

# VANUATU HWM 2013 CONTENTS

CONTENTS	1
EMERGENCY DRUG DOSAGES	2
FOREWORD AND DEDICATION	3
INTRODUCTION / ACKNOWLEDGEMENTS	4
INFECTION CONTROL	9
ABDOMINAL PAIN	13
ACCIDENTS	17
ANAEMIA	23
ANAPHYLAXIS	25
ASTHMA – see Respiratory Conditions	144
CHEST PAIN	27
CHILD HEALTH	28
CHEST INFECTION – see Respiratory Cond's	149
COMA	31
CONVULSIONS	34
DENGUE	37
DENTAL CONDITIONS	40
DIABETES	43
DIARRHOEA and DEHYDRATION	48
EAR DISEASE	54
EYE DISEASE	56
FAMILY PLANNING (FP)	59
FEVER	65
FILARIASIS	66
FISH POISONING	67
FOOD POISONING	68
FOREIGN BODIES	69
HEADACHE	70
HEPATITIS B	72
HIV/AIDS	73
HYPERTENSION	75
IMMUNISATION	80
JAUNDICE	82
JOINT PAIN AND ARTHRITIS	83
KIDNEY DISEASE	85

LEPROSY	87
LEPTOSPIROSIS	89
MALARIA	90
MALNUTRITION	94
MENINGITIS	97
MENTAL HEALTH DISORDERS	99
NAUSEA AND VOMITING	102
OBSTETRICS	104
OCULOGYRIC CRISIS AND DYSTONIA	122
OEDEMA (SWELLING) / HEART FAILURE	123
PAIN MANAGEMENT	125
PHARMACY ISSUES	128
POISONING	134
PREGNANCY AND LACTATION – Drugs in	137
RESPIRATORY CONDITIONS	144
Asthma and COPD	
Chest Infections in Older Children and Adults	149
Cough and Difficulty Breathing in Children < 5	152
RHEUMATIC FEVER AND HEART DISEASE	155
SEXUAL VIOLENCE ALGORITHM	158
SEXUALLY TRANSMITTED INFECTIONS (STIs)	159
SKIN DISEASES AND WOUND CARE	168
STINGS & BITES	173
STROKE	174
THYROID DISORDERS	175
TRACHOMA	176
TUBERCULOSIS (TB)	178
TYPHOID	183
URINARY TRACT INFECTION AND PYELONEPHRITIS	184
YAWS	186
DRUG CALCULATIONS AND IV DRIP RATES	192
ANATOMY DIAGRAMS – Organs and Skeleton	190
DRUG DOSAGES	192
USEFUL RESOURCES	205
SPACER DEVICE / FRONT COVER	207

**EMERGENCY DRUG DOSAGES - Refer to tables at back of manual for further information or other drug dosages**

<b>AGE</b>	<b>0-3 month</b>	<b>4-11 month</b>	<b>1-3 years</b>	<b>4-6 years</b>	<b>7-10 years</b>	<b>11-16 years</b>	<b>Small Adult</b>	<b>Large Adult</b>
<b>WEIGHT IN KG</b>	<b>3-5kgs</b>	<b>6-9kg</b>	<b>10-14kg</b>	<b>15-19</b>	<b>20-29</b>	<b>30-39</b>	<b>40-49</b>	<b>50+</b>
<b>ADRENALINE</b> 1mg / 1ml – S/C or IM	0.1ml	0.1ml	0.15ml	0.2ml	0.3ml	0.4ml	0.5ml	1.0ml
<b>ATROPINE</b> IV -strength varies							0.5-1mg	0.5-1mg
<b>BENZTROPINE</b> 2mg / 2ml IM / IV				0.3ml	0.4ml	0.6ml	1-2 ml	1 – 2 ml
<b>CALCIUM GLUCONATE</b> 10% /10ml IV	5 – 10ml					10 – 20ml		
<b>DEXTROSE</b> 25g / 50 ml IV Give into large vein for adults only = 50% Mix 10ml with 40ml of saline = 10%	8ml	14ml	25ml	35ml	50ml	70ml	25ml	30ml
<b>DIAZEPAM</b> 10mg / 2ml IV (PR dose = 2xIV)	0.2ml	0.5ml	0.5ml	0.75ml	1ml	2ml	2ml	2ml
<b>FRUSEMIDE</b> 20mg / 2ml IM / IV	-	0.5ml	1ml	1.5ml	2ml	2ml	2 – 4 ml	2 – 4 ml
<b>GLYCERYL TRINITRATE</b> 0.5/0.6mg tablets Sublingual						1 tablet under the tongue for relief of chest pain – can repeat to 3 tablets		
<b>HYDROCORTISONE</b> IV / IM Add 5ml water to make 100mg / 5ml	0.5ml	1ml	1.5ml	2ml	2.5ml	2.5- 5ml	5-10ml	5-10ml
<b>MORPHINE</b> 10mg/ml SC / IM(IV dose lower)	-	0.06ml	0.1ml	0.15ml	0.2ml	0.3ml	0.5 – 1ml	0.5 – 1ml
<b>NALOXONE</b> 400mcg / 1ml SC / IM / IV	0.5 ml IM	1ml	1ml	1ml	1ml	1ml	1-2ml	1-2ml
<b>PHENOBARBITONE</b> 200mg / 2ml IM	1ml	2ml	3ml	4ml	6ml	8ml	10ml	10ml
<b>PHENYTOIN</b> 250mg / 5ml IV Dilute with saline and give over 30 mins	1ml	2ml	3.5ml	5ml	7.5ml	10ml	13ml	15-20ml
<b>PROMETHAZINE</b> 50mg / 2ml deep IM				0.08ml	0.12ml	0.2ml	0.5-1ml	1-2ml
<b>SALBUTAMOL</b> 5mg / ml Nebuliser Dilute 1ml with 1 ml of saline or water - consider inhaler + spacer 12puffs >6y.o. 6puffs<6y.o.	Under 12mths do not respond		1-2ml			2ml		
<b>STAT RESUS FLUID IV</b> Use Saline or Hartmanns	50 - 100ml	150ml	250ml	350ml	500ml	750ml	1000ml	1000ml

## **FOREWORD**

**3rd EDITION 2013**

### **VANUATU HEALTH WORKER MANUAL Standard Treatment Guidelines**

The Vanuatu Health Worker's Manual was originally published in 1991 and revised extensively in 2004. Both editions have been used widely in Vanuatu since this time. The manual therefore has formed an important part of the day to day clinical care of our people and has been used as a basis for training curriculum and a guide for rural health workers in the referral system. As in the previous manuals, it is intended for registered nurses and nurse aides in the rural health facilities – Dispensaries and Health Centres. There is no question however that it is also beneficial to the doctors throughout the country, particularly new interns and those supporting us from other countries. This manual aims to help health workers prescribe the best possible treatment available and provide guidance on when to refer.

The revision of this manual commenced in 2011 and has been completed in a participatory manner between a number of people within the Ministry of Health (MOH) and others supporting it as well eg World Health Organisation (WHO). The updates in this manual endeavour to adapt current best practice to our situation within the confines of our resources. This follows the principles of Primary Health Care; Appropriateness, Affordability and Accessibility.

The time and effort put into this extensive review by the staff of the MOH is gratefully acknowledged. Thanks to the editor and driver of this update, the Principal Pharmacist, Amanda Sanburg for her perseverance in following up the upgrades of the various chapters. Thanks are also given to AusAID for funding assistance to print this manual for all medical and nursing staff of the MOH.

I take this opportunity to encourage all registered nurses and medical practitioners to use this manual wisely and for the benefit of improving clinical service delivery to the people of Vanuatu.

The Hon. Serge Vohor  
Minister for Health.

#### **DEDICATION IN MEMORIUM**

Jan O'Neill, when working on an Aus-AID funded project from 1999 to 2004, identified the need to update the first health worker's manual developed in 1991. Jan researched the topics and consulted with many staff members in developing a contemporary Manual. She completed her work just before leaving in July 2004 and the manual was distributed and well received across the islands of Vanuatu.

Sadly Jan died in November 2009 at the early age of 52 and this new edition of the Manual is dedicated to her memory. Jan was a passionate nurse who valued high standards and the need for consistency in how people were treated. Her special interests were as diverse as critical care and primary health care. Jan also worked hard both in Vanuatu and later in Indonesia to ensure safe birthing for mothers especially in remote areas.

In dedicating this manual to Jan it is hoped that all who use it will pursue the high standards for which she dedicated her working life.

# INTRODUCTION

## CHANGES IN THIS EDITION

New areas have been added and many of the topics have been re-written and updated.

All drug dosages should be according to the patient's weight. If you cannot obtain a weight then use age.

 Unless ordered by a medical officer all drug doses for people classed as "large adult" or 50+ kgs should receive the dose listed in the last column and would not normally be worked out per kilo to avoid overdosing in people who are fat.

Estimate Weight in Kg	3-5	6-9	10-14	15-19	20-29	30-39	40-49	50+
Or By Age	0-3 months	4-11 months	1-3 years	4-6 years	7-10 years	11-16 years	Small Adult	Large Adult

- Some Drug Treatment Guidelines have been changed.
  - New malaria drugs – refer guidelines and separate Manual.
  - New emergency medicines available for use in Obstetrics to prevent premature labour and treat eclampsia and PPH.
  - Zinc is available for children with diarrhoea to reduce likelihood of further episodes.
  - Amoxicillin replaces Cotrimoxazole as the first line of treatment for most infections in children: Pneumonia, Otitis Media.
  - Oral Amoxicillin (tablets) replace IM Procaine Penicillin unless indicated.
  - STI packs containing Ciprofloxacin and Azithromycin are used to treat Gonorrhoea and Chlamydia respectively.
  - Tinidazole is available for stat dose treatment for trichomonas and giardia – less number of tablets than stat Metronidazole and also not bitter tasting like Metronidazole.
  - Azithromycin is also approved for stat dose treatment of Yaws and Trachoma.
  - Ciprofloxacin is also approved for treatment of bloody diarrhoea. We need to ensure we do not overuse these antibiotics for unapproved conditions or we will get resistance to them and will not be able to treat STI's.
  - Dosing of some antibiotics has changed eg amoxicillin can be given bd at 25mg/kg bd for children to improve compliance, similarly 400mg(o)/500mg (IV) bd dosing of metronidazole is adequate and penicillin dosing can also be given twice daily eg 1g bd for adults without regard to food ie there is no evidence for it having to be given on an empty stomach.
  - Salbutamol inhalers (puffers) are first line therapy for mild-moderate asthma and replace the use of tablets whenever possible.
  - Inhalers should be used with a spacer made from a 600mL or 1L drink bottle – see picture at end of drug tables at back of this manual.
  - All known asthmatics should be using Inhalers: Salbutamol and the preventer Beclomethasone if asthma frequent or severe.
  - First line treatment for diabetics after diet and exercise is metformin provided they do not have severe kidney dysfunction. Maximum dose of Metformin is 1g bd – not tds.
  - Medol is no longer available and cleaning with neutral detergent is encouraged with chlorine used for contaminated equipment if sterilization is not available. Povidone iodine is used on sores if required.
  - Meningitis should be treated in a hospital. Ceftriaxone is available, but only for in-hospital use.
- Some Drug Treatments are no longer used:
  - Aminophylline should no longer be used, unless under direct orders of a medical officer.
  - Use of Salbutamol tablets should be avoided. If you feel you must use these, you must get approval from a senior medical officer.
  - Antibiotic syrups are in limited supply and generally are expensive and short dated – tablets for children can be crushed and mixed with water to make 10mL and then divided to give the correct dose – you will need to show mothers how to do this – the correct dose amount can be mixed with something the child likes to eat e.g. fruit like banana, paw paw, mango, butter fruit but not citrus fruit.
  - Pethidine is no longer available for pain relief – morphine has taken its place. Long acting morphine tablets are available for treatment of cancer pain.

- Ranitidine is replaced by Omeprazole for proven peptic ulcers and severe gastro-oesophageal reflux.
  - The morning after pill (Levonorgestrel 1.5mg or 2x750mcg) is available instead of using 50 x Microlut tablets.
  - Chlorpheniramine is replacing promethazine as the oral antihistamine of choice. IV promethazine is available but its use has reduced due to risk of side effects.
3. Pre-Treatment Referral Guidelines are added:
- Always give Paracetamol (Panadol) for fevers (38.5°C or higher) prior to referral.
  - All infants and children under 5 should be pre-treated according to specific illness guidelines before referral.
  - Anyone suspected of cerebral malaria should be commenced on Artesunate PR or IM/IV before referral as per malaria guidelines.
  - Every effort has been made to ensure that rural health staff have some instructions about treatment to commence as it is acknowledged that referral can be difficult and take time.

 REMEMBER, IF YOU ARE NOT SURE WHAT TO DO AND ARE NOT COMFORTABLE WITH A GUIDELINE, ASK FOR HELP. GET IMMEDIATE ASSISTANCE FROM SOMEONE MORE EXPERIENCED THAN YOU.

 YOU CAN ONLY DO YOUR BEST WITH WHAT YOU HAVE, BEING KIND AND ATTENTIVE TO PATIENTS AND THEIR FAMILIES CAN HELP A LOT WHEN YOU HAVE FEW RESOURCES.

## HEALTH FACILITIES, TREATMENT ESSENTIALS AND THE REFERRAL SYSTEM

In Vanuatu, Aid Posts managed by the community with assistance from the Ministry of Health are the first level of the Primary Health Care System in Vanuatu. Health Dispensaries offer more specialised care followed by Health Centres. Hospitals are for patients needing the most advanced care. It is important in Vanuatu to understand and use a referral system so that patients receive the level of health care they require. The following guidelines are to be used to make consistency possible.

### Referral Procedures

1. Any patient who is not improving, getting worse, extremely ill and / or beyond your level of medical skill needs referral to a higher level of care facility.
2. Before referring patients, if you have a radio or phone, call and discuss the case with a more experienced or senior level nurse practitioner or medical officer.
3. Agree upon a plan of action with this person and give the patient pre-referral treatment.
4. Document in writing patient's name, age, presenting condition, relevant medical history, treatment to date, reason for referral and pre-referral treatment given and have patient take this with him / her to referral site. Remember to sign your name, title and contact information.
5. Assist in whatever means necessary to assure patient has necessary transportation to go.
6. The hospital or medical officer who accepts and sees the referred patient should send back a report to the referring health facility.
7. It is important to record number of referrals you have made on your monthly HIS report – this should include urgent and non-urgent referrals.
8. Referral facilities should also maintain records of people received.
9. Dispensaries and Health Centres should work with their committees to develop community support to assist with urgent referral, especially transport logistics and costs.

## ESSENTIAL DRUGS

Vanuatu has an Essential Drugs List that is updated regularly by the National Drug and Therapeutics Committee. The drug list is based on a list of drugs that are appropriate, affordable and accessible for the basic health needs of the majority of the population.

Due to the complexity of some drugs regarding administration and/ or side effects and/ or cost not all drugs are available to all health staff. Some drugs are reserved for administration under direct supervision of medical officers and some others are for specialist medical officer use only. Refer to chapter – Pharmacy Issues – for more detail about who can prescribe what medicines.

# MANUALS

This manual is focused on the general treatment guidelines that should be carried out by all health staff in Vanuatu. Drugs are based on the Essential Drug List of Vanuatu. The guidelines are also based on various international standards. Some treatments have changed a lot since the last manual especially obstetrics with new emergency medicines in place. Many sources have been cross-referenced to make sure that what is recommended is what could be expected internationally.

In addition to this manual the Ministry of Health has a number of other key manuals that you should refer to when seeing patients. Each chapter in this manual where another guide exists for Vanuatu is noted(☞). The main manuals are:

1. Malaria
2. TB DOTS
3. EPI
4. Family Planning for Vanuatu
  
5. Obstetrics and Gynaecology
6. Prevention of Mother to Child Transmission (PMTCT) of HIV Policy and Guidelines
7. Infection Control
8. STI flowcharts and treatment guidelines
9. WHO mhGAP Intervention Guide 2010 for Mental Health disorders

## INFORMATION ABOUT MANUAL PRODUCTION

This manual has been produced in section using Microsoft Word and Excel for the drug tables then transferred to Adobe Acrobat and sections combined. This software was used to ensure that future updates could be done easily by someone with good formatting skills.

All the software is available at Ministry of Health. A copy in Acrobat format is available on the MOH Efate Server. Copies of the Word documents and the Acrobat documents are available electronically for those with PC access. The current contact person is Amanda Sanburg ([asanburg@vanuatu.gov.vu](mailto:asanburg@vanuatu.gov.vu)), Principal Pharmacist but copies will be kept by Director General of Health and other relevant health staff.

Care has been taken to make sure that the information in the manual is likely to remain current for at least 5 years but as medicine is an evolving and ever changing practice, it is important to maintain access to the latest health developments throughout the world. Updating of the Manual requires a health-based co-ordinator or editor and close collaboration with all stakeholders both within the MOH and outside such as WHO, specialists providing services under different aid programs etc. If you think an overseas person is required to help then they must have an understanding of clinical practice in Vanuatu and be competent in formatting and completing to print stage. It is recommended that if a person was recruited to do this only they would require 6 months in order to cross check with as many key clinical staff as possible and this would require travel to provinces. A donor would be required to fund such a person.

## ACKNOWLEDGEMENTS

As editor of this version, I would like to pass on a very big thank you to all those who contributed to the updating of this third version of the Vanuatu Health Worker's Manual. Originally it was planned to include the names of all those involved but then some chose not to have their names listed for various reasons and so I decided to leave out individual names and simply say thanks to all those who contributed – you know who you are! Contributors came from within the MOH, local medical, nursing, pharmacy and public health staff in Port Vila and provincial centres and donor funded consultants, VCNE, WHO both within Vanuatu and its broader organisation, volunteer organisations such as Pro-Medical and those running various training programs to support health in Vanuatu. Thanks also to the MOH Pharmacy staff for supporting this important project and giving me the time to complete it in a part-time capacity during my tenure as Principal Pharmacist. Special thanks also to AusAID for support with printing costs and support for the position of Principal Pharmacist through the PACTAM program. I was fortunate to work with Jan O'Neil who updated the second version of this manual in 2004 to promote its use amongst the rural nurses of Vanuatu. I trust this third version will be equally well received and utilized to ensure best practice in health care for the people of Vanuatu.

*Amanda Sanburg, Principal Pharmacist, Ministry of Health, Vanuatu 2003-6 and 2012-14.*

## ABBREVIATIONS

Pharmaceutical:

Daily/OD	Usually means to be taken once a day, same time every day
Mane	Usually means to be taken in the morning
Nocte	Usually means to be taken at night
BD	Twice per day – usually 12 hours apart e.g. 8am and 8pm
TDS/TID	Three times per day – can mean morning, afternoon and bedtime or may mean every eight hours depending on drug
QID/QDS	Four times per day – can mean morning, lunch, dinner and bedtime or every 6 hours depending on drug
QQH or Q4H	Means to be given every 4 hours
PRN	Means to be given whenever necessary but may have a number of hours linked with it e.g. PRN 4 hrly means can be given whenever necessary but at least 4 hours apart e.g. analgesia
STAT	Means to be given straight away
IM	Intra muscular
Inh	Inhale
Inj	Inject
IV	Intra venous
SC	Sub cutaneous
ID	Intra dermal
Neb	Nebuliser
PO	Per oral e.g. tablets and capsules
PR	Per rectum eg. Paracetamol suppository when patient vomiting
PV	Per vagina e.g. Clotrimazole pessary inserted high into the vagina
NG	Per Naso-gastric tube
AC/Before food	Means to be given 30 minutes before food on an empty stomach
PC/After food	Means to be taken with or soon after food to protect the stomach from side effects usually or to increase absorption
LD	Loading dose – given first to get blood levels high then a maintenance dose follows
U/Units	Units are a measure of strength for some medicines eg insulin, penicillins etc. Write 'Unit' in full to prevent errors made after the quantity.
mL	Millilitre
L	Litre or 1000mL
mcg	Microgram
mg	Milligram or 1,000 micrograms
gm	Gram or 1,000 milligrams
kg	Kilogram or 1,000 grams
1 mega unit	1,000,000 units e.g. with penicillin = 600milligrams
$\frac{1}{10}$	0.1 or 10%
$\frac{1}{4}$	0.25 or 25%
$\frac{1}{2}$	0.50 or 50%
$\frac{3}{4}$	0.75 or 75%
1/7	One day or 2/7 means 2 days
1/24	One hour
1/52	One week
1/12	One month

## ABBREVIATIONS

Medical:

ACEI	Angiotensin Converting Enzyme Inhibitor
ACT	Artemisinin-based combination therapy
AF	Atrial Fibrillation
AIDS	Acquired Immunodeficiency Syndrome
AMI	Acute Myocardial Infarction
AOM	Acute Otitis Media
BMI	Body Mass Index
BP	Blood Pressure
CCF	Congestive Cardiac Failure
CMS	Central Medical Store
COPD/COAD	Chronic Obstructive Pulmonary/Airways Disease
CSF	Cerebrospinal fluid
CVA	Cerebrovascular Accident
CXR	Chest XRay
EBM	Expressed breast milk
ECG	Electrocardiogram
EDL	Essential Drug List
ENT	Ear, nose and throat
ETT	Endo tracheal tube
FBC	Full Blood count
G6PD	Glucose 6 Phosphate Dehydrogenase
GIT	Gastrointestinal Tract
GORD	Gastro-oesophageal Reflux Disease
Hb	Haemoglobin
HIV	Human Immunodeficiency Virus
IDC	In-dwelling catheter
IHD	Ischaemic Heart Disease
IUD	Intra-uterine (contraceptive) Device
LFT	Liver Function Tests
MSU	Mid-stream Urine
MOH	Ministry of Health
MPS/MBS	Malaria Parasite/Blood Slide
NBM	Nil by mouth
NCD	Non-communicable Disease
NDTC	National Drug and Therapeutics Committee
NIDDM	Non-insulin Dependent Diabetes Mellitus
NSAID	Non-steroidal Anti-inflammatory Drug ie ibuprofen
ORS	Oral Rehydration Salts
PPH	Post partum Haemorrhage
RDT	Rapid diagnostic Test
SAH	Sub-arachnoid haemorrhage
SLE	Systemic Lupus Erythematosus
SOB	Short of Breath
STI/D	Sexually Transmitted Infection/Disease
TB	Tuberculosis
URTI	Upper Respiratory Tract Infection
UTI	Urinary Tract Infection
VFHA	Vanuatu Family Health Association
WCC	White Cell Count
WHO	World Health Organisation
WSB	Wan Smol Bag

# INFECTION PREVENTION AND CONTROL

## Refer Government of Vanuatu ICC Antiseptic and Disinfection Table 2013

Standard Infection Control Precautions aim to reduce the risk of disease transmission in the health care setting. Standard Precautions are designed for use with all patients who present in the health care setting and must be used if it is likely you will come into contact with:

-  Blood and body fluids whether or not they contain blood
-  Broken skin or wounds
-  Mucous membranes such as mouth, eyes.

### Reducing the Risk:

To reduce the risk of disease transmission in the health care setting, use the following Standard Infection Control Precautions:

1. Wash hands immediately with soap and water before and after examining patients and after any contact with blood, body fluids and contaminated items--whether or not gloves were worn.
  2. Wear clean, ordinary thin examination gloves if available (if not, wash hands well and cover any cuts and sores on your hands) anytime there is contact with blood, body fluids, mucous membrane, and wounds or broken skin. Change gloves between each task or procedure on the same patient. Before going to another patient, remove gloves promptly and wash hands immediately, and then put on new gloves.
  3. Wear a mask, protective eyewear and gown if available during any patient-care activity when splashes or sprays of body fluids are likely. Remove the soiled gown, mask and gloves as soon as possible taking care not to contaminate other surfaces and equipment and then wash hands.
  4. Handle needles and other sharp instruments safely. Do not recap, bend or break needles. Make sure contaminated equipment is not reused with another patient until it has been cleaned, and/or disinfected or sterilized properly. Dispose of non-reusable needles, syringes, and other sharp patient-care instruments in puncture-resistant containers.
  5. Routinely clean frequently touched surfaces including beds, bed rails, patient examination tables and bedside tables using Hospital Grade neutral detergent.
  6. Clean soiled linen and laundry safely. Use hot water if possible or add bleach to the wash if hot water is not available. Avoid direct contact with linen items soiled with blood and body fluids by wearing gloves and gown when handling soiled linen. Do not put soiled linen on the floor.
  7. Place a patient suspected to have any highly contagious disease and likely to contaminate surfaces or other patients in an isolation room or area away from other patients.
  8. Minimize the use of invasive procedures to avoid the potential for infection, injury and accidental exposure. Use oral rather than injectable medications whenever possible.
- ☺ When a specific diagnosis is made, find out how the disease is transmitted. Use airborne precautions (gloves, gown and high filtration mask, if available), droplet precautions (gloves, gown and surgical mask) or contact precautions (gloves and gown) according to the transmission risk.

### Cleaning, Cleaning and More Cleaning!

1. In Vanuatu, nurses are responsible for making sure health facilities and equipment are kept clean and that all equipment used by patients is decontaminated, cleaned and/or disinfected or sterilised as soon as possible after use. The equipment is then stored in a clean and dry place ready for the next patient. Nurses are responsible to make sure that if the job is delegated to lesser trained staff that these staff are educated about cleaning and/or disinfection or sterilization processes so that they carry out the tasks correctly and safely.
2. Most infection is spread by contaminated hands, surfaces and equipment. You need hospital grade neutral detergent to clean as it helps lift the dirt and soils and break down the proteins in body fluids that stick to surfaces. You are not only cleaning to remove body fluids but also to remove plain dirt and dust that has tetanus and other germs in it.
3. A clean health facility leads to a reduction of infections as well as community confidence which leads to community support.

### Disinfection or Decontamination Means:

To remove or destroy potentially infectious particles so they become safer to handle. The process does not destroy all micro organisms such as tetanus or the organism that causes gangrene.

Heat is the best form of disinfection in most instances. Other common disinfectants include chlorine / bleach, glutaraldehyde, iodine and 70% alcohol. Boiling is a suitable high level disinfectant if instruments and equipment are boiled or steamed in a pressure cooker/steriliser for a minimum of 10 minutes.

- Used instruments must be thoroughly cleaned with Hospital Grade neutral detergent as soon as possible after use. Make sure the Hospital Grade detergent is diluted correctly. Cleaning is a most important step in the disinfection process. If disinfection is required instruments may be steamed in a pressure cooker or boiled for a minimum of 10 minutes.
- Wearing thick domestic gloves, scrub instruments clean with Hospital Grade neutral detergent and a scrubbing brush – a toothbrush can be used for small instruments. Be careful to avoid splashing by holding the instruments under water while scrubbing.
- Lay instruments on a clean surface to dry – they are then ready for sterilising.
- Linen soiled with body fluids can be placed in a solution of chlorine 1000ppm for 10 minutes to decontaminate / disinfect them before they are washed in the usual way.

### **Sterilisation Means:**

To remove all micro organisms including spores. Methods include steam sterilisation (autoclave or pressure cooker), dry sterilisation (hot air oven) and gas (ethylene oxide). All methods must be used correctly to be effective. The most common in Vanuatu available to all facilities is the pressure cooker. Surgical instruments, can all be sterilised using the pressure cooker.

### **IF IT ISN'T CLEAN IT ISN'T STERILISED!**

No method of sterilisation is effective if the instruments are not cleaned first. It is essential that all instruments are cleaned with a scrubbing brush and detergent to remove all body fluids and dirt including dried secretions / blood before placing into an autoclave or pressure cooker. Be sure to prevent splashing by holding the instruments under water when scrubbing.

Instruments and equipment must be packed in autoclave/pressure cookers so that all surfaces of equipment can be exposed to steam and heat. Prior to placing in autoclave or pressure cooker:

- Open instruments e.g. forceps and scissors to allow full access of steam or heat
- Wrap items inside a double layer of clean cotton cloth
- Tape pack with special sterilising tape (if available) and mark date on tape
- Place packs in basket making sure items like bowls and jugs are up side down so heat or steam can get to all surfaces. – make sure packs are not tightly together and there is space between them to allow steam to move around.

Syringes, gloves and urine catheters should be single use only. If however new supplies are not available, it may be necessary to sterilise these items in an autoclave or pressure cooker after first being thoroughly cleaned with Hospital Grade neutral detergent. Ensure syringes are dismantled for cleaning and inside of catheters are thoroughly cleaned before placing in steriliser or pressure cooker.

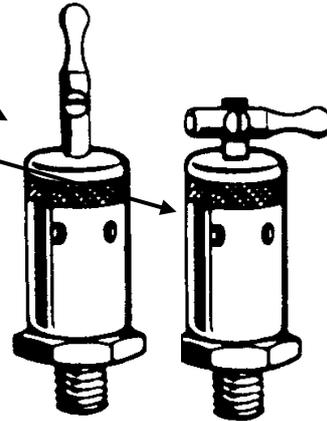
The thin medical gloves used should be discarded after each use. However if new supplies are not available Gloves are better washed in hot soapy water, rinsed and hung out to dry before sterilising – it is not recommended that gloves are reused for sterile procedures but using this method they should be satisfactory to use to protect you from the patient's body fluids – it is best to use two pairs of reused gloves.

The thick gloves used for washing linen can be washed in Hospital Grade neutral detergent and hung on the line to dry.

## How to Use the Pressure Cooker Steriliser:

Every facility should have a pressure cooker to use as a steriliser if an autoclave is not available. – either 24 litre or 39 litre. They work on gas, kerosene or open fire. If you organise your work well you can have the steriliser ready to put on the cooking fire in the evening after you have cooked your dinner and it will have cooled by morning.

1. Put clean water in pressure cooker – it should only come to your first knuckle – like cooking rice
2. Stack packs in basket and place inside pressure cooker with the tubing from the lid going down the side of the groove in the basket. Ensure instruments and packs are not sitting in water in the pressure cooker.
3. Screw down lid
4. Put the pressure cooker on the fire with the control valve open
5. Once the water starts to boil and steam comes out the valve you must close it down
6. Next step is to watch the valve – the pressure gauge should remain in the green area – if it goes to the red area the you must open the control valve again to release pressure
7. With the needle in the green area of the pressure gauge keep “cooking” for 20 minutes
8. When 20 minutes has passed remove from fire and release control valve and leave until needle on gauge returns to zero (O) – it is now safe to open lid.
9. Remove lid and wait to cool to remove articles – the cloth should be dry and the tape should have changed colour
10. Store your packs in a cool dry place – if they get wet they are no longer sterile – If possible store them in a plastic bag or container. If not stored in plastic bag or container and one month has passed, you must resterilise the pack for articles wrapped in two layers of cotton cloth or in one week if one layer used



## How to Use Chlorine Tablets (available in Hospitals only):

Before Chlorine solution is used all instruments and equipment must be thoroughly cleaned with Hospital Grade neutral detergent. Make sure the Hospital Grade detergent is diluted correctly.

Chlorine tablets (Aquatabs) are available from CMS or your provincial pharmacy– only order what you need and keep them in a secure cool dry place, as chlorine loses its strength over time if it is exposed to air, heat and light. Each tablet releases 1g of available chlorine when dissolved in water. Solutions of appropriate strength kill bacteria, fungi, spores and viruses including hepatitis and HIV.

Only make up the amount of chlorine solution that you will need during your clinic and discard it before you go home if you have already used it – if you haven't used it it can be kept for 24 hours – after this time it is not effective.

Plastic tolerates bleach solution better than metal over time.

1. One tablet of chlorine to one litre of clean water = 1g/L or 0.1% or 1000ppm available chlorine– this should be sufficient to soak instruments but you must leave in solution for a minimum of 15 minutes. Do not leave in for longer than 30mins or they will rust.
2. An alternative is to use 10mL of freshly opened household bleach (White King, Javel etc) to 400-500mL of clean water = 1000ppm chlorine solution. If household bleach has been opened a while it may be less effective so use a little more.

If you would like to make a solution for washing contaminated linen then you would mix 250mL or one cup with 10L of clean water = 1000ppm or you can use a 1000ppm chlorine solution made from tablets (1 tablet in 1 L water).

Use Hospital Grade neutral detergent for the initial clean of all blood and body fluids spills. Make sure the Hospital Grade detergent is diluted correctly. This may be followed by cleaning with Chlorine or bleach to disinfect the area.

**Use of Contain 5000 bleach sachets (only available to Health Centres and Dispensaries):**

- Clean instruments and surfaces with neutral detergent first
- Fill 1L bucket with cold water
- Add 1x8g sachet per 1L (**Always add the powder to the water not water to the powder**)
- Use a clean cloth to wipe surface
- Surface must be completely covered with solution and allowed to air dry.

Condition	Available Chlorine	Dilution
Dirty Conditions: <ol style="list-style-type: none"> <li>1. Spillages, blood or other body fluids</li> <li>2. Surfaces and equipment used by isolated, infectious patients</li> <li>3. Surfaces which cannot be adequately cleaned eg porous surfaces</li> </ol>	5000ppm	1x8g sachet in 1L water Or 5 tablets (1g available chlorine/tab) in 1L water
Clean conditions: <ol style="list-style-type: none"> <li>1. Walls, floors, benches</li> <li>2. Dental plates</li> <li>3. Incubators</li> </ol>	500ppm	1x8g sachet in 10L water Or 5 tablets (1g available chlorine/tab) in 10L water
Laundering of contaminated linen	1000ppm	1x8g sachet in 5L water Or 1 tablet in 1L water 250mL or 1 cup bleach solution to laundry washing machine
Food Preparation surfaces	100ppm	1x8g sachet in 50L water Or 5 tablets (1g available chlorine/tab) in 50L water

**Solution cannot be kept longer than 24hrs!**

**Sharps Disposal:**

1. All sharp items such as disposable needles, IV cannulas, suture needles should be placed in a sharps container at the bedside. If you do not have sharps containers or enough to take to bedside then you should place sharp item in a dish, take it to the sharps container or place into a rigid sided container such as a fruit juice bottle, where it can later be burnt in the incinerator.
2. If you do not have an incinerator then the sharps can be placed in a pit or VIP (ventilated improved pit) latrine. Do not flush sharps down a water seal toilet as it will eventually block the toilet.

**Medical Waste:**

1. Medical waste includes many things – drugs, cytotoxic drugs and antibiotics can all be toxic to the environment or dangerous if not disposed of properly. Putting antibiotics down toilets interferes with the germs that are required to decompose the waste. Contact a pharmacist for best ways of disposing of drugs.
2. Dressings and other articles soiled with body fluids if they are disposable should be burnt. Contact an environmental health officer to help you with a proper procedure e.g. building a simple incinerator.

\* Some information in this section adapted from SPC Infection Prevention and Control Guidelines Booklet available at all health facilities in Vanuatu.

# ABDOMINAL PAIN

First, think of serious causes that need urgent referral.

1. Have the patient lie down on their back.
2. Softly palpate the abdomen starting in the least tender area.
3. If any of the following signs are present **refer** immediately:
  - 🚨 serious pain or tenderness
  - 🚨 palpable tumour or mass
  - 🚨 temperature over 38.5 °C that has not resolved in 2-3 days
  - 🚨 vomiting blood
  - 🚨 missed period
  - 🚨 anuria
  - 🚨 bloody stools
  - 🚨 associated difficulty breathing

Pre-Referral Treatment:

Start an IV and give Normal Saline before and during transfer.

## Serious Causes of Abdominal Pain

- 🚨 BOWEL OBSTRUCTION:
1. pain with constipation
  2. not passing wind
  3. no bowel sounds
  4. vomiting
  5. abdominal swelling

- 🚨 PERITONITIS or APPENDICITIS:
1. severe tenderness
  2. guarding
  3. rigidity
  4. fever
  5. fast pulse

Alvarado Score for Acute Appendicitis

The **Alvarado score** is a clinical scoring system used in the diagnosis of appendicitis. The score has 6 clinical items and 2 laboratory measurements with a total 10 points.

## Alvarado score for appendicitis

Symptoms	Score
Migratory right iliac fossa pain	1
Nausea / Vomiting	1
Anorexia	1
<b>Signs</b>	
Tenderness in right iliac fossa	2
Rebound tenderness in right iliac fossa	1
Elevated temperature	1
<b>Laboratory findings</b>	
Leucocytosis	2
Shift to the left of neutrophils	1
<b>Total</b>	<b>10</b>

5-6 → Possible

7-8 → Probable

> 9 → Very probable

A score of 5 or 6 is compatible with the diagnosis of acute appendicitis. A score of 7 or 8 indicates a probable appendicitis, and a score of 9 or 10 indicates a very probable acute appendicitis.

**These scores will be lower if no lab access.**

A popular mnemonic used to remember the Alvarado score factors is

### **MANTRELS**

**M**igration to the right iliac fossa

**A**norexia, **N**ausea/Vomiting

**T**enderness in the right iliac fossa

**R**ebound pain

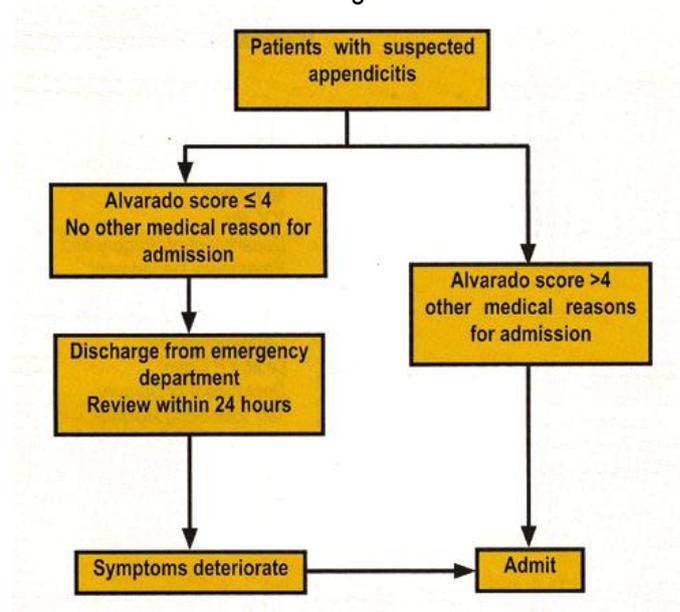
**E**levated temperature (fever)

**L**eukocytosis

**S**hift to the left (Neutrophilia)

Due to the popularity of this mnemonic, the Alvarado score is sometimes referred to as the **MANTRELS score**.

Here is some recommended guideline.



### 🚨 ECTOPIC PREGNANCY

1. severe pain with vaginal bleeding

2. pale

3. fast pulse

4. low BP

5. missed period or no period

### 🚨 SEPTIC ABORTION

1. severe pain / recent abortion

2. vaginal bleeding

If you suspect any of these causes **refer** immediately to the nearest hospital.

#### • Other Causes of Abdominal Pain

1. Diarrhoeal Diseases
2. Peptic Ulcer (see below)
3. Urinary Tract Infection
4. Pelvic Inflammatory Disease
5. Hepatic Disease or
6. Worms or Parasitic Disease

#### Management:

1. Take a complete history
2. Perform a thorough examination
3. Perform any lab test necessary and then identify the most likely cause
4. Look for and treat any cause found
5. Treat according to Guidelines

## Peptic Ulcer

1. Peptic Ulcers often presents with upper abdominal pain
2. The pain is often worse after food or if hungry, is especially bad at night and may be episodic
3. Ulcers may bleed
4. Helicobacter pylori is a germ that may cause peptic ulcer – in Vanuatu we cannot easily test for this but prevalence can be assumed to be fairly high as it is worldwide
5. Advise the patient to:
  - Stop smoking and drinking alcohol
  - Eat regular meals
  - Lose weight if overweight
  - Avoid acid or irritating foods
  - Avoid medicines causing or worsening ulcers ie ibuprofen, aspirin, prednisolone etc
  - Reduce stress – getting enough sleep/sleeping early
  - Give the patient:
  - Treatment for Helicobacter:

The optimum regimen consists of a full dose proton pump inhibitor (omeprazole), with either amoxycillin 1g and clarithromycin\* 500mg or metronidazole 400mg and clarithromycin\* 250mg, all given twice daily for 7 days.

### Efficacy:

- Eradication is effective in 80-85% of patients on triple therapy using either antibiotic combination.
- Dual therapies are not as effective as triple therapy and are not recommended.
- Triple therapy using a proton pump inhibitor plus amoxycillin and metronidazole is no longer recommended as first line therapy however could be used if unable to access other agents.

### Resistance:

Combinations with metronidazole and clarithromycin\* used as first-line therapy may induce resistance to both antibiotics whereas amoxycillin resistance does not seem to increase after the use of amoxycillin and clarithromycin\* combinations.

If clarithromycin\* or metronidazole has previously been taken for any infection in the past year, do not use that antibiotic in the triple therapy regimen, as monotherapy with these agents very readily leads to resistance.

### First-line therapy:

- Metronidazole and clarithromycin\* combination should be used in patients with penicillin hypersensitivity.
- Clarithromycin\* 250mg twice daily is as effective as 500mg twice daily when combined with metronidazole.

### Second-line therapy:

- Quadruple therapy containing bismuth\* is as effective as triple therapy and is sometimes recommended as second-line therapy (treatment failure).
- If quadruple therapy is not tolerated consider triple therapy that contains antibiotics not used before.
- Second-line therapy should use different antibiotics to first-line therapy.

### First-line seven day triple therapy regimens:

ANTIBIOTIC	PROTON PUMP INHIBITOR
Amoxycillin 1g twice daily and Clarithromycin* 500mg twice daily	Esomeprazole* 20mg twice daily or Lansoprazole* 30mg twice daily or Omeprazole 20mg twice daily or Pantoprazole* 40mg twice daily or Rabeprazole* 20mg twice daily
OR Metronidazole 400mg twice daily and Clarithromycin* 250mg twice daily	Lansoprazole* 30mg twice daily or Omeprazole 20mg twice daily or Pantoprazole* 40mg twice daily

### Second-line seven day quadruple therapy regimen:

ANTIBIOTIC	ACID SUPPRESSANT	CYTOPROTECTANT
Metronidazole 400mg three times daily and Oxytetracycline* 500mg four times daily	Proton pump inhibitor (as above)	Bismuth* 120mg four times daily

- \*Not available on Vanuatu EDL at time of printing – consider private purchase.

- Antacid 2 tabs up to 4 times per day if required for discomfort but do not take within 2 hours of above treatment
- If symptoms persist refer back to doctor – ensure compliance of complete course before considering on-going treatment with Omeprazole.
- If no definite cause is found you may give:
  - ⇒ Albendazole 400mg before food
  - ⇒ Do not give to pregnant women

**Counsel the patient:**

- ⇒ To eat non-greasy foods and non-acidic foods
- ⇒ Avoid ibuprofen and aspirin for pain relief – paracetamol safer.
- ⇒ About any other problems he or she may be having
- 
- Refer to a higher level health care facility if:
  - ⇒ Pain continues or becomes worse
  - ⇒ Patient loses weight without trying to.
  - ⇒ Abdominal mass.
  - ⇒ Passing black stools.
  - ⇒ Associated with fever.

# ACCIDENTS

ABCs of Resuscitation and Emergency Care:

Airway

Breathing

Circulation

Variations:

Nearly all first aid organisations use "ABC" in some form, but some incorporate it as part of a larger initialism, ranging from the simple 'ABCD' (designed for training lay responders in defibrillation) to 'AcBCDEEEFG' (the UK ambulance service version for patient assessment).

## ➤ DR ABC

One of the most widely used adaptations is the addition of "DR" in front of "ABC", which stands for Danger and Response. This refers to the guiding principle in first aid to protect yourself before attempting to help others, and then ascertaining that the patient is unresponsive before attempting to treat them, using systems such as the Glasgow Coma Score. As the original initialism was devised for in-hospital use, this was not part of the original protocol.

In some areas, the related SR ABC is used, with the S to mean Safety.

## ➤ DRsABC

A modification to DRABC is that when there is no response from the patient, the rescuer is told to *send for help!*

## ➤ ABCD

There are several protocols taught which add a D to the end of the simpler ABC (or DR ABC). This may stand for different things, depending on what the trainer is trying to teach, and at what level. It can stand for:

- Defibrillation — The definitive treatment step for cardiac arrest
- Disability or Dysfunction — Disabilities caused by the injury, not pre-existing conditions
- Deadly Bleeding
- (Differential) Diagnosis
- Decompression

## ➤ ABCDE

Additionally, some protocols call for an 'E' step to patient assessment. *All* protocols that use 'E' steps diverge from looking after basic life support at that point, and begin looking for underlying causes. In some protocols, there can be up to 3 E's used. E can stand for:

- Expose and Examine — Predominantly for ambulance-level practitioners, where it is important to remove clothing and other obstructions in order to assess wounds.
- Environment — only after assessing ABCD does the responder deal with environmentally related symptoms or conditions, such as cold and lightning.
- Escaping Air —Checking for air escaping, such as through a sucking chest wound, which could lead to a collapsed lung.
- Elimination
- Evaluate — Is the patient "time-critical" and/or does the rescuer need further assistance.

➤ ABCDEF

An 'F' in the protocol can stand for:

- Fundus — relating to pregnancy, it is a reminder to check if a female is pregnant, and if she is, how far progressed she is (the position of the fundus in relation to the bellybutton gives a ready reckoning guide)
- Family (in France) — indicates that rescuers must also deal with the witnesses and the family, who may be able to give precious information about the accident or the health of the patient, or may present a problem for the rescuer.
- Fluids — A check for obvious fluids (blood, cerebro-spinal fluid (CSF) etc.)
- Fluid resuscitation
- Final Steps — Consulting the nearest definitive care facility

➤ ABCDEFG

A 'G' in the protocol can stand for

- Go Quickly! — A reminder to ensure all assessments and on-scene treatments are completed with speed, in order to get the patient to hospital within the Golden Hour
- Glucose — The professional rescuer may choose to perform a Blood Glucose test, and this can form the 'G' or alternately, the 'DEFG' can stand for "Don't Ever Forget Glucose"

➤ AcBC

Some trainers and protocols use an additional (small) 'c' in between the A and B, standing for 'Cervical Spine' or 'consider C-spine'. This is a reminder to be aware of potential neck injuries to a patient, as opening the airway may cause further damage unless a special technique is used.

➤ MARCH

- Massive Haemorrhage
- Airway
- Respiration
- Circulation
- Head injury

TREATMENT:

First stabilize the patient then refer immediately to the nearest hospital all accident patients if they are:

- 🚨unconscious
- 🚨complaining of severe chest or abdominal pain
- 🚨having severe difficulty breathing
- 🚨injury to their spine
- 🚨severe burns
- 🚨uncontrollable and/or prolonged bleeding

Pre-referral Treatment:

- Check and assure ABCs – Airway, Breathing, Circulation
- Protect the airway (chin lift and jaw thrust)
- Protect, support and immobilize the neck (use a c-collar if available or support the head with 2 objects to ensure the head (and C-spine) is immobile)
- If back injury, ensure patient is laying flat at all times with little to no movement
- Start an IV and infuse Normal Saline
- If necessary give Morphine 5-10mg SC
- Stop all bleeding
- Stabilize any suspected fractures

## ACCIDENTS WITH BLEEDING

Treatment:

- Raise the bleeding part up high.
- Press firmly and directly on the wound with a gauze pad for 10 minutes or longer
- Do not apply a tourniquet to an arm or leg.

## ACCIDENTS WITH FRACTURES

Deformities, pain, swelling, immobility and/or bruising may help you diagnose bones that are fractured. Take a thorough history and perform a complete examination.

Pre-Referral Treatment:

- Pain Relief:

Offer the patient pain relief with Morphine or Paracetamol.

Immobilize with a splint as this offers some pain relief as well

- Skin and Wound Care

If the skin is broken over the painful, suspected area this is called a compound fracture. You must:

- ⇒ Clean the wound
- ⇒ Cover with gauze. (leave any object in and refer IMMEDIATELY)
- ⇒ Give IM Procaine Penicillin
- ⇒ Give Tetanus Toxoid 0.5mL. If the patient has not been previously immunized complete a course of 3 doses: one dose every 4 weeks until completed.

If the skin is not broken this is called a simple fracture.

- ⇒ Follow the same treatment outlined above but do not give the Procaine Penicillin or other antibiotic.

- Splinting the fracture:

- ⇒ Splint the fracture with any suitable material: wood or cardboard.
- ⇒ Loosely secure the splint with a bandage.
- ⇒ The splint should not be tight.
- ⇒ Immobilize the fracture
- ⇒ Arm fractures - put arm in a sling.
- ⇒ Shoulder injuries - put arm in a sling.
- ⇒ Clavicle (collar bone)- put arm in sling for 4 weeks
- ⇒ Toes - strap one toe to the next with plaster for 2 weeks.
- ⇒ Leg fractures - elevate leg.

Refer

- Except for patients with simple fractures of clavicle and/or toes all other fractures must be referred for further evaluation and care.

## BURNS AND SCALDS

- ⇒ Burn First Aid: Remove the patient from the cause of burn and put the burnt part in water. Keep in water whilst transporting to the clinic.

 All burns are serious.

There are four important principles to remember to prevent further complications:

### 1.Fluid loss:

Fluid loss kills a patient early. Make sure you replace fluids.

### 2.Infection:

Infection kills the patient a little later, but you must remember to treat for it.

### 3.Contractures:

These are a decrease in joint movement due to scar tissue. Contractures will not kill patients but if they occur they can cause severe disability later in life.

#### 4. Smoke Inhalation:

If the patient has been in a fire and breathed a large amount of smoke you must get the patient into fresh air, assure a clear airway and give oxygen if possible.

#### Treatment:

- Clear the airway and make sure the patient has plenty of fresh air.
- Calm the patient and give immediate pain relief.
- If you see the patient immediately after the burn, put cold water on the skin or put burnt limb in water.

#### Severe burns and pain:

- Morphine SC

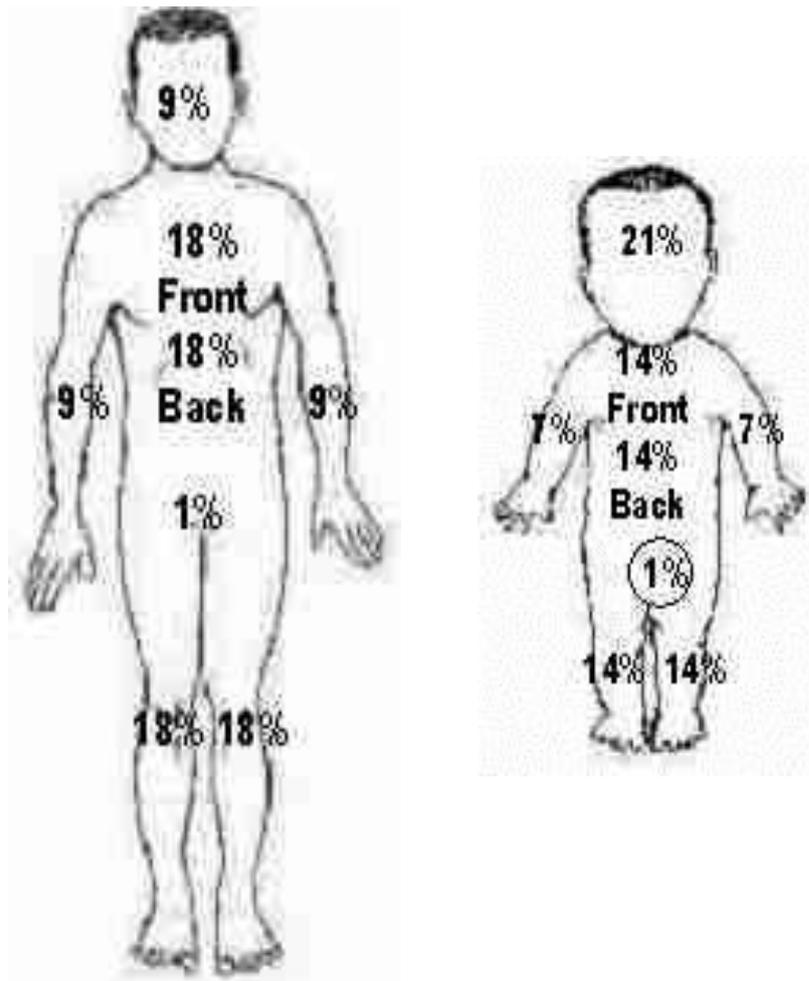
#### Moderate or mild:

- Panadol or Paracetamol

Decide degree of the burn and how much of the area is burned.

- Superficial: Epidermis only. The area is red, dry, and painful. Usually heals in 5-20 days, no scars.
- Epidermis and Dermis. The area is blistered and red. If broken skin the area is weeping, swollen. It is very painful.
- Deep Burns: This is a full thickness burn through epidermis, dermis and fat. It may even go to the muscle or bone. It is painless with no feeling. The burn might be pale white, or charred brown or black. You can see all exposed tissue and there is swelling. Deep Burns are associated with Fluid Loss.

To determine how much of the area is burned you count up the percentages for each part of the body burnt – children are different to adult



Fluid replacement if more than 20% burns (or more than 15% if >65 years):

- You must weigh all burns patients as a priority
- Insert large bore IV and give Normal Saline or Hartmanns as a stat fluid

Adults: If >20% body surface area affected by burns then fluid requirement is:

- %burns x Weight = volume (mL) administered over 2 hours.
- Eg. 60% burns x 80kg = 4800mL administered over 2 hours.

Children: If >20% body surface area affected by burns then fluid requirement is:

- %burns x Weight x 3 = volume (mL) administered over first 24hrs with half the volume given in first 8 hours.
- Eg. 60% burns x 20kg x 3 = 3600mL over the first 24 hrs but 1800mL to be given over first 8 hours.

If less than 20% of the body is burned (or 15% in someone >65 years):

- Give extra fluid by mouth.
- Use Oral Rehydration Solution (ORS).
- Give 400mL every 3 hours for 24 hours

If more than 20% is burned the patient and you cannot start an IV:

- Then give ORS by mouth or NG tube before and during transport
- The more severe and or shocked someone is the more likely you will have trouble getting them to absorb fluid via a NG tube as they develop intestinal stasis (gut stops moving) due to lack of blood supply
- ⚠ During fluid replacement make sure you monitor the urine output - too little means not enough fluid – too little is less than 50mL per hour – insert a catheter in all burns >20%.

Treat the burn:

Daily dressing changes should be done on all open burns

- Clean the burned area with clean water or a chlorine solution at appropriate dilution for topical use.
- Cut off dead skin. Do not cut open intact blisters.
- Apply silver sulphadiazine cream. If unavailable use chlorhexidine cream.
- Cover lightly with clean gauze dressing and bandage.
- Splint if joint affected.

Treat the pain:

- Burns are painful and adequate analgesia is necessary – Regular paracetamol 1g qid for adults and appropriate dose for children given regularly, not prn.
- Morphine at 0.1mg/kg/dose IM/SC/IV (Max 10mg) in severe burns if available.

Prevent infection:

- Give tetanus toxoid 0.5mL IM stat.
- Keep the wound clean and treat daily with silver sulfadiazine cream.  
⇒ Check with the medical officer. They should then be reassessed for further treatment.
- Burns that become infected will require procaine penicillin IM daily for 7 days (or oral amoxicillin if not severe).
- If, despite penicillin therapy infection remains, consider Chloramphenicol.

Prevent contractures:

- Splint all involved joints straight.
- Encourage patients to move all joints as much as possible and be sure to move joints during dressing changes.
- Give analgesia before the dressing change.
- If fingers or toes are burnt make sure to bandage each one separately.

## Refer

- 🔔 Any patient having difficulty breathing or suspected of excessive heat and / or smoke inhalation.
- 🔔 All burns over 5% in children <18 months.
- 🔔 All burns over 10% in everyone else and those requiring IVF therapy or any patient in which you cannot keep a good urinary output.
- 🔔 Full thickness burns to hands, fingers, face and/or genitals or burns that go all the way around the neck or a limb.
- 🔔 Infected burns not responding to antibiotic therapy.
- 🔔 All electrical burns as they can be worse than they look e.g. can burn internal organs.
- 🔔 Patients with associated trauma or underlying medical condition eg diabetes.

If a burn is 40% or more the chance the patient will survive is small so discuss with the accepting doctor before referral.

# ANAEMIA

Definition: Haemoglobin (Hb) less than 13.5g/dL (for men) and 11.5g/dL (for women)

People with sudden drops in Hb (e.g. from acute blood loss) will present differently (usually more acute symptoms) than people with chronic anaemia.

