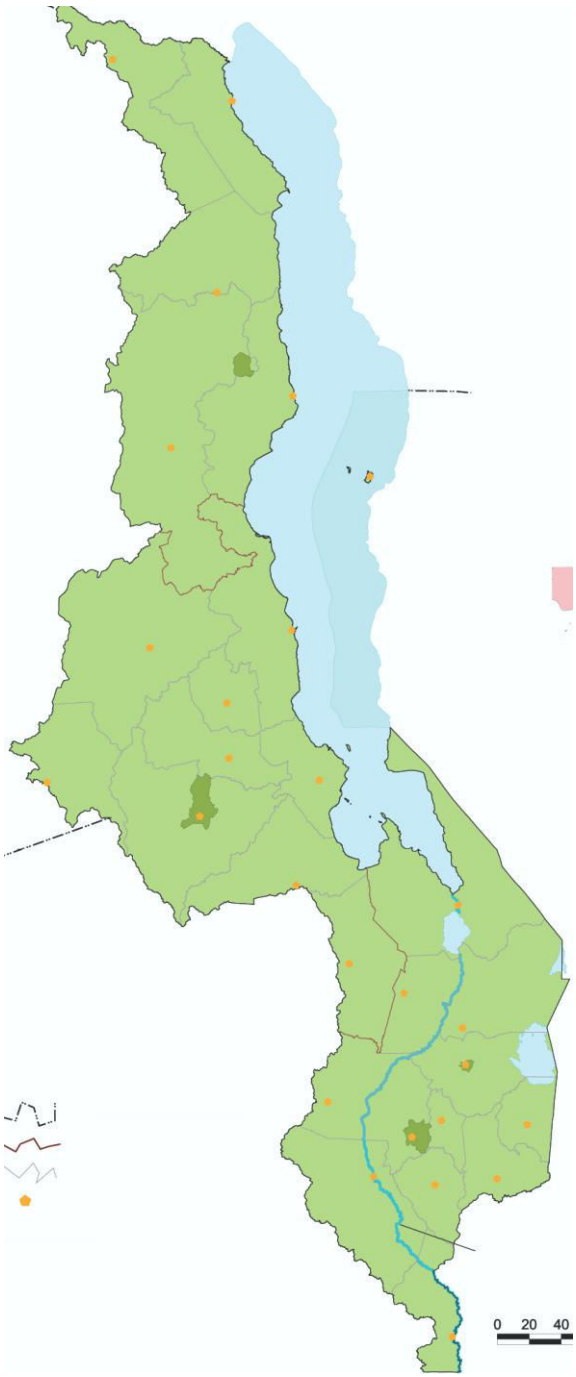
Government of Malawi



MALAWI STANDARD TREATMENT GUIDELINES (MSTG) 4th EDITION 2009

Incorporating MALAWI ESSENTIAL MEDICINES LIST (MEML) 2009

Ministry of Health

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Foreword

Medicine is a dynamic science and therefore it is important that publications such as the Malawi Standard Treatment Guidelines (MSTG) be revised at short intervals. Revision of the **3rd** edition of the MSTG started with a consultative meeting of stakeholders followed by editorial meetings and finally the approval process by members of the National Medicines and Medical Supplies Committee.

The MSTG includes key information on the selection, prescribing, dispensing and administration of medicines. It is designed as a digest for rapid reference and it may not always include all the information necessary for prescribing and dispensing. It should therefore be interpreted in the light of professional knowledge and supplemented as necessary by specialised publication and by reference to product literature.

Pursuant to the African Union Assembly Abuja Declaration of 2005, Malawi like other member states of the Union aims at putting 15% of the National budget towards towards the health budget. Resources, particularly financial resources for health service delivery are often scarce. Prudent use of these resources through improved diagnosis, rational prescribing, dispensing and use of medicines is paramount. The MSTG aims at standardizing prescribing and dispensing practices.

The 4th edition MSTG provides prescribers and dispensers with the currently recommended treatment as well as preventative schedules for most common disease states found in the country.

I would like to thank all those who took time to review the previous edition. Your contributions are greatly appreciated.

I look forward to your continued support and contributions to future reviews of the MSTG and other relevant publications.

