



MINISTRY OF HEALTH VANUATU

STANDARD GUIDELINES FOR OBSTETRICS, GYNAECOLOGY AND NEWBORN CARE

A HEALTH WORKER'S GUIDE

2nd edition, 2017

FOREWORD

The Ministry of Health has prioritised maternal and newborn health care as Vanuatu failed to reach the Millennium Development Goal 5A at the end of 2015. Vanuatu did however make some progress particularly with coverage for skilled birth attendance and coverage for antenatal care. With endorsement of the Sustainable Development Goals, it is imperative that Vanuatu works harder to eliminate preventable maternal deaths by so doing improve the quality of maternal and newborn health services.

It is known that approximately 15% of expected births will result in life-threatening complications during pregnancy, delivery, or the postpartum period. It is also known that it is not possible to predict which of the women will experience these life-threatening complications. Furthermore, timing is critical in preventing maternal death and disability. While post-partum haemorrhage can kill a woman in less than two hours, most of the other complications, may take between six and 12 hours or more providing opportunity for these women to get life-saving emergency care. Similarly, most perinatal deaths occur around delivery or in the first 48 hours following delivery.

A skilled and enabled health care professional is therefore one of the key elements necessary for reduction of maternal and newborn deaths. The Standard Guidelines for Obstetrics, Gynaecology and Neonatal Care guideline is one of main tools that should be in place to guide health care professionals in their day to day work. This guidelines will assist health workers deliver quality services in different settings, using the resources that are available.

The Standard Guidelines for Obstetrics, Gynaecology and Neonatal Care was adapted from the latest evidence based generic WHO guidance documents by local health professionals to suit the local situation in Vanuatu. It is aligned with other key guidance documents produced by the Ministry of Health. It primarily targets health workers in provincial hospitals, health centres and dispensaries. The guideline has been written with simplicity so that non-midwifery and non-obstetrician health professionals are able to initiate life-saving measures in emergency situations during pregnancy and childbirth.

The Standard Guidelines for Obstetrics, Gynaecology and Neonatal Care should be distributed to health providers in all provinces as a quick reference for clinical management in their clinical practice. It is an addition to the other guidelines the Ministry of Health has produced, in its efforts to improve the quality of health services and prevent unnecessary illness and deaths.

The Ministry acknowledges the effort and patience of those who have, in one way or another, contributed to the writing this guideline. In particular, we commend the dedicated work of members of the technical working group for Reproductive, Maternal, Newborn, Child and Adolescent Health (RMNCAH), with support from UNFPA, UNICEF and WHO.

Minister of Health

2017

ACKNOWLEDGEMENT

The Standard Guidelines for Obstetrics, Gynaecology and New-born Care is a revised edition from the 1st edition in 2005. The work on this guideline commenced in 2012 and was finally completed in July 2017. In this guideline we have included a chapter on New-born Care.

We wish to thank our Reproductive, Maternal, Neonatal, Child and Adolescent Health technical working group for its technical contribution to the development of the Standard Guidelines for Obstetrics, Gynaecology and Neonatal Care. We are grateful to our UN agencies – UNFPA, UNICEF and WHO – for their ongoing support for maternal and newborn care in this country.

We would like to acknowledge the assistance provided by UN agencies (WHO, UNFPA, UNICEF) RMNCAH technical committee, past and present Paediatric, Obstetrics and Gynaecology Consultants and midwives of Vila Central Hospital, tutors from Vanuatu College of Nursing Education, Vanuatu Family Health Association and other stakeholders.

We sincerely hope this guideline will assist all health workers to improve maternal and child health in Vanuatu.

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ABBREVIATIONS

3TC	Lamivudine	IDC	Indwelling Catheter
AGA	Appropriate for gestational Age	IM	Intramuscular
AMSTL	Active Management of the Third Stage of Labour	IPTp	Intermittent Preventive Treatment in Pregnancy
ANC	Antenatal Care	IPV	Intimate Partner Violence
APH	Antepartum Haemorrhage	IRIS	Immune Reconstitution Inflammatory Syndrome
ARDS	Acute Respiratory Distress Syndrome	IU	International Units
ARM	Artificial Rupture of Membranes	IUCD	Intrauterine contraceptive device
ART	Anti-Retroviral Therapy	IUGR	Intra Uterine Growth Restriction
ASB	Asymptomatic Bacteriuria	IV	Intravenously
AUB	Abnormal Uterine Bleeding	Kg	kilogram
AZT	Zidovudine	LAM	Lactational Amenorrhoea Method
BCG	Bacille Calmette Guerin	LBW	Low Birth Weight
BD	twice daily	LFTS	Liver Function Test
BFI	Baby Friendly Initiative	LMP	First day of last menstrual period
BMI	Body Mass Index	LSCS	Low Uterine Segment Caesarean Section
BP	Blood Pressure	MCDsr	Maternal and Child Death Surveillance and Response
CCT	Controlled Cord Traction	MCH	Maternal and Child Health
Cm	centimeter	MC&S	Microscopy, Culture and Sensitivity
COC	Combined Oral Contraceptive	MD	Maternal Death
CPD	Cephalic Pelvic Disproportion	MDSR	Maternal Death Surveillance and Response
CS	Caesarean Section	mg	milligram
CTG	Cardiotocography	mmHg	millimetre of mercury
DIC	Disseminated Intravascular Coagulation	mmol/L	millimole per litre
D&C	Dilatation and Curettage	MOH	Ministry of Health
dL	decilitre	MSV	Mauriceau-Smellie-Veit
dpm	drops per minute	MUAC	Mid Upper Arm Circumference
DMPA	Depo Medroxy Progesterone Acetate/ Depo Provera	MVA	Manual Vacuum Aspiration
DUB	Dysfunctional Uterine Bleeding	MWH	Maternity Waiting Home
D/Saline	Dextrose 4.3% N/5 Saline	NBM	Nil By Mouth
ECV	External Cephalic Presentation	NFP	Natural Family Planning
EDD	Estimated Date of Delivery	NND	Neonatal death
EFV	Efavirenz	NRTI	Nucleoside Reverse Transcriptase Inhibitor
ELBW	Extremely Low Birth Weight	NNRTI	Non –nucleoside reverse-transcriptase inhibitor
EmONC	Emergency Obstetric and Newborn Care	NSAID	Non-Steroidal Anti-inflammatory Drug
EUA	Examination under Anaesthesia	NVP	Nevirapine
FBC	Full Blood Count	PET	Pre-eclampsia (Pre-eclampsia Toxemia)
FDIU	Foetal Death in Utero	PID	Pelvic Inflammatory Disease
FH	Foetal Heart	PIH	Pregnancy Induced Hypertension
FP	Family Planning	PITC	Provider Initiated HIV Testing and Counselling
GTT	Glucose Tolerance Test	PMR	Perinatal mortality rate
GDM	Gestational Diabetes Mellitus	PMS	Pre- menstrual Syndrome
GA	General Anaesthesia	PMTCT	Prevention of Mother To Child Transmission
Hb	Haemoglobin	PNC	Post Natal Care
HDN	Haemorrhagic Disease of the Newborn	POP	Progesterone Only Pill
HepB	Hepatitis B	PPH	Post-Partum Haemorrhage
HIV	Human Immunodeficiency Virus	PPROM	Preterm Premature Rupture of Membranes
HTS	HIV Testing Services		
ICDMM	International Classification of Disease of Maternal Mortality and Morbidity		

PPTCT	Prevention of Parent to Child Transmission	TDF	Tenofovir Disoproxil Fumerate
PR	Per Rectum	TDS	Three Times A day (8 hourly)
prn	as required	TL	Tubal Ligation
PROM	Prelabour Rupture of Membranes	TST	Tuberculin skin testing
PV	per vagina	TT	Tetanus Toxoid
QID	6 hourly	TPHA	Treponema Pallidum Haemagglutination Assay
RDT	Rapid Diagnostic Test	UN	United Nations
RPR	Rapid Plasma Reagin	UNFPA	United Nations Population Fund
RTI	Reproductive Tract Infections	UNICEF	United Nations Children's Fund
SBA	Skilled Birth Attendant	USS	Ultrasound Scan
SHF	Symphysis Fundal Height	UTI	Urinary Tract Infections
SGA	Small for Gestational Age	VCH	Vila Central Hospital
STI	Sexually Transmitted Infection	VDRL	Test for Syphilis
SRM	Spontaneous Rupture of Membranes	VLBW	Very Low Birth Weight
TB	Tuberculosis	WHO	World Health Organization
TBA	Traditional Birth Attendant		

ABOUT THIS GUIDELINE

This guideline is an evidence-based, reference book for Obstetrics, Gynaecology and Newborn care developed for health professionals working at provincial hospitals, health centres and dispensaries.

It describes life-saving first line management of patients who need urgent attention in situations where there are no specialist Obstetrics and Gynaecology doctors or senior health professionals. Most of the guidance described in this document is already in practice. Health providers are however advised to go through the entire document to assess whether they have been doing things as described or differently. All are urged to adopt the management described in this document as it outlines the minimum standards that should be in place for improved quality of maternal and newborn care.

Health providers stationed in rural clinics face challenges when suddenly faced with life-threatening maternal and newborn conditions. This tool will help them with initial management of patients and will guide them assess the patient, initiate treatment and communicate the plans for referral with the Specialist Obstetrics and Gynaecology teams in referral hospitals in Port Vila and Luganville. When used correctly, it will help health providers in remote and isolated health facilities handle emergency cases to the best of their capabilities and to make timely referrals.

This guideline should be disseminated to all provincial hospitals, health centers, and dispensaries. It should be used alongside other reference materials and job aids for some sections. Where relevant, the health provider is referred to other guidance for more detail throughout the guideline.

We hope the guideline will be a useful tool in the care of mothers and newborns in primary care settings. The Ministry of Health will provide training on use of the guidelines as well as monitor their use to ensure adherence to standards outlined in the document.

DEFINITIONS

First trimester	Week 1 through week 12, or about 3 months.
Second Trimester	Week 13 to week 27.
Third Trimester	Week 28 to the birth.
Gravidity	Total number of pregnancies.
Gestational age	Term used to describe how far along the pregnancy is expressed in weeks - from the first day of the woman's last menstrual cycle to the current date. A normal pregnancy can range from 38 to 42 weeks.
Parity	Number of prior pregnancies with delivery of babies more than 24 weeks gestation or over and weighs more than 500g.
Abortion	Delivery of a foetus weighing less than 500g or one that is less than 24 weeks gestation.
Controlled cord traction	Controlled cord traction is the act of helping to deliver the placenta by gently pulling the cord in a downward direction during contractions and while stabilizing the uterus.
Stillborn	Baby that is born after 24 weeks gestation without any signs of life or weighs more than 500gms.
Neonatal Death	Death of a baby within 28 days of birth.
Early Neonatal Death	Death in the first week of life (7days).
Perinatal Death	Includes all stillbirths and neonatal deaths up to 7 days after delivery.
Maternal Mortality	"Death of a woman while pregnant or within 42 days of termination of the pregnancy, irrespective of the duration and site of pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes."
Late Maternal Death	A late maternal death is the death of a woman from direct or indirect causes more than 42 days but less than one year after termination of pregnancy.
Low Birth Weight	Birth weight less than 2500g.
Very Low Birth Weight	Birth weight less than 1000g.
EmONC	Emergency obstetric and newborn care (EmONC) is a package of medical interventions to treat common life-threatening complications during pregnancy, childbirth and early neonatal period. It is classified into basic and comprehensive EmNOC.
Basic EmONC	Set of minimal life-saving interventions which should be availed to all women during pregnancy and delivery. Signal functions of bEmONC include: 1) Administration of IV antibiotics; 2) Administration of magnesium sulphate; 3) Administration of parental oxytocics; 4) Performing manual removal of the placenta; 5) Performing removal of retained products; 6) Performing assisted vaginal delivery (e.g. by vacuum extraction); and 7) Performing newborn resuscitation.

cEmONC	Comprehensive Emergency Obstetric Care includes all the seven signal functions of bEmONC above, PLUS: 8 Performing surgery (Caesarean section), including provision of emergency obstetric anaesthesia and 9 Administration of blood transfusion.
Habitual Abortion	Habitual abortion, also referred to as recurrent pregnancy loss (RPL) /miscarriage, is defined as 3 consecutive pregnancy losses prior to 20 weeks from the last menstrual period.
Termination of Pregnancy	The separation and expulsion, by medical or surgical means, of the contents of the uterus of a pregnant woman.
Gestational Diabetes	Diabetes develops during pregnancy or is diagnosed for the first time during the current pregnancy.
Overt diabetes	Diabetes present before the current pregnancy.
Skilled birth attendant	An accredited health professional – such as a midwife, doctor or nurse – who has been educated and trained to proficiency in the skills needed to manage normal or uncomplicated pregnancies, childbirth and the immediate postnatal period; and in the identification, management and referral of complications in women and newborns). The following are regarded as skilled attendants: registered nurse, nurse practitioner, midwife and medical doctor. The following are not regarded as skilled attendants: Nurse Aid and Traditional Birth Attendants.
Skilled birth attendance	Skilled birth attendance is described as a partnership of skilled birth attendants and an enabling environment which includes adequate equipment, supplies, drugs and infrastructure as well as efficient and effective systems of communication and referral.
Provider initiated HIV testing	Provider-initiated testing and counselling (PITC) denotes HTS that is routinely offered in a health facility. It includes providing pre-test information and obtaining consent, with the option for individuals to decline testing.
Intimate partner	A husband, cohabiting partner, boyfriend or lover, or ex-husband, ex-partner, ex-boyfriend or ex-lover.
Intimate Partner Violence	Behaviour by an intimate partner that causes physical, sexual or psychological harm, including acts of physical aggression, sexual coercion, psychological abuse and controlling behaviours. This definition covers violence by both current and former spouses and other intimate partners.

CHAPTER 1: ANTENATAL CARE

Antenatal care (ANC) is defined as the care provided by skilled health-care professionals to pregnant women and adolescent girls in order to ensure the best health conditions for both mother and baby during pregnancy (WHO, 2016). All women should be encouraged to book for antenatal care in their first trimester. Communication with the mother should occur in a respectful, individualized and person-centred way. The 2016 WHO ANC recommendations emphasize supporting women have a “positive pregnancy experience”.

A positive pregnancy experience is defined as:

- Maintaining physical and sociocultural normality
- Maintaining a healthy pregnancy for mother and baby (including preventing and treating risks, illness and death)
- Having an effective transition to positive labour and birth, and
- Achieving positive motherhood (including maternal self-esteem, competence and autonomy).

OBJECTIVES OF ANC

- Identification of pre-existing health conditions
- Early detection and treatment of problems arising during the pregnancy
- Prevention of complications using safe, simple and cost-effective interventions
- Birth preparedness and complication readiness including physical and psychological preparation for childbirth and parenthood
- Health education and promotion using health messages and counselling and disease prevention

ANC reduces maternal and perinatal morbidity and mortality and ensures the best possible outcome for the mother and her baby.

SCHEDULE OF CONTACTS

The 2016 WHO recommendation on ANC promotes use of ANC “contact” instead of “visit” as it implies an active connection between a pregnant woman and the health care provider that is not implicit with the word visit. Contacts should be comprehensive, personalized and spread out during the entire pregnancy during which specific activities are carried out to guide the woman along the path of survival. For women without any risk factors, the following schedule for a minimum of **eight ANC contacts** is recommended.

Table 1.1: 2016 WHO ANC model

Trimester	Contacts	When
First trimester:	Contact 1	up to 12 weeks
Second trimester:	Contact 2	20 weeks
	Contact 3	26 weeks
Third trimester:	Contact 4	30 weeks
	Contact 5	34 weeks
	Contact 6	36 weeks
	Contact 7	38 weeks
	Contact 8	40 weeks

FIRST ANC CONTACT

Take a full history

- Personal history
- Present pregnancy: Record LMP and determine EDD (see box 1 below); Record date of first foetal movements (quickening); any symptoms (tiredness, nausea and vomiting, burning and or frequency of urine, cough, bowel function)
- Obstetric: previous pregnancies – number; any miscarriages; twin pregnancy; type of birth including birth weights; complications; neonatal and postpartum outcomes
- Medical conditions: TB; diabetes; anaemia; heart disease; hypertension; kidney disease; asthma; epilepsy; history of allergies
- Surgical history: previous Caesarean Section, laparotomy, myomectomy, etc.
- Familial and genetic disorders: diabetes mellitus, twin pregnancy, congenital malformations
- Social history including use of alcohol, tobacco and substance abuse

Physical examination

- General examination including colour of mucous membranes, mid upper arm circumference (MUAC) in cm, weight, height, heart rate, blood pressure (BP), check for leg oedema (and varicose veins) and palpation for lymph nodes
- Systemic examination including teeth and gums, breasts, thyroid, abdomen (any scars, size of liver and spleen), heart and lung examination,
- Examine the pregnancy including inspection and palpation of the pregnant uterus; measurement of the symphysis-fundal height (SFH) in cm, liquor volume, presentation and lie, listen to foetal heart.

Different methods of determining EDD

Bear in mind that none of the methods is exact, but that delivery at term takes place between 37 and 42 weeks of pregnancy):

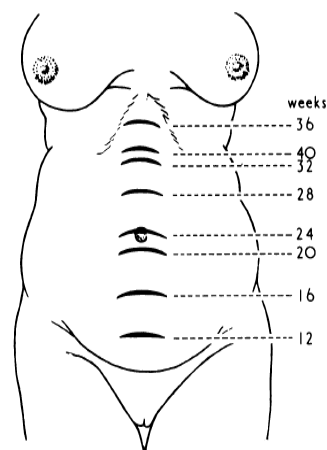
1. The easiest way of determining the EDD is by using an obstetric wheel or calculator.
2. Estimate date of delivery (EDD) from date of the first day of their last menstrual period (LMP + 7 days + 9 months = EDD). Example:
 - a. LMP date **20 March 2016: 20+7= 27**
 - b. LMP Month March add 9 months = December 2016
 - c. EDD will be **27 December 2016**

If LMP is unknown, assess fundal height (figures 1.1):

- 12 weeks – just palpable above pubis.
- 16 weeks – fundus is half way between pubis and umbilicus.
- 20 weeks – fundus is at umbilicus.
- After 20 weeks – fundal height is measured in cm

Ideal uterine growth is 1cm per week after 20 weeks. Growth faster than this suspect: twin pregnancy, polyhydramnios, diabetes. With slower growth suspect growth retardation

Figure 1.1: Determining uterine size by palpation



Source:

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1819975/pdf/brmedj02162-0040.pdf>

Perform the following tests:

- Urine: multiple dipstick test for proteinuria and sugar for all women and urinalysis for bacteriuria
- Syphilis serology – RPR/VDRL if positive TPHA
- Haemoglobin (Hb) using haemoglobinometer if far from laboratory
- HIV Testing using rapid test kits
- Blood glucose based on risk of diabetes (see chapter on diabetes)
- Others
 - Rhesus (D) blood group (if indicated)
 - Hepatitis (available in hospitals only)
 - Ultrasound scan (USS) before 24 weeks for accurate gestational age ascertainment, identifying multiple pregnancies and foetal anomalies (if available).

Point of care tests should be provided in outer islands for urinalysis, Hb, HIV and syphilis serology. This will ensure that women get all the test results on the same day and appropriate treatment where required at the first contact.

Implement the following interventions:

- Iron and folic acid supplements to all women if not anaemic, treatment doses for women with Hb >11g/dl:
 - Daily oral iron 200mg (1 tablet) and folic acid 5 mg (1 tablet) supplementation by mouth before food
- **OR**
- Ferro-Folic x 1 tab daily including during lactation
- If Hb < 11 g/dl: refer for chapter – for treatment of anaemia
- Tetanus toxoid (TT):
 - Primigravida – 3 doses

Table1.2: Tetanus Toxoid Immunization Schedule

First dose TT1	At first antenatal contact
Second dose TT2	At least 4 weeks after first dose
Third dose TT3	Six months later
Booster	Two dose every subsequent pregnancy until a total of 5 life doses have been given. In counting the 3 life doses, include doses given during childhood and those given in pregnancy.
If in subsequent pregnancy there is no record of previous immunisation, treat as for first pregnancy	

- Multigravida – one booster in each pregnancy up to a maximum of five pregnancies
- Intermittent Preventive Treatment (IPTp) – initiate as early as possible in the second trimester:
 - Three tablets sulfadoxine/pyrimethamine (each tablet containing 500 mg/25 mg SP) to prevent malaria in pregnant women
 - At least one month apart (giving the total required dosage of 1500 mg/75 mg SP)
- Deworming after 14 weeks for anaemic women – Albendazole 400mg one dose.
- Bacteriuria - A seven-day course of Amoxicillin 500mg TDS is recommended for all pregnant women with asymptomatic bacteriuria (ASB) to prevent persistent bacteriuria, preterm birth and low birth weight (refer to section on UTI).
- If test for syphilis is positive: treat (see section on STIs).
- Positive HIV test (refer to chapter on PPTCT).

Health Education and counselling

Counsel on possible complications during pregnancy, labour and postpartum period and advice on where to go in case of any of the following complications / emergencies:

- **Danger signs in pregnancy:** persistent vomiting, chills and fever, bleeding per vagina, drainage of liquor, severe abdominal pain, severe headaches, blurred vision, Generalized body swelling, reduced foetal movements, convulsions, urinary symptoms (dysuria and frequency).
- **Danger signs in labour:** Labour pains for more than 12 hours (sun rise to sunset), Excessive bleeding, ruptured membranes without labour for more than 12 hours, convulsions during labour, Loss of consciousness, cord, arm or leg prolapse.
- **Advice on personal hygiene,** rest, nutrition, dengue, malaria, worm infestations, HIV and PPTCT (refer to relevant chapters for more information).
- **Counsel on the signs of labour** (contractions, show, lower abdominal pains). In case of an emergency home delivery the mother should be encouraged to go the health facility within 48 hrs for a postnatal check-up.
- **Give advice on safer sex.** Emphasize the risk of acquiring or transmitting HIV or STIs when engaging in unprotected sex and offer condoms if at risk of infection.
- **Lifestyle modifications** - Advise women to stop the use of:
 - Tobacco (both smoking and chewing), marijuana
 - Alcohol and kava
 - Medications that may harm the baby
 - Other harmful substances
 - Regular exercise to prevent excessive weight gain in pregnancy, may also prevent low back and pelvic pain.

- Aerobic physical activity and strength-conditioning exercise aimed at maintaining a good level of fitness throughout pregnancy, without trying to reach peak fitness level or train for athletic competition.
 - Women should choose activities with minimal risk of loss of balance and foetal trauma
- Request the woman to monitor and record the first foetal movement
- **Counsel on exclusive and early initiation of breast-feeding** (within the first hour of delivery)
- Counsel on breast care and exclusive breast feeding for the first completed 6 months
- **Discuss family planning counselling** with every couple or with mother to enable decision making on FP method of choice post-delivery or during caesarean section should it be indicated.
 - For couples who wish to complete family size, discuss sterilisation.
 - If vasectomy or tubal ligation is requested refer appropriately. If the woman chooses a tubal ligation, she should plan to deliver in the hospital. Ensure appropriate forms are completed. If the couple are not ready for sterilisation, offer long-term contraception such as Jadelle implant (especially for grand-multigravida mothers and short spacing),
- Invite her to ask questions and respond to all her questions.
- Advise the woman to bring her partner (or a family member or friend) to subsequent ANC contacts so that they can be involved in the activities and can learn how to support the woman throughout her pregnancy, childbirth and postnatal period.
- Discuss repeat ANC and support development of a birth plan (see below).
- Refer women with dental problems to a dentist or dental therapist.
- Remember to schedule the next appointment.

Birth preparedness and complication readiness

At the end of the first contact, all pregnant women should have a provisional birth plan. Assist the pregnant woman to develop a birth plan and encourage the husband/partner to be involved in the health care of the mother-to-be and his baby. The pregnant woman/couple should know the following:

- The Expected Date of Delivery (EDD);
- The danger signs in pregnancy, childbirth and the postpartum period;
- The danger signs for the newborn;
- She should decide on where her delivery will take place;
- She should be advised to identify a birth companion (could be spouse, mother, mother in law, TBA etc.);
- What transport she will use before, during labour and after delivery if complications arise;
- How she will raise funds for transport, delivery charges and for essential items/supplies (e.g. Families in Port Vila and Luganville can subscribe to Promedical ambulance service);
- Women living in remote areas should be advised to come closer to health facilities and be accommodated in the maternity waiting homes from 37 week till delivery;
- Her postpartum contraception plans and subsequent reproductive goals; and
- A decision maker is identified in case of emergency.

Record relevant information in the Antenatal Card and health facility register including date of last Pap smear test and her next appointment date

At the end of the first contact

- Assess if dates are consistent with gestational age (GA) – based on estimated GA, fundal height measurement and USS if available.
- Document findings and list risk factors – consult/refer if risk factors present (check box below).
- Decision on place of delivery.
- Provide date of next contact if she does not require referral.

SUBSEQUENT FOLLOW-UP CONTACTS**History:**

- Gestational age;
- About general health, danger signs and any concerns regarding pregnancy;
- Foetal movements;
- Social history including use of alcohol, tobacco and substance abuse; and
- Inquire about history of GBV particularly sexual violence or abuse if the woman has conditions that may be caused or complicated by intimate partner violence (refer to page – for more detail on intimate partner violence).

Physical examination:

- At each visit
 - Weight and MUAC (compare with previous measurements), pulse rate, temperature, colour of the mucous membranes (for signs of anaemia) and generalised oedema.
 - BP - If over 140/90mmHg, see the section on pre-eclampsia or call the doctor for advice.
 - Measure and record the fundal height –SFH at each visit. Ideal growth is 1cm per week after 20 weeks. Faster growth may indicate twins, big baby, polyhydramnios or diabetes. Slower growth may indicate growth restriction (IUGR).
- After 34-36 weeks determine lie and the presentation:
 - If presentation cephalic – check engagement; and
 - If the presentation is not cephalic, refer to a senior colleague or doctor for advice

Investigations:

- Urine: for sugar and protein at each contact;
- Check results of any laboratory tests taken during booking clinic;
- Repeat HB at 36 weeks; and
- Repeat VDRL/RPR at 36 weeks and treat if results titre rises 4 fold.

Interventions:

- Provide Ferro Folic x 1 daily and three tablets sulfadoxine/pyrimethamine monthly if no signs of anaemia;
- Tetanus booster – provide outstanding doses;
- Deworming after 14 weeks for anaemic women – Albendazole 400mg one dose ;
- Continue IPTp; and
- Refer if she is symptomatic for anaemia or cardiac disease (e.g. shortness of breath on walking and lying) See box – for complete list of referral criteria.

Health education:

- Reinforce information on danger signs, signs of labour, review delivery plan (intended place of birth), breast feeding, breast and self-care and contraception choice.

Refer to annex 1 on page 14 for more detail on interventions recommended at stipulated times.

REFERRAL CRITERIA

Referral criteria are listed in box 2. For all conditions, check appropriate section for initial management details and consult with a medical officer/obstetrician for referral.

Additional areas you can consult the medical officer if uncertain of management include:

- No foetal heart heard by 24 weeks;
- The patient feels no movement by 22 weeks or none for 1 week any time after this;
- Proteinuria;
- Facial oedema;
- Glycosuria (sugar in urine);
- Lack of regular foetal growth;
- Late in pregnancy if you are uncertain about foetal position;
- If you are in doubt about the patient's status;
- If patient has symptoms of pyelonephritis;
- Abnormal heart sounds or hear murmur; and
- Extensive condyloma (warts).

Referral Criteria

Obstetric history

- Previous stillbirth
- Previous neonatal death
- Previous low birth weight baby (<2.5 kg)
- Previous large baby (>4.0 kg)
- Previous pregnancy admission for hypertension or pre-eclampsia/eclampsia
- Complications during previous pregnancy and delivery – e.g. PPH, retained placenta
- Previous caesarean section

Current pregnancy

- Diagnosed or suspected multiple pregnancy – uterus large for dates
- Age <16 years OR ≥37 years
- Vaginal bleeding - antepartum haemorrhage
- Pelvic mass
- Hypertension in pregnancy – BP ≥140/90 or there has been an increase from her booking BP of >30/15 mm Hg

General medical conditions

- Diabetes mellitus
- Signs of heart Disease
- Epilepsy
- Asthma on medication
- Active tuberculosis
- Any severe medical condition

Risk factors requiring hospital delivery

- Previous postpartum haemorrhage
- Parity ≥5

Further risk factors that arise during antenatal care

- Breech or transverse lie at term
- Uterus small for dates
- Pregnancy beyond 41 weeks
- Abnormal glucose screening (fasting and random blood sugar)
- Reduced foetal movements after 28 weeks
- Severe anaemia not responding to iron tablets
- Uterus large for dates

In situation when the pregnant mother declines referral, attempt should be made to manage the women in consultation with the obstetrician.

NUTRITION

Poor nutritional status and inadequate nutritional intake for women during pregnancy not only directly affect the women's health status, but will also have a negative impact on birth weight and the early development of the infant.

When conducting nutritional assessment, the health care provider should be aware of the following:

- A pregnant woman's weight should be taken at each contact - the weight taken during the first contact should be treated as the baseline weight.
- Normally, a woman should gain 11.5 – 16.0 kg during her pregnancy. After the first trimester, a pregnant woman gains around 2 kg every month or 0.5 kg per week. To calculate the expected weight gain since her previous contact, multiply the number of weeks elapsed since the previous contact by 0.5 kg. This should be compared with the actual weight gained (see table 1.3).

Table 1.3: BMI Assessment and Recommended Weight Gain¹

BMI	Assessment of Weight	Recommend Weight Gain
Less than 18.5	Underweight	12.5-18 Kg
18.5-24.9	Normal weight	11.5-16 Kg
25.0 – 29.9	Overweight	7.0 - 11.5 Kg
>30	Obese	5 - 9 kg
	Adolescent	12.5 – 18 kg
	Twin pregnancy	16.0 – 20.5 kg

- If weight gain is less than expected, the diet may not be enough or look for other possible causes (TB, HIV etc.).
 - Weight gain < 2 kg per month – risk of possible intrauterine growth retardation (IUGR) should be explained to the woman
 - Advise on improved daily and protein dietary intake.
- Excessive weight gain (more than 3 kg in a month) should arouse the suspicion of pre-eclampsia/twins (multiple pregnancy). Take the woman's BP, and test her urine to check if she has proteinuria.
- Depending on her nutritional status and the local availability of food she can afford to buy, advise her on what she should eat. It is important for the woman to know that she requires more compared to her usual diet for:
 - Maintenance of her health as a mother;
 - The needs of the growing foetus; and
 - Successful lactation.

¹ WHO ANC Guidelines, 2016

- Food intake should include a variety of foods to meet both macro and micronutrient (more colour on the plate) requirements which include:
 - Energy foods – Starch / carbohydrate
 - Body building - Protein
 - Fat
 - Protective - Fruits and vegetables
- Women should be advised on the locally available foods for each of the groups (including green and orange vegetables, meat, fish, beans, nuts, whole grains and fruit).

Figure 1.3: Food Groups



Foods to avoid

- High daily caffeine intake i.e. > 300 mg per day may increase the risk of pregnancy loss and low-birth-weight neonates
 - Caffeine is found in tea, coffee, soft-drinks, chocolate, and some over-the-counter medicines with coffee probably the most common source
 - A cup of instant coffee can contain about 60 mg of caffeine
 - Caffeine-containing teas (black tea and green tea) and soft drinks (colas and iced tea) usually contain less than 50 mg per 250 mL serving

MANAGEMENT OF COMMON DISCOMFORTS OF PREGNANCY

Morning sickness is a common occurrence particularly in early pregnancy.

- Women should be informed that symptoms of nausea and vomiting usually resolve in the second half of pregnancy.
- Provide advice on dietary modification such as:
 - Avoid fatty and spicy food,
 - Eat a light bland meal, eat small meals frequently - every two to three hours etc.
 - Eat lots of green vegetables and
 - Ginger and vitamin B6
 - Drink plenty of fluids
 - Approved anti-nausea medication may be considered under the supervision of a medical officer for those pregnant women experiencing distressing symptoms that are not relieved by nonpharmacological options.

Hyperemesis gravidarum - Few cases will present with hyperemesis gravidarum – this requires hospitalisation

- Start IV Hartman's and
- Consult and refer the woman to the Medical Officer/obstetrician.

Heartburn or indigestion, may be worse after eating and lying down. Advise the woman to:

- Avoid foods known to cause discomfort including fatty and spicy food, alcohol and cessation of smoking
- Take cold milk during attacks.

- Raise the head of the bed to sleep
- If severe and not relieved by lifestyle modification, antacids (such as magnesium carbonate and aluminium hydroxide preparations) may be prescribed.

NB: Antacids may impair absorption of other drugs (such as iron and folic acid supplements), and therefore should be taken two hours after taking them.

Constipation: corrected with diet – Advise the woman to take

- Lots of fluid
- High fibre diet - fruits, vegetables, nuts and whole grains
- Exercise
- Establish regular toilet routine
- Do NOT prescribe strong laxatives as they may start uterine contractions.
- Consult with medical officer/obstetrician if persists.

Loss of appetite – risk of inadequate intake of food at a time of increased nutrient need. Advise her to:

- Eat small frequent meals spaced throughout the day (5-6 meals per day)
- Schedule a regular eating time
- Eat protein from animal or plant source with snacks and meals whenever possible
- Drink plenty of liquids, preferable in between meals
- Take walks before meals to stimulate appetite
- Choose and prepare food that look and smell good for you
- Use spices such as onions, garlic, cinnamon, and ginger to stimulate appetite, improve flavour and digestion
- Eat with others as this makes food more enjoyable.