Common causes:

1. Malaria.
2. Poor nutrition or malnutrition (not enough iron = Iron Deficiency)
3. Abnormal and/or excessive bleeding - hookworms, periods, peptic ulcer.
4. Kidney failure
5. Pregnancy
6. Heavy periods
7. Chronic illness

If you suspect anaemia:

1. Carefully examine the patient:
2. Are the tongue, conjunctiva and/or fingernails pale?
3. Is there a difference in the blood pressure lying and standing?
4. Does the patient have a fever?
5. Is the abdomen tender or is there an abdominal mass? Ask about problems with menstruation for female patients
6. Check the haemoglobin
7. Check a blood slide/RDT for malaria
8. Check urea and electrolytes

Refer the patient if:

- 🚨 The haemoglobin is less than 5 g/dL and the patient is symptomatic
- 🚨 The patient has active bleeding
- 🚨 The patient is short of breath, very pale, or looks very sick
- 🚨 The patient has oedema

Treatment:

If the patient does not require referral treat the cause of anaemia:

- Malaria:
  - ⇒ Coartem [see package for doses for appropriate weight and age]
  - Hookworm Treatment:
    - ⇒ Albendazole according to weight or age
- Iron and Folic Acid
  - ⇒ Ferrous folic tablets
  - ⇒ Give daily with food (fruit if possible). Divided doses may be needed to reduce GI side effects. Hb should increase by 2g/dL every month and continue therapy for 3 months after Hb normal to ensure iron stores are replenished

Weight in kg	3-5	6-9	10-14	15-19	20-29	30-39	40-49	50+
Tablet 200mg (with folic acid 0.25mg) Once Daily	¼	½	1	1	2	2	2	3
Ferrous fumarate susp 100mg / 5mL Dose = 0.4mL / kg	1.5mL	3mL	5mL	7mL	10mL	Use tabs	Use tabs	Use tabs

Diet and Patient Education:

- Eat more protein foods – red meat, fish, peanuts, and eggs.
- Eat plenty of leafy green vegetables.
- Iron best taken on empty stomach but if upsets stomach, then give with or after food. Take with fruit to increase absorption from tablets.

- Explain bowel motions will change colour to black from the iron tablets.
- Advice on Family Planning and Antenatal Care
- If periods are excessively heavy may suggest oral contraceptive.
- If post menopausal bleeding or fibroids are suspected refer for gynaecological evaluation.

Follow-up on patients being treated outside of the hospital:

- Examine and check the patient's haemoglobin every month until the haemoglobin is normal
- If the Haemoglobin does not go up by 2 g/dL every month the patient must be **referred**.

# ANAPHYLAXIS

Definition: This is a severe allergic reaction, which can be fatal.

Common Causes:

It happens very soon after a person has contact with something they are allergic to such as

Food: nuts, fish and shellfish

Drugs: antibiotics (oral or IV), medicines

IV: blood transfusions or some IV fluids (colloids)

Stings: beestings, insect stings or fish spines.

Signs and Symptoms:

1. Mental: Worried, fright, confused
2. Respiratory: Shortness of breath, wheezing, and stridor, swelling of lips and tongue
3. Cardiac: Faint, dizzy, low blood pressure, rapid pulse
4. Skin: Pale, cold, clammy, itching, rash, facial and throat swelling

**You must act quickly as the reaction happens very fast.**

**Discontinue any suspect drug administration or blood/IV transfusion.**

 YELL FOR HELP and quickly start treatment.

Treatment:

ABC Resuscitation

➤ If you have time/assistance, lie the patient down and lift up their legs

➤ Adrenaline is the treatment for anaphylaxis

Adrenaline: Give this Intramuscularly (IM) into mid-lateral thigh- NOT IV as the dose is different

⇒ Use **1:1000 (1mg/1mL)** solution ampoules and give 0.5 ml IM initially

⇒ You may repeat this every 5 minutes until the patient responds (by checking BP, pulse & respiratory function)

ADULTS (use a 2 mL syringe)	Children (use insulin syringe) 10 mcg/kg IM
0.5mL-1.0 mL STAT IM	less than 1 year: 0.1mL 1-2 years (about 10kg): 0.1mL 2-3 years (about 15kg): 0.15mL 4-6 years (about 20kg): 0.2mL 7-10 years (about 30kg): 0.3mL 11-12 years (about 40kg): 0.4mL 12 years and older: see adult dose

➤ Oxygen: Adults 8L/min; Children 4L/min; Newborns to 4 year olds 2L/min.

➤ Secure IV line – if hypotensive, give normal saline rapidly - 500 to 1000 mLs for adults and 20mL/kg for children as per shock treatment.

➤ Treat wheezing as for severe asthma.

⇒

➤ Give Hydrocortisone 2-4 mg/kg or Prednisolone orally 1mg/kg to max 50mg daily.

⇒ If you can give this as IV dose, that is best.

⇒ If unable, then give Intramuscularly (IM).

⇒ Adults: Give a stat dose of 200 mg.

⇒ This can then be repeated every 6 hours until stable.

⇒ Two day course of oral prednisolone may reduce risk of symptom recurrence after severe reaction and assist with persistent wheeze.

Keep the patient resting and monitor every 15 minutes for at least 4 hours. Observe longer if severe reaction, history of asthma or required repeated doses of adrenaline.

Antihistamines have NO ROLE in treating severe anaphylaxis – injectable promethazine can worsen hypotension and cause muscle necrosis. Oral antihistamines could be used for mild skin reactions eg itch.

Remember:

Patients who have anaphylaxis from penicillin must never have any kind of penicillin again – this includes oral types of Penicillin, Amoxycillin, Augmentin, Cloxacillin, and injectable forms like Benzathine penicillin etc.

🔔 All patients and their families must be counselled about what they are allergic to and it should also be marked in texta pen (Marker) on the front of all medical record folders.

🔔 For infections they may have Bactrim, Erythromycin or Doxycycline. For more severe infections they can have Chloramphenicol and Gentamicin. Metronidazole and Azithromycin are also OK to give if required. Contact a medical officer if unsure.

🔔 If they reacted to an insect sting or food the patient must be advised on avoidance.

🔔 Give an adrenaline dose, syringe and needle and explanation/training on how to give for emergencies.

# CHEST PAIN

The important question to answer in someone with chest pain is whether the pain is from ischaemic heart disease, or not.

Ischaemic heart pain is usually described as feeling like a weight is sitting on the chest. It may be localized to the left side of the chest but sometimes it extends into the neck or the left arm. It usually comes on suddenly, often after physical activity or a meal, often with nausea, sweating, weakness or shortness of breath. Ischaemic pain does not change when the patient takes a deep breathe, or if you push on the ribs and sternum.

Non ischaemic causes of chest pain include:

1. Pericarditis or pleurisy (worse on taking a big breathe, eased by leaning forward – treat with paracetamol).
2. Indigestion / oesophagitis / gastric ulcer (hurts when you press in the epigastrium – treat with antacids) – refer to Abdominal Pain chapter for more information.
3. Rib pain or muscular pain around thorax (hurts when the patient moves their arms or chest or when you press on the chest wall – treat with paracetamol).
4. Pneumothorax (collapsed lung – if patient SOB and you can't hear any air entry on one side of chest you will need to refer patient to hospital BUT discuss this first with a doctor as flying in an aeroplane may make the patient's condition worse).
5. Pneumonia and chest infection (usually fever, cough and crackles. Deep breath can worsen the pain).

If the pain is consistent with ischaemic chest pain, give:

- Aspirin 300mg chewed or dissolved before swallowing.
- Glyceryl trinitrate (Anginine) 1 tablet under the tongue.
  - ⇒ This will drop the blood pressure so make sure the patient is not standing up! If headache develops, the patient can spit out the tablet. If no headache and pain persists, give another tablet under the tongue.
- Refer to hospital if pain does not stop.
- Administer oxygen at 6L/min if you have it and if a pulse oximeter available, only if Sats <94%
- If pain still unrelieved then give Morphine 2.5 - 5mg IV or 10mg IM
- A dose of metoclopramide may be useful to treat nausea
- Manage high BP but do not reduce it too quickly
- If in hospital make an ECG and connect to a cardiac monitor
- Further treatment dependent on medical officer.

# CHILD HEALTH

📁 Refer to IMCI Guidelines for further information

📁 Refer Buklet blong Mama mo Pikinini Vanuatu

## 1. Aims:

To properly assess growth and development.

Early identification and follow-up of “AT RISK” children.

## 2. Visit schedule:

- 2 weeks old: First visit.
- 0-2 years old: At least every month.
- 2-5 years old: At least every 3 months.

🔔 If a child does not regularly attend, find out why.

🔔 Keep a separate record of any child who is not growing or developing well, and chase up any who do not attend.

## 3. Some children need special care:

- Not breast-fed.
- Birth weight less than 2.5kg.
- Pregnancy complications.
- Multiple pregnancy.
- Congenital anomalies.
- Neonatal problems.
- 4<sup>th</sup> child or more.
- Birth less than 2 years from last birth.
- One or more children died.
- Single parent.

## 4. At first visit:

- Explain about child health and growth monitoring.
- Establish a relationship with the mother.
- Do a full examination. Include umbilical stump and hips.

## 5. At each visit:

- ASK about:
  - Feeding, sleeping, bowels, worms, and urine.
  - General health and any illnesses.
  - Mother’s diet and rest.
  - Answer any questions or concerns of the mother.
- WEIGH child:
  - Record the weight and height on the child health record card.
  - Look out for children who are not growing well.
- EXAMINE fully:
  - At first visit.
  - Every 3 months in the first year of life.
  - Then every 6 months.
  - Do a general examination -
  - Eyes, ears, mouth, chest, abdomen, skin, and genitals.
  - Do a developmental assessment.
  - Check against milestones.
- ADVISE about:
  - Good nutrition and feeding practices
    - Meals if 6-12 months old - Remember continue to Breastfeed too.
    - 6-8 months: Offer 2-3 teaspoons of well mashed foods. Aim for 2-3 times a day and increase amount to half a cup. Fingerfoods such as a small piece of banana or papaya should be encouraged. Avoid nuts or any foods that may increase choking risk.

- 9-11 months: Offer finely chopped or mashed foods and 'fingerfood snacks'. Aim for 3- 4 meals as well as 1-2 snacks per day. Aim for half a cup at each meal.
- 12 months -24 months: Aim 3-4 Meals and 1-2 snacks of chopped foods (mashed as needed)
- 2 years + 3 meals with the family and snacks to appetite and growth
- Food to choose:
- Choose a variety of foods at each meal such as root crop, fruit, vegetables and meat. Remember the child should be included in meals with the family as much as possible.

Extra feeding after any illness.

Family spacing.

Any illness you find and its treatment.

- IMMUNISE: Always check immunization status.

 The only reason not to give an immunisation is if the child has a known allergic reaction to it.

#### 6. Developmental milestones:

6 weeks	Begins to smile. Can turn his head.
3 months	Turns head to sound.
6 months	Lifts head and shoulders off ground while lying on stomach. Can roll over Holds toy in hand. Can sit and stand with support.
9 months	Sits unsupported. Stands with support. Makes sounds like 'da-da', 'ma-ma'. Attempts to crawl Holds objects with fingers and thumbs Responds to their name Attempts to feeds self and plays with cup/spoon Plays Peek a boo Points Bangs objects together
12 months	Crawls. Pull up to a stank Can stand holding a support. Says 'da-da', 'ma-ma', laughs & squeals. Shakes head Understands words (ie drink)
18 months	Stands and Walks alone Climbs Kicks balls/pushes things Talks - in single words. Plays with others can follow single instructions

7. Refer for further assessment to medical officer:

- Children with: Failure to grow or develop normally.  
Poor weight gain for 3 months (see Malnutrition).  
Any problem you feel unhappy with.

8. Weight for Age Chart:

Fill in the weight for age chart at EVERY visit to dispensary or hospital.

- Always look at the weight for age chart when you see a child.
- The child's weight should ALWAYS be increasing.
- The 0 line is the expected weight.
- The -3 line is approximately 70% of the expected weight and reflects severe malnutrition – clinical signs may be present – refer Malnutrition section
- Refer to the most appropriate health service if the child is not growing well for further investigation and treatment.

### **Child Abuse:**

Be aware that child abuse is more common than we like to think and it can present in many different ways:

- Non-accidental injury – any injury to soft tissue or bones that is not the result of an accident
- Sexual abuse – any use of a child for sexual stimulation
- Emotional abuse – undermining a child's self-esteem
- Neglect – failing to provide adequate care and a safe environment for the child

Always make a careful examination of the whole child and be alert to inconsistencies in the history relating to an injury. Watch for suggestive injuries eg. Bruising on back and buttocks, burn marks, lower limb fractures in child too young to walk etc.

If you suspect a child is being maltreated or neglected, refer to the hospital for further assessment. If you think a child is in danger, you should admit the child to the clinic and inform the Vanuatu Women's Centre or local police. Treat any physical injuries or sexually transmitted infections.

Child abuse is everyone's business and no person (even parents) has the right to abuse a child.

# COMA

Coma (loss of consciousness) is a feature of very severe illness, and must be assessed urgently to try to identify the cause.

Transient loss of consciousness (i.e. the patient has had an episode of unconsciousness but has woken up) is quite different from continuing loss of consciousness (where the patient remains unconscious). A transient loss of consciousness is usually either syncope or epilepsy (convulsions) and is not considered further here – see Convulsions.

## Diagnosis

Family members often think a comatose patient is asleep, so it is important for you to establish that the patient will not return to normal consciousness with severe stimulus.

There are different levels of unconsciousness, depending on whether the patient responds to any form of stimulus, e.g. the patient might move their arms if you squeeze their ear to cause a painful stimulus, but not respond to any other type of stimulus. It is important to note accurately the level of consciousness when you first assess the patient, as depending on the cause, it can change rapidly.

The Glasgow Coma Scale (see below) is simple to assess, and should be frequently monitored.

## The Glasgow Coma Scale (GCS)

Points are allocated as follows:

### Eye opening

- Spontaneous opening 4
- To verbal command 3
- To pain 2
- None 1

### Motor response

- Obeys verbal commands 6
- Localises response to painful stimulus 5
- Withdraws from painful stimulus 4
- Flexes limbs in response to painful stimulus 3
- Extends limbs in response to painful stimulus 2
- No response to painful stimulus 1

### Verbal response

- Oriented and converses normally 5
- Disoriented and converses 4
- Inappropriate words 3
- Incomprehensible sounds 2
- No verbal response 1

The scores for eye opening, motor response and verbal response are added together, so that the maximum GCS score is 15, and the minimum (i.e. the patient is deeply comatose and has no responses at all) is 3.

If the GCS is less than 10, close monitoring of the airway is essential.

## Causes

Loss of consciousness is either caused by a condition primarily affecting the brain, or a condition where the functioning of the brain is being affected by a severe illness elsewhere in the body.

Common and /or important conditions primarily affecting the brain include:

- Stroke-usually an acute haemorrhage if the patient is unconscious
- Meningitis
- Encephalitis
- Trauma

Common and/or important conditions secondarily causing coma include:

- Hypoglycaemia
- Diabetic ketoacidosis or diabetic non- ketotic coma
- Major sepsis/ septicaemia
- Drug overdose, including alcohol
- Major organ failure
  - ⇒ Renal failure
  - ⇒ Liver failure
  - ⇒ Respiratory failure

## Clinical Assessment

No history will be available from the patient because they are comatose, so it is essential a history is obtained from a relative or friend who is aware of the circumstances surrounding the development of loss of consciousness.

It is particularly important to establish:

- Did the patient have symptoms before losing consciousness, e.g. headache?
- Is there any history of recent head trauma?
- Is the patient a known diabetic on treatment with insulin or oral hypoglycaemic drugs?
- Was the loss of consciousness sudden (suggesting a vascular cause), or did it come on slowly (suggesting a metabolic cause)?
- Is the patient known to have any other illnesses – e.g. hypertension, chronic hepatitis?

Physical examination is very important and should particularly focus on:

- Vital signs – fever suggests infection, hypotension suggests septicaemia, hypotension suggests a stroke, increased respiratory rate suggests acidosis
- Neck stiffness – suggests meningitis or subarachnoid haemorrhage
- Focal neurological signs – e.g. if patient only moves one side of the body with a painful stimulus, suggests stroke
- Pupil response – fixed dilated pupils means the coma is very deep.

## **Investigations**

Always measure the blood glucose urgently in any unconscious patient unless the cause of the coma is absolutely clear – e.g. an acute head injury

## **Management**

Immediate management is the care of the unconscious patient:

- Nurse in coma position
- Check airway and breathing – put in airway if necessary
- Check vital signs

Insert IV line and administer N saline slowly. If the patient is hypotensive, administer 200ml quickly.

Urgently measure blood glucose, and treat hypoglycaemia or severe hypoglycaemia if present.

Further management depends on the likely cause – e.g. if there is any suggestion of infection/ septicemia, administer antibiotics.

## **When to refer**

All comatose patients should be seriously considered for urgent referral. However referral might not be appropriate in some circumstances, e.g. if an elderly patient has clearly had a stroke and will probably die, or a young person is clearly intoxicated with alcohol and will wake up if nursed well, or a diabetic patient is hypoglycaemic and wakes up after glucose administration.

# CONVULSIONS (Fits, Epilepsy, Seizures, 'Sik blong faol')

All types of convulsions occur when abnormal electrical activity is triggered in the brain. Sometimes this abnormal activity occurs spontaneously (idiopathic convulsions). These usually occur in children or young adults who are otherwise normal. Often however convulsions result from an injury to the brain – either acute or chronic – that acts as a 'focus' of abnormal activity (secondary convulsions). These occur in older people or in young people who are known to have a brain disorder or head injury.

There are different types of convulsions eg complex partial convulsions, petit mal convulsions and the most common, tonic-clonic or grand mal convulsions where the patient completely loses consciousness, becomes very stiff and then violently jerks all four limbs. Patients can injure themselves during a convulsion and they can often bite their tongue and be incontinent of urine. A tonic clonic convulsion usually lasts for several minutes and then the patient remains drowsy and difficult to arouse for some hours afterwards.

It is important to differentiate a convulsion from a syncopal attack (faint, transient loss of consciousness). If the patient felt dizzy and wanted to sit down before the episode, it is more likely a syncopal attack than a convulsion. Convulsions can be preceded by a brief aura but dizziness is more likely to be associated with syncope. A convulsion should be observed to assess if the eyes rolled back and/or jerking movements occurred, incontinence occurred or they bit their tongue as these more likely indicate a convulsion. If the patient woke up and recovered quickly then this is more likely a syncopal attack as after convulsions, the patient is confused and sleepy for some time.

## 1. Causes:

### a) Common Causes:

Fever (in children under 5)  
Cerebral malaria  
Meningitis  
Epilepsy  
Low blood sugar  
Alcohol withdrawal  
Recent trauma or fall  
Hypoxia  
Eclampsia in pregnancy (refer Obs section)

### b) Uncommon Causes:

Stroke  
Brain tumours, abscess  
End stage renal failure  
Encephalitis  
Poisoning and some medicines eg  
aminophylline, amitriptyline,  
promethazine  
Neonatal tetanus  
Flashing lights  
Sleep deprivation  
Shigella gastroenteritis

🔔 High fever of any cause may cause febrile convulsions in children.

🔔 Febrile convulsions are rare in children under 6 months of age, so think of other causes.

🔔 After a febrile convulsion the child may be drowsy but should be rousable.

🔔 In neonates, fitting can be subtle eg fluttering eyelids, lip smacking etc

🔔 Always look for the cause.

🔔 Always think of cerebral malaria and meningitis.

🔔 Remember if patient is pregnant this may be eclampsia which requires very different treatment – refer Obstetrics Section.

## 2. What to do if the patient is convulsing:

🔔 Yell out for help.

Be calm – most seizures are of short duration and care of the convulsing patient is supportive.

### a) **ABCs of Resuscitation**

i. Make sure the airway is clear.

ii. Check their breathing and circulation.

iii. Place the patient on their side in the coma position so they can breathe more easily.

iv. Ensure the patient cannot fall and is away from potential harm.

v. Give oxygen if available.

vi. Check the Blood Sugar Level, especially in children and diabetics.

- b) As you care for the patient
- i. Get a history from someone who witnessed the event or can give reliable information.
  - ii. Observe fit, is it focal or generalised?
  - iii. Find out exactly what happened.
  - iv. Find out if the patient takes medicine for fits.

 Never leave the patient alone.

c) Stop the convulsions: use diazepam IV or rectally, then phenytoin IV or phenobarbitone IM to prevent further fits. In children under 13 years, phenobarbitone IM is preferred as the preventer. Refer dosing table for doses.

If convulsions persist, Sodium thiopentone or propofol may need to be used in a hospital setting. Please note these are anaesthetic agents and should only be used by a doctor or anaesthetic technician trained in anaesthesia.

- i. **Diazepam** - If the patient has been fitting continuously for more than 5 minutes, use IV or Rectal Diazepam. Diazepam can be given IM (in the upper arm) but its absorption is unreliable.

### Dose of Rectal Diazepam

(putem meresin lo arse, NO stikim)

Mix 10mg (2mL) with 2mL water (Total of 4 mL at 2.5mg/mL concentration, solution should be clear).

Use a 5 mL or 10mL syringe. Remember, REMOVE NEEDLE FROM SYRINGE!! Insert contents of syringe into rectum and hold buttocks together for a few minutes.

Weight in kg	3-5	6-9	10-14	15-19	20-29	30-39	40-49	50+
Dose in mg 0.3-0.5mg/kg rectally	2mg	4mg	5mg	8mg	10mg	15mg	15-20mg	15-20mg
Dose in mLs above diluted soln 2.5mg/mL	0.8mL	1.6mL	2mL	3.2mL	4mL	6mL	6-8mL	6-8mL

A second dose can be given if convulsion continues after 10mins.

Note: Rectal dose (mg/kg) is higher as absorption is less compared to IV.

### Dose of IV Diazepam

Refer dose at back of Manual – Adults 10mg slowly undiluted. Children 0.25mg/kg IV to a maximum of 10mg IV. Repeat in 10-15mins with a second dose if needed.

### ii) Phenytoin

Injection 250mg/5mL or Oral 100mg tablets

Loading (stat) dose: 15-20mg/kg. Give IV (not IM) only in Normal Saline and infuse over 30 minutes to minimise cardiac arrhythmias. Pulse rate, respiration rate and BP should be monitored closely. Doses in tablet at back of Manual.

### iii) Phenobarbitone

If still convulsing after another 10minutes, begin a loading dose of Phenobarbitone and give as an IM dose (IV doses can be given over 20mins and may cause drowsiness and hypotension).

Loading dose (stat) is 15-20mg/kg, maximum 1g. After 24hrs follow with a daily oral maintenance dose of 3-4mg/kg/day. Refer dose in table at back of Manual.

### 3. What else should you do?

Reduce the temperature if febrile by giving paracetamol orally. We no longer recommend sponging with cool water.

Make sure you take a BP, Pulse, Respiratory rate and temperature and write it in your notes

**Refer:**

- All children under the age of 5 if after you have done all the above and the patient is still very ill or continues to fit
- Any patient in whom this is the first convulsion
- Any patient suspected of serious illness or who has had a recent head injury
- Any patient who required more than one drug to stop the convulsion

**4. Pre-Referral Treatment:**

- a) To prevent further convulsions while transferring:
  - Phenytoin or Phenobarbitone for children should be given if available. Otherwise have diazepam ready for transfer.
  - Give stat doses of Chloramphenicol (Refer to dosage chart)
- b) Remember to check the blood sugar.
- c) Obtain a RDT to check for malaria before you commence artesunate and send with patient.

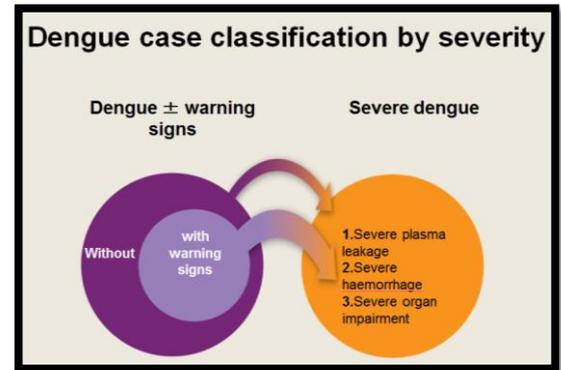
**Epilepsy or Frequent Convulsions (>2 fits in 6-12 months)**

1. All these patients require evaluation by medical officer.
2. Remove any precipitating causes eg low BSL's
3. Epilepsy can be prevented by regular anticonvulsants. These must be used for at least 2-3 years.
4. Drugs may include Phenytoin, Phenobarbitone, Carbamazepine or oral Sodium Valproate. Seek advice for dosage.
5. Refer patients on anticonvulsants if pregnancy is anticipated or occurs. Folic acid supplementation is required and anticonvulsants may need to be changed or if appropriate stopped.
6. When stopping these drugs do it slowly, over a period of at least 2 months.

# DENGUE FEVER

Dengue is a viral infection transmitted by the *Aedes* mosquito, which bites during the day, especially in the early morning and late afternoon. Dengue is not transmitted directly from person to person. It commonly appears in epidemics. Mosquitoes become infected when they bite infected patients. These mosquitoes pass on the infection when they bite another person.

Dengue virus infection may be asymptomatic or may cause a febrile illness. Most dengue is mild, but a small percentage of cases can progress to severe dengue, which often is fatal unless if it isn't adequately treated with IV fluids. Severe dengue starts between day 4 and 6 of illness, just as the initial fever goes down. It usually lasts for only 24-48 hours, and this is the period that IV fluids can be life-saving.



🔔 Appropriate and quick IV fluid administration can reduce the chance of death of severe dengue from over 15% to less than 1%.

🔔 Other therapies, such as blood transfusions or platelets are not recommended for most cases. Corticosteroids should be avoided.

In 2009, the WHO has updated the clinical guidelines for dengue. We no longer use the terms “dengue haemorrhagic fever (DHF)” or “dengue shock syndrome (DSS)”; we now classify the illness as “dengue, with- or without warning signs” or “severe dengue”. This is because DHF and DSS are late manifestations, and it is better to look for earlier signs of severe illness, so that the life-saving IV fluids can be started on time. This new approach has already saved many lives.

## Dengue assessment and classification

<p>Probable dengue: Fever and at least 2 of the following criteria:</p> <ul style="list-style-type: none"> <li>• Nausea, vomiting</li> <li>• Rash</li> <li>• Aches and pains</li> <li>• Tourniquet test* positive</li> <li>• Leucopenia</li> <li>• Any warning sign (see on right)</li> </ul> <p>Laboratory-confirmed dengue (important when no sign of plasma leakage)</p>	<p>Warning signs:</p> <ul style="list-style-type: none"> <li>• Abdominal pain or tenderness</li> <li>• Persistent vomiting</li> <li>• Clinical fluid accumulation</li> <li>• Mucosal bleed</li> <li>• Lethargy; restlessness</li> <li>• Liver enlargement &gt;2cm</li> <li>• <i>Laboratory:</i> Increase in HCT concurrent with rapid decrease in platelet count</li> </ul>	<p>Criteria for severe dengue:</p> <ol style="list-style-type: none"> <li>1. Severe plasma leakage leading to: <ul style="list-style-type: none"> <li>• Shock (DSS)</li> <li>• Fluid accumulation with respiratory distress</li> </ul> </li> <li>2. Severe bleeding as evaluated by clinician</li> <li>3. Severe organ involvement <ul style="list-style-type: none"> <li>• Liver: AST or ALT &gt;=1000</li> <li>• CNS: Impaired consciousness</li> <li>• Heart and other organs</li> </ul> </li> </ol>
---	---	---

\*The tourniquet test is performed by inflating a blood pressure cuff on the upper arm to a point midway between the systolic and diastolic pressure for five minutes. Wait for one minute after the release of pressure before reading the test.

## Management

- Patients **without warning signs** and with no co-existing conditions (pregnancy, infancy, old age, diabetes) can be sent home. They should be able to tolerate adequate amounts of oral fluids, and pass urine at least once every 6 hours. They should be advised to take bed rest, adequate fluid intake, and if necessary paracetamol but NOT aspirin. If possible, they should have a full blood count and a haematocrit (Hct). They should be advised to come back if they get worse.
- Patients **with warning signs** should be admitted for in-hospital care. They should get IV fluids guided by the haematocrit (Hct). See the box on the right. More detailed guidelines are available from the Directorate of Public Health, WHO (<http://www.who.int/entity/tdr/publications/documents/dengue-diagnosis.pdf>), and PPHSN (<http://www.spc.int/phs/pphsn/Outbreak/Dengue.htm>).

### Hospital management of dengue with warning signs:

- Obtain reference Hct before fluid therapy
  - Give isotonic solutions such as 0.9% saline, Ringer's lactate, Hartmann solution
  - Start with 5-7 ml/kg/hr for 1-2 hours, then reduce to 3-5 ml/kg/hr for 2-4 hr, and then reduce to 2-3 ml/kg/hr or less according to clinical response
- Reassess clinical status and repeat Hct**
- If Hct remains the same or rises only minimally -> continue with 2-3 ml/kg/hr for another 2-4 hours
  - If worsening of vital signs and rapidly rising Hct -> increase rate to 5-10 ml/kg/hr for 1-2 hours
- Reassess clinical status, repeat Hct and review fluid infusion rates accordingly**
- Reduce intravenous fluids gradually when the rate of plasma leakage decreases towards the end of the critical phase.
- This is indicated by:**
- Adequate urine output and/or fluid intake
  - Hct decreases below the baseline value in a stable patient

- **Severe dengue should be treated as an emergency.** The patient should be treated aggressively with IV fluids, guided by clinical signs and Hct. See the box below for a summary.

Hospital management of severe dengue:	
<p style="text-align: center;"><b>Treatment of shock:</b></p> <ul style="list-style-type: none"> <li>○ Start intravenous fluid resuscitation with isotonic crystalloid solutions at 5-10 ml/kg/hr</li> <li>○ Reassess patients' condition,</li> </ul> <p><b>If patient improves:</b></p> <ul style="list-style-type: none"> <li>○ Intravenous fluids should be reduced gradually to 3-5 ml/kg/hr, then to 2-3 ml/kg/hr and then depending on haemodynamic status</li> <li>○ Can be maintained for up to 24 - 48 hours</li> </ul> <p><b>If patient still unstable:</b></p> <ul style="list-style-type: none"> <li>○ Check Hct after first bolus</li> <li>○ <b>If Hct increases/</b> still high (&gt;50%), repeat a second bolus of crystalloid solution at 10-20 ml/kg/hr.</li> <li>○ If improvement after second bolus, reduce rate to 7-10 ml/kg/hr, continue to reduce as above</li> <li>○ <b>If Hct decreases</b>, this indicates bleeding and need to cross-match and transfuse blood as soon as possible</li> </ul>	<p style="text-align: center;"><b>Treatment of hypotensive shock:</b></p> <ul style="list-style-type: none"> <li>○ Initiate IV fluid resuscitation with crystalloid or colloid solution at 20 ml/kg as a bolus for 15 min</li> </ul> <p><b>If patient improves</b></p> <ul style="list-style-type: none"> <li>○ Give a crystalloid / colloid solution of 10 ml/kg/hr, then reduce gradually</li> </ul> <p><b>If patient still unstable</b></p> <ul style="list-style-type: none"> <li>○ Check Hct after the first bolus</li> <li>○ <b>If Hct increases/</b> still high (&gt;50%), change IV fluids to colloid solutions at 10 ml/kg/hr, then reduce to 7-10 ml/kg/h, then change back to crystalloid solution and reduce rate as above</li> <li>○ <b>If HCT decreases</b>, this indicates bleeding, see above</li> </ul> <p style="text-align: center;"><b>Treatment of haemorrhagic complications:</b></p> <ul style="list-style-type: none"> <li>○ Give 5-10 ml/kg of fresh packed red cells or 10-20 ml/kg of fresh whole blood</li> </ul>

🔔 If you suspect dengue fever in addition to treating the patient you must alert villages to clean up and remove or cover all water containers in and around the house where mosquitoes can breed (e.g. old tires, discarded cans, coconut husks, uncovered rain water tanks).

🔔 Suspected cases should be immediately notified to either Provincial Health Manager or Directorate of Public Health.

☞ Dengue is difficult to diagnose and is similar to other common diseases. Consider and treat for other diseases such as malaria, typhoid fever, and leptospirosis in addition to dengue as required.

☞ Isolate dengue patients under mosquito net as much as possible, so that mosquitoes cannot transmit the illness to others.

# DENTAL CONDITIONS

- ☺ Prevention is best!
- ☺ Eating healthy foods (alean kakae) and brushing teeth every day with fluoridated toothpaste will prevent most dental problems.

## 1. Periodontal disease( Gum Disease)

Definition: Infected, red, swollen gums (called gingivitis)

Causes: Poor oral hygiene and dental plaque

Treatment:

- Daily tooth brushing with fluoridated toothpaste
- Healthy Diet, "Alean Kakae" nomo, no sugar
- Regular mouthwash with normal saline /warm water and salt or 0.12% chlorhexidine aqueous solution
- If gums are painful and bleeding
  - ⇒ Proper oral hygiene.
  - ⇒ Metronidazole up to 400mg BD for 5 days.
  - ⇒ Soft diet for a few days
- If bleeding persist – refer to dentist
- Treat pain:
  - ⇒ Paracetamol

## 2. Tooth Decay

a) Definition: cavity or hole

b) Cause: sugary food + bacteria (Streptococcus mutans) +tooth + time (sugar – on the tooth); dental plaque

c) Treatment:

⇒ Focus on toothbrushing x 3 daily

Treatment depends on the extent of the cavity:

- If cavity with no pain
  - ⇒ Advise toothbrushing and refer to dentist for dental fillings
- If cavity with sensitivity to hot and cold
  - ⇒ Avoid hot /cold foods and drinks
  - ⇒ Advise tooth brushing and refer to dentist
- If cavity with pain
  - ⇒ Use oil of cloves (Eugenol®) with cotton pellets put inside hole
  - ⇒ Advise toothbrushing and refer to dentist

It is important patient maintains a good oral hygiene

## 3. Dental infections

Acute dento alveolar infections

Infections within the tooth spreading beyond tooth apices

a) Definition: tooth abscess and gum infections

b) Cause: poor oral hygiene and untreated tooth decay

c) Treatment: treat abscess

Must refer to dentist

i) Abscess without swelling

- If no pain :
- ⇒ Keep mouth clean ( rinsing with water , brushing )
- ⇒ Penicillin 500mg stat then 250mg orally 6 hourly for 7 days OR
- ⇒ Amoxicillin 500mg orally 8 hourly for 7 days
- ⇒ If hypersensitive to penicillin , erythromycin 500mg orally 6 hourly for 7 days

Always maintain a good oral hygiene

## ii) Abscess with cellulitis

can be life threatening particularly with mandibular molars with risk of airway embarrassment

- Rinse inside mouth with warm water and salt.
- Good oral hygiene
- Antibiotic
  - ⇒ Penicillin 500mg stat then 250mg 6 hourly for 7 days OR
  - ⇒ Amoxicillin 500mg orally 8 hourly for 7 days PLUS ( either of these with)
  - ⇒ Metronidazole 200mg – 400mg orally BD for 7 – 14 days
  - ⇒ If sensitive to penicillin, erythromycin 500mg orally 6 hourly PLUS
  - ⇒ Metronidazole 400mg orally BD for 7 – 14 days

If severe infections spreading and causing shortness of breath, fever, malaise

- ⇒ Penicillin G 600mg (1mega unit) IV 4 – 6 hourly OR
- ⇒ Ampicillin 1g IV 4-6 hourly PLUS ( Either of these with)
- ⇒ Metronidazole 500mg IV BD or 400mg orally BD or 7-14 days

Requires drainage refer to **hospital immediately**

- Treatment : abscess
  - ⇒ Refer to dentist

## iii) Pericoronitis

- a) Definition: infection of gum flap around an erupting tooth commonly wisdom tooth
- b) Cause : poor oral hygiene
- c) Treatment :
  - Good oral hygiene is important

If pain and swelling

- ⇒ Metronidazole 400mg orally 8 hourly for 7 – 14 days PLUS
- ⇒ Penicillin V 250mg orally 6 hourly for 7 – 14 days PLUS
- ⇒ Chlorhexidine 0.12% aqueous solution mouthwash X 3 daily

If persist refer to dentist

## 4. Trauma:

- a) Knocked out or broken permanent teeth:
  - i. If a Dentist is available:
    - If possible and you have the tooth put it directly back into the socket straight away. Make sure it is clean, do not hold the tooth by the root.
    - If tooth is dirty you must rinse in milk, patient's saliva or wrap up in a plastic
    - Have the patient hold in place until the dentist is available.

ii. No Dentist available:

- Have patient rinse and clean the mouth and apply pressure to stop the bleeding
- Any trauma to the face below the level of the cheek bones should be followed closely and started on antibiotics.

## 5. Broken Jaw:

Ask

- ⇒ About pain especially when moving jaw
- ⇒ If teeth meet properly when mouth closed
- ⇒ About any trouble swallowing or eating

Check

- ⇒ Look in mouth – do upper and lower teeth meet properly
- ⇒ For swelling or bleeding in mouth
- ⇒ Look for teeth in 1 jaw not lining up properly
- ⇒ Look for difference in outline between 1 side of jaw or face and the other
- ⇒ Feel for a step in line of teeth or jaw
- ⇒ Tetanus status , give if needed

Do

- ⇒ If you think there is a fracture
- ⇒ Put a head band around head to maintain teeth in position
- ⇒ Insert IV for hydration and commence IV Penicillin AND Metronidazole
- ⇒ Give pain relief
- ⇒ Refer patient to hospital for x rays and fixation

## 6. Oral Ulcers

May be due to minor trauma, burn, or infections

Treatment:

- ⇒ Soft non chewable diet x 7/7 days ( avoid hard foods)
- ⇒ Chlorhexidine mouthwash 3 times daily
- ⇒ Topical anaesthetic ( cream) if available

In young child with severe ulcers

- ⇒ Medical consult about anti-viral treatment
- ⇒ Check dehydration – may not be drinking if mouth sore
- ⇒ If child not eating – send to hospital

If ulcers not healed within 3 weeks send to hospital.

# DIABETES – ‘Siksuga’

**Definition:** A condition where the blood glucose [sugar] is high. A diagnosis of diabetes is made if two blood glucose levels show:

- Non-fasting value of 11mmol/l or more **OR**
- Fasting blood glucose levels of 7mmol/l or more.

## Type 1 Diabetes

1. Known as “Insulin dependent diabetes”.
2. Not enough insulin is produced by the body.
3. Usually develops in children and young adults.
4. Uncommon in Vanuatu.

## Type 2 Diabetes

1. Known as “Non-insulin dependent diabetes”.
2. Insulin does not work as well as usual (insulin resistant)
3. Usually develops in obese, middle-aged or elderly people.
4. Common in Vanuatu.

## Gestational diabetes

1. Develops during pregnancy.
2. Occurs in overweight mamas, >30years old and multiple pregnancies.
3. Increased risk to mother and baby developing diabetes in future.
4. Treatment with diet, exercise and sometime insulin is required.

## Clinical features:

1. Many people with diabetes have no symptoms and are not diagnosed for a long time, or ever.
2. Too much glucose in the blood causes glucose to appear in the urine. This may make the patient pass too much urine and they are often thirsty and tired.
3. Young people with type 1 diabetes often lose weight.
4. Older people with type 2 diabetes are often fat.
5. Patients may present with complications of diabetes.

## Complications:

- |                          |  |
|--------------------------|--|
| 1. Skin:                 | Boils, abscesses, or skin sores, ulcers, especially feet.  |
| 2. Coma:                 | “Diabetic coma” is caused by a very high blood glucose   |
| 3. Eyes:                 | Cataracts and damage to the retina cause blindness.  |
| 4. Nerve damage:         | Loss of feeling, usually in the feet.<br>Impotence.  |
| 5. Kidneys:              | Urinary tract infections.<br>Proteinuria.<br>Kidney failure.   |
| 6. Blockage of arteries: | Affects the feet, heart, brain, and kidneys.<br>Heart attack and stroke have a much higher incidence in diabetics. |

## Diabetes in Pregnancy (Gestational diabetes)

🔔 Can cause stillbirths, premature delivery, and large babies.

🔔 All pregnant women with diabetes must be **referred** to hospital.

🔔 All pregnant women should have their urine tested for glucose. If glucose is present on 2 or more visits, **refer** to a doctor.

🔔 Diabetes usually does not continue after delivery in women with gestational diabetes, but their chances of developing diabetes are higher, so they should be monitored and followed up.

## Diagnosis:

1. If you suspect diabetes, test urine and blood for glucose, preferably with the patient fasted
2. Test the blood glucose of every unconscious patient.
3. **Refer** people with newly diagnosed diabetes if
  - 🕒 Under 30 years old.
  - 🕒 Thin and wasted.
  - 🕒 Pregnant.
  - 🕒 They have infections e.g. chronic injury or ulcer of foot

## Be suspicious of diabetes in these people:

1. Usually overweight and over 30 years and may have hypertension
2. Sedentary lifestyle inactive and have less energy than other people e.g. do not engage in sports, do not walk regularly, do no heavy work, eg working in garden
3. Eats a lot of imported foods, eg rice and bread, but eats less local food
4. May come complaining of other illness e.g. urinary tract infection or vaginal itchiness (especially older women), sores that don't heal well
5. Sick older people who do not get better as quickly as you would expect
6. Some people may come to you because they are losing weight
7. People who have ketones in their urine – they may not necessarily show glucose in urine but blood level will be elevated

## Treatment:

- |                                |  |
|--------------------------------|--|
| 1. Aims of treatment           | 2. Types of Treatment                                  |
| a) Relief of symptoms          | a) Diet and exercise. Stop smoking and reduce alcohol. |
| b) Control of blood glucose    | b) Diet and tablets                                    |
| c) Prevention of complications | c) Diet and insulin                                    |
3. Educate and explain
    - a) Explain to patients that diabetes cannot be cured, but can be controlled.
    - b) If diabetes is not controlled the patient will become sick. Diabetes will increase chances of stroke, heart attack, result in amputations, cause blindness and kidney failure if left untreated. Early treatment will slow these complications.
    - c) For older obese patients with no complications – start them on diet treatment at home.

## 4. First line treatment is Diet and Exercise – refer NCD Protocol 'Health Education and Counselling on Healthy Behaviours'

- a) “Aelan kaka: kaka blong garen mo kaka blong solwata” is the best. Imported food and “kaka blong stoa” should be avoided.
  - b) Eat less carbohydrates, no sugar and use foods with low fat and low salt. Try and eat three well balanced meals spaced out during the day.
  - c) Stop smoking and reduce alcohol.
  - d) Obese people must lose weight. Daily physical activity is important.
  - e) Most people with diabetes in Vanuatu should be on diet alone.
5. Tablets
    - 🕒 Tablets are not an alternative to a good diet. ONLY give tablets if diet alone does not control diabetes.
    - 🕒 Explain that tablets must be taken every day and that diabetes treatment is for life. Explain several times.
    - 🕒 Patients must ensure they have enough supplies of tablets all the time. Get more supplies before they run out.
    - 🕒 Compliance is difficult. If possible tablets should be given two times every day; three times a day is more difficult to remember.

- **First line drug treatment is Metformin 500mg bd with meals increasing to a maximum dose of 1g bd.**  
*Costs of therapy 1700Vt pa for 1g bd based on 2012 prices.*
  - ⇒ Useful in fat people as it makes people less hungry so it assists weight loss.
  - ⇒ Do not use in patients with kidney failure.
  
- **If Metformin is contraindicated or is not sufficient to control diabetes, Glibenclamide (Daonil®) 5mg is second line therapy.**
  - ⇒ Start treatment with 2.5mg (1/2 tablet) BD, with meals.
  - ⇒ Maximum dose 10mg BD. *Costs of therapy 730Vt pa for 10mg bd based on 2012 prices.*
  - ⇒ Explain this can lower sugar levels so watch out for symptoms of hypoglycaemia (low blood sugar) ie dizzy, palpitations, sweating, strange behavior. If hypoglycaemia occurs, treat with sugary drinks, sweets or sugar followed by bread, kumala, taro, yams or laplap. If hypoglycaemia becomes frequent, reduce dose of Glibenclamide.

### Poor control:

- ☺ The most common cause of poor control of diabetes is non-compliance: failure to follow diet, exercise and/or take tablets regularly.
- ☺ Make sure advice and compliance are being followed before changing or adding treatment.

### 6. Insulin

🔔 Insulin treatment should only be started in hospital under supervision of a doctor or nurse practitioner trained in the treatment of diabetes. *Insulin therapy costs 24,000Vt pa for 40U daily based on 2012 prices.*

- a) Indications:
  - i. Young patients [under 30 years].
  - ii. Thin and wasted patients.
  - iii. Pregnancy
  - iv. During surgery
  - v. During infections if diabetic control is lost (diabetic sepsis)
  - vi. If diet and drug treatment are not adequate to control blood sugar
- b) Problems with insulin treatment:
  - i. Missed doses [for many reasons].
  - ii. Failure to follow diet.
  - iii. Patients with poor vision have difficulties with preparing injection – family members may need to be trained.
  - iv. Availability of cold storage [icebox] for insulin- this is only required if keeping insulin for >1 month. Room temperature storage in a cool part of house is sufficient for one month of treatment.
  - v. Hypoglycaemia as per Glibenclamide above – ensure patient understands how to treat this.
- c) Insulin injection:
  - i. Always give subcutaneous by lifting up a fold of skin, usually in the abdomen
  - ii. Rotate the injection sites around the abdomen. Change needles every three days at least.
  - iii. Do not inject insulin into the arms.
  - iv. Give insulin at meal times to avoid hypoglycaemia (hypo's)
- d) Monitoring treatment:
  - i) Symptoms
    - ⇒ Passing too much urine, thirst = not enough treatment.
    - ⇒ Hunger, dizziness, sweating = too much treatment.
    - ⇒ Weight gain can follow over treatment.
    - ⇒ If thin diabetics lose weight = too little treatment.
  - ii. Blood and Urine Glucose
    - ⇒ A single reading is not very useful.
    - ⇒ The symptoms and weight are a better guide to diabetic control.
  - iii. Blood pressure
    - Ensure blood pressure readings for all diabetic patients are <130/80.

If BP is higher than 130/80, enalapril therapy is first line treatment for diabetic patients because it protects their kidneys. This should be prescribed by specialist diabetes nurse or doctor in the first instance.

iv. Eye check

As diabetes can cause eye damage it is good to have a yearly eye check if possible.

### **Diabetes and Feet:**

1. Foot problems are the most important complications of diabetes in Vanuatu.
  2. Teach patients about foot care:
    - Wear proper fitting shoes to avoid injuries
    - Check feet every day, preferably at night before they sleep
    - Seek help immediately if there are wounds or sores.
    - Feet should be checked for peripheral neuropathy at each clinic visit.
    - **Refer** if chronic injury or ulcer on foot, or diabetes cannot be controlled.
- ☺ This is similar to advice given about foot care to people with leprosy.

### **Patient Education – refer NCD Protocol ‘Health Education and Counselling on Healthy Behaviours’:**

- ☺ Provide written material, preferably in Bislama after explaining the condition and its outcomes
- ☺ Patients should know the common complications of diabetes so they can be detected and treated quickly.
- ☺ Ensure patients maintain a constant supply of medicines through their local clinic, and that they understand the need to continue treatment for life. Expensive unproven products currently promoted in Vanuatu should NOT replace regular long term medicines.
- ☺ Patients need community support to manage their condition, after all, if there is one known diabetic in a community there are likely to be more
- ☺ Encourage people to form lifestyle groups e.g. walking groups three times per week in the evening, women getting together and cooking local food on a regular basis, older people educating youth on healthy lifestyle eg less lollies, sweet biscuits, iceblocks and do regular exercise.

🔔 Patients and their families must understand the importance of coming quickly to hospital if they become ill.

**Prevention of diabetes:**

A costing analysis undertaken in 2012 highlighted the huge costs associated with treating diabetes – drug treatment alone in 2012 for one diabetic costs the Govt. 3000Vt per annum for oral therapy and monthly testing up to 38,500 Vt for insulin and associated needles/syringes. With only 360Vt per annum per person available in the current budget for purchase of drugs the increasing incidence of diabetes in Vanuatu will quickly drain the drug budget. Prevention of this disease is extremely important and public health campaigns must be supported to ensure the general public understand how to live a healthy life – healthy island food in the correct quantity, regular exercise and no smoking. This message MUST reach the children to ensure this disease does not increase in the future.

# DIARRHOEA and treatment of DEHYDRATION

📁 Refer to IMCI Guidelines for further information

## Definitions:

Three or more loose or watery stools in 24hours.

Diarrhoea < 14 days – *Acute*

Diarrhoea ≥ 14 days – *Persistent* – **REFER**

Diarrhoea with blood in stool, with or without mucous is *Dysentery*

*Cholera is a rare but serious cause of loose and watery diarrhoea.*

## Children Under 5 years of Age

For every patient with diarrhoea:

- 1) Assess for symptoms and signs of dehydration.
- 2) Record the temperature and weight.
- 3) Examine the stool and ask about blood in stools.
- 4) Take a history and examine for other diseases eg. malnutrition, ear problems, cough or breathing problem, anaemia etc.

☺ **The most important part of the management of diarrhoea is the prevention and treatment of dehydration.**

☺ Once you have begun treating dehydration look for and treat cause.

☺ Remember coconut water if no ORS!

Treatment Plan	Plan A	Plan B	Plan C
<b>LOOK AT:</b> General Condition	Well Alert	Restless Irritable	Less than normal movements Abnormally sleepy Very difficult to awaken
Eyes		Sunken	Sunken
Thirst (offer the child fluids)	Drinks normally Not thirsty	Thirsty Drinking eagerly	Not able to breastfeed or drink Vomits everything
<b>FEEL:</b> Fontanelle			Sunken
Skin pinch*	Goes back immediately	Goes back slowly < 2 seconds	Goes back very slowly > 2 seconds
<b>DECIDE and CLASSIFY:</b>	The Child has <b>NO SIGNS of DEHYDRATION</b>	If the child has 2 or more signs from this column then child has <b>SOME DEHYDRATION</b>	If the child has 2 or more signs from this column then the child has <b>SEVERE DEHYDRATION</b>
<b>TREATMENT:</b>	<b>Plan A:</b> More fluids at home and continue feeding	<b>Plan B:</b> ORS under supervision, if improves Plan A at home	<b>Plan C:</b> IV Fluids if possible, if not, NG, if not ORS - <b>REFER</b>
<b>OTHER TREATMENT:</b>	Treat fever if present Zinc sulphate for 10 days	Treat fever and Malaria if present Zinc sulphate for 10 days	Treat fever and malaria if present Zinc sulphate for 10 days
<b>FOLLOW UP:</b>	Daily	In 3-4 hours, then reassess	<b>REFER IMMEDIATELY</b>
<b>REFER:</b>	If develops signs in column C.	If no response to ORS or develops signs in column C.	<b>IMMEDIATE REFERRAL</b>

\*In a child with marasmus (severe malnutrition), the skin may go back slowly even if the child is not dehydrated. In an overweight child, or a child with oedema, the skin may go back immediately even if the child is dehydrated. Even though skin pinch is less reliable in these children, still use it to classify the child's dehydration.

## 1. Assessment of dehydration in a child with diarrhoea

### a) Treatment of diarrhoea with no dehydration (**Plan A**)

- i. If child is exclusively breastfed, do not introduce foods at this time. Continue to breastfeed more frequently and for longer.
- ii. Home treatment of diarrhoea focuses on teaching the mother to:
  - Give more fluids than usual
  - Use coconut water, rice water, thin soups.
  - If this is not possible give clean water.
  - Give as much fluid as the child will drink after every loose stool.
    - ⇒ Up to 2 years: 50-100mL after each loose stool
    - ⇒ 2 years or more: 100-200mL after each loose stool
  - The more fluid the child drinks, the less the chance of becoming dehydrated.
  - Continue to give these fluids until diarrhoea stops.
  - Encourage the mother to give ORS – low osmolarity form now kept
  - Every health worker should establish an ORS Centre in their health facility
  - This is especially important if they have been on Treatment Plans B or C, or cannot return if diarrhoea gets worse.
- iii. Show the mother how to mix ORS for home treatment of diarrhoea:
  - Child under 2 years: one teaspoon every 1-2 minutes.
  - Older child: frequent sips from a cup.
  - If the child vomits: wait 10 minutes and give ORS again slowly.

Age	Amount of ORS after each loose stool	Amount of ORS to take home
Less than 24 months	50-100mL	500mL per day
2 to 10 years old	100-200mL	1000mL per day
Older than 10 years	As much as wanted	2000mL per day

- Give mother enough packets of ORS to last 2 days.
- If diarrhoea continues after all packets of ORS are used - give home fluid or water as described above.
- Give Zinc sulphate tablets for children 5years and younger.
- iv. Salt-sugar solution
  - Only use salt-sugar solution if **no** supplies of **ORS** are available.
  - Use 1 litre size bottle (e.g. cooking oil or plastic juice bottle).
  - Dissolve into 1 litre of boiled and cooled water: 1½ level tablespoons sugar.  
¾ level teaspoons salt. Dose as per ORS.
- v. Continue feeding and give plenty of food:
- Continue to breast-feed frequently and take opportunity to encourage mother to breastfeed as long as possible
- If under 6 months:
  - ⇒ If not breast-feeding then dilute the milk with equal amount of boiled water for 2 days.
  - If 6 months or older or taking solid food:
    - ⇒ Encourage the child to eat.
    - ⇒ Offer food at least 6 times a day.
    - ⇒ Encourage extra feeding after diarrhoea finishes and take opportunity to encourage mother to commence food if infant >6 months
- vi. Return to the clinic if:
  - 🚫 The child is not better in 3 days.



The child develops any of the following:

Many watery stools.	Eating or drinking poorly.	Repeated vomiting	Marked thirst.
Fever	Blood in the stool	Severe abdominal pain	Pallor

b) Treatment of diarrhoea with some dehydration (**Plan B**)

- i) This should be treated in Dispensary/ Health Centre or Outpatients for first four hours therapy.
- ii) Do not send the child home if they are unable to take fluids.
- iii) If the child wants more than that shown, give to the child.
- iv) Show the mother how to give ORS.
- v) Check from time to time to see if there are any problems and regime carried out – don't leave mother totally alone!
  - Child under 2 years - a teaspoon every 1-2 minutes.
  - Older child - frequent sips from a cup.
- vi) If the child wants more ORS, give more.
- vii) Encourage the mother to continue breastfeeding.
  - For infants under 6 months who are not breastfed, also give 100-200mL water PLUS the ORS regime for 4 hours. This prevents the infant from developing hypernatraemia.

Age	Up to 4 months	4 months to 12 months	12 months to 2 years	2 years up to 5 years
Weight	<6kg	6 to <10kg	10 to <12kg	12-19kg
Amount of ORS to give during first 4 hours or 75mL/kg over 4 hours	200-400mL	400-700mL	700-900mL	900-1400mL

viii) If the child vomits:

- Wait 10 minutes, then continue ORS slowly - 1 teaspoon every 2-3 minutes.

ix) If the child's eyelids become puffy:

- Stop ORS
  - ⇒ Give plain water or breast milk until puffiness gone then continue ORS.

x) After 4 hours re-assess hydration:

- NO dehydration: Use PLAN A.
- SOME dehydration: Repeat PLAN B, offer food, milk, juice.
- SEVERE dehydration: Use PLAN C.

xi) For children 5yrs and under, commence treatment with Zinc sulphate 20mg dispersible tablets

c) Treatment of diarrhoea with severe dehydration (**Plan C**)

- i) If you cannot give IV fluids, see next page.
- ii) If you can give IV fluids, see below.
- iii) Use Hartmanns or Normal Saline not 5% Dextrose or 0.18% Saline.
- iv) Start IV fluid immediately. If the child can drink, give ORS by mouth while the drip is set up. Give 100ml/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*	2 1/2 hours

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

- Reassess the child every 1–2 hours. If hydration status is not improving, give the IV drip more rapidly.
- Also give ORS (about 5 ml/kg/hour) as soon as the child can drink: usually after 3–4 hours (infants) or 1–2 hours (children).
- Reassess an infant after 6 hours and a child after 3 hours.

Classify dehydration. Then choose the appropriate plan (A,B, or C) to continue treatment.

- v) If the patient can drink:
  - Give ORS while drip is being set up.
  - Try to give ORS from start of IV treatment at a rate of 5ml ORS/kg/hr.
- vi) Assessment:
  - Re-assess every 1-2 hours during treatment.
  - Do a full dehydration assessment and choose appropriate treatment plan (A,B or C):
    - ⇒ Infants:- after 6 hours treatment.
    - Child:- after 3 hours treatment.
- vii) If still severe dehydration:
  - Continue IV fluids at rapid rate and fully assess again after 3 hours.
- viii) If improving and only some or no dehydration:
  - Start Plan B or A.
  - Continue IV fluids at maintenance rate until drinking well and no longer vomiting.
- ix) If the patient's eyelids become puffy:
  - Change IV from Normal Saline to IV Dextrose/Saline
  - Slow the infusion to maintenance rate.
- x) For children <5yrs, commence treatment with Zinc sulphate 20mg dispersible tablets
  - 10mg daily if <6months,
  - 20mg daily for >6months for 10days.
  - This is likely to reduce the recurrence of future episodes of diarrhoea.

**i. Severe dehydration if you cannot give IV fluids**

- a) IV treatment IS available within 30 minutes:
  - Refer immediately for IV treatment.
  - Start ORS solution if the patient can drink.
    - ⇒ Show the mother how to give ORS during the trip.
    - ⇒ ORS volume per hour for severe dehydration-20mL/kg/hr for 6 hours.
    - ⇒ Use the patient's age ONLY if you cannot weigh.

