moderately severe conditions 300mg to 600mg daily, in severe conditions 700–900 mg daily; doses over 300 mg daily should be given in divided doses. Allopurinol should only be started more than 2 weeks after an attack which has been treated with NSAIDs (with NSAIDs continued until the person is pain free).

Side effects of allopurinol include rashes and gastrointestinal disturbances. If a rash appears, the treatment is stopped then gradually reintroduced; if another rash occurs then allopurinol should not be given.

5.2 Pain control

Analgesics (pain medicines) can be divided into two groups:

- **Non-opioids:** These include paracetamol (acetaminophen) and the non-steroidal anti-inflammatory drugs (NSAIDs), eg aspirin, ibuprofen and diclofenac.. NSAIDs are useful in managing pain from bones and joints
- **Opioids:** These are the morphine-like drugs and include codeine, tramadol and morphine. Morphine is usually reserved for severe pain conditions and in palliative care.

Side-effects of NSAIDs:

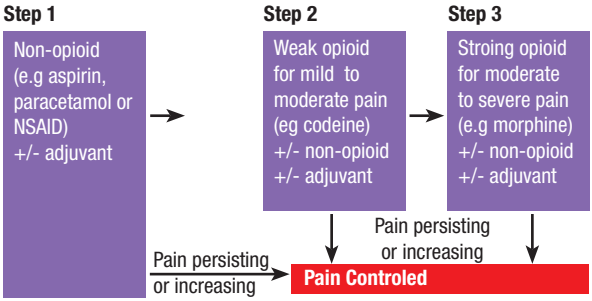
The main side effect of aspirin and other NSAIDs is stomach irritation, so they should, if possible, be taken with food. NSAIDs should not be used in patients who are very dehydrated as they may cause renal failure. They can also interfere with blood clotting

Side-effects of opioid drugs:

- **Constipation:** Morphine usually causes constipation, so it may need to be prescribed with a laxative unless the patient also has diarrhoea.
- **Nausea:** Some patients develop nausea when they start morphine and will need an antiemetic for the first few days.
- **Drowsiness:** It is common to get drowsy when first starting on morphine or when the dose is increased. This usually improves after three to four days. If it does not improve, then it may be a sign that the morphine dose is too high.
- **Sweating and itching:** These are less common side-effects that may be associated with taking morphine.

Analgesics should be given:

- **By mouth:** Giving analgesics by mouth is the simplest and most reliable method for most patients. If the patient cannot take tablets by mouth, then the subcutaneous, rectal, and buccal routes are alternatives.
- **By the clock:** Constant pain needs regular analgesics to keep it away. Pain that is allowed to build up is more difficult to control. Do not wait for the pain to return but give analgesics at regular intervals according to their duration of action, eg codeine 30mg every four hours.
- **By the ladder:** The WHO analgesic ladder gives a logical way of increasing the strength of analgesia in steps as pain increases (*see below*).



Explain to the patient:

- The medicine is to keep the pain away. Take it regularly and do not wait for the pain to return before taking the next dose.
- The medicine needs to be continued as long as the cause of the pain is still there: If the cause of the pain was an infection that has now been treated, they may be able to reduce or stop the medicine.
- If the cause of the pain is something for which there is no available treatment, then they will need to continue taking the medication.

Dosage chart for oral analgesia

Non-opioid analgesic	Dose (Adults) All oral	Duration of action
Paracetamol	500mg – 1g 4 x per day	4-6 hrs
Aspirin	300 – 600mg 4 x per day	6 hrs
Ibuprofen	200 – 600mg 3 x per day	6-8 hrs
Diclofenac	50mg 3 x per day	8 hrs
Opiod analgesics	Dose (Adults)	Duration of action
Codeine	30 – 60mg 4 x per day	4-6 hrs
Tramadol	50 – 100mg 4 x per day	6 hrs
Morphine	Increase gradually	
Normal release morphine	2.5 – 5mg 4 hourly	4 hrs
Modified release morphine	10 – 20mg 12 hourly	12 hrs

5.3 Use of steroids for disease suppression

Steroids are powerful drugs that can be lifesaving when used for treating conditions like asthma and COPD (*see 7.2*) and can effectively suppress the inflammation of disease like rheumatoid arthritis or polymyalgia rheumatic. They are also very useful in palliative care in reducing swelling and therefore pain from tumours. But steroids also have very serious, potentially life-threatening side effects, so should

be used with the utmost care, monitored very carefully and reduced or stopped as soon as they are not needed. Long term use is always associated with side effects, so the benefits of taking the steroids needs to be carefully considered against the dangerous negative effects. If steroids are given short term for a week they can be stopped without reducing the dose first. If they have been given for more than 2 weeks then they should be gradually tailed off to help reduce the rebound side effects like low BP caused by adrenocortical suppression.

Side effects of steroids include: thinning bones (osteoporosis, causing more fractures), weight gain, swelling of the face and ankles, thinning of the skin, weakness of the muscles, diabetes, gastric ulcer, cataracts, suppression of the immune system. If they cause acute agitation they should be stopped and the person given a one or two doses of haloperidol or chlorpromazine. Steroids must not normally be used in any acute or chronic infective condition and usually also avoided in HV and TB.

The dose of steroids depends on the condition but the lowest dose should be given for as short a time as possible.

Joint destruction in moderate rheumatoid arthritis: prednisolone PO 7.5mg 1 x per day may reduce the rate of joint destruction.

Polymyalgia rheumatic: Start with 15 - 20mg prednisolone PO 1 x per day. Maintain for 2-4 weeks. Reduce by 2.5mg every 4 weeks until 10mg 1 x per day. After 1 month of 10mg reduce thereafter by 1mg each month. Treatment may need to maintained for 18 to 24 months. About half of people will relapse during treatment requiring prednisolone to be increased again for a brief period before reducing more slowly.

Polyarteritis nodosa and systemic lupus erythematosus is treated similarly to polymyalgia rheumatica but a higher dose (up to 60mg 1 x per day) may be needed initially, especially if there are severe disease effects such as pleurisy, pericarditis or other systemic disease manifestations.

5.4 Bone and joint infections

Septic arthritis

This is an acute infection in joints. The causative bacteria include Staphylococcus aureus, Haemophilus influenza and group B Streptococcus. The treatment is urgent drainage and wash-out by a

specialist, intravenous antibiotics and short-term immobilisation to reduce pain. A first line antibiotic is cloxacillin or amoxicillin (as for osteomyelitis but normally given for 2 to 4 weeks). If gonoccal arthritis is suspected then daily ceftriaxone is needed for 2 weeks.

Acute osteomyelitis

An infection of bones, presenting particularly in the long bones of children or in adults with diabetes or immunosuppression. Causative organisms include Staph. aureus, Strep. pyogenes, Strep, pneumoniae and gram negative organisms. In children with sickle cell disease, salmonella species may cause osteomyelitis. The most common cause is blood borne spread from an infection near by, or from trauma or surgery.

In the early stages, osteomyelitis can be treated with IV then oral antibiotics for 4 to 6 weeks. Early treatment stops future deformity and allows normal growth of the long bone infected. The choice of antibiotic is difficult unless bacteriological culture and antibiotic sensitivity is available. If not, a good first choice antibiotic would be either IV benylpenicillin (followed by oral penicillin V), IV ampicillin (followed by oral amoxicillin) or cloxacillin. These are given every 6 hours. If treatment response if poor, then a broad spectrum antibiotic such as ciprofloxacin (2 x per day) or ceftriaxone (1 x per day) may be needed. For someone with sickle cell disease, the cause may be salmonella sps for which an appropriate treatment would be with ciprofloxacin (*see 3.7*).

Chronic osteomyelitis

Chronic osteomyelitis usually presents with a suppurating wound. The treatment is primarily surgical, because the pus originates from a cavity where a small piece of dead bone is located (called a *sequestrum*). Surgical management includes debridement and exposure of this bony cavity and *sequestrectomy* (removal of the piece of dead bone). The wound is not closed or packed, but covered in dry gauze. If all the sequestrum is removed, the wound will granulise and start healing. For large wounds, tissue flaps and/or skin grafts may be needed by a specialist.

6. STIs, HIV & TB

6.1 STIs

Prevention of STIs & HIV

Dual protection is proposed against STIs (including HIV, hepatitis B and C) and unplanned pregnancy. It can be achieved by the consistent use of condoms, or the use of one method to protect against unplanned pregnancy (a hormonal method or IUCD, see programme 1) and a second method to protect against STIs and HIV (a male or female condom). The involvement of men is crucial to the success of dual protection. Hormonal methods do not protect women against STIs including hepatitis B, C and HIV.

Condoms

Male condoms significantly reduce the risk of becoming infected with HIV or another STI when used correctly with every act of sex. All men and women can safely use male condoms except those with a severe allergic reaction to latex. Correct condom use must be explained when dispensing condoms.

Consistent messaging to prevent HIV and STIs

- Stigma reduction by raising awareness
- HIV prevention through Behavioral Change Communication (BCC)
- Display and dissemination of educational materials;
- Provision of condoms
- Post-test clubs
- Community mobilization
- Promotion of abstinence; faithfulness and condom use
- Promotion of partner engagement.

Syndromic management of STIs

STIs are treated in hospitals in line with Somali STIs treatment flowcharts. The flowcharts are consulted to make the diagnosis. Medicine dosages are given below.

Treatment of vaginal discharge

- Establish clinical diagnosis based on flowcharts.
- According to diagnosis, give recommended treatment for thrush, bacterial vaginosis, trichomoniasis
- Add treatment for chlamydia and gonorrhea if + risk factors.

- Advise on risk reduction, HIV counselling and testing and condom use
- Notify and manage partner
- Ask to return for in 3 days

Genital ulcer disease, women and men

- Establish clinical diagnosis based on flowcharts.
- According to diagnosis, give recommended treatment for genital herpes, syphilis, chancroid,
- Add treatment for chlamydia and gonorrhea if + risk factors.
- Advise on risk reduction, HIV counselling and testing and condom use
- Notify and manage partner
- Ask to return for in 3 days
- if ulcer still present and not healing a course of treatment might be needed for an alternative diagnosis.

Lower abdominal pain, women

- Establish clinical diagnosis based on flowcharts.
- If missed or overdue period, recent delivery or abortion, abdominal mass, rebound tenderness or guarding or abnormal vaginal bleeding, investigate as potential ectopic pregnancy: do urine pregnancy test, ultrasound if available. Monitor closely. Surgical team on stand-by. If ruptured ectopic pregnancy is possible, then treat as emergency, with IV fluids, do blood group and cross match blood, and surgical intervention as appropriate.
- According to diagnosis, give recommended treatment for pelvic inflammatory disease
- Advise on risk reduction, HIV counselling and testing and condom use
- Notify and manage partner
- Ask to return for in 3 days
- Further clinical examination and investigation and appropriate treatment if pain still present

Urethral discharge in men and women

- Establish clinical diagnosis based on flowcharts.
- According to diagnosis, give recommended treatment for chlamydia and gonorrhea

- Advise on risk reduction, HIV counselling and testing and condom use
- Notify and manage partner
- Ask to return for in 3 to 7 days
- If re-infection or poor compliance, treat again
- If re-infection unlikely and compliance good, treat for trichomonas.

Precaution: The following antibiotics *should not be prescribed* during pregnancy, child birth and breastfeeding:

- Ciprofloxacin
- Doxycycline
- Fluconazole
- Tetracycline
- Metronidazole (1st trimester contraindicated, dose should be halved in 2nd and 3rd trimesters)

Treatment for vaginal thrush (candidiasis)

Women may present with a history of an itchy rash with white discharge from the vagina. It is not always necessary to examine the woman if the history is clear and an STI is not likely, and treatment can be given, but examination is necessary if symptoms don't improve. Thrush is not an STI, but may be associated with an STI. Treatment is with either a pessary that the woman inserts herself in the vagina at home, or (if available) a single tablet of fluconazole taken by mouth. Only one treatment is needed.

Vaginal pessary for thrush (either clotrimazole or miconazole)

Medicine	Age	Dose
Clotrimazole 100mg or 500mg vaginal pessary	Women	Woman to insert in vagina at home: 1 x 500mg Clotrimazole pessary. Single dose
Miconazole 200mg vaginal pessary		Woman to insert in vagina at home: 1 x 200mg Miconazole pessary each night for 3 nights

Oral fluconazole for thrush

Medicine	Age	Dose	Duration
Fluconazole 150mg capsule by mouth	Adults	1 x 150mg capsule	Single dose

Treatment for bacterial vaginosis & trichomoniasis

Metronidazole for bacterial vaginosis and trichomoniasis

Medicine	Age	Dose	Duration	Side effects
Metronidazole 200mg tablets or 250mg capsules	Adults	2000mg (2gr) (8 x 250mg caps or 10 x 200mg tabs) oral single dose or 400mg – 500mg tablet 2 x per day for 7 days.	Single dose or for 7 days	**Common:** nausea **Rare:** vomiting,

Treatment for gonorrhea and chlamydia

Treatment note: The choice of antibacterial regime depends on local availability and changing sensitivity and resistance of organisms.

Azithromycin 1gm (4x 250mg capsule) single dose + ciprofloxacin 500mg cap single dose

OR

Ceftriaxone 125mg IM single dose

Treatment for genital herpes

Acyclovir for genital herpes

Medicine	Age	Dose	Side effects
Acyclovir 400mg capsules	Adults	1 capsule (400mg) 3 x per day for 5 days Or suppressive therapy give: 1 capsule (400mg) 2 x per day for 7 days	**Common:** **Rare:**

Treatment note: If RPR is + treat for syphilis as well.

Treatment for syphilis and chancroid

If not allergic to penicillin:

Benzathine penicillin 2.4 million units IM, divided into 2 and injected in each side, stat

If penicillin allergy give instead:

Doxycycline PO 100 mg 2 x per day for 14 days

Plus

Ciprofloxacin 500 mg PO 2 x per day for 3 days **OR** - Erythromycin PO 500 mg 4 x per day for 7 days

Treatment for pelvic inflammatory disease, PID (women)

If not pregnant:
Ciprofloxacin tablet 500 mg orally single dose **OR** Spectinomycin 2g IM single dose

PLUS

Erythromycin 500 mg 4 times for 7 days OR Doxycycline 100mg BD for 14days

PLUS

Metronidazole 500 mg 2 times a day for 14 days

If pregnant and in the 2nd or 3rd trimesters, do not give ciprofloxacin but give erythromycin plus metronidazole. If treatment is needed in the first trimester, then consider giving ceftriaxone or erythromycin as single treatment and monitor response.

6.2 HIV

Standard precautions for avoiding transmission of HIV and other pathogens in health facilities.

- Standard precautions of infection prevention and control must be taken routinely with all clients at all times. Standard precautions include:
- Use safe injection techniques, with 1 injection given by one person, and dispose of syringe and needle.
- Handle and clean instruments safely
- Handle and dispose sharps safely in safety box.
- Use personal protective materials
- Handle and dispose of waste safely
- Manage needle-stick and other workplace exposure to HIV with post-exposure prophylaxis (PEP)

Prevention of mother to child transmission (PMTCT)

PMTCT is offered at ANC, during delivery and postnatally as an integrated service. As well as HIV specific actions, other preventive activities that stop the mother becoming ill during pregnancy also help reduce HIV transmission. This section outlines the HIV specific treatment activities during maternal and newborn care. Full details are in the Somali PMTCT guidelines.

Antenatal care

- Women are offerred pre-test counselling, and have voluntary testing for HIV, followed by post-test counselling.
- Any HIV + women are seen in the ART centre and by the team who will supervise their delivery care.
- Birth preparedness

During delivery

Follow the full guidelines for PMTCT during labour and delivery supervised by the team.