Haemorrhoids – Reinforce the importance of a high fibre diet, including adequate fluid intake. Advise her to:

- Soak affected area in a warm tub or sitz bath (a shallow basin that fits over the toilet). dietary advise,
- Avoid straining during bowel movements.
- Avoid becoming constipated (see Constipation).
- If severe/worsen - consultant referral
 - Constipation, particularly if not relieved by measures described above; and
 - Anal pain, and/or bleeding on defecation—which may indicate an anal fissure

Varicose veins – Interventions for varicose veins and oedema include:

- Compression stockings if available, rest, leg elevation and water immersion
- Women should be informed that symptoms associated with varicose veins may worsen as pregnancy progresses but that most women will experience some improvement within a few months of giving birth.

Varicose veins and oedema - Non-pharmacological options, such as compression stockings, leg elevation and water immersion, can be used for the management of varicose veins and oedema in pregnancy, based on a woman's preferences and available options.

Low back pain and pelvic pain - Regular exercise throughout pregnancy is recommended to prevent low back and pelvic pain. There are a number of different treatment options that can be

used, such as physiotherapy, support belts and acupuncture, based on a woman's preferences and available options.

Leg Pain - Magnesium, calcium or non-pharmacological treatment options can be used for the relief of leg cramps in pregnancy, based on a woman's preferences and available options.

INTIMATE PARTNER VIOLENCE (IPV)

Health-care providers should inquire about exposure to IPV only if the woman has conditions (see below) that may be caused or complicated by IPV in order to improve diagnosis/identification and subsequent care. Health-care providers should initiate supportive care and refer where appropriate, particularly if there is no capacity to provide required care at that level of care.

Definitions

Intimate partner: A husband, cohabiting partner, boyfriend or lover, or ex-husband, ex-partner, ex-boyfriend or ex-lover.

Intimate partner violence: Behaviour by an intimate partner that causes physical, sexual or psychological harm, including acts of physical aggression, sexual coercion, psychological abuse and controlling behaviours. This definition covers violence by both current and former spouses and other intimate partners. Other terms used to refer to this include domestic violence, wife or spouse abuse, wife/spouse battering. Dating violence is usually used to refer to intimate relationships among young people, which may be of varying duration and intensity, and do not involve cohabiting.

Identification of intimate partner violence

Examples of clinical conditions associated with intimate partner violence include:

- **Symptoms of depression, anxiety, PTSD, sleep disorders**
- **Suicidality or self-harm**
- **Alcohol and other substance use**
- **Unexplained chronic gastrointestinal symptoms**
- **Unexplained reproductive symptoms, including pelvic pain, sexual dysfunction**
- **Adverse reproductive outcomes, including multiple unintended pregnancies and/or terminations, delayed pregnancy care, adverse birth outcomes**
- **Unexplained genitourinary symptoms, including frequent bladder or kidney infections or other**
- **Repeated vaginal bleeding and sexually transmitted infections**
- **Chronic pain (unexplained)**
- **Traumatic injury, particularly if repeated and with vague or implausible explanations**
- **Problems with the central nervous system – headaches, cognitive problems, hearing loss**
- **Repeated health consultations with no clear diagnosis**
- **Intrusive partner or husband in consultations.**

Management

Any woman who disclose any form of violence by an intimate partner (or other family member) or sexual assault by any perpetrator should be offered immediate support. Health-care providers should, as a minimum, offer first line support when women disclose violence.

First-line support includes:

- Non-judgmental and supportive attitude and validating what the woman is saying
- Providing practical care and support that responds to her concerns, but not intrusive
- Inquiring about her history of violence, listening carefully, without pressuring her to talk (care should be taken when discussing sensitive topics when interpreters are involved)
- Providers should ensure privacy and confidentiality
- Helping her access information about resources, including legal and other services that she might think helpful
- Assisting her to increase safety for herself and her children, where needed
- Providing or mobilizing social support.

In situations where health-care providers are unable to provide first line support and other services, they should facilitate immediate referrals. Example of other services include:

- Clinical management of rape refer to chapter -.
- Psychosocial support
- Legal services

Please refer to the Comprehensive Guidelines for Responding to Violence Against Women, Children, Vulnerable and Marginalized Groups.

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Annex 1: The WHO ANC model for positive pregnancy experience: recommendations mapped to eight scheduled ANC contacts

Overarching aim: To provide pregnant women with respectful, individualized, person-centred care at every contact, with implementation of effective clinical practices (interventions and tests), and provision of relevant and timely information, and psychosocial and emotional support, by practitioners with good clinical and interpersonal skills within a well-functioning health system.

Notes:

- These recommendations apply to pregnant women and adolescent girls within the context of routine ANC.

Type of intervention	Recommendation	Eight scheduled ANC contacts (weeks of gestation)							
		1	2	3	4	5	6	7	8
		12 weeks	20 weeks	26 weeks	30 weeks	34 weeks	36 weeks	38 weeks	40 weeks
Maternal and foetal assessment									
Intimate partner violence (IPV)	Enquiry about the possibility of intimate partner violence (IPV) should be considered at antenatal care contacts only if the woman has conditions that may be caused or complicated by IPV	X	X	X	X	X	X	X	X
Symphysis-fundal height (SFH) measurement	BP, Weight, abdominal palpation or symphysis-fundal height (SFH) measurement	X	X	X	X	X	X	X	X
Anaemia	Anaemia: Full blood count testing is the recommended method for diagnosing anaemia in pregnancy. In settings where full blood count testing is not available, on-site haemoglobin testing with a haemoglobinometer is recommended	X					X		
HIV and syphilis	PITC for pregnant women in ANC is a key component of the effort to eliminate mother-to-child transmission of HIV,	X					X		
Asymptomatic bacteriuria (ASB)	Positive nitrites on dipstick	X		X		X			
Gestational diabetes mellitus (GDM)	Screen for diabetes if has risk factors for gestational diabetes	X		X					
Tobacco use	Elicit history of tobacco use (past and present) and exposure to second-hand smoke as early as possible in the pregnancy and at every antenatal care contact.	X	X	X	X	X	X	X	X
Substance use	Elicit history of alcohol and other substances (past and present) use as early as possible in the pregnancy and at every antenatal care contact.	X	X	X	X	X	X	X	X
Tuberculosis (TB)	Screen for active TB	X							
Ultrasound scan	Before 24 weeks of gestation (early ultrasound) where available	X	X						
Nutrition interventions									
Dietary interventions	Counselling about healthy eating and keeping physically active during pregnancy.	x	X	x	x	x	x	x	X

	In undernourished populations, nutrition education on increasing daily energy and protein	x	X	x	x	x	x	x	X
Iron and folate (Fefol)	Daily oral iron and folic acid supplementation with 1 tablet daily (containing iron and folic acid) if Hb > 11g/dl	x	X	x	x	x	x	x	X
Restricting caffeine intake	Lower daily caffeine if more than 300 mg per day, to reduce the risk of pregnancy loss and low-birthweight neonates.	X	X	X	X	X	X	X	X
Preventive measures									
Antibiotics for asymptomatic bacteriuria (ASB)	A seven-day antibiotic (Amoxicillin 550 mg tds) regimen for all pregnant women with ASB to prevent persistent bacteriuria, preterm birth and low birth weight.	X		X		X			
Preventive anthelmintic treatment	Preventive anthelmintic treatment (Albendazole 400mg stat dose) is recommended for pregnant women after the first trimester.	X							
Tetanus toxoid vaccination	Tetanus toxoid vaccination is recommended for all pregnant women, depending on previous tetanus vaccination exposure, to prevent neonatal mortality from tetanus.	X							
Malaria prevention: (IPTp)	Intermittent preventive treatment with sulfadoxine-pyrimethamine (IPTp-SP) is recommended for all pregnant women. Dosing should start in the second trimester, at least one month apart, with the objective of ensuring that at least three doses are received.	X (13 weeks)	X	X	X	X	X	X	X
Interventions for common physiological symptoms									
Nausea and vomiting	Ginger, vitamin B6 are recommended for the relief of nausea in early pregnancy, based on a woman's preferences and available options.	X	X	X					
Heartburn	Dietary and lifestyle advise to prevent and relieve heartburn in pregnancy. Antacid preparations can be used to women with troublesome symptoms that are not relieved by lifestyle modification.	X	X	X	X	X	X	X	X
Leg cramps	Magnesium, calcium or non-pharmacological treatment options can be used for the relief of leg cramps in pregnancy, based on a woman's preferences and available options	X	X	X	X	X	X	X	X
Low back and pelvic pain	Advise on regular exercise throughout pregnancy to prevent low back and pelvic pain.	X	X	X	X	X	X	X	X
Constipation	High fibre supplements if the condition fails to respond to dietary modification, based on a woman's preferences and available options.	X	X	X	X	X	X	X	X
Varicose veins and oedema	Non-pharmacological options leg elevation and water immersion, can be used for the management of varicose veins and oedema in pregnancy, based on a woman's preferences and available options.	X	X	X	X	X	X	X	X

CHAPTER 2: BLEEDING IN EARLY PREGNANCY

Follow the steps below for diagnosis and treatment of a woman who presents with bleeding in early pregnancy:

- Rapid assessment of the patient including:
 - Vital signs: pulse rate, respiration rate and BP.
 - Abdominal assessment: tenderness, size of uterus.
 - Other: vaginal examination, pallor, assess the extent of vaginal bleeding
- Assess for complications
 - If shocked, the patient needs active resuscitation (refer to chapter - on maternal collapse).
 - Determine if the patient has had a safe or unsafe miscarriage (see below).
- Differential Diagnosis
 - Pregnancy test positive: consider miscarriage, ectopic pregnancy or molar pregnancy.
 - Pregnancy test negative: consider pelvic inflammatory disease (PID), torsion of an ovarian cyst, acute appendicitis.

ECTOPIC PREGNANCY

Ectopic pregnancy occurs when the developing embryo implants outside the endometrium of the uterus. The most common location is the fallopian tube in 98% of cases. Others are in the abdomen, cervix, ovary and cornua of the uterus.

Ectopic pregnancy is usually due to partial tubal blockage from previous pelvic infections (PID). The woman may be sub-fertile and often this is her first pregnancy.

Diagnosis

A high index of suspicion is required for diagnosis of ectopic pregnancy as early symptoms are either absent or subtle. Symptoms and signs differ according to stage of rupture.

UNRUPTURED ECTOPIC

An un-ruptured ectopic pregnancy may be difficult to diagnose. The patient may only complain of:

- Vaginal spotting
- Intermittent abdominal pain and
- Normal pregnancy symptoms (amenorrhoea, nausea, vomiting, etc.)

ACUTE RUPTURE

If an acutely ruptured ectopic, the patient may present with signs and symptoms of shock:

- Amenorrhoea
- Recent abdominal pain of sudden onset
- Weakness and pallor
- Shock (low BP, rapid pulse), tachypnea
- Pale and anaemic (low Hb < 8g/dl).
- Abdominal distention, tenderness, guarding and rebound tenderness
- Marked cervical excitation tenderness.

SLOW LEAK

In a slow leaking ectopic pregnancy, an amenorrhoeic patient will usually have:

- Abdominal pain for some time.
- Irregular PV bleeding, usually dark blood; amenorrhea may be absent or not determined.
- Dizziness and may experience fainting attacks
- Pallor
- Hypotension
- Low-grade fever may be present, rapid pulse may be present.
- Abdominal distension associated with guarding/rebound tenderness, pelvic tenderness and possibly a mass.
- Cervical excitation present (painful/tender when pushing on the cervix) and adnexal tenderness.
-

Urgent referral should be facilitated if diagnosis of ectopic pregnancy is made or suspected at lower levels of care without theatre facilities and skilled personnel.

Investigations for the doubtful case

At primary care level:

- An ectopic pregnancy should be considered in any woman with abdominal pain or vaginal bleeding who has a positive pregnancy test in the first trimester.
- Consult with the medical officer/obstetrician at next level of care for referral. Inform the provincial hospital about the referral.

Initiate resuscitation and stabilize before referral (refer to chapter 10 on Maternal Collapse)

At Hospital level: Consult with senior colleague or Obstetrician

- Do pregnancy test. If available, ultrasound scan (USS) will confirm ectopic pregnancy.
- Use a speculum to view cervix and determine products of conception
- Do a bimanual and check for cervical excitation pain.
- Laparoscopy is an alternative in cases where the diagnosis is in doubt.

Suspect ectopic pregnancy if the following are present: vaginal bleeding, lower abdominal pain and a positive pregnancy test in the first trimester. Discuss with the Obstetrician for further management.

Differential diagnosis:

- There are other conditions, which might present like ectopic pregnancy which include, miscarriage, molar pregnancy, PID, appendicitis, ruptured ovarian cyst, trauma (splenic rupture).
- Always consult with senior colleagues or doctor.

Management

- Discuss with the obstetrician.
- Insert two 16 gauge cannula on each arm and start IV with N/saline and run 1L fast.

- If the woman is in shock (low BP, rapid pulse and looking pale), give 1L of normal saline or Hartman's stat over 30-60 mins, followed by maintenance rate based on consultation with the doctor.
- Consent for urgent laparotomy and keep NBM
- Collect the blood for Hb and X-match 4 Units of blood (if it can be done within facility).
- Give a stat dose of azithromycin 1gram stat post- surgery. If not available give erythromycin.

MISCARRIAGE (ABORTION)

Definition: pregnancy loss at < 24 weeks gestation (< 500 grams). Abortion or miscarriage is classified into spontaneous and threatened miscarriage.

Spontaneous miscarriage is further subdivided into:

1. Threatened Abortion - pregnancy may continue
2. Inevitable abortion - pregnancy will not continue and will proceed to partial or complete expulsion
3. Incomplete Abortion - products of conception are partially expelled
4. Complete Abortion - When products of conception are completely expelled
5. Septic Abortion – signs of sepsis have set in
6. Missed abortion – non-viable foetus in utero
7. Habitual abortion – three or more consecutive miscarriages

THREATENED ABORTION

A woman may present with:

- Vaginal bleeding which may be slight to moderate
- Little or no pain
- Cervical os is closed
- Foetal sac is intact
- Uterine size equal to dates

Management

- Careful history should be taken. History should include duration and amount of bleeding and pain, past births, miscarriages and use of contraception.
- Document the last menstrual period and pattern of monthly period, any abnormal bleeding during or after sex.
- Do a general physical check, if pale, report urgently to senior colleague or doctor.
- Take blood pressure, pulse rate and temperature. If abnormal, report to senior colleague.
- Ask for a female chaperone if necessary to help when you do a gentle speculum examination under a good light.
- Treat if there are signs of infections with Flagyl 400mg tds and Amoxyl 500mg tds for 5 days. If unbooked, treat with Azithromycin 1gram stat. Outpatient management if stable with spotting.
- Admit to the ward overnight if actively bleeding or access to health facility is an issue.
 - Consult next level of care.
 - Observe the patient for possible progression to inevitable abortion. For Pain relief, give two tablets of paracetamol every 4-6 hours.
 - Advise the woman to rest and avoid sexual intercourse
- If bleeding persists, assess for foetal viability (pregnancy test / ultrasound) or ectopic pregnancy (ultrasound). Persistent bleeding, particularly in the presence of a uterus larger than expected, may indicate twins or molar pregnancy.

- If ultrasound is available, check for presence of foetus and its heart beat. If there is no foetus or there is absence of heartbeat, refer or call the doctor.
- If bleeding stops, and there is viable foetus advise to attend ANC if not already booked.

INEVITABLE ABORTION

When a threatening miscarriage progresses, with increase in the volume of vaginal bleeding associated with cervical dilation. This is usually associated with an increase of cramping lower abdominal pains.

- Monitor general condition (pulse and BP) as required
- Insert large bore cannula 16 gauge
- Pregnancy < 16 weeks:
 - Do a speculum examination - if retained products seen at os, manually remove with forceps immediately to minimise bleeding.
 - Give oxytocin 10 IU IM or misoprostol 600 sublingual 3 doses 6 hourly and arrange for evacuation of retained products of conception if there is a lot of bleeding as soon as possible in consultation with obstetrician.
- Pregnancy > 16 weeks:
 - Await for spontaneous expulsion of the products of conception
 - Follow with evacuation of the uterus if there is suspicion of retained products of conception
 - If necessary, infuse oxytocin 40 units in 1L iv fluids over 8 hours or misoprostol 200mcg four hourly for a total of 4 doses to help achieve expulsion of products of conception
 - Ensure follow-up of the woman after treatment
- Counsel and reassure the woman regarding the situation

INCOMPLETE ABORTION

A woman may present with:

- Vaginal bleeding which may be heavy or light
- May or may not have cramping lower abdominal pain
- Passage of tissues and clots
- Cervical os is open
- The size of the uterus does not correspond to the gestational age

If you diagnose incomplete abortion, refer to medical officer/obstetrician. This is because, bleeding might continue and lead to haemorrhagic shock.

Management

- Take a proper history. Ask about amount of bleeding and when it started. Ask about her last normal menstrual period, previous miscarriages or previous births, and work out the gestation age.
- Take vital signs – BP and pulse and assess urine output.
- Call for assistance and put up IV cannula (16G).
- Fluid replacement depending on condition - Give 1 litre of Normal Saline or Hartman's stat over 30-60 mins if in shock, followed by maintenance rate based on consultation with the doctor (refer to chapter - on Maternal Collapse).

- Give 10 units of syntocinon IV/IM. Give additional oxytocin 10 units and/or misoprostol 600 mcgs (3 tablets) sublingual.
- Ask for a female chaperone if necessary to help when you do a gentle speculum examination under a good light. Remove products of conception from the cervical os with sponge forceps. If bleeding is light or stops after removing POC, no further action.
- If bleeding persists and is heavy following removal of POC, evacuation of the uterus must be carried out.
- Provide feedback on progress and discuss with doctor about further management.
- If the incomplete abortion started for over 12 hours ago, start her on IV Ampicillin 1 gram and IV Flagyl 500mg every 8 hours for 2 days. Oral Amoxyl and Flagyl for 5 days could substitute IV medications if unavailable. If unbooked, treat with Azithromycin 1gram stat.

SEPTIC ABORTION

Woman may present with:

- Woman looks sick
- An incomplete abortion associated with
 - Fever, tachycardia, tachypnoea (respiratory rate more than 24/min)
 - Foul vaginal discharge
 - Lower abdominal pain or uterine tenderness and pain
- History of interference with the pregnancy may be present

Management

- Take vital signs – BP, Pulse, temperature and insert indwelling catheter (IDC) and monitor urine output.
- If admitted at primary level of care, stabilize, consult and refer to hospital for further management.
 - Conduct a rapid assessment of airway, breathing and circulation
 - Initiate IV infusion and rehydrate with NS/Hartman's solution
 - Immediate treatment with Antibiotics:
 - IV Ampicillin 1g 8 hourly,
 - IV Gentamycin 240mg daily,
 - IV Metronidazole 500mg 8 hourly or oral 400mg tds.
 - Azithromycin 1G oral stat
- At the referral level
 - Once stabilized, manage as for incomplete abortion – as outlined above
 - If these antibiotics are not available at your centre, consult the doctor.
 - A doctor should evacuate the uterus under GA or manual vacuum aspiration when the patient has been resuscitated and antibiotics commenced.

COMPLETE ABORTION

Expulsion of products of conception is complete

- Bleeding usually slight to moderate
- Uterus less than dates
- Cervix closed
- Evacuation of the uterus is usually not necessary
- Observe for heavy bleeding
- Ensure follow-up of the woman after treatment

MISSED ABORTION

Foetus dead with delayed expulsion

- No pain, little or no bleeding, may have brownish or red-brown vaginal discharge
- Uterus smaller than dates, cervix closed,
- Decrease in pregnancy symptoms/signs
- Woman may be at risk of DIC
- Consult and refer

HABITUAL MISCARRIAGE

A woman reporting 3 or more consecutive miscarriages should be referred to the Obstetrician for further evaluation and management.

SUPPORT AND FAMILY PLANNING FOLLOWING MISCARRIAGE

Provide information and support after miscarriage

- Inform her that spontaneous miscarriage is common and occurs in 1 out of every 7 pregnancies
- Reassure her that the chances of a subsequent pregnancy being successful are good (unless the pregnancy was complicated by sepsis or a recurrent cause for the miscarriage has been identified)
- Advise her to consider a next pregnancy only after full recovery from the miscarriage.
- Screen for other health problems and treat if needed:
 - Anaemia.
 - HIV and STI
 - Ask patient to return for a Pap smear.
- If the woman discloses violence or you see unexplained bruises and other injuries which make you suspect she may be suffering abuse (refer to chapter – for management)
- For women who had an unsafe miscarriage explore reasons for the action and provide advice on prevention to avoid repeat. Counselling on family planning and the methods available to her must be provided (See following section below).

Post Abortion Family Planning

- There is an immediate need for contraception for women who do not want to become pregnant, or for health reasons should delay becoming pregnant as:
 - After a first trimester abortion, ovulation often occurs within two weeks, and
 - After a second trimester abortion, within four weeks to six weeks.
- There is no medical reason to limit the choice of contraceptive methods available to women after treatment for miscarriage. All methods can be considered for use after abortion, provided there are no complications requiring further treatment –
 - Intrauterine devices and surgery should be delayed if Infection is present or suspected until such infection is cleared
- Appropriate screening is provided for the contraindications to each method
- Good counselling is offered (refer to the Evidence-based Guidelines in Family Planning for Health workers for method mix).

CHAPTER 3: INFECTIONS IN PREGNANCY

SEXUALLY TRANSMITTED INFECTIONS

Failure to diagnose and treat STIs at an early stage may result in adverse pregnancy outcomes which include spontaneous abortion, stillbirth, prematurity, low birth weight (LBW), choriamnionitis, postpartum endometritis, and various sequelae in the neonates. In addition, both ulcerative and non-ulcerative STIs have been found to increase the risk of sexual transmission of HIV.

Syndromic approach for treatment of STIs has been adopted in Vanuatu. (Refer to Guidelines for Management of Sexually Transmitted Infections in Vanuatu)

ABNORMAL VAGINAL DISCHARGE

- Vaginitis is an inflammation of the vagina which can result with discharge, itching and pain, and is often associated with an irritation or infection of the vulva.
- Vaginal discharge should be considered abnormal if it is itchy, copious, yellow or green, or offensive-smelling.
- The three main kinds of vaginitis are vaginal candidiasis, trichomoniasis, and bacterial vaginosis (BV). A woman may have any combination of vaginal infections at one time.
- Wherever possible, use a vaginal speculum to observe the discharge and inspect the cervix.

Vaginal Candidiasis (thrush)

- Thick, white itchy vaginal discharge which may be associated with vaginal or vulva soreness
- The conditions that may put a woman at risk of candidiasis include:
 - People with weakened immune systems
 - Pregnancy
 - Diabetes
 - Long-term use of broad-spectrum antibiotics
 - Use of corticosteroid medications
- Treatment include
 - Clotrimazole pessary 500 mg inserted intravaginally once
- If vulval burning/itching give a clotrimazole cream to vulva twice daily, continue for 3 days after symptoms resolve for maximum of 2 weeks.

Trichomoniasis

- Trichomoniasis is a common cause of vaginitis. It is primarily an infection of the urogenital tract; the most common site of infection is the urethra and the vagina in women
- Trichomonas is transmitted through sexual or genital contact
- Symptoms include pain, burning or itching in the vagina (vaginitis). Discomfort for both sexes may increase during intercourse and urination. Presence of a yellow-green, itchy, frothy, foul-smelling ("fishy" smell) vaginal discharge
- Symptoms usually appear within 5 to 28 days of exposure
- On speculum examination, the vaginal area and cervix usually inflamed. Confirmation of diagnosis usually done by using microscopic examination in the Laboratory.
- Treatment:
 - Metronidazole 2 g orally in a single dose **OR**
 - Tinidazole 2 g orally in a single dose

- Alternatively: the following may be used:
 - Metronidazole 400-500 mg orally 12 hourly for 7 days **OR**
 - Tinidazole 500 mg orally twice daily for 5 days

Bacterial Vaginosis

- Bacterial vaginosis (BV) is a bacterial infection also called Gardnerella or Non-specific vaginitis
- BV is caused by an imbalance of naturally occurring bacterial flora and is often confused with yeast infection (candidiasis) or infection with Trichomonas vaginalis (trichomoniasis), which are not caused by bacteria
- Presentation: The most common symptom of BV is an abnormal vaginal discharge that may be accompanied by an unpleasant (usually fishy) smell. This malodorous discharge coats the walls of the vagina, and is usually without significant irritation, pain, or erythema (redness), although mild itching can sometimes occur.
- Treatment- (SPC, 2012)
 - Metronidazole 400 mg orally twice daily for 7 days
 - Alternatively: the following may be used: Metronidazole 2 g in a single oral dose

Gonorrhoea and Chlamydia

- Both may present with: burning on urination, occasional conjunctivitis or arthritis, mucopurulent yellowish discharge on endocervix, cervix looks inflamed
- Symptoms appears after 1-4 days for gonorrhoea and 1-3 weeks for chlamydia
- Treatment:
 - Amoxicillin 3GM orally as a single dose
 - Probenecid 1GM as a single dose
 - Erythromycin 500 mg orally qid for 7 days **OR**
 - Chloramphenicol 500 mg orally qid

GENITAL ULCERS

Painful small ulcers

May be caused by Herpes Simplex and chancroid both associated with painful enlarged lymph nodes. Herpetic lesions have a classical onset with prodromal itchiness followed by clustered vesicles. Treatment:

- Pain relief if necessary; keep lesions clean and dry
- Give erythromycin 500 mg orally 4 times daily for 7 days (for chancroid)
- Consider Acyclovir 400mg three times per day for 5 days
- Counsel that HSV infection is life long and recurrent episodes may occur.
- Patients should be advised to inform their partner(s) to come for examination and treatment. Sexual transmission of HSV can occur even in the absence of symptoms.

If the ulcer or ulcers have not responded to treatment in one week, refer to a hospital or to a doctor with experience in the management of genital ulcers. (Active herpes infection at term is an indication for elective caesarean section).

Painless ulcer with or without swollen inguinal lymph nodes

- Take blood for syphilis tests (see below for treatment of positive syphilis test in pregnancy).
- Treat for primary syphilis and chancroid:
- Benzathine penicillin 2.4 million units IM 3 weekly dose and azithromycin 1 g orally single dose.
- Treat partner (contact tracing)

In case of penicillin allergy, Azithromycin 2 grams orally weekly for 3 week

If no improvement within a week - Refer

Note:

- **Genital ulcer caused by syphilis will resolve spontaneously within 4-6 weeks without treatment; however the syphilis infection persists, and the ulcer resolving does not represent cure.**
- **There is risk of congenital syphilis if mother is not adequately treated**

Syphilis Screening in Pregnancy

Congenital syphilis is an important and significant cause of spontaneous abortion, stillbirth and newborn morbidity and mortality. It also causes serious cardiac, neurological and other consequences, which can ultimately be fatal in adults.

Rapid point of care syphilis screening must be done at the first antenatal contact for all pregnant women

If the first test is performed before 20 weeks and is negative, a second test should be done at 36 weeks if she is at high risk of infection.

Treatment

- Treat all women with a positive screening test, irrespective of titre.
- Give benzathine penicillin, 2.4 million units IM once weekly, for 3 doses.

Severe penicillin allergy

This includes a history of any of the following:

- Angioedema
- Anaphylactic shock
- Bronchospasm

For all women allergic to penicillin give:

- Erythromycin 500 mg orally 4 times a day for 15 days for early syphilis and for 30 days in late syphilis or syphilis of unknown duration².

OR

- Ciprofloxacin 500 mg twice a day orally for 5 days.

There is no proven alternatives to penicillin available for treating congenital syphilis, or syphilis in pregnant women³.

Give azithromycin 2 g orally as a single dose. This high dose will treat both gonorrhoea and chlamydia. If symptoms persist after 7 days, repeat treatment if possible reinfection or poor adherence to treatment; otherwise refer the patient to specialist care. Notify the partner to come for examination and treatment. Repeat VDRL/RPR 6 weeks after treatment.

² Secretariat of the Pacific Community, 2012. Comprehensive Sexually Transmitted Infections Management Guidelines

³ Centers for Disease Control and Prevention. 2015 Sexually Transmitted Diseases Treatment Guidelines <https://www.cdc.gov/std/tg2015/pen-allergy.htm>

Prevention for all STIs

- For all infections, education on nature of infection, modes of transmission and ways to avoid infection
- Compliance should be emphasised
- Promote abstinence during the course of treatment
- Promote and demonstrate condom use, provide condoms.
- Importance of partner treatment should be stressed. Follow-up on partner treatment during review contacts should be ensured.
- All newborn of women who tested positive for syphilis regardless of treatment should be referred for paediatric evaluation.

GENITAL WARTS

These are caused by the human papilloma virus (HPV) and are sexually transmitted. They can be external on the vulva or perineum, or internal in the vagina or on the cervix. They sometime proliferate to a large size in women with HIV infection.

Treatment

- **Podophyllin is contraindicated in pregnancy.**
- If small (<10 mm), soft and involve the skin, no treatment is indicated in pregnancy and can be treated postpartum.
- If very large, bleeding or infected, refer to a doctor.
- Consider elective caesarean section if warts are very large and may obstruct vaginal delivery.

URINARY TRACT INFECTION

CYSTITIS

This presents with urinary discomfort and/or frequency. There may be some lower abdominal pain. The patient usually has no fever and does not appear ill. Urine dipstick testing may show nitrites and protein.

Asymptomatic bacteriuria is a condition in pregnancy that sometimes precedes acute pyelonephritis. If detected on urine culture, it should be treated in the same way as cystitis.

Management

- If possible, send a midstream urine specimen for microscopy, culture and sensitivity (MC&S).
- Treat empirically with one of the following:
 - Amoxicillin 500mg PO TDS x 5 days.
- If urine culture is positive, change antibiotics according to sensitivity results. Discuss with microbiologist at your laboratory if advice needed on antibiotic choice.
- Encourage a high oral fluid intake.

Indications for referral

- Pyelonephritis - symptoms and signs include:
 - Symptoms: Dysuria and chills, Increased frequency and urgency to pass urine, Anorexia Nausea/Vomiting, Abdominal pain/Retro pubic or suprapubic pain
 - Signs: Pyrexia, tachycardia and renal angle tenderness
 - The pregnant woman is at risk of preterm labour must be referred for IV treatment and possible care of the preterm neonate in case she goes into labour.
- Recurrent UTI

MALARIA

Malaria in pregnancy can be associated with serious complications. These are due both to the effects of a severe febrile illness in pregnancy, and to the malaria parasite itself, which becomes sequestered in the placenta, and in the small blood vessels of the brain, kidneys and other organs. Foetal complications include miscarriage, preterm delivery, foetal growth restriction, and perinatal mortality. Severe maternal complications include cerebral malaria, hypoglycaemia, acute respiratory distress syndrome (ARDS) and maternal death.

Symptoms and signs of Malaria include:

- Fever, Headache and body pains
- Diarrhoea and vomiting
- Anaemia and/or Jaundice
- A big spleen and/or liver
- Coma, convulsions, and confusion
- Shock and or kidney failure

Malaria symptoms are non-specific and high index of suspicion is required. 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.

Management

- Prevention:
 - The use of insecticide treated bed nets particularly for pregnant women and children.
 - IPTp: Three tablets sulfadoxine/pyrimethamine monthly to prevent malaria in pregnant women is standard per MOH Policy.
- Every suspected case of malaria should be tested with Rapid Diagnostic Test (RDT) or microscopy if available. If test is unavailable treat but also exclude other causes.
- Evaluation of a patient suspected to have malaria:
 - Take a history and examine for other diseases.
 - Check for signs of severe disease which include
 - Inability to sit or stand up
 - Prostration, altered consciousness, coma
 - Severe anaemia
 - Repeated convulsions
 - Respiratory distress
 - Shock
 - Abnormal bleeding
 - Jaundice
 - Haemoglobinuria
 - Anuria or oliguria
 - Suspected severe malaria should be confirmed by microscopy with parasite density count
 - If laboratory is available, check for hyperparasitaemia, hypoglycaemia, and hyperlactataemia.
 - Prick patient's finger for RDT
 - If test is positive: treat the patient for malaria
 - If the test is negative you can treat on clinical grounds.

All pregnant women with (severe) malaria should be referred to hospital immediately after the initial treatment is administered.

Treatments (Refer to National Malaria guidelines for more detail)

Initial treatment at Aid Post/Dispensary or Health Center:

- Treatment for uncomplicated malaria
 - Give a 3 days course of Artemether-lumefantrine (ACT)⁴ (with some fatty food or milk) for a total of 6 doses as shown below:
 - Dose 1 (timing starts here)
 - Dose 2 after 8 hours
 - Dose 3 after 24 hours
 - Dose 4 after 36 hours
 - Dose 5 after 48 hours
 - Dose 6 after 60 hours
 - Watch the patient take the first dose and advise her about schedule for remaining 5 doses.
 - If patient vomits within 1 hour
 - Rule out severe or cerebral malaria and
 - Repeat ACT treatment
 - 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
 - General measures for treating uncomplicated malaria
 - Monitor blood sugar 4 hourly.
 - Monitor regularly for clinical (and laboratory if possible) markers of severity; if any deterioration, change to IV treatment
 - Ensure adequate hydration, but avoid over-hydration
 - Control pyrexia; fan or tepid sponge, paracetamol may be given.
 - Refer to hospital for further management -
- Treatment of severe malaria whilst preparing for transfer
 - If the patient has one or several signs of severe malaria in Aid Post/Dispensary:
 - Give 200 mg (4 suppositories) artesunate suppository or 2.4mg/kg/dose artesunate IM (if available) as pre referral treatment.
 - Refer to hospital.
 - In hospital, give first dose of 2.4mg/kg/dose 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 Artemether-lumefantrine (ACT) (as above) on completion of the Artesunate course to ensure no resistance develops.
 - Monitor blood glucose for hypoglycaemia
 - Monitor respiratory rate and oxygen saturation
 - Monitor all intake and output
 - Add broad-spectrum antibiotics to treat secondary bacterial infection
 - Reduce high body temperatures (> 39°C) by tepid sponging and anti-pyretics.