C.V. Kang'ombe
SECRETARY FOR HEALTH

References

The following are national guidelines or reference text which should be consulted for further information on specific areas or topics:

- *Malawi National Medicine List,* MOHP, 2008
- *Malawi Prescribers Companion*, MOHP, 1993
- *A Paediatric Handbook for Malaw*i, J A Phillips, P N Kazembe, EAS Nelson, JAF Fisher, E Grabosch, 2nd ed. 1998)
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- *Management of Sexually Transmitted Infections Using Syndromic Management Approach, Guidelines for Service Delivery 2nd Edition, Ministry of Health/NAC, Vol 3, 2004 Malawi*;
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- *Malawi National Reproductive Health Service Delivery Guidelines*, MoH Reproductive Health Unit, 2007
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- *Prevention of Mother to Child Transmission of HIV*, Handbook for Health workers, MoH, 2003
- MoH *Management of HIV/AIDS Related Diseases (2008 2nd Edition)*
- MOH *Guide for Pre- and Post-test Counselling and AIDS Counselling information.*

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Acknowledgements

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Prescribing Guidelines

1. General points

Consider each of the following general points before writing a prescription:

1.1 Not all patients need a prescription for medicines. Non-medicine treatments and/or giving of simple advice may be more suitable in certain situations.

1.2 Good therapeutics depends on:

- Accurate diagnosis, based on thorough history-taking, necessary careful physical examination and, if required, supporting laboratory testing
- Knowledge of the medicines available
- Careful selection of the appropriate medicines
- Prescribing correctly the selected medicines and
- Ensuring that the patient understands *fully* how to use each prescribed medicine properly.

1.3 **Try to resist patient demand to prescribe injections or other expensive dosage forms. E.g. capsules and oral liquids**. Always make an effort to explain to the patient that these may not represent the best form of treatment for the particular condition

1.4 In life threatening conditions, always prescribe the *most effective* medicine available irrespective of the cost or limited availability

1.5 In order to avoid possible confusion, *always* prescribe medicines by their generic name and not by the brand name e.g. diazepam (not Valium), paracetamol (not Panado) or abbreviations i.e. PCM

1.6 Avoid prescribing combination medicines unless they have a known significant therapeutic advantage over single ingredient preparations

1.7 When prescribing any medicine, always take into consideration factors such as:

- Patient's age
- Patient's sex
- Patient's weight
- The effect of other diseases present
- Pregnancy
- Breast-feeding
- The likely degree of patient compliance with treatment

1.8 In all cases the likely benefit of any prescribed medication/s must be weighed against potential risks

1.9 Avoid overuse of symptomatic treatments for minor self-limiting conditions

1.10 Avoid multiple prescribing (polypharmacy), especially when the diagnosis is not clear

2. Prescribing of placebos

2.1 Avoid this whenever possible. Instead spend time reassuring and educating the patient

2.2 If it is *absolutely necessary* to prescribe a placebo, always choose a safe, cheap medicine which is not essential for the treatment of other important conditions, e.g. multivitamin tablets or vitamin B compound tablets

2.3 **Never** prescribe injections as placebo

2.4 Never prescribe tranquilizers e.g. diazepam, phenobarbitone, as placebos

3. Prescription writing

Note: Whenever possible, return all incomplete, inaccurate, illegible or unclear prescriptions to the prescriber for clarification, completion, or correction, before they are presented for dispensing

3.1 Write all prescriptions legibly in ink. Poor writing may lead to errors in interpretation by the dispenser which may have harmful and possibly disastrous consequences for the patient

3.2 Write the full name and address of the patient, and sign and date the prescription form

3.3 Write the name of the medicine or preparation using its full generic name. Do not use unofficial abbreviations, trade names, or obsolete names as these may cause confusion

3.4 Always state the strength of the preparation required where relevant

3.5 For solid dosage forms:

- quantities of one gram or more should be written as 1g, 2.5g, 10g, etc
- quantities of less than one gram but more than one milligram should be written as milligrams rather than fractions of a gram, e.g. 500mg and not 0.5g

3.6 Quantities less than one milligram should be expressed as micrograms (in full) and not as fractions of a milligram, e.g. 100 micrograms rather than 0.1 mg or 100mcg.

3.7 If decimals are used, always write a zero in front of the decimal point where there is no other figure, e.g. 0.5mL and not .5mL

3.8 Always state the full dose regimen, i.e.

- dose size
- dose frequency
- duration of treatment

The quantity to be dispersed will be deduced from this.