Postnatal care

- ARV for HIV exposed infants. The first ARV dose is given by specially trained staff before the newborn leaves the delivery room. PCR testing is being introduced at one centre in each political zone.
- Women not previously tested are given pre-test counselling, and have voluntary testing for HIV, followed by post-test counselling.
- Confirm HIV status of newborn using virological test (PCR) when available

PMTCT interventions at ART centre for HIV + women at the regional hospital

At least monthly ANC visits are recommended.

- Cotrimoxazole prophylaxis
- TB screening, counselling and prophylaxis are given.
- Nutrition education, counselling and nutrition assessment.
- Education about preventive WASH activities at home.
- Apply principles of good chronic care.
- Birth spacing counselling for after delivery

Cotrimoxazole prophylaxis

See under Treating PLHIV

TB screening, counselling and isoniazid prophylaxis

See under Treating PLHIV

ART for pregnant and lactating women

ART is initiated *as soon as possible* for all pregnant and lactating women with HIV *and continued for life* to reduce disease progression

in the mother, to reduce HIV-related death, opportunistic infections and TB. ART considerably reduces maternal-to-child transmission (MTCT) and reduces HIV spread to a non-infected partner.

- Preparation for ART (counselling & support, treatment of concurrent illness, lab tests)
- Antiretroviral therapy
- Adherence to ART and retention in care.
- Identification and follow up of HV exposed infants.

Preparation for ART (counselling & support, treatment of concurrent illness, lab tests)

Counselling and support are given as per PMTCT guidelines to encourage clients to fully engage with treatment. Both common illnesses and opportunistic infections must be diagnosed and treated before ART is started. The following lab tests are done: CD4 count (if available, and done every 6 months), hemoglobin concentration, and syphilis antibody test and urine dipstick.

Antiretroviral therapy

The first line ART recommended for all eligible PLHIV should also be used in pregnant and breastfeeding women living with HIV. Women should take the full 3 medicine ART regime. If they were on one medicine before they should be switched to all three. The following regimens may be used:

- zidovudine (AZT) **or** tenofovir (TDF) **AND**
- lamivudine (3TC) **or** emitricitabine (FTC) **AND**
- efavirenz (EFV) **or** nevirapine (NVP)

In this country, tenofovir, emitricitabine and efavirenz (TDF, FTC and EFV) is the preferred first line.

If there is HIV – TB co-infection, treatment for TB is started first and ART started 2 – 8 weeks later. Efavirenz is preferred to nevirapine during co-treatment because rifampicin can reduce serum levels of NVP but not of efavirenz.

Treatment note: The side-effects of ARV drugs that are most likely to be confused with pregnancy-related problems or complications include nausea and vomiting, headache, fatigue, pallor/anaemia, fever, jaundice, abdominal/flank pain, cough/difficult breathing, and depression. Consult PMTCT guidelines for advice on side-effects.

Adherence to ART and retention in care.
Adherence to ART can be assessed using patient self-report, pill count or pharmacy refill records. A combination of interventions are used to enhance adherence.

Identification and follow up of HIV exposed infants.
HIV exposed infants (HEI) have very fast disease progression. Without treatment, one out of every two children infected at birth die by two years of age. In order to establish their HIV-infection status, HEI need to be identified and HIV status determined at the earliest opportunity and started on care and treatment Follow the *Protocol for identifying HIV-exposed infants*.

Children born to women living with HIV need ARV prophylaxis for PMTCT at birth or whenever identified if they are still breastfeeding. At birth, all HEI should be given NVP prophylaxis for 4-6 weeks.

If the mother is HIV infected, the baby receives NVP prophylaxis for 4-6 weeks. If the mother has not yet started, or only recently started ART, then NVP is continued for up to one year for the HEI.

Nevirapine prophlyaxis in infants

Infant age	Daily dosing
Birth to 6 weeks: Birthweight 2000 – 2500g Birthweight > 2500g	 10mg 1x per day 15mg 1x per day
6 weeks – 6 months	20mg 1 x per day
6 – 9 months	30mg 1 x per day
9 months until breastfeeding has ended	40mg 1 x per day

Infants who are diagnosed as being HIV infected will receive full ART with 3 medicines but no longer the prophylactic NVP dose.

It is vital that the HEI comes for regular follow-up visits, along with his parent, and that prophylaxis with cotrimoxazole is given to prevent malaria, pneumonia and diarrhoea in HEIs. Routine childhood immunisations can be given. Isoniazid prophylaxis is given to prevent TB.

Mothers known to be infected with HIV (and whose infants are HIV uninfected or of unknown HIV status) should exclusively breastfeed their infants for the first 6 months of life. The ideal is then to stop

breastfeeding and give appropriate complementary foods thereafter. If there is inadequate alternative feeding, breastfeeding may need to be continued for the first 12 months of life. Breastfeeding should then only stop once a nutritionally adequate and safe diet without breast-milk can be provided. Breastfeeding women should be aware that the key to avoiding HIV transmission is adherence to ART in the mother. If a mother cannot breastfeed, then the child's feeding is entirely switched to bottle with full correct instructions on cleaning bottles and teats and no further breastfeeding encouraged.

Post-exposure prophylaxis (PEP)

PEP is given to victims of sexual violence and to staff exposed to a sharps injury. Full Somali PEP guidelines are followed, including clinical assessment to exposure, counselling and support, and follow up. Assessment is made of underlying comorbidities and possible drug-drug interactions with ARVs. Immediate wound care is given for any broken skin, and specific support and STI prophylaxis also given for victims of sexual violence.

Prescribing for PEP:

Before starting PEP, the exposed person is strongly recommended to have voluntary testing and counselling, and if HIV+ he or she is to be referred for chronic HIV care. The current country guidance is for a 28 day regime of 2 ARVs:

Recommended Regimen: Zidovudine (AZT) PO 300mg 2 x per day PLUS Lamivudine (3TC) PO 150mg 2 x per day for 28 days

- The earlier PEP is started, the more effective, and within 72 hours of exposure.
- PEP should not be delayed while waiting for HIV test results
- Adherence to PEP treatment is very important for the full 28 days.
- PEP can be taken while breastfeeding.
- While taking PEP, it is especially important to use condoms and not to donate blood.
- After the initial HIV test at exposure, repeat testing 3 and 6 months.

If a person has severe anaemia, then stavudine (D4T) is given in preference to zidovudine, in combination with lamivudine.

Treating people living with HIV (PLHIV)
Clinicians follow Somali national guidelines on chronic HIV care. These include guidelines on assessing HIV status and on voluntary counselling and testing, clinical review of clients, reviewing TB status, managing chronic problems, dispensing medication, positive prevention for PLHIV and special considerations in chronic HIV care/ ART for children.

Pre-ARV care
- Diagnose and treat any current infections and opportunistic infections
- Manage malnutrition.
- If hazardous substance use then advise reduction.
- If pregnant, follow full PMTCT guidelines.

Treating opportunistic infections before starting ART
Infections like pneumonia, ear and throat infections, thrush of mouth or oesophagus and persistent diarrhea should all be treated before starting ART. For severe infections like meningitis consult specialist guidelines.

Most of the problems in this section indicate active HIV disease, either because ART has not yet or only recently been started. They can also indicate a problem with adherence.

Treatment of persistent diarrhea
- Treat with cotrimoxazole and metronidazole for 14 days if there is a good response after one week. If diarrhea continues, ART may need to be started under specialist care.
- Give fluids as per guidelines.
- Ensure a supportive diet.

Treatment of recurrent or severe candidiasis

Vaginal candidiasis
Give fluconazole 200mg on the first day, then 100mg 1 x per day for 10 days. Do not give during pregnancy.

Oral candidiasis
- Use miconazole gum patch.
- If no response give fluconazole 100mg 1 x per day for 10 days
- May need intermittent treatment regime if continues after the 10 days

Treatment of persistent fever

- Test and treat for malaria if RDT +.
- If RDT – manage as acute fever.
- If fever persists after acute treatment, consider chronic causes of fever including TB.
- Make detailed clinical history, examination and laboratory investigations.
- Empirical treatment of chronic infections such as TB may be needed under specialist care.

Treatment of ARI

PLHIV and particularly children commonly present with prolonged ARI. ART treatment guidelines are followed, but treatment is given for twice as long and the doses or amoxicillin or erythromycin may be increased. If the person has not been receiving cotrimoxazole prophylaxis then they may need a treatment course of cotrimoxazole for pneumonia caused by pneumocystis carinii. Severe pneumonia in PLHIV should be treated with ceftriaxone.

Malnutrition in PLHIV

Severe acute malnutrition is a common presentation of HIV, especially in children. It is managed as per SAM guidelines. Any concurrent infections are treated as well.

Prophylaxis

Cotrimoxazole prophylaxis.

Co-trimoxazole is a fixed-dose combination of two antimicrobial drugs (sulfamethoxazole and trimethoprim) that covers a variety of bacterial, fungal and protozoan infections. Cotrimoxazole prevents against pneumocystits carinii pneumonia but also other organisms causing pneumonia, toxoplasmosis, diarrhoea and malaria.Co-trimoxazole preventive therapy is a feasible, well tolerated and inexpensive intervention for people living with HIV to reduce HIV-related morbidity and mortality. The dose is 960mg OD for the rest of the patients' life.

Treatment note: Co-trimoxazole prophylaxis may be discontinued for adults (including pregnant women) with HIV infection who are clinically stable on ART, with evidence of immune recovery and viral suppression, but should be continued in malaria endemic areas and continued for all people with TB co-infection.

Advice: If nausea from cotrimoxazole then take after food.

Precaution: Do not give if previous reaction to a sulfa medicine. If grade 1 allergic skin reaction, try desensitization with continued administration of cotrimoxazole and antihistamine. Those with a serious skin reaction are switched to Dapsone 100mg 1 x per day by mouth.

Medicine	Age (weight)	Dose	Duration	Side effects
Cotrimoxazole syrup 200mg/40mg in 5ml or 100mg/20mg table	Infants 6 weeks to 6 months (3 – 5.9kg)	100mg/20mg (2.5ml or 1 tablet) PO 1 x day	Daily, lifelong	**Common:** nausea **Rare:** allergic skin reaction; jaundice; anaemia
Cotrimoxazole syrup 200mg/40mg in 5ml or 100mg/20mg tablet	Children 6months to 6 years (6 – 13.9kg)	200mg/40mg (5ml or 2 tablets) PO 1 x day		
Cotrimoxazole syrup 200mg/40mg in 5ml or 400mg/80mg tablet	Children 6 -11 years (14 – 24.9kg)	400mg/80mg (10ml or 1 tablet) PO 1 x day		
Cotrimoxazole 400mg/80mg tablet 800mg/ 160mg tablet	Adults & children > 11 years (25kg and above)	800mg/ 160mg (2 x 400mg/80mg tablet or 1 x 800mg/160mg tablet) PO 1 x day		

Preventing TB

TB is 20 times more common in people living with HIV. In order to prevent TB disease in PLHIV and among pregnant and breast feeding women living with HIV, the “three Is” strategy is implemented: Intensified Case Finding (ICF), Isoniazid Preventive Therapy (IPT) and Infection control (as per PMTCT guidelines) whenever PLHIV present to health facilities.

Intensified case finding:
Ask if a person living with HIV has any ONE of the following currently:

- Cough for any duration
- ever for any duration
- Night sweats
- Weight loss OR failure to gain weight in pregnancy

If so they should be referred for sputum testing for TB.

Isoniazid preventive therapy:

Isoniazid preventive therapy is recommended for all PLHIV who to take for 6 months. Women who do not have symptoms of TB are all encouraged to take it for 6 months during pregnancy. It is given with the B vitamin Pyridoxine to prevent the side effect of peripheral neuropathy.

Treatment note: If peripheral neuropathy develops, double pyridoxine to 100mg 1 x per day in adults.

Advice: Needs to be taken for 6 months. Do not drink alcohol while on isoniazid.

Precaution: Do not give if regular alcohol intake, if hepatitis or if peripheral neuropathy.

Medicine	Age	Dose	Duration	Side effects
Isoniaziad 100mg tablet	Children	10mg/ kg PO 1 x per day	6 months	**Common:** anorexia, nausea, indigestion **Rare:** rash, hepatitis, neuropathy, confusion
Isoniazid 100mg tablet	Adults	300mg 1 x per day (5mg/kg 1 x per day for those < 60kg)		
Pyridoxine 50mg tablet	Children	25mg (½ tablet) x 1 per day		
Pyridoxine 50mg tablet	Adults (including pregnant women)	50mg (1 tablet) x 1 per day		
Prescribing tip: if anorexia, nausea or indigestion give at bedtime. If major side effects stop Isoniazid				

Fluconazole prophylaxis

If PLHIV have had cryptococcal meningitis, they are then given secondary prevention by giving fluconazole 200mg once a day for six months if CD4 count is greater than 100. If CD4 is < 100 fluconazole prophylaxis is continued.

Antiretroviral therapy, ARV

Usually a triple combination of ARVs are given together, referred to as antiretroviral therapy, ART. Adherence preparation, support and monitoring must be ensured.

When to start ART

Age	When to start ART
Adults and children > 10 years	Initiate ART if CD4 cell count ≤500 cells/mm3
	Initiate ART regardless of WHO clinical stage or CD4 cell count if: ◆ Active TB disease ◆ HBV coinfection with severe chronic liver disease ◆ Pregnant and breastfeeding women with HIV ◆ HIV-positive individual in a serodiscordant partnership (to reduce HIV transmission risk)
Children 5 – 10 years	Initiate ART if CD4 cell count ≤500 cells/mm3
	Initiate ART regardless of CD4 cell count if: ◆ WHO clinical stage 3 or 4 ◆ Active TB disease
Infants and children < 5 years	Initiate ART in all regardless of WHO clinical stage or CD4 cell count

Currently the preferred first line regime as per the WHO 2013 international guidelines for adults (including adolescents, and pregnant and breast-feeding women) is:

Tenofovir, lamivudine and efavirenz (TDF, 3TC and EFV).

Emtircitabine (FTC) may be used instead of 3TC in this regime as it has similar efficacy and safety to lamivudine (TDF, FTC and EFV). The national HIV programme issues updates depending on international and national guidelines but also on what is locally available. The preferred ARV regimes change from time to time in the country, based on experience of using the medicine, side effect profiles, price and availability. First line regimes have included zidovudine, lamivudine and nevirapine (AZT + 3TC + NVP) and AZT + 3TC + EFV (in which efavirenz replaces nevirapine) and are still in use.

Tenoforvir (TDF) should not be given to chidren under 12 years because it can reduce bone mineralisation. It should also not be given if there is renal disease or in those with hypertension or diabetes. Locally adapted ART guidelines should be consulted for prescribing ART in children.

Current international guidelines (WHO 2013) recommend: Abacavir, lamivudine and efavirenz (ABC, 3TC and EFV) for children aged over 3, and for those under 3, abacavir, lamivudine and lopinavir/ritonavir (ABC, 3TC and LPV/r in paediatric formulations where available.

Dosages of ARVs for adults

Nucleoside reverse-transcriptase inhibitors (NRTIs):
- Abacavir (ABC) 300 mg twice daily or 600 mg once daily
- Emtricitabine (FTC) 200 mg once daily
- Lamivudine (3TC) 150 mg twice daily or 300 mg once daily
- Zidovudine (AZT) 250–300 mg twice daily

Nucleotide reverse-transcriptase inhibitors (NtRTIs):
- Tenofovir (TDF) 300 mg once daily

Non-nucleoside reverse-transcriptase inhibitors (NNRTIs):
- Efavirenz (EFV) 600 mg once daily
- Nevirapine (NVP) 200 mg once daily for 14 days, followed by 200 mg twice daily

Proteases inhibitors (PIs):
- Lopinavir/ritonavir (LPV/r) 400 mg/100 mg twice daily

Full dosage guidance is given in the 2011 national guidelines and the 2013 WHO international guidelines. The tables of fixed dose solid formulations and syrups for children should be consulted very carefully.