Age	Under 4 months	4-11 months	12-23 months	➤ 2-4 years	5-14 years	Over 14 yrs
Weight in kg	Under 5kg	5-7	8-10	11-15	16-29	30+
mLs/hr	60-100	100-150	150-200	200-300	300-600	600-1000

- b) IV treatment IS NOT available within 30 minutes
  - i. If you can pass a nasogastric tube:
    - Start ORS by tube.
    - Give 20mL/kg/hour for 6 hours, total of 120mL/kg (see table above).
    - Re-assess patient after 1-2 hours
    - If patient worse - **refer** for IV treatment
    - Do a full dehydration assessment after 6 hours, continue treatment with Plan A, B or C.
  - ii. If the patient CAN drink:
    - Start ORS by mouth.
    - Give 20mL/kg/hour for 6 hours (see table above).
    - Re-assess patient after 1-2 hours,
    - If patient worse - **refer** for IV treatment.
    - Do a full dehydration assessment after 6 hours, continue treatment with Plan A B or C. Keep child in clinic a further 6 hours, ensuring mother can maintain fluids with ORS, feeding.
  - iii. If the patient CANNOT drink:
    - Urgently **refer** the patient for IV or nasogastric treatment. **If this child does not receive fluids, he/she will die.**

## Treatment of Cause of Diarrhoea in Children & Adults

### 1. Acute diarrhoea:

- a) Diarrhoea for less than 14 days
- b) The commonest causes of acute diarrhoea are infections of the gut.
- c) In children any infection may cause diarrhoea.
- d) Look and ask
  - i) Is there fever?
  - ii) Is there blood?

Fever	Blood	Common Causes	Treatment
NO	NO	Toxins E.coli Viruses e.g. Rotavirus	Rehydration therapy only.
YES	NO	Salmonella Viruses Malaria Any infection in children	Do not give antibiotics routinely. Fever over 38.5C: Antimalarials if RDT positive and Paracetamol If very toxic: Start Chloramphenicol <b>Refer</b> to hospital
YES	YES	Shigella Salmonella Campylobacter	Fever over 38.5C: Antimalarials if RDT positive and Paracetamol If very bloody, antibiotics must be given: Children <5 years give Chloramphenicol or, if not available Co-trimoxazole Adults: Ciprofloxacin or Chloramphenicol If very profuse watery diarrhoea then cholera should be considered If very sick - <b>Refer</b> to hospital

### 2. Persistent Diarrhoea:

- a) Diarrhoea for more than 14 days
- b) **Refer** if:
  - Under 6 months old.
  - Dehydration is present.
  - Malnutrition.
- c) Treatment:
  - Teach the mother home treatment of diarrhoea. (Treatment Plan A).
  - Continue breast-feeding.
  - If not breast-feeding, dilute milk with equal water or replace with semi-solid foods or yoghurt.
  - Give 6 meals a day with added oil or coconut cream.
  - Persistent diarrhoea may be caused by giardiasis.
  - If available, give Metronidazole – Adults: 2gram – Children: 30mg / kg (Max 2g) daily for 3 days. Tinidazole (Adult 2g single dose, Child 50mg/kg single dose) is also available in hospital settings.
- d) Review in 5 days:
  - i. If still diarrhoea
    - Refer
  - ii. If no diarrhoea
    - Continue breast-feeding
    - Give an extra meal a day for 1 month.
    - After 1 week gradually re-start normal milk.

For children 5yrs and under, commence treatment with Zinc sulphate 20mg dispersible tablets

### 3. Treatment of symptoms:

- a) If there is a severe colicky pain:
  - Stop oral treatment and give IV fluids.
- b) If the pain is very bad:
  - **Refer** to hospital.

- 🔔 Never give anti-emetics e.g. Metoclopramide (Maxolon®) to children < 16 years
- 🔔 If you have given Maxolon and patient reacts funny go to Dystonias/ Oculogyric Crisis section of this manual
- 🔔 Never give anti-diarrhoeal drugs e.g. Lomotil®, Imodium®.
- 🔔 Antibiotics should not be given if no blood in stool unless patient is very ill – fluid replacement is the priority.
- 🔔 Remember that coconut water is Ok for fluid replacement but not as good as ORS as it is lower in sodium.
- 🔔 Another important message in diarrhoeal disease is to continue feeding (breastmilk and solids) whenever possible and maintaining rehydration solutions.
- 🔔 Prolonged fasting is bad for the gut and recovery occurs quicker with early refeeding.

# EAR DISEASE

## 1. Deafness:

Table 1: Aetiology of hearing loss

Cause	Conductive hearing loss	Sensorineural hearing loss
Congenital	Atresia of ear, ossicular abnormalities	Prenatal: genetic, inherited rubella
Acquired	External: wax, otitis externa, foreign body Middle ear: middle ear effusion, chronic otitis (cholesteatoma, perforated drum) traumatic perforation of drum	Perinatal: hypoxia, jaundice Trauma: noise, heard injury, surgery Inflammatory: chronic otitis, meningitis, measles, mumps, syphilis Degenerative: presbycusis Ototoxicity: aminoglycosides Idiopathic: Meniere's disease

Look in the ear with an auroscope:

⇒ Wax and foreign body removal is best by using a probe/suction/syringing if there is space around the foreign body. Need a good bright light. It is safe to apply oil a few days before syringing.

🔔 If you are not confident to do any of the above please **refer to ENT clinic**.

If foreign body is metal, a magnet can be used to draw it out. If removal is unsuccessful, **refer to ENT clinic**.

⇒ If the drum is red /pus less than 2wks ⇒ treat as acute otitis media (AOM).

⇒ If there is pus over 2 wks ⇒ treat as chronic otitis media (COM).

⇒ If you see nothing ⇒ the patient should be sent to ENT clinic.

## 2. Acute Otitis Media (AOM):

⇒ Painful ear with fever.

⇒ Eardrum red and dull in appearance, or

⇒ Pus discharging from ear for less than 2 weeks.

Treatment:

- First-line antibiotic - Amoxycillin BD (to improve compliance) or TDS for 5 days.  
Second line antibiotic - Cotrimoxazole (Bactrim) BD for 5 days.
- Paracetamol or aspirin (in >16yo) for pain/fever.
- If pus discharging, dry the ear with toilet tissue QID (see ear cleaning below).

Review after 5 days:

If ear discharging pus, or still pain and fever:

- Continue same antibiotic for 5 more days.

## 3. Chronic Otitis Media (COM):

⇒ Ear discharging pus for more than 2 weeks.

Treatment:

- The most important treatment is cleaning the ear.
- The eardrum will only heal when it is dry.
- Antibiotics do not usually help but you may use drops e.g. Antibiotic/ steroid (Sofradex)
- If first presentation then antibiotics may be indicated – Amoxycillin for 10days + ear toilet but for follow-up presentations of COM, antibiotics are not indicated.

Ear Cleaning (Toilet)

Must be done QID.

⇒ Twist a piece of toilet tissue to make a spear.

⇒ Break off and throw away both ends.

⇒ Gently push and twist into ear canal until it stops.

⇒ Leave for 2 minutes to absorb pus, then gently remove.

- ⇒ Repeat until the ear is dry.
- ⇒ Sofradex drops or similar after ear toilet.

Education:

- Teach the family to do ear cleaning QID.
- Tell the patient to keep inside the ear dry.
- Explain no swimming and care when washing.
- Blow nose as often as necessary.

Remember:

🚫 Cotton buds are no good and must not be used.

🚫 Never plug a discharging ear with cotton wool.

Review:

Every week until the ear is dry.

Check how the family do ear cleaning.

**Refer** to local ENT clinic if:

🚫 Discharge continues for more than 6 months.

🚫 Suspect mastoiditis (painful swelling behind ear).

🚫 COM with headache, refer immediately.

4. Otitis Media with Effusion (OME) or Glue Ear:

- ⇒ Common in young children.
- ⇒ May last for weeks or months.
- ⇒ Eardrum appears dull or retracted with fluid behind drum.
- ⇒ Causes transient hearing loss in some children.
- ⇒ Mothers should encourage child to blow nose to clear secretions from Eustachian tubes.
- ⇒ Increases risk of AOM with febrile upper respiratory tract infection.

Treatment:

- Try 10days of Co-trimoxazole (Bactrim) therapy and if no improvement **refer** to ENT clinic.

5. Acute Otitis Externa (AOE)

- ⇒ Painful ear – patient does not like it touched.
- ⇒ Discharge – greenish.
- ⇒ Swollen ear canal (furunculosis, diffuse otitis externa)
- ⇒ Pain on chewing.

Treatment:

- Penicillin V for 5 days if AOE only.
- Ear toileting if discharge. Apply Ichthammol ointment for packing on gauze or cotton wool wick, remove after 48hrs.
- Alternative treatment: Sofradex drops or kenacomb drops 3 drop tds for 3days.
- If also AOM suspected, Amoxycillin can be used to treat both conditions.
- Paracetamol for pain relief.

## EYE DISEASE (see also Trachoma chapter)

### 1. Red Eye

a) Remember, not all red eyes are conjunctivitis.

b) Examine the eye

c) Is it painful:

➤ If yes, think:

Iritis: small, often irregular pupil, + pain

Corneal Ulcer: often follows an injury, ++ pain

Glaucoma: large, non-reactive pupil, +++ severe pain

➤ No pain:

Conjunctivitis: can be viral (watery discharge) or bacterial (pus discharge)

d) Is there a foreign body in the eye?

Refer to eye injury

e) Test Vision

i. Vision is normal in conjunctivitis.

ii. Vision may be reduced in Iritis, Corneal Ulcer and/or Glaucoma

f) Treatment:

Viral conjunctivitis:

➤ No treatment necessary unless severe or with complications

Bacterial conjunctivitis:

➤ Clean away the pus with a cotton wool and/or clean water

➤ If in hospital, obtain a pus swab for microscopy / culture before starting treatment

➤ Apply chloramphenicol / tetracycline drops/ointment QID for 5 days or until resolved.

g) **Refer:**

🚨 Any person with painful eye and decreasing vision.

🚨 If no improvement after 2 days of treatment or if patient becomes worse at any time.

### 2. Eye Injuries

a) Examine:

i) To make examination easier, apply 2-3 drops of Amethocaine or Lignocaine 1%, particularly before attempting removal of foreign bodies. Refer the patient if foreign body is very small or is firmly lodged in the cornea.

ii) Look carefully for any foreign body.

➤ Carefully remove any seen object with clean water and cotton buds or swab.

➤ Apply antibiotic eye ointment and cover with loose eye pad and shield before **referral**.

➤ Review patient daily until improved.

b) **Refer**

🚨 Eyeball lacerations (Penetrating eye injuries)

🚨 Eyelid injuries

🚨 Deep foreign bodies

🚨 Foreign Bodies in the Eye

### 3. Penetrating Eye Injuries

a) This includes eyeball lacerations, puncture wounds etc

b) Should all be **referred** for specialised care

➤ Calm the patient, do not remove anything.

➤ Give pain relief, tetanus toxoid.

➤ Cover the eyes with eye pad and eye shield.

➤ Do not handle the eye too much as this may cause further damage.

➤ Patients may need sedation during transfer. Have Diazepam available.

#### 4. Chemical Spills

- Wash the eye with tap water or saline for at least 20 minutes.
- You can use a IV set and run saline slowly into the eye as an irrigation.
- Do this before checking vision.
- Put antibiotic eye ointment and pad worse eye, then review daily until healed.

#### 5. Other common eye disorders accompanied with poor vision

##### a) Test vision with an eye chart placed at 6 metres from the patient

i. Test each eye in turn, the right eye first

ii. A person with normal vision can read line labelled "6", recorded as "6/6"

iii. If worse than "6/6" re-test having the patient looking through a tiny pinhole.

- If vision improves the patient just needs glasses.

##### b) Examine the eye with a torch or a good light source for:

i. Scar on the cornea.

ii. Cataract (a white looking pupil).

iii. Squint (abnormal deviation of the eye).

iv. Pterygium

##### c) Treatment:

i. No immediate treatment is required for above.

ii. There is a Primary Eye Nurse at each hospital who can advise on these non urgent referrals.

iii. There is no treatment for corneal scar but **refer** ASAP if found in children <8yrs.

iv. Surgery will be performed if there are cataracts affecting normal activities.

v. **Refer** new squint causing double vision and all children with squint.

vi. If there is nothing to find except poor vision, and vision does not improve with a pinhole, refer to Provincial Primary Eye Nurse for consultation.

#### 6. Neonatal Conjunctivitis

a. Conjunctivitis in babies within the first month of life.

b. It may be due to *gonococci* if seen within the first 2-4 days of life though it can take up to 4 weeks to present (*Chlamydia* and others: 4-10 days after birth – refer Trachoma chapter).

c. It can cause blindness if not treated appropriately.

d. Treatment:

Less than 7 days old:

- Ceftriaxone IM / IV 50mg / kg daily for 7 days
- **Or** BenzylPenicillin IM / IV 30mg / kg BD for 7 days

More than 7 days old:

- Ceftriaxone IM / IV 50mg / kg daily for 7 days
- **Or** BenzylPenicillin IM / IV 30mg / kg QID for 7 days

Purulent conjunctivitis and more than 28 days old (just over neonatal period):

- Procaine penicillin IM as a single dose
- **Or** Ceftriaxone IM as a single dose

Other treatments

- Irrigate eyes hourly with saline until pus decreases
- Tetracycline eye ointment 2-3 times a day for 6 weeks – any less will not cover *chlamydia*
- Treat mother, father and contacts for gonorrhoea or chlamydia (STI Treatment pack) if suspected.

#### 7. Vitamin A Deficiency (Xerophthalmia)

a. Vitamin A Deficiency causing changes in the eye.

b. Probably not a health problem in Vanuatu due to mangoes and paw paw.

c. Main signs are night blindness, Bitot's spot, conjunctival and corneal dry spots, corneal ulceration and scars.

d. Treatment: Vit A supplements

AGE ⇒	< 6 months	6 – 12 months	>12 months
1 <sup>st</sup> Day	50,000 IU	100,000 IU	200,000 IU
2 <sup>nd</sup> Day	50,000 IU	100,000 IU	200,000 IU
2 – 4 weeks later	50,000 IU	100,000 IU	200,000 IU

Use 1mL syringe to aspirate fluid out of capsule to give correct dose. Eg. One capsule has 200,000 IU in 0.2mL

- e) The above treatment should also be given to all children:
- i. With any non-traumatic corneal ulceration from any cause
  - ii. With measles
  - iii. Who are severely ill such as ARI etc
  - iv. Who are underweight

📁 Refer to IMCI Guidelines for further information.

## **FAMILY PLANNING (FP)**

 Refer Vanuatu Evidence Based Guidelines in Family Planning for Health Workers 2006

**Aims:** to enable women and their partners to plan pregnancies so that each pregnancy is wanted and has the best chance of a positive outcome and to improve maternal and child health (MCH).

**How:** By encouraging couples to follow 3 main FP messages:

- ▮ Plan to have children between maternal ages of 18 & 35 years.
- ▮ Space pregnancies by at least 2 years.
- ▮ Advise to have a family size of 3 children or less.

**Talk:** to men and women about FP, and help each couple to choose the best method for them.

**Reversible methods:**

1. Combined Oral Contraceptive Pill (Microgynon® or Marvelon®- COC).
2. Progesterone only Pill (Microlut® - POP).
3. Long acting Progesterone injection (Medroxyprogesterone – Depo-Provera® or ‘DEPOT’; Norethisterone Depot - Noristerat®). Implants may be introduced by UNFPA in the future.
4. Intrauterine contraceptive device (IUCD, Loop, Coil).
5. Condom, male and female
6. Natural Methods.

**Irreversible methods:** (used when family completed or sometimes for medical reasons e.g. cardiac disease:

1. Sterilization
2. Tubal ligation.
3. Vasectomy.

 No method is 100% effective.

 If a woman misses 2 periods, check for pregnancy.

**Family Planning Visits:**

1. At First visit:
  - a) Follow Family Planning Record to conduct first examination
  - b) Exclude risk factors and discuss options for woman or couple to decide
  - c) Male nurses can refer woman to female nurse for initial examination if required
  - d) This visit is a good opportunity to show woman or couple how to use condoms even if they do not choose this method
2. Follow-up visit:
  - a) Discuss problems and assist if possible
  - b) Check if following instructions, e.g. taking pill regularly, understands condom use etc.
  - c) Change method if required.
  - d) Measure BP and weight.
  - ▮ The family planning visit is ideal for well women’s check, education about breast examination and sexually transmitted infections.
  - ▮ All men and women should be educated about condoms and how to apply them!

**Combined Oral Contraceptive Pill - Microgynon®; Marvelon®**

(COC) = oestrogen + progesterone

1. Stops ovulation and thickens cervical mucus
2. Periods are regular and often lighter and shorter too.

Effectiveness:

1. Excellent if taken regularly.
2. NB: reduced effectiveness with some antibiotics and with diarrhoea and vomiting, some common drugs used for epilepsy and TB for example can reduce effectiveness.

How to take:

1. Take first hormone pill on first day of menstrual cycle.
2. One pill must be taken AT ABOUT THE SAME TIME every day.
3. After the 21 hormone pills, the inactive pills are taken for the next 7 days.
4. Then a new packet of pills started.
5. What to do for missed pills:

If forgotten at the usual time and remembered < 12 hours later:

- take the pill as soon as woman remembers and should still be contraceptively safe.

If it is more than 12 hours after the due time:

take the pill as soon as the woman remembers but use other precautions as well for the next 7 days.

If these 7 days run beyond the end of the packet, start the next packet at once. That is, do not have a 7 day break or take the inactive pills.

- ☺ This will mean that the woman probably will not have a period until the end of two packets, but this will not matter. Nor does it matter if they do bleed.

- ☺ If the woman takes a pill late, or forgets to take a pill altogether, she may start to bleed the next day. This is of no significance - continue pills as above.

Not suitable for women if:

- 🚫 High BP, heart disease, diabetes, jaundice
- 🚫 Women who smoke and are overweight (>90kgs) and over 35 years of age
- 🚫 Women who are unreliable at taking medication
- 🚫 In the first 9 months of breastfeeding (relative contraindication)

Reversibility:

On stopping pill pregnancy should occur within six months with normal sexual relations.

Progesterone Only Pill - Microlut®

(POP) = The breastfeeding pill.

1. Thickens cervical mucus and sometimes can stop ovulation.
2. Does not interfere with milk production. It can be used for older women as well.

Effectiveness:

1. Not as good as COC.
2. More effective if breastfeeding.
3. More effective in older women.

Problems:

1. Irregular bleeding can occur at any time.
2. Women may feel nauseated at first – this usually goes away.
3. It must be taken strictly at the same time every day.

How to take:

1. The best time to start is at the 6-week postnatal visit.
2. Can give at the time on discharge after delivery.
3. Do NOT wait for the first period before starting.
4. 1 pill AT THE SAME TIME every day. All pills are the same.
5. The pill works best after 3 hours taking it and up to 3 hours before the next pill. It is therefore more effective to take in the morning if women usually have sex at night. Taking the pill at night just before sex will lower the efficacy.

6. After 9 months consider changing to a different contraceptive method– can change to ‘Depot’ or COC or implant.

7. What to do for missed pills:

If the woman misses a pill by more than 3 hours from your normal time of pill-taking

Take the pill they have missed and use additional contraceptive precautions eg condoms or abstain for the following 48 hours.

Likewise, if you have diarrhoea and/or vomiting, the pill may not get absorbed, and additional precautions should be used in the same way.

Not suitable for women if:

1. Concerned about irregular vaginal bleeding.
2. Poor compliance with taking medication.

Reversibility:

On stopping pill pregnancy should occur within six months with normal sexual activity.

Long Acting Progesterone

(“Depot” = Injections and implants)

1. These consist of a progesterone hormone only and work very much like contraceptive pills to stop ovulation.
2. They can be used during breastfeeding.
3. Suitable for women taking medication for epilepsy, TB etc.
4. Maybe suitable for women with cardiac disease etc.
  - Injections: Depo-provera® lasts 3 months.
  - Noristerat® lasts 2 months.

Effectiveness:

Very effective

Common problems:

1. Irregular bleeding – consult midwife re this as it can be helped
2. Amenorrhoea (usually after 6-12 months).
3. Some women may feel nausea – this will usually go away – if women tolerated POP they will probably have less problems
4. Small increase in weight.

Reversibility:

Possible delayed return (up to 12 months) to fertility after stopping injections.

There is no evidence to say that these products stop fertility.

How to take:

1. Enquire at provincial hospitals about implants if they become available.
2. If a woman has an implant that needs removing contact O&G medical staff – they are difficult to remove but easy to insert.
3. Depo provera® is given by deep IM injection every three months. Noristerat® every two months.
4. Implants are best put in during a woman’s period.
5. If women are on chronic medication check with medical officer as ‘Depot’ may need to be given more frequently.

Remind woman when next injection due – use a date that can be remembered e.g. Easter, start of school term etc. It is better to be a week or so early than late.

Intrauterine Contraceptive Device

= IUCD, Loop, Coil

Depending on the type of device, it can remain in the uterus for up to 10 years.

Effectiveness:

1. A little less than injectables.
2. Suitable for women taking medication for epilepsy, TB etc.
3. Usually not suitable for women with suppressed immunity e.g. long term steroids etc

#### Common problems:

1. Can have heavier periods and cramping but usually settle in 2-3 months
2. Increase in PID if > 1 partner
3. Increase chance of ectopic pregnancy
4. Perforation of uterus on insertion – especially if inexperienced practitioner
5. Not suitable for women with: heavy painful periods, anaemia, no previous pregnancies, Pelvic Inflammatory Disease (PID), previous ectopic pregnancy, abnormal uterus
6. Other problems are cramping and expulsion but these are less common in women who have had a full term pregnancy.

#### How to manage problems:

- Counsel women about heavier periods and cramping – monitor for anaemia.
- Remove IUD and commence treatment if signs and symptoms of PID – see STI section of manual.
- Suspected perforated uterus needs urgent referral to hospital.
- Suspected ectopic pregnancy requires urgent referral to hospital – see Abdominal Pain section of manual.
- Teach women to check for string regularly.
- 

#### How to use:

1. Available from health facilities with staff trained in insertion
2. Ideally inserted 6 weeks postnatally or during menstruation (sik mun).
3. If the IUD needs removal you should contact trained staff for instructions

#### Reversibility:

Pregnancy should occur within six months of removal.

#### Condoms (Female and Male)

1. Are useful when sexual intercourse is infrequent or unplanned.
2. Are useful in preventing STI's including HIV when used correctly. This is part of "SAFE SEX".

#### Effectiveness:

1. Variable, depends if it is used correctly.
2. Condoms may break.

#### Problems:

1. Some women are allergic to the Latex that condoms are made of.
2. Some men find them uncomfortable – encourage to try different brands.
3. A water based lubricant (similar to gels used for medical examinations) may help use and decrease breaking. DO NOT USE Vaseline, coconut oil etc.

#### How to use:

- ☺ You must show every "new user" EXACTLY how to use a condom – it is a good idea to demonstrate to men and women how to use even if they do not choose this method – it is a good life skill to have.
- ☺ Women need to ensure there is no spillage on removal and remove as soon as possible after sexual intercourse.

#### Natural methods

1. Withdrawal:
  - a) Depends on the motivation of the man.

- b) Generally has a high failure rate.
2. Breastfeeding:
    - a) Gives some contraceptive cover for 6 months after childbirth.
    - b) Other methods of contraception should be used when breast feeding.
  3. Ovulation Method (Billings' rhythm or calendar method):
    - a) Relies on avoiding sexual intercourse around ovulation time.
    - b) Requires full understanding and cooperation by both husband and wife.

#### Sterilization

1. You must explain that the operation:
  - a) Is permanent.
  - b) Will not cause body weakness.
  - c) Will not affect sexual intercourse.
2. Tubal ligation – for women
  - a) A simple operation, usually under general anaesthetic.
  - b) A short stay in hospital.
  - c) It is effective immediately.
  - d) Will not affect periods.
3. Vasectomy – for men
  - a) A simple operation, under local anaesthetic.
  - b) NO stay in hospital, can be performed in health centres with trained personnel.
  - c) It is not effective for about 3 months, so another method is needed until then.
  - d) It does not affect erection, ejaculation or sexual performance.

Emergency Contraception – Levonorgestrel (NorLevo® 1.5mg; Postinor® 750mcg; Microlut® 30mcg)  
 ie 1xNorLevo1.5mg = 2xPostinor 750mcg=50xMicrolut 30mcg so total dose is 1500mcg or 1.5mg

1. What is it?
  - a) Methods used by women after intercourse to prevent pregnancy.
  - b) Not to be used as regular contraception but only when there is unprotected intercourse and pregnancy is not desired e.g. sexual assault.
  - c) The standard regimen is referred to as “Emergency Contraception Pills or ECPs” that is more effective if taken 1-3 days after intercourse but can be administered up to five days.
  - d) IUD insertion can also be used up to five days post intercourse.

#### 2. Effectiveness:

The ECP regime is up to 90% effective in preventing a pregnancy according to a study conducted by WHO. The earlier it is used after unprotected sex the more effective it is.

#### 3. How to use ECPs:

- a) First you must make sure the woman is not pregnant.
- There are three forms of the same medicine that can be used to deliver the dose of levonorgestrel required – this regime may cause nausea but less than the method that uses COC,
- 1500mcg levonorgestrel (1x NorLevo 1.5mg or 2 x Postinor 750mcg or Microlut 50 tablets) plus metoclopramide (maxolon® 10mg) for nausea
  - This dose does not need to be repeated
  - If the woman vomits the tablets within 2 hours of taking then repeat

OR

- 750mcg levonorgestrel (1 x Postinor 750mcg) or Microlut 25 tablets plus metoclopramide (maxolon®) 10mg for nausea
- Repeat these same doses after 12 hours
- If the woman vomits the tablets within 2 hours of taking then repeat

- b) Common side effects include nausea, vomiting, diarrhoea, lower abdominal pain, headache and dizziness
- c) The woman should expect a period within the following week as the pills change the menstrual cycle's times
- d) The woman should return and see you after three weeks to either check for pregnancy and or commence on regular contraception if required.
- e) When emergency contraception is used post sexual assault then prophylactic STI treatments should be given.

**4. IUD Method:**

- a) An alternative to above method is to insert a copper IUCD within 5 days of the act of sexual intercourse.
- b) This is a very effective method of prevention with a less than 1% failure rate of contraception.
- c) Suitable for all women UNLESS she is already pregnant.
- d) More suitable for women considering maintaining the IUD as a longer term contraceptive method.

## FEVER

Fever is a symptom or sign, not a disease. It is the body's response to a variety of situations, usually infections and it may be beneficial rather than harmful. A fever does not necessarily require any treatment at all – many viral infections eg common colds are self-limiting and antibiotics are not effective against viruses.

### 1. Common causes of acute fever are:

Malaria	Leptospirosis
Otitis Media	Dengue
Urinary Tract Infection	Pelvic Inflammatory Disease
Meningitis	Diarrhoea
Pneumonia	Typhoid
Acute Respiratory Infection	Inflammatory diseases, e.g. lupus
Abscesses	Rarely some cancers eg lymphomas, liver cancer

### 2. What to do:

- a) Take a history and examine to find the cause of fever.
- b) Duration of fever is the most important factor – fever less than 3 days is most likely due to malaria, acute viral or bacterial infections. Longer than 3 days, probably bacterial infection (in body cavity or internal organ), malaria, dengue or leptospirosis. Fever more than a week could be due to typhoid. Longstanding fever eg weeks to months is less common but may be due to TB, endocarditis, lupus or a malignancy.
- c) Treat the cause as well as the fever.

### 3. Treatment:

- a) Assess if fever requires treatment –see above.
- b) Treat the cause of the fever.
- c) Do not give antibiotics for fever without a known cause, except if leptospirosis suspected.
- d) Give extra fluids.
- e) If temperature over 38.5C
  - Consider giving Paracetamol in appropriate doses, rectally if unable to swallow.

Do not use aspirin in children less than 16 years old

In malarial areas, any patient with fever of 37.5C or higher, test for using an RDT and treat according to the Malaria Guidelines with:

–Artemether/Lumefantrine (Coartem®) (see package for doses appropriate for age and weight) or Artesunate suppositories or injectable if unable to swallow.

If malaria testing is not available and there is no other clear cause of the fever, treat for malaria according to the Guidelines.

If fever >38C and the child is also very sick (not eating, drinking) you should:

Start Chloramphenicol and artesunate injection at the appropriate dose.

You may consider Typhoid or Leptospirosis– see these sections in this manual.

### 4. When to Refer:

- a) If they have severe malaria.
- b) They have severe signs and symptoms eg. pneumonia, unconscious, jaundice, convulsions.
- c) Fever has been present for longer than 3 days and there is no clear cause of the fever eg boil.
- d) Fever suggests a chronic infection eg endocarditis, TB.
- e) There are other significant symptoms eg weight loss.
- f) The patient does not respond to your initial treatment.

## **FILARIASIS**

### **1. What is it?**

- a) Filariasis or “big leg” is caused by a chronic infection with an organism (filaria) that is transmitted by mosquitoes.
- b) The body’s immune response to this filarial worm causes inflammation and scarring in the lymphatic channels, which obstructs lymph flow resulting in swelling in the tissues (lymphoedema or hydrocele – swelling of scrotum).

### **2. What are we doing for it?**

- a) In 2000, a program to eliminate filariasis from the Pacific region began. Annual doses of albendazole and diethethylcarbamazine (DEC) were distributed in a mass drug administration (MDA) campaign throughout Vanuatu.
- b) Prevalence surveys have shown a significant drop in microfilaria positive individuals.
- c) In 2012 there were only a few remaining cases and it is hoped Vanuatu can be considered Filariasis free by 2014.
- d) Even after elimination level is achieved, occasional cases can appear including possible importation from other countries. Any suspected new case will need to be referred to a medical officer for investigation and treatment with albendazole and DEC.

### **3. What should be done to patients who have “big leg”?:**

- a) Ensure the patient is referred to the relevant MoH department and medical officer for assessment if not already registered.
- b) They need lifelong care but this can be managed at home.
- c) Daily cleaning of the affected limb with soap and water will help to prevent further aggravation. Elevation of the limb will also help to reduce its swelling.
- d) Antibiotics may be required if there is secondary infection of the affected limb.

### **4. What should be done to patients with big scrotum?**

- a) Refer to medical officer for opinion as it is operable and curable.

# FISH POISONING

Develops less than 6 hours after eating affected fish.

	<b>Scombroid</b> Is due to histamine accumulation due to bacterial decomposition	<b>Ciguatera</b> Is due to a toxin ingested by fish Odourless and tasteless and not inactivated by heat (cooking)
1. Type of fish	Almost any type	Usually reef fish
2. Time of catch	Often a delay between catch and eating. Fish may smell.	Not relevant
3. Initial symptoms	Dizziness, nausea, headache, flushing. Sudden onset of vomiting and diarrhoea. Often severe abdo pain with cramps. Lasts less than 24 hours.	Sudden onset of vomiting and diarrhoea. Abdo pain may be severe. Lasts about 24 hours.
4. Hypotension	BP may be very low	No
5. Sensory symptoms	Tingling of mouth/pepper taste is common. NO tingling of hands or feet.	Tingling and numbness of lips, hands and feet. Headache, muscle aches, dizziness and hallucinations in severe cases.
6. Itch and rash	Itchy rash on trunk in 50%.	Sometimes itch. NO rash
7. Breathing problems	Wheeze in 30% and more common or worse in asthmatic patients	NO wheeze. May have shallow rapid breathing.
8. Treatment  For children's drug doses see table at end of manual	<ul style="list-style-type: none"> <li>➤ Promethazine (Phenergan) 12.5mg IV/IM or oral therapy</li> <li>chlorpheniramine</li> <li>➤ Fluid replacement</li> <li>➤ if available use Atropine 0.5mg to 1.2mg IV STAT if pulse &lt;50 per minute with hypotension – can repeat after 15 mins</li> </ul>	<ul style="list-style-type: none"> <li>➤ No effective treatment or antidote.</li> <li>➤ Fluid replacement.</li> <li>➤ If sensory symptoms are severe or there are breathing problems, refer immediately.</li> <li>➤ Can give chlorpheniramine orally if patient complains of itchiness.</li> </ul>
9. Prevention of recurrences	Clean fish immediately after catching and eat as soon as possible. Refrigerate after catching if possible.	Symptoms can last months/years and repeat attacks are common. Patients must not eat fish of any type (including 'tin fish') for 6 months.

## FOOD POISONING

-  Refer Nausea and Vomiting chapter for more information.
-  Refer Diarrhoea chapter for more information on treatment and dehydration.

1. May be caused by bacteria or their toxins found in improperly prepared, poorly stored or inadequately cooked food.
2. The symptoms may be simple nausea, vomiting and diarrhoea or a combination of these in a severe form.

### What to do:

1. Do not give antibiotics
2. Prevent dehydration
  - ⇒ ORS in adequate dosage is preferred treatment to maintain urine output or IV Normal Saline or Hartmanns if not tolerating any oral fluids.
  - ⇒ Patient may benefit from metoclopramide (Maxolon) 10mg oral or IM/IV 4-6 hourly for severe nausea and vomiting.
  - ⇒ Patient may benefit from hyoscine butylbromide (Buscopan) 20mg oral or IM/slow IV 6-8 hourly for severe cramping
  - ⇒ Zinc sulphate dispersible tablets may be useful in children 5yrs and under with diarrhoea – refer chapter on 'Diarrhoea'.
3. Refer patient if symptoms do not resolve in 24-48hours or significant dehydration occurs. Refer if there is blood in the bowel motions.

 Do not use Buscopan and Maxolon in children.

 Check for possible causes of food poisoning eg not washing hands before food preparation and eating, poor storage of food eg in sun or flies around, not enough cooking of food eg raw meat etc. to ensure it does not happen again.

## FOREIGN BODIES

Young children commonly explore parts of their bodies by putting things into them.

These parts most commonly include the nose, the ear and the mouth (and after swallowing, to the gut).

### 1. Principles of Assessment and Removal of Foreign Bodies:

- a) Take a careful history.
- b) Look gently and carefully, being careful not to further penetrate the body with the object
- c) If the object has been swallowed and XR equipment is available, get an x-ray to check positioning, especially if batteries. Batteries are corrosive and must be retrieved, unlike coins.
- d) Calm the child before attempting any removal.
- e) Diazepam as an ampoule for IV injection or used rectally should be on hand.

### 2. Nostril Foreign Bodies:

- Once it is determined which nostril is affected, gently press the other nostril closed and have the person blow gently through the affected nostril. Avoid blowing the nose too hard or repeatedly.
- With an infant it is sometimes possible to have the parent blow a sharp puff into the baby's mouth while holding the opposite nostril closed to blow the object out of the nose.
- Ideally if the above do not work you must refer to a hospital for possible removal by general anaesthetic.
- If two nurses are present you could try the following but be careful you do not push the foreign body in further:
  - ⇒ ☐ Assure the child is calm and can be held down quietly without resistance – a small amount of Diazepam PR can be given if required.
  - ⇒ ☐ Lubricate a 8-10 gauge indwelling catheter and insert it gently into the affected nostril until you meet resistance of the foreign body.
  - ⇒ ☐ Gently move catheter past the foreign body.
  - ⇒ ☐ Inflate the balloon with no more than 5mL of air.
  - ⇒ ☐ Slowly withdraw the indwelling catheter.
  - ⇒ ☐ Examine the nares after removal to check for abrasion, bleeding or other complications.

### 3. Foreign Bodies in the Ear:

- a) Can usually be syringed out with warm water – wood, seeds etc cannot be removed this way.
- b) If insects, drown first with cooking oil, then syringe out with water
- c) Hard wax can be softened first with cooking oil for 2-3 days, then syringed out
- d) DO NOT syringe an ear with a hole in the drum, except if there is large amount of pus or insects
- e) NEVER use forceps to remove foreign body from the ear
- f) If in doubt, or you cannot syringe out the foreign body, REFER to the hospital

### 4. Foreign Bodies in the Eye:

See section on “Eye Disorders” in this guide.

# HEADACHE

Headache is a common symptom that usually does not have a serious cause and can be treated symptomatically. Sometimes however it has a serious cause that requires urgent treatment eg meningitis so it is important to be able to recognize the danger signs that suggest the headache is serious.

## Causes

Many causes, including:

- Dehydration – not enough fluid intake in a hot climate or from excess alcohol consumption
- Neck and muscle tension (tension headache) – most common
- Sinus infections usually associated with local tenderness over the infected sinus
- Migraine which is often associated with aura and photophobia and results in vomiting
- Systemic infections – headache is often a feature of malaria, viral respiratory infections, influenza and also infections such as pyelonephritis
- Eye strain if the patient requires glasses
- Hypertension can sometimes cause occipital headaches but the majority of patients with hypertension do not have headache as a symptom
- Raised intracranial pressure from tumours, cerebral abscess or haemorrhage
- Meningitis or encephalitis

## Assessment

Key features to be assessed:

- ⇒ Is the headache a new symptom or has it been present (either constantly or intermittently) for a long time? A longstanding headache is much less likely to have a serious cause than a recent onset headache.
- ⇒ Are there any neurological signs or symptoms present eg weakness of one side of the body?
- ⇒ Are there any other associated signs or symptoms eg fever (suggests infection eg malaria), nasal symptoms (suggests sinusitis)?
- ⇒ Is there any nausea and vomiting? This combination may suggest raised intracranial pressure.
- ⇒ Is there any neck stiffness? This combination suggests meningitis or subarachnoid haemorrhage.
- ⇒ Is there a reduction in conscious state? If so, raised intracranial pressure is likely.
- ⇒ Does the patient have any significant past history? Recent onset fitting may indicate a tumour.

## Danger features

- 🔔 Sudden or recent onset of severe headache, particularly in older patients
- 🔔 Presence of any neurological signs or symptoms
- 🔔 Fever
- 🔔 Associated nausea and vomiting
- 🔔 Neck stiffness
- 🔔 Reduced conscious state (drowsiness)
- 🔔 Past history of hypertension or epilepsy

## Management

If no danger signs or symptoms:

- ⇒ Adults - Paracetamol 1000mg (2x500mg) every four hours (Max 8 tabs per day) and reassess if the headache does not resolve.
- ⇒ Children – see dose table at back of Manual.
- ⇒ Treat specific causes eg if there are signs of a UTI treat the UTI and monitor the headache.
- ⇒ Instruct the patient to return if the headache does not resolve or worsens.

## When to refer

- All patients with danger signs should be referred.
- Urgency of referral depends on the severity of the patients overall condition and the acuteness of the condition. For example, if a patient has had a headache for three months and over the last month has developed mild weakness of the arm referral should be as quickly as convenient but it is not urgent – a tumour is likely but it is probably stable. However if the headache and arm weakness is of a much more recent onset and the patient is drowsy, has vomiting and neck stiffness then an abscess is likely and urgent referral for antibiotic treatment is required.

**Those not responding to maximal dose of paracetamol should be referred.**

## HEPATITIS (see Jaundice also)

Hepatitis means inflammation of the liver. It has many possible causes but the most common are viruses eg Hepatitis A, Hepatitis B. Other infections such as malaria can cause it as can toxic effects from drugs or alcohol. In Vanuatu, Hepatitis B is the most common cause of hepatitis and although most patients will recover, some patients remain carriers and can transmit the virus to others. Screening of blood donors indicates that more than 25% of the population of Vanuatu are carriers of the Hepatitis B virus. Hepatitis B is spread in the same way as HIV ie direct transmission of the virus from blood, semen or vaginal fluid or via mother to child transmission. Hepatitis B vaccine is now included in the childhood immunization schedule and the prevalence of infection will fall in the future.

### How is Hepatitis B transmitted?

Hepatitis B is spread in the same way as HIV (see below). Unlike HIV, however, there is a vaccine available to prevent infection. Many infants acquiring hepatitis B at birth never become jaundiced. As adults, these people may be unaware they are carriers of the virus and may unknowingly pass the infection on to others through unprotected sexual activity or blood transfusion.

### Acute hepatitis B

🔔 Acute hepatitis B causes an illness with jaundice and malaise onset 2-6 months after becoming infected.

🔔 Treatment is supportive.

🔔 80% of patients who develop acute hepatitis B as an adult will clear the virus naturally during the following year.

### Chronic hepatitis B

🔔 Chronic hepatitis B carriers may develop cirrhosis (gradual scarring of the liver resulting in liver failure) or they may get acute “flares” of hepatitis with jaundice and very high liver function tests (ALT/AST).

🔔 A small percent will develop hepatoma, a cancer of the liver which may present as a mass in the right upper abdomen and usually progresses to death over about 6 months.

🔔 It is important to exclude infective causes for liver masses, e.g. liver abscess or hydatid – which can be checked by referring patients for an ultrasound.

🔔 Treatment:

- d) Supportive only – low fat diet, no alcohol, kava, ensure that patient is not constipated and has bowel motion at least once per day.
- e) Care with drugs as some burden the liver more than others – avoid alcohol and kava, take care with paracetamol i.e. tell patient to take only if really necessary and do not exceed 6 tablets per day in adults – check with medical officer or pharmacist if you are unsure about a drug.
- f) Permanent contraception should be considered as COC and pregnancy are contraindicated
- g) Some Kastom medicine that is swallowed most likely is metabolised through the liver so care should be taken and if possible it should be avoided.
- h) Patient may develop easy bleeding or bruising – **refer** to medical officer for advice.

## HEPATITIS A

Hepatitis A is a virus transmitted by oral-faecal transfer – it often manifests following floods or storms from contact with contaminated water. It also affects the liver and supportive care is the only treatment.

This condition is not chronic and patients usually recover after a number of weeks.

# HIV/AIDS

- 📁 Refer to The Oceania Society for Sexual Health and HIV Medicine (OSSHHM) Guidelines available on Internet – [www.spc.int/hiv/osshhm](http://www.spc.int/hiv/osshhm) for the latest version of treatment guidelines for HIV/AIDS
- 📁 Refer to Operational guidelines for VCCT Centres in Vanuatu 2012-2016.

## What is it?

1. The Human Immunodeficiency Virus (HIV) is a virus.
2. Many people infected with HIV stay well for a long time and don't know they are infected. During this time they can pass the virus to other people.
3. HIV will eventually destroy the body's ability to fight infection.

## How does the virus spread?

1. HIV is spread when blood, semen, or vaginal secretions of an infected person (or carrier) come in contact with the blood or mucous membranes of a healthy person.

### 2. Virus is spread by

- Sexual intercourse of hetero and homosexuals
- Contaminated needles and syringes
- Transfusion of infected blood
- Infected mother to unborn child

### 3. Virus is NOT SPREAD by

- Shaking hands
- Playing together
- Eating together
- Food or water
- Insects
- Toilet seats

4. About 2-6 weeks after HIV enters the body the patient may get a self limiting flu like illness. Apart from this, they do not feel unwell until the virus has destroyed so many white cells that the body no longer fights infections well and symptoms develop:

## Infections and illnesses associated with HIV:

- Oral thrush
- Herpes simplex infections
- Shingles
- Chronic diarrhoea
- Swollen lymph nodes lasting 3 or more months
- Night Sweats and/or recurrent fevers
- Chronic weight loss
- Low White Blood count
- Pneumonia (*Pneumocystis Carinii*)
- Skin Infections and Cancer (Kaposi's sarcoma)
- Tuberculosis

## How to prevent the spread of HIV:

- ☺ Promote sex education and safe sexual practices
- ☺ For sexually active adults promote the use of condoms
- ☺ Early diagnosis in persons suspected of having the illness.

☹️ There is no vaccine; therefore a person must know how to protect him or herself

**Treatment:**

- **All suspected cases require referral to specialist medical staff.**
- There is treatment to prevent transmission from mother to newborn (using the PMTCT program) and to suppress the virus thereby reducing the effect of the virus on the immune system.
- Treatment is life-long.
- Treatment should only be prescribed for HIV by health professionals familiar with the use of anti-retroviral drugs, to prevent development of resistance.
- There are no proven successful herbal cures available for HIV/AIDS.

**Check:**

Consider this condition if a person continues to present with recurrent symptoms listed above. Refer them to provincial hospital for testing.

# HYPERTENSION

## Definitions:

1. A normal adult BP is less than 140/90.
2. Hypertension means the BP is 160/95 or more on 3 different occasions.
3. BPs between these levels indicate borderline hypertension.
4. In pregnancy, the BP should be no more than 120/85.
5. In diabetics, the BP should be <120/80.

## Causes:

1. In most cases, no cause is found.
2. Sometimes hypertension is caused by kidney disease or pregnancy (pre-eclampsia).
3. There is a hereditary component to hypertension so if parents had high BP then risk is higher.
4. Diabetes, smoking, high salt and high fat diet increase the risk of high BP and Cardiovascular Disease (CVD) complications.

## Clinical features:

1. Most people with hypertension feel well; they do not have symptoms.
2. A person with high BP may NOT complain of headaches, dizziness or tiredness.

## Complications:

Severe or untreated hypertension may cause:

1. Stroke
  2. Heart failure
  3. Kidney failure
- ☺ The aim of treatment is to lower the BP to as normal as possible and to prevent complications.
- ☺ In most cases hypertension cannot be cured, only controlled.
- ☺ Once treatment has started, it is taken for life. This must be emphasized to the patient.

## Diagnosis:

1. One high BP reading does NOT mean hypertension.
2. If you find a patient's BP is high (see definition above), follow the instructions below.

## Mild hypertension

- Diastolic BP is 90-100 **OR**
- Systolic BP is 140-160

## What you need to do: Advise on healthy lifestyle – see 'NCD Protocol - Health Education and Counselling on Healthy Behaviours' and educate on the following:

- Low salt diet. Salt causes fluid retention and increases blood pressure. Salt is in 'vetsin', soy sauce and flavour sachets of noodles as well as plain salt.
- Recommend 'aelan kakae nomo'.
- Stop alcohol and smoking.
- Check for diabetes and treat if present by controlling blood sugar levels.
- Weight loss if overweight or obese. Regular exercise for 30mins of moderate physical activity at least 5 times a week.
- Tell the patient that regular BP monitoring is important.
- Give the patient a pamphlet on hypertension to keep AFTER you have explained hypertension and its complications to them.
- If BP rises after 3 months despite above lifestyle changes, you may need to consider drug treatment.
- In mild hypertension with no other complications (eg, diabetes), educate on life style changes and maintain these.

## Moderate and severe hypertension

- Diastolic BP >100 **OR**
- Systolic BP >160

### What you need to do:

- **Educate patient on diet and exercise, stop smoking and reduce alcohol.**
- **Refer** to medical officer or specialist NCD nurse practitioner for drug treatment IF BP stays up after diet and exercise.

### Medication – Start with ONE drug:

- ☺ People with hypertension usually feel well and may not want to take tablets or forget to take them.
- ☺ It is easier to take medicine if there are only a few tablets and they are taken only once or twice each day.
- ☺ Your aim is a diastolic BP of 90 or less
- ☺ If the BP is not controlled, check carefully that the patient is taking the drug and is complying with healthy lifestyle changes. If BP is not controlled with medication + lifestyle change, **refer the patient for addition of a second drug.**
- ☺ Continue low salt diet, regular exercise and healthy lifestyle even if drug treatment is required.
- ☺ Hypertension treatment usually uses an 'add-in' approach rather than using high doses of one agent that can cause side effects. Each agent works on a different part of the blood pressure control system so using more than one drug is common practice. Lower doses reduce side effects. Lifestyle changes **MUST** be maintained to ensure best benefit from drugs.

### Drug treatment options:

#### First line treatment of uncomplicated hypertension:

- Commence on **hydrochlorothiazide** 6.25mg-12.5mg daily in the morning.
- This dose can be increased to 25mg maximum each morning. Higher doses do not reduce BP further but they do increase side effects.
- **Do not use if patient has diabetes, gout or poor renal function.**
- *Hydrochlorothiazide is the cheapest agent on the EDL for treatment of hypertension (124Vt pa in 2012) and this should be considered when therapy is for life so costs can be kept to a minimum. Price is not the only reason for choice of therapy but should be considered when there are two suitable equivalent options.*
- If poor control after 4 weeks – **refer for addition of a second drug.**

#### Diabetic patients with hypertension:

- Most diabetic patients with hypertension are likely to have other medical problems so they should be referred to a hospital for a thorough medical assessment.
- Hydrochlorothiazide can cause a small increase in blood glucose, so it is often not first line therapy.
- **Enalapril** is a first choice in diabetics as it reduces renal protein loss. (see notes in box below about Enalapril use)

- At hospital:
- Check baseline renal function (creatinine) – if normal commence enalapril 5mg daily (give 2.5mg if old and frail) and this can be increased to 10mg BD slowly over at least one week. Specialist physicians should only increase dose further. *Enalapril costs at 10mg bd are 1500Vt pa based on 2012 prices.*
- Patients commenced on enalapril need a repeat renal function after 1-2 weeks of treatment and if increased creatinine the enalapril should be ceased and the specialist physician consulted.
- Renal function should be monitored 6 monthly.
- If poor control after 4 weeks at maximal dose then **refer for addition of a second drug** Consider addition of Nifedipine 20 mg daily – 40mg BD – slow release tablets swallowed whole. *Nifedipine 20mg daily costs 1175Vt pa/ 40mg bd 4700Vt pa based on 2012 prices.*
- If still poor control, then: Continue BP therapy and refer to a hospital for further investigation and medication.

### Patients with gout and hypertension:

 Hydrochlorothiazide can increase uric acid levels and result in gout attacks.

- Commence on **enalapril** as above.
- If poor control after 4 weeks maximal dose then **refer for addition of a second drug**
- Consider addition of Nifedipine 20mg daily up to 40mg bd under medical advice.
- If still poor control, then: Continue BP therapy and **refer** to a hospital for further investigation and medication.

### Asthma patients with hypertension:

 Atenolol can make asthma worse, so avoid its use in asthmatic patients.

- **Hydrochlorothiazide** therapy is first line provided there are no other contraindications.
- If uncontrolled **refer for addition of a second drug**
- Consider adding in **Enalapril** as above or **Nifedipine** 20mg Slow Release (SR) daily – BD
- If poor control after 4 weeks maximal dose add in alternative
- If still poor control, then: Continue BP therapy and **refer** to a hospital for further investigation and medication.

### Pregnant patients with hypertension:

- See “Obstetrics” section of this manual.
- If no signs of pre eclampsia, can be commenced on **Methyldopa** (Aldomet) 250mg – 500mg BD (*Price 4350 Vt pa at 500mg bd based on 2012 prices*) and referred for medical officer assessment and management.
- If signs of pre eclampsia (see “Obstetrics” section of this guide), Methyldopa can still be administered for mild pre eclampsia but Nifedipine (chewed to break SR coating) or Hydrallazine injection is recommended for severe pre eclampsia.

### Heart Failure patients with hypertension:

- Close monitoring of these patients when commencing enalapril is required as they are more prone to sudden hypotension.
- **Enalapril** is the first line treatment as it does improve heart function (see notes in box below about Enalapril use).
-

If poor control after 2-4 weeks, under medical supervision then:

- Add in GTN patch especially for patients with angina.
- Consider addition of low dose Atenolol 12.5mg daily if stable heart failure. Increase dose slowly.
- If still poor control, then: **Refer** to specialist physician.

### Ischaemic Heart Disease (Angina) patients with hypertension:

- These patients will benefit from the heart rate reducing effects of atenolol and the vasodilatory effects of nifedipine. Atenolol is useful for patients who have had a heart attack or those with atrial fibrillation.
- **Atenolol** commencing at 25mg daily to 100mg daily (*Atenolol costs 5500Vt pa at this dose at 2012 prices*) then add in **Nifedipine** 20mg daily – 40mg bd if inadequate control.
- Further BP reduction may occur with GTN patches (on for 12 hours, off for 12 hours) which will provide relief from angina also.

### Kidney failure patients with hypertension:

Refer to physician for management.

### About antihypertensive Drugs

<p><i>Hydrochlorothiazide 25mg tablets. (Esidrex®)</i></p> <p>🔔 The dose has now changed and 12.5mg is found to be as good as 25-50mg. The higher doses cause more side effects with no added benefit to BP control.</p>	<p>Dose 12.5-25mg each morning.</p> <p>🔔 May cause gout or worsen diabetes.</p> <p>🔔 May cause low potassium requiring Slow K replacement.</p> <p>☒ Avoid in pregnancy.</p> <p>☒ Does not work in kidney failure.</p>
<p><i>Atenolol 50mg tablets.</i></p> <p>Not first line treatment for uncomplicated hypertension.</p>	<p>Dose 25-100mg daily.</p> <p>🔔 Avoid in patients with poor circulation to peripheries (peripheral vascular disease)</p> <p>🔔 Effective dose slows heart rate to 60.</p> <p>☒ Do not use in patients with asthma or heart block.</p> <p>☑ OK to use in diabetes but may mask signs of hypoglycaemia.</p>
<p><i>Enalapril 5mg/ 10mg tablets.</i></p>	<p>Dose: 5mg daily to 20mg BD</p> <p>🔔 May cause dry cough or kidney problems.</p> <p>🔔 Patient's renal function needs monitoring.</p> <p>🔔 First dose can cause significant drop in BP – take at bedtime.</p> <p>🔔 Retains potassium in body so avoid taking with Slow K.</p> <p>🔔 Dose is usually built up over one to two weeks.</p> <p>☒ Contraindicated (definitely avoid) in pregnancy.</p>

<i>Nifedipine 20mg SLOW RELEASE tablet.</i>	Dose: 20mg daily-40mg BD  May produce peripheral oedema and tachycardia.  Do not crush or chew tablet as the tablet is then no longer “slow release”. Crushing will help reduce BP quickly in eclampsia and control premature labour.
<i>Glyceryl Trinitrate (GTN) 5mg Patches</i>	Dose: 1 –2 patches applied in the morning.  Take the patch off at night to avoid becoming tolerant to the BP lowering effects of the nitrate.  May cause headaches. <input checked="" type="checkbox"/> Useful in heart failure and angina.
<i>Methyldopa 250mg tablets. (Aldomet)</i>	Dose: 250mg BD up to 1g TDS.  Some side effects such as drowsiness and depression. <input checked="" type="checkbox"/> Only use is pregnancy induced hypertension.

As a general rule:

The management of hypertension should start with lifestyle changes before drugs are added.

Even if drugs are commenced, lifestyle changes should continue.

If BP is not controlled after starting medications, always check for compliance and lifestyle changes before increasing the dose or adding a new drug.

# IMMUNISATIONS

Refer Buklet blong Mama Mo Pikinini Vanuatu and VCNE Training Manual on EPI



## VANUATU EXPANDED PROGRAMME ON IMMUNISATION



### GOALS

To protect all infants, children, and child bearing age women and vulnerable group (at risk) from vaccine preventable diseases through the use of appropriate, safe and potent vaccines.

### CHILDHOOD IMMUNISATION SCHEDULE (2011)

AGE	VACCINE	DOSAGE	ROUTE	SITE
Birth	BCG	0.05 ml	Intradermal	Left upper arm
	Hep B 0	0.5 ml	Intramuscular	Upper thigh
6 weeks	OPV 1	2 drops	Oral	Mouth
	Penta 1	0.5 ml	Intramuscular	Upper thigh
10 weeks	OPV 2	2 drops	Oral	Mouth
	Penta 2	0.5 ml	Intramuscular	Upper thigh
14 weeks	OPV 3	2 drops	Oral	Mouth
	Penta 3	0.5 ml	Intramuscular	Upper thigh
12 months	Measles	0.5 ml	Subcutaneous	Upper arm

- \* All infants should be fully immunized by the age of 12 months.
- \* Hep B must be given within 24 hours of birth. If not given at the birth, it should be given as soon as possible.
- \* Pentavalent vaccine includes five kinds of vaccines:  
Diphtheria, Tetanus, Pertussis, Hepatitis B and Haemophilia Influenza Type b.
- \* BCG and Measles vaccines must be discarded after 6 hours of reconstitution or at the end of the session, whichever comes first.

### Primary School Children

Class 1	Td 1	0.5 ml	Intramuscular	Upper arm
	OPV 4	2 drops	Oral	Mouth
Class 6	Td 2	0.5 ml	Intramuscular	Upper arm
	OPV 5	2 drops	Oral	Mouth

- \* Auto-disable (AD) syringes should be used when vaccinating the children and women. Do not recap the needles. Discard used AD syringe in the safety box.
- \* Vaccines must be store at the right temperature (between +2°C and +8°C).
- \* Record the immunizations given on Child Health Card/Book and immunization register book.
- \* Tell the mother when to come back for the next immunization.
- \* At the end of each month, every Health Facility should complete and submit a Monthly Report Form to the Provincial Office.
- \* If you suspect a case of vaccine preventable diseases, health workers should report the case to the EPI Supervisors immediately by phone.
- \* For further clarification of this schedule and other EPI issues, please contact the National EPI Coordinator in the Ministry of Health, Port Vila.  
Telephone: 23288 / 23128



Printed by:

## Preventing Neonatal Tetanus

1. Women must be vaccinated against tetanus to protect their babies during the critical time after birth.
  2. 5 doses of Tetanus Toxoid Vaccine gives complete protection.
  3. Women need at least two vaccinations with the second 4 weeks prior to delivery to give protection for that baby if they have not been immunised before.
  4. Tetanus Toxoid Vaccine can be given during pregnancy, before pregnancy, or between pregnancies.
  5. Pregnant women tetanus vaccination schedule:
    - 1<sup>st</sup> dose: At first Antenatal visit.
    - 2<sup>nd</sup> dose: At least 1 month later.
    - 3<sup>rd</sup> dose: At least 6 months after 2<sup>nd</sup> dose OR subsequent pregnancy
    - 4<sup>th</sup> dose: 1 year after 3<sup>rd</sup>dose OR subsequent pregnancy
    - 5<sup>th</sup> dose: 1 year after 4<sup>th</sup>dose OR subsequent pregnancy
- ☺ Hygienic delivery also helps to prevent neonatal tetanus

## Adult Tetanus Immunization

1. Ideally everyone should be vaccinated against Tetanus.
2. A course of 3 doses gives protection for several years.
3. Booster doses should be given every 10 years.
4. ANY patient with an infected or contaminated wound should have a booster.