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

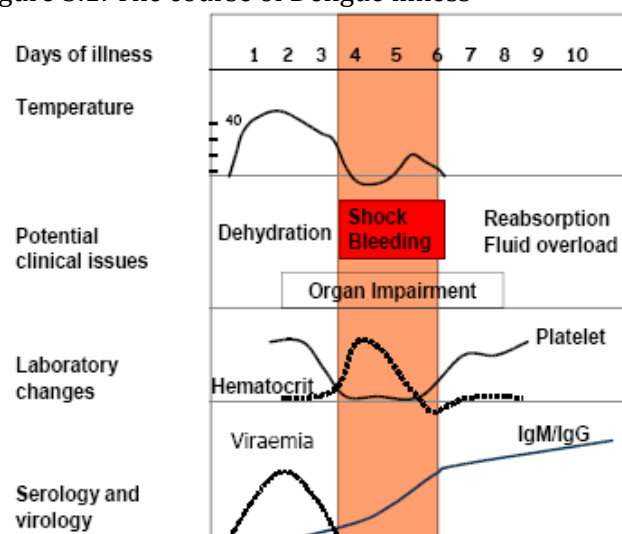
DENGUE

Dengue is a viral infection spread by the mosquito *Aedes aegypti*. Dengue infection has a wide clinical spectrum that includes both severe & non-severe clinical manifestations. It has a 2 weeks incubation period followed by abrupt onset of the illness. After the incubation period of 2

⁴ ACT - Artemether-lumefantrine (Coartem®) - a combined treatment of artemether 20mg & Lumefantrine 120mg in one tablet

weeks, the illness begins abruptly, followed by three phases – febrile, critical and recovery phase (figure -).

Figure 3.1: The course of Dengue illness



NB: IgM = immunoglobulin M; IgG = immunoglobulin G. Temperature is given in degrees Celsius (°C)

Severe dengue starts between day 4 and 6 of illness, just as the initial fever goes down and usually lasts for 24-48 hours. This is the period that IV fluids can be life-saving.

Course of dengue illness: Febrile Critical Recovery Phases
Source: WHO, 2012. Handbook for clinical management of dengue.

Symptoms and signs of Dengue

Dengue virus infection may be asymptomatic or may cause a febrile illness. Most of dengue infections are mild, but a small percentage of cases may progress to severe dengue, which can be fatal unless adequately treated with IV fluids. Table 3.1 provides classification of dengue which forms the basis for management (refer to algorithm at end of the section).

Table 3.1: Dengue assessment and classification

Criteria for dengue ± warning signs		Criteria for severe dengue
Probable dengue	Warning signs*	Criteria for severe dengue
<p>Live in/travel to dengue endemic area.</p> <p>Fever and 2 of the following criteria:</p> <ul style="list-style-type: none"> Nausea, vomiting Rash Aches and pains Tourniquet test positive⁵ Leucopenia Any warning sign <p>Laboratory confirmed dengue (important when no sign of plasma leakage)</p>	<ul style="list-style-type: none"> Abdominal pain or tenderness Persistent vomiting Clinical fluid accumulation Mucosal bleed Lethargy; restlessness Liver enlargement >2cm Laboratory: Increase in HCT concurrent with rapid decrease in platelet count <p>* Requiring strict observation and medical intervention</p>	<ul style="list-style-type: none"> Severe plasma leakage leading to: <ul style="list-style-type: none"> Shock (DSS) Fluid accumulation with respiratory distress Severe bleeding as evaluated by clinician Severe organ involvement <ul style="list-style-type: none"> Liver: AST or ALT >=1000 CNS: Impaired consciousness Heart and other organs
ALT = alanine aminotransferase; AST = aspartate aminotransferase; CNS = central nervous system; DSS = dengue shock syndrome; HCT = haematocrit		

⁵ 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.

A high index of suspicion is advised as the disease may mimic diseases such as eclampsia or pre-eclampsia, haemolysis, elevated liver enzymes and low platelet count (HELLP) syndrome, pneumonia, pulmonary embolism, various obstetric causes of per-vaginal bleeding and other infectious diseases. Table 3.2 highlights some of the differences and similarities with normal pregnancy and HELLP syndrome.

Table 3.2: Similarities and differences between dengue, pregnancy and HELLP syndrome

Symptom & sign	Normal pregnancy	Dengue	HELLP
Fever	Blunted febrile response	+	-
Bleeding	Bleeding can be due to obstetrical cause	+ (mild to severe)	- (DIC in severe disease)
Abdominal pain	+/-	+/-	+/-
Ascites, pleural effusion	-	+ in plasma leakage	-
WBC	Elevated	Leukopenia	No specific changes
Thrombocytopenia	+	+ unique FBC changes	+
Haematocrit	↓(haemodilution after the second trimester)	↑ in plasma leakage	Maybe normal /↓
Haemolysis	-	-	+
Liver enzymes	Mild ↑	Mild to severe ↑	Mild to moderate ↑

DIC = disseminated intravascular coagulopathy; FBC = full blood count; HELLP = haemolysis, elevated liver enzymes and low platelet count; WBC = white blood cell

Impact of dengue on pregnancy

- Uncertain whether dengue is a significant factor for adverse pregnancy outcome such as preterm birth, low-birth weight and caesarean deliveries.
- Risk of vertical transmission is well established among women with dengue during the perinatal period.
- Significant impact of dengue at delivery: Delivery and/or surgical procedures may be complicated by severe bleeding during the critical phase, i.e. the period coinciding with marked thrombocytopenia with or without coagulopathy and vasculopathy.

Challenges in recognition of dengue disease and plasma leakage in pregnancy

- Vomiting which is one of the warning sign may be taken as hyperemesis of pregnancy resulting in delay in recognizing severe dengue.
- After the second trimester of pregnancy it is normal to see an increase in circulating blood volume with generalized vasodilatation, resulting in an increased baseline heart rate and lower baseline BP, as well as a lower baseline haematocrit. This can confuse the diagnosis of dengue and health workers are advised to pay attention to the following:
 - The lower BP and tachycardia of normal pregnancy could be misinterpreted as hypotensive shock.
 - The lower baseline haematocrit after the second trimester of pregnancy should be noted. Establishing the baseline haematocrit during the first 2–3 days of fever is essential for early recognition of plasma leakage.
 - Clinical signs of plasma leakage such as pleural effusion and ascites could be difficult to elicit in the presence of a gravid uterus.

General management of dengue during pregnancy

- For any woman admitted with suspicion of dengue - consult obstetrician for possible referral
- Do a blood test to test if it is positive for dengue, determine the level of infection.

- Admit for close monitoring particularly women close to full-term/labour.
- In hospital, conservative medical and obstetrical management is the treatment of choice.
- To prevent dehydration due to vomiting, advise mother to drink lots of water and fresh juices. Being hydrated is essential for maintaining embryonic fluid level.
- Panadol 1g six hourly is given to control fever and joint or muscle ache.
- Advise mothers against using any over the counter medicines, especially NSAID (e.g aspirin, brufen and related drugs).
- Close monitoring of blood pressure and platelet count.
- Infusion of platelets might be required in extreme cases.
- If there is excess bleeding, blood transfusion might be needed
- Administering oxygen and intravenous fluid judiciously.

Challenges in monitoring and management

- Close observation and monitoring, prompt, adequate and appropriate replacement therapy during the pre-, intra- and post-delivery periods are essential.
- Failure to recognize plasma leakage and/or shock early will lead to prolonged shock and eventually massive bleeding and multi-organ failure.
- There is no difference in fluid therapy compared with the non-pregnant state, however, the growing gravid uterus may result in narrower tolerance of fluid accumulation in the peritoneal and pleural cavity from plasma leakage. Excessive fluid replacement should therefore be avoided.
- The increased baseline heart rate and a lower baseline BP are normal physiological changes in late pregnancy. Health workers should therefore guard against fluid overload and respiratory distress through over treatment of “normal” levels of BP and heart rate.
- The presence of wounds or trauma during the critical phase of dengue with marked thrombocytopenia, coagulopathy and vasculopathy creates a substantial risk of severe haemorrhage.
- If severe haemorrhage occurs, replacement with transfusion of fresh whole blood/fresh packed red cells should be promptly instituted.
- Prophylactic platelet transfusion is not recommended unless obstetrically indicated.
- Delivery should take place in a hospital where blood/blood components and a team of skilled obstetricians and a neonatologist are available.
- Tocolytic agents and measures to postpone labour to a suitable time may be considered during the critical phase of dengue illness.

Inevitable delivery during critical phase

If delivery is inevitable, bleeding should be anticipated and closely monitored.

- Blood and blood products should be cross-matched and saved in preparation for delivery.
- Trauma or injury should be kept to the minimum if possible.
- It is essential to check for complete removal of the placenta after delivery.
- Transfusion of platelet concentrates should be initiated during or at delivery but not too far ahead of delivery, as the platelet count is sustained by platelet transfusion for only a few hours during the critical phase.
- If significant bleeding occurs, fresh whole blood/fresh packed red cells transfusion should be administered as soon as possible. Health workers are advised not to wait for blood loss to exceed 500 ml before initiating replacement efforts and should also not wait for the haematocrit to decrease to low levels.

- Oxytocin infusion as per standard obstetrical practice should be commenced to contract the uterus after delivery to prevent postpartum haemorrhage. Misoprostol may be given for PPH Prophylaxis/treatment.
- Intramuscular injections should be avoided.

Post-delivery

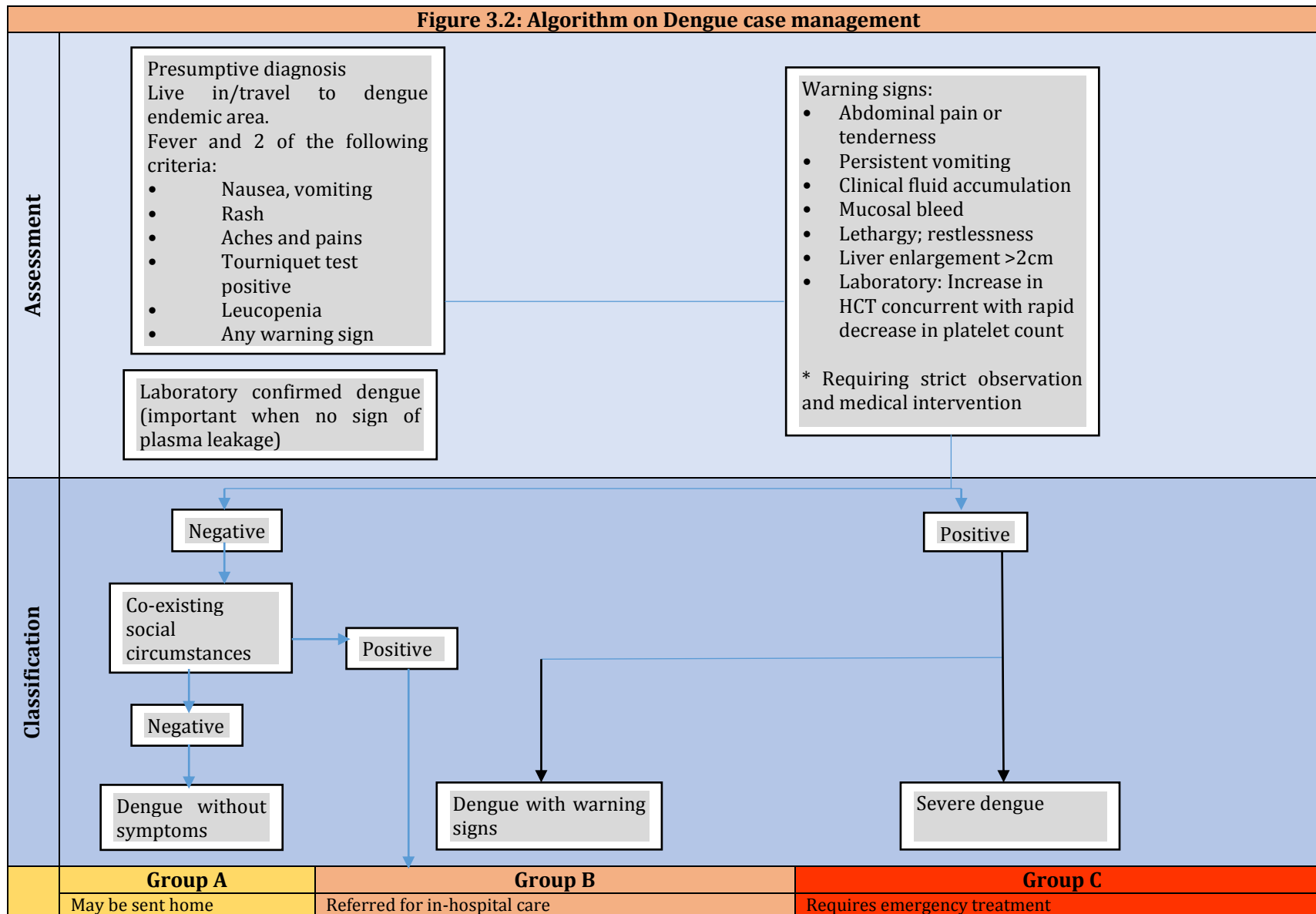
- Newborns with mothers who had dengue just before or at delivery, should be closely monitored in hospital after birth in view of the risk of vertical transmission.
 - At or near-term/delivery, severe foetal or neonatal dengue illness and death may occur when there is insufficient time for the production of protective maternal antibodies.
 - Clinicians should be aware that presentation in either maternal or neonatal disease may be atypical and confound diagnosis.
- Congenital infection could eventually be suspected on clinical grounds and then confirmed in the laboratory and managed according to the standard management guidelines.

Prevention of Dengue

Pregnant women should be advised to:

- Keep the surroundings hygienic and clean and free of any stagnant water around their home.
- Wear light coloured and full sleeved clothes to prevent mosquito bites.
- Use a mosquito repellent that is safe for pregnant women.
- Use treated mosquito nets at night and spray or coil to ward off mosquitoes.
- Try to stay in a cool room, as these mosquitoes prefer warm environs.

Figure 3.2: Algorithm on Dengue case management



	Laboratory tests: FBC, Hct)	Laboratory tests: FBC, Hct		Laboratory tests: FBC, Hct, Other organ function tests as indicated
Management	Treatment Advice for: - Adequate bed rest - Adequate fluid intake - Paracetamol, 4 gram max. per day Patients with stable Hct can be sent home	Treatment - Encouragement for oral fluids - If not tolerated, start intravenous fluid therapy 0,9% saline or Ringer Lactate at maintenance rate	Treatment - Obtain reference Hct before fluid therapy - Give isotonic solutions such as 0,9% saline, Ringer lactate, 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	Treatment of compensated shock: - Start I.V. fluid resuscitation with isotonic crystalloid solutions at 5-10 ml/kg/hr over 1 hr - Reassess patient's condition If patient improves: - I.V. fluids should be reduced gradually to 5-7 ml/kg/hr for 1-2 hr, then to 3-5 ml/kg/hr for 2-4 hr, then to 2-3 ml/kg/hr for 2-4 hr and then reduced further depending on haemodynamic status - I.V. fluids can be maintained for up to 24 - 48 hours If patient still unstable: - Check Hct after first bolus - If Hct increases/ still high (>50%), repeat a second bolus of crystalloid solution at 10-20 ml/kg/hr for 1 hr. - If improvement after second bolus, reduce rate to 7-10 ml/kg/hr for 1-2 hr, continue to reduce as above. - If Hct decreases, this indicates bleeding and need to cross-match and transfuse blood as soon as possible Treatment of hypotensive shock - Initiate I.V. fluid resuscitation with crystalloid or colloid solution at 20 ml/kg as a bolus for 15 min If patient improves - Give a crystalloid / colloid solution of 10 ml/kg/hr for 1 hr, then reduce gradually as above If patient still unstable - Review the Hct taken before the first bolus - If Hct was low (<40%) this indicates bleeding, the need to crossmatch and transfuse (see above) - If HCT was high compared to the baseline value, change to I.V. colloids at 10-20 ml/kg as a second bolus over to 1 hour; reassess after second bolus

	Monitoring <ul style="list-style-type: none"> - Daily review for disease progression: - Decreasing WBC - Defervescence - Warning signs (until out of critical period) - Advice for immediate return to hospital if development of any warning signs - Written advice of management (e.g. home care card for dengue) 	Monitoring <ul style="list-style-type: none"> - Temperature pattern - Volume of fluid intake and losses - Urine output – volume and frequency - Warning signs - Hct, white blood cell and platelet counts 	Monitoring <ul style="list-style-type: none"> - Vital signs and peripheral perfusion (1-4) hourly until patient is out of critical phase - Urine output (4-6 hourly) - Hct (before and after fluid replacement, then 6-12 hourly) - Blood glucose - Other organ functions (renal profile, liver profile, coagulation profile, as indicated) 	<ul style="list-style-type: none"> - If improving reduce the rate to 7-10 ml/kg/hr for 1-2 hours, then back to I.V. crystalloids and reduce rates as above - If condition still unstable, repeat Hct after second bolus - If Hct decreases, this indicates bleeding, see above - If Hct increases/ remains high (> 50%), continue colloid infusion at 10-20 ml/kg as a third bolus over 1 hr, then reduce to 7-10 ml/kg /hr for 1-2 hours, then change back to crystalloid solution and reduce rate as above <p>Treatment of haemorrhagic complications:</p> <ul style="list-style-type: none"> - Give 5-10 ml/kg of fresh packed red cells or 10-20 ml/kg fresh whole blood
	Discharge criteria: -> all of the following criteria must be present	<ul style="list-style-type: none"> - No fever for 48 hours - Improvement in clinical picture 	<ul style="list-style-type: none"> - Increasing trend of platelet count - No respiratory distress 	<ul style="list-style-type: none"> - Stable haematocrit without intravenous fluids

PREVENTION OF PARENT TO CHILD TRANSMISSION (PPTCT) AND MANAGEMENT OF HIV

POSITIVE PREGNANT WOMEN

There are four elements of PPTCT of HIV:

- Primary prevention of HIV, especially among women of childbearing age
- Preventing unintended pregnancies among women living with HIV
- Preventing HIV transmission from a woman living with HIV to her infant
- Providing appropriate treatment, care, and support to women living with HIV and their children and families.

PPTCT is a package of care for the mother-infant pair, and their family particularly the father. This chapter is an overview of the National PPTCT Guidelines. For more in-depth information, please consult the full guideline.

PPTCT IN ANTENATAL CARE

Aims

- Identify all women and their partners who are HIV positive
- Support women and their partners who test negative to stay negative
- Provide ART, as soon as HIV positive status is known, for maternal health reasons and to prevent mother to child transmission of HIV
- Improve maternal health and prevent mortality.

HIV TESTING SERVICES (HTS)

- HTS provides an entry point to comprehensive HIV prevention treatment, care and support and is vital for identifying HIV-positive persons.
- The 5 Cs essential for all HIV testing services include consent, confidentiality, counselling, correct test results and connection to HIV prevention, treatment and care
- For those who test HIV-positive, HTS provides an important opportunity for patient education on HIV disease and adherence, and is an essential step towards successful referral pathways that link patients to HIV care.
- For those who test HIV negative, counselling should address HIV risk-reduction behaviour with involvement of partners or spouses whenever possible, focusing mainly on how to maintain their HIV-negative status.
- **Connection** to prevention, treatment and care is an essential component of HTS
- All women attending antenatal care should be given routine pre-test information about HIV testing and the PPTCT programme, with a group information session, followed by individual counselling for women who have never tested, or have previously tested negative. (See figure 3.1 for testing algorithm).
- Pre-test information should be clear and concise should address the following areas:
 - The benefits of HIV testing;
 - The meaning of an HIV-positive and an HIV-negative diagnosis;
 - The potential risk of transmitting HIV to the infant;
 - Measures that can be taken to reduce mother-to-child transmission, including the provision of ART to benefit the mother and prevent HIV transmission to the infant;
 - Counselling on infant feeding practices to reduce the risk of HIV transmission;
 - The benefits of early HIV diagnosis for mothers and infants; and
 - Encouragement for partner testing.

- Clients should be assured that the test result and any information shared by the client is **confidential**.
- Verbal **consent** is adequate, however all individuals should have a private opportunity to refuse testing - **mandatory testing is never warranted**. Declining testing will not affect the client's access to HIV-related services or general medical care.
- Women who opt-out of HIV testing should have individual 'post refusal' **counselling**, and HIV testing offered at each antenatal contact.
- Clients should be afforded an opportunity to ask the provider questions.
- Post-test **counselling** should be offered to both HIV positive and HIV negative women.

Women who test negative

- An explanation of the test result and reported HIV status.
- Education on methods to prevent HIV acquisition, safe sex and provision of male or female condoms (use even during pregnancy), lubricant and guidance on their use.
- Emphasis on the importance of knowing the status of sexual partner(s) and information about the availability of partner and couples testing services.
- Education on seroconversion in pregnancy or while breastfeeding - has a very high risk of vertical transmission, due to a high maternal viral load in the absence of any intervention to prevent transmission.
- Retesting is needed only for HIV-negative individuals who report recent or ongoing risk of exposure - retesting after four to six weeks can be advised.
- An opportunity for the client to ask questions and request counselling

Women with a reactive HIV result

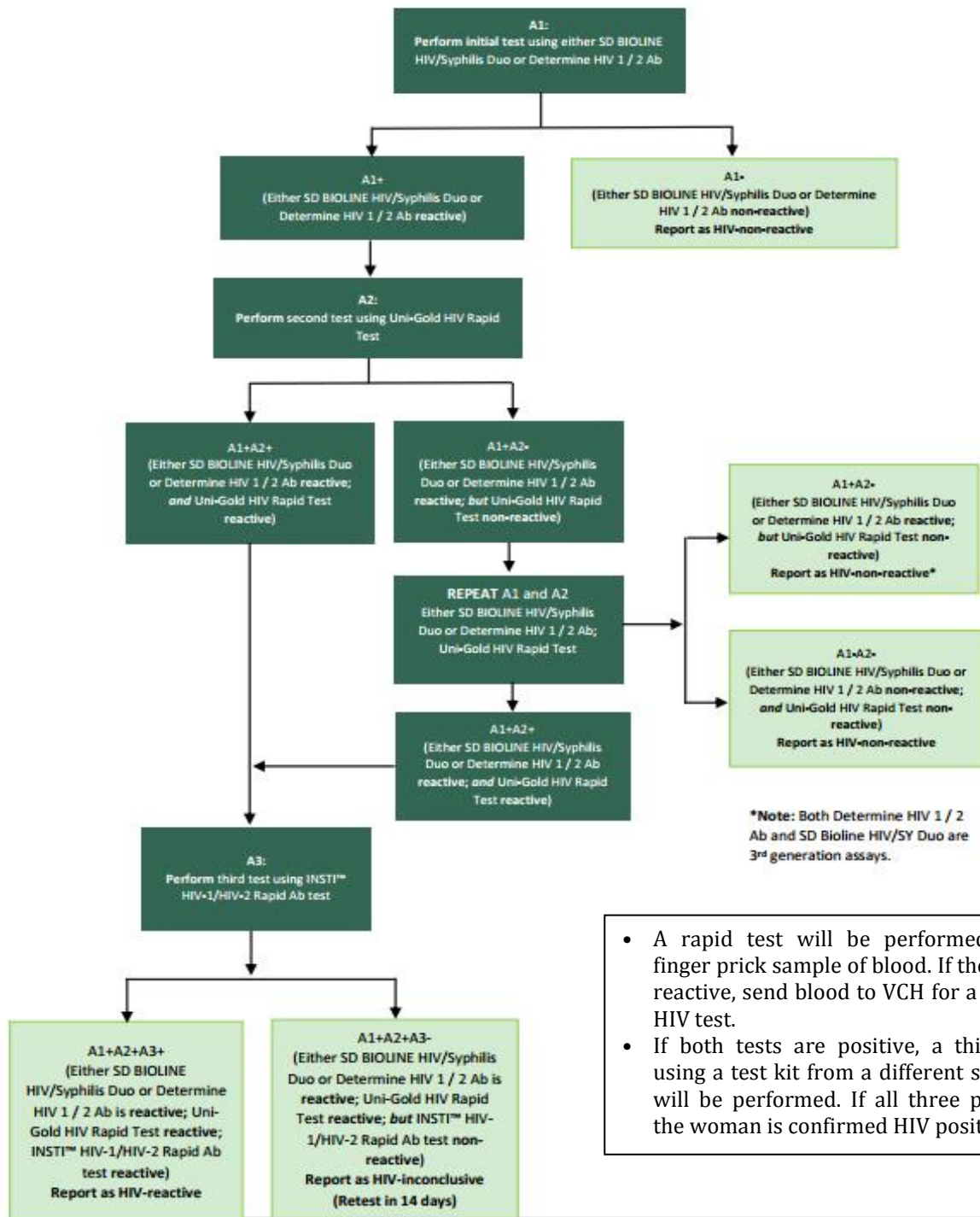
- Inform the woman that her test is reactive and the test needs to be repeated;
- Send blood to VCH for a confirmatory test;
- All women who have a confirmed HIV test should receive post-test counselling and referred to the existing HIV treatment Hubs in their areas where the woman will receive information on ARV, counselling on disclosure and importance of compliance.

Women with a confirmed positive result

- All women should be referred to the Obstetrician for initiation of antiretroviral treatment (ART) (see the following section).
- Everyone who is diagnosed HIV-positive should receive post-test counselling, including couples where one or both are diagnosed HIV-positive.
- Post-test counselling for pregnant women who test HIV positive should include the following, in addition to the standard messages for all people diagnosed with HIV infection (refer to HTS guidelines for more details):
 - Give the client time to consider the results and help the client cope with emotions arising from the diagnosis of HIV infection
 - Provide information on how to prevent transmission of HIV, including information of the reduced transmission risk when virally suppressed on ART
 - Initiate ART for the client's health as well as the to prevent transmission to the infant
 - Provide male or female condoms and lubricants and guidance on their use.
 - The importance of partner testing and information on the availability of couples testing services.
 - Discuss possible disclosure of the result and the risks and benefits of disclosure, particularly among couples and partners. Offer couples counselling to support mutual disclosure.

- Assess the risk of intimate partner violence and discuss possible steps to ensure the physical safety of clients, particularly women, who are diagnosed HIV-positive.
- Encourage and provide time for the client to ask additional questions.
- The woman should be clinically staged, and have baseline blood investigations taken (CD4 count, and serum creatinine etc.) – **blood results should however not delay initiation of treatment.**

Figure 3.3: HIV testing algorithm using either Determine HIV 1 / 2 Ab or SD BIOLINE HIV/Syphilis Duo as first assay⁶



⁶ National Guideline on HIV Testing Services, 2016.

People whose test results are not yet confirmed or whose HIV status is reported as inconclusive need follow-up services in 14 days to ensure that they receive an HIV diagnosis.

For more in-depth information, consult the full National Guideline on HIV Testing Services.

ANTENATAL MANAGEMENT

First ANC contact

At their first antenatal clinic contact all HIV positive women should undergo the following:

- Routine testing for Haemoglobin, Rh, syphilis tests and hepatitis B
- HIV clinical staging
- Clinical screening for TB and other opportunistic infections at each ANC contact
- Clinical & laboratory screening for renal disease, including serum creatinine - CD4, Viral load, FBC, LFTs, U/E
- Screening for active psychiatric illness
- Initiation of antiretroviral treatment
- Viral load testing if already on ART
- Nutrition advice particularly for HIV related conditions which affect nutrition intake
- Family planning counselling should be provided for all women in the antenatal period to enable decision making on FP method of choice post-delivery or during caesarean section should it be indicated.

Women testing HIV positive in pregnancy, or previously testing HIV positive but not on ART

- **All women who test HIV positive should be referred for ART by the Obstetrician;**
- All HIV positive pregnant women are eligible to start ART, irrespective of the WHO clinical staging and immunological status;
- Counselling should stress the importance of ART compliance; and
- ART is continued lifelong according to the national ART programme.

INITIATION OF ANTIRETROVIRAL TREATMENT

The first-line ART regimen is two nucleoside reverse transcriptase inhibitors (NRTIs) plus a non-nucleoside reverse-transcriptase inhibitor (NNRTI) as shown in table 3.3.

Table 3.3: Treatment Options for pregnant women who test HIV positive

Preferred Option 1 st line Regimen	Alternative Options
TDF + 3TC + EFV600	AZT + 3TC + EFV600 AZT + 3TC + NVP TDF + XTC3 + NVP

Women with renal impairment

- In pregnancy, renal impairment is defined as a serum creatinine >85 µmol/L.
- All pregnant women with renal impairment are high risk and should be referred. They should receive antenatal care and deliver in hospital.
- The cause of renal impairment needs investigation, and specific management implemented; obstetric complications may also occur, such as superimposed preeclampsia.

- HIV Associated Nephropathy is a common cause of renal disease in HIV positive people, can occur at any CD4 count level, and is a stage 4 defining disease.
- ART for women with renal impairment
 - Tenofovir is contraindicated in renal impairment.
 - Women should start a non-tenofovir based regimen. This would generally be AZT/3TC/Efavirenz. If Hb < 7 g/dL, AZT is contraindicated.

HEPATITIS B CO-INFECTION

- TDF and 3TC/FTC are both active against Hepatitis B.
- Hepatitis B surface antigen testing should be performed during pregnancy.
- Hepatitis B screening should be performed as early as possible in pregnancy.

LABORATORY MONITORING FOR WOMEN ON ART

Table 3.4: Monitoring for women on ART

Phase of HIV management	Recommended	Desirable (if feasible)
HIV diagnosis	HIV testing CD4 cell count TB symptom screening	HBV (HBsAg) serology HCV serology Cryptococcus antigen if CD4 cell count ≤ 100 cells/mm ³ Screening for STIs Pregnancy test to assess if ART initiation should be prioritized to prevent HIV transmission to the child Assessment for major NCD and comorbidities
Follow-up before ART	CD4 cell count (every 6–12 months in circumstances where ART initiation is delayed)	
ART initiation		Haemoglobin test for starting AZT Pregnancy test Blood pressure measurement Serum creatinine and estimated glomerular filtration rate (eGFR) or starting TDF Alanine aminotransferase for NVP Baseline CD4 cell count
Receiving ART	HIV viral load (at 6 months and 12 months after initiating ART and every 12 months thereafter) CD4 cell count every 6 months until patients are stable on ART	Serum creatinine and eGFR for TDF Pregnancy test, especially for women of childbearing age not receiving family planning and on treatment with DTG or low-dose EFV
Suspected treatment failure	Serum creatinine and eGFR for TDF Pregnancy test, especially for women of childbearing age not receiving family planning and on treatment with DTG or low-dose EFV	HBV (HBsAg) serology (before switching ART regimen if this testing was not done or if the result was negative at baseline and the patient was not vaccinated thereafter)

LABOUR AND DELIVERY INTRAPARTUM MANAGEMENT

- Check HIV status is known, and that details of antiretroviral medication that she is taking are documented.
- If HIV status is unknown, and she is in the first stage of labour, HIV testing services should be provided.

- Women on ART: Continue treatment throughout labour and delivery; ensure all doses are taken.
- Women newly diagnosed HIV positive in labour: give single dose of the following drugs at the onset of labour: Nevirapine 200 mg stat, Lamivudine 300 mg, Tenofovir 300 mg. If caesarean section is necessary, these drugs should be given prior to the procedure.

MANAGEMENT OF LABOUR

- Management should be in hospital – VCH, NPH
- Exercise universal precaution at all times. This includes protection from contact with body fluids such as blood, liquor, vaginal secretions; proper disposal of needles and soiled linen.
- The mode of delivery should be planned and discussed during antenatal care.
- Caesarean section in HIV positive women is performed for the same obstetric indications as in HIV negative women.
- For vaginal delivery
 - Avoid artificial rupture of membranes unless there is a specific obstetric indication
 - Duration of ruptured membranes prior to delivery should be as short as possible (ideally 4 hours or less)
 - Augment labour if there is slow progress - Do not use AROM as a means of augmenting labour, use alternatives e.g. oxytocin.
 - Avoid invasive monitoring and foetal blood sampling
 - At delivery avoid
 - Episiotomy
 - Instrumental delivery.
 - Prophylactic antibiotics are not required for HIV positive women who have normal deliveries.
 - Only suction the baby's nose and airway when there is meconium-stained liquor.
- Pre-labour rupture of membranes
 - Augment labour if not in spontaneous labour after 4 hours
 - Prophylactic antibiotics as for all women with pre-labour rupture of membranes
- For Caesarean section
 - Prophylactic antibiotics are given for both elective and emergency caesarean section: Cefazolin 1 g IVI or Ampicillin 1g IVI when on the operating table prior to the start of surgery, followed by a broad-spectrum antibiotic for 3-5 days.
 - Confirm other indications for C/S: Late stage disease, high viral load

POSTNATAL CARE

Within an hour of delivery

- All Infants born should receive skin-to-skin contact with their mothers, regardless of the mother's HIV status and mode of infant feeding, almost immediately after delivery.
- All infants should start feeding within an hour after delivery. The benefits of breastfeeding and the risks of not breastfeeding should have been discussed during antenatal care; exclusive breastfeeding is recommended.

Infant prophylaxis

- Start as soon after birth as possible, at the latest within 72 hours.

- **Breastfeeding Population: NVP daily for 6 weeks**
- **Replacement Feeding Population: 6 weeks of NVP**

- All infants are given prophylaxis with nevirapine syrup. Dosing is determined by birth weight, and is given daily.
- Breastfed infants should receive 6 weeks of nevirapine if the mother has been on ART for more than 12 weeks
- Extended prophylaxis is needed in breastfed infants if mother has been on ART for < 4 weeks
- Women who have been on ART for 4-12 weeks should be referred for viral load determination before decision is made on discontinuing infant prophylaxis.