Side-effects of ARVs

Most side-effects are minor; they include nausea and vomiting, diarrhoea, tiredness, headache, fatigue, pallor/anaemia, fever, jaundice, abdominal/flank pain, cough/difficult breathing, and depression.

A major side effect is Immune reconstitution inflammatory syndrome (IRIS).

6.3 Opportunistic infections

Various coinfections, comorbidities and other health conditions are common among people living with HIV and have implications for their treatment and care, including the timing and choice of ARV drugs. Co-trimoxazole prophylaxis is given to prevent several of these including pneumocystis carinii and isoniazid to prevent TB infection or reactivation (see above). With TB co-infection, therapy is giving for TB before ARVs are started (see section 6.5).

Cryptococcal meningitis is one of the most important opportunistic infections and a major contributor to high mortality before and after ART is initiated. With a recent diagnosis of cryptococcal meningitis, ART initiation should be deferred until there is evidence of a sustained clinical response to antifungal therapy. Treatment depends on drug availability, with combined amphotericin and fluconazole treatment given in specialist centres, or a high-dose fluconazole regime.

Further treatment advice on opportunistic infections will be included in the next edition of the STGs.

6.4 Tuberculosis

Tuberculosis (TB) is a chronic mycobacterium infection that most commonly affects the lungs but can also affect every other part of the body. In healthy people, infection with Mycobacterium tuberculosis often causes no symptoms, since the person's immune system acts to "wall off" the bacteria. About one in ten latent infections eventually progresses to active disease which, if left untreated, has more than 50% mortality. The symptoms of active TB of the lung are coughing, sometimes with sputum or blood, chest pains, weakness, weight loss, fever and night sweats. Tuberculosis is treatable with a six-month course of antibiotics. There are over ten thousand detected cases of TB in the country.

The diagnosis of TB refers to the recognition of an active case, i.e. a patient with symptomatic disease due to M. tuberculosis, and before treatment is started the type of TB must be diagnosed, based on 4 factors: the site of TB disease, bacteriology, the severity of TB disease and the history of previous TB treatment. To summarise these, TB can be:

Presumptive diagnosis of TB	based on symptoms & exclusion of other causes
Clinical diagnosis of TB	clinical and x-ray signs, but bacilli not identified
Bacteriologically-confirmed TB	sputum + for acid-fast bacilli or approved rapid test

TB is either *pulmonary* (PTB) (infection situated in the lung tissue) or *extra-pulmonary* (EPTB) (in other sites of the body, including TB-infected mediastinal lymph nodes and pleural effusion if no lung

involvement). Extra-pulmonary infection can be found in any tissue in the body, but is more commonly found in: pleura, lymph nodes, abdomen, genitourinary tract, skin, joints and bones and meninges. EPTB is diagnosed from clinical findings, bacteriological confirmation and/or histological findings.

Standardised TB treatment regimes

The aims of treatment of TB are the following:

- to cure the patient of TB;
- to prevent death from active TB or its late effects;
- to prevent relapse of TB;
- to decrease transmission of TB to others;
- to prevent the development and transmission of acquired drug resistance tuberculosis.
- to treat any co-infection with HIV

There are three main properties of TB drugs: *bactericidal* activity, *sterilizing* activity and the ability to *prevent resistance*. The TB drugs possess these properties to different extents. Isoniazid and rifampicin are the most powerful bactericidal drugs. Rifampicin is the most potent sterilizing drug available. Pyrazinamide and streptomycin are also bactericidal against certain populations of TB bacilli. Streptomycin is bactericidal against rapidly multiplying TB bacilli. Ethambutol is used in association with more powerful drugs to prevent the emergence of resistant bacilli. Fixed dose regimes with combined medicines are used where possible, a when quality control is assured, to facilitate acceptability and adherence.

Treating new cases:

Treatment regimens have an intensive directly-observed therapy (DOT) phase lasting 2 months and a continuation phase usually lasting 4 or 6 months. During the initial phase, normally consisting of isoniazid, rifampicin, pyrazinamide and ethambutol, there is rapid killing of tubercle bacilli. Infectious patients become rapidly non-infectious (within approximately 2 weeks). Symptoms abate. The vast majority of patients with sputum smear-positive TB cases become smear-negative on sputum testing within 2 months, in which case they can proceed to the continuation phase. In the continuation phase fewer drugs are necessary but for a longer time. The sterilizing effect of the drugs eliminates remaining bacilli and prevents subsequent relapse.

Standard regimens for new TB patients:

Intensive phase	Continuation phase	Dosing frequency
2 months of HRZE	4 months of HR	Daily

(H-Isoniazid, R-Rifampicin, Z-Pyrazinamide, E-Ethambutol)

The initial phase is 2 RHZE. The duration of the phase is 2 months. Drug treatment is daily, with isoniazid (H), rifampicin (R), pyrazinamide (Z) and ethambutol (E) in fixed dose combination. The continuation phase is 4 (RH). The duration is 4 months, drug treatment is daily with isoniazid and rifampicin, in fixed dose combination.

Treatment regimen of EPTB is similar to pulmonary tuberculosis except each dose is directly observed throughout treatment (DOT) and that TB meningitis should be treated for 9–12 months given the serious risk of disability and mortality and TB of the bones for 9 months because of the difficulties of assessing treatment response. In case of meningitis and pericarditis, adjuvant corticosteroid treatment is recommended if drug resistance is ruled out. In addition, ethambutol should be replaced by streptomycin in TB meningitis because streptomycin penetrates the meningitis better than ethambutol.

Dosages of fixed-dose preparations of tuberculosis drugs in adults

	Weight in kg			
	30 – 39	40 - 54	55 – 70	>70
Initial phase (daily)				
HRZE (75mg +150mg + 400mg + 275mg)	2	3	4	5
HRZ (75mg + 150mg + 400mg)	2	3	4	5
Cat. II: add S (vial 1g) for 2 months	0.5	0.75	1	1
Continuation phase - daily				
HR (75mg + 150mg)	2	3	4	5
Cat II: add E (400mg)	1.5	2	3	3
HE (150mg+400mg)	1.5	2	3	3

(H-Isoniazid, R-Rifampicin, Z-Pyrazinamide, E-Ethambutol)

Retreatment cases:

Previously treated patients include all TB patients who were treated as new cases for more than one month and are now smear or culture positive (failure, relapse, return after default). They have a higher likelihood to have drug resistance which may have been acquired through inadequate prior chemotherapy. They are more likely than new patients to harbour and excrete bacilli resistant to at least isoniazid.

Previously treated TB patients who completed treatment should receive a daily intensive phase followed by daily continuation phase 2HRZES/1HRZE/5HRE and that each dose is directly observed

This regimen should apply for both HIV infected TB cases because three times weekly dosing is not recommended for persons living with HIV or patients living in high HIV prevalence area.

TB patients returning after loss to follow-up or relapsing from their first treatment course should also receive the retreatment regimen containing first-line drugs 2HRZES/ 1HRZE/ 5HRE.

Intensive phase	Continuation phase	Dosing frequency
2 months of HRZES /one month of HRZE	5 months of HRE	Daily

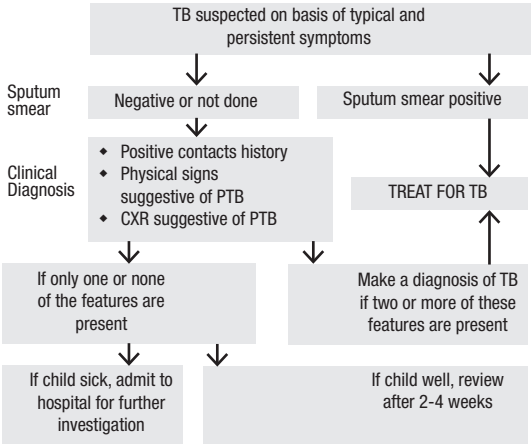
(H-Isoniazid, R-Rifampicin, Z-Pyrazinamide, E-Ethambutol, S-Streptomycin)

All patients should be treated under directly observed therapy (DOT). The national TB treatment guidelines must be followed if there is *interruption* of treatment.

Treating TB in children

Children (0-14 years) account for up to one-third of all TB cases. Most cases are PTB cases. Extrapulmonary TB (EPTB) is also common and presentation varies with age. TB disease can be more severe and of rapid onset in infants and young children. Children with TB disease usually have poor weight gain, may lose weight or be malnourished. The presentation and approach to diagnosis of pulmonary TB in older children (>10 years) and adolescents is similar to that for adults.

Suggeted Algorithim for TB diagnosis in children (non-HIV infected)



Recommended antituberculosis drug doses for children

Drug	Daily dose in kg/body weight	
	Weight range (kg)	Maximum dose (mg)
Isoniazid (H)	10-15	300
Rifampicin (R)	10-20	600
Pyrazinamide (Z)	30-40	2000
Ethambutol (E)	15-25	1200

Dosage of fixed-dose preparation tuberculosis drugs in children

	Weight in kg					
	Up to 7	8-9	10-14	15-19	20-24	25-29
Initial phase - daily						
HRZ (30mg + 60mg + 150mg)	1	1 ½	2	3	4	5
E 400mg	-	-	-	-	1	1
S 1 g	0.25	0.25	0.25	0.33	0.50	0.50
Continuation phase- daily						
HR (60mg + 30mg)	1	1 ½	2	3	4	5

Child contact screening and management

Isoniazid preventive therapy (IPT) greatly reduces the risk of an infant or young child with TB infection from developing disease:

- All children who are close contacts with cases with smear-positive TB should be screened for TB
- If the TB source case is the child's parent and is HIV-infected, test all the children for HIV
- Screening can be done at the HC level. Symptoms alone are used to screen child contacts for possible TB disease.

Treatment regimens in special situations

Treatment for pregnant and breastfeeding women: It is important to ask a woman before starting TB treatment if she is pregnant. Most TB drugs are safe for use in pregnant and breastfeeding women and so the standardised regime can be used. The exception is streptomycin which is ototoxic to the foetus and should not be used in pregnancy. Pyridoxine supplementation is recommended for all pregnant or breastfeeding women taking isoniazid. When active TB in the baby is ruled out, the baby should be given 6 months of isoniazid preventive therapy, followed by BCG vaccination.

Women on oral contraceptives: Rifampicin interacts with contraceptive medications with a risk of decreased protective efficacy against pregnancy. A woman who is receiving contraception may choose between the following two options while receiving treatment with rifampicin: either take an oral contraceptive pill containing a higher dose of oestrogen (50mcg) or use another form of contraception.

Treatment for patients with liver disorders: Although antituberculosis drugs are hepatotoxic, patients with the following conditions can receive the usual TB regimens provided that there is no clinical evidence of chronic liver disease: hepatitis virus carriage, a past history of acute hepatitis, current excessive alcohol consumption. Careful monitoring of these patients is crucial.

For TB patients with severe liver disease, (serum alanine aminotransferase > 3 x normal) one regime from the following options may be selected under expert care:

- **Two hepatotoxic drugs:** 9 months of HRE **OR** 2 months of HRSE followed by 6 months of HR **OR** 6–9 months of RZE

- **One hepatotoxic drug:** 2 months of HES lollowed by 10 months of HE
- **No hepatotoxic drugs:** 18–24 months of SE and a fluoroquinolone (eg Levofloxacin).

(H-Isoniazid, R-Rifampicin, Z-Pyrazinamide, E-Ethambutol)

Treatment of patients with renal failure:
Isoniazid, rifampicin and pyrazinamide are either eliminated almost entirely by biliary excretion or metabolized into non-toxic compounds. Isoniazid and rifampicin are eliminated by biliary excretion, so no change in dosing is necessary. There is significant renal excretion of ethambutol and metabolites of pyrazinamide, and doses should therefore be adjusted. TB patients with renal failure should be treated with 2HRZE/4RH with adjusted doses

Three times per week administration of these two drugs at the following doses is recommended: pyrazinamide (25 mg/kg), and ethambutol (15 mg/kg).

Patients with severe renal insufficiency receiving isoniazid are given pyridoxine to prevent peripheral neuropathy. Because of an increased risk of nephrotoxicity and ototoxicity, streptomycin should be avoided in patients with renal failure.

Managing side effects from TB drugs

Side effects are infrequent, but should be properly managed.

Symptom-based approach to side effects of TB drugs

Side effects	Drug	Management
Minor		Continue TB drugs, check dose
Anorexia, nausea, abdominal pain	Pyrazinamide, rifampicin	Give drugs with small meals or last thing at night
Joint pains	Pyrazinamide	Aspirin
Burning sensation in the feet	Isoniazid	Pyridoxine 100 mg daily
Orange/red urine	Rifampicin	Reassurance to patients, this is normal
Major		Stop responsible drug
Itching, skin rash	(S, H, R, Z)	Stop TB drugs
Deafness (no wax on auroscopy)	Streptomycin	Stop streptomycin, use ethambutol

Dizziness (vertigo and nystagmus)	Streptomycin	Stop streptomycin, se ethambutol
Jaundice (other causes excluded), hepatitis	Isoniazid, pyrazinamide, rifampicin)	Stop TB drugs, see below
Confusion (suspect drug-induced acute liver failure if jaundice present)	Most TB drugs	Stop TB drugs. Urgent liver function tests and prothrombin time test
Visual impairment (other causes excluded)	Ethambutol	Stop ethambutol
Shock, purpura, acute renal failure	Rifampicin	Stop rifampicin

National TB guidelines must be consulted for more detailed management of drug side effects.

Interactions of TB drugs

The commonest antituberculosis drug that interacts with other drugs is Rifampicin. Rifampicin induces liver enzymes to metabolize other drugs, thereby reducing their concentration and effect. To maintain a therapeutic effect, dosages of the other drugs may need to be increased. When rifampicin is discontinued, its metabolism-inducing effect resolves within about 2 weeks, and dosages of the other drug(s) will need to be reduced. The drugs whose concentrations and effects are substantially reduced by rifampicin include:

- Anti-microbials (mefloquine, azole antifungal agents, clarithromycin, erythromycin, doxycycline, atovaquone, chloramphenicol)
- Hormone therapy, including ethinylestradiol, norethindrone, tamoxifen, levothyroxine;
- Cardiovascular agents including digoxin, verapamil, nifedipine, diltiazem, propranolol, enalapril, losartan;
- Methadone; Warfarin; Cyclosporin; Corticosteroids; Anticonvulsants (including phenytoin); Theophylline; Sulfonylurea hypoglycaemics;

Multi-drug resistant TB (MDR-TB)

MDR incidence in the country among sputum positive case has been around 5% while among the previously treated cases it is 40%. Currently there is no Somali culture and DST laboratory but there is a 4 Gene Xpert machines that can detect Rifampicin resistance. Rifampicin

resistance is a proxy to MDR diagnosis and all patients known to have rifampicin resistance should be treated as MDR cases.

TB patients whose treatment has failed or other patient groups with high likelihood of multidrug-resistant TB (MDR) should be referred to specialist MDR-TB centres and started on the latest recommended MDR regime, consulting the national MDR-TB guidelines at all times. Patients with MDR-TB should be treated using mainly ambulatory care but for some cases hospitalization may be needed, provided it is only for the first 2 months of the initial phase of treatment, but doses after discharge must also be observed (DOT).