3.9 Avoid use of the direction "to be used/taken as required". Instead state a suitable dose frequency. In the few cases where 'as required' is appropriate, the actual quantity to be supplied should be stated

3.10 Avoid using unknown abbreviations. The following abbreviations can be used when writing a prescription:

Abbreviation	**Meaning**
b.i.d. or b.d.	twice a day
prn	occasionally
q4h	every 4 hours
q6h	every 6 hours
q8h	every 8 hours
q.i.d or q.d.	4 times a day
t.i.d. or t.d.	3 times a day
o.m.	every morning
o.n.	every night
nocte	at night
mane	in the morning
n et m or n.m.	night and morning

p.o.	by mouth
a.c	before meal
p.c.	after meals
stat	immediately or at once
sig	label

3.11 For oral liquids, doses should be stated in terms of 5mL spoonfuls for linctuses, elixirs, syrups and paediatric preparations, and in 10mL spoonfuls for adult mixtures

3.12 Doses other than 5mL or 10mL or multiples of these will be diluted to the nearest equivalent 5mL or 10mL quantity for dispensing

3.13 Total volumes of liquid preparations prescribed are usually selected from 50, 100, 300 or 500mL volumes

3.14 Total quantities of solid or semi-solid preparations prescribed are usually selected from 25, 50, 100, 200, 300, or 500g except where the product is supplied ready packed in a particular pack size, e.g. tetracycline eye ointment (3.5g)

3.15 Where relevant, always remember to include on the prescription any special instructions necessary for the correct use of a medicine or preparation, e.g. “before food” etc.

4. In-patient prescriptions

4.1 Write these prescriptions and records of dispensing and administration on in-patient treatment cards

4.2 Only use one card per patient at any one time

4.3 Clearly state a suitable dose frequency, or time of administration on medicines to be given ‘as required’

4.4 Always state the route of administration for all medicines prescribed

4.5 When any changes or cancellations are made to a prescription card, or if treatment is to be stopped, clearly sign and date the card in the appropriate place

4.6 If the timing of a medicine dosage is critical, ensure that suitable arrangements are made for the medicine to be given at the specific time/s required

5. Guide to quantities to be supplied

5.1 ***Oral liquids***

Adult mixtures (10 mL dose)

200mL (20 doses)

300mL (30 doses)

Elixirs, linctuses and paediatric mixtures (5mL dose)

50mL (10 doses)

100mL (20 doses)

150 mL (30 doses)

5.2 ***Preparations used in body cavities***

E.g. ear drops, nasal drops

5.3 ***External preparations***

Part of body	Semi-solid (g)*	Liquids (mL)**
Face	5-15	100
Groin and genitalia	15-25	100
Both hands	25-50	200
Scalp	50-100	200
Both arms and legs	100-200	200
Whole body	200	500

* E.g. creams, pastes, ointments etc

**e.g. lotions, applications, topical solutions, etc (for paints normally 10-25mL is supplied)

6. Prescriptions for controlled medicines

6.1 These medicines are controlled by the Laws of Malawi, The Pharmacy Medicines and Poisons Act, 1988. Consult the relevant sections of the Act for details of the appropriate legal requirements in **each case**

6.2 Medicines covered by the Act and which are also used in the MSTG are:

- **Morphine sulphate injection**
- **Morphine sulphate solution**

- **Pethidine hydrochloride injection**
- **Morphine sulphate tablets**

6.3 These medicines have potential for abuse which may be result in dependence. Carefully record all procedures involving them in the appropriate record books

6.4 Prescriptions for these medicines may only be written by registered medical practitioners

6.5 The following legal requirements must also be observed when writing such prescriptions:

a) the prescription must be in the prescriber's own handwriting
b) it must be signed and dated
c) the prescriber's address must be shown
d) the name and address of the patient must be stated
e) the total amount of the item to be supplied must be stated in words and figures

6.6 It is an offence for the prescriber to issue and for the pharmacy/dispensary to dispense prescriptions for controlled medicines, unless the requirements of the law are fully complied with

Notes:

a) In certain *exceptional* circumstances, senior nurses in charge of departments, wards, or theatres, and midwives, may also obtain and administer certain controlled medicines as part of their work. The relevant sections of the Act should be consulted for the details of the appropriate legal requirements in each case
b) Hospital in-patient prescriptions for controlled medicines should be prescribed on a separate prescription as well as written on treatment cards or case sheets and signed/dated by the person administering the medicine.