Before discharge from the health facility

- All breastfeeding women must be counselled on breast health to reduce the risk of HIV transmission to the infant through breastfeeding, and the need for continued ART as well as infant prophylaxis.
- Contraception counselling and method provision must be offered to all women before discharge.
- All women and their infants should receive follow-up at the health facility within the first 3 to 6 days postpartum, and should be seen again at the health facility at 6 weeks postpartum. Infant testing is performed at 6 weeks (Refer to the National Guideline on Prevention of Mother-to-Child Transmission of HIV, Syphilis and Hepatitis B and C).
- Infants should be vaccinated per Expanded Programme on Immunization (EPI) schedule:
 - BCG vaccine must be given unless the mother has active TB and has been on treatment for less than 2 months prior to delivery.
 - If the mother has active TB, the infant must be screened for congenital TB and INH prophylaxis or TB treatment started as appropriate (per National TB guidelines) and BCG vaccination deferred.

Refer to the comprehensive National Guideline on Prevention of Mother-to-Child Transmission of HIV, Syphilis and Hepatitis B and C for more detail on support for infant feeding, follow-up, women newly diagnosed HIV positive during breastfeeding.

TUBERCULOSIS (TB) IN PREGNANCY

Screening for TB is an essential component of antenatal care and all pregnant women should be screened for TB at every contact for early detection, and prompt initiation of TB treatment is essential.

Symptom screening for TB

At all antenatal contacts and other contacts with maternity services, ask the following:

- Any cough
- Fever
- Night sweats
- Loss of weight, or not gaining weight in pregnancy
- If positive for **any** symptom:
 - Consult with Obstetrician and proceed to collect 2 sputum samples (ask the patient to cough outside), and send to laboratory for microscopy and culture, as per National TB guidelines.
 - Refer to the Obstetrician for further management.
 - **Note that if symptom screen is negative, HIV positive pregnant women are eligible for Isoniazid Preventative Therapy.**

ART should not be initiated if the pregnant woman has TB symptoms until TB has been ruled out or confirmed.

- Women who have symptoms of TB at the first antenatal contact should not be started on ART on the same day. Instead they are 'TB suspects' and should be investigated for TB, and ART deferred until after TB treatment is started, or until TB is excluded.
- If TB is excluded, HIV positive pregnant women are eligible for Isoniazid Preventative Therapy.

Isoniazid Preventative Therapy (IPT)

IPT has been shown to reduce the incidence of TB in all people living with HIV, including those on ART. All HIV positive pregnant women who screen negative for TB are eligible for IPT. Initiate once the patient is stable on ART. Tuberculin skin testing (TST) is not mandatory prior to initiation of IPT, however for pregnant women on lifelong ART, if they are TST positive, the duration of IPT can be extended.

IPT regimen:

- Isoniazid 5 mg/kg daily to a maximum of 300 mg daily.
- Pyridoxine 25 mg daily.

Duration of treatment:

- 12 months.
- For HIV positive pregnant women who have a positive TST, IPT can continue for 36 months.

Symptom screening for TB should still continue at all contacts to maternity services:

- If symptom screen is positive, discontinue IPT and send 2 sputum samples as above.
- If sputum sample is TB culture negative and there is no ongoing concern about TB, restart IPT.

Adverse effects of isoniazid:

- These are not common, however discontinue IPT and refer if any of the following occur:
 - Drug induced liver injury: symptoms are jaundice, right upper quadrant pain or tenderness, nausea and vomiting
 - Skin rash
 - Peripheral neuropathy (numbness and/or tingling of the feet).

When to start ART in pregnant women with newly diagnosed TB

If a pregnant woman is newly diagnosed with TB, and not yet on ART:

- Early introduction of ART increases the risk of immune reconstitution inflammatory syndrome (IRIS); however delaying ART increases the risk of other opportunistic infections in women with low CD4 counts, and increases the risk of vertical transmission if there is a significant delay.
- Do not start ART in women who are TB suspects, and are being investigated for TB
- Do not delay initiation of ART in pregnant women because of long delays in diagnosis of TB or initiation of TB treatment. Discuss with local TB clinic or referral centre whether empiric TB treatment is warranted.

Management of the new-born if the mother has TB

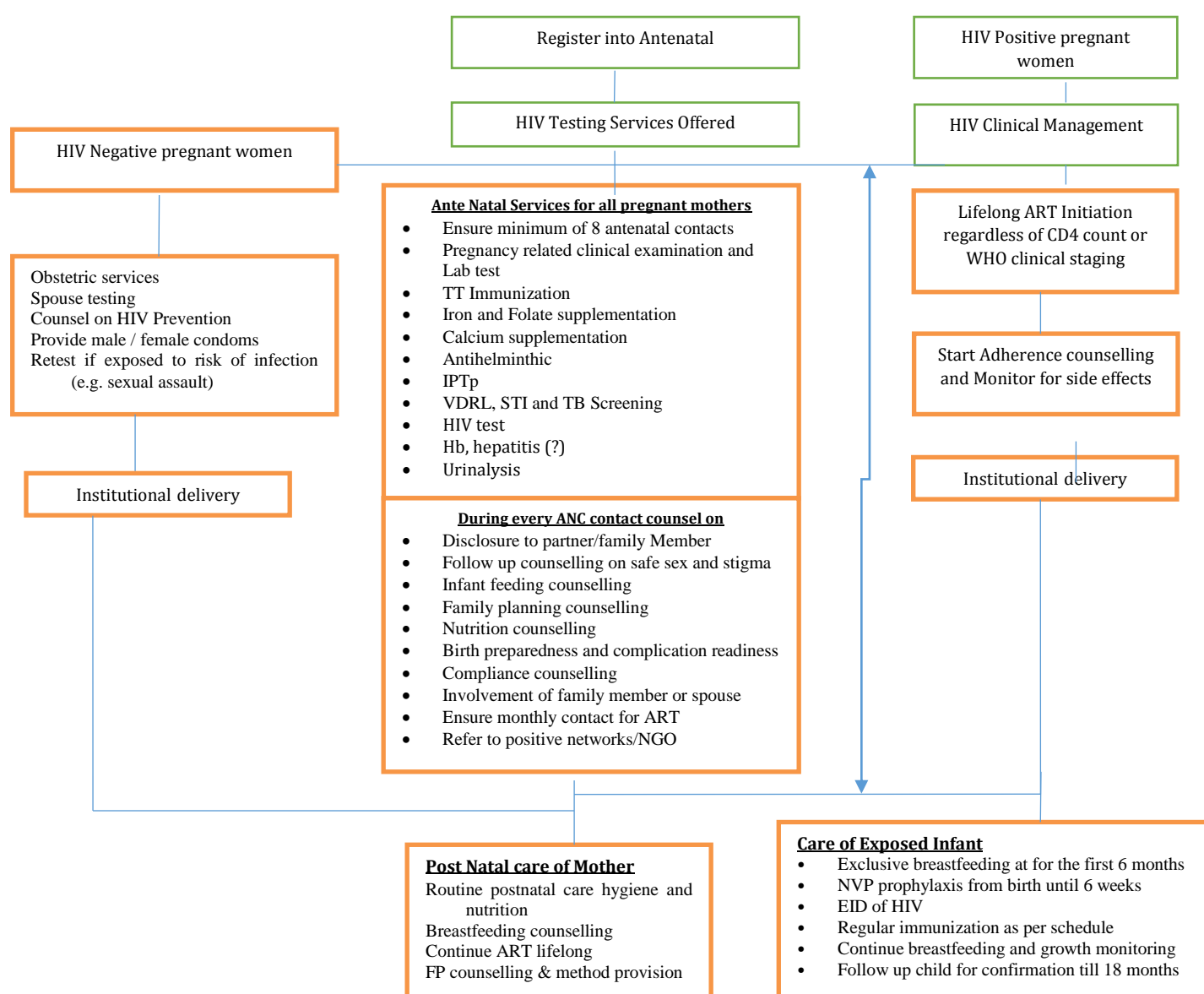
- If the mother has active TB and has been on treatment for less than 2 months before delivery, BCG vaccination for the new-born should not be given.
- The infant should be screened for congenital TB. If the mother has drug sensitive TB and there is no evidence of congenital TB, INH prophylaxis should be started.

For more detail on follow-up of clients on ART and management of TB, kindly refer to the relevant comprehensive National guidelines.

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ANNEX 3.1: CARE DURING ANTENATAL and POST NATAL SERVICES



CHAPTER 4: MEDICAL DISORDERS IN PREGNANCY

ANAEMIA IN PREGNANCY

Definition - Anaemia is defined as haemoglobin (Hb) of less than 11g/dL.

Severe anaemia is when Hb < 7g/dL%.

Diagnosis is made on clinical assessment and Hb test using haemoglobinometer at the point of care so that the result is available (and acted upon) at the same visit .

Anaemia prophylaxis

Give anaemia prophylaxis for all pregnant women with Hb level of ≥ 11 g/dl:

- Ferro-Folic x 1 tab daily including during lactation.
- Address compliance and absorption of iron tablets:
 - Discourage excessive consumption of tea or coffee;
 - Advise taking iron tablets during meals if side effects are affecting compliance; and
 - Avoid taking the iron tablets at the same time as calcium tablets.
- Provide health education about healthy nutrition high in iron and folic acid.
- Three tablets sulfadoxine/pyrimethamine monthly for prophylaxis of malaria.
- Repeat Hb at 28-32 weeks and again at 36 weeks for all women with Hb ≥ 11 g/dl.
- Dietary advise:
 - Eat more protein foods – red meat, fish, peanuts, and eggs.
 - Eat plenty of leafy green vegetables.

Treatment of Anaemia

- All women with anaemia to be given extra Fefol and should be followed up with more frequent Hb measurements after initiating treatment (see table 4.1 below).
- Albendazole 400mg stat for intestinal worms for severe anaemia. (Do not give before 14 weeks gestational age).
- Consult your senior colleague or doctor and refer.

Table 4.1: Management of anaemia in pregnancy

Anaemia (Hb in g/dl)	Pregnant <36 weeks	Pregnant > 36weeks	Postnatal
7-9 palmar and conjunctival pallor	<ul style="list-style-type: none">• Ferro Folic x 2 tabs bd• Repeat Hb after 2 weeks• Refer if no response to treatment	<ul style="list-style-type: none">• Ferro Folic x 2 tabs bd• Consult Obstetrician – delivery in facility with blood transfusion facilities	<ul style="list-style-type: none">• Ferro Folic x 2 tabs bd• Repeat Hb after 4 weeks• Treatment doses until Hb ≥ 11 then continue with prophylactic doses for 3 months• Refer if no response to treatment
5-7 Symptoms may include: Dizziness, tachycardia, shortness of breadth	Initiate treatment above and refer if symptomatic	Urgent referral Refer for transfusion	Ferro Folic x2 tabs bd and investigate if asymptomatic •Repeat Hb after 4 weeks •Refer if: no response to treatment and/or symptomatic
<5 Transfer to hospital	Consult and prepare for transfer	Consult and prepare for transfer	Consult and prepare for transfer

Look for possible causes of anaemia and treat accordingly. Examples include:

- Hookworm;
- Malaria;
- Nutrition related etc.

Other referral criteria

- No response to treatment
- Anaemia diagnosed at > 36 weeks symptomatic

Patient education

- Explain what anaemia is including its possible complications in simple language.
- Emphasize compliance including advice on foods to avoid when taking iron – e.g. drinking coffee or tea more than 30 minutes after taking tablets as it affects absorption. Drink it with water.
- Better to take tablets before going to sleep to reduce nausea.
- Dietary advice based on locally available foods.
- Advise about change in stool colour which may turn black.
- Warn about possibility of constipation – she should eat high fibre diet with fruit and vegetables and drink lots of fluids.
- Discuss family planning:
 - For grand-multiparous women - ideally long-acting methods or sterilization.
 - Spacing pregnancies by 2-3 years.

DIABETES IN PREGNANCY

Overt Diabetes Mellitus

- Diabetes present before the current pregnancy.
 - Women should be advised to plan their pregnancy, assisted in optimizing control before falling pregnant.
 - Tight control of blood glucose levels required from the time of conception.
- Early antenatal care booking - as soon as pregnancy is confirmed.
- Consult and refer to Obstetrician for appropriate management. Poor diabetes control is associated with higher risk of complications in both mother and baby.

Gestational Diabetes Mellitus

Diabetes develops during pregnancy or is diagnosed for the first time during the current pregnancy.

Table 4.2: Risk factors for Diabetes

Underlying factors	<ul style="list-style-type: none">• Age over 35 years• Obesity• Patient from ethnic group with high prevalence diabetes
Previous history	<ul style="list-style-type: none">• Previous history of gestational diabetes• A previous unexplained still birth• Foetal malformations• A previous baby weighing over 4kg• Family history of diabetes mellitus.
Current pregnancy	<ul style="list-style-type: none">• Heavy glycosuria (2-4+ glucose on dipstick)• Persistent glycosuria ($\geq 2+$)• Macrosomic (huge) baby or polyhydramnios in the current pregnancy

	<ul style="list-style-type: none"> • Polyhydramnios • Early onset preeclampsia i.e. rise in BP before 34 weeks gestation • Unexpected PET, i.e. occurring in a multipara who has not had PET in previous pregnancies.
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All women with risk factors for diabetes in pregnancy should be screened at the first antenatal contact and again at 26 - 28 weeks if the initial screen was negative.

Diagnosis of gestational diabetes

- Symptoms of diabetes include polyuria, polydipsia, and/or unexplained weight loss
- In women who are over 26 -28 week's gestation and with at least one risk factor for diabetes, do the following **screening tests** at point of care:
 - Fasting blood sugar of more than 7.0 mmol/L confirms overt diabetes
 - If less than 7 mmol/L, do a 2-hr glucose tolerance test (GTT).
 - A random blood glucose:
 - If > 11mmol/L – this confirms overt diabetes.
 - If >7.8 and < 11 mmol/L, do a 2-hr glucose tolerance test (GTT).
- **Diagnostic tests**
 - GTT – fasting blood sugar followed by a drink of 150ml of water in which you have mixed 75g of glucose powder. Diabetes is diagnosed if blood glucose level:
 - After 1hr – is > 9mmol/L, OR if
 - After 2hrs – is > 11mmol/L – this confirms diabetes
- Without symptoms, diagnosis should not be based on one single glucose result but requires repeat tests on another day.
- If results of testing do not demonstrate diabetes, they should be retested between 26 and 28 weeks' gestation.

Management

Mothers requiring insulin will be admitted to have an insulin regimen worked out for the pregnancy. After confirming gestational diabetes, follow these guidelines:

- Consult the Doctor and transfer if necessary.
- Gestational diabetes is high risk and requires regular and frequent antenatal care. Diabetic pregnant women will therefore require more than 8 ANC visits as diabetes is high risk condition.
- Importance of good glycaemic control throughout pregnancy should be stressed to the mother to reduce maternal and perinatal risks - miscarriage, congenital malformation, stillbirth and neonatal death.
- Advise on a healthy diet:
 - Eat more locally available vegetables, fruits, lean meat; and
 - Less carbohydrates, fatty food, sweets and salt.
- Advise on body weight and exercise.
- After one week on a healthy diet repeat glucose tolerance test:
 - If fasting > 5.3 mmol/L, then she needs insulin or metformin;
 - If postprandial blood sugar level is:

- < 5.8 mmol/L, then she does not need insulin.
- > 7mmol/L, she needs insulin or metformin
- If between 5.9 and 7.9 keep to healthy diet and repeat tests after one month. Refer to the Maternal, Infant and Young Child Feeding (MYIFC) guideline for details on dietary advice.
- The fasting levels should be repeated every three weeks as glucose tolerance usually deteriorates as pregnancy progresses. She should continue a healthy diet until delivery.
- An alternative to insulin injections is metformin - this is the only suitable oral hypoglycaemic drug for use in pregnancy.
 - Commence with 500mg bd, and increase to tds and qid checking the blood sugar levels 2 hrs after meals to determine the need to increase metformin.
- Birth is planned at 38 - 40 weeks.

Insulin Regime

- Admit for 4 points blood glucose (fasting and 2 hrs postprandial).
- If blood sugar levels are high may commence on insulin or metformin.
- If insulin (actrapid and isophane) regimen is used start with 5 units of actrapid before meals and isophane 5 units at night (9pm).
- Monitor with 4 points and increase insulin accordingly with increments of 5 units.
- Adjust insulin regiment after repeat 4 points blood glucose within 3 – 7 days.

Induce labour at 38 – 40 weeks

Misoprostol may be used for induction of labour – dissolve 200mcg in 200 mls of water and give 20ml (20 mcg) every 2 hours for 4 doses or as instructed by Obstetrician.

- Allow a light breakfast but do not give any insulin or metformin dose on the morning of induction of labor.
- During labour blood sugar level should not go beyond 7 mmol/L – if above give intermittent actrapid in consultation with the Obstetrician.

After delivery, consider sliding scale insulin regime following consultation with Obstetrician.

Babies of diabetic mothers

Babies of diabetic mothers are at risk of hypoglycaemia and should be monitored closely. Early initiation of breastfeeding is therefore important.

- Check the baby's blood sugar every 2-3 hours after birth.
- If breast feeding is not possible, **consult Pediatrician**. Commence 2- hourly feeds with 10% dextrose (15ml for babies above 2kg, 25ml for 3kg, 30ml for 4kg).
- If baby is unable to feed and blood sugar level is < 2.5mmol, NG tube or IV dextrose drip may be required. Consult with Pediatrician about further management.
- All babies over 4kg are to be observed for possible hypoglycaemia even if the mother is not diabetic. The above management should be followed if required.

CARDIAC DISEASE

Rheumatic heart disease is prevalent in Vanuatu. Health workers should ensure thorough history and physical examination at first contact in order not to miss existing cardiac conditions.

- History of heart disease should be elicited at the first antenatal contact including presence of current symptoms of heart disease.
- Clinical examination should include auscultation of the heart.

- All symptomatic women and those suspected to have heart disease should be referred to hospital for confirmation and further management.
- Should be co-managed with the physicians and anaesthetists.

Symptoms and

- Shortness of breath at rest or with mild exercise
- Shortness of breath when lying flat
- Haemoptysis
- Palpitations
- Chest pain

Signs

- Raised JVP
- Active precordium, displaced apex
- Tachycardia at rest or irregular heart rate
- Loud heart murmurs

Management during labour

All women with cardiac problem should be delivered under care of an Obstetrician

Occasionally a cardiac patient may present in advanced labour to the health center and may deliver there before transfer can be arranged. The following recommendations **must** be followed in such circumstances:

First stage of labour

- Nurse the mother with her upper body raised to 45 degrees.
- Secure intravenous access for drug administration - avoid giving large amounts of intravenous fluids (use a 200 mL fluid bag and run slowly if at all). Oral fluids should be available to the patient whenever thirsty.
- Give adequate analgesia - Morphine 5-10 mg subcutaneously.
- Continuous oxygen by mask if required
- Give Ampicillin 1 g IV 6 hourly and Gentamicin 240 mg IV as a single dose if indicated.

Second and third stage of labour

- Avoid the lithotomy position: the woman must remain upright or semi-upright when delivering, with her legs supported by 2 assistants below the level of her chest.
- Once the foetal head has engaged and the mother is bearing down, perform assisted delivery unless delivery is rapid and easy.
- Episiotomy only when indicated – **use local anesthetic without adrenalin**
- Give oxytocin 10 units intramuscularly in the third stage. **Do not give ergometrine or Syntometrine.**
- Give Lasix (frusemide) 20 mg intravenously after delivery of the baby.
- Newborn resuscitation as appropriate. Keep Naloxone (narcane) handy for respiratory distress if mother was given morphine.
- Provide regular updates to senior Obstetrician.

Fourth stage and puerperium

- Cardiac patients often decompensate in the first 24 hours post-delivery and may go into pulmonary oedema.
- Avoid intravenous fluids.
- **Care should be taken with administration of oxytocin if PPH occurs – DO NOT use ergometrine or syntometrine.**

- If bleeding continues give misoprostol 800mcg rectally
- **If delivered in a health center transfer to a hospital after consultation with the Obstetrician for observations and further management.**
- Advise on family planning.

Management of pulmonary oedema

Some patients may go into pulmonary oedema following delivery. The following management is recommended:

- Nurse the mother with her upper body raised to 45 degrees.
- Give oxygen by facemask.
- Secure IV line (for drug administration) only - avoid giving intravenous fluids.
- Give furosemide 40 mg intravenously, and repeat if necessary.
- Give morphine 5 mg as slow intravenous bolus.
- Transfer immediately to hospital with baby after consultation with Obstetrician for further care if delivered in a health center.

ASTHMA

- Pregnant women with an acute asthmatic attack must be referred to hospital urgently after consulting with the Obstetrician.
- History of asthma is an indication for follow-up at a high risk clinic.
- Women with recurrent severe attacks should be referred to a centre with specialist physicians.
- Management of asthma in pregnancy is the same as that of a non-pregnant women.
 - Beta-2 stimulants (e.g. salbutamol);
 - Inhaled and systemic steroids; and
 - Aminophylline are all safe in pregnancy.
- Manage labour and delivery according to normal obstetric principles.
- Women who are on chronic oral steroid treatment should receive hydrocortisone 100 mg IV 6 hourly during labour or at the time of caesarean section.
- If presenting for the first time with shortness of breath (SOB) exclude other common causes of SOB such as: anaemia, cardiac, pneumonia, TB etc.

EPILEPSY

Women with epilepsy should be supported to plan their pregnancy, and attend a specialist clinic to optimise the control of their disease. Review of the anti-epileptic drug regimen, before the woman falls pregnant is essential.

All women with history of epilepsy or who present with an epileptic fit should be discussed with the Obstetrician for possible referral for further management.

Management of epilepsy in pregnancy

- Arrange a second trimester detailed ultrasound scan to exclude foetal abnormalities.
- The drug of choice in pregnancy is carbamazepine. However, do not change non-carbamazepine treatment during pregnancy (e.g. phenytoin) if it is controlling the seizures.
- There may be need to increase treatment from the pre-pregnancy dose to maintain control during the pregnancy due to the increased volume of distribution.
- Give folic acid 5 mg oral once daily throughout the pregnancy; ideally this should be started before pregnancy.

- From 36 weeks add vitamin K 20 mg oral once daily (for all women on phenytoin).
- Always assess for other possible causes of seizures e.g. eclampsia or meningitis, even in a known epileptic.
- Treat status epilepticus as for non-pregnant women.
- Obstetric care, labour and delivery are the same as for non-epileptic women.
- Breastfeeding is not contra-indicated in a mother on anti-epileptic drugs. Control of seizures should be good before the mother is allowed to care for her new born without supervision. Readjust treatment to pre-pregnancy doses after delivery.

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CHAPTER 5: OBSTETRIC COMPLICATIONS DURING ANTENATAL PERIOD

HYPERTENSION IN PREGNANCY

CLASSIFICATION

- **Chronic hypertension:** Hypertension that is present before 20 weeks of gestation or if the woman was already taking antihypertensive medication before the pregnancy.
- **Gestational hypertension:** New onset of hypertension presenting only after 20 weeks of gestation without significant proteinuria.
- **Pre-eclampsia (PET):** Hypertension that occurs after 20 weeks of gestation associated with significant proteinuria in a woman with previously normal BP. A systolic rise of 30 mmHg or a diastolic rise of 15 mmHg over BP values taken at the first booking visit may indicate the development of hypertension even if the blood pressure is not yet in the hypertensive range.
- **Chronic with superimposed PET:** new onset of persistent proteinuria in a woman who had an initial diagnosis of chronic hypertension.

All women diagnosed with hypertension in pregnancy should be referred for management by the obstetrician.

PRE-ECLAMPSIA

Women at risk for the development of pre-eclampsia

Any pregnant women can develop pre-eclampsia however those most susceptible include:

- Primigravidae, in particular teenagers and elderly primigravidae.
- Women of age 35 years and above.
- Women with a previous pregnancy complicated by pre-eclampsia.
- Women with a previous abruptio placentae or intra-uterine death.
- Women with multiple pregnancies.
- Medical complications such as chronic hypertension, renal disorders and diabetes.
- Women who develop facial or generalised oedema in the mid trimester.

Diagnosis

Mild Pre – eclampsia

- BP >140/90 mmHg but < 160/110 mmHg on two occasions at least 6 hours apart while the woman is on bed rest.
- Proteinuria >300mg/24h or protein-creatinine ratio >30mg/mmol or 2+ on dipstick.
- Asymptomatic

Severe Pre – eclampsia/Imminent Eclampsia

- BP >160 mmHg systolic or >110 mmHg diastolic on two occasions at least 6 hours apart while the woman is on bed rest.
- Proteinuria 5g or higher in 24h urine specimen or 3+ or greater on 2 random urine samples collected at least 4h apart. Oliguria < 500ml urine in 24h.

- Severe headache or visual disturbances. Pulmonary oedema or cyanosis. Epigastric or right upper quadrant pain. Impaired liver function, Thrombocytopenia (low platelet + bruise easily) & foetal growth restriction.
- Very hyperactive reflexes or clonus.

MANAGEMENT OF MILD PRE - ECLAMPSIA

- Check gestational age, obtain full history:
 - Symptoms of imminent eclampsia - any of the following symptoms: severe headache, visual disturbances, pulmonary oedema, cyanosis, epigastric and right upper quadrant pain.
 - Vaginal bleeding
- Conduct full clinical examination
 - Check and document vital signs - B/P, pulse and temperature
 - Check urine for proteinuria
 - Pallor and jaundice
 - Assess degree of generalised oedema
 - Heart and lung examination
 - Palpate the abdomen for gestational age, tenderness irritability, foetal size and liquor volume and assess foetal well-being
 - Assessment of the cervix for possible induction of labour
- Consult with obstetrician and admit to health centre for rest & observation if mild pre-eclampsia is diagnosed.
- Record 6 hourly BP & urine daily for protein & observe woman for other signs of severe PET (see table above).
- Start antihypertensive medication, in consultation with the Obstetrician, if diastolic >110 mmHg, refer to Eclampsia management.
 - Methyldopa tablets – loading dose 750mg, maintenance 250-500mg 3-4 times daily OR
 - Nifedipine tablets slow release (SR) swallowed whole – 20mg 2 times a day
- If gestation < 36 weeks gestation initiate dexamethasone 8mg IM 8hourly for 3 doses for foetal lung maturity.
- Explain to the woman (and relatives) that delivery is the best method to treat her problem.
- Induction should only be done in hospital by the doctor.
- Prepare the woman for urgent transfer to hospital, in consultation with the Obstetrician if:
 - BP does not improve after one day of bed rest
 - >38 weeks gestation
 - Symptoms of imminent eclampsia present/develop
 - Intrauterine growth restriction
- Investigations: will be done in the hospital (FBC, LFTS, Urea and Electrolytes, Uric acid, USS) particularly if conservative management followed.

MANAGEMENT OF SEVERE PRE - ECLAMPSIA

- Diagnosis is made as above.
- Consult obstetrician for referral to hospital immediately.
- Initial management at the health facility, in consultation with the Obstetrician, as referral arrangements made:

**Stabilize the patient and protect her from convulsions and help reduce blood pressure.
Give MgSO₄ regimen (box below) and Hydralazine regimen.**

- Warn the woman of temporary chest hotness and facial hot flushes she will experience when MgSO₄ is administered. Have the cold towel available to wet her face and chest.
- Insert indwelling catheter and monitor urine output.
- Set up an IV line and give RESTRICTED IV fluid (Hartman's/N/S) at 42 drops per minute
- If BP > diastolic 110mmHg give Hydralazine 5 mg IV bolus stat, then 5mg every 30 minutes until diastolic <110mmHg to a maximum of 20 mg.
- Delivery should be the ultimate aim.
- Induction should be done in the hospital setting only.

NB: The MgSO₄ regimen described below - works best in Vanuatu.

Magnesium Sulphate Regime Loading Dose

- Give 4g IV slowly over 20 – 30 minutes. Draw up 4g (8ml) of MgSO₄ in 20ml syringe, and then add n/saline to fill up the remaining space in the syringe. Inject 20ml slowly IV over 20-30 minutes. **NEVER PUT LIGNOCAINE IN IV MIXTURE OF MgSO₄.**
- Then give 5g MgSO₄ mixed with 1-2 ml of 1% lignocaine (in each syringe) by deep IM injection in each buttock (upper outer quadrant) or thigh (total of 10g).

Maintenance Dose

- Give 5g (10ml) + 1-2 ml 1% lignocaine by deep IM injection every 6 hours on alternate thigh muscles for 24hrs (4 doses) postpartum or following the last seizure.
- If the woman has a fit whilst on the MgSO₄ regimen: give another bolus of MgSO₄, 4g (8ml) mixed in a 20ml syringe with 12mls of Normal Saline by slow IV injection into the rubber of the drip
- If seizure prolonged, give Diazepam 10mg slowly, IV
- Look out for the following signs of toxicity for all clients on MgSO₄ and before giving next dose:
 - Tendon reflexes present and
 - Respiratory rate hourly – should be >16/min AND
 - Urinary output >100 ml/4 hrs.
- **DO NOT give the next dose of MgSO₄ if:**
 - Tendon reflexes become non-responsive/absent or
 - Respiratory rate becomes less <16/min or
 - Urine output drops to < 100ml in 4 hours
- **If the woman stops breathing, she should be given the MgSO₄ antidote:**
 - **CALCIUM GLUCONATE, 10ml IV slowly over 10 minutes, and support respiration by bag and mask.**
- Consult the Obstetrician at VCH if you are not sure.

- Consult the doctor for transfer for delivery. Depending upon the transport situation the doctor may tell you to go ahead with the induction in the health centre.
- In the hospital, induce labour if the BP has not settled after 24hours bed rest and sedation. Use Oxytocin 10units IM for third stage management (**DO NOT USE ERGOMETRINE OR SYNTOMETRINE**).

- Assist delivery in the second stage with the Vacuum extractor to minimise pushing efforts, which may raise the BP further and cause fits.

ECLAMPSIA

Diagnosis

- Fitting or seizures after 20 weeks gestation
- Diastolic BP > 90 mmHg on repeated readings
- Hyper-reflexive and other neurological signs (blurred vision, epigastric pain)
- Proteinuria may or may not be present

In Health Center

If presenting with seizure, note that the seizure is self-limiting. It is important to maintain, airway, breathing and circulation (consult chapter on maternal collapse for more detail):

- Call for help
- Ensure woman is safe and put in left lateral position
- Assess and record patient's condition and level of consciousness:
 - Maintain airways
 - 100% oxygen at 2-4 L/minute by nasal catheter.
- Insert IV cannula

Consult with Obstetrician **and refer**. Stabilize whilst waiting for transfer. Assess for other causes of fitting if patient has high fever, neck stiffness with a normal BP – e.g. cerebral malaria or meningitis.

- Control seizures using MgSO₄ regime as outlined in box -
- If diastolic BP is >110mmHg, give:
 - 300ml of n/saline IV to support circulation as hydrallazine can cause hypotension, which might cause foetal hypoxia.
 - Hydrallazine 10mg IV stat and 2.5-5mg every 30minutes until diastolic BP settles to 90mmHg.
 - Once BP stabilizes, check BP 1-2 hrly. Do not try to bring Diastolic BP below 90mmHg.
- Indwelling catheter for monitoring and recording urine output every hour (minimum urine output should be 30ml/hour). If urine output drops below this, consult obstetrician.
- If in advanced labour prepare for delivery and newborn resuscitation in consultation with the Obstetrician. Refer to hospital for further management.
- If pulmonary oedema develops, give 40g IV frusemide (lasix).

Management in hospital

- Investigations
 - Urine – amount of protein
 - Blood – FBC, LFTs, Creatinine and Uric acid
- Decide on method of delivery.
 - If patient is in labour allow vaginal delivery.
 - IOL may be considered if cervix is favourable
 - If the cervix is not favourable, plan for caesarean section.

Postpartum Care

- Continue 5g MgSO₄ IM 6 hourly for 24 hours (4 doses) after delivery or after the last seizure.

- Keep in hospital after delivery until the blood pressure is well controlled (< 150/100 mmHg).
- Discharge on treatment if still hypertensive but asymptomatic
- Review within a one week or earlier if symptomatic to assess need for continued treatment or discontinuation
- Family planning advise and method provision (if possible)

NB: Some women may develop threatening signs or eclampsia for the first time after delivery. Stabilise (with MgSO₄ as above) and arrange for urgent referral in consultation with the Obstetrician. Need referral to specialist care after stabilisation.

ANTEPARTUM HAEMORRHAGE (APH)

APH is defined as vaginal bleeding that occurs after 20 weeks of pregnancy up to delivery of the baby. It may be result from:

- Placental causes - abruptio placentae, placenta praevia, vasa praevia
- Non-placental causes –uterine rupture, vaginal and cervical lesions including cancer, cervical infections trauma and decidual bleeding.
- Unknown causes - APH of unknown origin.

Never do a digital vaginal examination in cases of APH as digital vaginal examination can cause severe bleeding, making the need for delivery urgent. But a speculum examination can be useful to determine the source of bleeding.

Always admit a woman who presents with ante-partum haemorrhage, even if the bleeding has now stopped and she appears well.

All patients presenting with APH must be regarded as obstetric emergencies until properly

Initial Management of APH

- Call for help
- ABC⁷ for resuscitation if in shock
 - Assess for signs of shock – pallor, increased pulse rate and low BP.
 - If in shock, insert IV cannula (16G) and resuscitate with 2 L of normal saline or Ringer-Lactate then 1litre 4 hourly as maintenance,
 - Maintain airways and give 100% oxygen at 2-4 L/minute by nasal catheter if indicated
- Determine the cause of bleeding and manage according to the cause – see table – for signs and symptoms of major causes of bleeding.
- Consult with Obstetrician and refer.
- Stabilise whilst waiting for transfer.