Regimens should include at least pyrazinamide, a fluoroquinolone, a parenteral agent, ethionamide (or prothionamide), and either cycloserine or PAS (p-aminosalicylic acid) if cycloserine cannot be used. Standardized regimens will be used for treatment which might be adjusted according to resistance patterns.

4 groups of anti-Tuberculosis drugs currently used:

Group 1: First-line oral anti-tuberculosis drugs which include Isoniazid (H), Rifampicin (R), Ethambutol (E), and Pyrazinamide (Z)

Group 2: Injectable anti-tuberculosis drugs which include Streptomycin (S), Kanamycin (Km), Amikacin (Amk), Capreomycin (Cm), and Viomycin (Vi)

Group 3: Fluoroquinolones (FQ) which include, Levofloxacin (Lfx), Moxifloxacin (Mfx) or higher generation FQ.

Group 4: Oral bacteriostatic second-line anti-tuberculous drugs such as Ethionamide (Eto), Protionamide (Pto), Cycloserine (Cs), Terizidone (Trd), and P-aminosalicylic acid (PAS). The B vitamin, pyridoxine (B6), is also given with all regimes.

The following standardized regimens are currently (2015) being used in the country for laboratory-confirmed MDR-TB:

- Patient did not use SLD before: 8Am-Lfx-Eto-Cs-Z and B6/ 16 Lfx-Eto-Cs-Z and B6
- Patient previously on Amikacin: Cm-Lfx-Eto-Cs-Z and B6/ 16 Lfx-Eto-Cs-Z and B6
- Patient previously on Fluoroquinolones: 8 Am-Lfx-Eto-Cs-PAS- Z + B6 16 Lfx-Eto-Cs-PAS- Z + B6

Treatment is monitored with sputum smear and culture.

6.5 HIV & TB co-infection

Untreated HIV infection leads to progressive immunodeficiency and increased susceptibility to infections, including TB. HIV fuels the TB epidemic through progression of recent and latent M tuberculosis infection to active TB disease. HIV also increases the rate of recurrent TB. The immune system is less able to prevent the growth and local spread of M. tuberculosis. In PTB sputum is less often + and cavities form less often. Disseminated and extra-pulmonary disease is more common. Any child with suspected or confirmed TB should be tested for HIV. TB/HIV co-infection is common in children in sub-Saharan Africa.

TB treatment is started for at least 2 weeks before ART is started. ART should be initiated within 8 weeks of starting TB treatment. Specialist guidelines should be consulted for prescribing ART when there is co-infection with TB. Usually efavirenz (EFV) is prescribed instead of nevirapine (NVP) because rifampicin does not increase the metabolism by enzymes in the liver of EFV as much as NVP. In all HIV-positive TB patients, co-trimoxazole preventive therapy should be initiated as soon as possible and given throughout TB treatment.

7. Non-communicable diseases

7.1 Cardiovascular

Hypertension

Hypertension is not a disease, it is a risk factor for cardiovascular disease. Reducing high blood pressure reduces the chance of cardiovascular death and disability. Most people with high blood pressure will have no symptoms. There may be underlying causes of high BP that need treating as well. If there is no other cause that is found, it is called essential hypertension (the majority of people with raised BP).

Note: this section does NOT apply to pregnant women: in pregnancy BP 140/90 or more can be a sign of pre-eclampsia which can be fatal: see 1.1 for treating hypertension in pregnancy.

Diagnosis of hypertension

BP measurements need to be taken with the patient seated, relaxed and not talking. If raised, repeat straight away. If possible repeat again in 1 week before starting treatment unless > 180/110.

BP	Stage	Treatment	Investigations (as available)
BP < 140/90	Normotensive	No treatment. Recheck BP in 5 years, sooner if indicated	
BP 140-159 / 90-99	Stage 1, Borderline hypertension	Low risk, monitor annually. High risk (diabetes or CV disease) – treat.	Fasting glucose or glycosolated haemoglobin (for diabetes) Renal function and urine protein (for kidney disease) CRP or ESR (for vasculitis) ECG (look for ventricular hypertrophy)
BP 160-179 / 100-109	Stage 2, hypertension	Investigate. Offer drug treatment and lifestyle changes	
BP > 180 / 110	Severe hypertension	Treat same day	As above + Do the FAST test (see below) Look for papilloedema / retinal haemorrhages with ophthalmoscope.

CV: cardiovascular.

Management of hypertension

- Lifestyle advice – Advise weight loss if obesity. Advise low fat, sugar and salt in diet to reduce cardiovascular (CV) risk. Advised exercise 2.5hours/ week and walking. This lowers BP and reduces CV risk.
- Advise smoking cessation. Smoking increases CV risk
- Assess CV risk. Use WHO chart: http://tinyurl.com/WHO-CVD-risk
- Antihypertensive: start therapy if BP > 160/100 after 3 months of lifestyle change or BP >140/90 and CV disease, CV risk 20% or more or diabetic.
- Monitor for good adherence (taking daily dose). Target BP is < 140/90.
- Follow 4 step management. Step up therapy if BP > 140/90 on treatment, and check BP monthly when stepping up.
- Give simvastatin 40mg 1 x per day to lower blood cholesterol if diabetic (and > 40 years), if CV disease or if 10 year CV risk 20% or more (simvastatin 20mg if on amolodipine).
- Do not give aspirin unless known CV disease
- When BP stable, and good adherence to daily treatment, review every 6 months. Every year assess CV risk and need for statin. Check kidney function every year and screen for diabetes.
- If dizziness on standing or falls (postural hypotension) may need to reduce antihypertensive.

Use of antihypertensives

No single class of drug has been shown to be better than another: choose the cheapest with fewest side effects except in diabetes where ACE inhibitors are preferred because they offer kidney protection. 6 out of 10 people with raised BP end up needing 3 drugs. Ensure that a person is on the maximum tolerated dose of the 1st drug before adding in a 2nd drug.

Drug class	Drug name	Dosage	Treatment advice	Side effects
ACE inhibitors	Enalapril	Start on 5mg 1 x per day. Increase to maximum of 40mg	Contraindicated in aortic stenosis. Check kidney function 2 weeks after starting, and at every dose increase.	Cough: may start at any time, can take months to settle. Renal impairment.
Beta-blockers	Bisoprolol	Start on 2.5mg 1 x per day. Increase every 2 – 4 weeks to usual dose of 10mg 1 x per day	Do not give if history of asthma (may trigger attack)	Lethargy, impotence
	Atenolol	50mg 1 x per day (100mg rarely gives better control)		
Calcium channel blockers	Amlodipine	Start on 5mg. maintain low dose if frail or elderly, otherwise increase to 10mg 1 x per day	If using amlodipine with simvastatin, maximum simvastatin dose is 20mg (risk of myopathy). Instead atorvastatin can be given.	Ankle swelling
	Nifedipine (ordinary release)	Start on 10mg 3 x per day. Maximum dose 20mg 3 x per day		
Diuretics	Hydrochlorthiazide	Start on usual dose (12.5mg or 25mg 1 x per day)	Do not give loop diuretics (furosemide) which are less effective	Urinary frequency, electrolyte imbalance

Angiotensin receptor blockers like losartan and candesartan cause less cough than angiotensin converting enzyme inhibitors like enalapril but are more expensive and no better. Use only if an ACE inhibitor is essential for treatment but the cough is bad with enalapril.

4 step management of high blood pressure

	Medicine	Dosage
BP < 140/90	Normal BP Review every 5 years or every year if CV risk or diabetes	No treatment
BP 140-159/90-99	Lifestyle advice and monitor every 3 - 6 months. Move onto Step 1 if CV risk > 20%	No treatment
Step 1: if BP > 160/100 or > 140/190 AND CV risk > 20%	Start with a single drug.	Increase dose of 1st drug until good control is achieved, up to maximum tolerated dose
Step 2: if BP > 140/90 on 1 drug	Add 2nd drug of different class	Increase dose of 2nd drug until good control is achieved, up to maximum tolerated dose
Step 3: if BP > 140/90 on 2 drugs	Add 3rd drug of different class	Increase dose of 3rd drug until good control is achieved, up to maximum tolerated dose
Step 4: if BP > 140/90 on 3 drugs	Add 4th drug of different class	Increase dose of 4th drug until good control is achieved, up to maximum tolerated dose

Refer to Somaliland NCD field guides.

Management of severe hypertension (BP > 180/110)

This refers to someone with a BP of 180/110 or more and is a medical emergency. Causes include drugs (such as steroids, the contraceptive pill, salbutamol if taken by mouth, and triptans) and alcohol and drug misuse, kidney failure, primary hyperaldosteronism, cushing's syndrome or phaeochromocytoma.

Note: this section does NOT apply to pregnant women: in pregnancy BP 140/90 or more can be a sign of pre-eclampsia which can be fatal: *see 1.1* for treating hypertension in pregnancy.

- Repeat BP after person has sat quietly for 30 minutes
- If BP still > 180/110, check they are not having a stroke (CVA) with the FAST-Test: (Face: does one side of their face drop when they smile? Arms: can they raise both arms? Speech: Can they repeat a sentence correctly without slurring their words?)

- If stroke is suspected do not reduce BP. This could make the stroke worse. Wait 1 -2 weeks before starting drugs to lower BP.
- If no sign of stroke, look for end organ damage (chest pain, pulmonary oedema, renal failure, encephalopathy or papilloedema/ retinal haemorrhages).
- Signs of end organ damage and BP > 180/110 = Hypertensive Crisis. Admit. Aim to lower BP by 20-25% within 2 hours but not more (except if heart failure present). Use IV drugs and treat complications.
- No end organ damage, BP > 180/110 = Hypertensive 'urgency': admit. Aim to reduce BP over 24 – 48 hours. Use oral drugs. Once BP controlled, investigate causes. Monitor weekly until stable on treatment. Then manage as essential hypertension.

Drug treatment for hypertensive crisis (Signs of end organ damage)

Aim to lower BP by 20-25% within 2 hours but not more (except if heart failure present) Use one IV drug if available, if not use oral drugs as per hypertensive 'urgency'.

- Hydralazine by slow IV injection. 5 – 10mg diluted with 10ml 0.9% sodium chloride. May be repeated after 20 – 30 minutes. Do not use if acute MI. **OR**
- Labetolol by intravenous infusion 2mg/minute until good response, usual total dose 50 – 200mg.

Drug treatment for hypertensive 'urgency' (No end organ damage)

Aim to reduce BP over 24 – 48 hours. Use oral drugs

- Amlodipine PO 5mg initially, maximum 10mg. (not other calcium channel blockers)
- Labetolol PO 100mg 2 x per day, maximum 2400mg/day. Can use other beta blocker, but never use in asthma (can trigger an attack).

Note that sublingual nifedipine is no longer used to treat severe hypertension as it can worsen heart failure. Do not give loop diuretics (furosemide) to manage severe hypertension as it can cause too much fluid loss.

Refer to Somaliland NCD field guides.

Diabetes

Diabetes mellitus (DM) is a group of metabolic diseases in which there are high blood sugar levels. This leads to symptoms of frequent urination, increased thirst, increased hunger and weight loss. If left untreated, life-threatening complications include diabetic ketoacidosis, hyperosmolar coma, CV disease, stroke, kidney failure, foot ulcers and damage to the eyes (retinopathy).

Diabetes is due to either the pancreas not producing enough insulin (type 1 diabetes) or the cells of the body not responding properly to the insulin produced (Type 2 diabetes). The cause of type 1 diabetes is unknown. Type 2 diabetes is associated with excess body weight, too much sugar in the diet and not enough exercise. Gestational diabetes, is the third main form and occurs when pregnant women without a previous history of diabetes develop a high blood sugar level.

The treatment of type 1 diabetes is a very careful diet and subcutaneous insulin injections. The treatment of type 2 diabetes is weight loss, exercise, a very careful diet and a stepped up treatment with drugs.

Diabetes increases CV risk causing damage to large and small blood vessels, including those supplying the heart, eyes, kidneys and nerves. Because of this it can be thought of as a CV disease, and this is why it is included in this section.

Type 2 diabetes: screening, diagnosis and monitoring.

Screening: those with glucose in urine, in obese people, in those with symptoms, those with raised BP or CV disease, those with frequent infections, those with a family history or those on drugs that cause high blood glucose (steroids, ARVs, antipsychotics).

Diagnosis: If symptoms (increased thirst, frequent urination and weight loss) only a single test is needed, otherwise 2 tests are needed on 2 separate occasions.

- Fasting blood sugar = 126mg/dl (7mmol/l) or more
- Glycosylated haemoglobin (HbA1c) = 48mmol/mol (6.5%) or more.

Monitoring: Allow several visits to help a person newly diagnosed to understand the disease and how to manage it.

- Discuss lifestyle changes. This is the most important part of diabetes care.
- Check BP regularly and treat if > 140/90.
- If they are > 40 years start simvastatin 40mg 1 x per day for CV protection.

- After 3 months of lifestyle change, start metformin if blood sugar raised because it protects the CV system as well as reducing blood sugar.
- Check CV risk and look for complications (eyes, kidneys, feet, nerves) every year.

Treating type 2 diabetes – the 4 aspects of treatment

The aim of treatment is to reduce symptoms, get optimal blood sugar control and stop the damage. Lifestyle changes are very important.

Lifestyle: Help people to stop smoking because it increases CV risk. Healthy diet of low sugar, low fat, low salt. If overweight aim to lose 5 – 10% of body weight. Exercise helps weight loss and reduces CV risk.

CV risk management: BP control is more important than blood sugar control. Aim for BP < 140/90. See above. Use ACE inhibitor if drug needed. Over 40 years give simvastatin 40mg PO 1 x per day (or 20mg if on amlodipine). Do not offer aspirin (no real benefit).

Blood sugar control: Aim for blood sugar less than:

	Venous glucose		Capillary glucose		Glycosylated haemoglobin (HbA1c)
	mg/dl	mmol/l	mg/dl	mmol/l	
Fasting	75 – 130	4 – 7	115	6.5	64mmol/mol or 8%
After meal	180	10	160	9	

Implement 5 steps of blood sugar control (see below)

Look for and treat complications:

- **Hypoglycaemia:** (sweating, sudden tiredness, dizzy, confused) – make sure person and family know what to do (give something sweet). Ensure regular stops for food on long journeys.
- **Nephrophathy:** rising creatinine and proteinuria. Treat with ACE inhibitor and monitor kidney function.
- **Eyes:** check for cataracts and retinopathy. (surgery for cataracts only if imparing ability to do normal activities)
- **Feet:** ask about burning pain. Look for ulcers, deformity. Check leg pulses. If ulcers, treat and improve diabetic control.
- **Autonomic neuropathy:** GI symptoms; erectile dysfuntion; no warning of hypoglycaemia. Improve blood sugar and BP control and encourage lifestyle change.

Treating type 2 diabetes - the 5 steps of blood sugar control with drugs

	Medicine	Dosage	Side effects & caution
Step 1	**None. Lifestyle changes**		
Step 2	Add oral metformin after 3 months of lifestyle changes	500mg 1 x per day with breakfast, increased if needed, maximum 1500 - 2000mg/ day in divided doses with meals	nausea, diarrhoea, low risk of hypoglycaemia. Avoid in kidney failure.
Step 3	Add oral sulphonylurea, gliclazide Alternative: glibenclamide	Start gliclazide 40 – 80mg with breakfast. Increase if needed, maximum 320mg/ day in divided doses with meals **OR** Start glibenclamide 5mg with breakfast, maximum 15mg 1 x per day. May need to half dose if starting insulin.	Hypoglycaemia, weight gain. Only use glibenclamide if gliclazide not available as increased hypoglycaemia risk. It should not be given to the elderly.
Step 4	Insulin	Intermediate acting insulin (isophane/zinc suspension/ NHP insulin). Single daily dose. Usual starting dose 6 – 10 units at night but tailor for each person. May divide into 2 doses if needing higher doses.	Hypoglycaemia.
Step 5	Increase insulin Or newer diabetic drugs	Increase dose of insulin while monitoring blood sugar closely. Newer drugs (glitazones, gliptins) are not better than insulin and are very expensive.	