## Storage of vaccines:

Penta, DPT, Td, Tetox and HepB ⇒	Must NEVER be frozen - store between +2 to +8°C
Polio, Measles and BCG ⇒	Can be frozen or stored between -0 to -20°C

## Vaccine use tips:

- Always check the expiry date of the vaccine before you use it.
- Always use older stocks of vaccine before using the new stocks.
- If the vaccine has expired DO NOT USE & dispose of as for sharps disposal.
- Reconstituted vaccines should be destroyed after 6 hours.
- Do not keep food and drink in the same ice box with vaccines.

🔔 It is better to open a vial of vaccine for 1 child than to miss the chance to vaccinate.

# JAUNDICE

Jaundice is caused by high levels of bilirubin which is yellow in colour. This can manifest in yellow colouration of the conjunctiva and skin in pale individuals.

## What are the causes of jaundice?

1. PRE-HEPATIC: Haemolysis of red blood cells (various causes eg malaria) or drug causes eg Primaquine; infection esp. septicaemia and pneumonias
2. HEPATIC: Viral hepatitis, Leptospirosis, Drugs including alcohol and kava, herbal medicines, TB drugs, chlorpromazine.
3. POST-HEPATIC: something obstructing the flow of bile eg stones, tumours.

Investigate (if available):

- i) Hb, malaria film or Rapid Diagnostic Test (RDT) for Malaria
- j) Liver function Test
- k) Urine: check for bilirubin, urobilinogen and/or blood, protein
- l) Hepatitis serology (blood test).
- m) Ultrasound abdomen

Treatment:

- Stop any drugs that might cause jaundice including kava.
- Antimalarials if fever and Malaria film/RDT positive
- Treat any infection – (e.g. pneumonia, leptospirosis).
- Suspected chronic viral hepatitis (the patient should not have a fever)
  - ⚠ usually treat as an outpatient.
  - ⚠ plenty fluids.
  - ⚠ avoid alcohol (and or kava) for life.

Refer if:

- There is jaundice PLUS fever.
- The patient is very sick.
- There is abdominal pain – especially if right upper quadrant pain.
- The patient is still jaundiced after 4 weeks.

# JOINT PAIN AND ARTHRITIS

Refer also to Pain Management chapter

1. Many people suffer from painful joints and as a result seek medical treatment.
2. It is necessary to take a very careful history and perform a complete examination to decide if joint pain is due to “overuse” and plain old “wear and tear”, if it is due to an infection, if it is due to metabolic disorders or if it is a symptom of some other disease process.
3. The most important distinction you need to make in an acute, hot inflamed joint is: **IS THE JOINT INFECTED?**  
The only way this can be done is to aspirate fluid out of the joint for microscopic examination and culture. However, this does not mean you perform joint aspiration for every joint swelling. There is a risk that you could introduce infection into the joint. Aspiration should only be done under sterile conditions.
4. Joint infections can progress rapidly and may need to be surgically washed out before the antibiotics get them under control.
5. Severe joint inflammation that is not due to infection may require second line drugs (methotrexate) or steroid injections into the joints. These are only available under specialist treatment in hospital.

Type of Arthritis	Cause	Onset / Pattern	No. of Joints involved	Signs and Symptoms
<b>Traumatic</b>	Injury	Acute	Usually one	Blood in the joint
<ul style="list-style-type: none"> <li>➤ Rest, splint, paracetamol</li> <li>➤ Add Ibuprofen if there are no contraindications such as kidney disease, heart failure or gastric bleeding</li> <li>➤ <b>REFER</b> if ?fracture.</li> </ul>				
<b>Septic</b>	Infection More common in children	Acute	Only one joints involved	Fever. Hot, red, swollen joint
<ul style="list-style-type: none"> <li>➤ REFER.</li> <li>➤ Rest, splint, paracetamol</li> <li>➤ Add Ibuprofen if there are no contraindications such as kidney disease, heart failure or gastric bleeding. Aspirate for MC&amp; S then treat with IV Cloxacillin.</li> </ul>				
<b>Osteoarthritis</b>	Degenerative disease in adults	Chronic	Weight bearing joints	Effusions Crepitus
<ul style="list-style-type: none"> <li>➤ Regular Paracetamol,</li> <li>➤ Add Ibuprofen if there are no contraindications such as kidney disease, heart failure or gastric bleeding.</li> <li>➤ Weight loss if possible.</li> </ul>				
<b>Reactive</b>	May follow GIT/UT infection.	Acute	Multiple large joints	Swelling and pain
<ul style="list-style-type: none"> <li>➤ Rest, splint, paracetamol</li> <li>➤ Add Ibuprofen if there are no contraindications such as kidney disease, heart failure or gastric bleeding.</li> <li>➤ May need steroids and / or second line drugs.</li> </ul>				
<b>Rheumatic Fever</b> (see details following table)	Immune reaction to streptococcal infection Children and young adults	Acute	Single or multiple joints lasting days to months	May have fever, cardiac problems, evidence of strep infection
<ul style="list-style-type: none"> <li>➤ See ARF and RHD chapter– notify RF Co-ordinator in major referral hospital.</li> </ul>				
<b>Reiter’s Syndrome</b>	Immune reaction usually to Chlamydia infection	Acute and Chronic	Commonly knees, ankles, and feet	TRIAD of: Arthritis, Urethritis, Conjunctivitis
<ul style="list-style-type: none"> <li>➤ Stat dose of Azithromycin and Ciprofloxacin (STI Treatment pack) for both patient and sex partner(s). Paracetamol and Ibuprofen for both patient and sex partner.</li> </ul>				

<b>Gout</b>	Urate crystals Male and alcohol drinkers	Acute and Chronic	MTP joints, especially big toe	Joints red, swollen, hot
<ul style="list-style-type: none"> <li>➤ Paracetamol.</li> <li>➤ Ibuprofen if there are no contraindications such as kidney disease, heart failure or gastric bleeding</li> <li>➤ Stop hydrochlorothiazide if taking.</li> <li>➤ Consider Prednisolone 25mg daily in severe cases.</li> <li>➤ REFER if frequent as regular bouts of gout may require allopurinol therapy for prevention.</li> </ul>				
<b>Rheumatoid/ SLE</b>	Immune disorder, mainly in Women	Chronic	Symmetrical, hands and feet	Rheumatoid nodules Ulnar deviation of fingers (RA) Hair loss, cardiac and kidney effects, rash (SLE)
<ul style="list-style-type: none"> <li>➤ Ibuprofen if there are no contraindications such as kidney disease, heart failure or gastric bleeding</li> <li>➤ May need second line drugs such as Prednisolone, Chloroquine, methotrexate.</li> <li>➤ <b>REFER</b></li> </ul>				
<b>TB</b>	TB	Chronic	Usually one joint, the hip or knee	Very difficult diagnosis. Biopsy necessary
<ul style="list-style-type: none"> <li>➤ TB treatment.</li> </ul>				
<b>Gonococcal</b>	Untreated Gonococcal infection	<input checked="" type="checkbox"/> Chronic	One or more joints, migratory	Fever, skin pustules, urethral or vaginal discharge
<ul style="list-style-type: none"> <li>➤ Treat with Azithromycin and Ciprofloxacin (STI treatment pack)</li> </ul>				



**Check for contraindications to the use of Ibuprofen –**



**AVOID** in patients with peptic ulcer, heart failure and renal failure.



Use cautiously in patients with high BP, mild heart failure and diabetes.



**AVOID** if patient is taking BP medicines of hydrochlorothiazide + enalapril as a serious drug interaction can result in kidney damage.

➤ Paracetamol therapy is best given regularly four times a day to reduce pain in arthritis.



When combining paracetamol therapy and ibuprofen space doses two hours apart to provide best pain relief and give ibuprofen with food to reduce gastric side effects eg. 6am Paracetamol - 8am Ibuprofen after food - 11am Paracetamol - 1pm Ibuprofen after food - 4pm Paracetamol - 6pm Ibuprofen after food - 9-10pm Paracetamol.

# KIDNEY DISEASE

Refer also UTI and Pyelonephritis

Try and establish a cause - "Renal failure" is not a diagnosis.

## Acute renal failure

**Definition:** Condition where the kidneys, which normally excrete waste, fail to function almost completely. Fluid and waste rapidly accumulates, and the electrolytes in the body rapidly accumulate.

### What is causing the kidneys to fail?

1. PRE-RENAL: not enough blood getting to the kidneys due to dehydration or shock,
2. RENAL: infection or toxins damaging the kidney
3. POST-RENAL: something obstructing the urine flow e.g. kidney stones, prostate enlargement.

### Signs and Symptoms:

- 🚫 Reduced or no urine output
- 🚫 Dark or bloody urine
- 🚫 Body swelling
- 🚫 Shortness of breath
- 🚫 Confusion

### Treatment:

1. **REFER** urgently
  2. If infection is suspected:
    - Begin antibiotic treatment – do not give Gentamicin. Give Ceftriaxone 1g IV if available or Chloramphenicol IV if not.
  3. If blood loss or dehydration is suspected, treat with IV fluids but be careful not to cause fluid overload or high blood potassium. Always insert an IDC and strictly monitor fluid input and output.
- 🚫 Discourage herbal medicines!

## Chronic renal failure

**Definition:** This is a condition where the kidneys slowly stop functioning, wastes build up in the body and urea accumulates.

### What has caused the kidneys to fail?

Chronic, untreated hypertension and/or diabetes, glomerulonephritis, recurrent UTI, SLE, urinary obstruction.

### Signs and Symptoms:

1. Purpura, itchiness, brown nails
2. Puffy eyes, bipedal oedema
3. Later in the disease the patient may have nausea, anaemia, hypertension, ascites and breathing difficulties

### Treatment:

These patients should have ongoing care with a medical officer.

1. Manage and treat diabetes or hypertension (Note: In End Stage Kidney Disease, BSL falls back to normal. Therefore, you may need to stop any hypoglycaemic medication as you don't want to push the patient into hypoglycaemia. Target BP is <140/85 (<125/75 if diabetic)
2. Treat UTIs
3. Avoid drugs which may further damage the kidneys eg. Ibuprofen and use reduced dosages for drugs with renal clearance.
4. If volume overloaded, salt restrict and may need fluid restriction (1.5L/day) and/or diuretic eg frusemide.

🚫 Discourage oral herbal medicines!

## Glomerulonephritis

**Definition:** An inflammatory condition affecting the glomeruli of the kidney

**Causes:** Most occur after streptococcal throat or skin infections in children.

### Signs and Symptoms:

Patient may be asymptomatic or present with

1. Haematuria (blood in the urine), testing for microalbuminuria is encouraged if available.
2. Proteinuria
3. Renal failure

4. Oedema (puffy eyes)
5. Hypertension
6. Decreased urine output

**Treatment (varies if acute or chronic):**

These patients should be seen by a medical officer.

- Bed rest until haematuria is gone
- Fluid restrictions
- Low salt, but high calorie diet
- Penicillin to eliminate Streptococci
- Keep BP <130/80
- Consider adding Enalapril (Consult medical officer)

**Nephrotic syndrome**

**Definition:** A syndrome with 3 characteristic conditions: proteinuria; hypoproteinaemia and oedema.

**Causes:** Idiopathic, bacterial infections (streptococcal), malaria and other diseases.

**Signs and Symptoms:**

1. Oedema initially around the eyes and face. Later this is generalized.
2. Pleural effusions or ascites can cause shortness of breath.
3. Frequent skin infections and UTIs.

**Treatment:**

These patients need to have ongoing care with a medical officer.

Long-term management as per medical officer instructions only usually includes:

- High protein and low salt diets
- Diuretics e.g. Frusemide
- Steroids
- Antibiotics as needed to treat and/or prevent infection

🔔 Diuretics must be used cautiously since they may dehydrate the patient who already has a low blood volume.

# LEPROSY



Refer Leprosy Control Programme – Manual of Procedures for Health Workers, Vanuatu.

## Definition & Cause:

Leprosy is a chronic disabling disease affecting the skin and nerves. It is caused by a bacterium, *Mycobacterium leprae*, which looks identical to the TB mycobacteria when stained by Ziehl Neelsen stain ie. it is also an Acid Fast Bacilli (AFB). It can be transmitted to others (most probably by airborne transmission) but usually this occurs only in those who have had long term close contact with untreated multi-bacillary cases. Incubation period can be very long, several years on average. Leprosy can be cured and if detected early and treatment taken, most of the deformities can be avoided.

WHO defines a leprosy patient as someone who:

1. Has a skin lesion with a definite loss of sensation AND
2. Has not completed a full course of treatment with MDT (Multi-Drug Treatment).

Think of leprosy if a person presents with:

1. Skin lesions:	2. Nerve damage:
a) pale or reddish/copper-coloured lesions which can be flat or raised.	a) weakness of a limb, particularly hands and feet.
b) lesions do not itch and usually do not hurt.	b) loss of feeling eg in foot can lead to plantar ulcers.
c) there is loss of sensation of these lesions to heat, touch, pain.	c) deformity.
d) loss of eyebrows.	d) thick and/or tender nerve.
e) lesions can appear anywhere.	e) swelling or nodules on the face/earlobes.
	f) eye damage – lagophthalmos, see below.

Early detection:

It is important to maintain the low incidence of the disease in the country.

If you suspect leprosy then examine ALL household contacts.

Early treatment will reduce the likelihood of deformities developing.

**Caution:** Never put a “label” of leprosy on a suspect before confirmation of the diagnosis: the social consequences could be important. Never start a MDT treatment to see if it would bring a change in a suspect. The treatment is given to a person only after confirmation of the disease.

## Diagnosis and Classification:

### 1. Testing of sensation:

Test the feeling in the skin patches, using a light object, cotton wool preferably, or a pen or a bit of plant. In the hand, test the sensitivity to light touch in four places: two in the palm of the hand and one each on the tip of the 2<sup>nd</sup> and 5<sup>th</sup> fingers. In the foot, test the sensitivity on the sole of the foot in four places: two on the tip and base of the big toe and two along the external side of the foot. Test the feeling in the skin patches and compare with the feeling in normal skin:

If the person cannot feel anything when you touch the patches they have leprosy.

### 2. Feeling the nerves:

Enlarged nerves can be a sign of leprosy. Two nerves can be easily checked – the ulnar nerve and the peroneal nerve. The patient can also be checked for nerve damage – look for weakness of the eyelids or if a patient cannot close the eyes, this is called lagophthalmos. Facial paralysis and paralysis in the muscles of the hands (claw hand) and legs (foot drop) are other complications of leprosy. Manual of procedures explains how to assess these in detail.

### 3. Guidelines for Classification:

The classification of leprosy has been simplified:

- From 1-5 lesions, classify as *Paucibacillary leprosy (PB)*. The lesions are of the tuberculoid type (raised from the surface of the skin, surrounded by thick clear-cut edges, whitish with a definite loss of sensation)
- If only one lesion, classify as *PB, single lesion*.

- More than 5 skin lesions, classify as *Multibacillary leprosy (MB)*. The lesions are more of the lepromatous type (flat, reddish with vague edges looking as if they belong 'inside' the skin, a simple change in colour).

**All suspected leprosy cases must be referred for confirmation by TB/Leprosy officers or physicians and organization of treatment regimens. As a Notifiable disease, it must be reported to the central MOH. Reporting requirements are listed in the Manual of Procedures.**

**Treatment:**

1. All new cases receive multi-drug treatment (MDT). This consists of a 28 day blister pack of Rifampicin 300mg, Clofazimine 100mg and 50mg and Dapsone 100mg tablets. In Vanuatu, the MDT regimens are modified due to the occurrence of severe cases of Dapsone toxicity, including several deaths so **now the Dapsone is removed from the packs prior to giving to the patient.**

2. First doses (Rifampicin and Clofazimine), at the top of pack, is given at the health facility and the patient and family need to be shown how to use the blister pack. Give the patients enough blisters to last until they need to come back to the clinic.

The patient takes Clofazimine 50mg daily at home (best taken with food). Skin and body fluids may become red-brown but will resolve when medicine finished. Report and refer cases with any serious allergic reactions or jaundice.

3. No modification is needed for patients who are pregnant or breastfeeding.

4. The patient becomes non-infectious quickly and there is no need to isolate the patient.

5. Paediatric doses:

Age/Weight	Dosing	Rifampicin	Clofazimine
Adults 50-70kg	1 <sup>st</sup> day supervised dosing	600mg	300mg
	2 <sup>nd</sup> - 28 <sup>th</sup> day (at home)	Nil	50mg daily
Child 10-14 years (30-50kg)	1 <sup>st</sup> day supervised dosing	450mg	150mg
	2 <sup>nd</sup> -28 <sup>th</sup> day (at home)	Nil	50mg every other day
Child 5-9 years (15-30kg)	1 <sup>st</sup> day supervised dosing	300mg	100mg
	2 <sup>nd</sup> -28 <sup>th</sup> day (at home)	Nil	50mg twice a week
Child 3-5 years (<15kg)	1 <sup>st</sup> day supervised dosing	150mg	50mg
	2 <sup>nd</sup> -28 <sup>th</sup> day (at home)	Nil	50mg once a week

6. Because of the restriction on the use of Dapsone in Vanuatu, the treatment of both PB and MB patients will be the same. The only difference is the length of treatment:

⇒ MB cases are treated for 12 months

⇒ PB cases are treated for 6 months

 **Leprosy Reactions:**

When the leprosy germs invade the body they cause the immune system to respond by attacking the germs. As leprosy attacks skin and nerves, the reactions will be located in the skin and nerves as well as the eyes. Inflammation in the skin causes discomfort but is usually not serious. Inflammation in the nerves can cause serious damage sometimes resulting in paralysis.

Signs of reactions:

In the skin:	Skin patches showing signs of inflammation	In the eye:	Pain and redness
In the nerves:	Pain or tenderness in the nerve		New loss of vision
	New loss of sensation		New weakness in eye closure
	New muscle weakness		

*Reactions are NOT relapses.*

*Reactions are NOT directly caused by MDT treatment.*

Almost any leprosy patient can experience leprosy reactions however those with only one or two skin lesions and no nerve involvement at time of diagnosis are less likely to get them. Reactions can occur at any time, even in a cured patient. There are two types of leprosy reactions – Type 1 and Type 2. Refer to above Manual of Procedures for full details of management. **As a general rule, never stop treatment because of an episode of leprosy reaction. Refer all patients.**

# LEPTOSPIROSIS

## Definition:

People get infected with Leptospirosis by contact with water or mud contaminated by the urine of rats or other infected animals eg dogs, pigs, bats, cattle. Leptospire are microorganisms that usually enter the human body through cuts and abrasions in the skin and mucous membranes (nose, mouth, eyes) or by drinking contaminated water.

🔔 Prevention is by avoiding contact with water or mud that may be contaminated with animal urine. Cover cuts and abrasions with waterproof dressings and/or antiseptic ointment before and after exposure.

🔔 Antibiotic therapy is extremely effective if started early. If antibiotic treatment is delayed, patients may die!

Diagnosis is very difficult – if you suspect a case, start antibiotics immediately and complete course.

## Signs and Symptoms:

1. Early cases (1-2 weeks incubation period but up to 1 month) – mild symptoms of fever, headache and muscle pain.
2. Less common signs – cough, dyspnoea, nausea, vomiting, abdominal pain, diarrhoea, arthralgias, skin rash.
3. Disease presents in four broad clinical categories:
  - a. Mild, influenza like illness
  - b. Weil's syndrome – jaundice, renal failure, haemorrhage, myocarditis with arrhythmias
  - c. Meningitis/ meningoencephalitis
  - d. Pulmonary haemorrhage with respiratory failure

## Treatment:

- **Refer** to hospital for testing but commence antibiotics first and continue full course.
- **Up to 10-70% of leptospirosis cases may die if not treated with antibiotics.**
- Severe cases – High dose IV benzylpenicillin.
- Uncomplicated cases –
  - Amoxicillin 500mg tds for 7 days or
  - Doxycycline 100mg bd for 7 days or
  - Procaine penicillin 3mU IMI until able to switch to oral
  - Paediatric doses as per dose table.

🔔 If you suspect leptospirosis you must report immediately to Provincial Health Manager or Directorate of Public Health – do not wait for confirmation tests.

# MALARIA

 National treatment guidelines have been revised in 2009 and late 2013– contact Provincial or National Malaria & Vector Borne Disease Officers if you do not have a copy of the new edition.

Malaria can cause:

1. Fever, Headache and body pains
2. Diarrhoea and vomiting
3. Anaemia and/or Jaundice
4. A big spleen and/or liver
5. Coma, convulsions, and confusion
6. Shock and or kidney failure

OR

7. Malaria may be asymptomatic.

Immunity:

Immunity (resistance to infection) develops after repeated attacks of malaria, and protects against severe malaria (eg.cerebral malaria). Adults living in areas where malaria is common usually do not get very sick with malaria. By contrast, visitors, pregnant women and children are most at risk and might get severe forms of the disease like cerebral malaria and/or anaemia. Malaria in pregnancy is dangerous to the mother and baby.

Key points to remember:

The use of insecticide treated bed nets will dramatically decrease the incidence of malaria in your community. Distributed nets are now “Long Lasting” nets which do not need re treatment.

Every suspected case of malaria should be tested with Rapid Diagnostic Test –RDT-(or microscopy if available) and presumptive treatment of malaria should be avoided to every extent possible.

What to do for all patients with suspected malaria:

- Take a history and examine for other diseases.
- Check for signs of severe disease (see below)
- Prick patient’s finger for RDT
- If test is positive: treat the patient for malaria
- Do not treat for malaria if the test is negative.
- Weigh the patient to work out treatment doses.

**Signs of severe malaria:**

- Inability to sit or stand up (to drink for young children)
- Prostration, altered consciousness, coma
- Severe anemia
- Repeated convulsions
- Respiratory distress
- Shock
- Abnormal bleeding
- Jaundice
- Haemoglobinuria
- Anuria or oliguria

If laboratory is available: hyperparasitaemia, hypoglycaemia, hyperlactataemia.

 Suspected severe malaria should be confirmed by microscopy with parasite density count

All cases of severe malaria should be referred to health centre or hospital immediately after a pre referral treatment is administered.

**Chloroquine and Fansidar should no longer be used for the treatment of malaria because of resistance.** Uncomplicated cases of both *P.falciparum* and other species like *P.vivax* malaria should now only be treated by Artemisinin-based combination treatment (ACT).

The most common reasons for treatment failure are most likely that the nurse did not order the correct dose or the patient did not take all the treatment.

Quinine IV infusion is NOT the first line treatment of severe cases any more. It has been replaced by injectable artesunate.

## Treatments

1. If the patient has one or several signs of **severe malaria in Aid Post/Dispensary**:
  - Give artesunate suppository or artesunate IM (if available) as pre referral treatment – see below for doses.
  - Refer to health centre or hospital.
2. If the patient is admitted with signs of **severe malaria in Health Centre or Hospital**:
  - Test patient with microscopy (RDT if not available immediately)
  - If positive: Give first dose injectable artesunate (IM or IV) with second injection 12hr later and a third another 12 hr (T0-12hr-24hr) later irrespective of whether the patient can take oral medicines.
  - Give a full 3 days course of ACT on completion of the Artesunate course to ensure no resistance develops.
  - If negative: Give injectable antibiotic and check for other cause of severe disease- consider a lumbar puncture to exclude meningitis if convulsions or coma. Note: High fever in children can cause convulsions.
3. If the patient has **uncomplicated malaria** (either *P.falciparum*, *P.vivax* or other species):
  - Treat with 6 doses course over 3 days of ACT ie Artemether-lumefantrine (Coartem)
  - Watch the patient take the first dose and instruct him about schedule for remaining 5 doses.
4. If patient is vomiting but does not have severe or cerebral malaria:
  - Repeat ACT treatment if patient vomits within 1 hour
  - If patient vomits again, give artesunate suppository or artesunate IM or IV only once
  - Give a full 3 days course of ACT as soon as patient can take tablets
5. Radical treatment to avoid relapses after *P.vivax* malaria:
  - Treat first with a 6 dose course over 3 days of ACT (Coartem)
  - Check for pregnancy (contra-indication) and G6PD deficiency
  - Give primaquine 0.5 mg/kg daily for 14 days if not G6PD deficient
  - Give primaquine 0.25 mg/kg daily for 14 days if deficient or unknown G6PD status and check urine daily for the first 3 days. Stop Primaquine if colour change of urine indicates haemolysis – refer.
6. If symptoms persist within 14 days after initial ACT treatment:
  - **Treatment failure** can be suspected but should be confirmed by microscopy
  - If confirmed, give second line treatment with oral quinine and doxycycline for 7 days. Refer to full Malaria guidelines for dosing.

Treatment of complications – refer to specific chapters in HWM or contact medical officer:

1. Shock (low BP)
2. Prolonged convulsions (more than 5 min)
3. Dehydration
4. Acute renal failure
5. Pulmonary oedema
6. Severe anaemia
7. Hypoglycaemia

### Antimalarials

**ACT - Artemether-lumefantrine (Coartem®)** – a combined treatment of artemether 20mg & Lumefantrine 120mg in one tablet. Doses are packed in blisters for a full treatment course based on patient weight and dose required. All tablets are the same strength so if the weight range required is not available, other packs can be used to provide the required dose.

Give doses over 3 days (with some fatty food or milk)

Weight in kg	<5	5-14	15-24	25-34	>35
Age in years	<6mths	6mths-3yo	4-8yo	9-14yo	>14yo
Dose 1 (timing starts here)	½	1	2	3	4
Dose 2 after 8 hours	½	1	2	3	4
Dose 3 after 24 hours	½	1	2	3	4
Dose 4 after 36 hours	½	1	2	3	4
Dose 5 after 48 hours	½	1	2	3	4
Dose 6 after 60 hours	½	1	2	3	4

**Artesunate suppository** dose is 10mg/Kg, only once before referral

In the event that an artesunate suppository is expelled from the rectum within 30 min of insertion, a second suppository should be inserted and, especially in young children, the buttocks should be held together for 10 min to ensure retention of the rectal dose of artesunate.

Weight in Kg	3-5	6-10	10-20	21-40	41-60	>60
50 mg	1	2				
200 mg			1	2	3	4

**Artesunate injectable** dose is 2.4mg/kg/dose, second injection after 12h then daily. Three doses MUST be given if injectable is commenced for severe malaria, even if patient can swallow tablets.

Artesunate is dispensed as a powder of artesunic acid. This is dissolved in sodium bicarbonate (5%) to form sodium artesunate. The solution is then diluted in normal saline (not water) to 6ml for intravenous injection or 3ml for intramuscular injection.

IM injection should be given in the anterior thigh. All Artesunate doses MUST be followed by 3 days of ACT treatment to ensure the malaria does not develop resistance to the Artesunate products.

**Artesunate IV/IM dosing:**

Weight in Kg	<5	6-9	10-14	15-19	20-29	30-39	40-49	50-59	>60kg
For IV 60mg in 6ml	1ml	2ml	3ml	4ml	6ml	8ml	10ml	12ml	14ml up to 2.4mg/kg/dose
For IM 60 mg in 3 ml	0.5ml	1ml	1.5ml	2ml	3ml	4ml	5ml	6ml	7ml up to 2.4mg/kg/dose

**Primaquine** dose is 0.25mg base/kg/day for 14days when G6PD status is unknown.

Weight Range	10-19	20-39	40-59	>60kg
Dose of 7.5mg tabs	½ tab	1 tab	1 ½ tab	2 tab
Dose of 15mg tabs	¼ tab	½ tab	¾ tab	1 tab

**Primaquine** dose is 0.5 mg base/kg/day for 14days if patient is NOT G6PD deficient.

Weight Range	10-19	20-39	40-59	>60kg
Dose of 7.5mg tabs	1 tab	2 tab	3 tabs	4 tabs
Dose of 15mg tabs	½ tab	1 tab	1 ½ tab	2 tab

Note: Check you are dosing in BASE of primaquine, not the phosphate salt. Check with pharmacy if you are concerned.

- 🔔 Stop Primaquine if colour change of urine indicates haemolysis (reddish brown)– refer.
- 🔔 After Primaquine therapy avoidance of re-infection with *P.vivax* by mosquitoes is necessary so encourage bed net use and other approved measures.

**Prophylaxis:**

- Give Chloroquine tablets once per week to prevent malaria in pregnant women is standard per MOH Policy. Patients who have had their spleen removed may also receive prophylaxis – paed. doses listed below.

*Chloroquine.* Give once a week on the same day each week e.g. on Sundays

Weight in kg	3-5	6-9	10-14	15-19	20-29	30-39	40-49	50+
Tablet 150mg (base) (5mg/kg) Dose in tabs	¼	¼	½	½	1	1	1½	2

**Treatment of Systemic Lupus Erythematosus (SLE):**

Chloroquine may be used for treatment of conditions such as SLE on a daily basis.

## MALNUTRITION

📁 Refer to IMCI Guidelines and WHO Management of the Child with a Serious Infection or Severe Malnutrition for further information.

📁 Refer Buklet blong Mama mo Pikinini Vanuatu.

🔔 Suspect malnutrition if a child's weight does not go up.

1. At each visit:

- Weigh all children and record weight and height on the child health record card or booklet.
- Weight going up and above the median 0 line? = Good growth.
- Weight flat and below -2 line is underweight? = Danger. At risk.
- Weight falling or below -3 line is severely underweight? = Very dangerous. **Refer to hospital.**

2. A child's weight should go up every month:

- If it is the same or falling FIND OUT WHY.
- Ask about:

⇒ i. Diet:

Breast-feeding? Ask why they are not breastfeeding and consider re-introduction.

📁 Refer Key messages for successful Breastfeeding and Complementary Feeding leaflet:

Twelve keys to successful breastfeeding:

1. Begin breastfeeding as soon as possible after birth, preferably within an hour.
2. Try different positions when breastfeeding – avoid leaning over the baby.
3. Have your baby suckle on as much of the areola as possible.
4. Alternate the breast your baby begins with each time.
5. Seek an early evaluation of your breastfeeding technique by a trained professional.
6. Feed your baby whenever he/she shows signs of hunger ie feed on demand.
7. Nurse until your baby is satisfied – fat content increases with suckling.
8. Burp your baby once or twice during each feed.
9. Avoid pacifiers (dummies) until breastfeeding well established.
10. If possible, breastfeed exclusively during the first six months.
11. Do not give supplements eg water, leaf orange, cordial etc.
12. Eat a well balanced healthy diet from the four food groups.

Ensure baby is fed on demand and until baby detaches from breast (10-15mins each breast), not the mother forcing the detachment – this ensures baby receives richer milk at end of breastfeed.

Should have solids as well after 6 complete months of breastfeeding.

Cup and spoon feeding with expressed breast milk (EBM) only? Should not be using leaf orange, cordial, juice etc.

How much, how often, how prepared. Should not use bottle.

Meals if 6 months old?

Should have at least 3 good meals every day plus 2 snacks.

Give good mixture of island kaekae, suitable for babies – sof-sof initially.

Cook with coconut milk.

Ensure good cooking hygiene.

Consistency is important – not too watery or not enough energy is provided.

- ii. Home: Who looks after the child?
- iii. Mother: Works / pregnant / ill?
- iv. Too many children too close?
- v. Any support?

- vi. Child: Has he/she been sick? Have they had vomiting or diarrhoea? Measles?
- vii. Always ask about TB or chronic cough.
- viii. Socio-economic status of family.
- ix. Known or suspected HIV status.

**Examination:**

- i. Examine child in the clinic. Is he/she sick?
- ii. Look for: Dehydration or oedema (specifically the feet), wasting (very thin and no fat), fever or low Temp (sign of infection also), shock (cold clammy hands, weak and rapid pulse, slow capillary refill); anaemia (palmar pallor); infections or poor growth. If possible, measure BSL as hypoglycaemia may be present.
- iii. Check mid-arm circumference – if the child is older than 12 months and the mid-upper arm circumference is <13.5cm then he/she is likely to be malnourished.
- iv. Weight for length or height <70% or -3SD then severe malnutrition.
- v. Eyes: Check for signs of vitamin A deficiency eg Bitot's spots, corneal ulceration, photophobia.
- vi. Skin: Hypo or hyperpigmentation, ulceration or exudative lesions (like burns) often with secondary infection.

**Refer all cases of severe malnutrition to hospital.**

**3. Children at risk:**

Treat worms with Albendazole – stat dose.

Treat for Malaria with CoArtem if RDT positive.

Treat bacterial infections with appropriate antibiotics.

If eye signs suggest vitamin A deficiency give stat dose of vitamin A. Antibiotic eye ointment may also be required.

Give daily Multivitamins and contact medical officer if you suspect anaemia. If anaemic, folic acid then iron may be provided on medical advice.

Give health education.

Advise mother on best nutritional practices – 2-3hourly feeds day and night until gaining weight.

Follow-up closely.

Refer to MCH team.

🔔 If no better after 2 months - **refer** to hospital.

**4. Severe malnutrition or marasmus – less than 70% weight for height (-3 SD as per above booklet).**

If oedema of both feet (kwashiorkor or both - marasmic kwashiorkor). Treatment for both is the same.

Children <60% weight for age may be stunted and not severely wasted.

**Refer** to hospital, on admission:

- ⇒ Examine fully.
- ⇒ Look for other diseases.
- ⇒ Use TB Score chart in TB Chapter.
- ⇒ Check RDT, Hb, CXR, BSL, stool, urine, Mantoux test.

⇒ If child very sick prior to referral, give broad spectrum antibiotic eg Ampicillin + Gentamicin or co-trimoxazole before transfer. If low BSL's give 50ml of 10% sugar solution (1 heaped teaspoon sugar dissolved in 3½ tablespoons water) orally or by nasogastric tube. Feed as early as possible.

**5. General care:**

Treat worms with Albendazole

If fevers treat for Malaria if RDT positive.

Give daily Multivitamins.

Treat infection if present – look especially for UTIs, skin infections or Otitis Media.  
If diarrhoea, follow guide in this manual or IMCI Guidelines.

#### 6. Feeding:

If breast-feeding

Continue and supervise feeding.

If not breast-fed:

Start ½ strength milk feed for the first 24 hours.

Give every 3 hours day and night. (i.e. 8 feeds in 24 hours).

Then if no diarrhoea give full-strength milk feeds for 2 days.

Consider giving extra energy milk (MOF: Milk Oil Formula).

TO MAKE EXTRA ENERGY MILK FEED (MOF) – do not use in infants less than 3 months old.

Ingredients	F75 Starter formula		F100 Catch-up formula	
	To make 1L	To make 160mL	To make 1L	To make 160mL
Whole milk powder	4 tablespoons (35g) or 2½ x 30mL cups	½ tablespoons (5.6g) or 1/3 x 30mL cup	12 tablespoons (110g) or 7½ x 30mL cups	2 tablespoons (17.6g) or 1 x 30mL cup
White sugar	6 tablespoons (100g) or 3½ x 30mL cups	1 tablespoon (16g) or ½x 30mL cup	3 tablespoons (50g) or 2x30mL cups	½ tablespoon (8g) or 1/3 x 30mL cup
Vegetable Oil	1 tablespoon (20g) or ¾ x 30mL cup	½ tablespoon (3.2g) or to 5mL mark on 30mL cup	2 tablespoons (30g) or 1 x 30mL cup	1 teaspoon (4.8g) or to 5mL mark on 30mL cup
Clean Water	To 1L	To 160mL (4x30mL cups)	To 1L	To 160mL (4x30mL cups)

*Note: 1 tablespoon = 4 teaspoons*

*Note: Electrolyte formula not available at present so dose with zinc daily and consider addition of other electrolytes as required.*

*Refer dosing tables in wards or WHO manual. Dose at 130mL/kg/day initially as 3-4 hourly feeds.*

In severe cases (usually in hospital setting)-

The child may need feeding with nasogastric tube on a high-energy liquid diet.

Add soft foods when the child will eat.

Give small amounts often.

Mix oil or coconut milk with all food.

#### 7. Give health education.

Advise on good nutritional practices.

When discharged, the child should be eating 5 meals a day.

Advise mother to give extra food after any illness.

Keep good health records for each child.

Record all vaccinations for child.

Provide appropriate family planning advice for family.

Encourage parents to come back to clinic if they are unsure about anything.

# MENINGITIS

📁 Refer to IMCI Guidelines for further information

🚨 This is a life threatening illness.

🚨 Take a complete and clear history and always refer early.

🚨 Think of meningitis in every very sick, drowsy, very irritable or convulsing infant or child.

🚨 Neonatal meningitis - see Neonatal Problems in Obstetric Section of manual.

## Common symptoms and signs:

1. Fever, headache, vomiting
2. Drowsiness , severe irritability or convulsions
3. Not feeding well, unable to breastfeed
4. Neck stiffness.
5. Bulging fontanelles.

## Lumbar punctures:

### 1. Lumbar punctures should only be performed in hospitals by qualified health personnel

⇒ Therefore, if you cannot do a puncture **refer** patient immediately

- Start treatment first with Artesunate Suppository as per Malaria Guidelines, Chloramphenicol QID and Penicillin 4 hourly or Ampicillin 6hourly.

### 2. If you can do a lumbar puncture in hospital

⇒ Perform under sterile conditions and act according to findings

- Even if the CSF is clear meningitis cannot be excluded.
- In the hospital send CSF for urgent examination and begin treatment with appropriate antibiotics and Artesunate injection if you suspect cerebral malaria if prolonged drowsiness or coma.

### 3. If the CSF is bloodstained or you could not obtain you should:

⇒ Treat for cerebral malaria AND meningitis with Artesunate injection and antibiotic therapy.

### 4. If the CSF is cloudy:

⇒ Begin antibiotic therapy immediately and send CSF for urgent examination.

## Treatment:

⇒ Nurse in coma position and protect airway and don't forget to clear secretions with suction

⇒ Give oxygen

⇒ Treat convulsions:

- Give diazepam according to guidelines and phenobarbitone to prevent more fits – see Convulsions section of this manual.

⇒ Insert IV and give fluids to correct any dehydration then slow to keep hydrated – refer to table.

- Put a nasogastric tube in for feeding if the patient is still in coma and unable to swallow after 3 days, remember to adjust IV fluids
- Commence antibiotics:

⇒ If no bacteria are seen or Haemophilus influenza, Meningococcus or Pneumococcus are found:

- Start Chloramphenicol 100mg / kg / day divided into 6 hourly doses IV or oral / NG if unable to insert IV **plus** benzylpenicillin IV or ampicillin IV. Refer dose chart at back of manual.
- In infants <3months use Ampicillin IV and Gentamicin IV and refer.
- Commence antibiotics prior to referral

🚨 Ceftriaxone is only available in hospitals and can be used as an alternative to Chloramphenicol.

## Drug Dosages:

🔔 All drugs should initially be given IV. **Refer dose table at back of manual.**

🔔 If unable to give IV doses may be given IM in same dosages.

## Important points:

🔔 Always remember to think about TB as a cause in any case of meningitis.

🔔 If the fever is high, always consider cerebral Malaria. Don't forget to use an RDT/MPS!

🔔 Meningitis can cause disabilities:

👂 Refer for hearing testing prior to discharge

♿ Refer to Disability Council if required

## Eosinophilic Meningitis

There is a high prevalence of rat lung worm (*Angiostrongylus cantonensis*) infection in rats captured in Vanuatu.

The eggs of the rat lungworm, after being excreted in rat faeces, are ingested by snails.

The snail then excretes small worm larvae, contaminating plants.

If a human eats food contaminated by the rat lungworm larvae, eosinophilic meningitis can develop.

### 1. Signs and Symptoms

- Chronic headache – may be very severe, fever only present in 50%, sometimes loss of vision due to retinal detachment
- CSF shows eosinophils.

### 2. Treatment

a) Treatment is supportive

b) Use analgesia liberally:

may need IM Morphine Or regular Paracetamol with Codeine Phosphate tablets

⇒ Recurrent LPs to drain off CSF sometimes helps

🔔 Attempts to kill the larvae may cause deterioration due to increased inflammation

☺ Outcome is usually good

☺ Fatalities are rare

### 3. Prevention

Lettuce, island cabbage and other plants that snails may have been in contact with should be cooked or washed in salt water or vinegar.

# MENTAL HEALTH DISORDERS

📁 For more detailed guidelines, refer to WHO mhGAP Intervention Guide 2010

Mental disorders are commonly overlooked. There are many reasons for this: Lack of training; patients present with physical rather than psychological complaints; stigma associated with mental illness and the health provider's fear of not knowing what to do.

If you are not sure what to do seek assistance. There are efforts to improve mental health services. – Each province has a mental health focal point. These people are generally located in the provincial hospital.

😊 Some people are naturally good at dealing with people with mental health problems and they may be willing to help you.

🔔 Do not restrain, tie up or lock up people with mental disorders unless they are a real danger to themselves or others.

🔔 Look for other causes of deterioration of mental state e.g. injury, malaria, meningitis, diabetes (hypoglycaemia most common).

## Anxiety

1. Definition:

Excessive worry, fear, panic associated with muscle tension, irritability, insomnia, jumpiness.

During extreme anxiety people may have heart palpitations, tachycardia, shortness of breath, sweating and tremors.

2. Treatment:

Usually, it is not necessary to commence on medication unless symptoms are severe.

Rule out physical causes of anxiety and treat these first.

However, if necessary, use of medicines should be short term.

- Medications: Diazepam 1-10mg up to 3 times a day orally.(for not more than 1 week). Consider referral to hospital during this time. Long term treatment with diazepam is not recommended due to development of tolerance and dependence.

## Depression

1. Definition:

Symptoms present nearly every day: depressed mood, little to no interest in any activities, significant weight loss or gain, insomnia or hypersomnia; fatigue, loss of energy, inability to concentrate, and thoughts of killing themselves.

2. Treatment:

Drug treatment will take 2 or more weeks to take effect and usually the medicine needs to be taken long term.

Only start medication if symptoms are severe.

- Amitriptyline 25- 150mg / day at bedtime starting low (50mg at bedtime)and increasing at 25-50mg dose increases every 1-2 weeks to a maximum of 150mg at bedtime over 4-6 weeks. In elderly, use half the normal dose. Talk to a Medical Doctor or mental health worker before starting Amitriptyline. ALWAYS rule out any underlying cardiac, hyperthyroidism, epilepsy or liver conditions – cautious dosing is required.
- Common side effects include dizziness and sedation (hence best at bedtime), orthostatic hypotension, dry mouth, constipation and difficulty urinating. Serious but less common side effects are cardiac arrhythmias.
- Consider stopping antidepressant medication after 9-12 months of no depressive symptoms and they have been able to carry out normal activities of living during this time. Withdrawal must be done slowly over at least 4 weeks.

## Psychosis

Symptoms may include severe agitation, paranoia (extreme fear that something or someone is after them), hostility, hallucinations, un-recognizable speech patterns, or ways of speaking not understandable to others.

What to do:

1. Look for an organic cause e.g. Head injury, Meningitis, Cerebral malaria, Pneumonia, Typhoid, drug or alcohol intoxication. ALWAYS take the patient's temperature and blood pressure – a fever suggests a medical illness is the cause of the behavioural disturbance. Treat this first.
2. Treat any organic illness but if necessary to control the patient you can also give Chlorpromazine (Largactil)
  - 50-100mg orally QID - if withdrawn behaviour.
  - 100-200mg QID - if overactive, aggressive, or violent.
  - 100mg every 1-2 hours if very aggressive, or as needed, up to 500mg daily
  - Can be given IM if the patient refuses tablets. IM injection has to be given deeply into large muscle mass or necrosis can occur. ALWAYS check the patient's blood pressure as it causes low BP. Monitor patient for excessive sedation, respiratory depression and hypotension for at least 4 hours after last dose.
  - Oral Haloperidol 5mg tablets (10-20mg every 2 hours for acute psychosis) are also included on the EDL as an alternative to Chlorpromazine. These are only available in hospital settings.
  - If chlorpromazine is not available, Diazepam 5-10mg orally, rectally or IV injection can be used instead.
  - In cases where compliance is an issue, consider long term treatment with Fluphenazine (Modecate) 12.5mg – 50mg IM every 2- 4 weeks. Maximum of 100mg IM every 2-4 weeks. (Use lower doses for elderly patients).
  - Side effects of antipsychotics include orthostatic hypotension, extrapyramidal/parkinsonian effects (dystonias, tics, tremor, cogwheel rigidity etc), sedation and urinary hesitancy to varying degrees between agents. Consider using Benzhexol in patients on chlorpromazine to reduce side effects (parkinsonism, drooling).

🔔 If there was an organic precipitant that has been treated, reduce the dose of Chlorpromazine when the patient has been well for a week and stop after 3 months. If illness comes back, or in patients with probable schizophrenia long term treatment may be required.

## Bipolar disorder (BPD)

1. Definition: Bipolar disorder (BPD) is characterized by episodes in which the person's mood and activity levels are significantly disturbed. The disturbance consists on some occasions, of an elevation of mood and increased energy and activity (mania) and on other occasions of a lowering of mood with decreased energy and activity (depression). Recovery is complete between episodes. People who experience only manic episodes are also characterized as BPD.

2. Treatment : For mania, short term use of diazepam and antipsychotics eg chlorpromazine may be required to control agitation. Antidepressants should be stopped as these can precipitate mania in BPD.

Start therapy with a mood stabilizer – sodium valproate (300mg bd up to max 1000mg bd), carbamazepine (200mg bd up to max 800mg bd)

For depression, antidepressant therapy alone is not recommended as it can precipitate mania. If amitriptyline is used in BPD, it should be in combination with a mood stabilizer such as sodium valproate. Therapy should be maintained for 6-12months after first episode of acute mania due to high relapse. Ensure patient understands the need to continue therapy long-term.

## **Suicide Attempts**

People who attempt suicide must be taken seriously. They must be protected from themselves and evaluated carefully so that in the future they do not complete the act.

### **Suicide Risk Assessment**

Talking about suicide will not increase the risk that the patient will attempt suicide. Check the circumstances around the act of attempting suicide – presence of these items will point towards the seriousness of intent to commit the act:

- Isolation: whether or not someone was present at the time
- Timing: was it timed so that intervention was probable or highly unlikely?
- Precautions against rescue: did he/she actively take precautions against detection or not?
- Acting to gain help: did he/she call someone or not after the attempt?
- Final acts in anticipation: any documents of signing a will, gifts for someone?
- Suicide note: farewell note or not?
- Lethality: methods used eg hanging, jumping, medicines taken etc.

If the risk is high ie. Had left a note and will, taken large quantity of tablets, planned the suicide to not be detected or gain help, then admit or arrange transfer to hospital. Develop a suicide risk management plan with participation from patient, family and wantoks. Ensure someone is with patient and remove potential dangerous items that could be used to kill themselves.

### **Treatment:**

- Treat the immediate problem according to guidelines (poisoning, overdose, etc)
- Talk with the patient and try to understand what is the actual problem
- Refer or call a pastor, friend, someone with mental health training – treat for depression if indicated.

## **5 Ways to Wellbeing**

People with mental health disorders should be encouraged to consider lifestyle changes as well as medications. Below are some suggestions that you can share with patients about how to increase their wellbeing and quality of life. Suggestions will vary depending on the patient's abilities and interests.

Connect – with family, friends and neighbours. These connections will help support you every day.

Be active – go for a walk, dance, garden, play a game. Exercise makes you feel good.

Take notice – be aware of the world and what you are feeling.

Keep learning – try something new, like playing an instrument or learning a new recipe. This will increase your confidence as well as being fun.

Give – do something for someone else. This creates connections with those around you.

## NAUSEA AND VOMITING

Nausea and vomiting are common, and usually self-limiting symptoms that have many possible causes.

Persistent and/or distressing vomiting is often treated symptomatically with an antiemetic before a diagnosis of the cause has been made, but a cause always should be found and removed if possible. Prevention of dehydration and electrolyte disturbance is also important.

### Causes

Common and/or important causes include:

- Pregnancy
- Upper GI disorders, e.g. gastro-oesophageal reflux, diabetic gastroparesis
- GI infections—gastroenteritis (most commonly viral),
- Food poisoning from improperly prepared, poorly stored or inadequately cooked food
- Gallstones
- Bowel obstruction – either small or large bowel
- Hepatitis
- Metabolic disorders – e.g. end stage renal disease, hypercalcaemia
- An adverse effect of a drug – e.g. antibiotics, ibuprofen, aspirin
- Ear (vestibular) disorders
- Migraine
- Myocardial infarction (heart attack)

### Assessment

Clinical assessment should focus on the following:

- Menstrual history in females of reproductive age – pregnancy is very common cause.
- Recent drug intake – drugs are a very common cause.
- Whether the vomiting is immediate (present for hours), acute (present for a few days), subacute (present for more than a few days, but less than a few weeks), or chronic (present for more than a few weeks)
  - Immediate vomiting is likely caused by gastroenteritis or acute drug ingestion.
  - Acute vomiting is most likely caused by bowel obstruction, hepatitis, gastroenteritis or acute vestibular disorder.
  - Subacute vomiting is most likely caused by pregnancy, hepatitis, partial bowel obstruction, or a subacute vestibular disorder.
  - Chronic vomiting is most likely caused by a metabolic disorder, raised intracranial pressure or a chronic upper GI disorder such as gastro-oesophageal reflux or diabetic gastroparesis.
- Associated symptoms:
  - Abdominal pain – suggests a surgical cause, e.g. gallstones, bowel obstruction.
  - Chest pain – suggests myocardial infarction.
  - Headache – suggests migraine or raised intracranial pressure.
  - Vertigo – suggests a vestibular disorder.

- Diarrhoea – suggests gastroenteritis.
- Associated signs:
  - Jaundice – suggests hepatitis.
  - Nystagmus – a vestibular disorder.
  - Abdominal mass, tenderness, or ascites – suggest an upper GI / liver cause.
- If vomiting is severe, check the level of hydration of the patient.

## Management

- ⇒ If the patient is in distress, it is reasonable to administer an antiemetic before a full assessment is undertaken. Give Metoclopramide 10mg orally (or IM / IV if an oral tablet is not available or has been vomited). This can be repeated 4 hourly as required, but the patient should be referred if more than 6 doses are required.
- ⇒ Assess the patient for signs of hypovolaemia (low BP, tachycardia), and dehydration (decreased tissue turgor). If present, insert an IV line and administer one litre of N saline or Hartmann's quickly, then further IV N saline depending on the patient's response.
- ⇒ To prevent dehydration or if only mild, consider ORS to maintain urine output but if unable to tolerate oral fluids, give IV as above.
- ⇒ If a drug is the likely cause it should not be taken again, and a suitable alternative administered if appropriate.
- ⇒ For pregnancy, avoid drug treatment if possible. Dietary change may help – ginger may be helpful. Pyridoxine 25-50mg up to three times a day may also help. In severe cases consider metoclopramide or an antihistamine like promethazine or chlorpheniramine.
- ⇒ For motion sickness eg seasickness consider prior use of antihistamines such as chlorpheniramine 30mins before travel.
- ⇒ Further management, including whether or not to refer the patient, will depend on the likely diagnosis.

## When to refer

Patients should be referred if:

- 🔔 They continue vomiting despite adequate rehydration and symptomatic treatment with Metoclopramide.
- 🔔 They have features suggesting a surgical cause such as a bowel obstruction.
- 🔔 They have features suggesting another underlying cause for which referral is appropriate – e.g. a myocardial infarction.

# OBSTETRICS

See Obstetric and Newborn Guidelines for Vanuatu 2013

Refer also to 'Pregnancy and Lactation – Drug In' chapter for information on safety of medicines in pregnancy or breastfeeding

## Antenatal Care

AIM: Live and healthy mother and baby.

Encourage EARLY booking before 3-4 months of pregnancy.

RECORD all information on ANTENATAL and DELIVERY RECORD card.

First Visit:

1. ALL patients with one or more risk factors must be **referred** to the nearest hospital or midwife for assessment and recommendations for the type of antenatal care and delivery they need.

a) MEDICAL RISK FACTORS	b) OBSTETRIC RISK FACTORS
Epilepsy	Is now G5 (has been pregnant four times before)
Hypertension	Had stillbirth or neonatal death last pregnancy
Heart disease	Last baby <2.5kg or > 4.0kg
Renal disease or history of urine tract infections	Is less than 15 years or more than 34 years
Liver disease	First pregnancy and is more than 34 years
On TB medication or has had TB	Has had a caesarean section
Diabetes	Had a breech last time
Has oedema	Has been referred during pregnancy before
Has malaria	Has a multiple pregnancy
On asthma medication	Had a PPH last delivery or retained placenta
On any other medication for chronic medical disease	Has had a history of long labour during first delivery
	Has had a fracture of pelvis, hips or spine
	Has a history of gynae problems e.g. uterine fibroids

2. Previous pregnancies:

Record details of all previous pregnancies on Ante-natal and Delivery Record

Gravidity and Parity	History of Previous Pregnancies
Any miscarriages	Place of deliveries
Type of deliveries	Complication of deliveries
Birth weights	Foetal Outcomes e.g. alive or stillbirth
Breastfed	

3. Present Pregnancy:

a) Take a history of this pregnancy:

- i. Estimate date of delivery (EDD) from date of the first day of their last menstrual period (LMP + 7 days + 9 months = EDD, or use a gestational calendar).
- ii. Date fetal movements (quickening) first felt: (20 weeks for primips and 18 weeks for multiparas)
- iii. Ask about any problems
- iv. Record previous family planning method

b) Examination:

- i. Do a FULL general examination and record finding
- ii. Record weight, blood pressure, fundal height, presentation of fetus, fetal heart sounds, and oedema on chart
- iii. Is uterine size compatible with dates?

c) Tests:

- i. Haemoglobin
  - Check at booking and at 28 and 36 weeks
  - Refer if less than 8g/dL
  - Give Ferrous Folic daily with aelankakae routinely for all pregnant women.
  - Repeat Hb in 1 month if Hb less than 8/dL.
  - If no increase in Hb, then **refer**
- ii. Urine
  - STI's at booking for Chlamydia and Gonorrhoea where testing available.
  - Test for sugar and protein at every visit.
  - Refer if you find ++ to +++ of sugar or protein on one or more visits.

#### 4. Medications:

- It is Ministry of Health Policy that women of childbearing age are vaccinated against tetanus.

If the woman has a record that she received all childhood vaccinations then:

- Give a booster vaccination at first ante natal visit (If first pregnancy, two vaccinations given one month apart is routine)

If not fully vaccinated:

- Two (2) vaccinations given 1 month apart before 36 weeks will protect that pregnancy.
- It is Ministry of Health Policy that women receive iron supplements during pregnancy commencing from the first antenatal visit. See “Anaemia” section of this guideline for further information if anaemic.
  - Ferrous Folic Tablets. Give 1 daily with food.

If anaemia persists give stat dose:

- Albendazole. Give 400mg after 12 weeks gestation.
- It is Ministry of Health Policy is that all pregnant women receive malaria prophylaxis during pregnancy. The use of bed nets should also be encouraged. See “Malaria” section of this guideline for further information.
  - Chloroquine. Give 2 tablets weekly, every Sunday.

#### 5. Advice and Education:

- Good nutrition and cleanliness.
- Dental health.
- Counsel about breastfeeding benefits for mother and baby.
- Family spacing for the future.

 Where possible all pregnant women should have a full medical examination at least once during their pregnancy by a doctor, midwife, or nurse practitioner.

#### **Routine Follow-up Antenatal Visits**

##### 1. Schedule for Visits:

12 through 28 weeks	Patient visit every 4-6 weeks
30 through 36 weeks	Patient visit every 2-3 weeks
37 through 40 weeks	Patient visit every week until delivery
For Twin Pregnancy:	Every 1-2 weeks after 30 weeks until delivery.
For ‘At Risk’ Pregnancy:	According to recommendations of midwife or medical officer

2. At each visit:

- Ask about health, discuss problems, answer questions.
- Check weight, BP, and examine for oedema.
- Test urine for protein and sugar.
- Watch for signs of anaemia.
- Record fundal height. Normal growth is 1cm a week after 20 wks.
- Check presentation and fetal heart sounds.
- Give Ferrous Folic and Chloroquine tablets if needed.
- Give health education.
- Make sure the tetanus injections have been given.