⁷ Airway, Breathing, Circulation

Table 5.1: Comparison between abruptio placentae and placenta praevia

	Abruptio placentae	Placenta praevia	Uterine rupture
Patient	Often hypertensive. There may be history of abdominal trauma	Often previous caesarean section	Previous CS/ previous uterine surgery IOL/ obstruct labour
Symptoms	Pain almost always present. Foetal movements may be absent or reduced.	Usually painless. Foetal movements usually normal	Painful /may decrease after rupture
Abdominal examination	Hard, tender uterus, large for expected dates.	Soft, none tender uterus, often with malpresentation or high presenting part.	Loss of station, tender abdomen, fetal parts easily palpable, cessation of contraction
Bleeding	Dark blood with clots, at times no external bleeding visible.	Bright red blood.	Bright red blood
Ultrasound	Foetus may be dead, placenta normally situated. Retro-placental clot may be seen.	Placenta implanted close to or over the cervix.	NA

At a dispensary or health center

- Insert IV cannula (16G) and start crystalloid (Hartman's/N/Saline)
- If the mother is in shock, resuscitate with 2 L start crystalloid (Hartman's/N/Saline) refer to section on maternal collapse)
- Do not do a digital vaginal examination, unless placenta praevia has been excluded by a previous ultrasound scan.
- Commence Dexamethasone 8mg IM 3 doses 8 hourly if less than 36weeks
- Consult and transfer urgently from a dispensary/health center to hospital where 24 hour caesarean section services and adequate blood supply are available.

At the hospital

In hospital, further management of the patient depends upon the cause of the APH, the gestational age and condition of the baby, whether active bleeding continues or not, and the onset of spontaneous labour.

- Take a full history about amount of bleeding, last menstrual period, past obstetric history. Ask whether bleeding is associated with pain.
- Examine the patient:
 - General appearance. Is she conscious, is she talking to you clearly? Is she pale and sweaty? Record vital signs – BP, pulse and respiratory rate.
 - Check the fundal height, tenderness and lie, presenting part and station of the foetus. Check foetal heart rate.
 - Do not do a vaginal examination.
 - If bleeding is severe insert a urinary catheter.
 - Do USS to rule out placenta praevia if indicated.
- If preterm (< 36 weeks), give 3 doses of IM dexamethasone (8mg 8hourly);
- Blood should be collected for Hb and X-Match if facilities allow.
- Discuss with a senior colleague or Obstetrician for further management.

ABRUPTION

Abruptio placentae is associated with pre-eclampsia or trauma and is a clinical diagnosis. In severe cases, the blood pressure may be low due to shock however hypertension may manifest as soon as the patient is resuscitated. Proteinuria may be an indicator of underlying pre-eclampsia with abruptio placentae.

Initial management at the Health Center

- ABC for resuscitation if in shock.
- History, examination and confirm the diagnosis
- Vaginal Bleeding (dark blood with clots) is associated with pain.
- Amount of bleeding may not indicate severity, therefore manage APH like a severe case.
- Absence of foetal heart, pallor, hard tender uterus, increase pulse rate and low blood pressure indicates severe abruption.
- Manage for APH generally as above. Insert IV 2 large bore cannula (16G); Give 2 litres of normal saline or Hartman's solution stat followed by 1litre 4 hourly as maintenance.
- Consult with the doctor for further management and transfer advice.
- Indwelling catheter should be inserted before transfer.
- Talk to the relatives that it is a life threatening condition to mother and baby.

Hospital management

- Insert two IV cannulae (14G or 16G) in each arm. Resuscitate appropriately with IV Fluids as above and general nursing support. Insert indwelling catheter.
- Call for help from other colleagues, as PPH may follow.
- Take blood for:
 - FBC and x-match for 4 units of fresh blood.
 - If abruptio suspected, include platelet count and bed site clotting time – failure of a clot to form after 7 minutes or a soft clot that breaks down easily suggests coagulopathy.
- Do an urgent ultrasound scan to rule out placenta praevia and to check for foetal age and wellbeing.
- Do a gentle speculum examination to rule out other (local) causes of bleeding.
- Plan induction of labour (ARM/oxytocin or Misoprostol) if placenta praevia has been ruled out. Induction depends on:
 - Maternal wellbeing
 - Gestational age and foetal status
 - Previous uterine surgery
 - Stage of labor
- Notify specialists (Obstetrician, Paediatrician, Anaesthetist)
- Plan to deliver vaginally within 8 hours
- Consent for emergency caesarean section (+/- hysterectomy). Indications for C/S include
 - Severe bleeding
 - Foetus alive
 - Unfavorable cervix or poor progress of labour particularly in presence of abruptio placentae
 - Other obstetrics indications
- Look out for disseminated intravascular coagulation (DIC) which occurs when there is severe abruption and delay in active management.

Management Postpartum

Regardless of outcome of the baby, manage the mother like she just had a major postpartum haemorrhage (see section on PPH). Give:

- Active management of the third stage of labour (AMTSL) – give IV Syntocinon 10 Units after the birth of the baby followed by Controlled cord traction (CCT).
- Add 40 units of syntocinon to 1 litre of normal saline and run at 4 hourly rate and misoprostol 800mcg rectally stat.
- Monitor vital signs hourly, and observe for postpartum haemorrhage for at least twelve hours.
- Counsel on family planning.

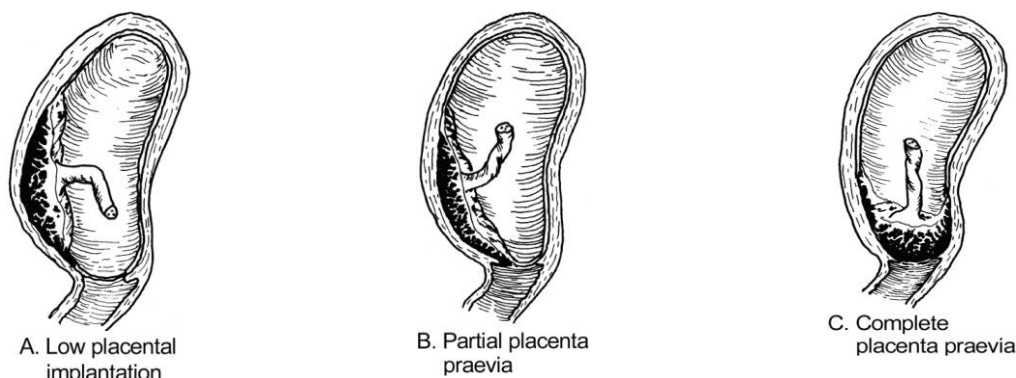
PLACENTA PRAEVIA

Initial management

Placenta praevia is when the placenta lies in the lower segment of the uterus, near to or across the cervix. It is diagnosed by USS. It is classified as minor/partial or major/complete depending on its position. Placenta praevia is usually pain-free.

All women with APH must be admitted and observed in hospital with operating theatre facilities.

Figure 5.1: Implantation of the placenta at or near the cervix.



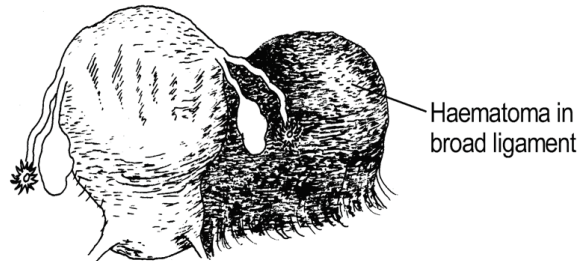
- Take a thorough history and confirm the diagnosis.
- Initial management must be to stabilize the patient. Follow same steps as for initial management of APH.
- Assess for signs of shock – pallor, increased pulse rate and low BP.
- Manage for APH as above. Insert two IV cannulae (14G or 16G) in each arm. Give 2 litres of normal saline or Hartman's stat followed by 1litre 4 hourly as maintenance.
- Ultrasound scan to assess location of the placenta
- If preterm (< 36wks), give 3 doses of IM dexamethasone (8mg 8hourly).
 - Call a senior colleague and doctor urgently for further treatment, and advice.
 - Talk to the relatives that it is a life threatening condition to mother and baby.

Admit all cases of APH for observation and care. If there is no further bleeding, the woman will continue to stay in the ward, until planned delivery usually by cesarean section at 37-38 weeks. Postpartum care as outlined in chapter-.

UTERINE RUPTURE

Bleeding from a ruptured uterus may occur vaginally if the foetal head does not block the pelvis. Bleeding may also occur intra-abdominally, however, if the lower uterine segment ruptures into the broad ligament (figure -), no blood will be released into the abdominal cavity.

- Bleeding (intra-abdominal and/or vaginal)
- Severe abdominal pain (may decrease after rupture)
- Shock with rapid maternal pulse
- Abdominal distension/ free fluid
- Abnormal uterine contour
- Tender abdomen
- Easily palpable foetal parts
- Absent foetal movements and foetal heart sounds



Management

This is an emergency as the woman will require surgical intervention.

- Take a thorough history and confirm the diagnosis.
- Initial management must be to stabilize the patient. Follow same steps as for initial management of APH.
 - Assess for signs of shock – pallor, increased pulse rate and low BP.
 - Insert two IV cannulas (14G or 16G) in each arm. Give 2 litres of normal saline or Hartman's stat followed by 1litre 4 hourly as maintenance.
- Call a senior colleague and Obstetrician urgently for further treatment, and advice.
- Obtain prior consent for hysterectomy, should this become necessary during the operation.

MULTIPLE PREGNANCY

A family history of multiple pregnancies and history of ovulation induction should raise suspicion of twin pregnancy. Suspect multiple pregnancy if any of these conditions are present:

- Exaggerated symptoms of pregnancy
- Fundal height larger than gestational age. Whenever the fundal height grows to more than 40cm, twins should be suspected.
- Term uterine size but only a small head presenting.
- More than two foetal poles felt, multiple foetal parts and more than one foetal heart heard.
- Polyhydramnios, PET, family history of multiple pregnancy and persistent anaemia make one suspicious of twins.
- Ultrasound will confirm the diagnosis of twins.

Multiple pregnancy is a high risk pregnancy and should be managed in a hospital setting.

Management

Antenatal care

- Give double dose of Fefol, and regular monthly sulfadoxine/pyrimethamine.
- Frequent antenatal care contacts – every 4 weeks to 28 weeks then 2 weekly till 36 weeks then weekly till delivery.
- Prophylactic dexamethasone between 28 and 34 weeks.
- Ultrasound scan for:
 - Chorionicity and amnionicity at first contact
 - Subsequent growth/ scan monthly.
 - Foetal wellbeing scan if indicated
 - Presenting part of the leading twin
 - Exclude possibility of conjoint or locked twins.

Labour Care

- Do FBC and X-match on admission
- Insert large bore IV (16gauge) cannula

The labour is managed according to the presentation of the leading twin - caesarean section is indicated if:

- If breech or transverse
- Previous caesarean section
- Triplets (or higher order pregnancy)
- Intrauterine growth restriction.
- Other obstetrics indications.

However, most 1st twins present cephalic and vaginal delivery is appropriate – use of the partogram for observing labour progress. Assistants are needed for delivery of twins.

2nd stage of labour

- Twin 1: delivered normally
 - Clamp the cord but do not administer IM oxytocin or
 - Attempt to deliver the placenta until all babies are delivered
- Twin 2:
 - Examine the abdomen to determine lie of additional baby and membranes still intact.
 - Correct to longitudinal lie by external version if transverse lie. Consider tocolysis with nifedipine/salbutamol (for suppression of labour) to facilitate the version, if needed
 - Check foetal heart rate(s)
 - Perform a vaginal examination to determine if:
 - The cord has prolapsed
 - The membranes are intact or ruptured
 - Presentation of other baby(s)
 - Await labour to re-establish before ARM and then augment to maintain contractions by adding 5 units oxytocin to the IV flask and run at 30-60dpm.
 - For failed ECV internal podalic version by provider with relevant skill provided the cervix is fully dilated and membranes are still intact:
 - Wearing sterile gloves, put your hand into the uterus, and grasp the baby's foot
 - Gently rotate the baby down

- Proceed with breech extraction
 - It may be necessary to give Morphine 5mg iv bolus
- Internal podalic version **should NOT** be attempted if:
 - If provider untrained
 - Membranes have ruptured and the amniotic fluid has drained **OR**
 - If the uterus is scarred.
- After the delivery of the 2nd twin, ensure there is no third twin then conduct active management of the third stage of labour - administer 10 units oxytocin and deliver the placenta(s) by CCT.
- After the delivery of the placenta run N/Saline with 40 units oxytocin added over 4-6 hours
- Observe closely as further management for PPH may be required e.g. Misoprostol 800mcg rectally.
- Obstetrician must be present or notified for each case of twin birth in case of assistance for a malpresentation of the 2nd twin or complications of third stage.

Retained Twin 2

If a mother is referred with a retained second twin (i.e. >30 minutes after delivery of first twin), Examine the lie of the foetus.

- If cephalic and foetal heart normal: do ARM and put up Oxytocin 10 units in 1litre normal saline as augmentation in a drip to effect delivery.
- If transverse and the membranes are still intact, attempt ECV and proceed as above.
- If the membranes have been ruptured for many hours and there is no liquor left inside the uterus it may be too difficult to do internal podalic version. If this is the case, to do a caesarean section.
- Presence of foetal distress is also an indication for caesarean section if delivery unlikely within 30 minutes.
- Commence n/saline 40units oxytocin infusion after birth of 2nd twin
- Ensure fundus stays firm and well contracted.

4th stage

- High risk for PPH
- Ongoing close monitoring (refer to section on post-partum care)

PROLONGED PREGNANCY (POSTMATURITY)

The normal duration of pregnancy is 37- 42 weeks from the first day of LNMP. All postdated (>41 weeks) pregnancies should be referred for further management at hospital level.

At the hospital. Induction of labour is indicated if all of the following exist:

- The pregnancy is more than 41 weeks gestation
- Evidence of postmaturity syndrome - when placental insufficiency has developed in a prolonged pregnancy
- The presentation is cephalic and the head 3/5 or less palpate abdominally.
- Bishop's score of at least ≥ 6 (refer to section - on induction of labour)

If uncertain of postmaturity or the cervix is not favourable, reassure the mother. Advise her to

keep a foetal kick chart to ensure good foetal movements, at least ten times over 12 hour period.

- Where available, you may use regular CTG machine monitoring.
- If the movements become less, foetal well-being maybe compromised.
- Discuss delivery plan. Consult and refer.

PREMATURE LABOUR

Premature labour is regular and painful contractions that lead to effacement and dilation of cervix after gestation of 28 weeks and before 37 completed weeks. Management depends on the gestational age and/or estimated foetal weight (by palpation or ultrasound).

- Confirm gestational age.
- Look for possible causes of preterm labour such as chorioamnionitis or other infections, abruptio. Look for underlying causes of preterm labour, e.g. chorioamnionitis or other infections (with fever and tachycardia), or abruptio placentae.
 - Fever present
 - Rule out acute UTI, malaria, dengue etc. and initiate appropriate treatment.
 - There is no need to transfer from a clinic or community health centre to a hospital if there are no complications at ≥ 34 weeks.
- Gestational age 28 to < 37 weeks gestation and the membranes are intact, perform a vaginal examination to assess cervical dilation. If $< 3\text{cm}$ or less dilated attempt to stop the labour, provided there is no other obstetric complication such as PET, APH, or chorioamnionitis etc.
- Consult and refer to Obstetrician - Suppress labour whilst waiting for transport and during transfer
- Suppression of labour management
 - Oral Nifedipine 20mg orally stat and repeat in 30 minutes, then 1 hour. Then continue 6hourly for 24hrs. This tablet should be swallowed whole (do not chew or take sublingually).
 - Contraindications to use of Nifedipine E.g. All cardiac diseases, hypotension
 - Other contraindications for Tocolysis - Mother does not consent to suppression; Lethal foetal anomaly; Intra uterine foetal death; Suspected chorioamnionitis (clinical signs of infection); Severe hypertensive conditions in pregnancy; Abruptio Placentae; Severe IUGR
- Foetal lung maturity - Give Dexamethasone 8mg IM 8hrly for 3 doses between 28wks and 37 weeks gestation.

PRETERM PREMATURE RUPTURE OF MEMBRANES (PPROM)

PPROM is rupture of membranes before 37 weeks gestation.

- Take the history and confirm the gestation age and do baseline observations.
- **Do not perform a digital vaginal examination as this may contribute to infection.** Perform a sterile and gentle speculum examination to confirm diagnosis of SROM and to check for cord prolapse.
- Commence oral Erythromycin 250mg for times a day for 10 days and monitor baby
- If not in labour, treat conservatively

- If > 37wks, do not attempt to stop labour. Do not perform digital vaginal examinations until the patient has at least two hours of strong contractions and the head has engaged.
 - Observe temperature, pulse, foetal heart rate, and pad checks 6 hourly
 - Do abdominal examination and check for tenderness
 - Consult with Obstetrician for possible referral if labour not started in 24 hours
- If < 37wks, see management on page -. Do not do PV until patient is in established labour.
 - Give tocolysis if contractions start in the first 24 hours after admission
 - Initiate dexamethasone 8 mg IM 8 hourly for 3 doses.
 - Observe temperature, pulse, foetal heart rate, and pad checks 6 hourly
 - Do abdominal examination and check for tenderness
 - Consult with Obstetrician and refer to hospital.

CHORIOAMNIONITIS

This infection may be associated with preterm labour, pre-labour or prolonged rupture of membranes, foetal death in utero or antepartum haemorrhage of unknown origin. Signs of Chorioamnionitis include:

- Fever
- Vomiting
- May be associated foul smelling discharge
- Temperature $\geq 38^{\circ}$ Celsius.
- Pulse ≥ 100 /minute.
- Uterine tenderness and/or irritability.
- Foetal heart rate ≥ 160 /minute.
- Offensive liquor or meconium stained liquor.

Management

- Consult with Obstetrician and transfer from a dispensary or health centre to a hospital. Chorioamnionitis is an indication for delivery of the foetus.
- Initiate ampicillin 2 g IV followed by 1 g IV 6 hourly, gentamycin 240 mg IV daily with metronidazole 400 mg orally 3 times daily; if allergic to penicillin use ceftriaxone 1g daily instead of ampicillin.
- Induce labour – refer to page – for methods of IOL.
- Try to avoid a Caesarean section as far as possible, but do it for the usual indications.
- During labour, monitor the foetus closely.
- Continue ampicillin (or ceftriaxone) and metronidazole for 5 days after delivery.

FOETAL DEATH IN UTERO (FDIU)/ STILLBIRTH

Definition: death of a foetus after 28 weeks gestation. Causes include foetal growth restriction, foetal infection, cord accident congenital anomalies or infections particularly syphilis where prevalent.

Typical clinical findings include:

- Absent foetal movements.
- Disappearance of symptoms of pregnancy.
- Symphysis-fundal height does not increase as expected.
- Difficult or abnormal foetal palpation.
- Foetal heart not heard.

Confirm by ultrasound scan, if available. Consult Obstetrician who will decide on place and method of delivery and further management.

Management

- Explain the problem to the woman and her family and discuss options of expectant or active management.
- If membranes have ruptured spontaneously without any contractions, confirm the position of the baby. If cephalic or breech, induce as per induction protocol after consultation with the Obstetrician.
- If the membranes have ruptured for more than 24 hours commence Ampicillin IV 1gram tds, Gentamicin IV 240 mg daily and Metronidazole 500mg IV tds for 5 days. Use oral Amoxyl, Flagyl, Erythromycin, if you do not have IV facilities.
- If spontaneous labour begins, do not rupture the membranes until full dilatation of the cervix. Augment with an oxytocin drip (see augmentation).
- If expectant management is decided on:
 - Consult and refer for delivery in hospital
 - Weekly ANC
 - Weekly FBC for expectant management
 - If spontaneous labour does not occur within the time period expected (within 1 month), consult Obstetrician for further management and induction of labour.
- Follow the same protocol for induction as with a live baby, but delay rupture of membranes until late in the first stage
 - FBC, group and hold
 - Provide good analgesia - morphine 5 mg IM 4 hourly if necessary.
 - Labour management follows the same principles as for normal labour - enter all observations, fluids and medications on a partogram and treat labour abnormalities appropriately.
- Examine the baby and placenta for clues regarding possible cause of death (e.g. congenital abnormalities, diabetes, malaria, STIs etc.)
- Look out for DIC particularly in FDIU of long duration.

Postpartum care

- Explain possible cause of death if known e.g. congenital abnormalities, diabetes, congenital infections, PIH with IUGR etc.
 - If unbooked conduct all the booking investigations
 - Provide information on preconception supplements for neural tube defects (preconception folic acid for three months)
- Be empathetic and supportive at all times
- Take into account the normal grief responses during counselling and offer bereavement counselling
- Breast care - treat breast discomfort with simple analgesics and breast binding/support
- Family planning counselling noting that ovulation may return within one month.

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CHAPTER 6: NORMAL LABOUR AND BIRTH

Every effort should be made to ensure that all pregnant women access skilled birth attendance at delivery.

LABOUR AND THE PARTOGRAM

The management described only apply when the presentation is cephalic, the gestation is term and there are no other contraindications to vaginal examination (such as APH).

Diagnosis of Labour

- Regular, painful contractions that lead to effacement and dilation of the cervix
- or
- Regular labour pains with ruptured membranes.

Admission of woman in labour

All women and their families must be treated equally with respect and dignity when they come in labour. They must be assisted to go through labour and delivery in a professional manner. Every attempt should be made to make this a positive experience - avoid shouting or physical abuse.

- Greet the woman and make her feel welcome, introduce yourself as her care-giver and discuss with her what you plan to do.
- View antenatal chart for important features of the pregnancy. Conduct a quick history for relevant information (such as SRM or malaria) and clearly note all the risk factors.
- If unbooked, interview as if she this is her first ANC contact with and note EDD, presenting symptoms, obstetric history, medical history, surgical history, family history, social history etc.
- Check vital signs. If she has a fever, assess for cause and start appropriate treatment – refer to section on infections in pregnancy.
- Assess contractions (duration and frequency)
- Palpate the abdomen
 - Inspect for previous scars, possible multiple pregnancy or abnormal lie.
 - Clinical assessment of foetus (fundal height), lie, presentation determine descent of baby - Level of head in 5th above the symphysis pubis
 - Liquor volume
- Check foetal heart rate - best taken before and at the end of a contraction
- If no APH, do a VE to assess:
 - Vulva and vagina: look for abnormal discharge, warts or ulcers.
 - Cervical dilatation in cm
 - Effacement (cervical length in cm), position and consistency
 - Position of the occiput, station and moulding (parietal-parietal or OP) and caput
 - Membranes whether ruptured or not and whether there is meconium-stained liquor.

- Obvious pelvic deformity should be noted. Pelvic deformity should be noted at ≥ 37 weeks gestation and decision made on mode delivery, particularly elective Caesarean Section.
- Investigations
 - Test the urine for glucose, ketones and protein.
 - For unbooked mothers or women whose results are not available:
 - Perform rapid syphilis, hepatitis B and rhesus group (if indicated) testing.
 - HIV testing services if no result is available and in early labour.
 - Measure the Hb if no recent result (<4 weeks) is available.
- If labour is confirmed and the cervix is ≥ 4 cm dilated, record all findings on the partogram (see sample completed partogram: figure 6.6).
- If the cervix is less than 4cm dilated on admission, observe for up to 8 hours. After 8 hours have elapsed.
 - If in active labour, initiate partogram observations. Ensure accurate and complete documentation on partogram.
 - If no signs of active labour, woman probably had false labour – see difference between active and false labour in table – below. Exclude other causes mainly cystitis.
 - Send home/MWH to await the onset of active labour and complete any medications if prescribed. Any concerns, consult with doctor.

Table 6.1: True versus False Labour

Features	True Labour	False Labour
Contractions	Regular	Irregular
Interval between pains	Gradually shortens	Remains long
Intensity	Increases	Remains the same
Cervix dilatation/effacement	Present and progressive	Absent
Bulging membranes	Present	Absent
Pain relief	Pain not stopped	Pain relieved
Descent of presenting part	Present and progressive	Absent

- If in latent phase (cervix <4 cm dilated) observations may be entered on a separate observation sheet. These include 4 hourly:
 - Temperature, heart rate, respiratory rate and blood pressure.
 - Uterine contractions and foetal heart rate.
 - Vaginal examination.
 - Any abnormal observation warrants action.
- Once confirmed to be in active phase of labour all observations including fluid intake and output, and medications must be entered on the partogram.

GENERAL CARE DURING LABOUR

- Artificial rupture of membranes may contribute to neonatal infection and HIV transmission and should not be part of the routine management of normal labour.
- Explain all procedures to the woman and respond to her questions

- Allow low-risk women to eat and drink during labour - an intravenous drip is not needed.
- Encourage women at low risk to be mobile during labour in women.
- Encourage the woman to empty her bladder regularly – catheterisation is not indicated.
- Allow continuous companionship during labour (space allowing).

MANAGEMENT OF THE FIRST STAGE OF LABOUR - USE OF THE PARTOGRAM

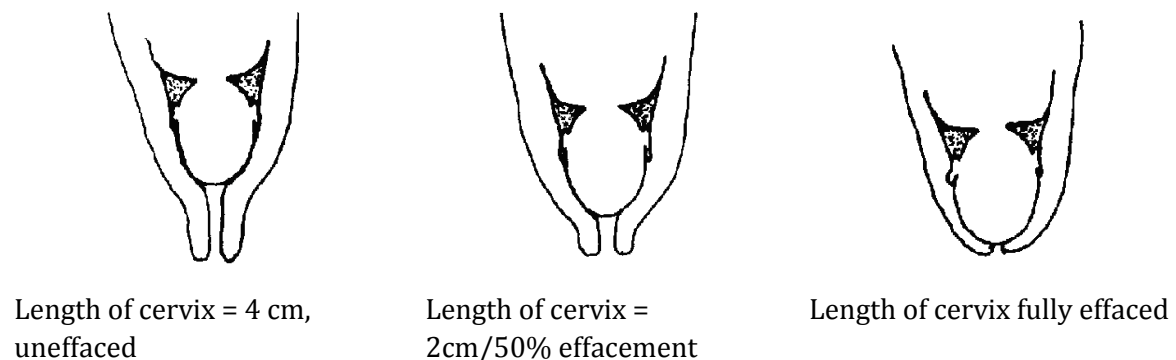
Aims of the partogram

- To monitor the progress of labour, maternal and foetal condition.
- To detect prolonged labour early and institute appropriate action on time.

Proper and consistent use of the partogram in monitoring progress of labour will improve the management and reduce the risk of prolonged labour in all women. Once the woman goes into active phase of labour (cervix ≥ 4 cm dilated, < 1 cm long), all examination findings and labour progress findings must be recorded on the partogram (see figure 6.5).

Labour is confirmed when regular uterine contractions are associated with cervical effacement i.e. progressive shortening and thinning of the cervix during labour (see figure 6.1 below).

Figure 6.1: Effacement and dilatation of the cervix



Routine monitoring in the first stage of labour - Making entries on the partogram

Every assessment must be noted on the partogram:

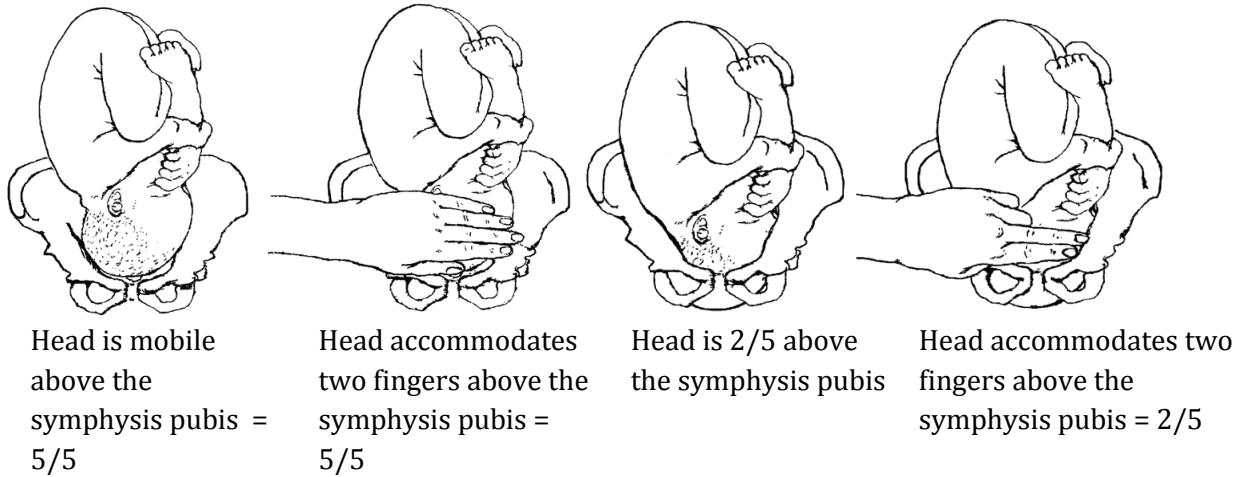
- Progress of labour (contractions – duration and strength, descend of the presenting part, the cervical dilatation);
- Foetal condition;
- Maternal condition;
- Medications administered; and
- Other vital observations.

Note the time and document in the notes. Problems identified should be clearly outlined including management plan to address concerns.

Progress of labour

- **Descent of the head** - assessed in fifths of foetal head palpable above the symphysis pubis – see diagram 6.2 below

Figure 6.2: Assessment of descent of the head abdominally



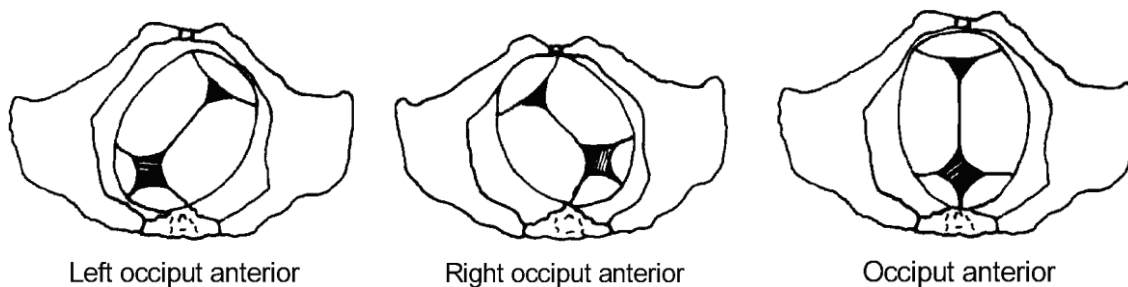
- **Uterine contractions** - Duration and frequency of uterine contractions per 10 minutes half-hourly:
 - Less than 20 seconds:
 - Between 20 and 40 seconds:
 - More than 40 seconds:
- Vaginal examination 4 hourly noting cervical dilation (record with an 'X' on partogram), position of the foetal head, sagittal moulding and caput.
 - In normal labour, when the cervix reaches 4cm dilated start plotting on the partogram and observe by further VE every 4 hours. Normal dilatation proceeds at the rate of 1cm an hour or more, thus the woman's graph will stay on or above the alert line. If the action line is crossed, dilatation is definitely too slow and specific action must be taken. Therefore, talk to a doctor or senior staff who will decide on next course of action (see diagram 6.6 below).
- Note position



Figure 6.3: Positions of the occiput in relation to the maternal pelvis



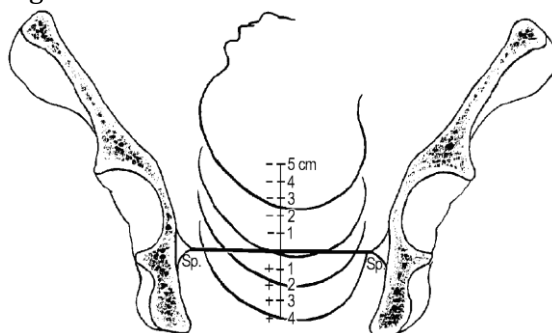
Foetal head normally engages in the maternal pelvis in an occiput transverse position, with the foetal occiput transverse in the maternal.



With descent, the foetal head rotates so that the foetal occiput is anterior in relation to the maternal pelvis (occiput anterior positions). Failure of an occiput transverse position to rotate to an occiput anterior position should be managed as an occiput posterior position.

- Note station of the head (with reference to ischial spine)

Figure 6.4: Assessment of station of the head



Assessing descent of the foetal head by vaginal examination; 0 station is at the level of the ischial spine

- **Moulding:**
 - + sutures together;
 - ++ sutures overlapping but reducible;
 - +++ sutures overlapping but not reducible reflect severe moulding - this is a definite sign of cephalo-pelvic disproportion (CPD).
- **Caput** - oedematous swelling under the scalp and above the periosteum which forms on the presenting part.

Foetal condition

- Foetal heart rate half-hourly throughout labour, best taken before and at end of a contraction – use hand-held Doppler device if available.
 - If <110 or >160 this could be foetal distress. Consult doctor (or senior staff) and recheck with the woman lying on her left side. If FH is over 160, check her temperature, if she has fever, check for possible causes of fever and treat accordingly.
- Colour and odour of the liquor 1 hourly if the membranes have ruptured.
 - State of membranes and colour of liquor – if meconium present, note degree of meconium:
 - + green colour fluid;
 - ++ with particles seen in the fluid;
 - +++ thick green fluid.
 - Change of clear liquor to meconium +++ usually indicates foetal distress.

Maternal condition

- Pulse hourly

- BP, respiratory rate and temperature 4 hourly unless otherwise indicated.
- Urine volume and test for protein and sugar when urine is passed.