Refer to Somaliland NCD field guides.

Cardiovascular (CV) disease

management and secondary prevention

It is very important to prevent further CV complications in those who have already had a CV event such as angina, myocardial infarction (MI), heart failure, atrial fibrillation, transient ischaemic attack (TIA), a stroke (cerebrovascular accident – CVA) or peripheral arterial disease.

Disease monitoring in CV disease

- Lifestyle
- Monitor symptoms (of angina, heart failure, peripheral arterial disease)
- Medication as appropriate
- BP and pulse – measure every 6 months or more often if disease is not stable. Check for high BP, low BP (postural hypotension from antiypertensives), for atrial fibrillation, slow pulse from too much beta-blocker.
- Check for heart failure – short of breath on exertion? Examine for basal crepitation in the lungs and ankle swelling.
- Check cholesterol and kidney function once a year and screen for diabetes every 2 years. Screen for anaemia and thyroid function every 2 years.

Management for all CV disease

- **Lifestyle:** smoking cessation, weight reduction (5 – 10% a year if overweight) , exercise, reduce fat, salt and sugar in diet
- **Aspirin:** 75 – 100mg 1 x per day. Cheap and effective at reducing CV disease. Newer antiplatelet drugs like clopidogrel are more expensive and only a little more effective.
- **BP control:** aim for < 140/90, see hypertension guidelines above.
- **Cholesterol lowering:** simvastatin PO 40mg 1 x per day (or 20mg if on amolodipine). Aim for cholesterol < 5mmol/l or 200mg/dl).

In addition to management that is common to all CV disease, there are specific treatments for each disease:

Treatment of angina

- Suspect angina if chest pain brought on by activity, which is like a tight band and may radiate to jaw of left arm. Pain goes away on resting.
- Investigate with ECG to see ischaemia. If unavailable do treatment trial.
- Symptomatic relief: give glyceryl trinitrate, 0.5mg sublingual with pain or before activity
- Add beta-blocker: bisoprolol. Start with PO 2.5mg 1 x per day and increase to maximum of 10mg 1 x per day. Alternative is atenolol – start with PO 25 – 50mg 1 x per day and increase to maximum of 100mg 1 x per day. Do not give beta-blocker to asthmatic.

- Add calcium channel blocker if still getting pain: amlodipoine PO 10mg 1 x per day. (not verapamil or diltiazem which can cause heart failure).
- Add long acting nitrate if still getting pain: isosorbide dinitrate, start with PO 5mg 2 x per day, increase to maximum of 40mg 3 x per day.
- Add ACE inhibitor if diabetic to protect the heart: enalapril, start with PO 5mg and increase to maximum 20mg 1 x per day; Monitor kidney function with each dose increase .
- Don't forget lifestyle, aspirin, cholesterol lowering and BP control

Treatment of myocardial infarction (MI)

- **ACE inhibitor:** enalapril (see dose above)
- Add beta blocker: use for the first 12 months unless heart failure or angina. Give Bisoprolol, start with PO 2.5mg and increase every month to maximum of 1 x per day. Do not use if asthmatic.
- Don't forget lifestyle, aspirin, cholesterol lowering and BP control

Treatment of peripheral arterial disease

- Symptoms include claudication pain on walking, worse going up a hill and relieved on rest. Peripheral foot pulses are absent.
- Advise to walk to the point of pain and a little beyond to encourage new blood supply. Vasodilators make little difference.
- Don't forget lifestyle, aspirin, cholesterol lowering and BP control

Treatment of heart failure

The main symptom is breathlessness when lying flat and ankle swelling. Bilateral crepitations in lower chest. ECG is helpful. Note that digoxin is not as effective as ACE inhibitor or beta-blocker, only use in severe disease.

- Give diuretics: furosemide PO 40mg 1 x per day. Increase if needed but monitor kidney function. In severe disease add spironolactone .start with PO 25mg 1 x per day and increase if necessary to 50mg 1 x per day.
- Add ACE inhibitor, enalapril (see dose above)
- Add beta blocker, (see dose above)
- Don't forget lifestyle, aspirin, cholesterol lowering and BP control

Treatment of stroke (CVA)

Assume it was a thrombotic stroke (caused by a clot, also known as an ischaemic stroke) rather than a haemorrhagic stroke unless the person was on warfarin, aspirin or had a clotting disorder. Brain scans diagnose the type of stroke but are not widely available and are very expensive. After strokes, a person needs intensive physiotherapy provided by the hospital staff and family to prevent contractures and pressure sores and to promote re-education and rehabilitation. Support is needed to treat anxiety and depression. Help is needed to do basic daily tasks (washing, dressing, toileting, feeding). Nutritional support is needed. Specific aids/ adaptations are needed at home to help rehabilitation.

- If haemorrhagic stroke do not offer aspirin or statin
- If thombotic stroke, offer aspirin (see above)
- Don't forget lifestyle, aspirin, cholesterol lowering and BP control

Rheumatic fever

Rheumatic fever is a non-contagious inflammatory disease that involves the heart, joints, skin, and brain. The disease typically develops two to four weeks after a streptococcal tonsillitis. Signs and symptoms include fever, multiple painful joints and a characteristic but uncommon rash. The heart is involved in about half of cases (rheumatic heart disease (RHD)), affecting all layers of the heart and permanently damaging the valves, with stenosis and regurgitation causing heart failure.

Treating people who have strep throat with antibiotics, such as penicillin, decreases their risk of getting rheumatic fever. Children who have been affected can present with RHD and heart failure.

Treatment of acute rheumatic fever

This needs supervision by a cardiologist or paediatrician

- Antibiotics for strep – give benzathine penicillin (or erythromycin if allergic to penicillin).
- Adult and child > 30kg give 900mg (1.2 million IU) IM single dose
- Child < 30kg give 450 – 675mg (0.6 – 0.9 IU) IM single dose
- Anti-inflammatories – aspirin is used at high doses under expert supervision. There is a very small risk of Reyes's syndrome (liver failure).
- Oral steroids (prednisolone) may be given instead of aspirin
- Heart failure is treated with furosemide and spironolactone, and sometimes digoxin is needed as well.

Treatment of chronic rheumatic heart disease (RHD)

- Give monthly benzathine penicillin IM to prevent further deterioration of the heart valves (secondary prophylaxis).
- Give benzathine penicillin (or erythromycin if allergic to penicillin): Adult and child > 30kg give 900mg (1.2 million IU) IM single does 1 x every 4 weeks
- Child < 30kg give 450 – 675mg (0.6 – 0.9 IU) IM single dose 1 x every 4 weeks
- Diuretics and digoxin may be needed for heart failure.
- Active surveillance with echocardiography if available

7.2 Respiratory

Acute bronchitis

Acute bronchitis is infection in the smaller air passages of the lungs, with some light crepitations but without consolidation in the lung tissue which is pneumonia. If a patient presents with a cough and green or yellow sputum, with or without fever, but without fast breathing, they may have acute bronchitis. Most mild cases of acute bronchitis will resolve without antibiotics and paracetamol can be given for fever and to reduce cough symptoms. If the person is coughing up a lot of yellow or green sputum, amoxicillin can be given. If there is fast breathing, any danger signs or if symptoms are not improving then treatment will be needed for pneumonia (see ARI 3.2).

Asthma

Asthma is a chronic disease of airways presenting with reversible airways from smooth muscle contraction. It presents with acute wheezing in children and adults. Symptoms are often worse at night, and may be triggered by the cold, by exercise, by other allergens like dust, by taking aspirin or non-steroidal anti-inflammatories. When a person with asthma is well the chest examination is normal. When wheezing, they have a widespread expiratory wheeze. In more severe disease they have increased respiratory rate and faster pulse. If caused by an infection, there may be crepitations in one part of the chest with widespread wheeze across the rest of the chest. Severe exacerbations of asthma are very dangerous with high mortality if not treated quickly and effectively. Diagnosis can be confirmed by a peak flow test (peak flow rate improves by > 20% after 400mcg of salbutamol given by inhaler and spacer) or by spirometry, showing a 15% increase in FEV1 and 400mls increase in adults. Other diseases should be excluded

such as heart failure for example presents with fine crepitations low in the chest) or anxiety with hyperventilation (normal chest examination, light headedness, peripheral tingling), or TB. Refer to Somaliland NCD field guides, (including guidance on use of inhalers).

Management of asthma

- Check for signs of alternative diagnosis
- Advise person to stop smoking
- Start with step 1 (below) and only increase to next step if symptoms persist
- Always use a spacer with an inhaler.
- Ask about and check inhaler use
- Encourage exercise. Treat obesity/ malnutrition
- Increase medication if often breathless
- Look for anxiety/ depression as breathlessness is frightening.
- Once condition is stable, review every 6 months

5 step management of chronic stable asthma

	Medicine	Dosage	Treatment advice
Step 1	Start reliever: Short acting bronchodilator via spacer (salbutamol or if not better after 1 month try ipratropium)	Salbutatmol 200mcg as needed. (Ipatropium 40mcg as needed).	Only give oral salbutamol if no inhaler available. Only use ipratropium if salbutamol not working as risk to heart and not as effective
Step 2	Add preventer: Inhaled steroids at normal dose – beclometasone or budesonide. Continue reliever therapy.	Adults: 200 - 400mcg 2 x per day. Children: 100 – 200mcg	All inhaled steroids are equally effective – use the cheapest available.
Step 3	Add second preventer: Over 5 years old: long acting beta agonist (LABA). Aged 2 -5 leukotriene receptor agonist	Salmeterol 50-100mcg 2 x per day Montelukast Child 2-5y 4mg; 6-15y 5mg 1 x per day Adult 10mg 1 x per day	Never use LABA without inhaled steroids as there is a risk of death. Do not give to children < 6.

Step 4	Check inhaler use & technique. Review diagnosis. Increase to 'high dose' inhaled steroids. Continue other medicines.	Adults: Beclometasone 1000mcg 2 x per day Child > 5 400mcg 2 x per day.	In children inhaled steroids can affect growth: seek specialist help.
Step 5	In adults only: consider oral steroids or oral theophylline or oral salbutamol	Start at 25mg oral prednisolone 1 x per day. Aim to reduce to 5-10mg 1 x per day.	Severe side effects of steroids: thin bones, weight gain, diabetes, gastric ulcer. Only use theophylline if dose can be monitored due to toxicity.

Management of acute exacerbations of asthma

- Give high flow oxygen via a face mask
- Assess the severity (pulse, BP, respiratory rate, temperature, colour, how much they can talk, oxygen saturation - < 92% is abnormal at any age)
- Give bronchodilator (salbutamol via spacer, 10 puffs, over 10-15 minutes, shaking inhaler before each puff. Or nebulised salbutamol (< 10 years 2.5 - 5mg; over 10 years 10mg). Repeat inhaled salbutamol – 4 – 6 puffs via spacer or via nebuliser 2 – 4 hourly of more for 24 hours.
- Give steroids. Oral prednisolone 2 – 5 years: 20mg; 6 – 15 years 30 – 40mg, adult 40 – 50mg PO for 3 days then stop. There is no need to tail off the dose. Alternatively give IV hydrocortisone for the first dose (2 – 5 years: 25mg IV: 6 – 10 years 50mg IV; 10 – 15 years & adults 100mg IV).
- In life threatening asthma when all the above has already been given, and no improvement with nebuliser, aminophylline may be needed. Loading dose 5mg/kg over > 20 minutes. Then infuse 0.5 – 1mg/kg/hour. Stop as soon as improving.
- Start inhaled steroids.
- Antibiotics are not indicated unless there is clear evidence of infection (fever, productive cough, crepitations in the chest). If pneumonia, treat (see 3.2).
- Ensure person and parents know how to use inhaler and spacer, how to take oral prednisolone and know signs of exacerbation and when to return. Review 3 – 7 days later.

Oral salbutamol for acute wheeze (only if salbutamol inhaler not available)

Medicine	Age	Dose	Duration	Side effects
Salbutamol syrup (2mg/5ml), 4mg tablet	Infants < 12 months	Do not give, but refer immediately		**Common:** tremor, headache **Rare:** fast heart, irregular heart
	Children 1 – 5 years	1mg (2.5ml or ¼ tablet)		
	Children 5 – 12 years	2mg (5ml or ½ tablet)		
	Adults and children over 11 years	4mg single dose		

Chronic obstructive airways disease, (COPD)

COPD is chronic bronchitis that presents with cough, breathlessness and yellow or green sputum in recurrent infections in people usually over 35 years old. There may be crepitations in the chest. Severe exacerbations of COPD are very dangerous with high mortality if not treated quickly and effectively. It is a disease of people who have smoked or who have lived in smoky/polluted air. It is differentiated from asthma in which the history dates from childhood, with significant day-to-day variation in symptoms and night time waking with breathlessness or wheeze. In smokers both conditions can co-exist. Other diseases such as TB, heart failure and bronchiectasis should also be excluded. Diagnosis is confirmed with spirometry (the FEV1/FVC is < 0.7) and clinical features, and chest X-ray can be helpful to distinguish it from other diseases like heart failure. Refer to Somaliland NCD field guides (including guidance on use of inhalers).

Management of COPD

- Check for signs of alternative diagnosis
- Advise person to stop smoking
- Start with step 1 (below) and only increase to next step if symptoms persist
- Always use a spacer with an inhaler.
- Encourage exercise. Treat obesity/ malnutrition
- Increase medication if often breathless
- Ask about and check inhaler use
- Look for anxiety/ depression as breathlessness is frightening.
- Once condition is stable, review every 6 months

4 step management of COPD

	Medicine	Dosage	Treatment advice
Step 1	Short acting bronchodilator via spacer (salbutamol or if not better after 1 month try ipratropium)	Salbutatmol 200mcg as needed. (Ipatropium 40mcg as needed.	Only give oral salbutamol if no inhaler available. Only use ipratropium if salbutamol not working as risk to heart.
Step 2	Add long acting drug (tiotropium or salmeterol).	Tiotropium 18micg one puff 1 x per day NOT MORE than once per day) Salmeterol 50-100mcg inhaled 2 x per day.	Give these if available and not too expensive, otherwise go to step 3.
Step 3	Add inhaled corticosteroids (budesonide)	200 – 400mcg inhaled 2 x per day. Do not use beclometasone (not effective in COPD)	Inhaled steroids reduce exacerbations but increase risk of pneumonia. Only use if severe disease.
Step 4	Add oral daily steroids or theophylline	Oral prednisolone 1 – 5mg 1 x per day. Theophylline 250 – 500mcg 2 x per day	Severe side effects of steroids: thin bones, weight gain, diabetes, gastric ulcer. Tail off gradually if used for > 3 weeks Only use theophylline if dose can be monitored due to toxicity.

Management of acute exacerbations of COPD

- Assess the severity (pulse, BP, respiratory rate, temperature, colour, how much they can talk, oxygen saturation)
- Give bronchodilator (salbutamol via spacer, 10 puffs, over 10-15 minutes, shaking inhaler before each puff, then 4 – 6 puffs every 2 – 4 hours. Or nebulised salbutamol (5mg) if very ill.
- Give steroids. Oral prednisolone 30 – 40mg 1 x per day for 7 – 10 days. There is not need to tail off the dose. Do not give IM or IV.
- Give antibiotics (oral amoxicillin 500mg 3 x per day for 5 – 7 days). If allergic to penicillin give erythromycin 500mg 4 x per day for 7 days (but not if on theophyliine) or doxycycline 200mg on day 1 then 100mg 1 x per day for 6 days.
- Oxygen if cyanosis, decreased saturation and if available, to a maximum concentration of 28% (2l/min with nasal canula)

7.3 Gastro-intestinal

For diarrhoea see 3.1. Other GI conditions will be include in the next edition of the STGs.