3. Identify and **refer** high risk factors if and when they occur during the pregnancy

🔔 Vaginal bleeding

🔔 Twins

🔔 Malpresentation after 36 weeks

🔔 Poor weight gain

🔔 Uterine size too large or too small for dates

🔔 Fetal movements diminished

🔔 Anaemia

🔔 High blood pressure

🔔 Diabetes

🔔 Oedema

🔔 Shortness of breath

🔔 Multiple urine infections

### Hypertension & Pre-Eclampsia & Eclampsia

📁 “Managing Complications in Pregnancy & Childbirth”. WHO –current edition.

🔔 The only known way to treat pre eclampsia is to deliver the baby – the following is what to do as you arrange **referral** to a hospital for medical management or delivery as soon as possible.

### Chronic Hypertension

A diastolic BP of 90 or more before 20 weeks gestation.

What to do:

- This is an obvious risk factor and the woman should be **referred**.
- If the diastolic is >90 she may need to commence antihypertensives prior to referral but try and get advice e.g. oral Methyldopa, IV Hydralazine may be used to stabilize before transfer where available and with consultation with the Obstetrician.
- If she already takes antihypertensives, check safety in pregnancy and if safe, continue until referral. The safest agents in pregnancy are methyldopa and nifedipine.
- Advise rest until referral.

## Mild Pre Eclampsia

Two readings of diastolic BP of more than 90 four hours apart after 20 weeks gestation and may have up to 2+ urine protein.

- 🔔 Increasing protein in urine is a sign pre eclampsia is getting worse.

Oedema of limbs is not considered a reliable sign of pre eclampsia.

What to do:

- The woman should be **referred** to a hospital or to at least a health centre near an airstrip to await referral. You cannot predict whether or not this woman will or will not get severe pre eclampsia or eclampsia.
- Her blood pressure should be monitored at least twice per day and urine tested daily.
- She should rest, take a normal diet but avoid salt.
- There is no need for drugs and diuretics especially are not indicated and can be harmful unless ordered by a medical officer.

## Severe Pre Eclampsia

Diastolic is >90 after 20 weeks of gestation and 3+ or more of urine protein. Other signs and symptoms include:

- Headaches
- Clouding of vision
- Urine <400mL in 24 hours
- Upper abdominal pain
- Pulmonary oedema
- Fitting

🔔 This condition needs urgent **consultation and referral** to hospital.

🔔 Remember first things first – ensure airway, coma position, oxygen and suction.

Before transfer:

- ensure IV access
- IDC (in-dwelling catheter) in place
- good history and handover letter
- arrange health worker to accompany during transfer

1. What to do if woman is NOT fitting:

The goal is to lower BP to less than 90 **diastolic**:

- Give Hydralazine 5mg IV slowly every 15 minutes until diastolic is between 90-100 or you have used a total of 20mg.
- You can continue hydralazine 10mg IM every two hours to keep diastolic BP between 90-100.
- Consult Obstetrician to consider need for Magnesium Sulphate treatment.

2. What to do if the woman is fitting (**Eclampsia**):

The goal is to stop fitting, control BP and deliver the baby.

*Magnesium Sulfate is first drug of choice:*

- The drug of choice is Magnesium Sulfate as it will treat and prevent fitting. If you do not have this drug you can use diazepam (see below for instructions).
- a) Loading Dose:
  - Magnesium sulphate 4g (8mL of 50% solution) IV over 5 minutes
  - **PLUS**GIVE5g (10mL of 50% solution) as a deep intramuscular injection in each buttock (10g in TOTAL as intramuscular injection) promptly after IV injection completed. TOTAL DOSE = 14g (4g IV + 5g +5g IM)
  - When giving IM injection you can add 1-2mL of 1% lignocaine to decrease pain.
  - Woman will feel warmth spreading over her body after injection – this is normal.
- b) Maintenance dose:
  - 5g of Magnesium Sulphate (10mL of 50% solution) IM every 6hrs into alternate buttocks
  - Give for 24 hours after last fit or after delivery if no fits.
- c) Before maintenance dose given ensure that:
  - i. Respiratory rate is at least 16/min
  - ii. Patellar reflexes are present
  - iii. Urinary output is 30mLs/hr or greater
  - iv. Withhold magnesium sulphate until these are all present
- d) Be prepared for respiratory arrest:
  - i. Best to administer treatment with someone else who can help you.
  - ii. First priority is to assist patient's breathing with oxygen, mask and bagging and or mouth to mouth resuscitation. Also have suction ready.

**Calcium Gluconate** is an antidote in the case of respiratory arrest.

- Give 10mLs of 10% solution by SLOW (10mL over 10 minutes) IV injection until respiration re-establishes.

Continue with Magnesium sulphate for 24 hours after delivery OR 24 hours from the last seizure.

*Diazepam is second drug of choice:*

IM route of administration is NOT effective

- a) Loading dose:
  - Diazepam 10mg IV slowly over 2 minutes
  - **OR** you can put Diazepam 20mg in a syringe, lubricate the barrel and insert into rectum and inject – you will need to hold buttocks together for 10 minutes to stop leakage
  - If fitting recurs repeat loading dose
- b) Maintenance dose:

Consult with Obstetrician.

### 3. What to do next:

- Check BP and proceed to lower with Hydralazine as described in point 1 above.
- Continue to maintain airway and administer oxygen for the benefit of the fetus even if you think the woman doesn't need it.
- Nurse woman on left side mainly with small spells on right side – room should be quiet and dark and a reliable attendant should stay with woman if you are busy with other patients.
- Monitor BP, pulse and respirations every 30 mins.
- Measure urine output hourly via a catheter in situ.
- Check fetal heart rate hourly.
- Conduct a baseline vaginal examination and commence partogram if in labour.
- Record all your observations and medications given with your referral letter.

### Drugs in Pregnancy and Breastfeeding

- 🔔 All women of childbearing age should be asked about pregnancy before any drugs are given. During pregnancy some drugs given to the mother can harm the developing baby.
- 🔔 The most dangerous period for damage to the fetus is the first 12 weeks of pregnancy when the mother may not know she is pregnant.
- 🔔 No drug is absolutely safe in pregnancy and breastfeeding. Avoid drugs whenever possible.
- 🔔 Refer to table relating to Drugs in Pregnancy and Breastfeeding for those medicines listed on the 2013 Essential Drug List. Refer to specialist texts if other medicines are used.

### Common Pregnancy Problems

📁 “Managing Complications in Pregnancy & Childbirth”. WHO

#### Ruptured Membranes

Membranes normally rupture either at onset of first or second stages of labour. There is no indication for the nurse / doctor to rupture membranes unless you suspect fetal distress so you can monitor for meconium liquor. Routine rupture of membranes for no real reason leads to infection and possible delay in progress of labour.

#### 1. Ruptured membranes without labour:

- If offensive liquor or more than 24hrs, commence prophylactic antibiotics of oral penicillin or erythromycin if available.
- **Refer** to hospital if gestation is < 36 weeks
- **Refer** to midwife if gestation is > 36 weeks and labor has not commenced within 24 hours

#### 2. Ruptured membranes with labour: Proceed to delivery.

#### 3. If meconium liquor observed:

- If thick, have a doctor or another medical support person to assist with resuscitation.
- If thin or not able to get doctor suction mouth then nostrils and observe baby closely once delivered.
- Commence antibiotics if signs of infection

## Premature Labour

Labour that commences < 37 weeks gestation. Babies born between 24-34 weeks gestation usually do OK if receiving special care and mother receives Dexamethasone to help mature lungs 48 hours prior to delivery.

What to do:

1. See above and treat depending on state of membranes
2. If malaria likely trigger – commence malaria treatment in addition to:
3. Less than 34 weeks, cervix less than 3cm dilated and no signs of bleeding, pre eclampsia, infection or fetal death:
  - Nifedipine 20mg (three doses). Second dose given half an hour after the first and third an hour later. Continue 20mg 6 hourly for 24 hours. Tablets must be chewed for quick release from SR form.
  - Give Dexamethasone 8mg IM 6 hourly for 4 doses
  - Mother to mainly rest in bed to decrease pressure of presenting part on cervix.
  - **Refer** to nearest midwife and or hospital
4. More than 34 weeks and one or more of the following: bleeding, pre eclampsia, infection, fetal death and cervix > 3 cms:
  - **Refer** to hospital and or midwife if able after commencing IV fluids and giving treatment for pre eclampsia or infection if present
  - Allow to labour
  - Deliver gently with episiotomy if required
  - Look after mother as she is prone to PPH and infection post delivery
  - Keep baby warm and feed early – warmest place is skin to skin contact with mother known as “Kangaroo Mother Care” – this means baby remains skin to skin as much as possible with mother. Napkin on only and warm wrap over mother and baby together.
  - Re assess **referral** post delivery if not yet referred.

## Antepartum Haemorrhage

Bleeding after 20 weeks gestation. Heavy bleeding commonly due to abruption of the placenta or placenta praevia or ruptured uterus.

What to do:

- Do not perform a VE (vaginal examination)
- Resuscitation if required.
- Insert IV (16g or 18g) and infuse to prevent / treat shock
- Give oxygen if you have it
- Commence treatment for any other problems e.g. pre eclampsia
- **Refer** as soon as possible to nearest hospital capable of doing emergency caesarian section and blood transfusion
- If patient has light bleeding, do gentle speculum examination without VE, rest in bed and insert an IV. In case of further bleeding, observe and consult with a midwife or medical officer.

## Miscarriage

Treat similar to points 7 and 8 in post natal care section below.

**Refer** if tissue still inside uterus and causing problems e.g. bleeding / infection – women will probably need D&C.

As women enter 2<sup>nd</sup> trimester they are more likely to have retained products of conception, therefore will bleed more, are prone to infection and will need a D&C.

## LABOUR AND DELIVERY

In labour, monitor 3 things:

- a) Condition of the mother.
- b) Condition of the baby.
- c) Progress of the labour.

☺ Vanuatu policy is that partograms are used in hospitals & community health for all women in labour.

Signs that labour has started:

- Regular, painful contractions
- Cervix 4cm dilated or greater

When a woman presents in labour:

1. Check antenatal card for any risk factors.
2. Calculate the gestational age.
3. Obtain a history from the mother about the onset of labour.
4. Do an abdominal examination and check:
  - fundal height and clinical size.
  - presentation, position, and lie of fetus.
  - frequency, and duration of contractions.
  - fetal heart sounds: listen and count (normal 120-160).
5. Record pulse, BP, temp and test the urine for protein and sugar
6. Do a Vaginal examination, if no risk factors, and check for:
  - nature of presenting part (vertex, breech etc)
  - cervical dilatation
  - descent of presenting part
  - intact or ruptured membranes.

7. Continue hourly observations.

☺ RECORD ON PARTOGRAM.

When the baby is born:

1. Put baby on the mother's abdomen.
2. Dry the baby and have the mother hold and keep the baby warm.
3. Check there is not another baby present at this stage!
4. Give IM 10U of oxytocin to mother. This makes for better expulsion of the placenta and reduces bleeding.
5. Clamp the cord with sterile forceps and secure it tight with a sterile clamp or sterile ties.
6. Put the baby to the mothers breast and allow to feed.
7. Check the Baby's APGAR score at 1, 5 and 10 minutes after birth.
8. Give the baby Vitamin K 1mg IM as soon as possible after birth to help prevent Hemorrhagic Disease of the Newborn. Consider other immunizations.

#### APGAR SCORE TABLE

SIGN	SCORE 0	SCORE 1	SCORE 2
HEART RATE	Absent	Less than 100	More than 100
RESPIRATORY	Absent	Slow	Good
EFFORT		Irregular	Crying
SKIN COLOUR	Blue / pale	Blue arms & legs Pink body	Completely pink
MUSCLE TONE	Floppy	Moves arms & legs	Active movement
REFLEXIBILITY	No response	Grimace	Cries

Signs of placental separation (third stage):

- Lengthening of cord.
- Show of blood.
- Fundus rises and uterus contracts.

When placental separation has occurred, assist with expelling the placenta using controlled cord traction (CCT).

Always guard the uterus above symphysis to prevent uterine inversion.

After the placenta is expelled massage the uterus to expel blood clots and contract the uterus.

Check to make sure the placenta appears complete.

- 🔔 If there are any problems immediately get in contact with the nearest midwife, medical officer or obstetrician.

### **Post Partum Haemorrhage (PPH)**

Definition: The loss of more than 500mLs of blood following a birth.

It is the most common reason for maternal mortality in the world including Vanuatu.

BE AWARE of potential risk factors and **refer** these women to at least a midwife before delivery:

- Grandmultiparity
- Prolonged labour
- Multiple Birth or any other reason for over distended uterus
- Antepartum Haemorrhage
- Previous Postpartum Haemorrhage

To reduce the risk of PPH make sure the bladder is empty immediately prior to second stage and practice proper and confident third stage technique.

Immediate Treatment of Post Partum Haemorrhage:

1. Act quickly, but calmly.
2. Call out for help.
3. Do not leave the woman.
  - Give Methylergometrine 0.2mg IM (equivalent to 0.5mg Ergometrine). Ensure that the woman is not hypertensive prior to administration of methylergometrine. A second dose of oxytocin 10 units IM can be given.
  - Start an IV and add 40U of oxytocin to the 1L bag of either normal saline or Hartmanns solution. Run the IV over four hours. Consider a second IV for fluid replacement.
  - Insert a urine catheter to empty the bladder.
  - Try to deliver the placenta if it is not already out.
  - If the placenta has been expelled then massage the fundus to expel any clots and to contract the uterus.
  - If bleeding continues give 800mcg (4x200mcg tablets) Misoprostol (Cytotec®) PR (rectally)
4. If the bleeding stops but the placenta is still inside:
  - Continue the IV with oxytocin and **refer and consult** with an obstetrician immediately
  - Get the patient to a health centre or hospital for help.
5. If the bleeding does not stop:

- Continue to run the IV with oxytocin at a four hourly rate and **refer** immediately to a health centre or hospital for help. Consult with an obstetrician. Insert second IV before transfer.

6. If the bleeding stops and the placenta is expelled:

- Continue the IV with oxytocin 20units in one litre of normal saline for 8 hours.
- Consider giving the woman antibiotics for 5 days (amoxycillin) to reduce the possibility of infection.

## Postnatal Care

1. Routine care of the mother:

Do daily examination for 1 week.

Check mothers temperature, breasts, perineum, fundal height and the lochia (PV blood loss).

There is an observation chart on back of partogram to record this.

Give health education for care of baby, breast-feeding, hygiene (washing hands) and cord care (keep dry – no antiseptic required unless infected).

Do a complete postnatal check at 6 weeks:

- Breasts and breast-feeding.
- Perineum.
- Any PV Bleeding.
- BP.

Family planning.

- Encourage family planning; explain that a woman can become pregnant if breast-feeding.
- Offer choice of contraception – POPS, Depoprovera® can be commenced post delivery or at six week postnatal check.

Ask if there are any other problems.

2. Routine care of the newborn

Do daily examination for 1 week:

- Check the eyes, the skin, the umbilicus (keep dry) and feeding
- All newborn babies need a full examination.
- Refer** if any abnormalities found.
- Arrange First Clinic visit for baby at 6 weeks

### 3. Breast feeding

The Ministry of Health Policy promotes exclusive breastfeeding for the first six months. Solids can be introduced at six months with breastfeeding to continue to two years

- i. All mothers and babies will be given the opportunity to have uninterrupted skin-to-skin for one hour
- ii. Have the mother feed early - as soon as possible after delivery.
- iii. Allow the baby to feed on demand during the day and night.
- iv. Ensure that both breasts are regularly and completely emptied.
- v. If the baby is unable to suck then express milk 3 hourly and give to baby with cup and spoon.

Do not use or encourage use of baby bottles.

Do not use products that promote infant formula in the health clinic e.g. posters, calendars etc.

Do not give routine supplementary feeds.

### 4. Engorged Breasts

- a) Ensure the baby is attaching properly
  - b) Express a little milk before feeding
  - c) Express remaining milk when finished feeding
- Apply warm/cold compresses and give paracetamol if painful

### 5. Flat Nipples

- a) Pull out nipples gently
- b) Express a little milk if engorgement
- c) Check attachment
- d) Feed with cup and spoon if necessary with expressed breast milk

### 6. Cracked Nipples

- a) Check feeding technique-positioning and attachment.
- b) Continue to express milk and feed with cup and spoon.

### 7. Persistent or heavy red lochia

This is usually caused by retained placental products but may be associated with infection, the fundus stays high.

Treatment:

- Amoxicillin 500mg TDS and Metronidazole 400mg BD (with food) for 5 days if infection.
- Refer: If the symptoms continue refer to hospital for further assessment.

### 8. Postnatal fever and infection

Always try and find the cause of fever.

Always examine the abdomen, uterus, perineum, lochia, breast, chest and urine. Check for malaria.

Treatment:

If infection appears to be pelvic and woman looks sick:

- Ampicillin and Gentamicin IM/IV and Metronidazole orally

If infection appears to be pelvic and woman does not look sick:

- Amoxicillin and Metronidazole orally

## 9. Breast infections

Mastitis

a) Red, swollen, tender breast. Treatment:

- Empty breasts well after each feed
- Give regular paracetamol for pain relief, ibuprofen may also be offered.
- If the problem persists consider giving Cloxacillin.
- Continue breastfeeding to prevent breast abscess.

b) Breast Abscess

Very tender collection of pus.

Treatment:

- Surgical drainage of abscess.
- Keep breast-feeding on good side, express milk of affected side, restart breastfeeding on affected side as soon as possible.

## 10. Genital tract infections

a) Perineum/Vulva/Vagina

Local pain, swelling, discharge

Treatment:

- Wash with clean water, keep clean and dry.
- Remove some or all sutures (if present).

**Refer:** If no response.

b) Uterus

Abdominal and back pain, smelly PV loss, high fundus, tender uterus.

Treatment:

- Ensure there are no retained products
- Give Amoxycillin 500mg TDS and metronidazole 400mgs BD (with food) for 5-7days
- Analgesics.
- **Refer:** If symptoms continue.

#### 11. Urinary tract infection

- a) Abdominal and back pain, dysuria, frequency, usually fever.
- b) Cloudy urine with protein and blood.

Treatment:

- In hospital send urine for examination first.
- Amoxycillin 500mg TDS for 7-10 days
- Encourage to drink plenty of water

#### 12. Malaria

See "Malaria" section in this manual.

### Newborns

Key conditions affecting newborns are:

1. Low Birth Weight (LBW): preterm or small for dates (IUGR – Intrauterine Growth Restriction)
2. Respiratory Distress – grunting, chest recession, fast breathing, cyanosis
3. Sepsis
4. Hypoglycaemia and hypothermia
5. Jaundice
6. Asphyxia

😊 The key to management is keeping them: Warm, correct the feeding regime and treat infection.

#### 1. Feeding & Fluids:

- a) LBW infants (especially preterm) may be too small to breastfeed, so may need nasogastric tube feeds of expressed breastmilk (EBM) every 2-3 hours
- b) Sick newborns with respiratory distress should not be tube fed or breastfed because of the risk of aspiration – they need an IV following consultation with a paediatrician. Refer or transfer if possible.
- c) Feeding Volumes / IV fluid rates:

Days Old	mL per Kilogram per Day	Divide total daily amount by 12 for 2 hourly feeds or 8 for 3 hourly feeds  e.g. 60mL x 2.2kgs = 132mL ÷ 8 = 16.5mL every 3 hours for Day 1 for a birth weight of 2.2kgs
1	60mL / kg / day	
2	90mL / kg / day	
3	120mL / kg / day	
4	150mL / kg / day	

d) IV Fluids:

- i Use 5% Dextrose or 4% Dextrose with 0.18% Saline
- ii Add 10mL of 50% Dextrose to each 90mL You MUST USE a PAEDIATRIC BURETTE with microdrops – 1 drop per minute = 1mL per hour e.g.  
60mL x 2.2kgs = 132mL ÷ 24 = 5.5mL per hour for Day 1 for a birth weight of 2.2kgs.
- iii To work out how many drops per minute for a microdrip set you need the following equation:

$$\frac{\text{mL}}{\text{Hours}} \times \frac{60 \text{ drops per mL}}{60 \text{ minutes}} = \text{Drops per minute}$$

Therefore:

$$\frac{132\text{mL}}{24 \text{ hours}} \times \frac{60 \text{ drops per mL}}{60 \text{ minutes}} = 5.5 \text{ drops per minute}$$

## 2. Infection:

- a) Neonatal sepsis is common, especially in small babies or in mothers with prolonged rupture of membranes or fever during labour – See Common Obstetric Problems for what to do to help prevent neonatal sepsis.
- b) Signs of infection are usually non-specific such as respiratory distress, fever, refusing feeds, mottling of skin, low temperature, and hypoglycaemia.
- c) Treatment:
  - Antibiotics must be given IM or IV, not orally, newborns need two antibiotics and these should be commenced before referral:
    - Ampicillin 50mg / kg twice per day
    - Gentamicin 5mg / kg once per day
  - Keep baby warm, including head cover (hat)
  - Feed 2 hourly or administer IV depending on condition to prevent hypoglycaemia
  - Take temperature per axilla to avoid heat loss from exposing for PR temperature, take respirations over full minute and apex heart beat with stethoscope – take observations every hour until stable

- In hospital, consider nursing in an incubator if condition unstable

### 3. Respiratory Distress:

- a) Hyaline Membrane Disease: preterm infants develop grunting, fast breathing and frothy sputum by 4-8 hours of age.

Treatment:

- Oxygen
- Antibiotics as above
- Stop feeds if respiratory rate more than 80 per minute and insert IV

- b) Apnoea: affects preterm infants, usually in week 2.

Treatment:

Responds to stimulation

If early onset or no response to stimulation:

- Check blood sugar and temperature and treat for sepsis

- c) Transient Tachypnoea of Newborn (TTN): affects full term infants, especially after caesarian section or precipitous (fast) delivery. Consult with Paediatrician.

Treatment:

Usually only lasts 4 – 6 hours

- Take observations and watch carefully

If more than 4 – 6 hours

- Treat for sepsis

### 4. Asphyxia (Hypoxic – Ischaemic Encephalopathy)

- a) Risk factors include prolonged labour, meconium stained liquor, low APGAR score, cord around neck etc

Affected infants may be jittery, very irritable, drowsy and lethargic, unable to breastfeed, convulsions, meconium aspiration syndrome.

Treatment:

- Check blood sugar regularly and treat / prevent hypoglycaemia (<2.2mmol/L) with tube feeds of EBM or IV fluid
- If fever or respiratory distress, treat for sepsis
- Treat convulsions with Diazepam or Phenobarb and refer.
- Follow-up developmental milestones at 6, 9 and 12 months

### 5. Hypoglycaemia

- a) Defined as a blood sugar less than 2.2mmol/L

b) Large for Gestational Age (LGA) babies (>4.0kg) or infant of a diabetic mother (IDM) are at risk, especially 2 – 12 hours after delivery

c) Small for Gestational Age (SGA) babies and preterm infants also at risk but prevented by frequent feeding

Treatment is symptomatic:

- Hypoglycaemia with IV dextrose or expressed breast milk with dextrose via nasogastric tube. Consult with paediatrician.

### **Other Points:**

Vitamin K must be given at birth, Hepatitis B vaccine can be given, when to give BCG can be discussed with medical officer.

Immunisation schedule continues as normal even if they are preterm.

You must take extra time educating mothers who have sick newborns.

Make sure that infants attend MCH clinic frequently.

Encourage mothers to exclusively breastfeed, practice good hygiene and place baby under mosquito net when sleeping.

If infant was admitted to hospital, make sure referral back to clinic is given to mother with any special instructions.

Check mother has adequate family planning so she can devote time to this baby before having another.

## OCULOGYRIC CRISIS AND DYSTONIA

Dystonia (including oculogyric crisis) can be a side effect of some drugs. In particular, drugs that block dopamine (dopamine antagonists) can do this. Many drugs used to treat nausea or psychosis block dopamine. These drugs include:

1. Metoclopramide (Maxalon®)
2. Chlorpromazine (Largactil®)
3. Haloperidol
4. Trifluoperazine (Modecate®)
5. Other drugs available privately or via donation include prochlorperazine (Stemetil®), other drugs for mental health conditions – check with pharmacist or medical officer.

🔔 Avoid all of these in patients who get dystonia. Do not use in children.

### Signs:

1. Patient has usually just had one of the drugs listed above, dystonias are more common in children and young adults.
2. Eyes roll back in head
3. Neck can spasm
4. Tongue can fall back
5. Dribbling saliva

### Treatment:

1. Adult:

➤ Benztropine (Cogentin®): IV (over 3-5 minutes) or IM: 1mg to 2mg

**OR**

➤ Trihexyphenidyl (Benzhexol): 2mg orally

➤ In some cases, treatment with diazepam may also prove helpful.

2. Children over 3 years old: (must dilute ampoule before giving dose)

➤ Benztropine (Cogentin®) 10mcg to 20mcg/kg IV (maximum 1mg to 2mg)

Weight (kg)	DILUTE injection before giving to children	Dose of DILUTED injection
15-19	Dilute 1mL (1mg) plus 9mL of water for injection = Total volume 10mL This gives you a solution that is <b>100mcg per mL</b> , then use the dose in next column according to weight.	2mL (200 micrograms)
20-24		3mL (300 micrograms)
25-29		4mL (400 micrograms)
30-34		4mL (400 micrograms)
35-39		5mL (500 micrograms)
40-44		6mL (600 micrograms)
45-50		7mL (700 micrograms)

\* IV is preferred as it works faster, but IM can be used if reaction is mild or if no IV access. Symptoms are reduced within 2 minutes and resolved within 15-30 minutes after IV dose. In adults, it may be possible to reintroduce the offending drug at a lower dose or consider alternatives.

# OEDEMA (SWELLING) AND HEART FAILURE

## General swelling

Swelling of both legs due to:

1. Heart Failure:
  - a) Fast pulse, raised neck veins, big liver.
  - b) Sudden shortness of breath from build-up of fluids in lungs, often worse if lying flat.
  - c) May have ascites and swelling of lower legs.
  - d) Often breathless with crackles in the chest and heart murmurs.
  
2. Kidney Disease:
  - a) Protein in the urine.
  - b) Maybe swelling of the face.
  - c) May also have high BP and anaemia.
  
3. Liver Disease:
  - a) May have distended abdomen (ascites) in addition to swelling of legs.
  - b) Liver not usually big.
  - c) Sometimes jaundiced.
  
4. Anaemia:
  - a) Very pale, tired and dizzy.
  - b) Usually signs of heart failure or kidney failure too.

## What to do:

Thoroughly examine the patient and ask about past history e.g. have they had this problem before then decide on treatment according to findings.

Try and speak to a medical officer but do not delay initial treatment to do this.

- The younger the patient the more they need to see a medical officer.
- Consider rheumatic heart disease in young patients.

**Refer** all patients with heart, kidney and liver disease and children.

People with heart failure should be commenced on:

- Enalapril 5mg daily increasing to maximum dose of 20mg bd under medical supervision.
- Frusemide 20-40mg daily may assist with fluid reduction.
- ☒ Hydrochlorothiazide is not often used for heart failure as it is not a strong diuretic and causes side effects in high dose.

Counsel patient to:

- ⇒ Have rest periods with feet elevated
- ⇒ If in gross failure, restrict fluids to 1.5litres per day
- ⇒ Stop using salt
- ⇒ Stop smoking
- ⇒ Avoid alcohol
- ⇒ Try to reduce weight if fat and do some physical activity if possible.

They should see you regularly if they are well for examination, support and tablet resupply.

**Discuss** all patients with medical officer after commencing treatment for investigation of cause. Further drug therapy may include spironolactone 25mg daily and a b-blocker such as atenolol commencing at low dose.

- ☒ Digoxin is only added by medical officer when all else has failed or if atrial fibrillation present.

### Swelling due to malnutrition

Usually children, light hair, skin changes, thin arms.

#### What to do:

1. Adults with malnutrition usually have another underlying disease
  - **Refer** to hospital and see Malnutrition section of this guide
2. Examine and commence treatment for fever or infections before **referral**
  - Frusemide (Lasix) should only be given on medical officer's orders

### Swelling in pregnancy

Some ankle oedema is common in late pregnancy.

If raised BP or protein in urine, may be pre-eclampsia.

#### What to do:

- Follow Obstetrics section of this guide for management and when to **refer**
- Pregnant women are usually not given Frusemide (Lasix)

### Swelling of only one leg

1. Filariasis ["big leg"] is present for a long time and painless.

#### What to do:

- See Filariasis section of this manual

2. Infection (eg cellulitis, pyomyositis or osteomyelitis):

- Acute and painful, requires urgent treatment.

#### What to do:

- See Skin Diseases and Wound Care section of this manual

3. Bite or Sting (e.g. 'milpat'):

Acutely painful

#### What to do:

- Usually settles with analgesia. See Stings and Bites section of the manual

4. Injury or Vein Thrombosis:

Injury is obvious. Treat accordingly.

Vein thrombosis commonly presents as pain at back of calf, worse when foot pushed upwards and the skin on the swollen leg feels hotter than the other leg.

#### What to do:

- Treat the injury, **refer** if necessary.

If you think problem is a vein thrombosis:

- **Discuss** with medical officer and if necessary, refer as soon as possible to hospital
- Rest and elevate limb
- Give an Aspirin 300mg stat to decrease further clot formation.

## PAIN MANAGEMENT

Refer also to Joint Pain and Arthritis chapter.

Pain is the most common reason that people come to health facilities and seek medical advice. It is vital to treat the CAUSE of the PAIN eg. Tooth extraction for dental pain, management of gout, setting of fractures etc as well as the PAIN itself. Recognising the type and cause of pain enables us to treat the pain appropriately.

1. How to assess pain:
  - a) It is important to know exactly what patients mean by pain and if it is related to other symptoms.
  - b) You must ask many questions and explain why you are asking them (to help you diagnose the cause of the pain and how serious it is).
    - i. When did the pain start and how long have you had it?
    - ii. Where is the pain?
    - iii. What is the pain like?
    - iv. Is there anything else the person has noticed that goes with the pain?
    - v. Does the pain transfer or go anywhere else?
    - vi. Is there anything that makes the pain better or worse?

### Different types of pain

1. Mild:

- a) This pain is usually of fairly sudden onset and often related to injuries
- b) Some examples would be cuts, bruises, headaches and sprains

Paracetamol 500 to 1000 mg 6<sup>th</sup> hrly (regular 6<sup>th</sup> hrly paracetamol gives the most effective pain relief).

2. Moderate:

- a) This pain is more severe, lasts longer and often requires medical treatment for relief.
- b) Examples include dental pain, post-minor surgery and sprains.

Paracetamol 500 to 1000 mg 6<sup>th</sup> hrly (regular 6<sup>th</sup> hourly paracetamol gives the most effective pain relief)

+ Anti-inflammatory drugs such as Ibuprofen 400mg, 6 to 8 hourly if there are no contraindications such as kidney disease, heart failure or gastric bleeding.

**and/or** Codeine 30 to 60 mg 4<sup>th</sup> hrly.

Paracetamol, anti-inflammatory drugs and codeine can be given at the same time.

Remember non-drug therapy – RICE first aid plan for the first 48-72hrs after a sprain or strain.

**Rest** the injured area, remove rings from fingers if a hand injury in case of swelling.

**Ice** the injured area for 15mins every 2 hours for 24hrs, then for 15mins every 4 hrs for the next 24hrs. Ice reduces pain, swelling and bruising. You can use ice, a cold pack, a pack of frozen vegetables or even a bucket of cold water if no refrigeration available. Do not apply ice directly to the skin – wrap in a damp cloth.

**Compression** – apply a firm, wide, elastic bandage to reduce the swelling and bleeding and to provide support to injured area. The bandage should extend well above and below the injury. It should not be too tight that it cuts off the blood supply.

**Elevation** – raise the injured part to reduce swelling and bleeding. Elevation is most important in the first 24-48hrs and while applying ice.

For the first 48-72hrs after a soft tissue injury, follow NO HARM as well as RICE first aid:

**No Heat** – it increases bleeding and swelling

**No Alcohol** – it increases bleeding and swelling

**No Running or exercise** – it can make the injury worse

**No Massage** – it may increase bleeding and swelling.

### 3. Severe:

a) This pain is difficult for the patient to tolerate.

b) Examples include severe burns, fractures, post-major surgery and acute surgical cases.

Paracetamol 500 to 1000 mg 6<sup>th</sup> hrly (regular 6<sup>th</sup> hourly paracetamol gives the most effective pain relief)

+ Anti-inflammatory drugs such as Ibuprofen 400mg, 6 to 8 hourly if there are no contraindications such as kidney disease, heart failure or gastric bleeding

+ Codeine 30 to 60 mg 4<sup>th</sup> hrly **or**

Morphine 0.1-0.15 mg/kg subcutaneous every 2 to 3 hours **to a maximum of 10mg per dose**

Paracetamol, anti-inflammatory drugs and codeine **or** morphine can be given at the same time.

As codeine and morphine are both opiates drugs in the same family, do not give at the same time

### 4. Chronic:

c) This pain is long term in nature, often constant and not always easily relieved with medication.

d) It is very important to determine the cause of the pain PRIOR TO starting treatment.

e) Examples include low back pain, musculoskeletal pain, arthritis and cancers.

Non-drug treatments such as counselling, education, exercises, massage, acupuncture etc

Paracetamol given on a regular basis will provide a baseline level of pain relief - paracetamol 500 to 1000 mg 6<sup>th</sup> hrly.

Anti-inflammatory medications such as Ibuprofen 400 mg 6 to 8 hourly if there are no contraindications such as kidney disease, heart failure or gastric bleeding

Paracetamol and anti-inflammatory drugs can be given at the same time.

Amitriptyline and carbamazepine can be used if there are symptoms of neuropathic pain

#### **A Special Note on Patients with Chronic pain and Morphine**

Morphine is the best drug to give to cancer patients with the chronic and progressively worsening pain of malignancy (cancer).

In other chronic pain settings such as low back pain, headache and arthritic pain, morphine should be AVOIDED.

#### **A Special Note on Cancer Patients**

1. Pain associated with cancer almost always becomes chronic and severe.

2. The pain is progressive and pain management will require medical expertise.

3. Morphine is the best drug to treat cancer pain.

#### **What to do:**

If you are unable to manage pain relief **refer** to a hospital to assure adequate pain management.

1. Initial treatment for patients with cancer pain

Paracetamol given on a regular basis will provide a baseline level of pain relief - paracetamol 500 to 1000 mg 6<sup>th</sup> hrly

Anti-inflammatory drugs may be helpful but may be poorly tolerated in sicker patients - ensure that there are no contraindications such as kidney disease, heart failure or gastric bleeding

Amitriptyline if patient has poor sleep or has symptoms of depression

Morphine 5-10 mg SC every 3-4 hours as required, change to oral morphine when pain is controlled

2. After 2-3 days assess the total dose of Morphine required and then switch to an equivalent dose of oral morphine slow release tablets available from Central Medical Store/ Provincial Hospital Pharmacy.

To change from SC/IM to oral dosage requirements, find out how much morphine they have used in 24 hours.

The equivalent oral dose is 2-3 times the amount given SC/IM as not all the drug is absorbed from the gut. The total daily dose of oral morphine is then halved and given as slow release oral morphine tablets twice a day.

- e.g. patient was given 10mg of morphine SC/IM x 5 during last 24 hours with good pain relief.
  - Their daily requirement of IM/SC morphine is  $10\text{mg} \times 5 = 50\text{ mg}$
  - The daily oral dose is therefore  $50\text{mg} \times 2 \text{ to } 3 = 100 \text{ to } 150\text{ mg}$
  - This dose is halved into 2 doses given 12 hours apart of slow release morphine – i.e. 50 to 75 mg every 12 hours
  - You cannot break the tablets and the tablets only come in 10, 30 and 60mg.
  - For this example you will need to give 100mg for the day or 50mg bd i.e. you would give (1 x 30mg + 2 x 10mg) tablets in the morning and the same in the evening). If this is not providing good pain relief, increase dose to 70-80mg bd – you cannot halve the SR tablets so 75mg cannot be given orally.
3. Extra doses may need to be given – this is normal when a patient has cancer, instruct family in this. Continue giving the calculated dose twice per day even if extra is given.
- 🔔 Make sure family understand that this drug should not be taken by anyone else and that the tablets should be kept in a safe place where children cannot find them.
4. As time goes by the patient will need increasing doses as the cancer pain worsens and they develop a tolerance to morphine. The medical officer who ordered the pain relief should write instructions on how to increase the dose but never withhold morphine if a cancer patient has pain. Tolerance is not the same thing as addiction – patients with cancer pain do not become addicted to morphine.
5. As morphine is a restricted drug, you should keep records of administration and when and how much you gave to the family to administer. Have the family member sign that they received the tablets. Keep notes on the pain and when you increase the dose or give extra doses.

**Points to remember:**

1. Do not withhold strong pain relief medication for short term pain relief. Short-term use does not pose a significant risk of addiction.
2. If the pain is expected to continue, give regular pain relief. Do not wait for the pain to return or do not wait for the patient to ask. Anticipate pain relief needs.
3. If the patient requires transfer, always give pain relief prior to transfer.
4. Patients who do not have diagnosed cancer who continually ask for morphine or codeine should be referred to a medical officer.
5. If you abuse the administration of morphine or codeine disciplinary charges can be brought against you and also criminal charges.

## PHARMACY ISSUES

**Essential Drug List:** The National Drug and Therapeutics Committee (NDTC) oversees the Vanuatu Essential Drug List (EDL) which is the range of medicines stocked by the Ministry of Health (MoH). This list is based on the WHO Model List and essentially covers medicines for the most common diseases found in Vanuatu. Generic medicines are purchased through the Central Medical Stores (CMS) and distributed to provincial hospitals who then fill two monthly orders for rural aid posts, dispensaries and health centres. The budget for purchase of all medical supplies, including laboratory reagents, dental and XRay requirements is approximately 800Vt per person per annum in 2014.

**Donations:** Some donations are provided through the CMS eg. Malaria medicines, family planning commodities and HIV medicines. External drug donations are discouraged and the *Vanuatu Drug Donation Guidelines of 1999* must be followed before these can be accepted. In particular, drug donations left at clinics by visiting tourists or yachts are discouraged as many of these medicines are not on the EDL and staff may not be familiar with their use. Also once expired, there is no safe disposal method available for clinics to dispose of these medicines. Large unaccounted donations of medicines make prediction of actual need difficult for CMS and reduce the ability to accurately predict the necessary budget required for purchase of medical supplies.

**Clinic Storage:** Medical supplies should be stored in clinics:

- securely away from public access
- kept in a clean environment with no rats or vermin likely to damage or contaminate the supplies
- away from direct sunlight and heat
- in the order of the order form – to make it easier to count stocks ready for ordering
- stock should be rotated such that first stock in is the first stock out or used so new stock must be placed BEHIND old stock when unpacking orders. The only exception to this is if the expiry of the new stock is before the stock already on the shelf, then it is placed in front.

**Clinic Ordering:** Medical supplies must be ordered every two months according to your Annual Order Schedule supplied by the provincial pharmacy. Supplies must be counted and the calculation currently used for Dispensaries and Health Centre's ensures you will keep four month's supply in stock. This is double your usage rate but the extra stock ensures you do not run out of medicines if there is an outbreak of a disease or there is a delay in supply of your order. It is very important you order on time every two months – do not wait till you run out of stock before placing an order.

Order Calculation for HC's and Dispensaries:

1. You must have accurate records of previous order and stock received! Keep a file with copies of previous orders and what you received.
2. Count full containers in units specified.
3. Work out how much used since last order:  
*Last stock check + Amount received – This stock check = Amount used since last order*
4. Now work out how much to order:  
*2xAmount used since last order – This stock check = Amount you need to order*

Your provincial pharmacy will check this calculation and change it to be correct so if you do not understand the calculation – just do an ACCURATE stock check and pharmacy can work it out!

5. Individual patient supplies eg medicines for diabetes, hypertension, epilepsy etc. must be ordered on the appropriate section of the order form and include instructions and ordering doctors name.

Ordering for Aid Posts:

1. In 2012, the system changed for Aid Posts and there is a maximum quantity that can be ordered for each item listed on the order form.
2. Aid Posts must place an order every two months according to the Order Schedule.

Keep a copy of your order and ensure all goods received are checked off and recorded when the supplies are received. Keep these records for your next order calculation.

Remember to put new stocks behind the old supplies (unless an earlier expiry) so stocks do not expire.

### Who can prescribe what?

Basically the list of medicines on each respective clinic order form specifies what the health care worker in that facility can prescribe ie.:

- Aid Post workers can prescribe all medicines listed on the Aid Post Order form
- Registered nurses can prescribe all medicines listed on the Dispensary Order Form
- Nurse Practitioners can prescribe all medicines listed on the Health Centre Order Form

Provincial Managers can provide written permission for health care workers to prescribe more extensively eg if an Aid Post Worker only is manning a Dispensary ie no nurse, the Provincial Manager may approve items such as the oral contraceptive to be continued to be prescribed so patients do not suffer as a result of lack of staff.

Alternatively, a registered nurse working in an Aid Post would also require provincial manager approval for Dispensary listed medicines to be supplied to the Aid Post as this has financial budget implications.

**Expiry Dates:** All medicines and medical supplies have expiry dates. We try to ensure we only use medicines within their expiry dates but sometimes CMS receives medicines that are short dated or over-ordering means we have a lot of medicine in stock and it may reach its expiry date before we run out.

**For medicines, there must be 90% active ingredient in the medicine at the date of expiry.** Medicines usually break down to inactive substances at an even rate but this may speed up if medicines are in a hot climate or in direct sunlight or exposed to lots of moisture. This is why we want you to rotate your stocks and use the first expiry-first out method of storage. If we have no alternative, sometimes we have to use medicines past their expiry date and the pharmacy will notify you if the expiry date of a product has been extended.

Some medicines (not a complete list) we do NOT use past their expiry dates include:

- Vaccines
- Doxycycline
- Aspirin
- Medicines where you cannot check easily if it is effective eg oral contraceptives

Check with Pharmacy if you have any concerns about using a medicine that has passed its expiry date.

By adding the expiry date to the order form you can notify pharmacy of expired stock and if they have in-date stock they can replace your expired medicines. Remember do not throw away your expired stock until your new stock arrives.

For medical supplies that are in a sterile packet, the expiry really relates to sterility and if the expiry is reached the product may need resterilization if the packaging is damaged. It does not necessarily mean the product is no longer useable.

**Quality Issues:** Central Medical Stores purchases medicines from all over the world and sometimes the quality of the product purchased is not good. If you notice medicines are crumbly, change colour, or produce an unexpected response please contact your provincial pharmacy staff to report this problem. They will refer it to the Central Medical Stores for assessment and if necessary, testing or recall of the product.

**Dispensing:** Make sure you have the following:

- Right patient,
- Right medication
- Right dose (strength and frequency),
- Right route of administration eg swallowing a tablet, suppository in rectum etc,
- Right time of dose.

Ensure you have calculated the right quantity of tablets to give the patient. Ensure the patient understands how to take the medicine and for how long. Label the medicines with instructions (or fill in the pictogram with doses if they cannot read) and include the name and strength of the medicine as well as the patient's name. All oral medicines should be taken with a drink of water to ensure they reach the stomach and do not lodge in the oesophagus. Make sure medicines are not shared with others. Tell the patient to return if they experience side effects from the medicine or their condition does not improve. If a patient has an allergic reaction to a medicine, document this in the patient notes with details of drug given, type of reaction and when it occurred. Ensure patient understands not to take this medicine again. Refer to a pharmacist if you are unsure if an allergic reaction has occurred.

**Counselling Information:** Below are some recommendations for counselling about medicines on EDL:

DRUG	COUNSELLING INFORMATION
Allopurinol	Take with food Might make you dizzy when you first start it
Amitriptyline	Might make you sleepy Might make you dizzy when you first start it It might give you a dry mouth and dry eyes
Amoxicillin	Finish all the medicine
Aspirin	Take with food Check for interactions
Atenolol	Do not stop taking this medicine without talking to your doctor Might make you dizzy when you first start it
Augmentin	Take with food Finish all the medicine
Beclomethasone Inhaler	Rinse your mouth with water after you use it Use regularly as a preventer for asthma and airways disease
Chloroquine	Take with food
Co-Artem	Take with food, finish the full course
Chlorpheniramine	Might make you sleepy, do not drink alcohol
Chlorpromazine	Might make you sleepy Might make your skin burn easily Might make you dizzy
Ciprofloxacin	Take half hour before food Do not take with antacid, iron, calcium tablets or milk products Might make your skin burn easily
Ciprofloxacin	Might make you dizzy Finish all the medicine

Cloxacillin	Take half hour before food Finish all the medicine
Cotrimoxazole	Take with food Finish all the medicine It might make your skin burn easily
Diazepam	Will make you sleepy, do not drink alcohol
Digoxin	Check interactions If it gives you an upset stomach or makes your vision blurry, see the doctor again. Do not stop taking this medicine without talking to your doctor
Doxycycline	Take with food Do not take with antacid, iron or calcium tablets Might make your skin burn easily
Enalapril	Might make you dizzy when you start it Do not stop taking this medicine without talking to your doctor
Erythromycin	Check interactions Take half an hour before food or after food if upsets stomach Finish all the medicine
Ferrous sulphate (Iron)	Do not take with antacids or calcium tablets Space two hours away from other meds eg ciprofloxacin, doxycycline etc Tell patients their bowel motions will turn black Take half an hour before food or after food if upsets stomach
Frusemide	It might make you dizzy if you stand up quickly Take in morning as you may pass urine more frequently
Glibenclamide	Take with food Do not take more than 1 aspirin a day with this medicine Do not stop taking this medicine without talking to your doctor
Griseofulvin	Take with food Finish all the medicine Do not drink alcohol with this medicine It might make your skin burn easily It might make you dizzy
Hydrochlorothiazide	It might make you dizzy when you start it Do not stop taking this medicine without talking to your doctor
Ibuprofen	Take with food It might make you dizzy Don't take more than 1 aspirin a day with this medicine
Metformin	Take with food Do not take more than 1 aspirin a day with this medicine Do not stop taking this medicine without talking to your doctor however if you have diarrhoea/vomit skip doses on these days
Methyldopa	It might make you dizzy when you start it Do not stop taking this medicine without talking to your doctor
Metronidazole	Take with food Finish all the medicine Do not drink alcohol with this medicine
Microgynon (COC)	Take with food Take at the same time each day

Microlut (Progesterone only)	Take at the same time each day
Nifedipine SR	Swallow whole (do not chew or crush) It might make you dizzy when you start them Do not stop taking this medicine without talking to your doctor Must be chewed if using for stopping premature labour
Nystatin drops	Swill gargle and swallow after food
Paracetamol	Do not take more than 8 tablets daily (adult) Do not give more than 4 times daily
Penicillin	Finish all the medicine
Phenobarbitone	It might make you sleepy Do not stop taking this medicine without talking to your doctor
Phenytoin	Do not stop taking this medicine without talking to your doctor
Prednisolone	Take with food Do not stop this medicine quickly (if are to take it for a long time)
Promethazine	It might make you sleepy, do not drink alcohol
Sodium Valproate	Do not stop taking this medicine without talking to your doctor Swallow whole (do not chew or crush) Take with food Do not take more than 1 aspirin a day with this medicine
Warfarin	See specific warfarin counseling handout (below) Check interactions Do not take aspirin with this medicine
Zinc sulphate	Tablets can be dispersed in water for easy dosing of children Take with food if eating

*The Australian Pharmaceutical Formulary (APF) provides details of these recommendations – copies are available in most pharmacies for further information.*

## SPECIL SAMTING LONG SIDE LONG

### WARFARIN MERECIN



Yu mas save gud ol samting long merecin ia:

1. Dring merecin evri day mo same taem long evri day.
2. Kakai gud - yu no chanisim kakai blong yu tumas.
3. No dring alcohol.
4. Spos yu lukum plente blud long pis pis blong yu o nose blong yu or yu shit shit black o red shit shit afta yu mas lukum wan docta o nurse mo stopem merecin.
5. Taem yu cutim body blong yu, blud i ron longtaem from merecin i makem blud blong yu thin tumas. Bae yu mas takem care blong yu taem yu usem nif or razor.
6. Yu mas gat wan blud test taem docta or nurse i telem long yu. Yu mas check bakagin witim docta mo bae hemi telem long yu wanem new dose blong merecin.
7. Yu no dring any other merecin be wanem docta hemi givem long yu. Plente merecin i no go gud witim tislela merecin so yu no drink Aspirin or Bactrim be yu jek witim famaci or docta firstime. Spos yu gat sore i olrite spos yu dring Panadol nomo.
8. Spos yu forgetem drink merecin one day yu no save dring twofela doses long wan day from we yu gat tumas merecin. Takem normal dose nomo long wan day. Taem yu forget, yu mas telem docta or laboratory wanem taem yu forget.
9. Trifela strength blong tislela merecin: Warfarin 1mg i brown, 3mg i blue mo 5mg i pink - yu mas save gud mo checkim gud taem yu dring!

## POISONING

Poisoning can be accidental or not (self-inflicted or deliberate). All patients showing signs of poisoning or who are known to have been exposed to or ingested poisons with delayed actions will need careful monitoring. If possible, it is advisable to admit the patient to hospital.

As quickly as possible you will need to find out:

- a) What has been taken? How much? When? Any vomiting-what came out?
- b) If the patient is unconscious, drowsy or convulsing (having fits) you must first:
  - DRABC Resuscitation – see Accidents section in this guide.
  - Manage convulsions - see Convulsions section in this guide.
  - Do not induce vomiting
  - **Refer** to hospital as quickly as possible.
- c) If the patient is fully awake and ate or drank the poisonous substance:
  - Complete a thorough history and perform an examination
  - Check quickly the pulse, respiratory rate, blood pressure and listen for wheezes.
  - If possible check the temperature
  - Immediate Supportive Treatment and Management:

Airway and Respirations	<ul style="list-style-type: none"> <li>➤ Secure an Airway. If obstructed clear and insert airway if necessary</li> <li>➤ If unconscious, lay the patient on their side,</li> <li>➤ Assist ventilation if needed</li> <li>➤ Give supplemental oxygen (especially for irritant gas or carbon monoxide exposure)</li> </ul>
Pulse	<ul style="list-style-type: none"> <li>➤ If no pulse, begin CPR</li> </ul>
Blood Pressure	<ul style="list-style-type: none"> <li>➤ Assure adequate circulation and hydration.</li> <li>➤ IV fluids per age and weight</li> <li>➤ If transferring patient, keep them on their side</li> </ul>
Body Temperature	<ul style="list-style-type: none"> <li>➤ Conserve body heat, especially in the young and elderly, as well as those malnourished</li> </ul>
Convulsions or Fits	<ul style="list-style-type: none"> <li>➤ Diazepam stat.</li> <li>➤ May need Diazepam IV if persistent</li> </ul>
Gastrointestinal Tract	<ul style="list-style-type: none"> <li>➤ Give activated charcoal orally– 1g/kg up to 50-100g single dose</li> <li>➤ DO NOT INDUCE VOMITING if they have ingested burning/corrosive substances, detergents, petrol, diesel or kerosene. Inducing vomiting with ipecac is no longer advised.</li> <li>➤ In these cases use milk and water to dilute the poison.</li> </ul>

🔔 The most dangerous drugs in Vanuatu which people overdose with are paracetamol (Panadol®), aspirin, iron tablets, chloroquine and quinine. All poisoned patients should be observed and monitored for at least 24 hours and receive counselling prior to discharge.

➤ Substance and Effects	➤ Treatment
<p><b>Paracetamol(Panadol)</b></p> <ul style="list-style-type: none"> <li>• Acute symptoms may include nausea and vomiting.</li> <li>• Severe side effects include liver damage, organ failure and death.</li> </ul>	<ul style="list-style-type: none"> <li>➤ ALL overdoses should be given activated charcoal, 1g/kg of bodyweight unless the time elapsed between ingestion and presentation is greater than 8 hours.</li> <li>➤ Give Methionine 2.5g/dose by mouth (if conscious and not vomiting) every 4 hours for 4 doses for overdoses of more than 9 grams (18tabs) in adults. Same dose for 6year olds and older if ingested &gt;150mg/kg paracetamol. Children &lt;6years receive 1g every 4 hours for 4 doses if ingested &gt;150mg/kg paracetamol. If possible consult paediatrician for children.</li> </ul>
<p><b>Chloroquine or Quinine</b></p> <ul style="list-style-type: none"> <li>• Acute symptoms include nausea, vomiting, dizziness, blurred vision and drowsiness.</li> <li>• Serious effects are hypotension, irregular pulse, convulsions and cardiac arrest</li> </ul>	<ul style="list-style-type: none"> <li>➤ ALL overdoses should be given activated charcoal, 1g/kg of bodyweight unless the time elapsed between ingestion and presentation is greater than 8 hours</li> <li>➤ Use cardiac monitor and treat any arrhythmias that may occur</li> <li>➤ Support with Oxygen and IVF as needed</li> <li>➤ Convulsions should be treated with Diazepam as per guidelines</li> </ul>
<p><b>Aspirin</b></p> <ul style="list-style-type: none"> <li>• Serious in young children as become acidotic quickly and suffer CNS effects –contact paediatrician</li> <li>• Acute symptoms include acidotic-like breathing, vomiting and tinnitus</li> </ul>	<ul style="list-style-type: none"> <li>➤ Give activated charcoal 1g/kg in repeated doses as absorption can be delayed. If charcoal not available and severely toxic dose taken, perform gastric lavage.</li> <li>➤ Give IV Sodium bicarbonate 1mmol/kg over 4 hrs to correct acidosis and increase excretion of aspirin from urine.</li> <li>➤ Give IV fluids and monitor blood glucose levels, correct as needed</li> </ul>
<p><b>Iron Tablets (Fefol®)or Mixture</b></p> <ul style="list-style-type: none"> <li>• Symptoms of nausea, vomiting, abdo pain and diarrhoea.</li> <li>• Severe cases GI haemorrhage, hypotension, drowsiness, convulsions, metabolic acidosis.</li> </ul>	<ul style="list-style-type: none"> <li>➤ Activated charcoal does not bind to iron salts. Consider giving gastric lavage if toxic amounts ingested.</li> <li>➤ Gastrointestinal effects usually appear in first 6 hours so if asymptomatic for this time after ingestion, probably does not require antidote treatment. <ul style="list-style-type: none"> <li>➤ Currently no antidote available in Vanuatu.</li> </ul> </li> </ul>
<p><b>Kerosene, Petrol, Diesel</b></p> <ul style="list-style-type: none"> <li>• Acute symptoms include shortness of breath, grunting respiration, pulmonary oedema.</li> </ul>	<ul style="list-style-type: none"> <li>➤ DO NOT GIVE OXYGEN</li> <li>➤ DO NOT INDUCE VOMITING OR GIVE CHARCOAL</li> <li>➤ Give milk and / or water</li> <li>➤ Symptomatic care</li> <li>➤ Refer immediately if drowsy, short of breath, losing consciousness</li> </ul>
<p><b>Insecticides / Organophosphates</b></p> <ul style="list-style-type: none"> <li>• Acute symptoms include salivation, sweating, wheezing, sweating, colicky abdominal pain, diarrhoea.</li> <li>• Severe symptoms muscle fasciculation (twitching), bradycardia(slow pulse), convulsions, paralysis and death</li> </ul>	<ul style="list-style-type: none"> <li>➤ Protect yourself from contamination – absorption through skin and inhaled can occur. Wear gloves and a facemask to protect self from contamination</li> <li>➤ Urgently remove all contaminated clothing and wash the skin.</li> <li>➤ Give activated charcoal if ingested and within 1 hr of ingestion.</li> <li>➤ Give IV or IM Atropine 1mg every 5-10 minutes until the amount of secretions (eg. from lungs and mouth) are normal. Child: 0.05mg/kg IV every 5-10mins until atropinised (reduce bronchial secretions).</li> <li>➤ <b>Refer</b> all symptomatic patients</li> </ul>

**Acids and Bleaches**

- Burning or damage to mouth, throat, airway, oesophagus and stomach.

- DO NOT INDUCE VOMITING OR GIVE CHARCOAL
- Give plenty of fluids, water or milk to dilute corrosive
- Look for and treat burns of mouth or throat
- Watch for shortness of breath

- ✓ Remember PREVENTION:
- ✓ Teach families to keep kerosene, chemicals, drugs, and other harmful things out of reach of children.
- ✓ All repackaged items MUST be labeled with contents.