Treatment given

- All medications.
- All fluids, by whatever route

Decision on progress of labour and ongoing plan

- May be normal or abnormal.
- Examples of abnormal labour include:
 - Poor progress of labour due to inadequate contractions (power)- reflected by too slow dilatation rate (<1 cm/hour in the active phase/crosses the partogram alert line) of the cervix either due to:
 - Contractions too far apart or too weak i.e. uterine inertia, **or**
 - Cephalopelvic disproportion (CPD). **This diagnosis can only be made after the pelvis has been tested by good contractions, (in a primigravida one should never diagnose CPD without augmenting contractions with Oxytocin infusion as per protocol).**
 - Slow descent due to malposition (passenger) and
 - Descent and slow dilatation (passage)

Management of poor progress in the active phase

- Ensure good hydration.
- If the alert line is crossed, put up Normal Saline or Hartman's and notify doctor or senior staff.
- Repeat VE at least 2 hourly.
- Augmentation may be considered (use of oxytocin to strengthen contractions) if the patient has:
 - Contractions less than 3 in 10 minutes and lasting for less than 40 seconds;
 - No previous caesarean section;
 - No heavy meconium staining of the liquor, or other sign of foetal distress (late decelerations); and
 - No malpresentation: for breech and oblique/transverse lie.
 - No evidence of obstructed labour (increasing grade of sagittal moulding with no descent, or grade 2 sagittal moulding with the head $\geq 3/5$ palpable above the brim)
- Consult with Obstetrician on further management.
- If action line is crossed notify doctor or senior staff and prepare for transfer in consultation with the Obstetrician

Never use an Oxytocin infusion without consultation and documentation

Figure 6.5 : PARTOGRAM

Name	Gravida	Para	Hospital number
Date of admission	Time of admission		Ruptured membranes hours

Fetal heart rate

Amniotic fluid Moulding

Cervix (cm) [Plot X]

Descent of head [Plot O]

Hours

Time

Contractions per 10 mins

Oxytocin U/L drops/min

Drugs given and IV fluids

Pulse ● and BP ▲▼

Temp °C

Urine { protein
acetone
volume

200	
190	
180	
170	
160	
150	
140	
130	
120	
110	
100	
90	
80	

10	
9	
8	
7	
6	
5	
4	
3	
2	
1	
0	

5	
4	
3	
2	
1	

180	
170	
160	
150	
140	
130	
120	
110	
100	
90	
80	
70	
60	

Temp °C	
---------	--

protein	
acetone	
volume	

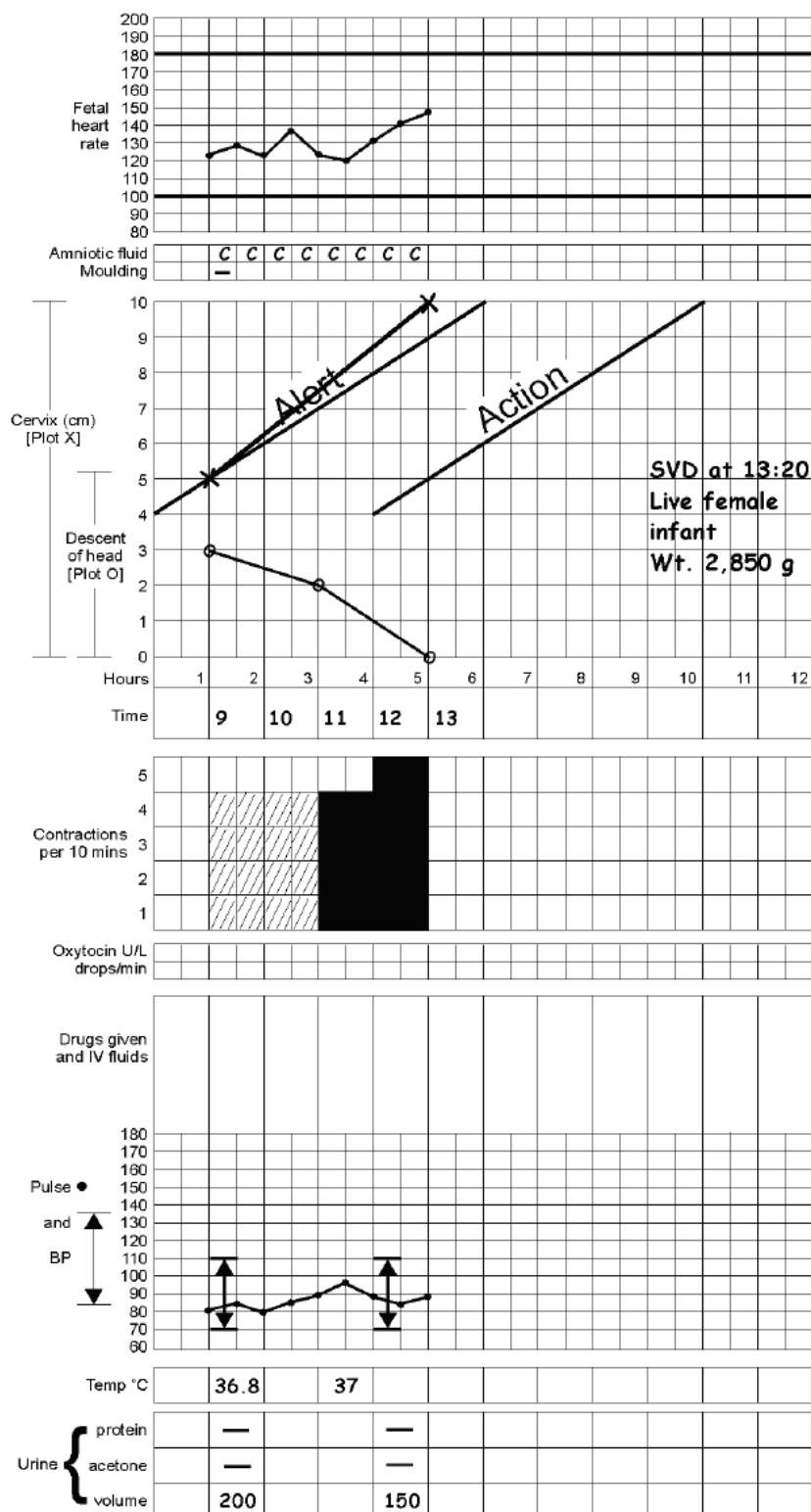
Alert

Action

Figure 6.6: Partogram showing normal progress in labour

Name **Mrs. S** Gravida **3** Para **2+0** Hospital number **7886**

Date of admission **12.5.2000** Time of admission **5:00 A.M.** Ruptured membranes **1** hours



MANAGEMENT OF THE SECOND STAGE OF LABOUR

The second stage starts when the cervix reaches full dilatation (10 cm) and ends with delivery of the baby. Most women deliver without problems. The bladder should be empty. The observations of the active first stage of labour should continue. Efforts at bearing down are only encouraged when the foetal head starts to distend the perineum and the woman **has an urge to push**.

When the woman is ready to push (bear down):

- Be supportive and encouraging and always communicate clearly with the woman to gain co-operation.
- Put the woman in a suitable position: propped up, sitting, squatting, kneeling, semi-Fowler's or wedged supine – mainly based on woman's position of choice. Avoid the flat supine position (lying flat on the back), as the pregnant uterus will compress the aorta and inferior vena cava.
- Encourage pushing/ bearing down only during contractions.
- Listen to the foetal heart before and at end of every contraction.
- Support the perineum when the foetal head crowns.
- Assist flexion of the head until the head delivers.
- Feel for a cord around the baby's neck and, if present, pull it over the head.
- Wipe the baby's face
- Allow the head to reconstitute into the anterior-posterior position and with maternal assistance pull firmly downwards to release the anterior shoulder from under the symphysis pubic bone.
- Place the baby on the woman's abdomen, skin to skin, and dry the baby for her to hold immediately after delivery for at least an hour.
- Wait 1-2 minutes before clamping the umbilical cord, but clamp and cut the cord earlier if the baby needs urgent resuscitation.
- Assess the baby's Apgar score at 1 minute, 5 minutes and 10 minutes.
- Postpone all routine neonatal procedures that are not lifesaving (e.g. washing, weighing and non-urgent medical procedures).
- Help the mother to initiate breastfeeding within an hour after birth and /or baby shows readiness to feed (which can decrease the risk of maternal haemorrhage, new-born hypoglycaemia and increase exclusive breastfeeding) unless there is a medical indication not to breastfeed.
- Record the times of onset of the second stage, onset of bearing down efforts and delivery, as well as the status of the foetal heart rate during the delivery.

Episiotomy

Routine episiotomy is discouraged. Consider episiotomy under local anaesthesia (lignocaine infiltrated into the perineum) only for the following reasons:

- Foetal distress in the second stage of labour.
- Thick or rigid perineum preventing delivery and prolonging the second stage.
- Maternal conditions where rapid delivery is required, e.g. cardiac disease.
- Preterm delivery where the perineum is tight
- Assisted delivery if indicated.
- Do not forget to repair of episiotomy.

MANAGEMENT OF THE THIRD STAGE OF LABOUR

The third stage starts immediately after delivery of the baby and ends with delivery of the placenta. **Routine active management of the third stage of labour is recommended**, to prevent excessive bleeding:

- Immediately after delivery of the baby, ensure there is no undiagnosed second twin, (even if antenatal ultrasound found a singleton pregnancy).
- If there is no second twin, immediately give oxytocin 10 units intramuscularly.
- Await uterine contraction for 2-3 minutes then feel for uterine contraction every 30 seconds.
- Do not massage or squeeze the uterus with the placenta still inside.
- When the uterus is felt to contract, put steady tension on the umbilical cord with the right hand, while pushing the uterus (guarding) upwards with the left hand. Deliver the placenta by applying continuous gentle traction on the umbilical cord (CCT).
- Examine the placenta for completeness and for any abnormalities.

MANAGEMENT OF THE FOURTH STAGE OF LABOUR

The fourth stage is the first two hours after delivery of the placenta. The woman is at risk for postpartum haemorrhage and must be closely observed:

- Check and record pulse, BP, respiratory rate and temperature just after delivery of the placenta.
- Record the pulse, respiratory rate and BP measurement after one hour or earlier if indicated.
- Regularly check that the uterus remains well contracted.
- Involve the women in her care by encouraging her to rub her own uterus to maintain contraction.
- Frequent observations for bleeding and ensure there is no excessive vaginal bleeding.
- Support baby to have uninterrupted skin to skin contact for one hour, and initiate breastfeeding within the hour (unless the woman has decided not to breastfeed).
- At the end of the fourth stage, offer the woman a light meal and transfer her to the postnatal ward if all observations are normal.
- Mother should be encouraged to empty bladder on transfer
- Do not forget to document all observations, procedures and treatments.

INDUCTION OF LABOUR

Induction of Labour (IOL) should be performed in a facility where there are skilled health providers who are able to perform emergency Caesarean Section in the event that the induction fails or problems arise. Explain to the mother and family about her progress, what you wish to do and why.

Indications for IOL may include:

- Severe pre-eclampsia or eclampsia at any gestation;
- Prolonged pregnancy or post-term;
- Gestational diabetes;

- Foetal death in-utero;
- APH due to placental abruption; and
- PROM.

Contra-Indications include:

- Breech or Transverse lie;
- Previous caesarian section- NEVER use Misoprostol in a woman with previous CS;
- Placenta praevia;
- Foetal distress;
- Previous caesarean section; and
- Parity ≥ 5 .

Approach to induction of labour

- Confirm the indication for IOL.
- Examine the mother carefully to confirm gestational age and presentation.
- Assess the Bishop score- use the table and assign points for a total score.

Assessment of the cervix

Prior to induction, assess whether the cervical is favourable (ripe) and document Bishop's score as outlined in table -:

Table 6.2: Assessment of Bishop's score

Parameter	0	1	2	3
Dilatation of cervix (cm)	<1	1 - 2	2 - 4	>4
Consistency of cervix (effacement)	Firm	Average	Soft	
Cervical length (effacement) (cm)	>4 (<30%)	3 - 4 (40 - 50%)	1 - 2 (50 -75%)	<1 (> 75%)
Position of cervix	Posterior	Mid-position	Anterior	-
Station of presenting part (cm above or below ischial spine)	-3	-2	-1 to 0	+1 to +2

A score of **8-9** or more indicates a favourable cervix for an induction of labour. A favorable cervix may have these measurements:

- Cervical dilation of ≥ 3 cm;
- Fully effaced;
- Anterior cervix; and
- Vertex presentation at station -1.

A score of < 6 indicates an unfavourable cervix.

METHOD OF INDUCTION

Methods for Induction of Labour depends on ripeness of the cervix.

- If Bishop's score is 9 or more:
 - HIV negative woman: Surgical induction using ARM + oxytocin;
 - HIV positive woman: Oxytocin with membranes intact or misoprostol; and
 - If Bishop's score 9 or less: Medical induction using Misoprostol.

Surgical induction using ARM + oxytocin

- Listen to foetal heart rate (FHR).
- Insert IV drip and then perform an ARM (except in presence of FDIU).

- If FHR is normal, continue with induction. Add 10 Units of Oxytocin in 1 litre of Normal Saline/ Hartman's.
- Commence at 10dpm and increase by 10 dpm every 30 minutes. Do not go above 60dpm. Refer to doctor if there is no progress of labour after reaching 60dpm.

Medical induction

- Oral administration misoprostol: The maximum oral dose is 20 ml 2 hourly for 4 doses. Administer as follows:
 - Add a single 200 microgram tablet of misoprostol to a bottle of 200 mL water.
 - Shake the bottle well until the tablet has dissolved.
 - Give 20 mL of the solution orally every 2 hours, for 4 doses.
 - As soon as the woman reports painful contractions, do a vaginal examination. If she is in established labour, stop the misoprostol.
 - Discard unused solution after 4 doses.
 - If there are no contractions after 4 doses, repeat the Bishop score and act accordingly - oxytocin or rupture of membranes if ≥ 9 ; if < 9 repeat misoprostol.
 - If there are no cervical changes after 2 courses of misoprostol, review the indication for induction.

Do not give oxytocin less than 8 hours after giving misoprostol
Do not repeat the misoprostol course more than twice

- Mechanical cervical dilatation (Bulb induction) is the first line of induction agent:
 - Pass a sterile Foley catheter (F16-18, with a 30 mL balloon) through the internal cervical os, during a sterile speculum exam or with vaginal examination; and inflate it with 30-50 mL of water.
 - Put it on gentle traction against the cervix by strapping the catheter to the thigh. To maintain gentle traction, periodic repositioning of the distal tip on the thigh may be necessary. Alternatively, it can be put on traction with a piece of string suspended over the foot end of the bed with 2x200 mL bags of fluid used as counterweight.
 - As soon as the bulb is expelled, do ROM or start oxytocin
 - Bulb induction should preferably not be done for patients with overt lower genital tract infection, severe immuno-compromised patients/AIDS or patients with ruptured membranes (cover with antibiotics if no other induction method feasible).

Observations-hourly

- Ensure close monitoring of drip rate.
- Foetal heart rate after contractions must be monitored and recorded.
- Contractions: Record their frequency, duration and strength. This must be charted on Partograph or other relevant chart.

AUGMENTATION OF LABOUR

Augmentation of labour is when labour is facilitated by ARM or oxytocin infusion. Indications:

- Inadequate uterine contractions;
- Slow progress of labour – as per partograph; and
- Malpresentation (only frank and complete breech) and malposition.

Augmentation is only for those mothers with a singleton pregnancy, in a cephalic presentation, and currently having slow progress of labour, or crossing the action line on the partogram.

Use caution and consult with the Obstetrician before augmenting in these situations:

- Previous C/S;
- Foetal distress (meconium liquor);
- Malpresentation; and
- Previous fresh stillbirths.

Management

- Explain to the mother and family about her progress, what you wish to do and why.
- Insert an IV cannula (16 or 18G) and hydrate with 1L NS or Hartman's solution.
- Consider ARM.
- Add Syntocinon 10 IU to 1 litre of normal saline or Hartman's solution and run as per protocol. Start at 5 – 10 drops per minute. Increase by 5-10dpm every 30 minutes, until labour is established (3-4 contractions in 10 minutes).
- **DO NOT EXCEED 60dpm of 10 IU of oxytocin.**
- Record 15 – 30 minutes observations of foetal heart rate, contraction frequency, duration and strength on the partogram.
- Regular bladder emptying with mobilization.
- Do a VE after 4 hours to assess progress. If there is no significant dilatation after 4 hours of augmentation and good strong contractions, consult with obstetrician about further management.
- Do not leave the woman unmonitored.
- If dilatation has occurred, continue with IV infusion for a further 2 hours. If no progress after 2 hours of oxytocin, consult Obstetrician.
- If foetal distress develops at any time, stop oxytocin drip, consult and prepare for transfer to referral hospital (e.g. VCH or NPH).
- If contractions become excessively strong and more frequent (more than 2 minutes, or lasting for more than 60 seconds) reduce the IV infusion rate to 20dpm. If no further signs of foetal distress increase as per regime.

Women being augmented with oxytocin need to be observed carefully for signs of uterine rupture and foetal distress due to sustained uterine contractions.

REFERENCES

1. World Health Organization, 2017. Managing complications in pregnancy and childbirth: a guide for midwives and doctors – 2nd ed. Geneva.
2. WHO, 2015. Integrated Management of Pregnancy and Childbirth: Pregnancy, childbirth, postpartum and newborn care: a guide for essential practice – 3rd ed.

CHAPTER 7: COMPLICATIONS OF LABOUR, DELIVERY AND IMMEDIATE POST DELIVERY PERIOD

ABNORMALITY OF THE FIRST STAGE OF LABOUR

OBSTRUCTED LABOUR

When the labour fails to progress because of mechanical problems (i.e. no further dilatation of the cervix or descent of the presenting part)

Causes:

- Deep transverse arrest
- Malpresentation: brow, shoulder, breech or face
- Malposition: occipito-posterior position
- Cephalo-pelvic disproportion
- Foetal abnormalities: locked twins, hydrocephaly
- Pelvic mass

Contractions may get weaker in primigravida, if obstruction has been present for some time: **however**, in a multipara the contractions usually remain strong until the uterus ruptures.

When labour has been obstructed for some time, the mother may become dehydrated or ketotic and is exposed to infection. The danger of obstructed labour is that a fistula or opening between the vagina and the bladder/rectum may form some days later if labour has been obstructed for a long time.

Example (Figure 7.1) of a completed partogram showing obstructed labour:

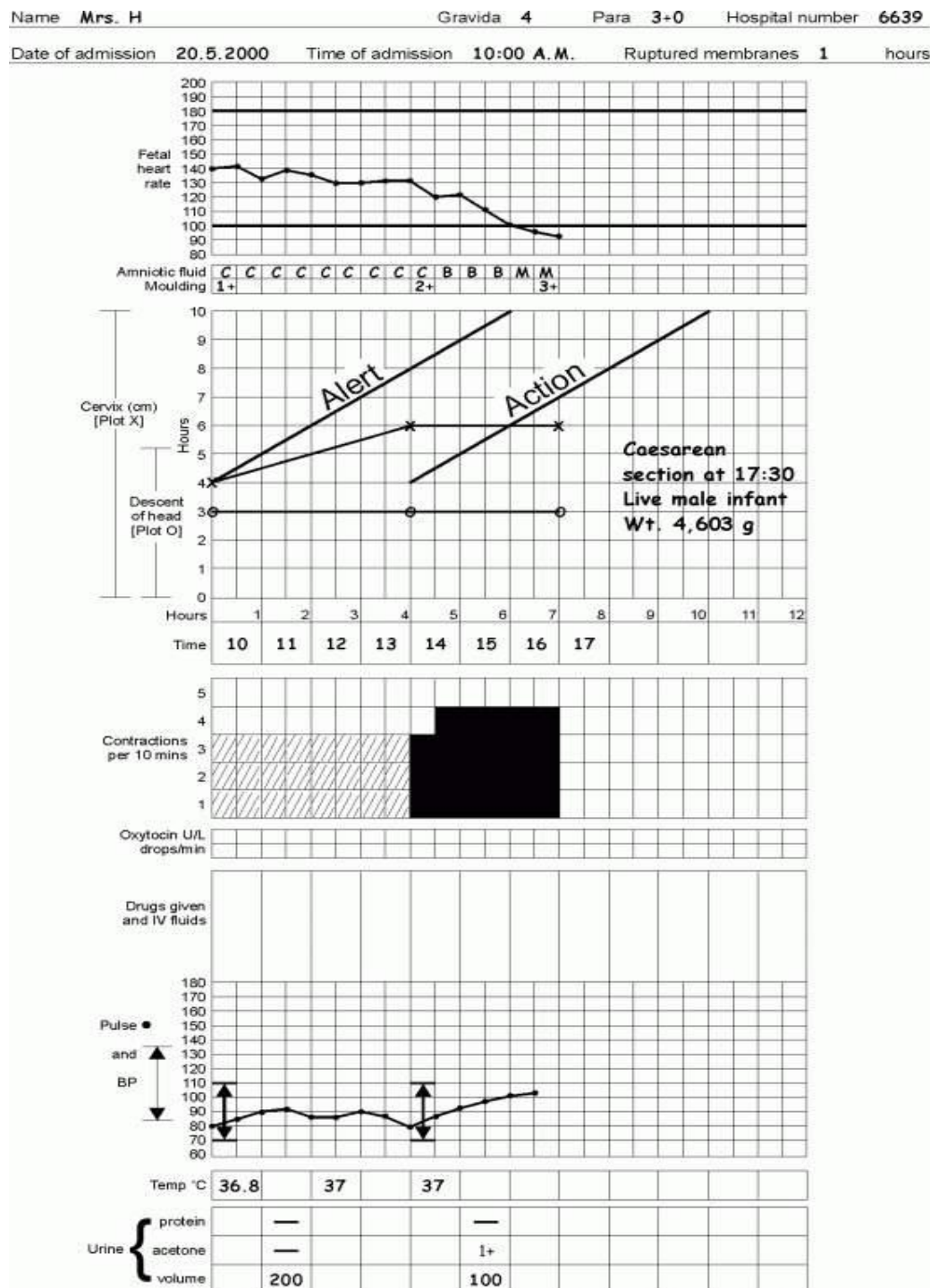
- Foetal distress (bradycardia);
- Poor cervical dilatation with action line crossed;
- Descent of the head poor;
- Moulding 3+;
- Meconium stained liquor; and
- Strong uterine contraction (4 in 10 minutes lasting more than 40 seconds).

With transverse lie (baby is lying across), it is impossible for the baby to be delivered vaginally. Therefore it will always obstruct. The woman should be transferred to NPH/VCH immediately for deliver by Caesarean section.

Management of Obstructed Labour

- Commence N/saline infusion, and broad-spectrum antibiotics IV. **Consult and refer patient to a doctor/obstetrician.**
- If delay in transfer or performing the caesarean section is anticipated, temporarily stop the contractions by giving nifedipine 20mg as per protocol.
- If the baby is alive, it should be delivered as soon as possible, by Caesarean section as appropriate.
- Prepare for neonatal resuscitation

Figure 7.1: Partogram showing obstructed labour



Management of the patient with partogram entries in figure 7.1

- The patient requires immediate referral for Caesarean section for the following reasons;
 - Foetal distress with meconium staining of liquor; and
 - Signs of obstructed labour: poor descent of the head, significant moulding crossed the transfer line.
- Place in left lateral position to ease aorto-caval compression.
- Stop contractions with Nifedipine or Salbutamol.
- Consult with Obstetrician and arrange for referral.

MALPRESENTATIONS AND MALPOSITIONS

Malpresentations are all presentations of the foetus other than vertex. Malpositions are abnormal positions of the vertex of the foetal head (with the occiput as the reference point) relative to the maternal pelvis.

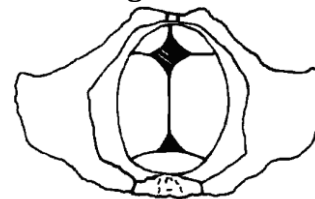
Importance of malpresentation and malpositions: An abnormal position or presentation may result in prolonged or obstructed labour.

More than 95% of births present with a head presentation; the remaining 3% present as breech.

Occipito-posterior position

- Foetal occiput is posterior in relation to the maternal pelvis (figure 7.2).
- On abdominal examination, the lower part of the abdomen is flattened, foetal limbs are palpable anteriorly and the foetal heart may be heard in the flank
- On vaginal examination, the posterior fontanelle is towards the sacrum and the anterior fontanelle may be easily felt if the head is deflexed.
- Common cause of slow progress in labour.
- Encourage bladder emptying if full.
- Put up IV to hydrate and augment the labour with syntocinon infusion as per usual practice if progress of labour slow.
- Assess progress. If there is full dilatation for 1 hour with no descent, it may be a sign of obstruction.
- Consult with the doctor to discuss transfer.

Figure 7.2

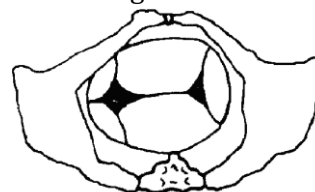


Occiput posterior

Occiput transverse position

- Foetal occiput is transverse to the maternal pelvis (figure 7.3). If an occiput transverse position persists into the later part of the first stage of labour, it should be managed as an occiput posterior position.

Figure 7.3



Left occiput transverse

Brow presentation

- Caused by partial extension of the foetal head so that the occiput is higher than the sinciput (figure 7.4).
- On abdominal examination, more than half the foetal head is above the symphysis pubis and the occiput is palpable at a higher level than the sinciput.
- On vaginal examination, the anterior fontanelle and the orbits are felt.
- Consult with the Obstetrician to discuss immediate transfer for delivery by Caesarean section.
- Catheterize if full bladder.

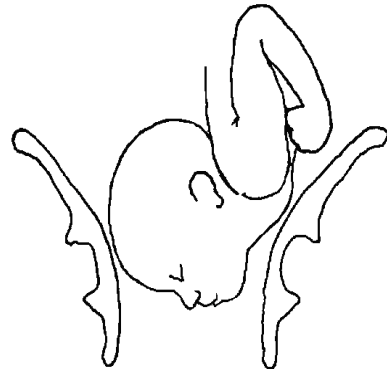
Figure 7.4: Brow presentation



Face presentation

- Caused by hyper-extension of the foetal head so that neither the occiput nor the sinciput are palpable on vaginal examination (figure 7.5).
- On abdominal examination, a groove may be felt between the occiput and the back.
- On vaginal examination, the face is palpated, the examiner's finger enters the mouth easily and the bony jaws are felt.
- Consult with the doctor to discuss immediate transfer.
- Catheterize if full bladder.

Figure 7.5: Face presentation



It is important to distinguish mento-anterior (chin anterior) position from mento-posterior (chin posterior) position as delivery may occur with mento-anterior position. In mento-posterior position the fully extended head is blocked by sacrum and requires delivery by Caesarean section.

Compound presentation (arm prolapsed with head)

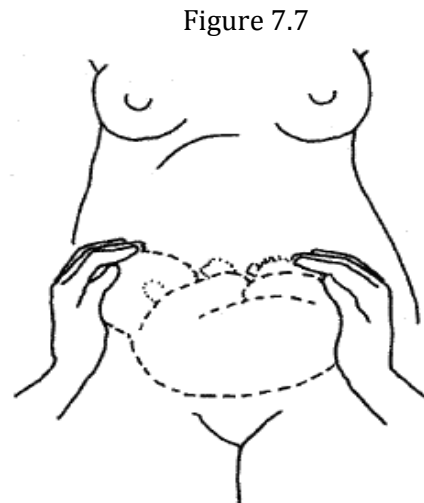
- Occurs when an arm prolapses alongside the presenting part (figure 7.6). Both the prolapsed arm and the foetal head present in the pelvis simultaneously.
- If there are signs of obstructed delivery, consult with the doctor to discuss immediate transfer.
- Catheterize if full bladder.

Figure 7.6



Transverse lie

- The long axis of the foetus is transverse with the shoulder as the presenting part (figure 7.7).
- If baby remains in transverse position after 36 weeks, consult with the doctor to discuss plans for delivery.
- On abdominal examination, neither the head or the buttocks can be felt at the symphysis pubis
- On vaginal examination, a shoulder, an arm and elbow, arm or hand may be felt in the vagina
- If transverse lie presents in labour consult with the doctor to discuss immediate transfer.



If oblique or transverse lie there is no need to refer before 34 weeks.

For doctors only:

- Attempt external version if not cephalic at 37 weeks if there are no contraindications.
- Consult/refer if malpresentation persists after 36 weeks.

BREECH PRESENTATION

If baby remains in a breech position after 36 weeks, consult with the doctor to discuss referral and or plans for delivery.

External Cephalic Version can be performed from 37 weeks **only in a hospital setting by the Obstetrician and** if there are no contraindications (i.e. APH, ruptured membranes, twins, previous caesarian section, and severe hypertension, reduced liquor volume, foetal distress). ECV is successful in about 60-70% of cases. If unsuccessful, repeat weekly. Complications of ECV are rare. ECV will not cause rupture of a normal pregnant uterus. Nifedipine 20mg may be used to relax the uterus.

If breech persists, the doctor will consider whether it is safe for baby to deliver vaginally, or whether caesarean should be done. Breech with extended legs is the safest breech presentation for vaginal delivery; footling breech is the most dangerous – see figure 7.8 for types of breech.

If a primigravida presents with a breech presentation in labour, consult with the doctor to consider transfer.

Figure 7.8: Types of breech



Complete breech – both legs at hips and knees. Occurs in 20% cases – acceptable for vaginal delivery



Frank (extended) breech – both legs are flexed at the hips and extended at the knees. This is the most common type (77% of cases) – favourable for vaginal delivery



Footling breech (10%) – either one or both hips and knees extended with one or both feet presenting. Carries a high risk of cord prolapse and generally recommended for C/S.

Breech delivery

With a breech presentation, the presenting part is either the buttock or feet. It occurs in 3% of deliveries.

Remember to be alert to the increased possibility of a breech presentation in the following clinical situations:

- Preterm labour – particularly before 30 weeks
- Grandmultiparity, polyhydramnios or oligohydramnios
- Twin pregnancy or higher multiples
- When frank meconium is evident with rupture of membranes

Assessment:

- Abdominal palpation: A hard, ballotable mass can be felt in the uterine fundus and a soft or irregular mass can be felt lying over the pelvic brim (foetal heart sounds are usually not heard in the lower pole of the uterus).
- Vaginal examination
 - The presenting part feels irregular - You cannot feel the fontanelles on the hard foetal skull.
 - May feel the pulsation of the cord near an irregular presenting part in either the footling or complete breech.
 - With a frank breech you only feel the buttocks and genitals and they are less hard and less irregular than feet and less frequently involve a cord.
 - May feel the straight line of the gluteal cleft which can be mistaken for a suture line of a vertex presentation.

Management

Preparation of the delivery area should include neonatal resuscitation equipment.

- If the woman presents in early labour refer after consultation with Obstetrician.

- If the woman presents in advanced labour and no time for referral, reassure the woman and her family. Consult with a colleague or a doctor for advice and assistance.
- Allow the mother to progress in labour normally.
 - Support her, as breech labour usually takes longer than cephalic labour.
 - Assess and document progress using the partogram. If poor progress, consult and transfer.
 - **Do not give oxytocin infusion for slow progress in the first stage and do not perform an ARM. Try and keep the membranes intact until the buttocks come on view at the vaginal introitus.**
 - Perform a vaginal examination when membranes rupture to detect if the has cord prolapsed.
- When fully dilated, put the woman in lithotomy position. Empty the bladder.
- Prepare for episiotomy if required i.e. the perineum is very tight.
- When fully dilated tell the woman she can bear down with the contractions once the buttocks have entered the vagina.

Delivery of the breech

Keep your hands off the breech. However, you can support the baby to turn during its passage in the birth cavity.

- **Ensure foetal wellbeing throughout the delivery process**
- **Observe the “three contraction rule” in the second stage** (see box below).

The second stage ‘three contraction rule’ –

Once the buttocks are crowned – you have **ONLY 3** contractions to safely birth the baby. You always need ‘good’ contractions in second stage

- Strong contractions, lasting 50 – 60 seconds
- Coming at least every 3 minutes – 3:10

If contractions in second stage are not strong start IV oxytocin augmentation

Delivery of the buttocks and legs

Do not pull but ensure baby’s back stays upwards.