Gastritis, gastric-oesophageal reflux disease (GORD) and gastric and duodenal ulcers

For mild indigestion symptoms in adults (burning or indigestion after food) give Magnesium trisilicate compound, 1 -2 tabs as needed (max 8 a day).

Advice: Chew the tablets. Tablets may cause belching or mild diarrhea.

Precaution: Do not take ibuprofen, indomethacin, naproxen or diclofenac if symptoms of indigestion.

If symptoms more than 2 days, if moderate to severe symptoms, then treat with a H2-receptor antagonist (cimetidine or ranitidine) or a proton pump inhibitor (PPI) (omeprazole or lansoprazole).

- Cimetidine PO 400mg 1 or 2 x per day
- Ranitidine, PO150mg 1 or 2 x per day
- Omeprazole PO 10 – 20mg 1 x per day
- Lansoprazole PO 15 – 30mg 1 x per day

Side effects of the H2-receptor antagonists: diarrhoea, headache, dizziness. Rarely rash and allergy.

Side effects of the PPIs: GI disturbance, headache. Dry mouth, dizziness. Long term use can increase risk of ischaemic heart disease.

If symptoms persist, the person may need to given one course of treatment for Helicobacter pylori. The H pylori breath test is not currently available but should be used when available and not too expensive.

Eradication therapy for Helicobacter pylori

- Omeprazole PO 20mg 2 x per day or lansoprazole PO 30mg 2 x per day AND
- Clarithromycin 250mg 2 x per day AND
- Amoxicillin PO 1g 2 x per day OR
- Metronidazole PO 400mg 2 x per day

If clarithromycin is not available, give PPI, amoxicillin and metronidazole instead.

For severe symptoms, any history of haematemesis or meleana or severe epigastric pain, treat as above but if possible investigate with gastroscope. Normally medical treatment will heal most ulcers, but a bleeding or perforated ulcer may need emergency laparotomy.

7.4 Urinary tract

Mild UTI (urinary tract infection) in women may be treated without investigation unless very frequent. In men and children UTI may be a sign of underlying disease so all cases should be treated and investigated.

Treatment steps

- Test urine with urine dipstick. If nitrites and/or leucocytes + on dipstick, give nitrofurantoin
- If symptoms persist for more than 2 days or if symptoms worsen, test urine again and if positive consider other antibiotic (ciprofloxacin PO 250mg 2 x day for 3 days; for severe infection give 500m 2 x per day for 5 – 7 days).
- Admit a person with moderate to severe symptoms (including high fever, abdominal pain, blood)

Treatment note: The bacteria causing UTIs are resistant to many antibiotics. Sometimes amoxicillin can treat it, but the bacteria is often resistant.

Advice: Drink plenty of fluids.

Medicine	Age	Dose	Duration	Side effects
Nitrofurantoin 50mg tablets	Children	750mcg/kg 4 x per day	3 days	**Common:** Anorexia, nausea **Rare:** vomiting and diarrhea; allergic reaction
	Adults (women)	1 tablet (50mg) 4 x per day	3 days	
Prescribing tip: Do not give if previous allergic reaction to nitrofurantoin				

Side effects: anorexia and GI disturbances, rare hypersensitivity reactions.

7.5 Central nervous system

Epilepsy

Epilepsy is a chronic neurological condition, characterized by recurrent unprovoked seizures. It has several causes; it may be genetic or may

occur in people who have a past history of birth trauma, brain infections or head injury. In some cases, no specific cause can be identified. Seizures are caused by abnormal discharges in the brain and can be of different forms; people with epilepsy can have more than one type of seizure. The two major forms of seizures are convulsive and non-convulsive. Non-convulsive epilepsy has features such as change in awareness, behaviour, emotions or senses (such as taste, smell, vision or hearing) similar to mental health conditions, so may be confused with them. Convulsive epilepsy has features such as sudden muscle contraction, causing the person to fall and lie rigidly, followed by the muscles alternating between relaxation and rigidity, with or without loss of bowel or bladder control. This type is associated with greater stigma and higher morbidity and mortality. Treatments are only given here for convulsive epilepsy. The next edition of the STGs will include the treatment of non-convulsive epilepsy.

For management of a person with convulsions as an emergency, see 4.1.

Diagnosing convulsive epilepsy

A history of convulsions with no acute cause (no fever, headache, meningitis, head injury, substance withdrawal or metabolic abnormality (hypoglycaemia, hyponatraemia):

- Stiffness, rigidity lasting longer than 1 – 2 minute
- Convulsive movements lasting longer than 1 – 2 minute
- Tongue bite or self-injury
- Incontinence of urine and / or faeces
- After the abnormal movement: fatigue, drowsiness, sleepiness confusion, abnormal behaviour, headache or muscles aches

To confirm a diagnosis of epilepsy, ask if there have been at least 2 convulsions in the past year on 2 different days with no underlying cause, and if so about their severity. If so, then consider epilepsy and initiate treatment. The person should be encouraged to keep a seizure diary.

Start with one treatment and lowest dose and build up slowly. The aim of treatment is to achieve the lowest maintenance dose that provides complete seizure control.

Adherence to medication is very important. If control is still poor on maximum advised doses given below a second medicine may need to be added. Initial follow up is monthly to monitor for side effects, but once the person is seizure-free and with very few side effects then they can be reviewed every 3 months.

Treatment may be reduced (and eventually stopped) if there has been absence of seizures for 2 years but dose increased again if there are further seizures after reducing the dose. A person should not drive with a history of epilepsy unless they have been stabilised on medication and after being at least 1 year seizure free.

Treatment with antiepileptic medicines

Most medications are given twice a day but phenobarbital can be given once a day. Seizures may still occur during the first 2 to 3 weeks of starting phenobarbital as blood levels increase slowly. If there are also behavioural problems, phenobarbital or valproate may be preferred.

	Child		Adult and adolescent	
	Starting dose	Maintenance dose	Starting dose	Maintenance dose
Carbamazepine	5 m / kg / day	10 – 30 mg per kg / day	100 – 200 mg per day	400 – 1400 mg per day
Phenobarbital	2 – 3 mg per kg / day	2 – 6 mg per kg / day	60 mg per day	60 – 180 mg per day
Phenytoin	3 – 4 mg per kg / day	3 – 8 mg per kg / day (max 300 mg/ day)	150 – 200 mg per day	200 – 400 mg per day
Sodium valproate	15 – 20 mg per kg / day	15 – 30 mg per kg / day	400 mg per day	400 – 2000 mg per day

Side effects of carbamazepine: double vision, impaired coordination, rash, increased liver enzymes. Rarely blood disorders and Stevens-Johnson syndrome.

Side effects of phenobarbital: drowsiness, lethargy, hyperactivity in children, skin rash, bone marrow depression, liver failure

Side effects of phenytoin: drowsiness, unsteadiness, twitching, confusion, coarsening of features of face and gums, hirsuitism, anaemia, hepatitis

Side effects of valproate: Hair loss. Pancreatitis. Caution in liver disease.

Prescribing in pregnancy

Where possible pregnant women should only be given one antiepileptic medicine and valproate should not be given in pregnancy, but all 4 medicines can be used during breastfeeding. Women of child bearing age on epilepsy medication should take folate 5mg by mouth every day. At birth, the newborn is given vitamin K 1mg IM if the mother has been on epilepsy medication.

Other neurological conditions will be included in the next edition of the STGs

7.6 Endocrine

Diabetes, see 7.1

Thyroid disease

Thyrotoxicosis

This should be suspected in people with goitre, heat intolerance, sweating, anxiety, weight loss and palpitations. The pulse may be raised. There may also be exophthalmos. Most cases are caused by Grave's disease. If TSH is available it should be measured (in thyrotoxicosis before treatment it is <0.01mIU/L, with a raised T3/4).

Treatment steps

If the diagnosis of Grave's disease is most likely then:

- Give low dose beta-blocker (atenolol or propranolol, but not to asthmatics) to improve symptoms if not contra-indicated until the person is euthyroid.
- The safest treatment is with carbimazole.
- Carbimazole is potentially teratogenic so should only be initiated in pregnant women by a specialist, or alternative medical treatment considered if available.
- Surgery may be considered by a surgeon specialised in thyroidectomy, but there are very dangerous potential complications and the person is left with permanent hypothyroidism.
- Atrial fibrillation is a complication of hyperthyroidism and should be treated by reducing the cardiac rate (with a beta blocker like atenolol or propranolol, not with digoxin).

Carbimazole is initially given between 15mg to 40mg 1 x per day. This is continued until the patient becomes euthyroid (usually between 4 and 8 weeks) when the dose is gradually reduced to a maintenance dose of between 5 to 15mg 1 x per day for 12 to 18 months. **Only a specialist should treat thyrotoxicosis in children.**

Side effects: rash and itching if not severe can be treated with an antihistamine and treatment with carbimazole continued; a rare and dangerous side effect of carbimazole is agranulocytosis - an urgent FBC is done if there is a sore throat or fever. Treatment must be stopped.

If the diagnosis is thyroiditis (deQuervain's):

- Give supportive treatment with beta-blockers (atenolol or propranolol, but not to asthmatics) and analgesia until symptoms improve. The thyroid function normalises at 4 to 6 weeks.

If the diagnosis is toxic nodular goitre:

- Carbimazole is given and a beta-blocker (but not to asthmatics) to control symptoms until a more definitive treatment can be given by a specialist.

Hypothyroidism

Hypothyroidism refers to an underactive thyroid gland that has a global effect on metabolism. It is most commonly caused by low iodine in the diet, and rarely by autoimmune diseases and is always present after a total thyroidectomy. Symptoms included weight gain, poor concentration, tiredness and hair loss. In children, it can lead to delays in growth and intellectual development (called cretinism in severe cases). The thyroid hormone levothyroxine is given in replacement dose to those with an underactive thyroid. This includes for infants born with hypothyroidism which needs urgent treatment, and the dose is monitored according to growth, clinical response and biochemistry if available by a specialist.

It is especially important to treat hypothyroidism in pregnant women because left untreated it can affect the neurodevelopment of the foetus. Pregnancy can trigger the progression of subclinical hypothyroidism to overt hypothyroidism and can increase levothyroxine requirements. Adequate treatment of hypothyroidism during pregnancy reduces complication rates. If hypothyroidism is diagnosed during pregnancy, specialist assessment is advised to aim to correct TSH as quickly as possible.

Levothyroxine is given to adults with hypothyroidism. Start with 50 – 100 micrograms (less if heart disease) 1 x per day. Dose can be increased in steps of 25 micrograms every 3 -4 weeks according to response. The maintenance dose is likely to be between 100 and 200 micrograms. The goal of treatment is to improve symptoms and for most patients that will be achieved at (if the test is available) a TSH between 0.4 and 2.5 mU/l. Increase the usual levothyroxine dose by 30% in a pregnant women with hypothyroidism as soon as it is known she is pregnant. If available, monitor TSH at least once each trimester.

Side effects: mainly if the dose is too much, in which case: diarrhea, palpitations, arrhythmias, tremor, weight loss and other signs of hyperthyroidism.

Other endocrine diseases will be included in the next edition of the STGs.

7.7 Blood disorders

Iron deficiency anaemia See under malnutrition, 2.2

Other nutritional anaemias

Will be included in the next edition of the STGs

Thalassaemia

Thalassaemia is an inherited disease with faulty haemoglobin production. Thalassaemia minor (a person has the thalassaemia gene from only one parent) presents with mild anaemia > 10g/dl and is asymptomatic. Thalassaemia major (when a person has inherited thalassaemia genes from both parents) is permanent condition of anaemia, jaundice and splenomegaly with complications of recurrent infection, bone deformities, iron overload nad heart failure. Treatment involves repeated blood transfusions and chelation of iron in the blood to avoid too much iron deposition (haemochromatosis) from the transfusions.

Treatment of thalassaemia major

Transfusion (*see 4.2*) is used as part of the spectrum of treatment for thalassaemia, that includes chelation therapy, micronutrients (folate 5m each day, vitamin D, calcium), immunisation (against pneumococcus and hepatits B) and long term penicillin. Splenectomy is sometimes performed to reduce the need for repeat transfusions in adults and

children > 6 years (not before as high rate in infections in those without a spleen).

Iron chelation in thalassaemia

- Give subcutaneous infusion of desferrioxamine: 25–50 mg/kg/day over 8–12 hours, 5–7 days per week. Dose adjustment should be conducted on an individual basis. Young children should be started on a dose of 25–35 mg/kg/day, increasing to a maximum of 40 mg/kg/day after 5 years of age and increasing further up to 50 mg/kg/day after growth has ceased.
- Give vitamin C up to 200 mg/day orally one hour after initiating chelation to promote iron excretion.

Sickle cell disease

Sickle cell disease is rare amongst Somali populations. It is an inherited disease with faulty haemoglobin production leading to red cells that crescent shape. If a person inherits the gene from only one parent they have sickle cell trait and the only effect is mild anaemia. In sickle cell disease a person has inherited the genes from both parents. They present with severe chronic anaemia and jaundice, skeletal abnormalities and delayed puberty, and with acute painful bony, haemolytic or aplastic crises.

Prevention of sickle cell crises

- Give folate 5mg PO 1 x day
- Give benzathine penicillin 2.4 million iu IM once a month or penicillin V 250mg PO 1 x day to prevent infections
- Immunise against pneumococcus and hepatitis B
- Detect and promptly treat malaria or give malaria prophylaxis
- Treat all infections promptly
- Avoid precipitating factors like dehydration, hypoxia, infection and cold.
- Give transfusion, if severe anaemia

Treatment of sickle cell crises

- Rehydrate with oral fluids and, if necessary intravenous normal saline.
- Correct hypoxia: give supplemental oxygen, if oxygen concentrator available.
- Give effective pain relief: strong analgesics, including opiates (i.e. morphine), are likely to be needed.

- Treat malaria, if infected.
- Treat bacterial infection with the best available antibiotic in full dose.
- Give transfusion, if severe anaemia.

Congenital bleeding and clotting disorders
Treatments are not currently available. This will be covered in future edition of STGs.

Disseminated intravascular coagulation (DIC)
For transfusion for DIC *see 4.2*

Leukaemia
Leukaemia is a group of cancers that usually begin in the bone marrow and result in high numbers of abnormal white blood cells (leukaemia cells). Leukaemia presents with infections, fever, tiredness, bleeding, bruising and anaemia. Treatment is not currently available for the four types of acute and chronic lymphocytic and myeloid leukaemias. Treatment will be covered in future edition of STGs.

7.8 Malignant disease
There are very few cancer treatments available in the country. Treatment options will be outlined in future editions of the STGs

7.9 Palliative care
Treatments for palliative care will be included in the next edition of the STGs. Clinicians are advised to consult the excellent palliative care toolkit publilshed by Help the Hospices at: http://integratepc.org/wp-content/uploads/2012/12/Palliative-Care-Toolkit-HtH.pdf

For pain control for palliative conditions see 5.2.

7.10 Skin disorders and infestations

Scabies
Scabies is an infestation of the skin caused by a small insect resulting in a raised very itchy rash. It is often found between the fingers and toes. The rash may be badly scratched and there may be infection from bacteria.

Treatment steps (at home)

- Wash the body with soap, drying, then apply benzyl benzoate 25% lotion on the whole body but not on the face or genitals. For young children dilute the lotion with the same quantity of water to make a 12.5% lotion.