7. Adverse drug reactions (ADRs)

7.1 Nearly all medicines may produce unwanted or unexpected adverse effects, some of which may be life threatening e.g. anaphylactic shock, liver failure

7.2 Prescribers should immediately report any serious or unexpected adverse effects thought to be due to a medicine to :

The Registrar,
Pharmacy, Medicines and Poisons Board,
PO Box 30241, Lilongwe.
Tel: 01 755 165/166 Fax: 01 755 204

7.3 Rules for prevention of ADRs

a) Never use a medicine unless there is a clear indication for its use
   a. Only use medicines in pregnancy if absolutely essential
   b. Check if the patient has had any previous reactions to the medicine or to similar medicines
   c. Remember to reduce doses when necessary e.g. in the young, the elderly, and if liver or renal disease is present
   d. Always prescribe the minimum number of medicines possible
   e. Carefully explain the dose regimens to patients, especially those on multiple medicines, the elderly and anyone likely to misunderstand
   f. If possible, use medicines with which you are familiar
   g. Look out for ADRs when using new or unfamiliar medicines
   h. Warn patients about likely adverse effects and advise them on what to do if they occur
   i. Patients on certain prolonged treatments e.g. Anticoagulants, corticosteroids, Insulin etc should carry a small card giving information about the treatment

8. Paediatric prescribing

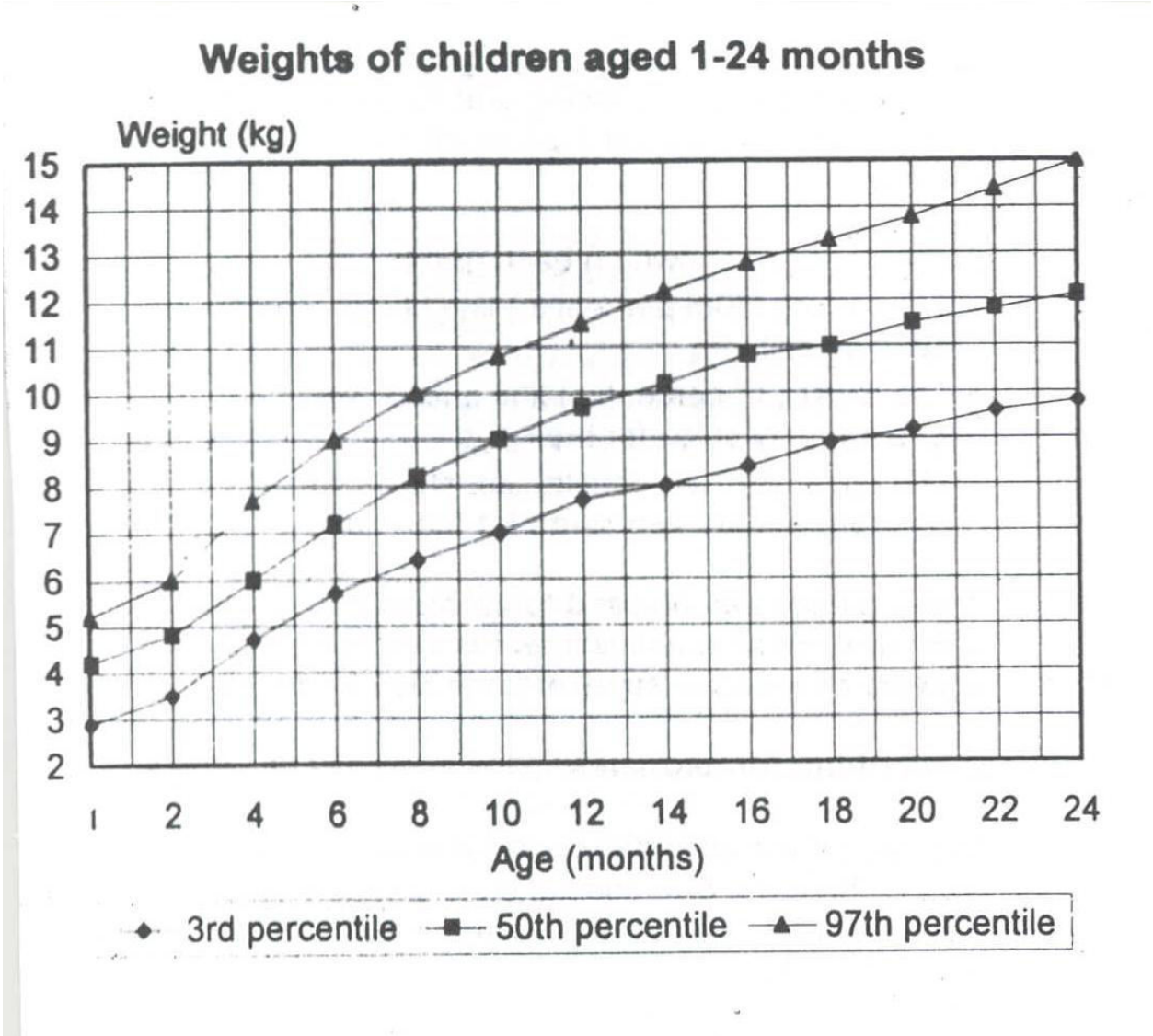
8.1 In these guidelines, paediatric medicine doses are usually given according to body weight and not age, and are therefore expressed as mg/kg etc. The main reason for this is that children of the same age may vary significantly in weight.