- Encourage spontaneous breech delivery and only assist in keeping the foetal back facing upwards.
 - Let the buttocks deliver until the lower back and then the shoulder blades are seen. Gently hold the buttocks in one hand, but do not pull.
 - For extended knees and if the legs do not deliver spontaneously, assist by flexing at the knees and gently delivering each leg at a time.
 - Push behind the knee to bend the leg;
 - Grasp the ankle and deliver the foot and leg;
 - Repeat for the other leg.
 - After delivery of the trunk, allow the breech to hang, pull the cord down and cover the delivered parts with a cloth.
 - **Do not pull the baby while the legs are being delivered.**

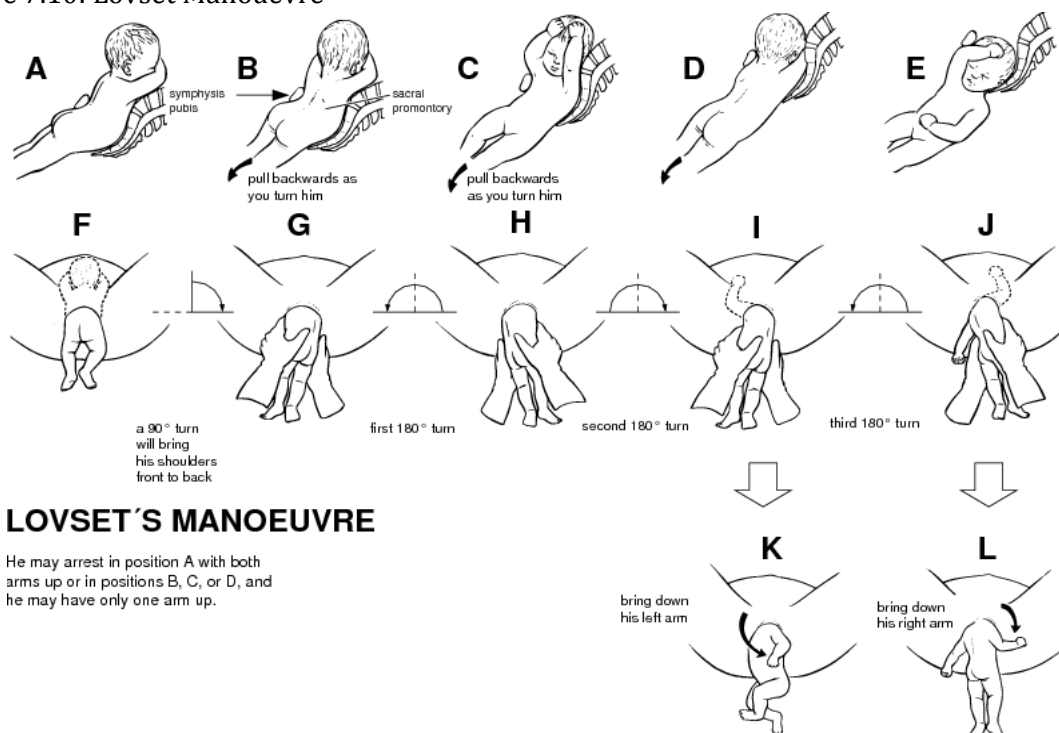
Delivery of the arms

- Arms are felt on chest:
 - Allow the arms to disengage spontaneously one by one - only assist if necessary.
 - After spontaneous delivery of the first arm, lift the buttocks towards the mother's abdomen to enable the second arm to deliver spontaneously.
 - If the arm does not spontaneously deliver, place one or two fingers in the elbow and bend the arm, bringing the hand down over the baby's face.
- Arms are stretched above the head or folded around the neck - when both shoulders and arms are NOT being delivered with second contraction attempt: use **Lovset's Method** (see diagram 7.10 below)
 - Never hold the baby's abdomen as this may cause kidney or liver damage – hold the bony pelvic girdle structures with thumbs directed upwards on baby's buttocks to stabilize the pelvic girdle.
 - Hold the baby at the hips, but do not pull (figure 7.9).
 - Lift as you turn – the shoulder will contact the pubic rami and adduct to reduce the bi-acromial diameter. The lift will encourage the arms to then deliver spontaneously.
 - The moves to be performed during a contraction with the mother pushing strongly to assist with baby's decent
 - Release of the arms: brace the humerus down to the elbow, keep the arm close to the body, sweep it across the face then down across the chest
 - Return the baby so its back is pointing up towards the mother's symphysis

Figure 7.9



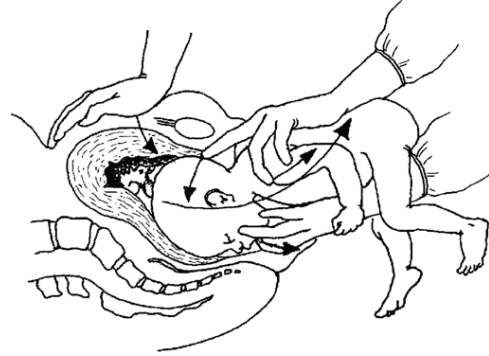
Figure 7.10: Lovset Manoeuvre



Source: PSRH, 2015. The Pacific Emergency Maternal and Newborn Training Manual

- When nape of neck (baby's hairline) is NOT in view at the end of second contraction: perform **Mauriceau Smellie Veit (MSV)**
 - Suprapubic external pressure by assistant: push the baby's head down towards the sacral curve. This will flex the baby's chin down on the chest and also pushes the head down under the pubic arch.
 - Deliver the head by laying the foetus over the right forearm (right-handed midwife or doctor), the left middle finger as far up on the baby's head as possible with the index and ring fingers resting on the baby's shoulders to prevent hyperextension of the head. Keep pushing down on the occiput with the middle finger as high as you can reach on the head to follow the sacral (downward) curve of her pelvis.
 - Deliver the head by laying the foetus over the right forearm (right-handed midwife or doctor), the left middle finger as far up on the baby's head as possible with the index and ring fingers resting on the baby's shoulders to prevent hyperextension of the head. Keep pushing down on the occiput with the middle finger as high as you can reach on the head to follow the sacral (downward) curve of her pelvis (figure 7.11).
 - At the same time, apply gentle pressure on the cheek bones with the right hand ring and index fingers. Bring the chin, nose then the rest of the head out slowly lifting the baby up onto the mother's tummy in a continuous gentle curve without hyperextending the neck.
 - Ease the baby out, with gentle traction, and continuous flexion.

Figure 7.11: Delivery of the Head



Post delivery

- Be prepared for neonatal resuscitation (you will need help). If baby requires resuscitation refer to page - on neonatal resuscitation.
- If the baby is in good condition, allow skin to skin contact with delayed cord clamping.
- Clamp and cut the cord.
- Give oxytocin 10 units IM within one minute of delivery and continue active management of the third stage.
- Examine the woman carefully and repair any tears to the cervix or vagina or repair episiotomy if this was performed.

ABNORMALITIES OF THE SECOND STAGE OF LABOUR

Prolonged second stage

Delivery has not occurred after 45 minutes of pushing in a nullipara, or 30 minutes of pushing in a multipara. If the woman is not bearing down after 1 hour of full dilatation:

- Re-examine the woman to make sure the cervix is fully dilated.
- Rupture the membranes if they are intact.
- Exclude CPD or foetal distress: if found, arrange caesarean section.
- Attempt delivery by asking the woman to bear down.
- If these efforts do not result in delivery efforts at a health center, transfer to hospital; unless skills and equipment for vacuum extraction are available (see below).

- f. Consider augmentation for nulliparous women only.
- g. Continue routine monitoring of labour.
- h. Re-assess after one hour: if still no delivery efforts, consider vacuum extraction (refer to vacuum extraction guide).

Vacuum Extraction

Indications for Vacuum Extraction include:

- Delay in the second stage.
- To minimise maternal effort in some conditions in such as heart disease, severe pre-eclampsia, eclampsia, severe anaemia, respiratory distress from any cause, previous Caesarean Section.
- Foetal distress in the second stage.

Vacuum extraction (ventouse delivery) may be performed at Health Centres by experienced midwives and in hospital in consultation with obstetrician

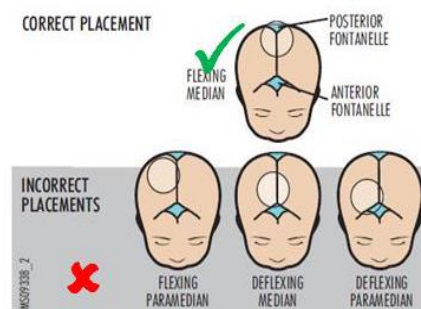
Conditions for safe vacuum extraction include:

- Woman fully informed and co-operative;
- Cephalic presentation;
- No head palpable above the brim - 0/5;
- Position of the presenting part known – occipito-anterior position;
- Cervix fully dilated;
- Membranes ruptured;
- Bladder empty; and
- Strong uterine contractions (duration >40 seconds duration).

Technique

- Check the equipment thoroughly before use by testing suction on the gloved hand.
- Aim for a negative pressure of at least -0.6 Bar to -0.8 Bar in the cup (do not exceed a pressure of 0.8 Bar/80 Kilopascal/600 mmHg- the red zone).
- Insert the cup gently into the vagina and position it as far back as possible on the baby's head (figure 7.12). Ensure that no vaginal or perineal tissue is caught by the rim of the cup.
- Get your assistant to pump the pressure straight up to 80 mm.
- Apply traction only during contractions after formation of chignon.
- Encourage the mother to push with a contraction.
- If there is progress after 2 contractions/pushes/pulls continue for a maximum of another 2 contractions/pushes/pulls.
- The vacuum extraction has failed if:
 - There is no noticeable head descent during traction;
 - There has been no clear progress after 2 contractions / pushes / pulls;
 - There have been 2 cup detachments with functioning equipment; and
 - If the baby is undelivered after 30 minutes.
- Failed vacuum extraction requires caesarean section unless the baby's head has already

Figure 7.12: Placement of the Vacuum cup



Source: PSRH, 2015. The Pacific Emergency Maternal and Newborn Training Manual.

extended and can be easily delivered by pushing without further use of the vacuum extractor.

- Be ready for possible need for neonatal resuscitation if successful.
- Apply active management of the 3rd stage (AMSTL) of labour.
- Write up the procedure fully: indication, initial findings, times, cup type and size, number of pulls, number of detachments, and infant's condition at delivery.

EMERGENCIES DURING LABOUR

Cord Presentation and Prolapse

Overt Cord presentation – the umbilical cord lies below the presenting part and the amniotic membrane remains intact.

Occult cord presentation – loop of cord lies along side, instead of in front of the presenting part and may not be felt during vaginal examination.

Cord prolapse – an umbilical cord is felt in front of or beside the presenting part with ruptured membranes.

Management

Cord presentation

- Explain the situation to the woman & ensure verbal consent for any planned interventions.
- Place woman in knee-chest position or exaggerated Sim's position i.e. lie on left side with 2 pillows below hips).
- Notify the Obstetrician at VCH. Prepare for transfer if appropriate.
- Administer 100% O₂, 8L/min, if available.
- Establish IV access, cross match/ G&H and urgently refer the woman to the hospital.

Cord prolapse – this is an emergency for immediate delivery

- Call for help.
 - Explain situation to woman and obtain verbal consent for any planned intervention.
 - Place woman in knee-chest position (figure 7.13) or exaggerated Sim's position to reduce cord compression. If cord is visible at introitus, carefully replace it in the vagina to minimize chilling and vasospasm.
 - Assess the situation – especially cervical dilatation and FHR
-
- If Oxytocin infusion is ongoing, **STOP IMMEDIATELY**, unless cervix is fully dilated and delivery is imminent.

Figure 7.13: Knee chest position



- Bladder filling and clamp catheter with 500 – 700 mls of normal saline to relieve the presenting part off the cord if not ready to deliver.
- Prepare for immediate transfer
- Administer 100% - O₂, 8L/min.
- Secure IV access, cross match blood transfusion.
- In hospital, before starting caesarean section ensure that the foetus is alive.

Should there be any delay in referral to the hospital consider:

- Maintain manoeuvres as above during transportation to the hospital.
- Commence Nifedipine 20mg stat oral.
- Document all important events and treatment.
- Prepare for neonatal resuscitation.

SHOULDER DYSTOCIA

Shoulder dystocia is an obstetric emergency. It occurs when the shoulders are difficult to deliver after the head has been born. **Shoulder dystocia may occur for any baby but is most common in large babies, postdates, gestational diabetes, prolonged 1st stage of labour, obese mothers and previous history of shoulder dystocia.** Shoulder dystocia may occur in women who have an instrumental delivery (such as a vacuum delivery).

- **Shoulder dystocia cannot be predicted.**
- Diagnosis: Presence of the turtle sign (analogous to a turtle withdrawing into its shell), - retraction of the foetal head against the perineum.
- For shoulder dystocia, wherever possible, call the doctor to come **immediately**.
- Follow these steps:
 - Call for help
 - Do not pull on the foetal head as this causes significant damage to the baby
 - McRobert's manoeuvre
 - Suprapubic pressure
 - Axillary traction
- Remember mnemonic – **HELPER**
- **H:** Call for **Help**.
- Empty bladder – may have to catheterize.
- **E:** An **Episiotomy** may be required, therefore be prepared.
- **L:** **Legs** in McRobert's position - Prepare immediately for McRobert's maneuver.
 - Immediately move the woman to the edge or to the lower end of the delivery bed.
 - Ask 2 assistants to push the flexed knees almost touch her shoulders as demonstrated in Figure 7.14.

H: Call for HELP
E: Assess for EPISIOTOMY
L: LEGS in McRobert's position
P: Suprapubic PRESSURE
E: ENTER the vagina (axillary traction)
R: REMOVE the posterior arm
R: ROLL the woman over and try again

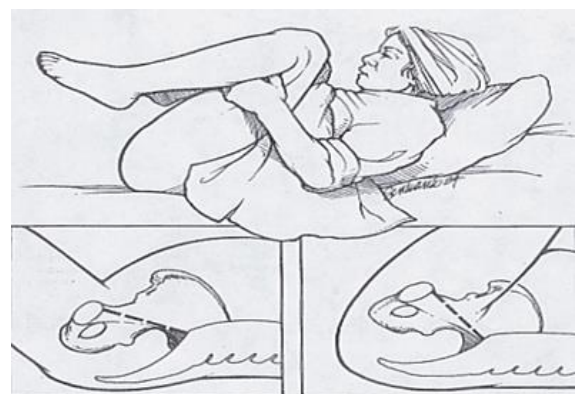


Figure 7.14: McRobert's position

- **P:** Ask a 3rd assistant to press behind the symphysis pubis bone on the abdomen rolling the baby's shoulder forward under the suprapubic bone (suprapubic pressure, see figure 7.15).
 - Main attendant delivers the baby by downward pressure or pull. This will help to deliver anterior shoulder. Ask the woman to push, even if she does not have a contraction
 - Attempt GENTLE lateral traction of the foetal head but do not stretch the neck or jerk forcefully on the head.

Figure 7.15: Supra pubic pressure



Source: PSRH, 2015. The Pacific Emergency Maternal and Newborn Training Manual.

- **E & R: Enter** the vagina and **Remove** posterior arm: follow steps outlined in figure 7.16: Axillary traction)
 - In presence of Bilateral shoulder dystocia, neither of the shoulders has entered the pelvic cavity - the shoulders may be in transverse diameter of the pelvis
 - Enter the vagina posteriorly and grasp the axilla from behind
 - Push the shoulder towards the foetal chest to the nearest oblique diameter and apply axillary traction downwards – the anterior shoulder may deliver in the larger oblique diameter
 - If unable to free the shoulder in the oblique diameter, continue to push the foetal shoulder toward the chest until the opposite shoulder is in the posterior aspect of the pelvis then deliver as for unilateral shoulder dystocia
- An alternative method is to rotate the baby through 180 degrees to bring the posterior shoulder forward.
- During rotation hold both the arm and the head to facilitate rotation and reduce the risk of injury to the baby.
- Post-delivery:
 - After the baby is born, manage the third stage like any other births. PPH is a common complication.
 - Insert and IV line and refer to management of PPH.
 - Check uterus for firmness frequently in the first 15 min, then every 15 minutes for 2 hours, then hourly for 4 hours. Check her temperature 6 hourly, for 2-3 days.
 - Irrespective of the outcome for the baby, debrief the woman after the delivery, giving a full explanation of the emergency management and potential complications.

Figure 7.16: Axillary traction



Step1: Enter posteriorly – hand sliding along fetal neck



Step 2: GRASP



Step 3: Anterior and posterior views demonstrating placement of the fingers in order to secure a grasp on the fetal shoulder



Step 7: The anterior shoulder delivered by gentle lateral traction



Step 4: With the thumb on top of the shoulder, traction is applied with the index finger through the axilla whilst the second finger secures the arm against the body



Step 5: The anterior shoulder pivoting around the symphysis



Step 6: The posterior shoulder delivering over the perineum



Step 8: The fetal shoulders in the transverse diameter of the pelvis

Source: PSRH, 2015. The Pacific Emergency Maternal and Newborn Training Manual.

Figure 7.16 continued



Step 9: Rotation of the foetal shoulder towards the foetal chest into the oblique diameter of the pelvis

Source: PSRH, 2015. The Pacific Emergency Maternal and Newborn Training Manual.



Step 10: The fetal shoulder freed from the pelvis in the oblique diameter

ABNORMALITIES OF THE THIRD STAGE OF LABOUR

Postpartum Haemorrhage (PPH)

Definition PPH – when blood loss measures 500 ml or more following delivery. Severe PPH is defined as blood loss of > 1000 mls. Blood loss is usually underestimated as blood trickles and is not measured. Bleeding may occur at a slow rate over several hours and the condition recognized only when the woman suddenly goes into shock.

A woman with a normal Haemoglobin is likely to tolerate blood loss, however loss of small amounts can be fatal for a woman with low Haemoglobin.

Types of Postpartum haemorrhage

- Primary PPH: Excessive vaginal bleeding within 24 hours of childbirth
- Secondary PPH: Excessive vaginal bleeding 24 hours following childbirth until 6 weeks after childbirth

Causes of PPH

The causes of PPH are classified into 4 groups (see table 7.1). For ease of recall, the MNEMONIC 4Ts is used.

Table 7.1: Main causes of postpartum haemorrhage

Main causes of PPH (4T's)	Specific causes
Tone	Atonic uterus
Trauma (Genital)	Cervical, vaginal and perineal laceration, vulval / pelvic haematoma, uterine inversion and ruptured uterus
Tissue	Retained tissue/membranes, retained placenta
Thrombin	Coagulopathies (blood clotting disorders)

All women should be considered at risk of Post-partum Haemorrhage and haemorrhage prevention through practice of the active management of the third stage of labour must be a part of every birth.

Prevention

PPH and its complications can be prevented by:

- Ensuring skilled attendance at delivery.
- Iron supplementation in pregnancy and antenatal screening and treatment of anaemia.
- Prevention of prolonged labour by using the partogram and instituting appropriate actions for poor progress in labour.
- Performing active management of the third stage of labour with all labours.
- Identifying women at risk for atonic uterus and giving additional oxytocin after active management of the third stage.
 - Have IV cannula inserted (preferably 16G in each arm). Collect bloods for FBC, Group and X-match if facilities available.
 - Massage the uterus immediately, and keep it contracted after placenta is delivered.
 - IV infusion commenced with 40 units of Oxytocin added to 1L N/Saline or Hartman's over 4 hours.
 - Misoprostol 800mcg (200mcg x 4 tabs) rectally (if available) can be given prophylactically or if bleeding continues.
- Close monitoring of vital signs, uterine contraction and bleeding in the fourth stage of labour.

Management of PPH

Health workers should take emergency steps listed below to arrest bleeding and achieve fluid resuscitation. Patients with PPH, wherever possible, should be adequately stabilized before transfer from health center to hospital.

Management of PPH should proceed as follows:

- **Call for help** and massage/rub the uterus to expel clots and induce contraction.
- Establish IV access: Insert 16G cannula (x 2) and start a rapid infusion with 1 litre Hartman's solution/Normal Saline solution in one arm followed by (Gelfusion if available). Continue to give 3 litres of IV fluids over 1 hour if bleeding excessively.
- In the other arm start oxytocin 40 units in 1 litre Hartman's solution at 83 drops/ min (250 mL/hour).
- Insert 800 mcg misoprostol rectally
- Collect bloods for FBC, Group and X-match.
- Insert an indwelling urinary catheter and assess amount of urine output.
- Check placenta: if retained or incomplete, proceed as for retained placenta discussed in the below. See table 7.2 for more action depending on cause of bleeding.
- Take observations and document every 5 minutes until no further deterioration.
- Supplement 100% O₂, 6-8 L/min by mask.
- Reassure woman and explain to family. **Document all events clearly.**
- Estimate or measure blood loss (weigh pads or sheets if necessary).

Table 7.2: Management of bleeding by cause

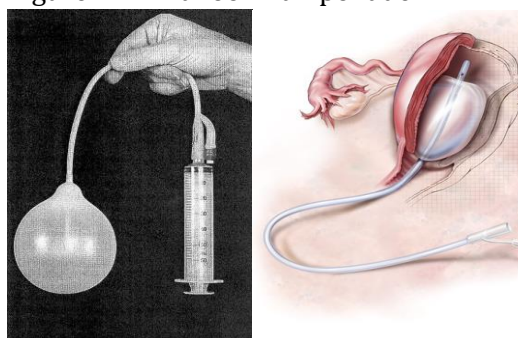
Main Causes	Action
A. Tone: Uterus is not well contracted	A. Call for help. Rub up uterus and empty bladder. Put 40units of Oxytocin into 1 Litre IV fluid and run over 4 hours. B. Misoprostol 800 mcg (4 tablets) rectally STAT
C. Trauma: Vaginal, perineal or cervical tears	B. Call for help. Examine under good light and assistance. Identify the tear. Suture the tears; Refer if not able to suture.
C. Tissue: The placenta is retained. Get it out by: - CCT, do vaginal examination as it may be caught in the cervix.	Call for help. Put 40units of Oxytocin into 1 Litre IV fluid and run over 4 hours. Misoprostol 800 mcg (4 tablets) rectally STAT Explore uterus and evacuate clots and feel for tears or retained placental tissue. This is usually performed under anaesthetics. Talk to your doctor if in the rural health facility.
D. Thrombin: Coagulopathies (blood clotting disorders)	Fresh frozen plasma and whole blood

Persistent PPH

The above measures will control over 90% of cases of PPH. If the patient is still bleeding:

- **CALL FOR HELP. Consult the doctor or Obstetrician at VCH or NPH.**
- Re-examine to ensure there are no causes of bleeding that have been missed.
- Ensure indwelling catheter inserted for monitoring urine output hourly.
- Intrauterine balloon or condom tamponade (figure 7.17) may be applied in the treatment of PPH where uterine atony is the only or main cause of haemorrhage. Technique
 - Insert into uterus
 - Inflate with 400-500cc warm saline
 - Keep 24 hrs
 - Continue oxytocin 40 units in 1 liter Hartman's solution

Figure 7.17: Balloon Tamponade



Source: Dr Muhammad El Hennawy presentation

- Perform bimanual compression (figure 7.18) by inserting right-gloved fingers behind the cervix and pressing upwards against the left hand, which is pressing on the fundus of the uterus thus compress the uterus between the two hands. This will reduce the amount of blood loss while the help arrives.

Packing the uterus is ineffective, may lead to concealment of bleeding, wastes precious time and predisposes to infection

- Look at blood passed for clotting; if not clotting this is DIC and she urgently needs many units of fresh whole blood at least 6 units. Call for relatives to donate blood so fresh O+ve blood might be given.
- If in a health centre, continue to treat shock with IV N/Saline or Hartman's + Gelfusion, continue bimanual compression and prepare to transfer to hospital when the woman is stable.
- If you think, she has lost 2 litres of blood, aim to give 4-6 litres of IV Fluid over short time. Lookout for danger sign of fluid overload - swollen face and crackles in the lungs.
- Ensure clear and timely documentation.
 - Observation – vital signs and urine output

- Continue talking to relatives and the doctor/obstetrician.
- Further management may require surgical intervention by the Obstetrician

Other method of controlling bleeding

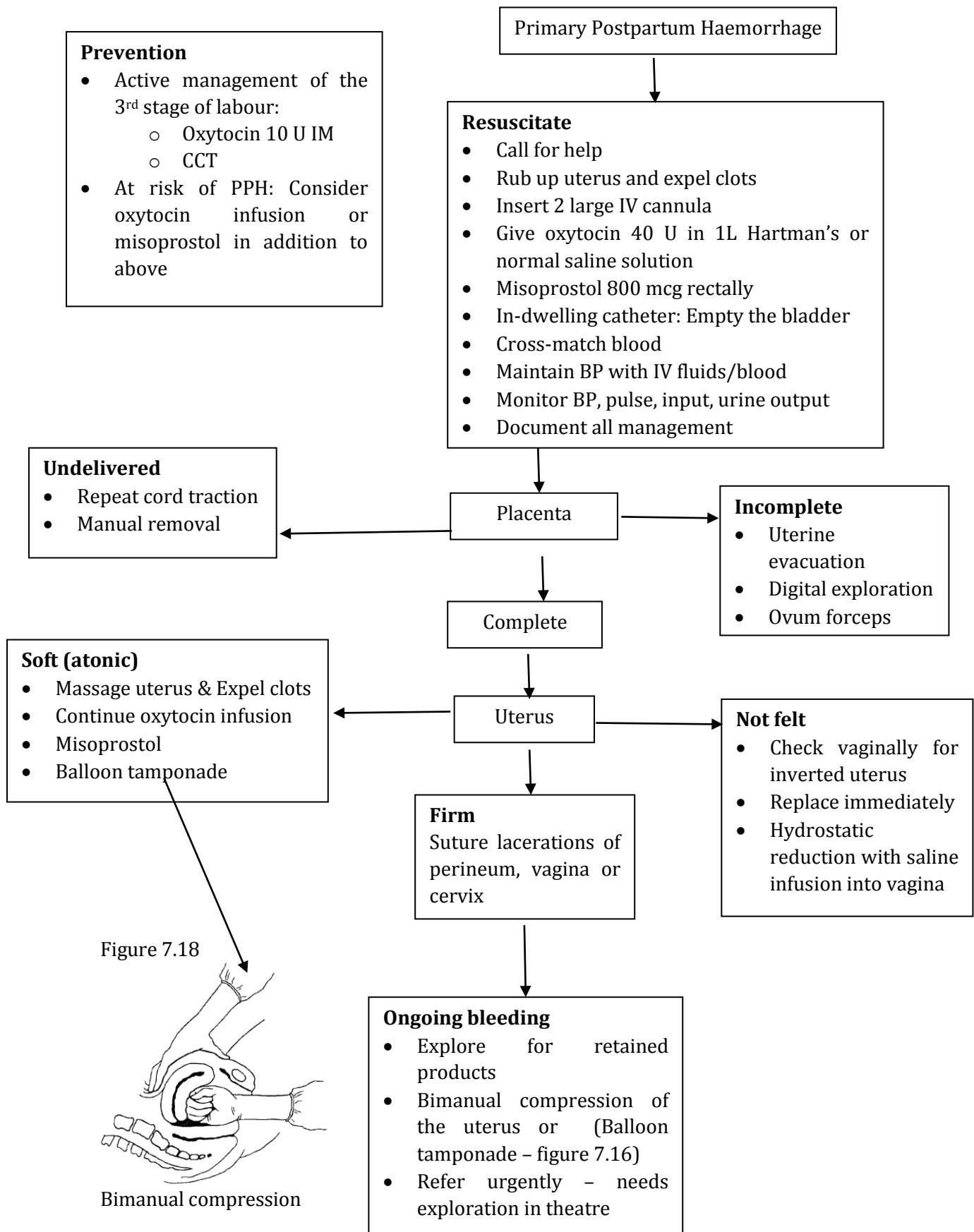
Secondary PPH

- Bleeding occurring after 24 hours up to 6 weeks post-delivery. Bleeding can be light or heavy, continuous or irregular and foul-smelling
- Usually retained products of conception associated with infection
- Uterus softer and larger than expected for elapsed time since delivery
- Signs of anaemia may be present

Treatment

- Give oxytocic drugs if bleeding heavily and misoprostol 800 mcg rectally
- Resuscitation with 1L N/Saline, Hartman's, or blood as appropriate/available.
- Ampicillin 1gm IV qid, Gentamicin 240mg IV daily Metronidazole 500mg IV tds or oral equivalents (Amoxyl/Flagyl).
- If the cervix is dilated, explore by hand to remove large clots and placental fragments.
- If the cervix is not dilated, consult the doctor and transfer to the hospital for ultrasound scan and blood tests.
- X-match and give blood if Hb has fallen below 7g/dl or symptomatic for anaemia.
- Ensure clear and timely documentation.

Figure 7.19: Management of Primary Postpartum Haemorrhage (PPH)



RETAINED PLACENTA

The placenta is retained when it is not delivered from the uterus within 30 minutes of delivery of the baby. At times, the placenta is not truly retained, and it may be removed by simply lifting it out of the vagina, or manually helping it out of the cervix.

Retained Placenta is unpredictable but predisposing factors include:

- Multigravidae
- Previous retained placenta
- Previous c/section.

Retained placenta may be partial with bleeding, or complete with no active bleeding (morbidly adherent).

Management:

- Call for help
- Insert IV line using cannula 14 or 16 gauge cannula
- Collect blood for FBC and X-match.
- Run Oxytocin 20 units in 1 litre normal saline, run at 4 hourly rates.
- If placenta is partially separated and actively bleeding:
 - Attempt to remove the placenta by CCT.
 - Keep massaging the uterus.
 - If placenta is not delivered in 1 hour after the delivery of the baby or if heavy vaginal bleeding continues, prepare for manual removal of placenta.
- Consult and refer.
- If there is active bleeding manual removal of the placenta should be carried out by a provider with skills to perform the procedure. **DO NOT ATTEMPT TO REMOVE THE PLACENTA IF THERE IS NO BLEEDING.**
- **NOTE: Morbidly adherent placenta usually does not bleed and attempt should not be made to remove it unless in theatre where an urgent hysterectomy can be performed if bleeding starts.**

Preparation & Technique of manual removal

- Discuss with the Obstetrician at VCH.
- Analgesia if available
- Explain to the woman the need for manual removal including possibility of hysterectomy and obtain consent.
- If mother has signs of shock or has excessive bleeding, treat as for PPH.
- Collect bloods as above and insert second IV cannula.
- Insert urinary catheter.
- Clean the vulva & perineal area; wash hands and forearms well and put long sterile glove if available.
- Lubricate and insert right hand into vagina and up the uterus gently. Hold the fundus with the left hand in order to support the fundus of the uterus and to provide counter-traction during removal.
- Move the fingers of the right hand sideways until the edge of the placenta is located and start detaching the placenta. Proceed gradually all around the placental bed until the whole placenta is detached.

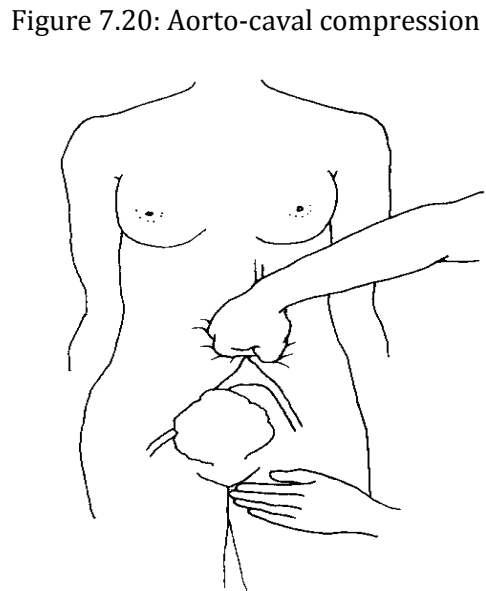
- Then, withdraw the right hand from the uterus bringing the placenta with it.
- Explore the inside to make sure there are no fragments left behind and examine the uterine surface of the placenta to ensure all lobes & membranes are complete.
- Refer the woman urgently to the hospital if the placenta cannot be removed.

After manual removal of the placenta

- Repeat oxytocin 10 units IM/IV; continue to massage the fundus of the uterus to encourage a tonic uterine contraction.
- Give ampicillin stat 1g 6hrly IV for first 24 hours. Then continue as with oral Amoxyl and oral Flagyl for 5 days.
- If fever > 38.5 degrees, add gentamycin 240mg IV, then daily for 5 days.
- If bleeding continues: Give oxytocin 10 IM Units
- Then use 40 units of oxytocin in 1L of Normal Saline/Hartman's and run at 4hourly rate.
- Insert Misoprostol 800mcg rectally (200mcg x 4) stat if available and **refer the woman urgently to hospital.**

If severe bleeding occurs before or during transportation, do bimanual or aorto-caval compression (see figure 7.20). This is a very uncomfortable situation but it could buy time before the help arrives.

- Lie the women flat, press with clamped fists over the abdominal aorta
 - Point of compression is just above the umbilicus and slightly to the left.
 - Aortic pulsations can be felt easily through the anterior abdominal wall in the immediate postpartum period.
- With the other hand, palpate the femoral pulse to check the adequacy of compression
 - If the pulse is palpable during compression, the pressure exerted by the fist is inadequate
 - If the femoral pulse is not palpable, the pressure exerted is adequate
 - Maintain compression until bleeding is controlled.



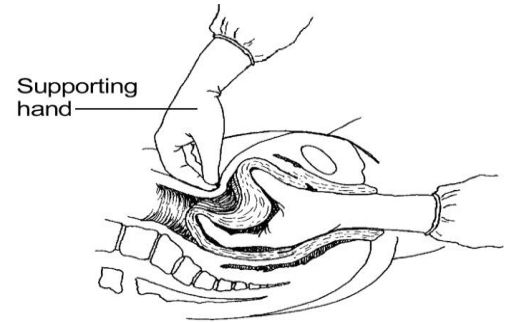
ACUTE INVERSION OF THE UTERUS

Acute inversion of the uterus may result from inappropriate cord traction on a fundal placenta in a flaccid uterus, without providing the necessary upward counter-pressure on the uterus, however, it may occur spontaneously. Clinical shock may be greater than expected for the amount of blood loss. This emergency requires immediate action.

- Call for help
- Commence resuscitation measures immediately (refer to Chapter 8 on Maternal Collapse).
- Order blood for transfusion if there is haemorrhage.
- Do not remove the placenta if it is still attached to the uterus.
- Stop oxytocin if she had an oxytocin drip to stop uterine constrictions.
- Reduce the inversion by:

- Placing the flat hand against the inverted surface of the uterus and push the uterus (with placenta if attached – see figure 7.21) as high up into the vagina as possible and hold that position for several minutes. Reduction should occur with sustained upward pressure.
- If reduction is not achieved, attempt reduction by hydrostatic correction in consultation with the Obstetrician. Place the woman in deep Trendelenburg position (lower her head about 0.5 metres below the level of the perineum).
 - Infuse 500-1000 mL of warm saline into the vaginal posterior fornix via IV administration set held 1-2 metres above the patient while an assistant blocks the vaginal orifice.
 - The water distends the posterior fornix leading to increase in the circumference of the orifice which in turn relieves cervical constriction hence correcting the inversion.
- Once reduction is achieved, give oxytocin infusion 40 units in 1 L N/S at 83 drops/min (250 mL/hour). Do not remove the hand from the uterine cavity until a firm uterine contraction is felt.
- Carefully deliver the placenta when signs of separation are observed.
- If the placenta is not expelled spontaneously from the uterus, manual removal needs to be done in theatre.
- Observe the woman closely for haemorrhage or re-inversion.
- Provide antibiotic coverage and analgesia.
- Document all vitals and procedures.

Figure 7.21: Manual reduction of inverted uterus



Failed reduction requires laparotomy. Refer urgently to hospital and alert the obstetrician.