- Apply an antiseptic, gentian violet, to any infected areas. If badly infected, give amoxicillin, (or cloxacillin if available) or, if allergic to pencillin, erythromycin.
- The next day benzyl benzoate is applied again without washing the child.
- A further dose may be applied on the third day after bathing the child
- If the child is very itchy and scratching a lot, give chorphenamine (see under allergic rash for dose).
- Treat all children in the family and tell them to wash clothes and sheets at the same time.

Side effect: Benzyl benzoate may cause skin irritation and burning.

Permethrin is a very effective treatment for scabies but is much more expensive than benzyl benzoate. It should only be prescribed if it is either available to be given for free or if the prescriber has offered the cheaper benzyl benzoate first.

Head lice

If the scalp is infested with head lice, this can be treated with good hygiene and permethrin 1% rinse of the hair and washed off after 12 hours. The hair should also be combed with a fine head lice comb.

Eczema, dermatitis and allergic rash

Eczema and dermatitis are inflammatory conditions of the skin presenting with a raises itchy rash. In children this commonly occurs behind the elbows and knees and can be on the face. Infants may have a scaly rash on their scalps. Treatment aims to stop the skin drying and to reduce the inflammation.

An allergic rash may be in reaction to something that has been eaten, applied to the skin or a reaction to a medicine. Chlorphenamine may be needed.

Treatment steps

- Apply emollient ointment frequently as long as there is eczema.
- Apply a small amount of hydrocortisone 1% to more inflamed areas for 7 days.
- Apply gentian violet to infected areas.
- For severe itching give chlorphenamine by mouth.

- Give penicillin V (or cloxacillin if available) by mouth if rash is badly infected, or erythromycin in case of allergy to penicillin.

Chlorphenamine for severe itch or allergic rash.

Medicine	Age	Dose	Duration	Side effects
Chlorphenamine syrup (2mg/5ml) and Chlorphenamine tablet (4mg)	Infants < 12 months	Do not give		**Common:** drowsiness **Rare:** headache, dry mouth, abdominal discomfort
	Children 1 to 2 years	2.5mls (1mg) or ¼ tablet (1mg) 2 x per day	2 – 3 days	
	Children 2 to 6 years	2.5mls (1mg) or ¼ tablet (1mg) 2 - 4 x per day (every 6 hours)	2 – 3 days	
	Chilldren 6 to 12 years	5mls (2mg) or ½ tablet (2mg) 2 – 4 x per day (every 6 hours)	2 – 3 days	
	Adults and children over 12 years	1 tablet (4mg) 2 – 4 x per day (every 6 hours)	2 – 3 days	

Fungal disease

A fungal rash presents as a raised, red, itchy rash. This rash can be in circles if it is a fungal disease called ring worm.

Treatment

Apply antifungal cream such as benzoic acid 6% and salicylic acid 3%, clotrimazole 1% or miconazole 2% twice a day for 7 days.

Nappy rash

Infants may present with a rash around the groin or buttocks caused by irritation from urine or stools and sometimes caused by thrush.

Treatment steps

- Wash the area with soap and dry.
- Apply an emollient cream or zinc oxide 10% cream as long as the rash is present.
- If there is a red rash, with satellite lesions, it is thrush (candida). Apply clotrimazole 1% or miconazole 2% twice a day for 5 days.
- Any ulcerated areas need the application of gentian violet and the infant admitted.

- Advise parents to change the baby cloth/ diaper as frequently as possible.

Impetigo
Impetigo is a bacterial infection of the skin presenting with oozing golden-yellow crusts. They may be red and raised.

Treatment
- Wash the area with soap and water.
- Apply gentian violet.
- Give penicillin V or cloxacilin if there are many spots or if the child is unwell, or erythromycin in case of allergy to penicillin.

Abscess
- An abscess is a collection of pus under the skin.
- Very small pus swellings may discharge themselves, and can be treated with antiseptic and a guaze dressing and observed (ask the patient to come back).
- A medium superficial abscess may be incised by a nurse if authorised to do so.
- Give penicillin V (or cloxacillin if available) or erythromycin if allergy to penicillin for medium or large abscesses.
- Larger or deep abscesses will need incision and drainage.

Ulcer
An ulcer is a chronic break in the skin that is red and may ooze pus.

- Apply antiseptic (diluted chlorhexidine)
- Apply paraffin gauze dressing
- Change daily if infected. Once the ulcer is bright red without infection, the paraffin gauze dressing can be applied and left for 10 days.
- Give penicillin V (or cloxacillin if available) or erythromycin if allergy to penicillin for medium or large ulcers if infected.
- Large ulcers may need admission, surgical debridement, daily dressing until clean and red with no infection, and then vaseline dressing applied and left for 2 weeks.

8. Mental health

For mental health problems the WHO mental health guidelines should be followed. These are known as the mHGap Intervention Guide. The following treatments are mainly taken and adapted from the mHGap IG which should be consulted. This is in line with the goal of the Somali Mental Health Strategy 2014 – 2020 which is to strengthen the integrated response of the health sector with evidence-based treatment and achievable plans for the promotion of mental health and the treatment and rehabilitation of mental and neurological disorders.

Treatments are not given here for developmental and behavioural disorders, alcohol and drug use disorders or for dementia. These will be covered in the next edition of the STGs.

8.1 Depression

In typical depressive episodes, the person experiences depressed mood, loss of interest and enjoyment, and reduced energy leading to diminished activity for at least 2 weeks. Many people with depression also suffer from anxiety symptoms and medically unexplained somatic symptoms. A person with moderate to severe depression has difficulties carrying out his or her usual work, school, domestic or social activities.

Diagnosing moderate to severe depression

A person experiences difficulties in day-to-day functioning and at least 2 of the following symptoms for 2 weeks:

- Depressed mood (most of the day, almost every day), (for children and adolescents: either irritability or depressed mood)
- Loss of interest or pleasure in activities that are normally pleasurable
- Decreased energy or easily fatigued

And at least 3 other symptoms of depression:

- Reduced concentration and attention
- Reduced self-esteem and self-confidence
- Ideas of guilt and unworthiness
- Bleak and pessimistic view of the future
- Ideas or acts of self-harm or suicide
- Disturbed sleep
- Diminished appetite

If the person also has symptoms of bipolar depression or psychosis see the next sections.

Treatment for moderate to severe depression

Options include one or a combination of:

- Psychoeducation
- Address current psychosocial stressors
- Reactivate social networks
- Consider antidepressants
- Interpersonal therapy or cognitive behavioural therapy
- Structured physical activity

These interventions are described briefly on mHGap, but staff should also be trained in how to counsel a person with depression using these interventions.

Use of antidepressants

If someone has these symptoms but is recently bereaved they should be given the advice but not antidepressants. Pregnant and lactating women can also be given the advice with antidepressants only given if severe depression at lower doses. Antidepressants should not be considered as first line treatment in children over 12 and adolescents, and should not be prescribed in children under 12.

The first choice antidepressant is fluoxetine or citalopram (both selective serotonin reuptake inhibitors SSRI). Alternatively amitriptyline may be used, but is more sedative and has other side effects. If a person is at risk of self-harm/ suicide, medicines should only be dispensed in small quantities and the person seen before the more medicines are due. Antidepressants may induce mania in people with bipoloar depression (BPD).

Treatment with SSRI antidepressant

Fluoxetine (or citalopram, at same dose) - initiate oral treatment with 10mg (half a tablet) 1 x per day and increase to 20mg after 1 – 2 weeks. If there is no response after 6 weeks, the dose may need to be increased to 40mg. Treatment is likely to be needed for 4 to 6 months. Maximum dose in adolescents, the medically ill or elderly is 20mg of citalopram, or 40mg of fluoxetine.

Side effects of SSRIs: restlessness, insomnia, anorexia and GI disturbances, headache, sexual dysfunction. Rarely: bleeding abnormalities (non-steroidal anti-inflammatories may exacerbate this so should be avoided).

Treatment with amitriptyline

Amitriptyline. Initiate oral treatment with 50mg at night, increased by 25mg every 1 -2 weeks aiming for 100 to 150mg by 4 – 6 weeks. In the elderly of medically ill, start with 25mg at night and aim for a dose of 50 – 75 mg.

Side effects: low BP on standing, dry mouth, constipation, difficulty urinating, dizziness, blurred vision, sedation. Impaired ability to perform skilled tasks like driving (precautions needed until used to medicine). Rarely: heart arrhythmias

Antidepressants can be stopped when the person has no or only minimal depressive symptoms for 6 – 9 months and has been able to carry out routine activities for the same time. The dose is reduced over a 4 week period. The person is warned about discontinuation/ withdrawal symptoms. If these become severe, the antidepressant may need to be reintroduced.

Self-harm and suicide

Suicide is the act of deliberately killing oneself. Self-harm is a broader term referring to intentional self-inflicted poisoning or injury, which may or may not have a fatal intent or outcome. Any person over 10 years of age experiencing mental health problems, chronic pain or acute emotional distress should be asked if they have had thoughts or plans of self-harm in the last month and about acts of self-harm in the last year:

If someone is at risk of self-harm/suicide, the following should be done:

- Remove the means of self-harm
- Create a secure and supportive environment
- Do not leave the person alone
- Supervise and assign a named staff or family member to ensure safety
- Treat any depression, psychosis or BPD, or drug or alcohol use disorder.
- If medicines are indicated, use medicines that are the least dangerous in overdose and give the prescription for a short duration (e.g. one week at a time).

8.2 Psychosis

Psychosis is characterized by distortions of thinking and perception, as well as inappropriate or narrowed range of emotions. Incoherent or irrelevant speech may be present. Hallucinations (hearing voices or seeing things that are not there), delusions (fixed, false idiosyncratic beliefs) or excessive and unwarranted suspicions may also occur. Severe abnormalities of behaviour, such as disorganized behaviour, agitation, excitement and inactivity or hyperactivity, may be seen. Disturbance of emotions, such as marked apathy or disconnect between reported emotion and observed affect (such as facial expressions and body language), may also be detected. People with psychosis are at high risk of exposure to human rights violations.

Signs of acute psychosis

- Incoherent or irrelevant speech
- Delusions
- Hallucinations
- Withdrawal, agitation, disorganized behaviour
- Beliefs that thoughts are being inserted or broadcast from one's mind
- Social withdrawal and neglect of usual responsibilities related to work, school, domestic or social activities

Rule out psychotic symptoms from alcohol or drug intoxication or withdrawal or delirium due to an acute medical condition such as sepsis or head injury. If signs of acute mania are present then treat as BPD.

If symptoms persist for more than 3 months then chronic psychosis (schizophrenia) is likely.

Treatment of psychosis

- Provide education to the person and carers about psychosis and its treatment
- Start antipsychotics.
- Psychological and social interventions such as family therapy or social skills therapy
- Facilitate rehabilitation
- Regular follow-up

Treatment with antipsychotics

IM treatment is used only if oral medication is not feasible. Oral treatment with haloperidol or chlorpromazine is preferred. Depot injections should not be used in acute psychosis. Prescribe one antipsychotic at a time, and "start low and go slow". Try the medication at an optimum dose for at least 4 – 6 weeks before considering it ineffective.

Women with psychosis who are planning a pregnancy, are pregnant or breastfeeding should be treated with low-dose oral haloperidol or chlorpromazine.

Medication	Haloperidol	Chlorpromazine	Fluphenazine depot / long-acting
Starting dose	1.5 – 3mg	75mg	12.5mg
Effective dose (mg)	3 – 30mg/day	75-300mg/day	12.5 – 100mg every 2-5 weeks
Route	Oral (IM for acute psychosis)	Oral	Deep IM injection in gluteal region
Significant side-effects:			
Sedation	+	+++	+
Urinary hesitancy	+	++	+
Low BP on standing	+	+++	+
Extrapyramidal effects	+++	+	+++
Tardive dyskinesia	+	+	+

These antipsychotics can all very rarely cause neuroleptic malignant syndrome. They are contraindicated if there bone marrow depression or impaired consciousness.

If extrapyramidal side-effects (such as parkinsonism or dystonia) occur:

- Reduce the dose of antipsychotic medication, and
- Consider switching to another antipsychotic (e.g. switching from haloperidol to chlorpromazine).
- Consider anticholinergic medications for short-term use if these strategies fail or extrapyramidal side-effects are acute, severe or disabling.

Anticholinergic medications for treating extrapyramidal side-effects

Biperiden, if needed, started at 1 mg twice daily, increasing to a target dose of 3 – 12 mg per day, oral or intravenous. Side-effects include

sedation, confusion and memory disturbance, especially in the elderly. Rarely: angle-closure glaucoma and GI obstruction.

Trihexyphenidyl (Benzhexol) can be used as an alternate medicine at 4 – 12 mg per day. Side-effects are similar to those of biperiden.

8.3 Bipolar disorder

Bipolar disorder (BPD) is characterized by episodes in which the person's mood and activity levels are significantly disturbed. This disturbance consists on some occasions of an elevation of mood and increased energy and activity (mania), and on others of a lowering of mood and decreased energy and activity (depression). Characteristically, recovery is complete between episodes. People who experience only manic episodes are also classified as having bipolar disorder. People who are not currently manic or depressed but who have a history of 2 or more episodes of mania (or a single manic episode with adverse consequences) or one episode of mania and one episode of depression may need a mood stabiliser and full support as below.

Signs of acute mania episode

Several days of:

- Markedly elevated or irritable mood
- Excessive energy and activity
- Excessive talking
- Loss of normal social inhibitions and recklessness
- Elevated sexual energy or sexual indiscretion

Past history of:

- Depressed mood
- Decreased energy and activity

Signs of depression

See *diagnosing moderate to severe depression 8.1*
Prior episode of mania

Treatment of acute mania

- Begin treatment of acute mania with lithium, valproate, carbamazepine or with antipsychotics.
- Consider a short-term benzodiazepine (such as diazepam) for behavioural disturbance or agitation
- Discontinue any antidepressants

- Advise the person to modify lifestyle; provide information about bipolar disorder and its treatment.
- Provide regular follow-up.

Treatment of depression in BPD

- Begin treatment with a mood-stabilizer
- Consider antidepressant combined with mood stabilizer for moderate / severe depression (*see 8.1*)
- inform the person about the risk of switching to mania before starting antidepressant medication
- Advise the person to modify lifestyle; provide information about bipolar disorder and its treatment.
- Reactivate social networks.
- If available, consider psychological interventions.
- Pursue rehabilitation, including appropriate economic and educational activities, using formal and informal systems
- Provide regular follow-up

Medication for BPD

Valproate, carbamazepine or antipsychotics are mood stabilisers in BPD. They cannot be given to pregnant or lactating women. Lithium can only be used if clinical and laboratory monitoring is available. They can all cause sedation, tremor and weight gain. If symptoms are severe, an antipsychotic is used as onset of effectiveness is more rapid. Diazepam may be used to treat agitation in a person who is in a manic state, but should be gradually discontinued as soon as symptoms improve.

Valproate is not given if a past history of heart, kidney or liver disease. A low dose of 500mg 1 x per day is given and gradually increased while monitoring for side effects to a dose of 1000 - 2000mg/day. .

Side effects of valproate: Hair loss. Pancreatitis. Caution in liver disease.

Carbamazepine is not given if a past history of heart, kidney or liver disease. It is given if valproate (or lithium) is not available. A low dose or 200mg 1 x per day at night is given, slowly increased to 400 – 600mg/day.

Side effects of carbamazepine: double vision, impaired coordination, rash, increased liver enzymes. Rarely blood disorders and Stevens-Johnson syndrome.