## DRUGS IN PREGNANCY AND LACTATION (BREASTFEEDING)

DRUG NAMES	PREGNANCY CATEGORY	COMPATIBILITY WITH BREASTFEEDING
<b>ANAESTHETICS</b>		
Bupivacaine	Safe to use (Cat: A)	Compatible- Safe to use
Ephedrine	Safe to use (Cat:A)	Compatible-Safe to use
Isoflurane	Safe to use (Cat:A)	Compatible
Ketamine	Safe to use (Cat:A)	Avoid use-limited data
Lignocaine	Safe to use (Cat: A)	Compatible-safe to use
Thiopentone	Safe to use (Cat: A)	Safe to use-small amount excreted in breast milk
<b>ANALGESICS &amp; ANTISPASMODICS</b>		
Aspirin (acetylsalicylic acid)	Avoid use, increase rate of miscarriage. Avoid in late pregnancy. Antiplatelet dose less than 150mg safe(Cat:C)	Avoid use-theoretical risk of Reye's syndrome – single doses can be taken
Hyoscine	Safe to use-take caution though (Cat:B2)	Appears safe
Paracetamol	Safe to use (Cat: A)	Compatible-safe to use
<b>NARCOTIC ANALGESICS &amp; ANTAGONISTS</b>		
Codeine	Safe to use (Cat: A)-but prolong high dose before delivery may produce respiratory depression in infant and withdrawal symptoms	Avoid use-as infant death has occur
Fentanyl	Avoid use (Cat:C)	Avoid use
Morphine	Avoid use (Cat:C)	Compatible in usual analgesic doses use in prenatal period-caution with high dose
Naloxone	Avoid use (Cat:C)	Caution-insufficient data
<b>ANTI-INFLAMMATORY DRUGS</b>		
Allopurinol	Safe to use-use with caution-insufficient data (Cat:B2)	Compatible-though being excreted in breast milk
Ibuprofen	Avoid use (Cat:C)	Compatible-though limited data
Indomethacin	Avoid use (Cat:C)	Compatible
Probenecid	Use with caution-insufficient data (Cat:B2)	Caution-insufficient data available
<b>ANTI-ALLERGICS</b>		
Chlorpheniramine	Safe to use (Cat: A)	Safe to use
Prednisolone	Safe to use (Cat: A)-use for short term	Safe to use, take after feed and wait 4 hours before next feed
Promethazine	Safe to use-theoretical risk of neurological disturbance in infant when taken in late pregnancy (Cat:C)	Safe to use in short term period-sedation of mother main concern

<b>ANTI-EPILEPTICS-balance risks Vs benefits – ensure folic acid supplement</b>	Pregnancy Category	Compatibility with Breastfeeding
Carbamazepine	Avoid use if possible(Cat: D)	Safe to use-monitor for drowsiness and poor suckling
Diazepam	Avoid use if possible (Cat: B3)	Avoid use
Phenobarbitone	Avoid use if possible(Cat: D)	Avoid use-risk of sedating infant
Phenytoin	Avoid use if possible(Cat : D)	May be use
Sodium Valproate –highest risk of deformities	Avoid use (Cat : D)	May be use
<b>ANTI-HELMINTHICS (INTESTINAL)</b>		
Albendazole	Avoid used ( Cat: D)	Compatible- Safe to use
<b>ANTIBACTERIALS</b>		
Amoxicillin	Safe to use (Cat: B1)	Safe to use
Amoxicillin +Clavulanic acid	Avoid in women with premature rupture of membrane- inc. risk of neonatal necrotising enterocolitis. (Cat: B1)	Safe to use-may cause diarrhoea in infant
Ampicillin	Safe to use (Cat: A)	Safe to use
Azithromycin	Safe to use (Cat: B1)	Compatible- may cause diarrhoea in infant
Benzathine Penicillin	Safe to use (Cat: A)	Safe to use
Benzyl penicillin	Safe to use (Cat: A)	Safe to use
Ceftriaxone	Safe to use (Cat: B1)	Safe to use-may cause loose bowel motion
Chloramphenicol	Safe to use (Cat: A) – near term oral or parenteral use there is theoretical risk of grey syndrome in neonate	Compatible-may cause loose bowel motion
Ciprofloxacin	Avoid use-potential for fetal arthropathy (Cat: B3)	Compatible-diarrhoea in infant-use short course or other alternative drug
Cloxacillin	Safe to use (Cat: B1)	Compatible-diarrhea in infant.
Co-trimoxazole	Avoid in late pregnancy due to risk of neonatal kernicterus (Cat: C)	Compatible in healthy full-term neonate; avoid in ill or preterm
Doxycycline	Avoid use (Cat: D)	Compatible for short course (e.g. 10 days)if alternative drug not appropriate
Erythromycin	Safe to use (Cat: A)	Compatible-diarrhoea in infant.
Gentamicin	Avoid use (Cat: D) but use in severe sepsis in pregnancy.	Compatible
Metronidazole/Tinidazole	Safe to use (Cat: B2/B3)	Safe to use – may cause bitterness in milk – give in divided doses after feeding.

Drug Category	Pregnancy Category	Compatibility with Breastfeeding
Penicillin	Safe to use (Cat: A)	Safe to use- may cause loose bowel motion
Procaine Penicillin	Safe to use (Cat: A)	Safe to use- may cause loose bowel motion
<b>ANTILEPROTIC</b>		
Clofazimine in MB combi Pack	Approved for use in leprosy (Cat: C)	Approved for use in leprosy
Rifampicin	Safe to use (Cat: C) –ensure Vit K given at birth	Safe to use
<b>ANTI-TUBERCULOSIS</b>		
Ethambutol	Safe to use (Cat: A)	Safe to use
Isoniazid	Safe to use (Cat: A) - give pyridoxine 25mg daily to mother	Safe to use- give pyridoxine 25mg daily to mother
Pyrazinamide	Safe to use (Cat: B2)	Safe to use in TB.
Rifampicin	Safe to use (Cat: C) –ensure Vit K given at birth	Safe to use
Streptomycin	Avoid use (Cat: D)	Safe to use
<b>ANTIFUNGALS</b>		
Clotrimazole	Safe to use (Cat: A)	Compatible
Griseofulvin	Avoid use (Cat: B3)	Avoid use
Nystatin	Safe to use (Cat: A)	Compatible
<b>ANTI-PROTOZOAL</b>		
Chloroquine	Safe for prophylaxis (Cat: A)	Compatible
Metronidazole	Safe to use (Cat: B2)	Compatible-avoid high single dose
Primaquine	Avoid use (Cat: D)	Avoid use-avoid breastfeeding
Quinine	Avoid use (Cat: D) but routinely use for treatment of malaria in pregnancy	Compatible – avoid if child has G6PD deficiency
Artemether-Lumefantrine (Coartem 20/120®)	Avoid use-contraindicated in first trimester (Cat: D)	Safe to use
Artesunate	No data available-do not withhold in severe malaria or use quinine	Caution
<b>ANTINEOPLASTICS</b>		
Cyclophosphamide	Avoid use (Cat: D)	Avoid breastfeeding- excreted in milk.
Methotrexate	Avoid use (Cat: D)	Avoid use
Tamoxifen	Avoid use (Cat: B3)	Do not breastfeed- lactation may be suppressed.
<b>ANTI-PARKINSONISM</b>		
Benzhexol	Safe to use (Cat: B1)	Appears safe
Benztropine	Safe to use (Cat: B2)	Appears safe
Levodopa + Carbidopa	Limited data available (Cat: B3)	Avoid breastfeeding-may inhibit lactation.

<b>BLOOD &amp; HAEMATOPOIETIC</b>	Pregnancy Category	Compatibility with Breastfeeding
Ferrous Sulphate 200mg/Folic Acid	Safe to use (Cat: A)	Safe to use
Folic Acid	Safe to use (Cat: A)	Safe to use
Hydroxocobalamin/Cyanocobalamin (Vitamin B12)	Safe to use (Cat: A)	Safe to use
Heparin	(Cat: C)-use to treat or prevent thromboembolism during pregnancy	Safe to use
Phytomenadione (Vitamin K)	Use if required-few data available; may be use from 36 wks gestation in mothers taking liver enzyme inducing antiepileptics	Safe to use
Warfarin	Avoid use (Cat: D)- except perhaps in women with prosthetic valves, teratogenicity risk	Safe to use
<b>CARDIOVASCULAR</b>		
<b>A.ANTI-ANGINA &amp; ANTI-ARRHYTHMIC</b>		
Atenolol	May cause bradycardia in fetus and new born. Avoid in early stages of pregnancy due to retarding fetal growth (Cat: C)	Avoid, propranolol or metoprolol (not on EDL) more preferred to atenolol to take when breastfeeding
Amiodarone	Avoid use (Cat: C)	Do not breast feed
Glyceryl Trinitrate	Use with caution-limited data available, safety not established	No data available
Verapamil	Avoid use-(Cat:C)	Limited data available - avoid
<b>B. ANTI-HYPERTENSIVE</b>		
Atenolol	May cause bradycardia in fetus and new born. Avoid in early stages of pregnancy due to retarding fetal growth (Cat: C)	Avoid, propranolol or metoprolol (not on EDL) more preferred to atenolol to take when breastfeeding
Enalapril	Contraindicated – may cause malformations. Avoid in all trimesters (Cat: D)	Compatible- Safe to use
Hydralazine	Used for eclampsia to manage high BP (Cat: C)	Safe to use
Hydrochlorothiazide	Avoid use- may cause electrolyte imbalance etc.(Cat: C)	Use with caution- unlikely to suppress lactation
Magnesium Sulphate	Safe to use- in delivery	Compatible-safe to use
Methyldopa –drug of choice in pregnancy	Safe to use (Cat: A)	Compatible-safe to use
Nifedipine	May cause fetal hypoxia, however use first line for preterm labour	Compatible-safe to use
<b>C. CARDIAC GLYCOSIDES</b>		
Digoxin	Safe to use (Cat: A)	Safe to use
<b>D.ANTI-SHOCK</b>		
Adrenaline	Use if required: Safe (Cat: A)	No data available

Drug Category	Pregnancy Category	Compatibility with Breastfeeding
Hydrocortisone	Safe to use (Cat: A)	Safe to use
<b>E.DIURETICS</b>		
Frusemide	Avoid use, may cause electrolyte imbalance in fetus (Cat: C)	Use with caution- unlikely to suppress lactation
Hydrochlorothiazide	Avoid use- may cause electrolyte imbalance (Cat:C)	Use with caution-unlikely to suppress lactation
Spirolactone	Avoid use-may cause feminization of the male fetus.(Cat: B3)	Appears safe to use
<b>F.LIPID LOWERING AGENT</b>		
Simvastatin	Avoid use (Cat: D)	Avoid
<b>DERMATOLOGICAL DRUGS</b>		
Benzoic Acid	Use with caution-for short period	Safe to use
Benzyl benzoate	Avoid use since no data available- permethrin use preferred (Cat: B2)	Data limited- avoid, use permethrin (not on EDL)
Chlorhexidine	Safe to use (do not swallow)	Safe to use (do not swallow)
Clotrimazole	Safe to use (Cat: A)	Safe to use
Hydrocortisone /Betamethasone	Safe to use (Cat: A)-use the lowest appropriate potency and for the shortest period.	Safe to use-ensure breast area is free of corticosteroid before breastfeeding
Ichthammol	Limited data but appears safe to use	Safe to use
<b>GASTRO-INTESTINAL DRUGS</b>		
Antacid (Mag Trisilicate Co)	Safe to use (Cat: A)	Safe to use
Anti-hemorrhoids Cream	Safe to use	Safe to use
Bisacodyl	Avoid stimulants except for occasional doses (Cat: A)	May be use
Metoclopramide	Safe to use (Cat: A)	Safe to use
Omeprazole	Safe to use (Cat: B3)	Safe to use
<b>ADRENAL HORMONES</b>		
Dexamethasone	Safe to use	Safe to use
Hydrocortisone /Betamethasone	Safe to use (Cat: A)-use the lowest appropriate potency and for the shortest period.	Safe to use-ensure breast area is free of corticosteroid before breastfeeding
Prednisolone	Safe to use (Cat: A)-use for short term	Safe to use, take after feed and wait 4 hours before next feed
<b>SEX HORMONES</b>		
Clomiphene	Not indicated (Cat: B3)	May reduce milk supply
Norethisterone	Not indicated	Safe to use
<b>INSULIN &amp;ANTI-DIABETIC AGENTS</b>		
Glibenclamide	Avoid use (Cat: C)-replace with insulin	Avoid breastfeeding
Insulin –all forms –preferred treatment	Safe to use	Safe to use
Metformin	Change to insulin preferably but appears safe (Cat: C)	Safe to use

<b>THYROID AND ANTAGONISTS</b>	Pregnancy Category	Compatibility with Breastfeeding
Carbimazole	Use lowest effective dose-small risk of fetal hypothyroidism, check TFT's if possible (Cat: C)	Use lowest effective dose-monitor infant
Thyroxine	Safe to use – increased dose may be required(Cat: A)	Safe to use
<b>MUSCLE RELAXANTS &amp; ANTAGONISTS</b>		
Atracurium	Safe to use (Cat: C)	Safe to use
Vecuronium	Safe to use (Cat:C)	Safe to use
Neostigmine	Use with caution (Cat:B2)	Safe to use
Pancuronium	Safe to use (Cat:B2)	Safe to use
Suxamethonium	Safe to use (Cat:A)	Use with caution-no data
<b>OPHTHALMOLOGICAL PREPARATIONS</b>		
Acetazolamide	Avoid use (Cat: B3)	Avoid use-limited data.
Chloramphenicol eye drops	Safe to use (Cat: A)	Safe to use
Ciprofloxacin eye drops	Safe to use, limited data –unlikely to be concern due to low systemic maternal dose (Cat: B3)	Safe to use
Dexamethasone Eye drops	Safe to use	Safe to use
Fluorescein strips (Fluorets)	Safe to use	Safe to use
Gentamicin eye drops	Safe to use	Safe to use
Pilocarpine eye drops	Limited data-use caution (Cat:B2)	Safe to use
Phenylephrine	Safe to use short term (up to 5 days)	Safe to use
Tetracycline eye	Unlikely to cause adverse effect at topical dose-safe to use	Safe to use
Timolol eye drops	Avoid use-cause fetal bradycardia (Cat: C)	Safe to use- unlikely to cause adverse effects at usual dose
<b>OXYTOCICS &amp; TOCOLYTICS</b>		
Methylergometrine/ergometrine	Not indicated; use to stimulate contraction of uterine smooth muscle (Cat: C)	May use
Oxytocin	Safe to use (Cat: A)	May use
Misoprostol	Contraindicated-induces labour, teratogenic (Cat: X)	Appears safe to use-possibility of diarrhoea in infant
Nifedipine	May cause fetal hypoxia, however use first line for preterm labour	Compatible-safe to use
Salbutamol	Safe to use (Cat: A)	Safe to use
<b>PSYCHOTHERAPEUTIC</b>		
Amitriptyline	Safe to use, need to reduce dose a week before delivery. (Cat: C)	Safe to use
Chlorpromazine	Avoid use if possible or use lowest possible dose (Cat: C)	Avoid use-if used, monitor infant for sedation
Diazepam	Avoid use if possible (Cat: B3)	Avoid use if possible

Drug Category	Pregnancy Category	Compatibility with Breastfeeding
Fluphenazine	Avoid use if possible or use lowest possible dose (Cat: C)	Avoid use-if used, monitor infant for sedation
Haloperidol	Avoid use if possible or use lowest possible dose (Cat: C)	Avoid use
<b>RESPIRATORY TRACT</b>		
Aminophylline	Safe to use(Cat: A)	Avoid use-irritability has been reported in infant –use inhaled bronchodilators
Beclomethasone	Safe to use. Encourage women to continue using inhaled corticosteroids	Safe to use
Salbutamol	Safe to use (Cat: A)-inhalers preferred to tablets	Safe to use
<b>SOLUTION CORRECTING WATER, ELECTROLYTE &amp; ACID-BASE DISTURBANCES</b>		
<b>A. Oral</b>		
Oral rehydration salts	Safe to use	Compatible-safe to use
<b>B. PARENTERAL</b>		
Calcium Gluconate	Use if needed	Compatible
<b>VITAMINS &amp; MINERALS</b>		
Calcium tablet	Safe to use	Safe to use
Hydroxocobalamin/ cyanocobalamin (Vit B12)	Safe to use (Cat: A)	Safe to use
Multivitamin tablet	Safe to use	compatible
Pyridoxine (vit. B6)	Safe to use in therapeutic dose	Safe to use
Thiamine	Safe to use	Safe to use
Retinol (Vitamin. A)	Contraindicated (Cat: D)-recommended dietary intake of 2500IU daily is safe	Avoid use
Zinc sulphate 20mg	Only used in children	Only used in children

### **References:**

 eTG complete [CD-ROM]. Melbourne: Therapeutic Guidelines Limited; 2012 Mar.

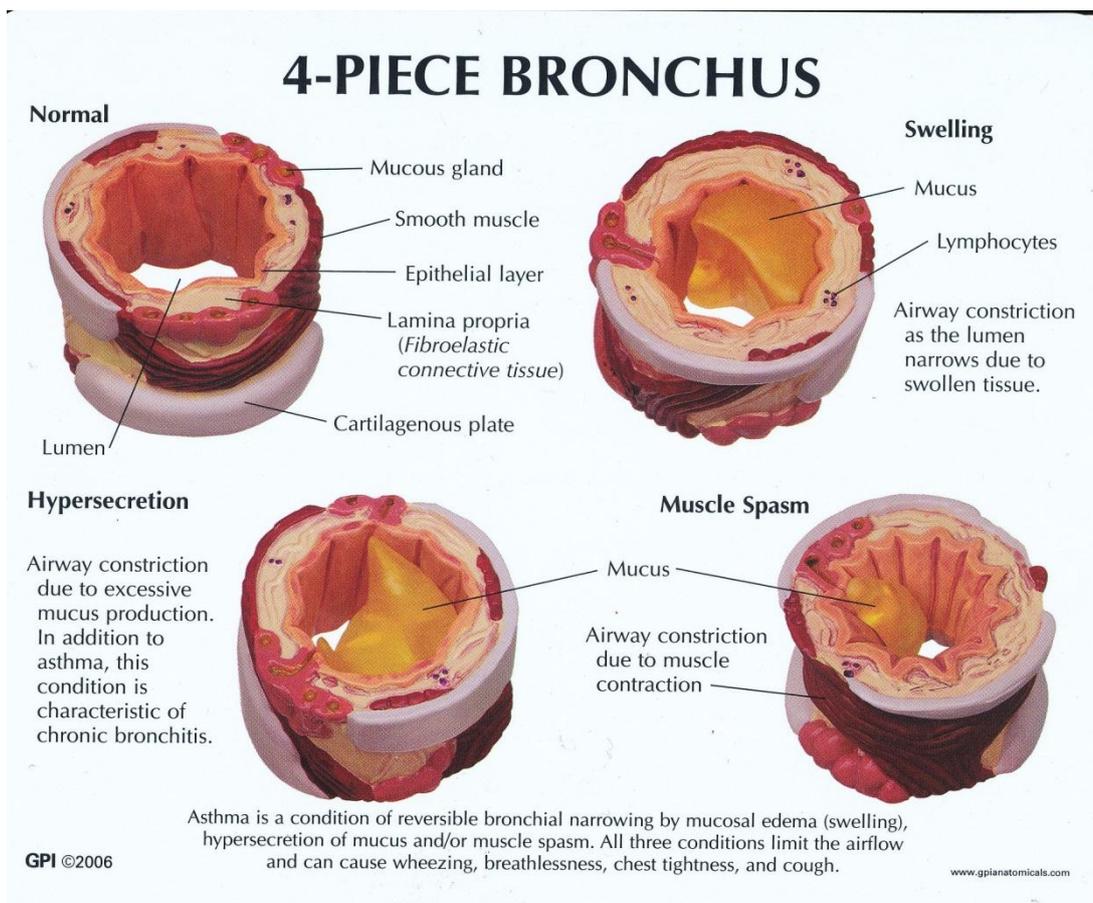
Rossi S, *Australian Medicines Handbook* 2013. Adelaide: Australian Medicines Handbook Pty Ltd; 2013

Molika In; *Drugs and Pregnancy*, The Royal Women's Hospital Pharmacy Department, Melbourne, Australia 2006

## RESPIRATORY CONDITIONS -ASTHMA

Definition:

1. Reactive and reversible airway disease (inflammation of the airways) resulting in shortness of breath and/or wheezing.
2. It is commonly referred to as "sotwin".
3. Wheezing in children over 18 months of age is usually due to asthma.
4. If younger, it is likely to be secondary to an infection.
5. Often a history of hayfever, eczema and/or allergies.
6. Intermittent symptoms with asymptomatic periods in between.
7. Symptoms frequently triggered by respiratory infection, weather changes or stress.
8. Symptoms frequently worse at night and early morning hours and respond to salbutamol.



Causes of Sotwin:

1. Not all sotwin or wheezing is asthma.
2. Asthma is caused by allergies, sensitivities, and immune disorders.
3. Causes of "sotwin" vary:
  - a) Asthma
  - b) Heart failure – most important and most commonly overlooked.
  - c) Pneumonia.
  - d) Chronic bronchitis (Chronic Obstructive Pulmonary Disease-COPD) – see below.
  - e) Severe anaemia.
  - f) Drugs such as aspirin, ibuprofen and blood pressure tablets like Atenolol can precipitate asthma – therefore check history and medications in a person presenting with wheeze or shortness of breath.

## Mild Asthma

Wheezing/coughing but not short of breath.

Talking easily.

Treatment:

- Salbutamol (Ventolin) inhaler – usually relieved by 2 - 4 puffs but can use up to 12 puffs for adult, 6 puffs for children via a spacer if symptoms worsen.
  - ⇒ People with mild asthma do not need regular puffs and should be instructed to only use inhaler when feeling tight in the chest or have symptoms of asthma.
  - ⇒ Show the patient how to use the spray using a spacer.

Make a 'spacer' by cutting a small hole in the bottom of an empty 600mL - 1.5L plastic bottle to fit the spray nozzle. (See picture back of this book) Bottles take time to make so have one ready in clinic.

This helps the spray go into the lungs.

One puff into the bottle, followed by 3-4 breathes, depending on size of bottle.

Repeat.

 Salbutamol tablets do not work well and cause lots of side effects. They are now discouraged. *Do not start new patients on Salbutamol tablets! Inhalers are NOT addictive and will continue to work each time they are needed, provided they are used correctly.*

 Aminophylline is definitely **not used** for mild asthma.

 If patient needs to use inhaler on a daily basis they should be assessed by a medical officer

 Each inhaler contains 200 puffs – someone with mild asthma should only need a new inhaler every 6 months

- Antibiotics – Should not be given routinely for asthma as it is usually a viral infection that triggers asthma. Viruses do not respond to antibiotics. Give antibiotics only if there is persistent fever and other signs of pneumonia.

⇒ Children – see Cough and Difficult Breathing in Children Under 5

⇒ Adults - Amoxicillin 250mg or 500mg TDS for 7 days

**OR**

⇒ Doxycycline 100 mg BD on Day 1 then 100mg daily for 6 days with food

- Fluids - encourage to drink

## Moderate Asthma

1. Shortness of breath, much wheezing.

2. No cyanosis and pulse under 120/min.

3. What to do:

- Salbutamol spray (via spacer) 12 puffs every half-hour until settled (repeat up to 3 times).
- Prednisolone tablets 40mg immediately, then daily for 5 days. Child: 1mg/kg up to 40mg daily for 3 days.
- Consider introduction of Beclomethasone inhaler 50-200mcg BD as a preventer.
- Antibiotics - Give only if the sputum is yellow/green and/or fever. Same as for mild asthma. Rarely needed in moderate asthma but given for bronchiectasis, COPD.
- Fluids - encourage to drink
- **Refer** the child if no improvement in 12 hours or any worsening

## Severe Asthma

1. Patient is unable to talk because of severe shortness of breath.

2. Pulse more than 120/min.

3. Patient is sweaty and pale, becomes tired and looks anxious.

4. Asthma does not settle after 24 hours.

5. All severe asthmatic patients need to be **referred** to a hospital when they are stable enough to be transported

6. What to do:

- Sit the patient up, on the side of the bed or in a chair and always have someone stay and support patient
- Give oxygen: 4 litres per minute at first and increase if oxygen saturation is less than 90%.
- Salbutamol (Ventolin) by nebulizer, 5mg in 1mL mix with 1mL Normal Saline (take from IV fluid bag if you do not have ampoules). This dose can continue to be given until relief is obtained.

Weight in kg	3-9 – ineffective if <1yr	10-50+
Dose in mixed solution	1mL (2.5mg)	2mL (5mg)

**OR**

- Salbutamol puffer with spacer can be almost as effective as a nebuliser
  - ⇒ Adults and children: use 6 puffs with a spacer for children and 12 puffs with a spacer for adults.
  - ⇒ Infants: use 2 puffs with a spacer – paper cup with hole at end for puffer and open section of cup fits over face and nose. Note Salbutamol is ineffective in children <1 year old.
  - ⇒ For both Salbutamol nebuliser and inhaler, if there is no response you can repeat this treatment every 15 minutes up to 3 times.
  - ⇒ Then repeat every 1-4 hours as required.
- Prednisolone tablets
  - ⇒ Give as for moderate asthma above
  - ⇒ Only use IV or IM hydrocortisone if the patient is unable to take tablets and then change back to daily prednisolone tablets when they can take
  - ⇒ Hydrocortisone Dosages IV or IM every 6 hours (children: 2-4 mg/kg)

Weight in kg	3-5	6-9	10-14	15-19	20-29	30-39	40+
IM/IV Dose in mg	15	30	40	75	100	100	100-200

- IM or IV Ampicillin as appropriate for age if not allergic to penicillins.

What to do next:

- Admit the patient to the ward if there is no improvement after 2 hours or if you are concerned in any way.
  - ⇒ If the patient improves quickly continue outpatient treatment as for mild asthma.
  - ⇒ When the patient improves stop the IVF and change to salbutamol spray, oral antibiotics and complete course of prednisolone.
  - ⇒ Introduce Beclomethasone inhaler 50-200mcg BD as a preventer if not already using. Higher doses can be used on the recommendation of a medical officer.
  - ⇒ Follow up patient after one week or earlier if symptoms worsen. Refer if poor response to therapy.

 Note on Aminophylline:

- Aminophylline is NOT a first line drug for acute asthma and may have severe side effects; it should only be given in hospital under direct supervision of a doctor. Reserve use for those unresponsive to combined salbutamol nebs (high dose) and systemic hydrocortisone.
  - ⇒ Loading dose: Adult: 5 mg / kg IV over 20 minutes. This MUST be given slowly; patients can die from arrhythmias or seizures if given too rapidly. Monitor BP.
  - ⇒ An aminophylline infusion (0.5mg/kg/hr) may later be ordered.
  - ⇒ If needed, this infusion is started immediately after the loading dose.

 Do not give a loading dose if the patient is already taking THEOPHYLLINE tablets. These are no longer on the EDL but patients could be purchasing privately so always check before giving Aminophylline.

## Maintenance Therapy of Asthma

- General Advice:
  - ⇒ Avoid precipitating causes (eg. dust, animals, volcanic vapours, other known allergens).
  - ⇒ Stop smoking. Keep away from second-hand smoking or passive smoking.

Antihistamines are not useful in asthma and sedatives are contraindicated in acute asthma – agitation (from hypoxia and bronchospasm) should be managed with oxygen and salbutamol, NOT by sedatives.
- Mild Asthma:
  - ⇒ Salbutamol (Ventolin) inhaler via spacer.
  - ⇒ Only used as required for symptoms of asthma.
  - ⇒ Children and older patients may have difficulty using inhalers. Use spacers to improve delivery.
  - ⇒ Always check the patient's inhaler technique.
- Moderate Asthma
  - ⇒ Salbutamol spray via spacer (as above).
  - ⇒ Beclomethasone (Becotide®) inhaler up to 200mcg BD for children and 400mcg BD for adults via spacer, will help prevent attacks – puffers come in 50mcg and 100mcg doses. Reduce to minimum effective dose as asthma improves.
- Severe Asthma
  - ⇒ Some patients remain poorly controlled despite all the above treatment and require regular oral Prednisolone.
  - ⇒ This must be supervised by a physician with measures to reduce osteoporosis and immunosuppression related infection. Minimum effective dose should always be found.

## Patient Education

- It is important to educate patients about 'preventers' (e.g. Becotide®) and "relievers" (e.g. Ventolin®) and the difference between them. Preventers must be used regularly even when the patient feels well. Relievers are for treatment of sotwin.
- Assess inhaler-spacer technique every time you see them. If technique is poor ie the patient does not co-ordinate inhalation with activating the inhaler, then provide and explain how to use a spacer. As the nurse you need to be an expert in this technique and be able to teach others.
- If a patient is using their reliever (Ventolin) more than three times a week they should be considered for addition of a preventer ie Becotide.
- Patients should be encouraged to identify their 'triggers' or precipitating causes and AVOID these eg. Cigarette smoke, dust, pollen from flowers, cold air, volcanic eruptions etc. Use of a preventer (Becotide) two weeks prior to and during seasonal causes of asthma may reduce symptoms. Prevent second-hand smoking.
- If using a preventer (Becotide), patients must rinse their mouth and spit after using to prevent the development of thrush in the mouth.
- Work with the patient to develop a plan on what to do next time they get asthma – ensure they always have a reliever spray and a spacer and know they can use higher doses in an emergency.
- Arrange for regular follow up of all asthma patients –adjust doses of asthma medicines up and down to ensure adequate control with the lowest effective dose. Doses must be reduced slowly.

## COPD

Consider COPD if:

- a previous diagnosis of COPD
- symptoms usually start after age 40 years
- are persistent and slowly worsen over time
- history of heavy smoking or lung damage from prolonged contact with smoke from fires etc
- daily or frequent cough with lots of sputum production
- symptoms may not respond to salbutamol.

Therapy:

- is similar to asthma although response to salbutamol may not be as good due to damage to the lungs.
- **STOPPING SMOKING is the only intervention that has been proven to stop the lungs from getting worse.**
- Smoke-free cookers or cookers vented outside the cooking area are preferred.
- Steroids – Beclomethasone inhaler and oral prednisolone may provide more benefit than salbutamol in relief of symptoms.
- Antibiotics (as above) are required for acute exacerbations of COPD as infections are bacterial.

# RESPIRATORY CONDITIONS - CHEST INFECTION IN OVER 5 YEARS AND ADULTS

*Remember:* Cough does not always mean chest infection. Think about other causes, especially if shortness of breath is the main problem. Consider TB if it does not resolve.

## Severe Pneumonia

Severe pneumonia can kill people quickly so you must recognize when a patient has severe pneumonia to ensure they receive the best treatment and are referred to hospital. Risk Factors include:

- Frail, old, diabetes, chronic lung disease, kidney problems, heart failure, liver disease, cancer.
- Alcohol misuse, petrol/solvent sniffer

Check the following:

- Symptoms – cough, wheeze, shortness of breath, sputum (colour and amount), chest pain.
- How long have they had symptoms?
- Are they smokers?
- Have they had previous chest infections?
- Past history of TB or family history of TB?
- Measure temperature, BP, pulse, respiratory rate, oxygen saturation (if available) or check colour eg blue lips, pale
- Listen to the chest and heart
- Look at the ears and throat

## Diagnosis

Patient has severe pneumonia if the following present:

1. Fever and cough AND
2. Pain with breathing or on tapping on chest, fast breathing, crackles in the chest, upper abdominal pain AND
3. Looks very unwell AND any OR all of:
  - a. Short of breath –unable to finish a sentence
  - b. Confused, altered mental state
  - c. Respiratory Rate 30/min or more
  - d. Systolic BP less than 90mmHg (adults)
  - e. Pulse 125/min or more
  - f. Temp less than 35°C or 40°C or more
  - g. Oxygen sats less than 95% on oxygen
  - h. Patient has a risk factor as above

**Refer all severe pneumonia cases to hospital.** Before sending to hospital:

- ⇒ Put up an IV and give Ampicillin IV or Chloramphenicol IV if allergic to penicillin.
- ⇒ Stat dose of Gentamicin may be required if severely septic.

On admission:

- ⇒ Give oxygen by mask 6-8L/min if available
- ⇒ Take sputum and blood cultures (if available) preferably before antibiotic therapy started
- ⇒ CURB 65 (Confusion, Urea >7, Resp.rate>30, SBP<90, Age >65) scoring system can assist in deciding severity of pneumonia and guide treatment.

### Mild or Moderate Pneumonia

Diagnosis:

Patient has mild or moderate pneumonia if the following present:

1. Fever and cough AND
2. Pain with breathing or on tapping on chest, fast breathing (RR >30/min), crackles in the chest, upper abdominal pain AND
3. Looks unwell AND
4. **NO** other features of severe pneumonia.

Care for in the clinic.

Treatment:

- ⇒ IV Ampicillin for 24 hours, admit to clinic and observe. If mild or unable to put in an IV, use oral Amoxicillin and review after 24 hours. IM Procaine Penicillin is an alternative if no amoxicillin.
- ⇒ If Temp returns to normal, change to oral Amoxicillin and continue for 5 days.
- ⇒ If Temp remains high or patient gets sicker, **refer to hospital**.
- ⇒ If allergic to penicillin, consider chloramphenicol IV for 24 hours. Oral alternatives for penicillin allergic patients are Doxycycline (in >8yo) or Erythromycin for 5 days.
- ⇒ Give paracetamol for pain if needed.
- ⇒ Drink plenty of fluids and rest.

### Non-lobar/Atypical Pneumonia

If clinical signs continue despite antibiotic therapy, consider atypical pneumonia as a cause – this requires different antibiotics – **refer to hospital**.

### Cold (upper respiratory tract infection) and 'flu'

Most URTI's are caused by viruses and do not need antibiotics. They resolve spontaneously.

Diagnosis:

- Fever, aches and pains
- Sore throat
- Blocked or runny nose
- BUT NO other features of pneumonia
- Sputum white, clear, small amounts

Treatment:

- ⇒ Paracetamol for fever ( $>38.5^{\circ}\text{C}$ ) and aches
- ⇒ Drink lots of fluids (lemon or orange juice or whole fruit also helps) and rest
- ⇒ If they do not get better or get other symptoms, return to clinic for review.

## Sinusitis

Diagnosis:

- As for Colds above BUT
- Nasal discharge coloured
- Tenderness over cheeks
- Headache or facial pain

Treatment:

- ⇒ Paracetamol for aches and fever
- ⇒ Drink lots of fluids (lemon or orange juice or whole fruit) and rest
- ⇒ Steaming with Vicks in hot water and towel over head may help clear congestion
- ⇒ Oral Chlorpheniramine may help in  $>6\text{yo}$ .
- ⇒ If Temp  $>38^{\circ}\text{C}$  or symptoms for  $>5\text{days}$ , give amoxicillin for 5 days. If allergic to penicillin, give doxycycline in  $>8\text{yo}$ . or erythromycin for 5 days.
- ⇒ Patient should return to clinic if they are not getting better or if new symptoms develop.

## Tonsillitis

Diagnosis:

- Sore throat - Pus on the tonsils
- Fever  $>38^{\circ}\text{C}$
- Swollen lymph nodes
- No cough

Treatment:

- ⇒ Antibiotic treatment with Penicillin V for 10days or Benzathine penicillin if compliance an issue.
- ⇒ If allergic to penicillin, use Erythromycin for 10 days.

## Follow up for all chest infections:

- 🔔 Give advice and encourage patient to stop smoking, reduce alcohol, kava or substance misuse,
- 🔔 Check for chronic lung conditions,
- 🔔 Consider asthma in cases of wheeze and shortness of breath,
- 🔔 Follow up chest XRay/TB assessment if no improvement after 4 weeks.

# RESPIRATORY CONDITIONS - COUGH AND DIFFICULT BREATHING IN CHILDREN UNDER 5

Acute Respiratory Infection (ARI)

📁 Refer to current IMCI Guidelines for further information

Categories have changed e.g “Mild ARI” to reflect changes in international classification now used for IMCI

## 1. Definition of ARI:

a) Acute Respiratory Infections (ARI) are infections of the respiratory tract and include simple coughs and colds, sore throats, tonsillitis, and more serious infections like pneumonia.

b) Viruses or bacteria can cause them.

🔔 ARI are important causes of child illness and death in Vanuatu.

🔔 It is important to diagnose and treat them correctly.

c) In children under 5 years, ARIs are classified using simple signs and symptoms.

🔔 They are now classified as No Pneumonia (URTI), Mild Pneumonia, Severe Pneumonia and Very Severe Disease.

🔔 Determining the rate of breathing is very important in diagnosis.

🔔 Count the breathing for a full minute.

## 2. Definition of fast breathing:

Infant less than 2 months old = 60 or more a minute.

Child 2 months to 1 year old = 50 or more a minute.

Child 1 year to 5 years old = 40 or more a minute.

## 3. What to Do:

a) Take a complete history

How old is the child?

Coughing?

For how long?

Can the child drink or breastfeed?

Feeding well?

Fever? For how long?

Has the child had convulsions?

b) Examine the child carefully

Count the breaths in 1 full minute.

Look for Chest In drawing.

Listen for stridor, wheeze.

Examine the ears and throat.

Check for dehydration.

Check the temperature.

Can you awaken the child?

Check the weight and height.

Malnourished?

## 4. Danger signs:

🔔 Fast breathing-see above

🔔 Lower chest wall in drawing –lower chest wall indrawing occurs when the lower chest wall goes in when the child breathes in; if only the soft tissue between the ribs and above the clavicle goes in when the child breathes, this is not lower chest wall indrawing

🔔 Stridor (noisy breathing as the child breathes IN)

🔔 Grunting breathing.

🔔 Child is unable to drink or breastfeed

🔔 Child is vomiting everything

🔔 Child is abnormally sleepy and is difficult to awaken

🔔 Severe malnutrition.

🔔 Severe Dehydration (sunken eyes, skin takes longer than 2 seconds to return after skin pinch)

🔔 Child is fitting.

🔔 Temperature >38 °C.

🔔 Cyanosis.

1. **No Pneumonia – (URTI)**

<p>No fast breathing. No chest in drawing. No stridor when child is calm No general danger signs</p>	<ol style="list-style-type: none"> <li>1. No antibiotics unless             <ol style="list-style-type: none"> <li>a) otitis media</li> <li>b) tonsillitis with pus</li> </ol> </li> <li>2. Assess and treat other problems eg honey,lemon drink to soothe cough; clear nasal secretions before feeds. Avoid antihistamines.</li> <li>3. Treat fever with paracetamol if causing distress to child</li> <li>4. Treat wheeze, if present (see mild asthma)</li> <li>5. Advise mother on home care and when to return to clinic</li> </ol>
--	--

**Mild Pneumonia**

<p>Fast breathing for age. No chest in drawing.</p>	<ul style="list-style-type: none"> <li>➤ Give 5 days oral Amoxycillin –dose can be given 25mg/kg BD to aid compliance.             <ul style="list-style-type: none"> <li>⇒ If you don't have Amoxycillin give Cotrimoxazole.</li> </ul> </li> </ul> <ol style="list-style-type: none"> <li>1. Treat fever with paracetamol, if present.</li> <li>2. Treat wheeze, if present (see mild asthma)</li> <li>3. Advise mother on home care.</li> <li>4. Re-examine the child in 2 days</li> <li>5. If improving - Continue treatment.</li> <li>6. If worse - <b>Refer</b> urgently to hospital and give pre-referral treatment</li> </ol>
---	---

**Severe Pneumonia**

<p>Fast breathing for age. Has chest in drawing. No other danger signs.</p>	<ul style="list-style-type: none"> <li>➤ Give <b>pre-referral treatment</b> and <b>refer</b> immediately.             <ul style="list-style-type: none"> <li>⇒ STAT dose of IM Ampicillin</li> <li>⇒ Or Procaine or Benzyl Penicillin</li> </ul> </li> </ul> <ol style="list-style-type: none"> <li>1. Assure hydration</li> <li>2. Treatment continued for 5 days</li> </ol>
---	---

**Very Severe Disease**

<p>Fast breathing for age. Has danger signs</p>	<ul style="list-style-type: none"> <li>➤ Give pre-referral treatment and <b>refer</b> immediately.             <ul style="list-style-type: none"> <li>⇒ STAT dose of IM Ampicillin</li> <li>⇒ Or Procaine or Benzyl Penicillin</li> </ul> </li> <li>➤ Children over 2 months of age:             <ul style="list-style-type: none"> <li>⇒ Give Pre-referral treatment of Stat IM Chloramphenicol or Ampicillin with Gentamicin</li> </ul> </li> <li>➤ For babies less than 2 months old with fever:             <ul style="list-style-type: none"> <li>⇒ Give pre-referral treatment of Ampicillin and Gentamicin and treat the fever</li> </ul> </li> </ul>
---	--

**Acute Bronchiolitis**

1. Causes wheezing and fast breathing in infants and children under 2 years of age, less common over this age.
2. Caused by a virus (e.g. Respiratory Syncytial Virus – RSV) so antibiotics are not useful. However if unsure of diagnosis, give antibiotics (in case it is pneumonia) and refer if severe.
3. Treatment is:
  - Oxygen
  - If respiratory rate is >80 there is danger of aspiration so stop breastfeeds and give IV fluids.
  - If under 6 – 9 months salbutamol nebulisers DO NOT WORK as the smooth muscle has not developed and wheeze is due to inflammation and oedema.

**Home care advice:**

5. Feed the child during the illness.
6. Clear the nose if it interferes with feeding (use saline as drops) and increase feeding after illness.
7. Increase fluids, offer the child more to drink and increase breast-feeding.
8. Return quickly if:
  - The breathing becomes faster or difficult, or if the child is not able to drink or breastfeed, or if the child gets sicker or develops a fever if they didn't previously have.

 Do not give Promethazine or Chlorpheniramine for ARIs.

## ACUTE RHEUMATIC FEVER (ARF) and RHEUMATIC HEART DISEASE (RHD)

ARF is a **notifiable** condition, notify to national rheumatic fever co-ordinator in the major referral hospitals of Vanuatu.

ARF is the result of Group A  $\beta$  haemolytic streptococcal throat infection. These throat infections should be treated with penicillin. Poor housing, overcrowding and poor personal hygiene can increase the incidence of this condition.

1. A person with Acute Rheumatic Fever (ARF) may have any or all of the following:

- a) **Painful, swollen and tender one or more large joints** (arthritis), may move from one joint to another over days.
- b) Even a single painful joint may be ARF. Joints can be swollen for days to months.
- c) New heart murmur.
- d) Strange body movements that the person cannot control (chorea).
- e) Fever, unwell.
- f) Shortness of breath and fast pulse (signs of heart failure).
- g) Skin rash and lumps under the skin (nodules) can happen, but rarely.
- h) ARF is most common in 5-15 yr olds, rarely over 35 yrs or under 4 years old.
- i) The patient might have had this illness before.

2. Also think about:

- a) Is it joint or bone infection? or some other sort of arthritis?
- b) Discuss any child with a painful swollen joint with a paediatrician.
- c) If you think a person has rheumatic fever, do:
  - throat swab (mc&s)
  - blood for FBC, ESR, blood cultures
  - ECG
  - **Refer** to hospital within 1 day

3. Treatment

- a) If joint pain does not settle with paracetamol and patient is 16 years or older, give;

➤ Aspirin (300 mg tabs): 4 tabs QID

🔔 Do not give aspirin to children under 16 years.

- b) If pain is still uncontrolled patients may need a brief course of

➤ Prednisolone 1mg / kg / day to max dose 50mg/day.

4. Prevention of further attacks of rheumatic fever (prophylaxis) should commence after the first attack of ARF:

**All** patients who have had rheumatic fever must have:

- **Benzathine Penicillin** 1.2 million units IM every 4 weeks whatever their age, unless something different is written in their management plan.
- If allergic to penicillin – use Erythromycin 250mg BD oral for prophylaxis

5. How long do you give penicillin for?

- Continue secondary prophylaxis with Benzathine Penicillin for life unless advised otherwise by a cardiologist.

6. Tips:

☺ Keep a follow-up list in clinic of all people on regular benzathine penicillin. Ensure details are passed onto the referral hospital.

☺ Missing penicillin doses is a common problem. A good relationship between the person and the health service is likely to help.

- ☺ Make sure the person/ family understand the reason for the penicillin.
- ☺ Ensure, if possible, the patient has access to mobile phone coverage through both networks and include this information in the registry.
- 🔔 Always give antibiotics (cover) for dental and surgical procedures and wounds to prevent endocarditis (SBE) in patients with underlying heart disease (rheumatic or congenital).

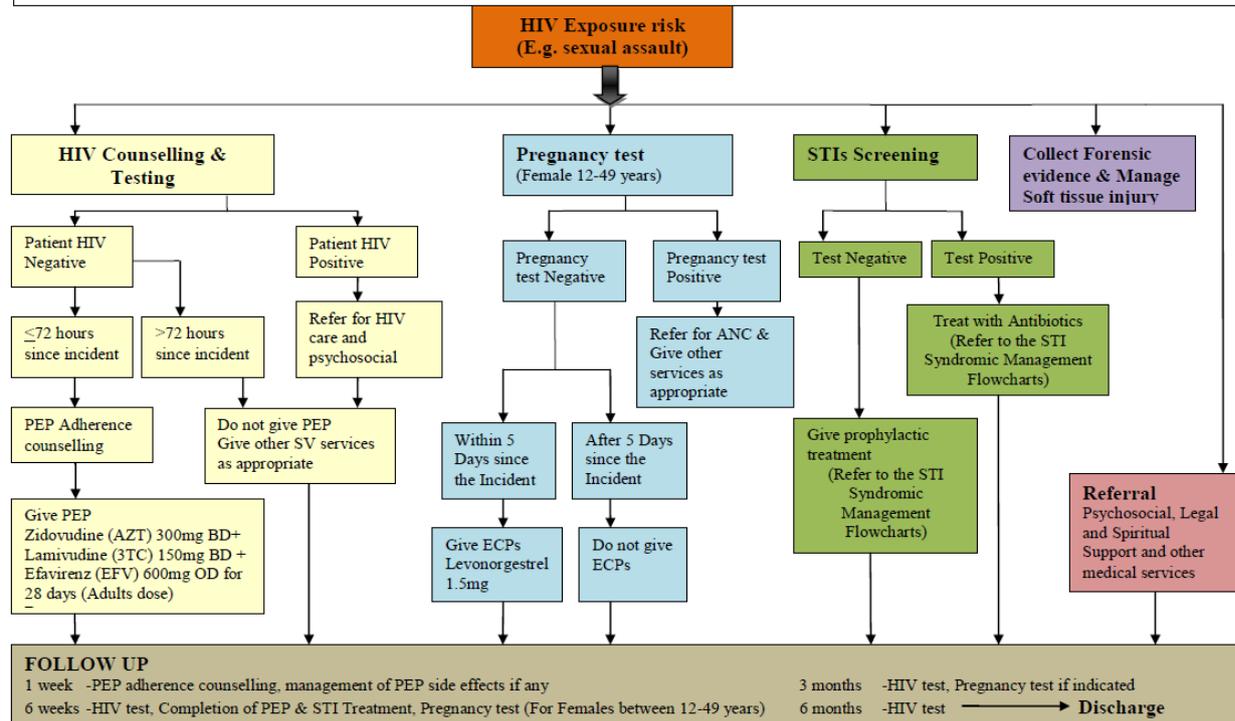
### **Rheumatic Heart Disease (RHD)**

This is the chronic sequelae of recurrent ARF. Heart valves are damaged. Patients may present with both leaking (regurgitative) and thick (stenosed) valves caused by scarring.

**Refer** to major referral hospitals for review and dental checks.

Secondary antibiotic prophylaxis with Benzathine Penicillin is essential.

## FLOW CHART FOR MANAGEMENT OF SEXUAL VIOLENCE AND OTHER NON-OCCUPATIONAL HIV EXPOSURES



### Glossary of abbreviations

PEP	-	Post Exposure Prophylaxis of HIV
ECPs	-	Emergency Contraceptives
SV	-	Sexual Violence
STIs	-	Sexually Transmitted Infections
HIV	-	Human Immunodeficiency Virus
ANC	-	Antenatal Care

### NOTE:

The doses in this flow chart are for adults. Please refer the children to a paediatrician for prescription of paediatric doses but ensure that you give other services

### Collection of Forensic evidence:

\*Document and photograph injuries as appropriate

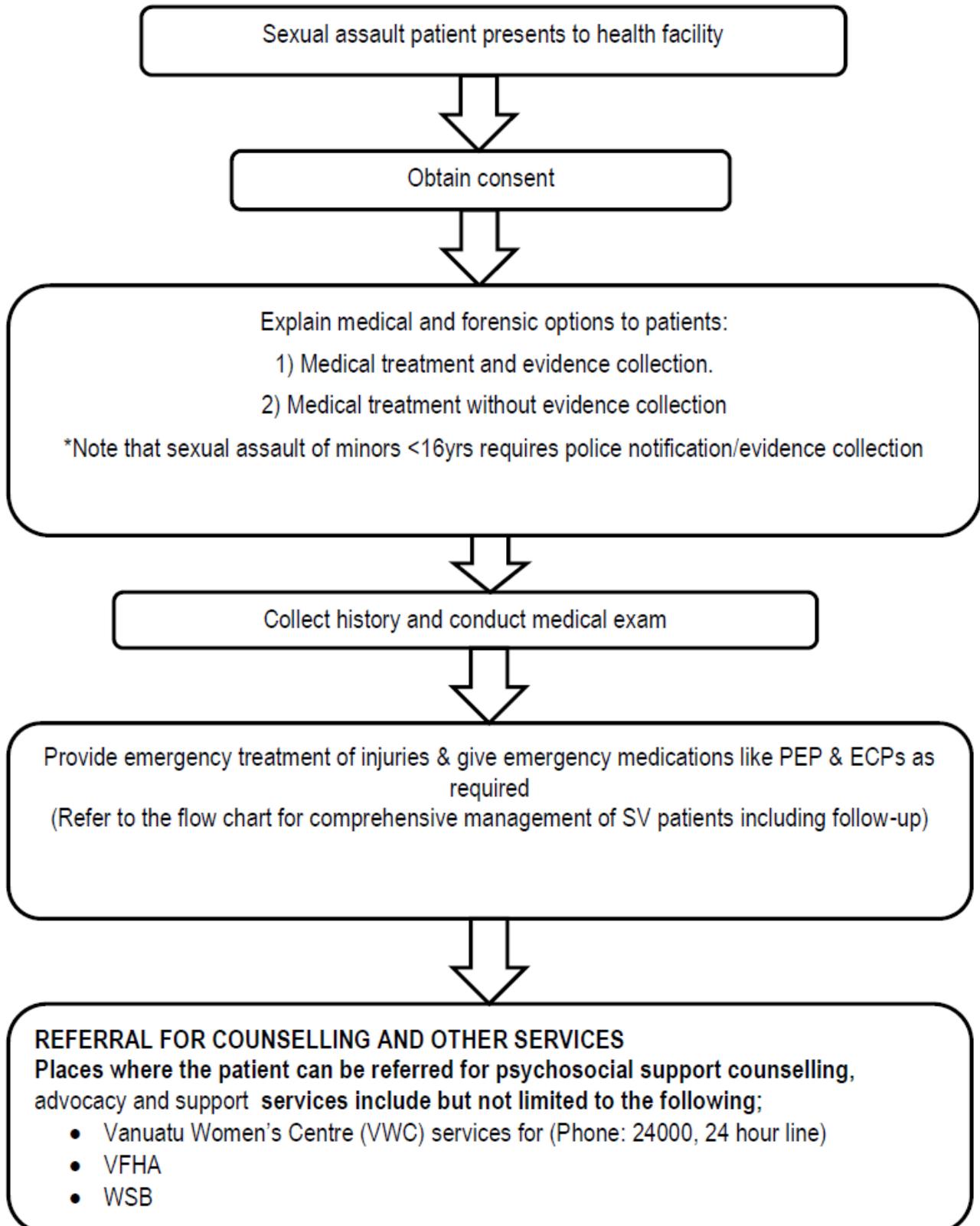
\*Release appropriate evidence and reports to the police with the consent of the patient/guardian for minors

\*Note that the patient may choose to complete evidence collection but not follow-up with the police at this stage

## SEXUAL VIOLENCE TREATMENT ALGORITHM SUMMARY

Refer to WHO Responding to intimate partner violence and sexual violence against women

WHO clinical and policy guidelines 2013



## SEXUALLY TRANSMITTED INFECTIONS (STI)

-  Refer Evidence based Guidelines for the Management of Sexually Transmitted Infections in Vanuatu July 2008 including Flow charts for STI's (included here)
-  Ensure you complete the STI Reporting Tally Sheet

This is private. Be respectful, maintain confidentiality, and do not pass your own judgement. Stick to the facts.

### Syndromic Approach

1. Vanuatu uses the Syndromic Approach to STI Management.
2. This approach is more effective than trying to guess what the patient has.
3. You should report the syndromes you treat in the monthly HIS report.
4. The recognised syndromes are:
  - a) Urethral Discharge in men who have had unprotected sex in the last 2 weeks
  - b) Persistent or recurrent Urethral Discharge in men who have received treatment according to above flowchart
  - c) Genital ulcers in men and women
  - d) Vaginal discharge
  - e) Female lower Abdominal Pain/tenderness
  - f) Acute scrotal swelling or pain
  - g) Purulent conjunctivitis in neonates

All Patients must receive

1. Education on behaviour change
2. Be provided with and taught how to use condoms
3. Have a plan with the patient for how the partner (s) will be managed. Work closely with the patient to find the best way to assure the partner/s receives treatment. It is vital that all partners of patients with STIs be treated for the same infection.

Follow up Plans:

All patients should return if they have not improved in 3 days and/or if they become worse.

5.

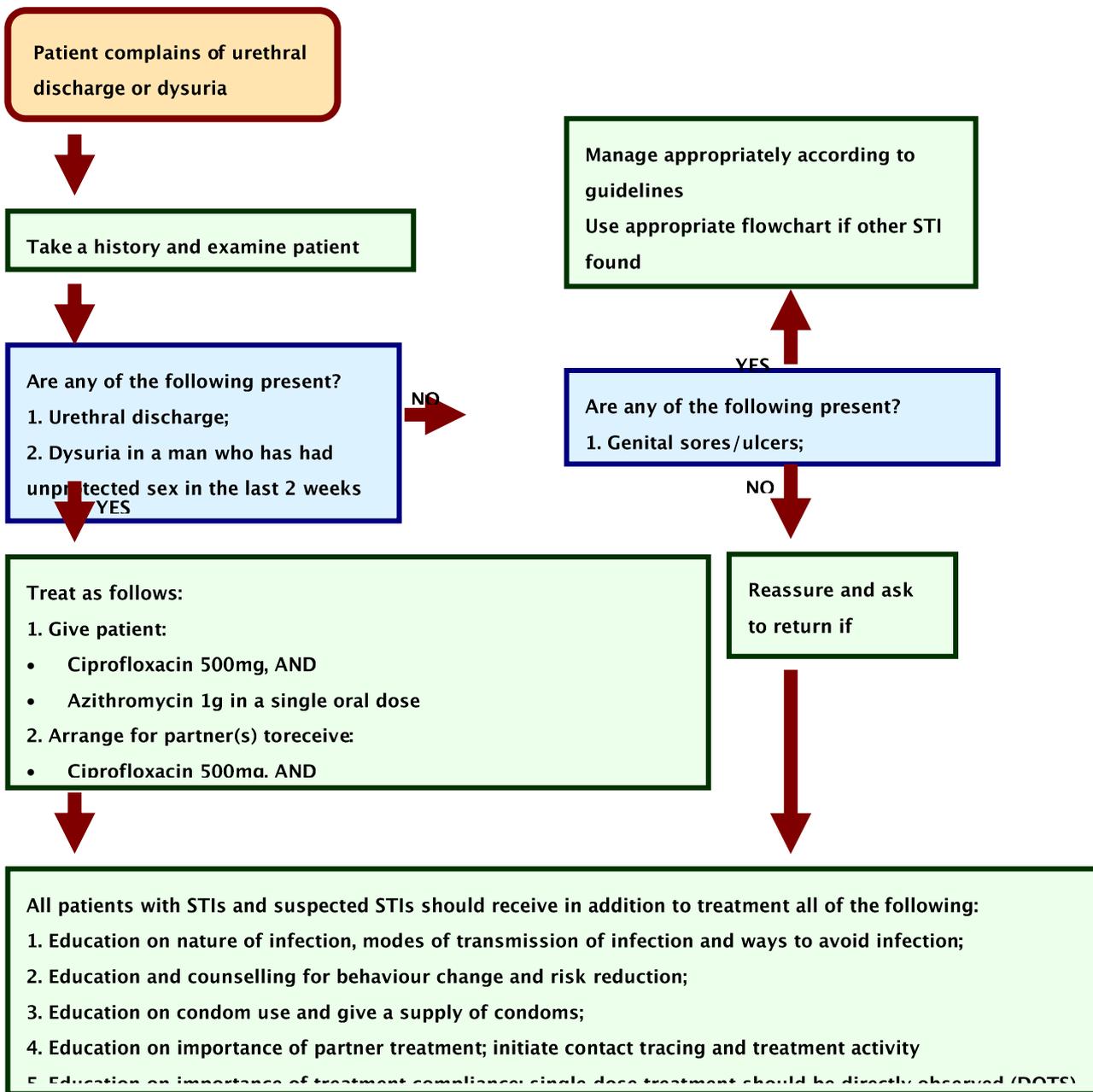
Treatments (refer flowcharts below):

- Due to the changing availability of drugs in Vanuatu and the possibility of gonorrhoea becoming resistant to current therapy, the treatments listed here may change.
- If you are unsure of the most current therapy make sure you check with a supervisor.
- You must treat the syndromes even if you are using laboratory tests – do not wait for the results – the person can get sicker and can also infect people.
- When you get result back you should check it to make sure your treatment was correct.
- Supervise the dosing if you are unsure if the person will take it (compliance).
- Prior to discharge Educate, Partner Treatment, Condom Use and Follow up as appropriate.
- Record you have treated this syndrome on your monthly statistics.