Thus it is safer and more accurate to prescribe drugs according to body weight. Moreover, this should encourage the good practise of weighing children whenever possible.

8.2 When a weighing scale is not available, the following graphs showing weight of children from 1-24 months and 2-15 years respectively can be used to estimate the weight of a child of known age after assessment of whether the child appears of average, small or large in size for its age.

Three lines are shown on each graph

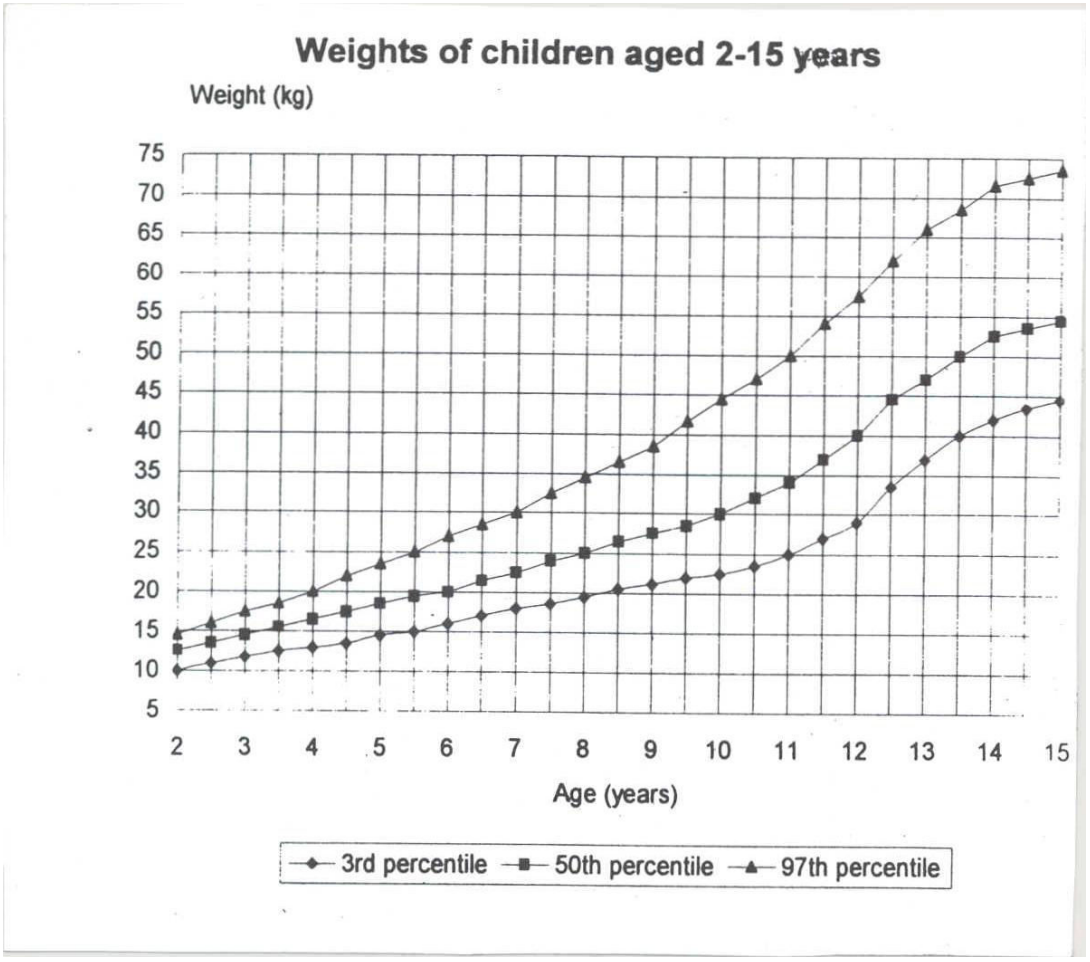
- the middle (50th percentile) line shows weight for average children
- the lower (3rd percentile) line shows weights for children who are very small for their age
- the upper (97th percentile) line shows weights for children who are very large for their age