[Lithium can only be used if serum level can be checked and thyroid function checked every 6 – 12 months. It is given starting with a low dose of 300mg at night increasing gradually while monitoring blood concentration every 7 days until a blood level of 0.6 – 1.0mEq/litre is reached. Blood serum levels are then checked every 6 months.

Side effects of lithium: impaired coordination, urinary frequency and increased thirst, heart arrhythmias, diabetes insipidus and hypothyroidism.]

The treatment of pregnant or lactating women with BPD is with low dose haloperidol. Mood stabilisers are not given.

8.4 Medically unexplained symptoms (MUS)

"Medically unexplained" means "no underlying physical condition can be identified". It also means that the patient is not thought to be suffering from moderate to severe depression.

Patients may present with multiple symptoms. It is important that the person is listened to carefully, not judged and made to feel welcome. The person's concerns should not be dismissed. It is important that physical conditions are ruled out with a thorough history and complete physical examination to exclude underlying disease, and mental health assessment to exclude moderate to severe depression.

Take time to explain to the person that their symptoms are real but that this is possible without finding a medical cause. You can explain how the mind and the body are connected, so emotional pain can be experienced as physical pain, or emotional distress can be felt as a physical problem. You may need to clarify that a medically unexplained diagnosis does not mean they are imagining it, or making it up

<u>In ALL cases:</u>

- Do NOT prescribe antidepressants or benzodiazepines.
- Do NOT manage complaints with placebos, injections or other ineffective treatments (eg vitamins).
- Address current psychosocial stressors.

<u>In adolescents and adults:</u>

- Address inappropriate self-medication
- Reactivate social networks
- Where available, consider one of the following treatments:

Behavioural activation, relaxation training or problem-solving treatment.

- Continue to review the person. New symptoms will need to assessed with history and examination, and on-going symptoms carefully reviewed to exclude underlying physical illness or moderate to severe depression.
- Consult as mental health specialist if no improvement at all or if the person asks for more intense treatment.

Identifying psychosocial stressors:

- Offer the person an opportunity to talk in private
- Ask about current stressors
- Assess for abuse (e.g. domestic violence) and neglect
- Brain storm together for solutions or for ways of coping
- Involve supportive family members as appropriate
- Encourage involvement in self-help and family support groups

In children and adolescents:

- Assess and manage mental, neurological and substance-abuse problems
- Assess parent's psychosocial stressors
- Assess and manage maltreatment, exclusion or bullying at school
- If there are school performance problems, discuss with teacher how to support the student.

8.5 Misuse of Khat

Khat is a widely used substance in Somaliland. It can cause elation, depression, anxiety as well as constipation. People may spend much of their money on khat and neglect to eat properly and neglect their familiies. Sometimes people take benzodiazepines abusively to come down off a high with Khat. It is reported that Khat can cause people to be psychotic , violent and fighting with their families

Treatment. There is no specific treatment. If someone is very violent they may need some diazepam 10 mgs to calm them down but not more than 10 mgs 3 x in the first day and NOT after that. The effect of the khat will wear off by itself over a day

Assess and advise on risk to the family, financial risk, occupational risk, constipation.

Talk to the person about the benefits and risks of Khat and let them make a decision about this. Support them if they want to stop or invite to come back whenever they want to stop. WHO Assist document is helpful in primary care as a model to help in talking to people with khat problems.

9. Oral health

9.1 Teeth and gums

Dental caries

These are holes in the teeth caused by decay. This happens mainly as a result of poor oral hygiene (e.g. teeth not brushed or flossed) where bacteria attack and corrode the teeth. In adults khat chewing, smoking or excess alcohol intake can be contributory causes. Signs and symptoms include pain after hot and cold foods or drinks, or constant sharp pain, and a small hole may be visible on examination. It is treated initially with pain control (ibuprofen or paracetamol) but needs dental care. Where available the hole is filled by a dentist or dental assistant with amalgam. Tooth extraction should be avoided unless there is no alternative to relieve severe pain.

The prevention of dental caries is a very important aspect of public health. Programmes in schools and community centres encourage teeth brushing and flossing to protect teeth and gums at least twice a day, the reduction of smoking and khat chewing, minimising the eating of sweets and foods containing sugar and regular dental check-ups. Unhealthy teeth and gums can lead to dangerous infections and complications.

Dental abscess

A dental abscess is a collection of pus around an affected tooth, often secondary to dental caries, which may spread into the surrounding tissue. A dental abscess may develop from gum disease or dental decay. Signs and symptoms include throbbing pain, fever, painful tooth when touched, tender swelling of the surrounding gum, discharge. The infection may spread as life-threatening cellulitis through adjacent tissues causing facial or neck swelling (Ludwig's angina) or difficulty opening the mouth. Incision of a dental abscess must be done by a specialist with an anaesthetist present.

Treatment

- Give paracetamol, ibuprofen or diclofenac for pain control.
- Warm saline gargles or chlorhexidine mouth wash
- Give cloxacillin or penicillin V 500mg 4 x per day or child dose
- In severe abscess also give metronidazole 500mg 4 x per day (or child dose).
- Incision by a specialist with anaesthetist support.

- With facial and neck swelling, parenteral antibiotics are needed and emergency measures may be needed to protect the airway.

9.2 Throat

Small oral ulcers (aphthous ulcers) can be treated by applying gentian violet.

Advice: make a mild saline solution at home with salt and water for the child to rinse and spit out. Or use chlorhexidine mouth wash.

Oral thrush (candidiasis) presents commonly in infants and sometimes in older children with a white coating on the tongue. In young children this can be treated with nystatin. In adults or children over six with thrush there may be an underlying disease which should be investigated.

Nystatin for oral thrush

Medicine	Age	Dose	Duration	Side effects
Nystatin 100,000 IU/ml oral suspension	Infants < 1 month	Do not give		**Common:** Oral irritation **Rare:** Nausea
	Infants and older children	100,000 IU (1ml) 4 x per day by mouth	5 to 7days	
	Adults	100,000 IU (1ml) 4 x per day by mouth		
Prescribing tip: 1ml is measured with the pipette, and given by parents.				
Advice slot: Give after feeding. Continue giving treatment for 2 days after rash has gone				

For tonsillitis see 3.2.

9.3 Nose

Nose bleeds (epistaxis)

Nose bleeds are common in children and in some adults, and can occur spontaneously or after mild trauma. Usually the bleeding comes from the lower, soft part of the nose.

Treatment

Advise the person to sit forward and hold the soft part of the nose for 10 minutes. A parent may hold the soft part of a young child's nose. Advise them not to blow or pick their nose afterwards for the rest of the day. If bleeding continues, the nose may need to be packed.

Allergic rhinitis

This presents with a history of a chronic clear nasal discharge and sneezing, worse when exposed to certain allergens (such as certain plant/ tree pollens, presenting in many countries as seasonal hay fever). Treatment is with nasal steroids: Beclometasone nasal spray, 1 – 2 sprays in both nostrils 1 – 2 x per day when allergy likely (adults and children over 5 years). This treatment may also reduce the development of nasal polyps. If nasal obstruction from a nasal polyp is not improved with a nasal steroid spray, then surgical excision by a specialist may be needed.

9.4 Ears

Ear wax

Wax occurs naturally in the ear canals and has a protective function. Do not remove wax unless specifically trained to do so. If the canal is blocked, and if they are available, give special ear oil or sodium bicarbonate drops. These are applied at home for one week. Ear wax can be syringed out of the canal by someone specially trained to do so.

Advice: Advise people never to put cotton buds or any instrument inside the ear canal.

For acute ear infections *see 3.2* under ARI.

Chronic suppurative otitis media

Perforation of the tympanic membrane with a pus discharge to the external canal from the middle ear is a relatively frequent presentation of acute otitis media in children. These perforations usually close within a few weeks. Antibiotics are not normally needed in acute otitis media. However if a chronic pus discharge continues from a perforation, treat with amoxicillin for 10 days. If the suppuration continues with no change, then a broad spectrum antibiotic may be needed. The causative organisms include S. aureus and pseudomonas. Treat with ciprofloxacin 500mg 2 x per day for 5 days (adults and children over 12 years). Children aged 1 to 5 years 125mg 2 x per day; children aged 6 to 12 years give 250mg 2 x per day. An alternative treatment is with topical ciprofloxacin ear drops. If symptoms persist, a specialist should exclude a cholesteatoma as a cause of a chronic discharging middle ear.

Otitis externa

Otitis externa is an inflammation of the external ear canal, with redness in the canal and swelling closing the canal. It is painful and associated with a discharge or flaking of the skin in the canal. Some people may have recurrent eczematous otitis externa who may benefit from steroid drops alone (if available dexamethasone ear drops). Infectious cases often respond to (if available) to acetic acid ear drops, (or aluminium acetate 3% ear drops). Persisting cases that don't respond may need to be treated with steroid and antibiotic drops (either separate or combined preparations, depending on what is available). Antibacterial or antifungal drops may be needed. Choice will depend on what is available . In severe infections, oral antibiotics may be needed (amoxicillin first line, erythromycin or ciprofloxacin second line).

Note: this section of the STGs is short but will be developed for the next edition of the STGs.

10. Eyes

10.1 Eye lids

Stye

This is an infection of the eyelid which presents with a small swollen area and pain. A stye usually clears up by itself.

- Apply tetracycline 1% ointment
- Admit if the whole eye lid is swollen and give oral erythromycin 500mg 4 x a day for 5 to 7 days

Blepharitis is a mild but chronic inflammation of the eye lids with small flakes/ scales. Treatment is with tetracycline 1% ointment gently put on the lids at night, and may be needed for several weeks.

10.2 Conjunctiva, cornea and iris

Conjunctivitis

Conjunctivitis is an inflammation and often infection of the conjunctiva of the eye. Symptoms and signs include: eye discomfort, yellow discharge, red conjunctivae (the white of the eye is red).

Treatment steps

- Apply tetracycline 1% eye ointment 4 x per day for 5 days (or chloramphenicol 0.5% eye drops).
- Give gauze to clean the side of the eyelids
- Admit if eye is painful, or if there is redness around the cornea, if the eye lids are puffy or if there is photophobia and treat for potential iritis. Examine the eye carefully for corneal ulcer using fluorescein drops to stain, and/ or a foreign body.
- Admit if the conjunctivitis does not improve in 2 days.

Advice: Review if not rapidly improving. Do not put any other product in the eye or any herbs or local medicines. If eye is painful, admit and follow step 3.

Conjunctivitis in newborns (neonatal conjunctivitis)

If the eye lids are puffy and there is copious discharge, admit immediately. Causes include gonorrhea and chlamydia. Treat with IM or IV ceftriaxone 25mg/kg once a day for 5 days.

Trachoma
Trachoma is the leading cause of preventable blindness in the country. Staff promote the use of soap and regular washing of the hands and face, and may be involved in trachoma control programmes. People with trachoma can present with a pus discharge and may have complications.

Treat people with trachoma conjunctivitis with tetracycline ointment 3 x per day for 7 – 14 days. For chronic eye problems in trachoma, treat with azithromycin by mouth 20mg/kg as a single oral dose. Infants < 6 months are not given oral treatment but instead are given tetracycline eye ointment.

Important control measures may be needed for the early prevention and treatment of trachoma. This includes hygiene awareness on the importance of facial hygiene, environmental sanitation (including the control of the breeding of flies) and mass treatment with tetracycline eye ointment and/or oral azithromycin.

Vitamin A deficiency
This can present with dry eyes, eye pain, reduced vision. If it is suspected, or if there are any changes to the cornea, give vitamin A (see 2.2 Micronutrients for dose), apply tetracycline 1% ointment and admit immediately. Parenteral antibiotics are likely to be needed to treat or prevent secondary bacterial infection, and the child is likely to also have severe acute malnutrition (SAM) so will need to be admitted for inpatient therapeutic nutritional care.

Herpes simplex keratoconjunctivits
This is a dangerous infection of the eye that can cause ulcers, uveitis and blindness. Treatment is with:
- Antibiotic eye ointment or drops applied 4 x per day for 7 days (to treat secondary bacterial infection)
- Acyclovir eye ointment applied 5 x per day and for at least 3 days after complete healing
- Atropine eye drops to dilate the pupil and prevent adhesions beween the inflamed iris and the lens
- An eye pad to cover and protect

Allergic conjunctivitis
This is a relatively benign condition that causes itch and watering of the eyes. It may present with enlarged papillae of the upper eye lid,

seen when this is inverted. It must be distinguished from infectious conjunctivitis and other eye conditions such as uveitis. Treatment is with:

- Sodium cromoglycate eye drops, 2 drops applied to both eyes once or twice a day.

Corneal ulcer

Corneal ulcers are very painful, and present with watering of the eye, photophobia and redness around the cornea. If not properly treated they can cause blindness. Examination with fluorescein drops shows up the ulcer.

Treatment is with:

- Antibiotic eye drops or eye ointment
- Atropine eye drops to dilate the pupil and prevent adhesions beween the inflamed iris and the lens
- An eye pad to cover and protect.

The eye is examined at least twice a day until the ulcer starts to heal.

Iritis/ Uveitis

This is inflammation of the iris, usually an autoimmune condition, if not properly treated it can cause blindness Treatment is with steroid drops and atropine drops to dilate the pupil. These should only be given by a health professional who is sure of the diagnosis (has been trained) and who can follow up the person, usually with admission for the first 2 days until the adhesions that form between the iris and lens have separated. Surgery may be needed to separate these in chronic uveitis.

- Atropine eye drops for iritis/ uveitis – apply 2 drops both eyes once (action lasts up to 7 days).
- Steroid eye drops (what is available – either betamethasone, dexamethasone or prednisolone) – apply 2 drops every 3 – 4 hours until inflammation has subsided, then apply 2 drops 2 x per day for 5 days.

Caution: steroid drops should only be given by someone trained in eye care and when there is no infection present, and only used for short period because they may cause a rise in intraocular pressure and cause may cause chronic glaucoma and blindness. They must never be given for an acute red eye caused by a bacterial infection or herpes simplex virus.

10.3 Glaucoma

Glaucoma is a dangerous disease of the eye caused by an increase in pressure that damages the retina, causing initially loss of the peripheral vision (leaving a person with "tunnel vision") but progressing if untreated to blindness. It can be congenital, or acute angle-closure glaucoma that needs treating with surgery, or chronic open-angle glaucoma that can be treated with drops that reduce the pressure but surgery may also be needed. It is very important that glaucoma is diagnosed early, by routinely measuring the pressure of the eyes of people over 50, and in appropriate treatment for people with trauma to or inflammation (uveitis) of the eyes.

Treatment of acute glaucoma

- Give acetazolamide PO 250mg 2 – 3 x per day for short term use to urgently reduce intraocular pressure.
- Ophthalmologist needs to operate urgently

Timolol eye drops (a beta-blocker) – apply 2 drops 2 x per day in both eyes **OR**
Latanoprost eye drops (prostaglandin analogue) apply 2 drops 1 x at night in both eyes.

Treatment of chronic open angle glaucoma

- Give beta-blocker drops or prostaglandin analogue eye drops (depends on availability of treatment)
- Ophthalmologist may do a trabeculectomy operation

10.4 Retinal and choroidal disorders

Will appear in the next edition of STGs

Note: this section of the STGs is short but will be developed for the next edition of the STGs.

References

The STGs are developed from the contributions of many sources, including many of the protocols and guidelines developed by health ministries, UN and international agencies for the Somali zones. Some parts of these guidelines are reproduced in full in the STGs, but in order to keep the STGs as "pocket" reference guides, they are sometimes referenced next to where the treatment is given so that clinicians know where to consult a fuller description of the disease and diagnostic support. Most of the international guidelines are available online.

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Medical Conditions

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