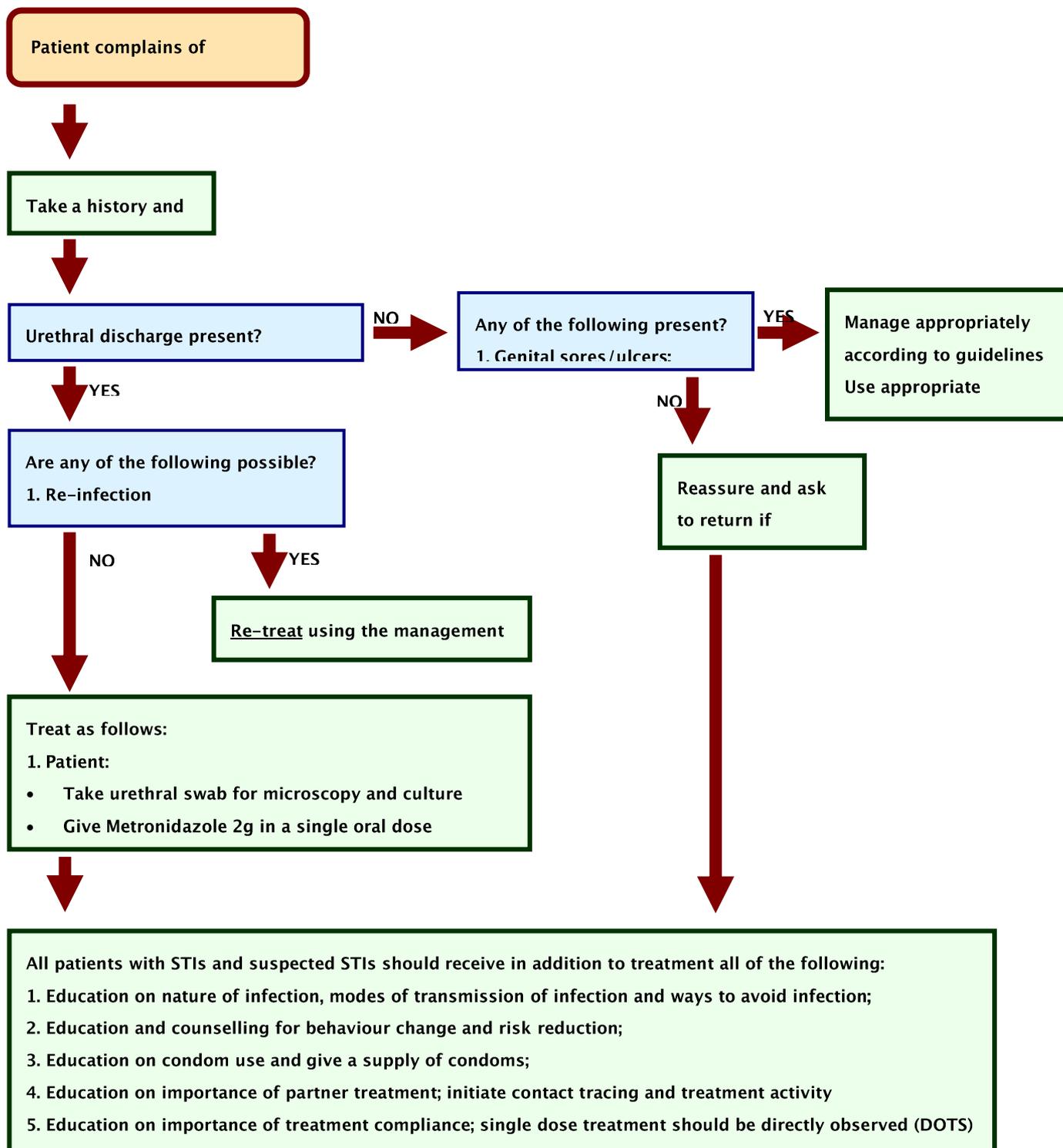
 If you suspect HIV, refer to Operational Guidelines for VCCT Centres in Vanuatu 2012-2016.

 Also refer to HIV chapter in Manual.

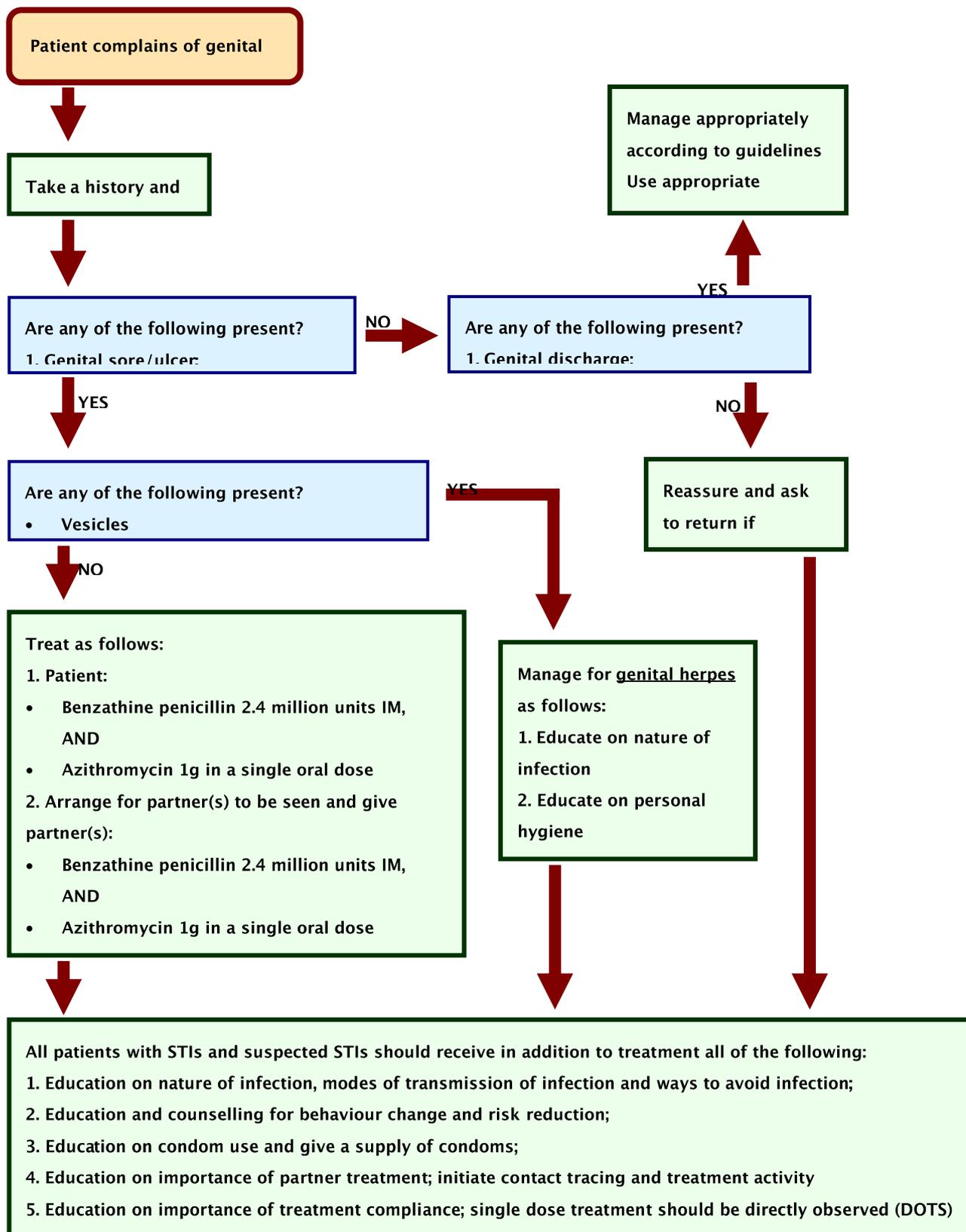
## Management of urethral discharge in men and dysuria in men who have had unprotected sex in the last two weeks



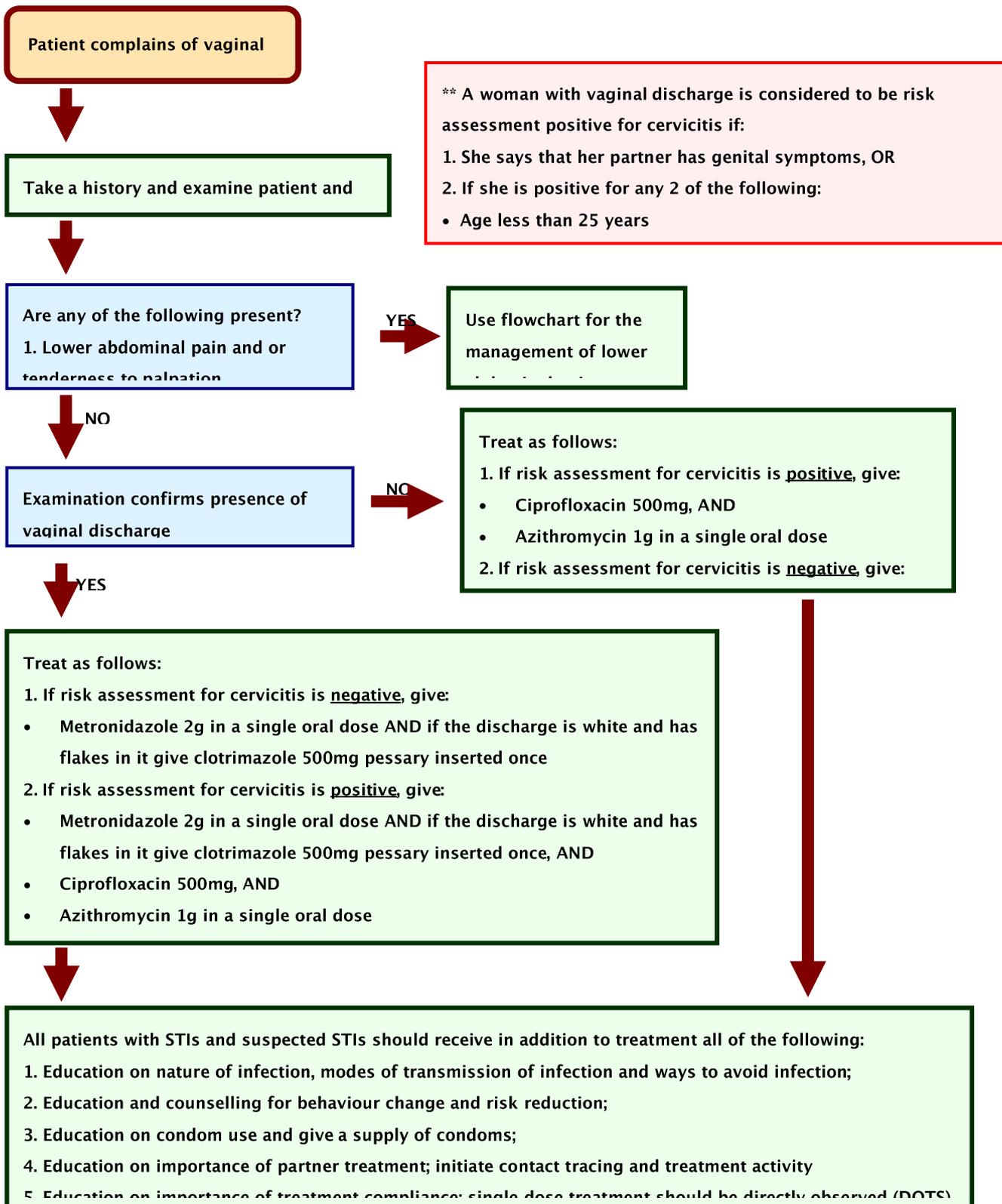
**Management of persistent / recurrent urethral discharge in men who have received treatment according the management of urethral discharge flowchart**



## Management of genital ulcers in men and women



## Management of abnormal vaginal discharge in women



\*\* A woman with vaginal discharge is considered to be risk assessment positive for cervicitis if:

1. She says that her partner has genital symptoms, OR
2. If she is positive for any 2 of the following:
  - Age less than 25 years

Are any of the following present?

1. Lower abdominal pain and or tenderness to palpation

YES

Use flowchart for the management of lower

NO

Examination confirms presence of vaginal discharge

NO

Treat as follows:

1. If risk assessment for cervicitis is positive, give:
  - Ciprofloxacin 500mg, AND
  - Azithromycin 1g in a single oral dose
2. If risk assessment for cervicitis is negative, give:

YES

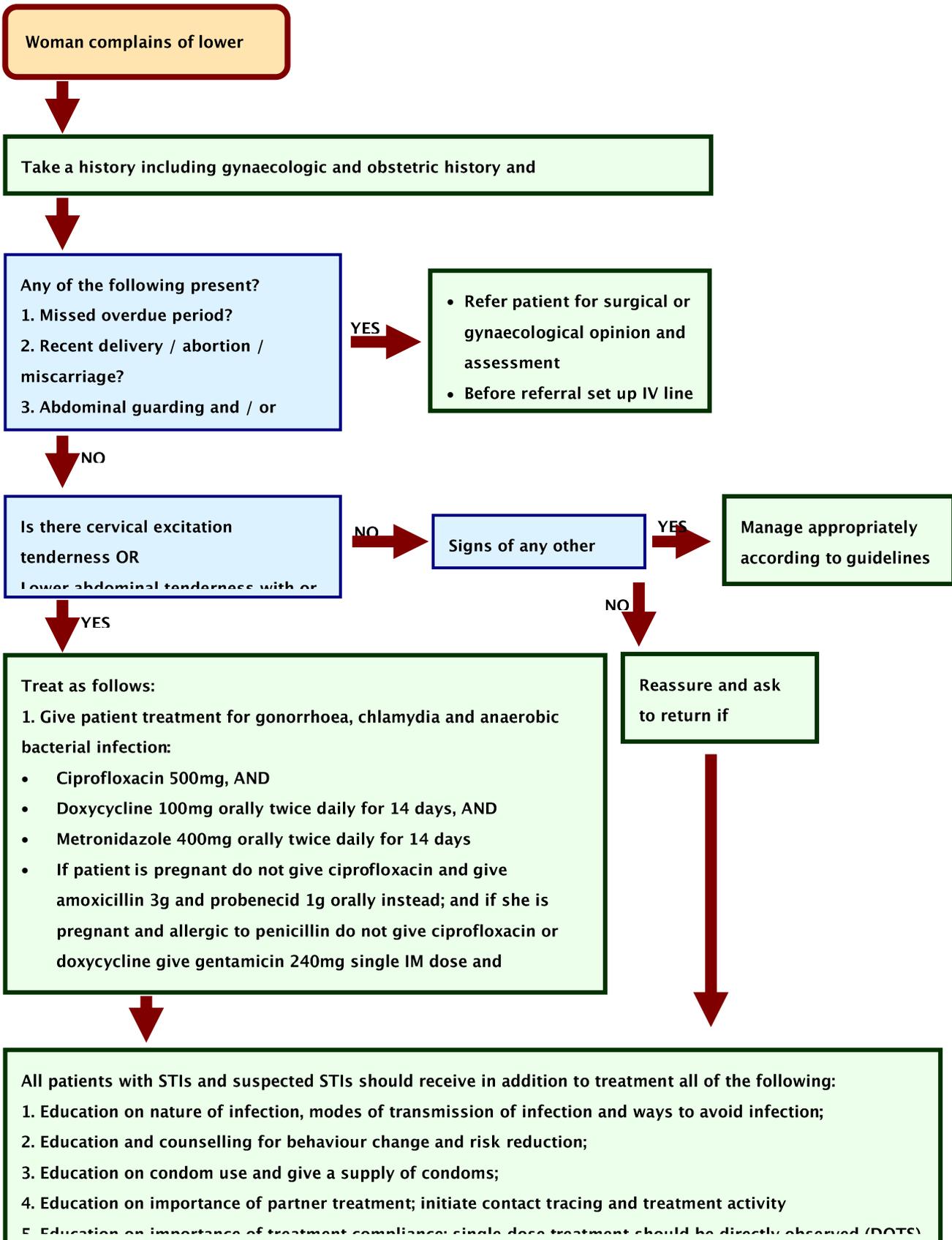
Treat as follows:

1. If risk assessment for cervicitis is negative, give:
  - Metronidazole 2g in a single oral dose AND if the discharge is white and has flakes in it give clotrimazole 500mg pessary inserted once
2. If risk assessment for cervicitis is positive, give:
  - Metronidazole 2g in a single oral dose AND if the discharge is white and has flakes in it give clotrimazole 500mg pessary inserted once, AND
  - Ciprofloxacin 500mg, AND
  - Azithromycin 1g in a single oral dose

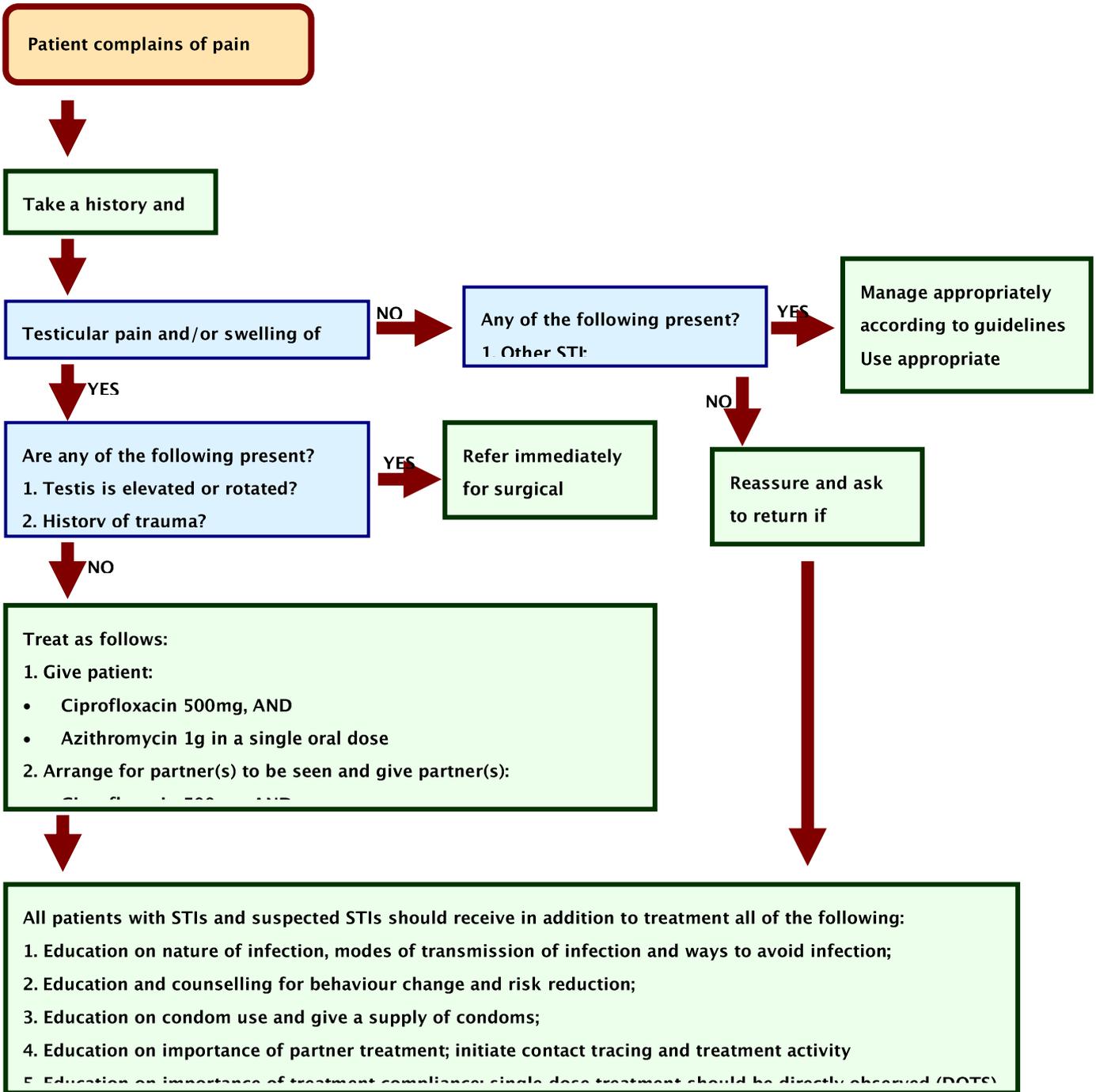
All patients with STIs and suspected STIs should receive in addition to treatment all of the following:

1. Education on nature of infection, modes of transmission of infection and ways to avoid infection;
2. Education and counselling for behaviour change and risk reduction;
3. Education on condom use and give a supply of condoms;
4. Education on importance of partner treatment; initiate contact tracing and treatment activity
5. Education on importance of treatment compliance; single dose treatment should be directly observed (DOTS)

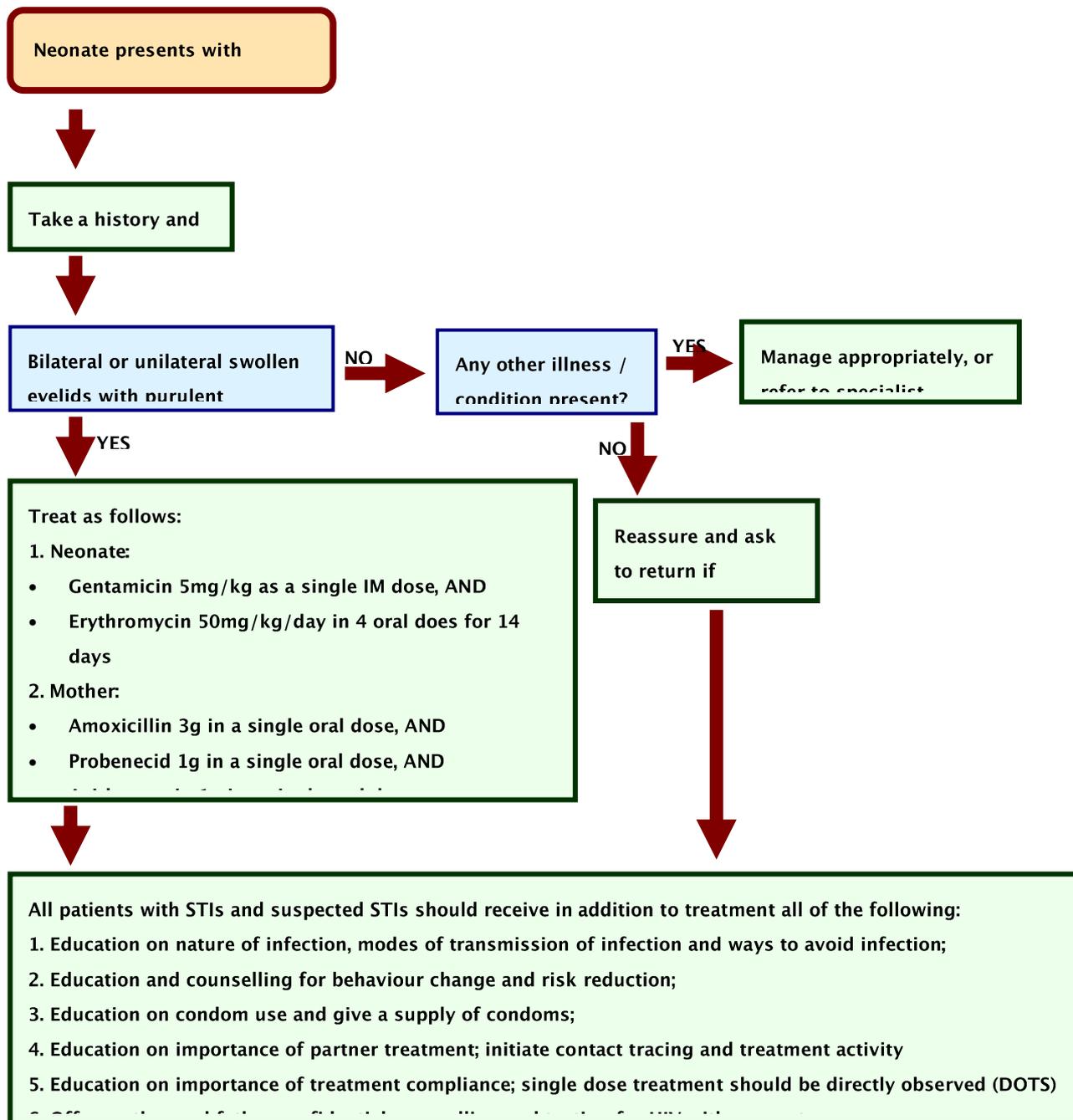
## Management of lower abdominal pain/tenderness in women



## Management of acute scrotal swelling/pain



## Management of purulent conjunctivitis in neonates



# STI SYNDROMES MONTHLY TALLYSHEET

Health Centre/Clinic: \_\_\_\_\_

Health Worker's Name: \_\_\_\_\_

Report Period: Month: \_\_\_\_\_ Year: \_\_\_\_\_

Signature: \_\_\_\_\_

STI SYNDROME	STI SYNDROMIC CASES BY SEX AND AGEGROUP															
	(Shade in one circle in the correct row and column for each newly diagnosed case)															
	MALES: AGEGROUPS (Years):										FEMALES: AGEGROUPS (Years):					
	0-4	5-14	15-19	20-24	25-29	30-34	35+	U/K	Total Male	0-4	5-14	15-19	20-24	25-29	30+	
Urethral Discharge or Dysuria	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000								
Vaginal Discharge										00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	
Lower Abdominal Pain or Tender										00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	
Genital Ulcers in males	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000								
Genital Ulcers in females										00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	
Scrotal pain/swelling	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000	00000 00000 00000								
Neonatal Conjunctivitis	00000 00000 00000									00000 00000 00000						
Other/unknown STI	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000		00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	00000 00000	
<b>TOTALS</b>																
Partners of symptomatic STI clients	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000			00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000	00000 00000 00000 00000 00000

**NOTE:**EACH TIME YOU DIAGNOSE A PATIENT WITH A NEW STI, SHADE IN A ZERO ("o") IN THE CORRECT ROW & COLUMN FOR THEIR SEX, AGE AND DIAGNOSIS.

IF THE PATIENT IS TRANSGENDER OR THEIR SEX IS UNKNOWN, RECORD THE PATIENT'S DETAILS (Age, Sex, Diagnosis) ON THE REVERSE SIDE OF THIS FORM.

**Only record new cases,**ie: If a patient has been diagnosed previously and is attending for follow-up do NOT record this patient. If, however, the patient then report him/her as a new case by marking off another zero.

**AT THE END OF THE MONTH,** ADD UP THE TOTAL NUMBER OF CASES IN EACH ROW AND COLUMN AND WRITE IN THE TOTAL MALES, TOTAL FEMALES, TOTAL TRANSGENDER, TOTAL UNKNOWN SEX.

**SEND IN THIS COMPLETED TALLY SHEET WITH YOUR OTHER MONTHLY REPORTS.** SEND A ZERO MONTHLY REPORT IF NO STI CASES ARE SEEN

**DO NOT register partners as symptomatic cases, unless you observe the symptoms.** If the person comes referred by a patient, then register them as a partner.

# SKIN DISEASES AND WOUND CARE

## Boils, abscess

- Warm compresses to promote drainage may be sufficient for small boils.
- Incise and drain if there is a large abscess present (abscess = painful, tender, red nodule that compresses when examined as pus present).
- Antibiotics NOT usually needed. The role of antibiotics in treatment of skin abscesses is uncertain. In the meantime, we suggest that patients with abscess >5 cm, multiple lesions, extensive surrounding cellulitis, associated comorbidities or immunosuppression, systemic signs of infection, or lack of response to incision and drainage be managed with incision and drainage as well as antimicrobial therapy eg Co-trimoxazole or Cloxacillin if available.
- Drawing ointment such as Ichthammol 10% may help to draw the boil out if unbroken.
- Give Paracetamol or Ibuprofen for pain (watch for contraindications to ibuprofen eg peptic ulcer, heart failure, high BP and renal problems).

## Cellulitis

- Red, swollen, hot and tender – may feel hard to touch.
- May not be a clear source of infection or precipitating cause.
- May have associated fever.
- May spread up limbs.
- If lower limbs, foot cellulitis, always check for the presence of tinea and treat this appropriately (Clotrimazole cream).
- Antibiotics are usually used for cellulitis using Cloxacillin for 7-10days. If no clinical improvement following this, consider a course of Co-trimoxazole.
- Cellulitis may get worse after commencement of therapy (eg increased spreading and redness). If the patient is otherwise clinically improving, continue with therapy.
- If temperature continues to remain high or the patient is septic, **refer to hospital**.
- Give Paracetamol or Ibuprofen for pain (watch for contraindications to ibuprofen eg peptic ulcer, heart failure, high BP and renal problems).

## Osteomyelitis

Think of bone infection (osteomyelitis) if:

- a) Child with hot, red, swollen limb that is not cellulitis.
- b) Pain and decreased mobility. There may have been a preceding trauma. Cellulitis can co-exist with osteomyelitis so if recurrence occurs following treatment or there is a draining sinus, consider underlying osteomyelitis.
- c) Osteomyelitis affecting the feet can present in patients with diabetes. It is typically associated with overlying diabetic foot ulcers which may be painless.
- d) Also consider osteomyelitis when there is a deep wound over bone and the bone is in view.
- e) No improvement after short term antibiotics. Refer for an XRay if possible. - they should be put on long term IV Cloxacillin.

## Refer

If unsure as patients require long term specialised antibiotics to prevent bone loss – consult surgeons.

- ⇒ Following discharge from hospital, oral antibiotic therapy may need to be continued for weeks/months – ensure stocks are available to cover this requirement if patient does not return with sufficient supplies.

## Impetigo

1. Many crusted sores mainly on the face and extremities with lesions that progress from papules to vesicles, pustules and crusts. Contagious – ensure handwashing to prevent spread.
  - Remove crusts regularly and clean with warm, salted water or soap.
  - Apply Betadine or Chlorhexidine Cream.
  - Consider treatment of underlying dermatosis caused by scabies and head lice.
2. If fever, many sores, swollen lymph glands.
  - Give Cloxacillin 500mg QID for adults for 7 days. Childhood doses according to drug dosing guidelines. Erythromycin is an alternative if patient is penicillin allergic.
  - Penicillin orally or via injection may be sufficient to treat Strep. pyogenes infections but not S.aureus.
  - Co-trimoxazole has activity against S.aureus (Staph) but not Strep.pyogenes.
3. Impetigo may be followed by poststreptococcal glomerulonephritis or rheumatic fever.



## Sores and Ulcers

1. All sores when they present:
  - Clean the whole limb with soap and water.
  - Clean sore with salted water or antiseptic (eg Betadine).
2. If swollen, red, or infected:
  - Apply antiseptic dressings –Betadine or Chlorhexidine cream daily, until clean and pink.
3. If clean and not infected:
  - Apply dry dressings daily – Chlorhexidine cream or similar can be applied to stop dressings sticking otherwise soak off with salted water.
4. If many infected sores or large sores:
  - Give Benzathine penicillin 2.4MU IM STAT or Penicillin V oral QID for 10 days.
5. If no improvement after Penicillin and dressings:
  - Give Cloxacillin 500mg QID for adults for 10 days.
  - Continue to clean and dress daily.
6. Sores bigger than a 20-vatu coin:
  - May need skin grafting when clean.
7. **DO NOT PUT CRUSHED ORAL ANTIBIOTICS ONTO ANY SORES OR WOUNDS – this causes sensitivity and leads to development of antibiotic resistance orally.**



Always think about:

Diabetes.

Chronic osteomyelitis.

Yaws.

Leprosy.

## Scabies

1. Treat all the family if possible.
2. Wash all clothes and bed sheets. Can put clothes inside a plastic bag, close bag and leave in the sun all day.
3. Use Benzyl Benzoate Solution or Permethrin 5% cream (not on EDL –patient will have to purchase privately). Dilute as per dosage guidelines for younger children.
  - Wash the body with soap and water.
  - When dry, apply Benzyl Benzoate to the whole body, not just the itchy areas.
  - Apply to all the body except the head and face – it irritates eyes and open sores (avoid)
  - Wash the body again after 1 day (24hours), and repeat treatment 1 week later.
4. If the scabies are infected:  
Give Procaine penicillin IM daily (if you suspect poor oral compliance), oral Penicillin or Erythromycin orally for 5 days.

5. Educate the family about transmission of scabies. Sleeping under an insecticide bed net (available through Malaria department) appears to reduce the incidence of scabies and head lice.
6. If scabies are extensive and crusted, Ivermectin is available at rural hospital level for stat dose treatment.
7. Remember as the scabies mite dies it can set off an inflammatory reaction that causes itch. This can occur for 1-2 weeks following successful treatment. The patient may think the treatment has not worked. Use of an antihistamine such as Chlorpheniramine may help reduce the itch. Hydrocortisone cream may also be beneficial.

### Ringworm (tinea)

1. Make sure the patch is not leprosy - check skin sensation and review chapter in HWM on this topic.
2. Wash with soap and water daily.
3. Apply clotrimazole cream or Whitfield's ointment BD for 2 weeks after infection clears.
4. Explain treatment is required for 2 weeks after infection has cleared for tinea. Good household and personal hygiene needs to be practiced.



Make sure animals such as cats are not the cause. If so the cats need to be treated with Whitfield's ointment.



Do NOT give Griseofulvin except after discussing with Medical Officer – this drug can cause liver problems – especially if continually used and regular kava is taken.



### Tinea versicolor (Whitespot)

Only needs to be treated if patient requests.

- Wash regularly with soap and water.
- Apply Clotrimazole cream tds or Selsun Shampoo (patient will need to purchase this) to dry skin in the evening after washing and let it dry and do not wash off – they will need to do this for a few weeks before change is noticed.



Do NOT use griseofulvin as it does not work in treating whitespot.

### Wound care

1. Damage to the skin, soft tissues and deeper structures must be carefully assessed to prevent infection, fluid loss and or further injury.
2. The following skin care principles should be followed:
  - Clean their wounds, give tetanus toxoid as per following table:

#### Guide to tetanus prophylaxis in wound management

History of tetanus vaccination	Time since last dose	Type of wound	Tet toxoid
≥3 doses	<5 years	Clean minor wounds	NO
		All other wounds	NO
≥3 doses	5–10 years	Clean minor wounds	NO
		All other wounds	YES
≥3 doses	>10 years	Clean minor wounds	YES
		All other wounds	YES
<3 doses or uncertain		Clean minor wounds	YES
		All other wounds	YES

- Consider commencing antibiotics, especially if there is a delay in transfer.
- If you think the patient will need urgent surgery make sure they stop eating and drinking and insert an IV.
- Wear gloves and use sterile technique whenever possible.
- Don't forget pain relief.
  - Offer the patient Paracetamol or a stronger analgesia before exploring and treating the wound.
- Deep, dirty and/or necrotic wounds that will require extensive cleansing may require local anaesthetic.

- Lignocaine 1% at a maximum dose of 3mg/kg (max 10mL) may be used.
- At times a general anaesthesia may be needed to scrub wounds to remove road dirt etc.
- Carefully assess the wound:
  - i. Where is the location?
  - ii. How deep is it?
  - iii. Are other structures (tendons, bones) affected?
  - iv. Does it have a good blood supply?
  - v. What is the wound's colour and is pus or necrotic tissue present?
- Check the Tetanus immunisation status and treat as above.
- If there is an object sticking deeply into the body DO NOT REMOVE. **Refer** to hospital.
- Clean the entire limb or area affected with soap and water.
- Then thoroughly clean the wound with either salted water, normal saline or Betadine antiseptic solution.

If the wound is clean and less than 6 hours old

- Cut away dead or damaged skin, and close the wound with sutures or tape.
- Antibiotics may not be necessary for mild wounds not involving tendons or joints that can be adequately debrided and irrigated and that are seen within 8 hours.

If the wound is clean, but greater than 6 hours old

Wounds having a high risk of infection include:

- wounds with delayed presentation (8 hours or more)
- puncture wounds unable to be debrided adequately
- wounds on hands, feet or face
- wounds with underlying structures involved (eg bones, joints, tendons)
- wounds in the immunocompromised patient.
- Cut away dead or damaged skin, do not suture or tape, cover the wound with antibiotic cream, sterile gauze and pressure dressing.
- Give Procaine Penicillin for 5 days (if non-compliance expected) or stat dose of Procaine Penicillin followed by oral Penicillin V, and follow up to reassess. All dirty wounds – are treated the same as clean ones as above.
- All patients with dirty wounds will require Procaine Penicillin for 5 days (if non-compliance expected) or stat dose of Procaine Penicillin followed by oral Penicillin V, and follow up to reassess. Metronidazole should also be added to cover anaerobic infections.

Spear wounds, stabbings, bites (animal, fish or human), tooth, damaged knuckles or any type of skin ulcer.

- Do not suture.
- All Bite wounds should receive Amoxycillin with Metronidazole or Augmentin for 5 days. (Doxycycline or Co-trimoxazole with Metronidazole for anaerobic infections, if allergic to Penicillin).
- Patients not responding to Penicillin may be treated with Chloramphenicol.

**Burns –see Accidents.**

**Info about suturing:**

INDICATIONS — Sutures are appropriate when the depth of the wound will lead to excess scarring if the wound edges are not properly opposed. Typically this is true whenever the laceration extends through the dermis. Clean, uninfected lacerations on any part of the body in healthy patients may be closed primarily for up to 18 hours following the injury without a significant increase in the risk of wound infection. Facial wounds may be closed primarily up to 24 hours following the injury, and in select cases up to 48 to 72 hours if there are no signs of infection, the patient has no risk factors for infection, and the wound edges can be approximated easily.

CONTRAINDICATIONS — Concern about wound infection is the main reason not to close a wound primarily. Wounds that have been grossly contaminated with foreign debris that cannot be completely removed, infected tissue, or noncosmetic wounds that have come to medical attention late should be allowed to heal by granulation (secondary

intention) after appropriate cleansing. In addition, patients with risk factors for proper wound healing (eg. immunocompromise, peripheral arterial disease, diabetes mellitus) may warrant delayed primary closure depending upon the age of the wound (eg. >6 hours old) or wound site (eg. hands or feet).

# STINGS AND BITES

## 1. Centipedes (in Bislama - "Milbud"):

Cause extremely painful bites, often associated with marked swelling.

- If ice is available, it helps to alleviate acute symptoms.
- Local injection with 1% lignocaine can provide some short-term relief.
- Use anti-inflammatories (ibuprofen/aspirin) regularly until symptoms settle.
- Consider tetanus immunization if this has not been given in last 5 years.

## 2. Hornets/Bees:

The sting is initially very painful.

- If ice is available, it helps to alleviate acute symptoms.
- Oral anti-histamines (eg. chlorpheniramine) may be helpful to control the swelling and itchiness if local reaction persists. Avoid these in children under 6yo.
- ⚠️ Some patients are allergic to bee-stings and develop rapid onset shock/anaphylaxis immediately after a sting.
- If anaphylaxis occurs, treatment (intramuscular adrenaline) should be administered immediately with IV fluids if available. Get to hospital as soon as possible.
- The patient should be advised to carry an Epi-pen® (available at private pharmacies 0.1% adrenaline: 0.3mg for adults, 0.15 mg for children) at all times. Alternatively they or a reliable family member should be taught how to use draw up and give Adrenaline injection.

## 3. Snakebites:

Fortunately, in Vanuatu there are no venomous land snakes and therefore no antivenom is required.

- The bite should be thoroughly cleaned and if it becomes infected treated with a broad spectrum antibiotic.
- Consider tetanus immunization if this has not been given in last 5 years.

## 4. Cone shells/stone fish:

⚠️ The sting from these shells/fish is agonizingly painful and can cause hypotension, arrhythmias, respiratory distress and neurological signs.

- Initial treatment is to place the affected area into water as hot as the patient can tolerate for 45mins (not so hot that you cause a burn!) as the toxin is inactivated by heat.
- Pain relief with paracetamol and ibuprofen may be necessary. Severe pain may require stronger analgesia eg SC morphine or oral codeine. Local injection with 1% lignocaine may provide some short-term relief.
- Subsequent treatment is supportive – adrenaline for hypotension, atropine for bradycardia.
- Consider tetanus immunization if this has not been given in last 5 years.
- If the patient is having trouble breathing, they may need short term ventilation and immediate transfer to a hospital.

## 5. Jellyfish stings:

⚠️ These can be extremely painful and some jellyfish stings cause rapid onset of cyanosis, convulsions and death.

- Immediate treatment is to remove tentacles (using gloves) and wash with sea water.
- Use large amounts of vinegar onto the affected area. In some stings this may worsen pain so avoid.
- Hot water immersion for 20mins as hot as can be tolerated may assist with pain relief. Some stings respond to cold packs for pain relief.
- Instigate CPR if patient stops breathing and immediately transfer to hospital.
- Large doses of narcotic analgesics may be required.

# STROKE

A Stroke is the result of an area of the brain dying due to lack of blood supply. This can occur when a clot blocks off one of the vessels in the brain, or alternatively, one of the small blood vessels may burst. A transient ischaemic attack (TIA) initially looks like a stroke but people recover in a few hours because the blockage clears and blood supply gets through to the brain again. **A patient who has had a TIA is at high risk of having another more serious stroke.** They require treatment with Aspirin 150mg daily.

## 1. Types of presentations:

- a) Strokes are sudden; if deterioration is gradual, think about other causes, e.g. head injury, malaria, TB, meningitis, tumour.
- b) Symptoms can include a numb or weak feeling in the face, arm or leg, trouble speaking or understanding, unexplained dizziness, blurred or poor vision in one or both eyes, loss of balance or an unexplained fall, difficulty swallowing, headache, confusion and unconsciousness.
  - A quick test is to ask the following:
    - i. Face: Can the person smile? Have their mouth or eyes drooped on one side?
    - ii. Arms: Can they raise both their arms?
    - iii. Speech: Can the person speak clearly and understand what you say?
    - iv. If there is drooping of face, both arms cannot be raised and speech is affected then there is a good chance that the person has had a stroke.
- c) Usually there is weakness on one side of the body and they may have difficulty speaking normally.
- d) In severe strokes the patient may be unconscious.
- e) Patient is usually more than 45 years of age – if they are young always think about the possibility of underlying rheumatic heart disease / endocarditis which can be associated with a clot breaking free from the abnormal heart and blocking a small blood vessel in the brain.
- f) Patients with a history of diabetes and hypertension are at increased risk of stroke.
- g) If the patient describes a sudden, terrible pain and subsequently has neck stiffness the blood vessel may have burst into the CSF. This is called a subarachnoid haemorrhage (SAH). It can be confirmed by finding blood in the CSF on lumbar puncture. The treatment of SAH is the same as for stroke.

## 2. What to do:

If the patient is unconscious you will need to:

- a) nurse them in coma position with a clear airway.
- b) give oxygen if available 4L/min.
- c) IV or NG fluids to maintain hydration ~2L/day.
- d) Insert a urinary catheter.

## 3. What to do next:

There is not a lot that can be gained from sending a person who has had a stroke to hospital. Make sure the family understands that there is no medical treatment that changes the outcome for stroke patients.

- If the patient survives, the family need to learn how to care for them - you can contact the hospital or Disability Society to get walking sticks or a wheel chair. People can gradually improve over a number of months.
- Aspirin 150mg (½ tab) daily for the rest of their lives helps prevent further strokes caused by clots.
  - 🔔 People who have a stroke often have been hypertensive, diabetic and / or are overweight.
  - 🔔 Preventing strokes is one of the main reasons for treating hypertension.

# THYROID DISORDERS

The thyroid gland, located in the front of the neck, secretes thyroxine which controls the bodies metabolic processes. Too much thyroxine increases metabolism and not enough thyroxine reduces it.

## Goitre

A goitre is a swelling in the neck caused by enlargement of the thyroid gland. Most patients do not experience any symptoms but sometimes large goitres can compress the oesophagus or trachea and cause problems with swallowing or breathing. These patients should be referred to hospital for potential surgery. Small goitres may not be a cause for concern but if the patient is worried or the lump is changing in size they should be referred to hospital.

## Hypothyroidism

Not enough thyroxine being excreted by the thyroid gland leads to hypothyroidism which results in a slower body metabolism. This condition is more common than hyperthyroidism and mainly affects women and the elderly. It can be due to iodine deficiency or an autoimmune disease that destroys the gland leading to less thyroxine production.

Symptoms:

Fatigue and slow movement, slow speech	Constipation, heavy/ prolonged menstrual periods
Weight gain even with poor appetite	Depression
Cool dry skin and dry brittle hair	Can be hard to identify if onset of symptoms is gradual
Cold intolerance	

**Refer all patients for medical assessment.** If the diagnosis is confirmed they will need lifelong treatment with thyroxine tablets.

## Hyperthyroidism

Too much thyroxine being excreted by the thyroid gland leads to hyperthyroidism which results in a faster body metabolism. Again it is more common in women than men. In severe cases this can be a medical emergency where emergency treatment is required.

Symptoms:

Nervousness and tremor	Diarrhoea, reduced menstrual periods
Weight loss despite a good appetite	Muscle weakness
Tachycardia and palpitations	Bulging eyes
Heat intolerance	Goitre

**Refer all patients for medical assessment.** If confirmed they may need treatment with anti-thyroid drugs, Carbimazole and symptom controllers like b-blockers or surgical removal of the gland.

# TRACHOMA

## What is Trachoma?

Trachoma is an infectious disease caused by *Chlamydia trachomatis* bacteria which produce roughening of the inner surface of the eyelids. It is also called granular conjunctivitis and Egyptian ophthalmia. It is also a leading cause of infectious blindness in the world.

## Signs & Symptoms:

- Trachoma causes irritation of the eye, starting with simple redness of the eye and lids, progressing to inturning of the lids and irritation and scarring of the cornea, which may then progress to an opaque cornea resulting in blindness. These complications are avoidable with adequate diagnosis and treatment.
- With the development of the later stages of trachoma with scarring of the lids and conjunctiva, vision is often decreased to the point where the individual is no longer able to work, resulting in disruption of the family.

## Treatment:

- ⇒ Azithromycin (single oral dose of 20 mg/kg) or topical tetracycline (1% eye ointment twice a day for six weeks). Azithromycin is preferred because it is used as a single oral dose. Azithromycin can be used in children from the age of six months and in pregnancy.
- ⇒ If not treated properly with oral antibiotics, the symptoms may escalate and cause blindness, which is the result of ulceration and consequent scarring of the cornea. Surgery may also be necessary to fix eyelid deformities.

## How does it spread?

- 🦟 Trachoma is spread by direct or indirect contact with eye, nose, or throat secretions of an individual with trachoma, or indirectly via flies or other insects carrying those secretions on their legs or bodies.
- 🦟 Common denominators are poor hygiene, unsanitary water supplies, and shared towels. It is most common in small children (3-5 years of age) who spread it to their siblings, parents and playmates.
- 🦟 Within endemic areas, the incidence of the infection is highly variable from village to village and concentrates in families or other pockets

## Prevention of Trachoma?

- Facial cleanliness: Children with grossly visible nasal discharge, ocular discharge, or flies on their faces are at least twice as likely to have active trachoma as children with clean faces.
- Intensive community-based health education programs to promote face-washing can significantly reduce the prevalence of active trachoma, especially intense trachoma. If somebody is already infected washing one's face is strongly encouraged, especially a child, in order to prevent re-infection.
- National governments in collaboration with numerous non-profit organizations implement trachoma control programs using the WHO-recommended SAFE strategy, which includes:
  - **S**urgery to correct advanced stages of the disease;
  - **A**ntibiotics to treat active infection, using azithromycin
  - **F**acial cleanliness to reduce disease transmission;
  - **E**nvironmental change to increase access to clean water and improved sanitation.

- Without intervention, trachoma keeps families shackled within a cycle of poverty, as the disease and its long-term effects are passed from one generation to the next.

# TUBERCULOSIS (TB)

 See Vanuatu Technical Guidelines and Policies for Tuberculosis Control Revised edition 2011

TB is caused by the bacteria *Mycobacterium tuberculosis*. It is usually spread by an infected person coughing up the bacteria. People close to the infected person, usually close contacts, breathe in the bacteria and become infected. The disease is most commonly seen as Pulmonary disease, but it can also involve the lymph nodes, genitourinary tract, cause meningitis, osteomyelitis, peritonitis or pericarditis. It can also cause systemic disease known as miliary TB.

Vanuatu has adopted the Directly Observed Therapy (DOTS) Strategy for controlling TB. In practice this means patients have the first 2 months of treatment as an inpatient. This improves compliance, avoiding the emergence of resistant TB that has become a big problem in countries where patients fail to complete treatment courses. All health facilities and providers should be familiar with the forms and follow the guidelines. If you are unsure or have questions you should contact your Provincial TB Officer.

More information can be found in the Vanuatu Technical Guidelines and Policies for Tuberculosis Control Revised edition 2011.

1. Always think of TB in any person with:
  - a) a cough for more than 3 weeks.
  - b) bloody sputum (haemoptysis).
  - c) weight loss.
  - d) loss of appetite.
  - e) fever or night sweats.
  - f) enlarged lymph glands.
  - g) family history (contact) of TB.
  - h) children with poor growth or underweight.
  
2. Diagnosis:
  - a) TB is confirmed when the bacteria is seen in the sputum or tissue stained with a specific stain to pick up acid fast bacilli (AFB).
  - b) The sputum examination for AFB is the most important test for TB.
    - i. Get patients to cough up specimens in a well ventilated place, preferably outside.
    - ii. Collect one sputum sample on the spot then another early morning sputum specimen the following day and send them to the nearest DOTS centre along with the appropriate request form. Some doctors may request 3 sputum samples.
  - c) Examination of the chest is usually normal
    - i. CXR are also very helpful, especially in patients with negative sputum smears, especially for HIV positive cases.
    - ii. In patients being treated with antibiotics for upper or lower respiratory infections who do not improve despite broad – spectrum antibiotics be sure and check a sputum for AFB and do a CXR to exclude TB
    - iii. Do not give second courses of antibiotics without checking a sputum for AFB and CXR for TB.
  - d) A Mantoux test may aid the diagnosis of active tuberculosis. However a negative Mantoux does not exclude clinical disease. Up to 10% of patients with active TB will be Mantoux negative.
  - e) Not all AFBs are TB. The organisms that cause Leprosy look identical, and there are also many “atypical” mycobacteria that can only be distinguished from TB by culture.

## Paediatric tuberculosis score chart

Score the following features, and add up the numbers.		
<b>Length of illness:</b>		
How long has the child been sick with this particular symptom [cough, swollen neck, sputum, diarrhoea].	Less than 2 weeks 2 to 4 weeks More than 4 weeks	0 1 2
Previous episodes should not be counted		
<b>Nutritional Status:</b>		
Look at weight for age. Look at the weight pattern over time.	More than 80% (above red line) Between 60-80% line (below red but above black) Under 60% line (black )	0 1 2
<b>Family History of TB:</b>		
Ask the child's parents about household contacts. If there is a convincing story of a thin relative coughing up blood score 1. If evidence of positive sputum score 3.	None Verbal Family History Sputum positive	0 1 3
<b>Positive PPD Mantoux:</b>		
More than 15 mm if the child had one or more BCGs. If there is no BCG scar, then positive is 5mm or more		3
<b>Enlarged, painless, rubbery neck glands:</b>		
Feel the child's neck from behind. TB glands commonly stick together and don't move easily.		3
<b>Night sweats or unexplained fever:</b>		
Recurrent, especially at night, which does not respond to antimalarial or antibiotic treatment.		2
<b>Angle deformity of spine:</b>		
Look at and feel the spine with your hand. A sharp angle bend in the backbone is often caused by TB		4
<b>Malnutrition no better after 1 month treatment:</b>		
Treat the malnourished child with appropriate diet and medicines (see page 88). If there is no weight gain after 1 month or weight loss over 2 weeks score 3.		3
<b>Firm, non-traumatic swelling of joint:</b>		
TB arthritis is not acutely painful. If pain is present, consider septic arthritis.		3
<b>Unexplained abdominal swelling (Ascites):</b>		
Exclude large spleen or liver as the cause of the swelling. If the abdomen is filled with fluid (ascites) or feels doughy or masses are palpable then score 3. If vomiting, urgent referral is needed.		3
<b>Coma for longer than 48 hours:</b>		
TB meningitis or abscesses can alter the level of consciousness with or without convulsions. Other neurological signs may be present: blindness; hemiplegia. They usually develop slowly. DO NOT DO an LP, but rather treat for bacterial meningitis and cerebral malaria and REFER URGENTLY.		3
<b>Total Score:</b>		

If TOTAL score is 7 OR MORE AND no other disease has been found or is more likely to the explain illness, then **refer** urgently.

### 3. Referral:

- a) If the patient is not very sick you can send sputum samples for tests and await results.
- b) If however you strongly suspect the patient is infected, or the patient is sick, **refer** immediately.

### 4. Notification and Registration:

- a) All suspected cases should be referred to the nearest DOTS Centre for diagnosis.
- b) Confirmed cases will be registered in their TB registry book.
- c) Quarterly reports will be submitted to the National TB Office and one will be kept at the Provincial level.

### 5. Treatment:

- a) The recommended protocol in Vanuatu for new cases is the “short course” 6 month regime.
- b) Standard 6 month therapy is adequate for most cases of pleural, bone and urinary tract TB.
- c) This consists of an initial intensive bactericidal 2 month period with 4 drugs aimed at achieving a rapid reduction in numbers of viable organisms. In 2013, a combined product – Rifampicin 150mg/Isoniazid 75mg/ Ethambutol 275mg/ Pyrazinamide 400mg (RHZE) was introduced to reduce the number of tablets required to be taken during the intensive phase. The number of FDC(fixed-dose combination drugs) tablets will be prescribed in accordance to the appropriate weight band. Single products will remain on the EDL.
- d) This is followed by a 4 month period of 2 drug therapy with isoniazid and rifampicin (RH) to eliminate the remaining organisms and prevent relapse.
- e) For re-treatment (defaulters, treatment failure,etc) patients – these patients receive 8 months treatment. ie, (3 months RHZE + Streptomycin injection) and 5 month RH.
- f) 12 month treatment is needed for TB meningitis.
  1. Pyrazinamide and isoniazid cross the blood brain barrier well and should be used for the full duration of therapy.
  2. Corticosteroids are recommended (prednisolone 1 – 2 mg/kg per day for 4 – 6 weeks) then slowly reduced.

### 6. The aims of anti-tuberculosis therapy are:

- a) To achieve bacteriological conversion of sputum to negative as quickly as possible.
- b) Assure a complete cure without relapse.
- c) To prevent the emergence of drug resistance.
- d) To minimize the side effects of therapy.

 FOR SPECIFICS OF THERAPY REFER TO VANUATU DOTs GUIDELINES

### 7. Drug side effects and interactions:

- a) Rifampicin – Dose 10mg /kg to maximum of 600mg per day
  - Reddish discolouration of urine and tears.
  - Gastrointestinal intolerance, nausea and vomiting.
  - Hepatotoxicity, more common in older patients and with alcohol consumption.
  - Flu like syndrome with myalgia, arthralgia, fever, malaise and headache
  - Skin reactions.
  - Renal failure.
  - Blood dyscrasias including thrombocytopenia.
  - Interaction with the following drugs: oral contraceptives (see special clinical situations below), corticosteroids (prednisolone/hydrocortisone), anticoagulants(warfarin), hypoglycaemic drugs(glibenclamide), theophylline/aminophylline, anticonvulsants(phenytoin), anti-fungals, simvastatin and some antiretrovirals for HIV. Often metabolism of the interacting drug is increased requiring higher doses for effect. Check above guidelines or pharmacy for more information about how to handle these.

- b) Isoniazid – Dose 5mg / kg to maximum of 300mg per day
- Gastrointestinal intolerance including nausea, vomiting, epigastric pain and constipation.
  - Minor elevation in liver enzymes is common (seen in up to one third of patients).
  - Hepatotoxicity, more common in older patients and with alcohol consumption.
  - Peripheral neuropathy, paraesthesia of hands and feet. This is due to pyridoxine (Vitamin B6) deficiency. Preventive pyridoxine 25 mg daily is prescribed for all patients receiving isoniazid.
  - Hypersensitivity reactions include fever, rash, itch and lymphadenopathy. This can range from mild to serious (Stevens Johnson Syndrome).
  - Neurological side effects including drowsiness, insomnia, irritability, euphoria, dizziness, tremor and rarely psychosis or convulsions. Drug interactions with some anti-convulsants.
  - Acne
- c) Ethambutol – Dose 15mg / kg to maximum of 2 gram per day
- Anorexia.
  - Optic neuritis presenting as blurring of vision or colour blindness. Hypersensitivity.
  - Contraindicated in renal failure.
- d) Pyrazinamide – Dose 25mg / kg to maximum of 2 gram per day
- Mild arthralgia.
  - Flushing.
  - Hepatotoxicity (more common in older patients and with alcohol consumption).
  - Gout.
  - Renal impairment.
  - Lability of blood glucose in diabetic patients.