Example: When prescribing for an 8 months old baby who is fatter than usual, (i.e. larger than average weight for age):

- look along the x-axis (age) of the graph to the 8 month mark

- follow the vertical line from there to the point somewhere between the middle (50th percentile) and top of (97th percentile) lines on the graph
- from there follow a horizontal line left to cut the y-axis (weight)
- the estimated weight is around 10 kg



Example: when prescribing for an $8^{1}/_{2}$ year old thin child, (i.e. less than average weight for age) of years:

- Look along the x-axis (age) of the graph to mid way between the 8 and 9 year marks
- Follow the vertical line from there until it meets the lower (3rd percentile) line on the graph
- From there follow a horizontal line left to cut the y-axis (weight)
- The estimated weight is around 20.5 kg

8.3 Neonates have delayed hepatic and renal excretion of medicines. Therefore give special consideration when prescribing for children less than 30 days old and especially premature infants.

9. Medicine interactions

9.1 Whenever prescribing a particular medicine, care should be taken to avoid problems of interactions with other medicines, whether these are:

- also prescribed at the same time
- previously prescribed by another prescriber for the same or another condition and currently being taken by the patient
- purchased or otherwise obtained by the patient for the purpose of self-medication

9.2 Thus, before prescribing a medicine, *always* obtain details of any other medication currently being taken by the patient

9.3 Where a medicine interacts with alcohol (e.g. metronidazole, diazepam, anti-diabetic medicines, tricyclic antidepressants etc.) remember to counsel the patient to avoid taking alcoholic drinks during the course of treatment and for at least 48 hours after completion of the course

Presentation of Information

a. Arrangement of sections

Standard treatments have been grouped in sections according to either body systems (e.g. respiratory conditions, gastrointestinal conditions, etc) or types of disorder (e.g. parasitic diseases, nutritional disorders, etc)

Use the table of contents, pp ii, to locate the particular section required.

b. **Indexing and Cross-referencing**

All diseases, conditions, tables, etc are included in an index. Extensive cross-references are given in the text, by section number and page number, to facilitate location of other references to the subject elsewhere in the guidelines.

Use the Index on page 201-208 to quickly find the required subject.

Prescriber's guidance points

- These are given for most standard treatments and are key points to be considered before prescribing for a patient with a particular condition.
- Certain points as well as warnings are given added emphasis by inclusion in a boxed border.

Medicine administration

- Unless otherwise specified, the *oral route* is to be used. Even when a parental route is specified, with medicines which are well absorbed orally and which are available as an oral dosage-form, it is often possible to switch to oral administration once the patient has improved and is able to swallow/tolerate oral medication
- Additional guidance on medicine administration is given, where relevant, as bulleted points after dosage regimen.

Medicine names

- Medicines recommended for use are those on the current Malawi National Medicine List, 2009. Generic names are used and indicated in **bold type**. Where necessary, proprietary names are indicated in *italic* type.

Alternative medicines

- These are indicated where appropriate and available for alternative treatment of a particular condition. They should be used only if the recommended medicine is not available or is not suitable for a particular patient.
- In some cases (where indicated) alternative (i.e. 2nd line) medicines may be used when a satisfactory response has not been obtained with the recommended (1st line) medication.