## 8. Special clinical situations:

- a) Paediatrics:
- Children should be weighed monthly and dosages adjusted accordingly. Doses per kg tend to be higher – refer to Vanuatu DOTS Guidelines.
- b) Women of child bearing age:
- OCP is NOT EFFECTIVE while patient is taking rifampicin and for 2 months after rifampicin therapy has ceased
  - Alternative forms of contraception include condoms, IUCD or Depo Provera.
- c) Pregnancy and breast feeding:
- The TB standard treatment regime can be used in pregnancy and breastfeeding.
  - Pyridoxine 25mg daily is recommended to protect against isoniazid induced peripheral neuropathy during pregnancy and breast feeding.
  - Most anti-tuberculosis drugs pass into human milk, but not sufficient to protect the child.
  - The child still needs isoniazid preventive therapy.
- d) Renal failure:
- Ethambutol is largely eliminated by the kidneys and if possible should be avoided where there is severe renal impairment. Doses should be reduced if CrCl <25mL/min and monitor for optic neuritis.
  - In mild to moderate renal impairment no modification to isoniazid, rifampicin, pyrazinamide dosage is required.
  - In severe renal failure the dosage of isoniazid and pyrazinamide should be reduced. Ensure regular pyridoxine dosing to reduce peripheral neuropathy from isoniazid.
- e) Liver disease:
- Isoniazid, rifampicin and pyrazinamide are all potentially hepatotoxic.
  - It is common for serum transaminase levels to rise in the first weeks of therapy.

f) HIV infection:

- Standard therapy is used for the first two months.
  - The continuation phase should be prolonged for a total of 12 months.
  - Drug interactions may occur with other HIV drug therapies and patients need to be managed in conjunction with an HIV specialist.
- 
- If the information you need is not contained in the Vanuatu Technical guidelines and Policies for Tuberculosis Control then you must contact Specialist Physician or Paediatrician at Vila Central Hospital.

# TYPHOID FEVER

## Definition:

Typhoid Fever is a febrile illness caused by the bacterium *Salmonella typhi* which is only found in humans. It is transmitted mainly by people eating food or water contaminated by faeces or urine of patients and carriers or by direct contact with patients and carriers.

🔔 Handwashing is the most effective prevention measure.

🔔 Typhoid fever mainly affects children and they are most affected by this disease. Death can result from intestinal perforation.

## Signs and Symptoms:

1. Prolonged fever (more than a week)
2. Headache and weakness
3. Diarrhoea is NOT common, patient may even be constipated
4. Loss of appetite
5. Abdominal pain, swelling and tenderness

## Treatment:

➤ **Refer** to hospital for evaluation.

➤ Chloramphenicol 500mg QID for 14 days

⇒ **Or** Ciprofloxacin 500mg BD 5 days

⇒ **Or** Ceftriaxone 2gm IV daily for 5 days

⇒ Paediatric doses –check separate dose table.

⇒ All suspected cases should get antibiotics and **they must complete the full course** even if laboratory tests are negative.

🔔 All patients are infectious until recovery but about 10% of untreated patients remain infectious for 3 months; 2-5% become permanent carriers. Permanent carriers shed *S.typhi* in their faeces or urine without having symptoms of the disease.

🔔 If you suspect typhoid you must report immediately to Provincial Health Manager or Directorate of Public Health – do not wait for confirmation tests.

## Prevention:

1. Handwashing – always wash with soap and water after each visit to the toilet and before touching food and eating.
2. If water contaminated, bring water to a rolling boil or filter and treat with chlorine.
3. Uncooked foods are a risk as well as food handled by carriers who don't wash their hands with soap.

# URINARY TRACT INFECTION (UTI) AND PYELONEPHRITIS, URINE PROBLEMS IN MEN

Common in women, much less common in men, especially young men and boys.

Urine symptoms in sexually active men are usually due to STIs.

UTIs in pregnant women can cause premature labour.

Pyelonephritis is an infection involving the parenchyma and collecting system of the kidney. This is an infection of the upper urinary tract but often the infection has risen from the lower urinary tract and so features of both upper and lower urinary tract infection are present. Like lower tract infections, pyelonephritis is more common in women and also in pregnancy, older patients with diabetes and those with abnormalities of the urinary tract eg kidney stones etc.

## 1. Signs and symptoms:

- a) Burning with urination (dysuria)
- b) Passing urine more often (frequency)
- c) Back and/or abdominal pain
- d) Haematuria
- e) Fever, tachycardia, sweating, rigors – pyelonephritis. Pain and tenderness over affected kidney.
- f) Signs of septicaemia may be present in severe cases of pyelonephritis.
- g) In older patients, urinary signs may not be present and they may present with confusion and/or other signs of infection.

## 2. History Taking:

- a) Make sure you ask about sexual activity and possible STIs and/or pregnancy in women
- b) Ask how much water the person is drinking
- c) Ask about kidney disease

## 3. Laboratory Tests:

- a) Instruct the patient to wash carefully and collect a mid-stream urine
- b) Examine for pus, blood, protein and sugar
- c) If possible obtain a C&S (culture and sensitivity)
- d) Pregnancy test if suspect pregnant
- e) STI specimens if STIs suspected

## 4. Treatment for UTIs: Varies between women, men and pregnant women:

Non-pregnant women:

- Cotrimoxazole 2 tabs BD for 5 days OR
- Amoxicillin 500mg BD for 5 days

Pregnant women:

- Amoxicillin 500mg BD for 10 days.

Men:

- Cotrimoxazole 2 tabs BD for 14 days OR
- Amoxicillin 500mg BD for 14 days

Drink plenty of water.

If suspect STI, treat accordingly – see STI section of this manual.

## 5. Treatment for Acute Pyelonephritis:

- Mild infection: Cotrimoxazole 2tabs BD for 10 days
- Severe infection: IV fluids + Gentamicin 5mg/kg IV stat + Ampicillin 2g IV stat (flush between doses) and **Refer to hospital.**
- If gentamicin is contraindicated, ceftriaxone 1g IV daily can be used.
- Resistant organisms: Ciprofloxacin 500mg BD for 10 days OR Amoxicillin/Clavulanic acid 500/125mg bd-tds for 10 days.

## 6. Referral:

- If protein and/or blood in the urine and no pus or leukocytes refer to section on kidney disease in this manual.
- 📞 **Refer** severe pyelonephritis cases as well as recurrent cases, especially in children and/or men and pregnant women.

## Urine problems in older men

🔔 Men with retention of urine or “dribbling” or frequency of urination:

- Usually older men have an enlarged prostate because in old age the gland can get bigger and put pressure on the urethra and it can also be due to prostatic cancer.
- If you have been taught to perform a rectal examination you will usually feel an enlarged prostate gland (normal size about 4cm, firm and non tender).
- A UTI can often irritate the urinary tract leading to retention or other symptoms, therefore check for UTI.

What to do:

- ⇒ Can encourage voiding by sitting in a bowl of warm water first off to avoid catheter.
- ⇒ If unable to void and palpable bladder pass a catheter and allow to empty bladder over about an hour then remove catheter – you will need a big soft catheter of about 18G size – never force the catheter or use a metal catheter.
- ⇒ If you are unable to easily pass a catheter via the urethra you may need to consider a supra pubic tap – if you can do this you can leave the tube in well secured until patient referred to hospital.
- ⇒ Consider commencing the patient on antibiotics as above to treat a UTI.
- ⇒ **Refer** all men with retention, “dribbling” or frequency of urine to a hospital – timing will depend on whether or not symptoms can be relieved in the short term.

# YAWS

Yaws is a contagious disease caused by an organism that belongs to the same group as syphilis (*Treponema*). Infection with yaws will therefore give positive results on syphilis tests (e.g. RPR, VDRL, TPHA). Unlike syphilis, however, it is transmitted by direct contact particularly within households and among children at school. It occurs in Vanuatu mainly in the remote rural areas. The World Health Organization thinks it is possible to eliminate the disease with good detection and treatment, and by promoting good hygiene.

🔔 Think of yaws in any patient with a chronic skin or bone lesion.

🔔 When a case is found, it means that there are others in the community who also carry the infection.

## 1. The disease:

- a) Primary-painless ulcer usually on the lower limb. It may last for a few months but usually heals by 6 months even without treatment.
- b) If the primary ulcer is not treated, secondary ulcers/sores may occur again, usually on the lower limbs.
- c) Some patients may have pain in the bones-mainly hands, wrists and elbows.

## 2. Treatment:

- Initially, when finding a clinical case with the typical sores, treat the case and all household members.
- Take a blood sample from the case for testing.
- When the test result comes back positive, organize a treatment of the entire community: usually this is the entire village, and if the child goes to school, the entire school as well.
- People who missed the treatment should be visited later to get treated.

## New first line treatment starting in 2012:

- Single dose Azithromycin (request by special order from Provincial Pharmacy/CMS)
  - Children: 30mg/kg up to 2g max as a single dose;
  - Adults: 2g as a single dose.

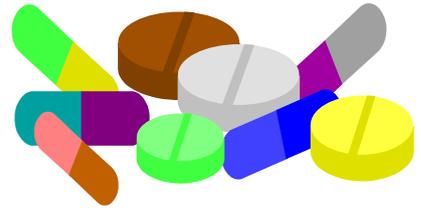
## If azithromycin is unavailable or it does not resolve within 2 weeks:

- Single dose of intramuscular Benzathine Penicillin:
  - Persons aged under 10 years: 600,000 units;
  - Persons aged 10 years or older: 1.2 million units.

*Do not use topical antibiotics on sores – this will eventually lead to bacterial resistance and can cause skin sensitization.*



## How to Calculate Solid Doses



When a tablet has been ordered to be given to a client you may not have the correct dose in the stock cupboard. You need to use your knowledge to give the correct dose. At times you can accurately estimate how many to give e.g. amoxicillin 500 mg is ordered and you have a bottle with 250 mg you know that you need to double the number to get 500 mg. Sometimes this is not simple and a formula can be used. The **formula for solid doses** i.e. **tablets/capsules** is:

	<u>Strength/dose to give</u>	=	number of tablets to give
	Stock strength		
Eg.	<u>500mg</u> <u>250mg</u>	=	2 (using example above)



## How to Calculate Liquid Doses



When you have an injection to give or a liquid medicine you need to work out how much of the drug by weight is present in the volume of the solution. A formula can also be used to calculate this. The calculation is the same as for solid doses but you have an extra step and need to multiply by the volume of fluid. Working out how many mLs of Amoxicillin syrup 125mg/5mL you need to give a dose of 250mg – see below.

	<u>Amount to give</u>	x	<u>volume</u>	=	the correct volume to administer
	Amount in stock		1		
Eg.	<u>250mg</u> <u>125mg</u>	x	<u>5ml</u> <u>1</u>	=	10mL



## Rehydration formula (Saline or Hartmann's):

Adults and Children: 20mL/kg STAT. Check haemodynamic status ie pulse rate and BP after this. If either is abnormal (ie tachycardia or hypotension) then give a second 20mL/kg STAT. A third dose of 20mL/kg may be required on the advice of a doctor or nurse practitioner.

For burns:

Adults: If >20% body surface area affected by burns then fluid requirement is:

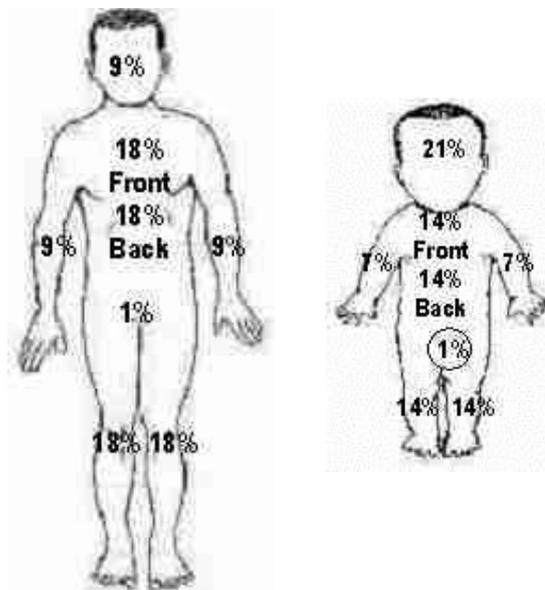
%burns x Weight = volume (mL) administered over 2 hours.

Eg. 60% burns x 80kg = 4800mL administered over 2 hours.

Children: If >20% body surface area affected by burns then fluid requirement is:

%burns x Weight x 3 = volume (mL) administered over first 24hrs with half the volume given in first 8 hours.

Eg. 60% burns x 20kg x 3 = 3600mL over the first 24 hrs but 1800mL to be given over first 8 hours.



**Volume measures** ⇒ 1 litre = 1000 millilitres  
(L) (mL)

**Percentage concentrations** ⇒ Number of grams per 100mL = percentage (%) in 100mL  
Eg. Glucose 50% = 50g per 100mL = 5g per 10mL

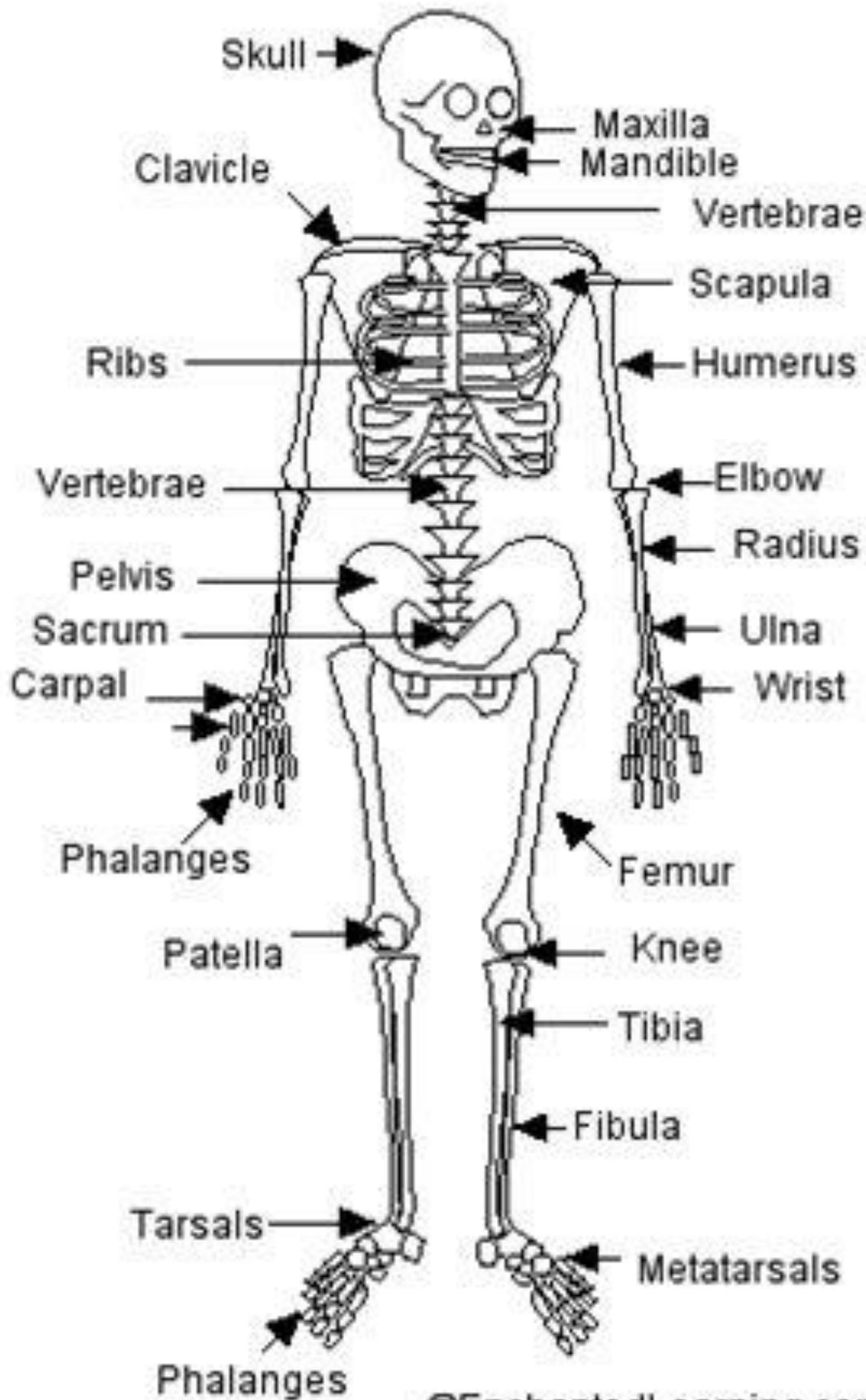
Lignocaine 2% in 2mL Convert the 2% to 2g per 100mL  
=2000mg per 100mL = 20mg in 1mL = 40mg in 2mL

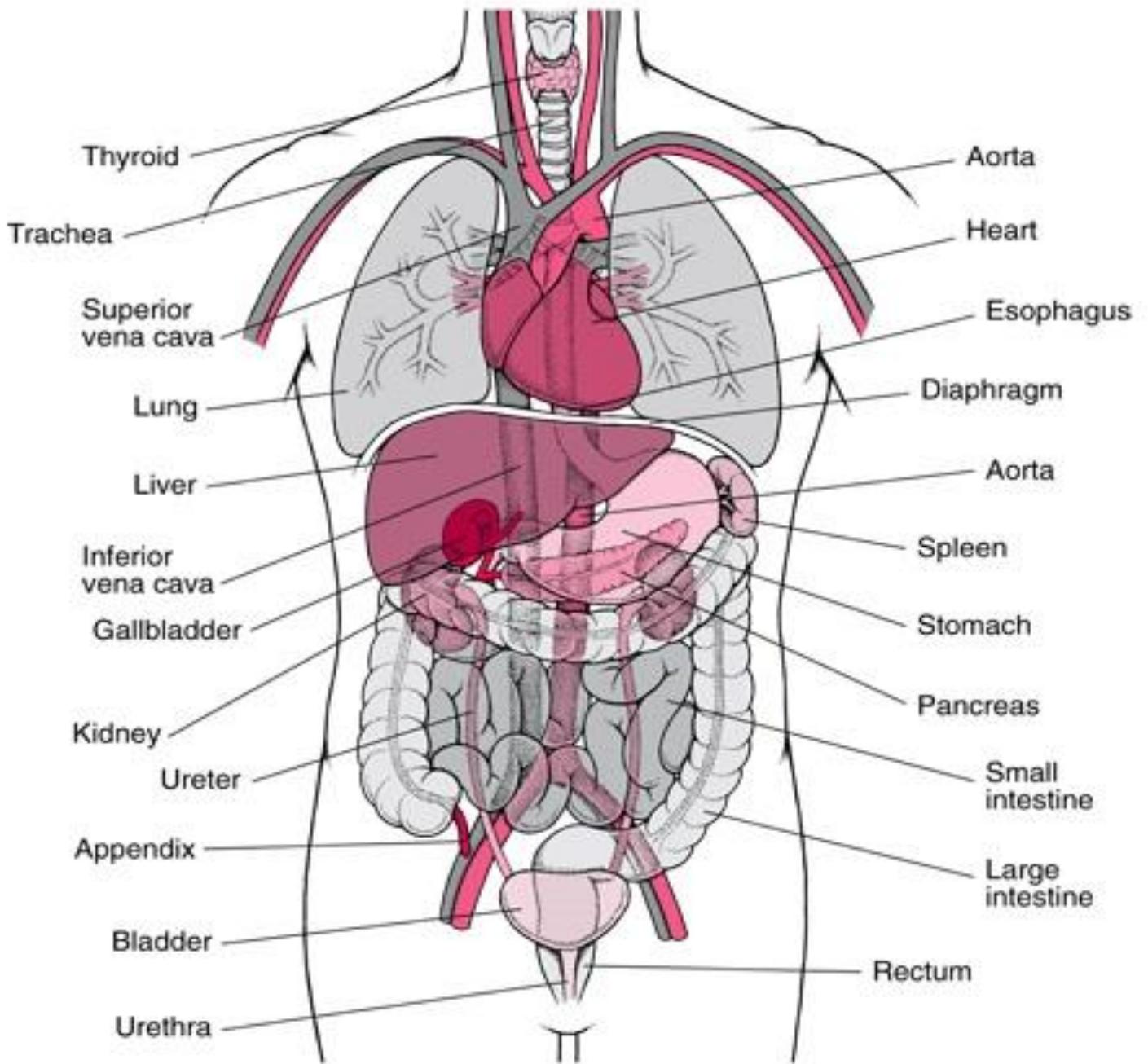
**Rounding up** ⇒ If greater than or equal to 5 round up eg 166.66=167

**Rounding down** ⇒ If less than 5 round down eg.33.333=33

Consult with pharmacist as required.

# Human Skeleton





**HUMAN ORGANS**

DRUG DOSAGE CHART								
AGE	0-3 month	4-11 month	1-3 years	4-6 years	7-10 years	11-16 years	Small Adult	Large Adult
WEIGHT IN KG	3-5kgs	6-9kgs	10-14kgs	15-19kgs	20-29kgs	30-39kgs	40-49kgs	50+kgs
<b>ACETAZOLAMIDE QID</b> 250mg tablets 5mg/kg/dose (up to 250mg)QID	0	0	1/4tab	1/4 tab	1/2 tab	3/4 tab	1	1
<b>ACYCLOVIR EYE DROPS</b> OR EYE OINTMENT	Apply 1cm of ointment or use 1 drop every 4 hours							
<b>ADRENALINE PRN</b> 1mg in 1mL (1:1000) IM dose	0.1mL	0.1	0.15	0.2	0.3	0.4	0.5	0.5-1mL
<b>ALBENDAZOLE Daily (before food)</b> 200/400mg tablets	More than 6 months or 10kgs give 400mg stat More than 6 months but less than 10kgs give 200mg stat							
<b>#ALLOPURINOL Daily</b> 100mg tablets -start low and increase slowly	No use in children						1-3	1-3
<b>AMITRIPTYLINE At night</b> 25mg tablet - takes 2-3 weeks to work	Refer speacialist before use in children						50-150mg (max 300mg)	
<b>AMINOPHYLLINE</b> Injection 250mg / 10mL	ONLY GIVE UNDER MEDICAL OFFICER DIRECTION AND ADVICE							
IV loading dose	5mg / kg (slow IV over 20 minutes – any quicker can kill)					5mg / kg (slow IV over 20 minutes)		
IV Maintenance	1mg / kg / hr (infusion)					0.5 mg / kg / hr (Infusion)		
<b>AMPICILLIN 6 hourly</b> Injection 1g viaL 50mg / kg / dose								
IM / IV dose in mg	250mg	375mg	500mg	750mg	1g	1g	1g	1g
<b>AMOXYCILLIN TDS</b> Amoxycillin 125mg/5ml Syrup	2.5-5mL	5-10mL						
250mg tablets	1/4-1/2tab	1/2-1tab	1	1	1	1	1-2	2
<b>AMOXYCILLIN/ CLAVULANIC ACID TDS</b> 500/125mg tablets -Restricted Use	Check Dr (Paeds)	Check Dr (Paeds)	1/2	1/2	1/2	1	1	1
<b>ANTACID Q4H - QID</b> Tablets							2	2
<b>ANTI HAEMORRHOID BD</b> Cream or suppos							Apply cream using nozzle internally and externally	

AGE	0-3 month	4-11 month	1-3 years	4-6 years	7-10 years	11-16 years	Small Adult	Large Adult
WEIGHT IN KG	3-5kgs	6-9kgs	10-14kgs	15-19kgs	20-29kgs	30-39kgs	40-49kgs	50+kgs
<b>ARTESUNATE SUPPOS 50MG/200MG</b> - 10mg/kg stat and refer - cannot halve suppositories	50mg	100mg	200mg	200mg	400mg	400mg	600mg	600-800mg
<b>ARTESUNATE 60MG INJ</b> - IV or IM 2.4mg/kg/dose twice daily on Day 1 -see guidelines	10mg	20mg	30mg	40mg	60mg	80mg	100mg	120mg + per mg/kg
<b>ASPIRIN</b> 300mg tablet -for pain (high dose) and to thin blood	DO NOT USE IN CHILDREN UNDER 16YRS						Pain 2-3 qid 1/2 daily	2-3 qid 1/2 daily
<b>#ATENOLOL Oral Daily &amp; IV</b> 50 mg tablet Injection 5mg / 10mL -Inject no faster than 1mg/min	Not recommended for use in children							1-2tabs 5mg
<b>ATROPINE</b> Varying strengths of inj kept 0.4mg-1mg	0.02mg / kg / dose. Max 0.5mg per dose. Maximum TOTAL dose is 1mg unless organophosphate Repeat dose after 5 -10 mins if needed						0.5mg	0.5-1.2 mg.
<b>ATROPINE EYE DROPS BD</b>	1 Drop BD. NOTE: May precipitate glaucoma							
<b>AZITHROMYCIN STAT</b> Two approved uses in Vanuatu - STI and Yaws 250 or 500mg tablets -30mg/kg for Yaws single dose							1 gram single dose for Chlamydia	
	125mg	250mg	375mg	500mg	750mg	1000mg	1500mg	1500mg
<b>BECLOMETHASONE Inhaler BD</b> Child: 50mcg / puff Adult: 100mcg / puff			<b>CHILDREN</b> Using 50mcg / puff inhaler 1-4 puffs BD, depending on the severity of their Max 400mcg daily.				<b>ADULT</b> 100mcg / puff 1-4 puffs BD Max 800mcg daily	
<b>BENZATHINE PENICILLIN</b>	SEE PENICILLIN BENZATHINE							
<b>BENZHEXOL 1-3 X / day</b> 2 mg tablets								No more than 15mg/day
<b>BENZOIC ACID COMP OINT (WHITFIELDS OINT)</b>	Apply two to three times a day until all cleared. Avoid open sores as may sting.							
<b>BENZTROPINE INJ</b> 0.02mL = 0.02mg Injection 2mg / 2mL IV/IM dose mg -see dilution table under Oculogyric				Children over 3 years 0.02mL / kg / dose stat Repeat after 15mins if needed				1-2mg

AGE	0-3 month	4-11 month	1-3 years	4-6 years	7-10 years	11-16 years	Small Adult	Large Adult
WEIGHT IN KG	3-5kgs	6-9kgs	10-14kgs	15-19kgs	20-29kgs	30-39kgs	40-49kgs	50+kgs
<b>BENZYL BENZOATE 25%</b> Lotion	Apply to entire body at night, leave on overnight, and wash off next night. Treat family members at same time. DO NOT APPLY TO FACE OR TO OPEN SORES. APPLY TO CLEAN COOL DRY SKIN. Repeat after 5 days. Clothes and bedding should be washed and put in strong sun to kill mite. Dilute 1:1 with water for young children and 1:3 for infants before use or if stinging occurs							
<b>BENZYPENICILLIN</b>	SEE PENICILLIN G							
<b>BISACODYL Daily or PRN - increase fruit in diet</b>		6 months to 3 years		Over 3 years				
5 mg Tablets				1-2 tablets			1-3	
10 mg Rectal Suppositories		½ supp at night		½ to 1 supp			1	
<b>CALCIUM GLUCONATE</b> 10% Inj (Antidote to Magnesium Sulph - Refer Obs)							10mL of 10% IV	
<b>CARBAMAZEPINE BD or TDS</b> 200mg tablets -start at low dose and inc.slowly	Under direction of paediatrician only (5-8mg/kg/day in divided doses initially)						Up to 6 tabs daily	Up to 6 tabs daily
<b>CARBIMAZOLE BD or TDS</b> 5 mg tablets	INFANTS AND CHILDREN 0.2mg / kg / dose (max 10mg) 8 hourly for 2-3 weeks, reducing to maintenance of 2.5-5mg 2-3 times a day.							
Initial dose tabs							1-4 tab	
Maintenance dose	Adjust according to thyroid function tests						1-2tab	
<b>CEFTRIAXONE</b> 1g injection IV/IM	Under consultation with paediatrician - 50mg/kg once daily						1-2g daily up to 4g	1-2g daily up to 4g
<b>CHARCOAL ACTIVATED STAT FOR POISONINGS</b> 50G/250mL (Carbsorb) -can repeat up to 3 doses	Paed dose = 1g/kg up to 50G single dose						50g stat orally	50g stat orally
<b>CHLORHEXIDINE CREAM 1%</b>	Apply cream 2-3 times per day, PRN Clean wound with clean water before applying							
<b>CHLORAMPHENICOL</b>								
Eye drops 0.5% 1-6 hourly	1 drop every 2-6 hours for 2-3 days, after eye appears normal, then give 6-8 hourly							
Eye ointment 1% 1-4x/daily	1.5cm to inner eyelid up to every 3 hours (or at night-time if using eye drops)							
<b>CHLORAMPHENICOL TDS (IV/IM) OR QID(orally)</b>								
IV / IM or oral: 25mg / kg / dose	100mg	200mg	300mg	450mg	625mg	875mg	1g	1g
250 mg capsule			1cap	2	2	3	4	4
125mg/5mL syrup Neonates -consult MO		8mL	10mL					

AGE	0-3 month	4-11 month	1-3 years	4-6 years	7-10 years	11-16 years	Small Adult	Large Adult	
WEIGHT IN KG	3-5kgs	6-9kgs	10-14kgs	15-19kgs	20-29kgs	30-39kgs	40-49kgs	50+kgs	
<b>CHLOROQUINE</b> weekly for malaria prophylaxis 150mg tablets							2	2	
<b>CHLORPHENIRAMINE</b> 4mg tablets Can cause drowsiness	Under 2 years Do not use	Antihistamines no longer recommended for children < 6years old  6-12 years: 1-2mg every 4-6 hours						4mg every 4-6 hours	
<b>CHLORPROMAZINE TDS / QID</b> 25mg tablet - <b>oral dosing preferred</b> Injection 50mg/2mL Deep IM injection needed, monitor for low BP	Under 5 Do not use	5-12 years: max 75mg / day ORAL: 0.5-1mg / kg / dose every 4-6						IV / IM: 25-50mg TDS-QID Oral: 25-100mg TDS	
<b>#CIPROFLOXACIN BD</b> (before food) 500mg tablets	Ciprofloxacin may cause joint problems in infants and children. Do not use without consulting medical officer first.						1-2 tabs		
<b>CLOTRIMAZOLE 2-3 X / day</b> Cream 1% Pessary 500mg as a single dose at bedtime	Apply tds and continue for 7 days after cleared						1	1	
<b>CLOXACILLIN QID before food</b> IV / IM: 25-50mg / kg / dose ORAL: 12.5-25mg / kg / dose 250 mg tablets or 125mg/5ml syrup Injection 500mg IV / IM dose mg	1/4 (2.5mL) 125mg	1/2 (5mL) 250	3/4 (7.5mL) 375	1 500	1-2 750	2 1000	2 1000	2 1000-2000	
<b>COARTEM BD for 3 days -see pack for wt dosing</b>	1/2	1	1	2	2-3	3-4	4	4	
<b>CODEINE PHOSPHATE QID PRN</b> 30 mg tablets	No longer recommended by WHO for use in children.						Adult 15-60 mg QID - use with regular Paracetamol 1g qid for best		
<b>#COTRIMOXAZOLE BD with food</b> 400mg / 80mg tablets		1/2tab	1/2	3/4	1	1.5	2	2	
<b>DEXAMETHASONE -doses vary on condition</b> 4 or 5mg/mL Injection and tablets (4mg and 0.5mg)	Only under supervision of paediatrician						Complex (see O&G)	Complex (see O&G)	
<b>DIAZEPAM PRN - similar oral dosing</b> 10mg / 2mL ampoule IV - dose in mg IV dose in mL by slow injection See Convulsions Section for PR use-dose =2x IV	1mg 0.2mL	2.5 0.5	2.5 0.5	3.5 0.75	5 1	10 2	10 2	10 2	

AGE	0-3 month	4-11 month	1-3 years	4-6 years	7-10 years	11-16 years	Small Adult	Large Adult				
WEIGHT IN KG	3-5kgs	6-9kgs	10-14kgs	15-19kgs	20-29kgs	30-39kgs	40-49kgs	50+kgs				
<b>#DIGOXIN</b> 250 mcg tablets 50mcg / 1mL syrup NOTE: All doses are in <b>micrograms (mcg)</b> NOT mg.	CONSULT MEDICAL OFFICER BEFORE USING ORAL LOADING DOSE: Neonates: 20mcg / kg Loading dose - Infants and children: 30mcg / kg Maintenance 5mcg/kg daily Adult: 1500mcg in 24 hours, halve this for severe renal impairment. Give HALF the loading dose stat, followed by a quarter of the loading dose 6 hours later and the last quarter another 6 hours later (Total loading within 24 hours)											
<b>IV Digoxin is rarely needed and IM is never given.</b>	THEN maintenance dose up to 250mcg daily-lower in renal impairment and						1tab	1				
<b>DOXYCYCLINE BD with food</b> 100mg tablets	Do NOT use in children under 8 years as this can permanently change the colour of their teeth.						1tab	1	1			
<b>#ENALAPRIL daily or BD</b> 5mg/10mg tablets	Under direct management of paediatrician.						up to 10mg bd	up to 20mg bd				
<b>ERGOMETRINE (or METHYLERGOMETRINE) STAT</b> 500mcg (200mcg) IM injection - for PPH see Obs							1-2ml	1-2ml				
<b>ERYTHROMYCIN QID before food</b> Up to 12.5mg / kg / dose 250mg tablets or 125mg/5mL syrup	1/4 (2.5mL)	1/2 (5mL)	1/2 (5mL)	3/4	1	1	2	2				
<b>#ETHAMBUTOL (E)Daily</b> 400mg tablet-also in combined TB treatment 15mg-20mg / kg (max 2g / dose) .	Check dosage with medical officer or TB Unit.						1.5tab	2	3			
<b>FERROUS FUMARATE 1-2 X / day</b> 100mg / 5mL syrup (33mg Fe / 5mL) (0.4mL / kg)	1.5mL	3	5	7	10	use tabs	use tabs	use tabs				
<b>FERROUS SULPHATE / FOLIC ACID Daily dose</b> Daily dose can be split in div doses for reduced GI 200 mg tablets (66mg Fe)/0.25mg	1/4 tab	1/2	1	1	2	2	2	3				
<b>FLUPHENAZINE every 3-4 weeks</b> 25mg Depot Injection (IM)							1	1-2				
<b>FOLIC ACID Daily</b> 5 mg tablets							1/4tab	1/4	1/2	1/2	1	1

AGE	0-3 month	4-11 month	1-3 years	4-6 years	7-10 years	11-16 years	Small Adult	Large Adult
WEIGHT IN KG	3-5	6-9	10-14	15-19	20-29	30-39	40-49	50+
<b>FRUSEMIDE Daily in AM</b>								
IV / IM - 0.5-1mg/ kg/dose Oral 1-2mg/kg/dose								
40 mg Tablets -can drink contents of amp for lower		1/4tab	1/2	3/4	1	1	1-2	1-2
Injection 20mg/2mL								
IM/IV dose in mg		5mg	10	15	20	20	20-40	20-40
Can use higher doses dependant on response								
Monitor potassium levels if using long term								
<b>#GENTAMICIN Daily</b>								
5mg / kg Avoid in kidney failure. SEEK ADVICE								
IM / IV dose mg	15mg	30	50	80	100	160	200	240
Injection 80mg / 2mL in mLs	0.4mL	0.75	1.25	2	2.5	4	5	6
<b>GLIBENCLAMIDE Daily to TDS with meals</b>								
5mg Tablets							5-10mg	
<b>GLYCERYL TRINITRATE PRN</b>							1-2 tablets under the tongue for relief of chest pain.	
500mcg tablets -special storage conditions - discard 3months after opening and keep in glass bottle							1-3 patches on skin e.g. chest. Put a patch ON in the morning and take it OFF before going to	
<b>REGULAR DOSING</b>								
5mg / 24 hour patch								
(Use the patch up to 14 hours a day only (8-10 hours without patch) reduces the chance of becoming tolerant to its effects)								
<b>GRISEOFULVIN Daily with food</b>								
500mg tablets								
Skin: use for 4-6 weeks, Nails: 6-12 months				1/4tab	1/2	1/2	1	1
<b>HALOPERIDOL Daily to TDS</b>								
5mg tablets					½ tab		1-3tab	
<b>HYDRALAZINE STAT</b>								
Injection 20mg IV/IM- See Pre Eclampsia (Obs)							5-10mg	
<b>HYDROCHLOROTHIAZIDE Daily in morning</b>	Check with Paediatrician before using.							
25 mg tablets							¼ to 1tab	

AGE	0-3 month	4-11 month	1-3 years	4-6 years	7-10 years	11-16 years	Small Adult	Large Adult	
WEIGHT IN KG	3-5kgs	6-9kgs	10-14kgs	15-19kgs	20-29kgs	30-39kgs	40-49kgs	50+kgs	
<b>HYDROCORTISONE QID</b>	Neonates, infants and children (IV / IM)								
Injection 100mg (anti-inflammatory eg asthma - to oral prednisolone)	2-4mg / kg / dose						50-100mg	100-200	
<b>HYDROCORTISONE Daily to TDS</b>									
Cream 1%	Apply sparingly 1-3 times to affected skin daily until cleared.								
<b>HYDROXOCOBALAMIN</b> (VITAMIN B12)	Children (1-12 years) and adults								
Injection 1000mcg per 1mL	TREATMENT: 250mcg-1000mcg (0.25-1mL) every second day for 1-2 weeks, then 1000mcg every 2-3 months Prophylaxis: 1000mcg (1mL) every 2-3 months to maintain normal blood count								
<b>HYOSCINE TDS- QID</b>	Children (1-12 years)								
10mg tablets	IV/IM: 5-10mg						1tab	2	
Injection 20mg	Oral: 6-12 years 10mg						20mg	20-40	
<b>#IBUPROFEN TDS to QID with food</b>									
200mg/ 400mg tablets	Not used <3mths. Dose 5-10mg/kg 3-4x day with or after food.						200mg	400mg	400-800mg
<b>ICHTAMMOL 10% OINTMENT</b>									
Drawing ointment	Apply to directly, Cover with bandage.								
<b>#INDOMETHACIN PR</b>									
100mg suppos -main use in obstetrics	Not normally given to children – use paracetamol						1	1	
<b>INSULIN - MIXTARD 30/70; ISOPHANE; SOLUBLE</b>	Under direct supervision of paediatrician						Variable up to 100U/day	Variable up to 100U/day	Variable up to 100U/day
100U/mL - need BG testing; usually twice daily dosing									
<b>ISONIAZID (H) Daily</b>									
5mg / kg (up to 300mg) before food									
100mg tablets -also in combined TB treatment	1/4tab	1/2	3/4	1	1.5	2	2.5	2.5-3	
Give with pyridoxine to reduce peripheral neuropathy									
<b>IVERMECTIN STAT once only</b>									
3mg tablets	-	-	0.5	1	1	2	3	4	
<b>LEVODOPA / CARBIDOPA BD to TDS</b>	ADULTS ONLY: begin with ½ tablet TDS for one week.								
250mg / 25mg	If poor response, increase dose by another ¼ of a tablet each week until good response. Maximum 8 tablets a day.								
<b>LEVONORGESTROL 750mcg (Postinor)/NorLevo</b>									
1.5mg Morning After Pill -see FP chapter							1.5mg	1.5mg	1.5mg

AGE	0-3 month	4-11 month	1-3 years	4-6 years	7-10 years	11-16 years	Small Adult	Large Adult
WEIGHT IN KG	3-5	6-9	10-14	15-19	20-29	30-39	40-49	50+
<b>MAGNESIUM SULPHATE 50%</b> Stat (IV and IM) for severe eclampsia (See Obs Section)							Complex (see Obs)	Complex (see Obs)
<b>MEDROXYPROGESTERONE</b> 150mg depot injection (Depot contraceptive)							1 every 3 mths	1 every 3 mths
<b>METHYLDOPA BD to TDS</b> 250mg tablet			Only used for treatment of hypertension in				250mg bd inc to 500mg tds slowly (Max dose)	
<b>MICROGYNON/MARVELON</b>	Oral contraceptive pill. Take daily (same time each day) as ordered.							
<b>MICROLUT</b>	Oral contraceptive pill. Take daily (same time each day) as ordered.							
<b>METOCLOPRAMIDE TDS</b> 10mg Injection (IV/IM) and tablets	Avoid use in children as more extrapyramidal side effects						1 10mg inj	1 10mg inj
<b>METRONIDAZOLE BD</b> ORAL DOSES (with food-avoid alcohol) 200mg tablet								
General dosing 10mg/kg bd for 7 days	1/4 tab	1/2 tab	3/4 tab	1tab	1tab	2tabs	2tabs	2tabs
Acute giardia and amoebiasis require higher doses or consider Tinidazole as less tablets required.								
Severe Infections - IV dosing 12.5mg/kg dose BD								
500mg/100mL vials	50mg	75mg	150mg	200mg	300mg	400mg	500mg	500mg
Note: BD dosing as good as TDS	10mL	15mL	30mL	40mL	60mL	80mL	100mL	100mL
<b>#METFORMIN BD with meals</b> 500mg tablet							First line drug treatment siksuga 1-2tab	
<b>MISOPROSTOL STAT</b> 200mcg tablet -PR for PPH (See Obs section)							4 (PR)	4 (PR)
<b>MORPHINE 4-6 hourly PRN</b> 0.05 - 0.1mg/kg/dose SC or 0.025-0.05mg/kg/dose IV Monitor respiratory rate and sedation								
10mg/mL		SC/IM 0.06mL	SC/IM 0.1mL	SC/IM 0.15mL	SC/IM 0.2mL	SC/IM 0.3mL	SC/IM 0.5mL	SC/IM 0.5mL-1mL
<b>MULTIVITAMINS Daily after food</b> Tablet	1/2	1/2	1/2	1	1	1	1-2	1-2

AGE	0-3 month	4-11 month	1-3 years	4-6 years	7-10 years	11-16 years	Small Adult	Large Adult
WEIGHT IN KG	3-5	6-9	10-14	15-19	20-29	30-39	40-49	50+
<b>NALOXONE -may need repeated doses</b> Injection 400mcg / 1mL								
Adult/Child: 400 - 800mcg/dose for opioid overdose	0.5mL	1mL	1mL	1mL	1mL	1mL	1-2mL	1-2mL
Neonate: 0.1mg/kg to max 2mg (5mL) IV / IM / SC								
<b>NIFEDIPINE BD</b> 20mg controlled release tablet							BP dosing: 1-3tab bd	
DO NOT CRUSH EXCEPT FOR QUICK EFFECT							Tocolysis - Chew 20mg q30mins	
<b>NORETHISTERONE (NORISTERAT) INJ -Depot</b> alternative to Medroxyprogesterone (Depot)							1 every 2 mths	1 every 2 mths
<b>NORETHISTERONE TDS</b> 5mg tablets							1	1
<b>NYSTATIN QID</b> Oral Suspension 100,000IU topical use	1-2 mL (not drops) onto mouth lesions 4 times daily after feedings. If possible swill gargle then swallow. Patient able to swallow mixture after lesions coated.							
<b>OMEPRAZOLE daily</b> 20mg tablets	Only under paediatrician supervision.						1-2	1-2
<b>ORAL REHYDRATION SALTS (ORS) prn</b> Mix with 200mL clean water and drink often	Follow packet and dose according to severity of diarrhoea and weight and age of patient. Green coconut c							
<b>OXYTOCIN STAT</b> Injection for infusion and IM (Refer Obs section)	10IU						10-40IU per infusion	10-40IU per infusion
<b>PARACETAMOL QID PRN</b> 500mg tablet			¼ tab	½ tab	1tab	1-2tab	2tab	2tab
120mg/5mL syrup (15mg/kg/dose)	2.5mL	3.5mL	6mL	10mL				
120mg Suppository – do not cut; 500mg Suppos.			1x120mg	2x120mg	1x500mg	1x500mg	2x500mg	2x500mg
Paracetamol tablets can be crushed and mixed with 5-10mL water or syrup can be given per rectum in patients too sick to take orally or you cannot give via NG								
<b>PENICILLIN BENZATHINE 3-4 weekly or stat</b> 1.2MIU=900mg Deep IM injection only	225mg	225mg	450mg	450mg	675mg	900mg	900mg	900mg
<b>PENICILLIN G QID</b> Benzylpenicillin IV / IM								
30-60mg / kg / dose - 1 megaunit = 600mg	300mg	300mg	600mg	600mg	900mg	900mg	1.2g	1.2g

AGE	0-3 month	4-11 month	1-3 years	4-6 years	7-10 years	11-16 years	Small Adult	Large Adult	
WEIGHT IN KG	3-5	6-9	10-14	15-19	20-29	30-39	40-49	50+	
<b>PENICILLIN PROCAINE Daily</b> 3 mega units=3g 50mg / kg / dose IM daily by deep IMI	250mg	400mg	500mg	750mg	1g	1.5g	1.5g	1.5g	
<b>PENICILLIN V QID OR BD</b> 10mg/kg/dose QID or 20mg/kg/dose BD 250mg tablets	¼ tab	¼	1/2	1	1	1-2	1-2	1-2	
<b>PILOCARPINE EYE DROPS TDS</b>	CHILDREN AND ADULTS 1 drop TDS								
<b>#POTASSIUM CHLORIDE Daily to TDS</b> 600 mg tablet -swallow whole after food								1-2tab	
<b>PHENOBARBITONE Daily</b> 30mg tablet 200mg / 2mL injection	LOADING (STAT) dose of 15-20mg / kg (max 1g). Give IM if possible. You do not need to dilute ampoule. THEN maintenance dose (start 24 hours after the loading dose) of 3-4mg / kg once a day. IM or oral								
LOADING DOSE (STAT dose)-monitor resp.rate	100mg	200mg	300mg	400mg	600mg	800mg	1g	1g	
IM dose in mLs	1mL	2mL	3mL	4mL	6mL	8mL	10mL	10mL	
Oral dose tablets	3tabs	6tabs	10tabs	13tabs	20tabs	26tabs	33tabs	33tabs	
THEN MAINTENANCE DOSE 3-4mg/kg/day Daily (24 hours after loading dose)	15mg	30mg	60mg	90mg	120mg	150mg	180mg	180-240mg	
Oral dose tablets	½	1	2	3	4	5	6	6-8	
<b>PHENYTOIN</b> LOADING STAT DOSE -(15 – 20mg / kg IV, NOT IM) 250mg/5ml Inj. IV: Use Normal Saline ONLY and give over 30 mins.	50mg	100mg	175mg	250mg	375mg	500mg	650mg	750mg-1g	
THEN MAINTENANCE DOSE Daily	1mL	2mL	3.5mL	5mL	7.5mL	10mL	13mL	15-20mL	
4 - 5mg / kg Daily in 1-2 doses	25mg	50mg	50mg	100mg	150mg	200mg	250mg	300mg	
100mg tablet	¼ tab	½	½	1	1 ½	2	2 ½	3	
<b>PHYTOMENADIONE (Vitamin K) STAT 1mg injection</b>	Newborn - 1mg at birth      Adults - Vit K deficiency or reversal of warfarin 1-2mg IV/oral								
<b>PREDNISOLONE Daily</b> (with food)	Asthma: ALL ages: 1mg / kg daily with food . When TOTAL STEROID therapy (hydrocortisone and prednisolone) is not more than 10 days, reducing doses is NOT needed. More than 10 days only under direction of specialist.								
5 & 20mg tablets	You can give high doses for less than 10 days and stop suddenly.								







## USEFUL RESOURCES:

Many doctors and nurses in Vanuatu reviewed this manual. Information was cross-checked from a number of sources. Many of these sources can be found through the internet. Useful internet addresses (but they do not include all the sites used for this manual) you may like to follow-up are:

1. The first site is the World Health Organisation and their address is [www.who.int](http://www.who.int) By working through the site you can find a lot of publications – some can be downloaded and others cannot be. You can make a note of the publication and see if it is in the libraries of VCH, NDH or the WHO library. Another place to look is in Directorate of Public Health. If you cannot find the publication ask at WHO about obtaining one.

Integrated Management of Pregnancy and Childbirth can be found through

[http://www.who.int/maternal\\_child\\_adolescent/documents/impac/en/](http://www.who.int/maternal_child_adolescent/documents/impac/en/)

Other reproductive health related topics including neonatal and adolescents try

[http://www.who.int/maternal\\_child\\_adolescent/topics/maternal/adolescent\\_pregnancy/en/](http://www.who.int/maternal_child_adolescent/topics/maternal/adolescent_pregnancy/en/)

- a) Safe Motherhood site is [www.safemotherhood.org](http://www.safemotherhood.org)
  - b) Integrated Management of Childhood Illness is found at [http://www.who.int/maternal\\_child\\_adolescent/documents/9241546441/en/](http://www.who.int/maternal_child_adolescent/documents/9241546441/en/)
  - c) Almost every other subject in health can be found at [www.who.int/health\\_topics/en/](http://www.who.int/health_topics/en/)
2. In addition to WHO another site of note is [www.cdc.gov](http://www.cdc.gov) This site focuses on communicable diseases and is based in USA and has strong links with WHO.
  3. The Cochrane Collaboration brings together many people from around the world to review topics and recommend current best practice and evidence. Their website is [www.cochrane.org](http://www.cochrane.org)
  4. A more specific site for nursing best practice that is Asia / Pacific regional is [www.joannabriggs.edu.au](http://www.joannabriggs.edu.au) (registration required)
  5. Another great website to check on best practice/evidence based resources is WONCA- click on the link below <http://www.globalfamilydoctor.com> then click on Resources for GP's/FP's and select Evidence and guidelines from the dropdown list or click directly onto this page <http://www.globalfamilydoctor.com/Resources/Evidenceandguidelines.aspx> then choose the database you want to look at.
  6. Apart from looking to WHO for essential drug information another useful website is [www.essentialdrugs.org](http://www.essentialdrugs.org)
  7. Management Sciences for Health or [www.msh.org](http://www.msh.org) has a number of good resources
  8. A number of hospitals have their manuals or guidelines on the internet, a few to try are:

Royal Prince Alfred Hospital for neonatal care <http://www.sswahs.nsw.gov.au/rpa/neonatal/>

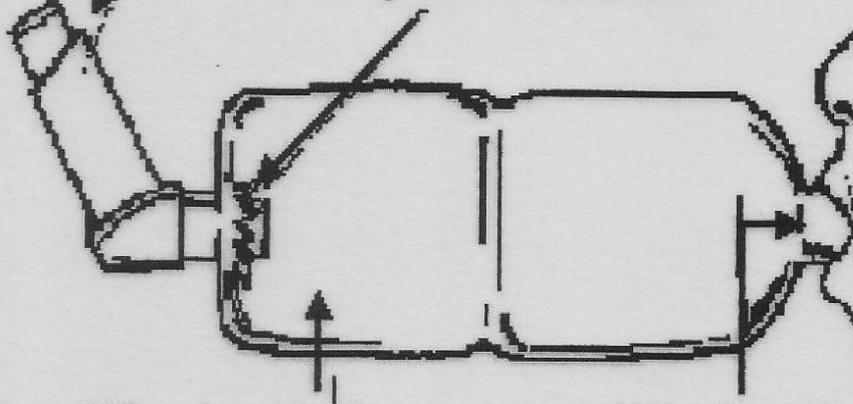
- a) The Royal Children's Hospital in Melbourne at [www.rch.org.au](http://www.rch.org.au)
  - b) The Royal Women's Hospital in Melbourne at [www.rwh.org.au](http://www.rwh.org.au) and also includes information about developing good practice guidelines
  - c) Scottish Intercollegiate Guidelines Network have various guidelines available [www.sign.ac.uk](http://www.sign.ac.uk)
  - d) For diabetes there are many sites but difficult to find in English and French – try Canada, their Ministry of Health site is [www.hc-sc.gc.ca](http://www.hc-sc.gc.ca)
9. Apart from the sites above there are many others. A must see site is the South African Department of Health – it has many useful publications on it including their manuals. Find it on [www.doh.gov.za](http://www.doh.gov.za)
  10. Try searching in [www.google.com](http://www.google.com) - Once you find sites of interest don't forget to make a note of their internet addresses so you can find them next time!

11. The Remote Primary Health Care Manuals are designed to support good clinical practice in primary health care clinics in remote areas of Australia – they include the CARPA Manual which provides treatment options for many conditions, Medicines Book for Aboriginal Health Workers– provides information in easy to understand language about commonly used medicines, Minymaku Kutji Tjukurpa - Women’s Business Manual providing all information about women’s health and the Clinical Procedures Manual for basic nursing procedures. The manuals are in plain English, current and evidence based and relevant to remote practice. Access is via <http://www.remotephcmanuals.com.au/html/register> however free registration is required to enter the site.
12. NPS Website covers topics about using medicines wisely. It also has links to many other health related websites. <http://www.nps.org.au/health-professionals>
13. The Australian Government produces a number of free publications on line including the Australian Immunization Handbook <http://www.health.gov.au/internet/immunise/publishing.nsf/Content/Handbook10-home>
14. Another useful Australian government website is the Prescribing Medicines in Pregnancy database at [www.tga.gov.au/hp/medicines-pregnancy.htm](http://www.tga.gov.au/hp/medicines-pregnancy.htm) upon which the table in this manual is based.
15. An independent journal that is available free of charge is the Australian Prescriber available and searchable at [www.australianprescriber.com](http://www.australianprescriber.com) – this provides succinct articles on drugs and therapeutics for a variety of conditions.
16. Dermnet is a NZ website that is very helpful for dermatological conditions and it is well illustrated with examples of various skin conditions and their causes and treatments <http://dermnetnz.org/>
17. Many websites are specifically for the general public eg National Heart foundation, Kidney Australia, Asthma SA, Diabetes Australia etc but many have a ‘Health Professionals’ sections that provide more detailed information. –  
<http://www.heartfoundation.org.au/Information-for-professionals/pages/information-professionals.aspx>  
<http://www.kidney.org.au/>  
<http://www.asthmasa.org.au/index.php/selectedContent/1746754173?currentDriven=541101108&currentContent=430756718>  
<http://asthmaaustralia.org.au/>  
<http://www.diabetesaustralia.com.au/en/For-Health-Professionals/Diabetes-National-Guidelines/>
18. Check local computers in wards and hospitals as many carry up to date subscriptions of Australian Therapeutic Guidelines (eTG) and the Australian Medicines Handbook (AMH) as well as other ‘books’ that assist with medical treatments.

# HOW TO USE INHALERS WITH SPACERS

Inhaler - shake before  
each press

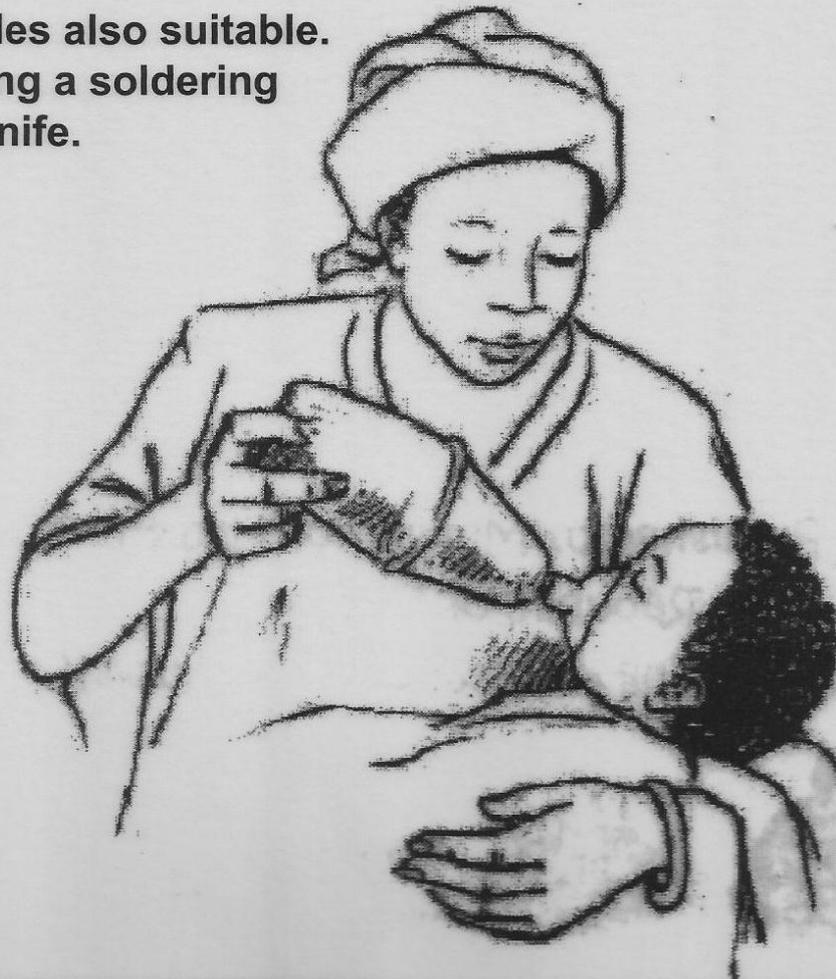
Hole cut in bottom of 1 litre  
plastic drink bottle



1 litre clear plastic  
drink bottle

Patient breathes  
slowly 5 times,  
after pressing inhaler

Smaller bottles also suitable.  
Cut hole using a soldering  
iron or hot knife.





Republic of Vanuatu  
Ministry of Health

# HEALTH WORKER'S MANUAL

*Standard  
Treatment  
Guidelines*

September 2013  
3rd Edition