Abbreviations

ARI	-	Acute respiratory infections
ART	-	Anti retroviral therapy
BF	-	blood film examination
BP	-	blood pressure
CSF	-	cerebrospinal fluid
CVA	-	cerebrovascular accident
CXR	-	chest x-ray
DIC	-	disseminated intravascular coagulopathy
FBC	-	Full blood count
FFP	-	Fresh Frozen Plasma
g	-	gram
Hb	-	haemoglobin
HIV	-	Human immunodeficiency virus
i/m	-	intramuscular
i/v	-	intravenous
IU	-	international units
JVP	-	juvenile venous pressure
Kg	-	kilogram
L	-	litre
LP	-	lumbar puncture
LRTI	-	lower respiratory tract infection
mg	-	milligram
mL	-	milliliter
mmol	-	millimole
MU	-	mega (1 million) units
NGT	-	nasogastric tube
PCV	-	packed cell volume
s/c	-	subcutaneous
STI	-	sexually transmitted infections
TB	-	Tuberculosis
TTP	-	Thrombotic thrombocytopenic purpura
URTI	-	upper respiratory tract infection

Metric Units

1 kilogram (kg)	= 1,000 grams (g)
1 g	= 1,000 milligrams (mg)
1 mg	= 1,000 micrograms
1 litre (L)	= 1,000 millilitres
1 ml of water	=1 g
1% (m/v)	= 10 mg/mL

Equivalents

1 litre	= 1.8 pints
1 pint	= 568.3 mL
1 kg	= 2.2 pounds
1 lb	= 453.4 g
1 ounce (oz)	= 28.35 g

1.0 Blood and blood diseases

1.1 Blood: Guidelines for Appropriate Use

- Refer to the National Transfusion Service/National AIDS Control programme booklet **Recommended Guidelines for the Practice of Safe Blood Transfusion in Malawi** for further details including information on:
  - donor recruitment and selection,
  - blood collection,
  - storage procedures and records,
  - laboratory testing of donor and recipient's blood,
  - transfusion reactions and
  - clinical aspects of blood transfusion and administration.
- Blood transfusion although having undoubted benefits, also carries serious risks including:
  - Possible transfusion of infections (e.g. HIV and hepatitis)
  - Immune-system related problems (e.g. Intravascular haemolysis)
  - Circulatory overload
- It is expensive and uses a scarce human resource, therefore *only* prescribe blood if:
  - Less hazardous therapy has been or will be ineffective, *and*
  - The benefits outweigh the risks involved
  - The decision to transfuse blood has been based on careful assessment of the patient which indicates that it is necessary to save life or prevent major morbidity
- Except in the most exceptional life-threatening situations, *always* transfuse blood which has been obtained from appropriately screened donors and/or appropriately screened for infectious agents
- Ensure that compatibility testing is carried out on **all** blood transfused even if, in life-threatening emergencies, this is done after it has been issued.
- Observations of patient's vital signs should be done every 15 minutes during blood transfusion and 4 hourly after transfusion for the next 24 hours.

1.2 Indications for whole blood or red cell suspension transfusion

General measures

- Reduce salt intake
- Prop the patient up on pillows
- Treat underlying cause if possible, e.g. anaemia, rheumatic carditis, hypertension
- Bed rest in severe cases, reduced activity in milder cases,
- Give oxygen if cyanosed or restless

Treatment

Adults

- **Frusemide** 40-160 mg daily in divided doses plus

- **Enalapril** 10-20 mg once or twice daily

Alternatively

- **Spironolactone** 25mg once daily
- If atrial fibrillation is present add **Digoxin** 0.25mg every 6 hours. on first day then from day two onwards, **Digoxin** 0.125-0.25 mg daily
- If rapid atrial fibrillation is present (heart rate >100/min), a loading dose of 0.75mg – 1mg in divided doses on the first day can be given
- Treat underlying cause

Note: Potassium supplementation is not required in patients on frusemide and enalapril or spironolactone.

Children

- Give **Frusemide** 1-2 mg/kg orally or i/v once or twice daily

2.3 Hypertension

- Diagnosis is based on a raised blood pressure measured while patient is at rest on at least 3 separate readings.
- Hypertension is generally asymptomatic.
- Essential hypertension is unusual in children and young adults and an underlying cause should be excluded at hospital level
- Refer all children with hypertension to a doctor for management
- A child's expected BP can be calculated as:
  - Mean systolic BP = (age in years x 2) + 80
  - Mean diastolic BP = 2/3 of systolic BP

- Remember to use the correct cuff size when measuring BP. It should cover 2/3 of the upper arm

Table 2: Classification of Hypertension

Type of Hypertension	Systolic Blood Pressure	Diastolic Blood Pressure
Mild	140-159	90-99
Moderate	160-179	100-109
Severe	>180	>110

General measures

- Reduce salt intake
- Stop smoking
- Regular exercise
- Loose weight
- Avoid excessive alcohol consumption

- Consider medicine treatment for mild hypertension only if the above general measures are unsuccessful

Treatment

- Explain to the patient that treatment must be regular (every day), closely monitored and generally has to be taken for life
- Use the following stepped treatment approach with the medicines *in this order* unless there are specific contraindications, co-morbidities or side-effects:

2.3.1 Stepped anti-hypertensive treatment approach (adults)

- **Step 1: Hydrochlorthiazide** 25 mg each morning, increasing the dose is not advised

Alternatively

Bendrofluazide 2.5 mg each morning. Avoid in pregnancy and breast-feeding

- **Step 2**: **Hydrochlorthiazide** 25mg once daily and **Amlodipine** 5-10mg once daily
- Where Amlodipine is not available **Nifedipine** 10-20mg slow release tablets twice daily can be used.

- **Step 3**: **Hydrochlorthiazide** 25mg once daily, **Amlodipine** 5-10 mg once daily and **Enalapril** 10-20mg once daily
- Where Enalapril is not available **Captopril** 12.5-50mg every 8 hours can be used.

Note:

(i) Best to start with a lower dose of Enalapril 5mg and increase to 10mg after observation of the BP response over a few days.

(ii) Avoid Enalapril and Captopril in pregnancy and breast-feeding

- **Step 4**: **Hydrochlorthiazide** 25mg once daily, **Amlodipine** 5-10 mg once daily, **Enalapril** 10-20mg once daily and **Atenolol** 50-100mg once daily.
- Where Atenolol is not available **Propranolol** 40mg - 80mg every 8 hours can be used.
- **Step 5**: Refer to Medical Specialist

Note:

(i) Side-effects may outweigh benefits

(ii) In patients with severe hypertension or complications (heart failure, renal failure) start medicine treatment immediately

(iii) In patients without co-morbidity, aim for a BP of around 140/90

2.3.2 Emergency antihypertensive treatment

Symptoms/Signs of hypertensive crisis: encephalopathy, convulsions, retinal hemorrhages or blindness.

- Reduce the blood pressure in a controlled manner to avoid impaired auto-regulation of cerebral blood flow.
- Only use parenteral therapy in:
  - hypertensive heart failure
  - hypertensive encephalopathy
  - malignant hypertension
  - eclampsia
  - hypertension and dissecting aneurysm of the aorta

Note: Intravenous rapid lowering of blood pressure has several risks and should be done under close monitoring only, preferably in a high or intensive care setting. It is only indicated in hypertensive emergencies mentioned above.

Treatment

Adults

- **Hydralazine** 5-10 mg i/m
- Repeat up to every 1 hour as necessary
- *If heart failure:*add **Frusemide** 40 mg i/v stat

> Sub-lingual **nifedipine** (10 mg) should be avoided due to the unpredictable response of the blood pressure, unless parenteral drugs are unavailable.

Children

- *For fluid overload*: **Frusemide** 1 mg/kg bolus i/v or i/m
- *For hypertensive encephalopathy*: **Hydralazine** 0.15 mg/kg slow i/v
  - Repeat every 30-90 minutes as required
  - Maximum dose: 1.7-3.6 mg/kg in 24 hours
- Long term management of hypertension would depend on the cause hence these patients need to be referred for proper management.

2.4 Angina Pectoris

- Minimize risk factors by:
  - weight reduction (if obese)
  - control of hypertension
  - stopping smoking
- Address other factors such as:
  - high blood cholesterol
  - stressful lifestyle
  - excessive alcohol intake
- Encourage regular moderate exercise

2.4.1 Stable angina (infrequent attacks)

Treatment

- **Aspirin** 150 mg daily
  - contraindicated in peptic ulcer
- and **Glyceryl trinitrate** 0.5 mg sublingually as required.
- Maximum 3 tablets per 15 minutes
- deteriorates on storage: keep tablets in original container for no more than 3 months after opening
- Alernatively use **Isosorbide dinitrate** 5-10mg sublingually as required instead of glyceryl trinitrate