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3. Ministry of Health, 2013. Vanuatu Health Worker Manual: Standard Treatment Guidelines. 3rd Edition
4. PSRH, 2015. The Pacific Emergency Maternal and Newborn Training Manual.
5. WHO, 2017. Integrated Management of Pregnancy and Childbirth: Managing complications in pregnancy and childbirth: a guide for midwives and doctors – 2nd ed.
6. WHO, 2015. Integrated Management of Pregnancy and Childbirth: Pregnancy, childbirth, postpartum and newborn care: a guide for essential practice – 3rd ed.

CHAPTER 8: MATERNAL COLLAPSE OR SHOCK

Maternal collapse is defined as severe respiratory or circulatory distress that may lead to a rapid change in level of consciousness or cardiac arrest if untreated. Shock or collapse is a life-threatening condition that requires immediate and intensive treatment. Maternal collapse can be caused by circulatory collapse, respiratory collapse and conditions in the central nervous system.

Its onset can be rapid or progressive. Table 8.1 shows the changes in a woman's vital signs that should trigger an emergency response.

Table 8.1: Observations that should trigger an emergency response

Airway	Obstructed or noisy
Breathing	Respiratory rate more than 35 or less than 5 breaths per minute
Circulation	Pulse rate more than 140 beats or less than 40 per minute. Systolic BP less than 80mmHg or more than 10mmHg
Neurology	Sudden decrease in level of consciousness; Seizures

Causes of Maternal Collapse or Shock

The causes of maternal collapse (table 8.2) can be loosely described as affecting one of six 'H's: the Head, Heart, Hypoxia, Haemorrhage, Whole body and Hazards

Table 8.2: Possible causes of maternal collapse

Head	Eclampsia, epilepsy, cerebrovascular accident, vasovagal response (a faint)
Heart	Myocardial infarction, arrhythmias, peri-partum cardiomyopathy, congenital heart disease, aortic dissection
Hypoxia	Asthma, pulmonary embolism, pulmonary oedema, anaphylaxis
Haemorrhage	Abruption, uterine atony, genital tract trauma, uterine rupture, uterine inversion
Whole body & Hazards	Hypoglycaemia, amniotic fluid embolism, septicaemia, trauma, anaesthetic complications

Initial management

- Call for help. Note the time.
- Assess level of consciousness (Glasgow Coma Scale) and take vital signs. Use DR ABC approach (Danger, Responsiveness, Airway, Breathing and Circulation) to rapidly assess level of consciousness.

Table 8.3: DR ABC Approach for assessment of level of consciousness

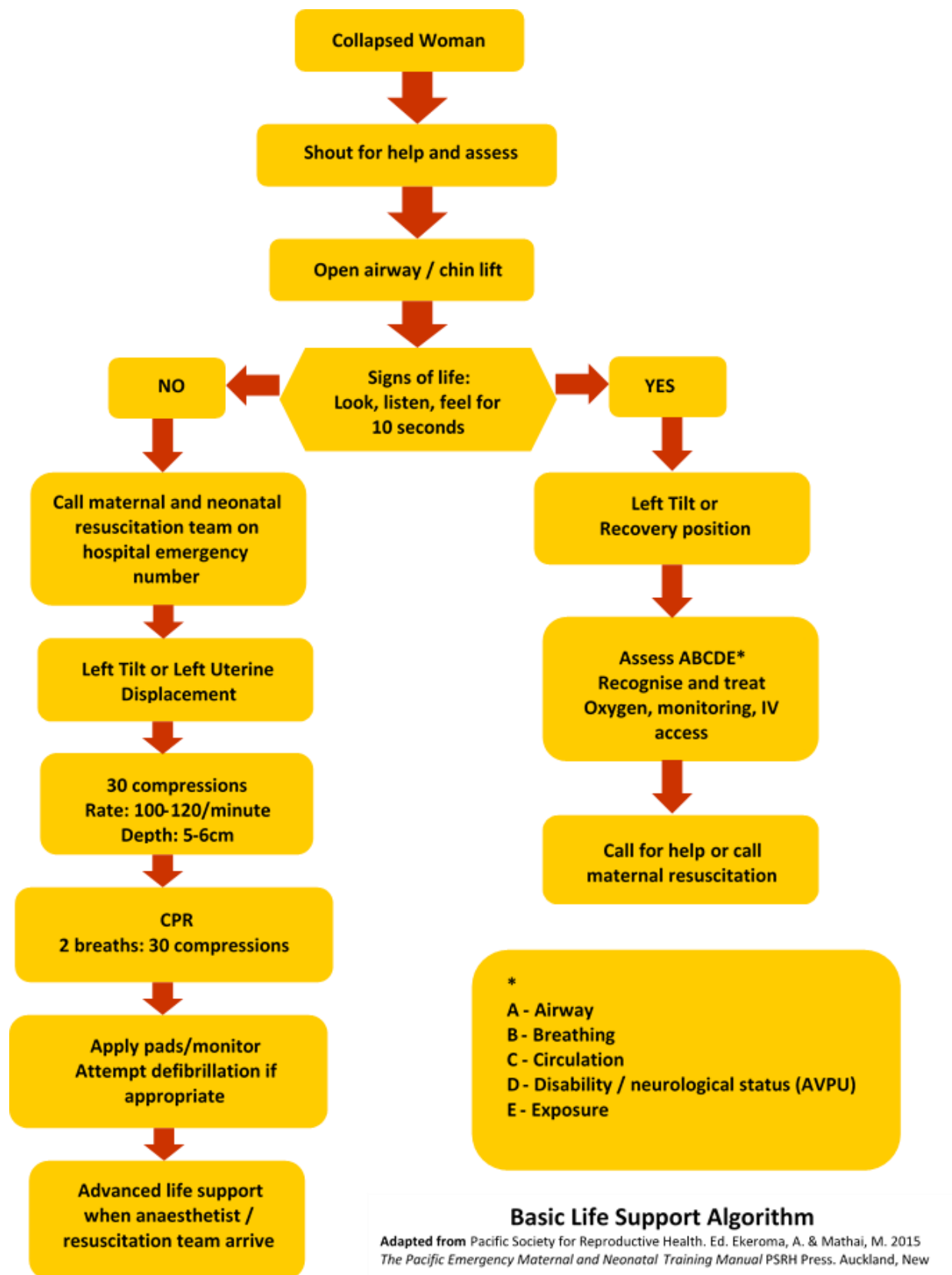
D	Check for any DANGER to yourself
R	Assess the RESPONSIVENESS of the woman
A	Make sure she has an open AIRWAY using chin lift and head tilt.
B	Assess her BREATHING by looking for movement of the chest wall, listening for breath sounds or feeling for air on your cheek
C	If there are no signs of life you will need to start basic life support to maintain her CIRCULATION until help arrives

- Initiate emergency resuscitation if no signs of life (Refer to figure 8.1 page 104).
- Allocate duties assistants - i.e. to take blood, put up IV line, medications, scribe/write notes etc.
- When woman shows signs of life, place in left lateral recovery position and give oxygen
- Take blood for X-match, group & hold, FBC, UEC & BGL (Blood Glucose Level).
- Insert IV access with 16G x 2 sites and commence IV fluids as per flow chart.
- Stabilise the patient, determine cause of collapse and commence appropriate treatment based on cause of the collapse
- Monitor: respiratory rate, BP, pulse, temperature. If pregnant, monitor baby
- If possible, establish cause of collapse and initiate appropriate treatment whilst awaiting referral
- Consult Obstetrician for immediate referral and continue treatment.

Documentation

- Time of collapse noted in clinical notes.
- Document actions, times, medications, people present in clinical notes, and progress.
- Check FHR
- Document patient condition with good notes
- Use these summary notes to consult with Obstetrician for immediate referral.

Figure 8.1: Algorithm on Basic Life support Algorithm



Source: Pacific Emergency Maternal and Newborn Training Manual,

CHAPTER 9: POSNATAL CARE

The postnatal period begins immediately after the birth of a baby and extends for about six weeks thereafter. Postnatal is used interchangeably with postpartum.

The postnatal period is the most vulnerable time for women with about 60% maternal deaths reported to occur within the first week of childbirth. Furthermore, one million newborns are reported to die within the first 24 hours after birth and about 75% of newborn deaths occur during the first week of life.

TIMING OF POSTNATAL CONTACTS

WHO recommends the following schedule of contacts:

- First contact: within 24 hours after delivery
 - Birth in a health facility: mothers and newborns should receive postnatal care in the facility for at least 24 hours after birth.
 - If birth occurred at home: the first postnatal contact should be as early as possible within 24 hours of birth.
- Subsequent contacts:
 - Day 3 (48–72 hours),
 - Between days 7–14 after birth, and
 - Six weeks after birth.

ROUTINE POSTNATAL CARE FOR THE MOTHER

First 24 hours after birth

- Check
 - Maternal wellbeing and vital signs – especially pallor, vital signs, temperature, pulse and BP.
 - Mental status assessment
 - Lochia and excessive bleeding.
- Physical assessment:
 - Vital signs – Pulse, Temperature, Blood Pressure and respiratory rate
 - Pallor, uterine involution (ensure uterus is well contracted)
 - Perineum – tears/episiotomy, lochia, swelling
 - Inspection of the C/S wound- if present- for bleeding
 - Calf tenderness
- Encourage mother to empty the bladder regularly.
- Encourage mother to eat and drink.
- Breast examination for establishment of lactation.
- Counselling on:
 - Family planning and provide appropriate FP method/ensure tubal ligation is done before discharge for women who requested this method.
 - HIV testing services/re-testing as appropriate.
- Provide:
 - Pain management

- Iron/folic acid supplements for 3 months
- Screening for TB and treat as appropriate
- Insecticide treated bed-nets
- Treatment or refer if any complications are detected
- If HIV positive initiate/continue ART treatment
- Advice on:
 - **Maternal danger** signs and where to go for help. Management of some of the conditions is described on page 107 (section on abnormalities of the puerperium)
 - Excessive bleeding
 - Foul smelling vaginal discharge
 - Fever with or without chills
 - Severe abdominal pain
 - Excessive tiredness or breathlessness
 - Swollen hands, face and legs with severe headaches or blurred vision
 - Painful, engorged breasts or sore, cracked, bleeding nipples
 - Personal hygiene and hand washing
 - Breast care and support continued and assist exclusive breast feeding
 - Exercises
 - Care of the perineum with advise on sitz baths for tears or episiotomy
 - Maternal nutrition (refer section on Nutrition in page 9)
 - Use of Insecticide Treated Nets.
- Advise on when to return for next postpartum checkup
- Record in PNC register and Mother Child booklet

First week after birth

Every mother and baby should have a postnatal check during the first week, with further follow up if required.

- Check /perform:
 - Maternal wellbeing, mental status and symptoms (headache, fatigue, back pain, perineal pain, bowel function)
 - Vital signs: BP, temperature, pulse rate, respiratory rate
 - Pallor,
 - Lochia loss- (colour, amount, smell) and uterine involution (uterine tenderness?)
 - Assess for calf tenderness
 - Healing of any wounds - Infection /pus from C/S site or perineal wound
 - Breast condition, observe and assist breast feeding.
 - Check for signs of breast infection (breast pain, engorged breasts or sore, cracked, bleeding nipples)
 - Micturition and urinary incontinence
- Provide:
 - Haematinics - 3 months' supply of Fefol
 - Insecticide Treated Nets (if not yet given)
 - Treatment for any complications detected
 - Referral as appropriate
- Counsel on:
 - Danger signs and encourage her to seek help early if feeling uncertain or unwell about her baby or herself.

- HIV testing if not already done
- Maternal Nutrition
- Personal hygiene and hand washing for caregiver and perineal hygiene,
- Breast care and reinforce exclusive breast feeding
- Self-care – episiotomy and other wound care (post C/S and post T/L)
- In malaria prone areas, encourage to sleep under insecticide treated net.
- On cervical cancer screening
- Family planning method and provide method appropriate for this period
- Return date and record in PNC register and Mother Child booklet

Six weeks after delivery

All mothers are encouraged to return for a postnatal contact at six weeks with their babies.

Check:

- General wellbeing of mother and Mental status
- BP, pulse, temperature and weight,
- Lochia (amount /colour/smell)
- Uterine involution
- Healing of any wounds (perineum, C/S, T/L)
- Observe a breast feed

Provide:

- FP method of choice
- HIV counselling and testing if not already done if HIV positive screen for TB
- Screening for cervical cancer
- Clinical breast examination
- Screening for STI
- Treatment for any complications detected and referral as appropriate

Counsel on:

- Danger signs and where to seek medical help
- Exclusive breast feeding and Breast care
- Family planning and birth spacing and provide method
- Harmful practices
- Personal hygiene and hand washing for the caregiver
- Nutrition, diet and importance of exclusive breastfeeding for 6 months and continued up to 2 years with suitable weaning foods.
- Return date and record in PNC register and Mother Child booklet
- On intimacy

ABNORMALITIES OF THE PUERPERIUM

Puerperal Fever

A temperature of more than 38°C occurring during the first 6 weeks after delivery. Puerperal fever can be caused by:

Puerperal sepsis -

- Infection of genital tract occurring at any time between the onset of rupture of membranes or labour and 6 weeks postpartum.
- Two or more of the following are present:
 - Pelvic pain,
 - Fever,
 - Foul smelling vaginal discharge and
 - Sub – involution of the uterus.

The most common site of infection in puerperal sepsis is the placental bed. However infection may also occur in the cervix, vagina, perineum, the episiotomy site and Caesarean section wound.

Puerperal sepsis can also cause long-term complications such as pelvic inflammatory disease (PID) and infertility.

Puerperal Infection - includes all extra - genital infections and incidental infections. It encompasses infections specifically related to the birth process but not involving the genito-urinary systems e.g. breast abscess, incidental infections (malaria, respiratory tract infection) as well as urinary tract infections.

Common Causes (see table 9.1 for symptoms and signs of the conditions which cause puerperal infection):

- Genital tract infection
- Urinary tract infection
- Caesarean wound infection
- Infected episiotomy
- Mastitis or breast abscess
- Malaria
- Dengue
- Zika
- Chikungunya

Treatment of genital tract infection

- Assess severity
- If mild: oral Amoxycillin 500mg tds plus metronidazole 400mg bd for 7 days. Increase oral fluid intake.
- If severe: start IV fluids with antibiotics and refer: Ampicillin 1g IV qid, Metronidazole 500mg IV tds and Gentamicin 240mg once daily for 3 days. Symptoms and signs of severity include:
 - Symptoms - Chills and general malaise; Lower abdominal pain and perineal pain; Vomiting; Headache in severe cases
 - Signs - Fever (temperature of 38°C or more); Tender uterus; Sub-involution of the uterus; Purulent, foul-smelling lochia; Infected perineal wound
 - Puerperal sepsis may also present with signs of shock which include; (Low blood pressure, tachycardia (over 90) and cold clammy skin)
- If ultrasound confirms retained products, consider evacuation of uterus
- **Consult and refer, as appropriate.**

Table 9.1: Presentation of puerperal infections

Presenting signs and symptoms	Other symptoms/signs	Possible Diagnosis	Treatment
Fever/chills Lower abdominal pain Purulent foul smelling lochia Tender uterus	Light vaginal bleeding Shock	Metritis	<ul style="list-style-type: none"> Initiate: Ampicillin 1g IV qid, Metronidazole 500mg IV tds and Gentamicin 240mg Refer to hospital after consultation with the Obstetrician
Lower abdominal pain and distension Persistent spiking fever/chills Tender uterus	Poor response to antibiotics Swelling in adnexa or Pouch of Douglas	Pelvic abscess	
Low-grade fever/chills Lower abdominal pain Absent bowel sounds	Rebound tenderness Abdominal distention Anorexia, Nausea/vomiting Shock	Peritonitis	
Breast pain and tenderness 3-5 days after delivery	Hard enlarged breast Both breast affected	Breast engorgement	<ul style="list-style-type: none"> Cloxacillin 500mg qid for 7 days OR Erythromycin 500 mg orally every 6 hours for 10 days (mainly for patients sensitive to penicillin) Drainage abscess Continue Breast feeding Breast feeding support
Breast pain and tenderness Reddened wedge shaped areas on the breast 3-4 weeks after delivery	Inflammation preceded by engorgement Usually only one breast is affected	Mastitis	
Firm very tender breast Overlying erythema	Fluctuant swelling in the breast Draining pus	Breast abscess	
Un-usually tender wound with bloody or serous discharge	Slight erythema extending beyond the edge of incision	Wound abscess, wound serum or wound haematoma	<ul style="list-style-type: none"> Cloxacillin 500mg qid Drainage abscess
Painful and tender wound Erythema and oedema beyond edge of incision	Hardened wound Purulent discharge Reddened area around the wound	Wound cellulitis	<ul style="list-style-type: none"> Cloxacillin 500mg qid x 7 days Analgesia
Dysuria Increased frequency of micturition	Retro-pubic /supra-pubic pain Abdominal pain	Cystitis	Refer to section – for further management
Presentation of other causes of puerperal fever			
Dysuria Spiking fever / chills Increased frequency and urgency of urination Abdominal pain	Retro-pubic/supra-pubic pain Loin pain/tenderness Tenderness in rib cage Anorexia Nausea/vomiting	Acute pyelonephritis	Refer to section – for further management
Spiking fever despite antibiotics	Calf muscle tenderness	Deep vein thrombosis	Consult with Obstetrician for urgent referral
Fever Difficulty in breathing Cough with expectoration Chest pain	Consolidation Congested throat Rapid breathing Rhonchi/rales	Pneumonia / Tuberculosis	

Fever Chills/rigor Headache Muscle/joint pain	Enlarged spleen	Uncomplicated malaria	Refer to section – on Management of Malaria in pregnancy
Symptoms and signs of uncomplicated malaria Coma Anaemia	Convulsions Jaundice	Severe/complicated malaria	
Fever Malaise Anorexia Nausea Dark urine and pale stool Jaundice Enlarged liver	Muscle/joint pain Urticaria Enlarged spleen	Hepatitis	Consult with Obstetrician and refer

Treatment of urinary tract infection:

- Assess severity
- If mild: oral Amoxicillin 500mg tds; or Septrin/Bactrim 2 tabs BD for 7 days.
- Increase oral fluid intake.
- If severe (refer to page – on symptoms and signs of pyelonephritis): IV fluids, initiate IV antibiotics (Ampicillin 1g IV qid) and refer.

Mastitis:

Mastitis refers to an inflammatory condition of the breast. It may or may not be accompanied by infection. It should not be confused with breast engorgement, which is an exaggeration of the lymphatic and venous engorgement that occurs before lactation. Mastitis is not the over distention of the breast with milk.

Symptoms and signs

Onset is usually rapid and in most cases only one breast is affected. Symptoms and signs include:

- Breast is painful and swollen Red
- Wedge-shaped area visible on breast
- Breast tenderness

Treatment of breast infections

- Cloxacillin 500mg qid for 7 days OR Erythromycin 250 mg orally every 8 hours for 10 days (mainly for patients sensitive to penicillin).
- Provide support and assistance for continued breastfeeding. She should be encouraged to express the milk BUT she should NOT give it to the baby.
- Oral pain relief with paracetamol 500mg four – six hourly as required may be needed.
- If abscess has formed – drainage maybe required, consult doctor.
- The breasts should be supported with a binder or brassiere
- Reassure mother
- Follow up in three days is recommended to ensure response.

FAMILY PLANNING

Over 289,000 women die every year because of pregnancy complications. Most of these are unplanned and unwanted. Therefore every woman of reproductive age irrespective of marital status should be advised to wait at least two years after the birth of their last infant by using family planning to improve health of mothers, babies and families. Birth spacing gives time for the body to fully recover before the next pregnancy. Other benefits include:

- **Mother:**
 - Gives enough time and opportunity to love and provide attention to her husband and children.
 - Gives more time for her family and own personal advancement.
 - When suffering from an illness, gives enough time for treatment and recovery.
- **Children**
 - Healthy mothers produce healthy children.
 - Will get all the attention, security, love, and care they deserve.
- **Father**
 - Lightens the burden and responsibility in supporting his family.
 - Enables him to give his children their basic needs (food, shelter, education, and better future).
 - Gives him time for his family and own personal advancement.
 - When suffering from an illness, gives enough time for treatment and recovery.

Women and couples should be counseled and educated about family planning at every opportunity such as antenatal and postnatal clinics, health facilities and in the community. They should be introduced to the range of methods available and efforts made to respond to their concerns and queries including correcting myths and misconceptions regarding family planning.

It is safe to start women on contraception in the immediate postpartum period before they are discharged home. However, if they are not ready, make an appointment for them to see a health professional for family planning advice at the six weeks postnatal contact.

There are two types of contraceptive methods:

- **Temporary Methods** includes methods that are non-permanent or are reversible. Fertility returns on discontinuation.
- **Permanent methods** are sterilization for males and females – they end fertility.

Table 9.2 below provides a summary methods of contraception for breastfeeding and non-breastfeeding women as well as time each of the methods can be initiated.

Temporary Methods

- **Condoms**, both males and female, are an effective contraceptive method when used correctly and consistently. They also protect the users from STIs and HIV/AIDs.
- **Lactational amenorrhoea method** particularly for women who opt to exclusively breastfeed. The principles of LAM include:
 - The woman must be exclusively breastfeeding on demand
 - The infant should be less than six months old
 - Periods should not have resumedAll three conditions should be satisfied for the method to be effective.

- **Combined Oral Contraception (COC e.g. Microgynon 30 ED)** - COC is highly effective in preventing pregnancy. The menstrual flow will occur regularly every 28 days on this type of pill. It should not be taken by women with high BP > 140/90, smokers of >40 years. **Do not give to breastfeeding mothers in first six months.**
- **Progesterone-only Pills (POP or minipills e.g. Microlut)** - This method is ideal for breast-feeding mothers as it does not reduce milk supply. It needs to be taken daily at the same time regardless of menstrual flow.
- **Depo-Provera Injection (DMPA)** - Depo provera is a highly effective contraceptive method given by injection every three months, and can be used in breastfeeding and non-breast feeding women. The most common side effect is intermittent spotting. But if a woman bleeds continuously on depo-provera, give ethinyl estradiol 50ug daily for 20 days (or Microgynon 1bd for 10 days). Depo-provera can prevent ovarian and uterine cancer, and also reduces blood loss and therefore reduces anaemia.
- **Intra Uterine Contraceptive Device (IUCD)** - IUCDs are effective methods for women who may not have easy access to health facilities for contraception. Insertion should be done by a person trained in the technique using sterile precautions. Insertion is preferable at the end of a menstrual period. IUCDs should not be used by women who have never been pregnant before. IUCDs are contraindicated if a woman has active STI and should be used with caution in those with a history of STIs, or have unprotected sex with multiple sexual partners.
- **Implants (Jadelle, Implanon)** - Implants are progesterone capsules that are inserted under the skin into the inner aspect of the arm. The commonly used implant in Vanuatu is Jadelle which comprises of 2 capsules of LNG and is effective for 5 years. Another method which is not yet offered in Vanuatu is Implanon which comprises of 1 rod of desogesterol and effective for 3 years
- **Ovulation Method (natural family planning, NFP)** - This method relies on the fertile time in the menstrual cycle. The effectiveness depends on accurately identifying the fertile time and modifying sexual activity to avoid pregnancy. Therefore, it depends on partner participation. Ovulation usually takes place 14 days before the next period. It is best for women to attend a special education course on this method before attempting to use it.
- **Emergency Contraceptive ("Morning after Pill")**
 - Emergency contraception should be taken within first 72hrs of unprotected sexual intercourse. Postinor is available in 2-pill preparation, each tablet containing Levonorgestrel 750mcg.
 - If Postinor is not available, use microgynon 30 ED – 4 tabs stat and take 4 more tabs after 12 hours. She might feel nauseous, therefore advise her.
 - If both postinor and COC are not available, take 20 tabs of microlut (POP) stat and repeat 20 tablets after 12 hours.
 - An alternative emergency contraceptive method is insertion of IUCD within 5 days of unprotected sexual intercourse.
 - Advise the woman to see the clinic nurse if menses do not occur within 3 weeks.
 - Make women aware that this is not a family planning method and counselling needs to be strengthened on choice of ongoing contraception.

Permanent Methods (Sterilization)

Tubal Ligation (female)

This is a simple surgical procedure performed by an obstetrician within the first week postpartum or after 6 weeks. The total procedure takes only 10 minutes. The procedure does not have any serious long-term side effects; it does not cause weakness or weight gain. Menstruation is not affected following the operation. There is a small chance of failure in this procedure.

Women planning post-partum tubal ligation should be referred to a hospital for delivery near term. They should sign a consent form during antenatal period and bring the form with them.

Vasectomy (male)

This procedure is performed under local anesthesia. It does not interfere with sexual intercourse in any way. If a man plans to have a vasectomy, he should be referred to a health professional/doctor who is able to perform the procedure. After vasectomy a man is still fertile for about 3 months or until he has ejaculated about 20 times following the procedure. Therefore, the couple must use another method of contraception for 3 months. Consider doing a semen analysis after 20 ejaculations or three months to confirm sterility.

Dual protection should be emphasized and advise on correct and consistent use of condoms for protection from sexually transmitted infections or HIV

Table 9.2: Contraceptive options for breastfeeding and non-breastfeeding mothers

When to start	Family planning method
Breastfeeding woman	
Can be used immediately postpartum	<ul style="list-style-type: none"> - Lactational amenorrhoea method (LAM) - Condoms - Female sterilisation (within 7 days or delay 6 weeks) - Copper IUD (delay 4 weeks)
Delay 6 months	<ul style="list-style-type: none"> - Progestogen-only oral contraceptives - Progestogen-only injectables - Implants
Delay 6 months	<ul style="list-style-type: none"> - Combined oral contraceptives - Fertility awareness methods
Non-breastfeeding woman	
Can be used immediately postpartum	<ul style="list-style-type: none"> - Condoms - Progestogen-only oral contraceptives - Progestogen-only injectables - Implant - Female sterilization (within 7 days or delay 6 weeks)
Delay 3 weeks	<ul style="list-style-type: none"> - Copper IUD - Combined oral contraceptives - Fertility awareness methods

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1. Ministry of Health, 2015. Evidence-based Guidelines in Family Planning for Health Workers, 3rd Edition.
2. WHO, 2013. WHO recommendations on Postnatal care of the mother and newborn
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CHAPTER 10: RESPONDING TO A MATERNAL DEATH AT A HEALTH CARE FACILITY

The Ministry of Health has adopted a system of Maternal Death Surveillance and Response to facilitate improved reporting of maternal deaths, review of the deaths to assess the quality of care provided so that actions can be undertaken to address the gaps in care, thus reduce maternal deaths.

DEFINITIONS

Definition of deaths in pregnancy, childbirth and the puerperium: ICD-10

Death occurring during pregnancy, childbirth and the puerperium is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the cause of death (obstetric and non-obstetric).

Maternal death

A maternal death is the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes.

Maternal deaths are subdivided into two groups:

- **Direct obstetric deaths:** direct obstetric deaths are those resulting from obstetric complications of the pregnancy state (pregnancy, labour and the puerperium), from interventions, omissions, incorrect treatment, or from a chain of events resulting from any of the above. Examples of direct maternal deaths include
 - Pre/Eclampsia
 - Placenta Abruptio
 - Placenta Praevia
 - Puerperal Sepsis
 - Ruptured uterus
 - Retained placenta
 - Ectopic Pregnancy
 - Complications of abortion
- **Indirect obstetric deaths:** indirect obstetric deaths are those resulting from previous existing disease or disease that developed during pregnancy and which was not due to direct obstetric causes, but which was aggravated by physiologic effects of pregnancy. Examples of indirect maternal deaths include:
 - Diabetes Mellitus
 - Rheumatic Heart Disease
 - Tuberculosis
 - Malaria

Late maternal death

A late maternal death is the death of a woman from direct or indirect causes more than 42 days but less than one year after termination of pregnancy.

Underlying cause of death is defined as the disease or condition that initiated the morbid chain of events leading to death or the circumstances of the accident or violence that produced a fatal injury. The single identified cause of death should be as specific as possible. There can only be one underlying cause of death.

Contributing causes are conditions unlikely to cause death but may have contributed to the events leading to death - may predispose women to death, as either a pre-existing condition or a risk factor.

If you are not sure of the cause of death, please consult the Obstetrician with a full history and findings on examination for you both to reach a decision based on the presentation of the women who died.

NOTIFICATION AND REVIEW OF MATERNAL DEATH

Maternal death is a notifiable condition in Vanuatu. All deaths that occur during pregnancy, childbirth and the puerperium should be reported to the National Maternal and Child Death Surveillance and Response (MCDSR) Committee. This section describes the flow of information that should be followed by all health providers after a death during pregnancy, childbirth and the puerperium has occurred in a health facility or in the community is recommended.

- Notification of maternal death and completion of Notification form
 - The maternal death should be reported telephonically to the Provincial Coordinator within 48 hours.
 - The health facility should then complete a maternal death Notification form, make copies of the patient case notes and send both to the Provincial coordinator. A copy of the notification form should remain in the health facility.
 - The Provincial Coordinator will in turn inform the National MCDSR Committee about the death.
- Review of the maternal death
 - The Provincial Coordinator agree on a date to support the health facility, where the death occurred, to review the death in order to learn from that death.
 - The following should be elicited for every maternal death that has occurred and a maternal death review form completed:
 - Facility information.
 - General information about the woman who died.
 - Maternal death history.
 - Details of ANC, intrapartum, delivery and postnatal care – assessing the adherence to standards of care as provided in the Standard Guidelines for Obstetrics, Gynaecology and Newborn Care.
 - Cause of death categorized by underlying, immediate and contributory cause of death.
 - For each death, assessment of associated factors that may have contributed to the death should be undertaken as these will be key in identifying where gaps in care exists.
 - Recommendations for improving care based on the gaps identified.
 - Action plan developed to facilitate implementation of the recommendations thus strengthening response to each maternal death.
 - The completed maternal death review form together with the action plan should be submitted to the MCDSR Committee at National level. The MCDSR Committee will from time to time follow-up with the Provincial Coordinator on progress with implementation of recommendations and action plan. It is advised that challenges with implementation of agreed upon actions be clearly documented to enable the MCDSR Committee understand reasons behind slow or lack of progress. It is also recommended that enabling factors be documented for these to be used as lessons for other Provinces.
- Collation, analysis and report writing

- At the end of the year, all the information will be collated, analysed and report written to provide trends in maternal deaths as well as identify areas that need policy and national strategy intervention.
- The information and recommendations will be shared with provinces and used to inform Policy, planning and development of strategies at national level.

Please do not hesitate to contact the MCDSR Committee members for advice and guidance if you get stuck and are not sure how to proceed.

Do not forget to inform the family about the cause of death. If available, provide bereavement counselling to the family.

REFERENCES

1. WHO, 2013. Maternal death surveillance and response: technical guidance information for action to prevent maternal death.
2. WHO, 2012. The WHO application of ICD-10 to deaths during pregnancy, childbirth and puerperium: ICD MM.

CHAPTER 11: GYNAECOLOGY

INFERTILITY

Definition: Inability to become pregnant after 12 months of regular unprotected intercourse.

Obtain a full history paying particular attention:

- Sexual and fertility history from both partners
- Previous children prior to this relationship
- Gynaecological problems including miscarriage, menstrual patterns and abnormal bleeding
- Any medication
- Social drug habits including smoking and alcohol
- Other medical conditions

Assess the couple - check the woman for:

- **Ovulation**
 - Check for regular periods (>95% of women with regular periods are ovulating.
 - Check for signs of ovulation such as mid-cycle mucous, temperature rise, mid-cycle pelvic pain
- **PID**
 - History of lower abdominal pain, dyspareunia (pain on sex), adnexal tenderness on bimanual pelvic examination or cervical excitation pain (Refer to section on PID).
 - If there is evidence of PID, provide counseling and treat using standard treatment of PID. Consult and refer for further treatment, if required.
- **Other gynaecological abnormalities** – such as uterine abnormalities and tumours.

Assess the male partner for:

- Provide counseling to
 - Stop drugs, smoking and alcohol and kava.
 - Wearing tight clothing
 - Treat infections
- Medical conditions - sexual dysfunction, diabetes, testicular problems, chronic STI
- Refer for semen analysis - the normal sperm count is 20-40million sperm/ml.
- If a man has a low semen count (< 15million/ml), if there is infection, treat as per STI guidelines. Repeat sperm count after 3 months.
- Other appropriate interventions may be indicated (HSG, laparoscopy).

PELVIC INFLAMMATORY DISEASE (PID)

Chlamydia is the predominant infectious agent causing PID. Other causes can be due to puerperal infection, abortion or instrumentation of the uterine cavity. The woman and her partner must be treated at the same time even if the partner has no symptoms. Inform him that men are sometimes asymptomatic (**Refer to National Comprehensive Guideline on STI diagnosis, treatment and management**).

Acute PID

In Vanuatu, most women presenting with acute PID really have acute on chronic disease, i.e. they have chronic PID and this sudden onset of lower abdominal pain is a flare up or a repeat infection, therefore they will usually be sub-fertile or infertile.

Always have a high index of suspicion for PID in women with lower abdominal pain usually starting soon after a menstrual period because the consequences are serious therefore treat aggressively.

If this is “acute on chronic” there will be a history of:

- Lower abdominal pain in the past
- Fever
- Infertility or subfertility
- Signs of peritonitis across the lower abdomen
- Tenderness on bimanual examination, particularly cervical excitation.

Note: A vaginal examination must be done in all women with lower abdominal pain. If ectopic pregnancy is a possibility i.e. patient pale, irregular menses & history of amenorrhea; do a pregnancy test and an ultrasound scan).

If appendicitis is a possibility; the right-sided pain has rebound tenderness and will be worse rather than improved after 24 hours antibiotics.

Treatment

Mild or Moderate case (patient not septic, not vomiting; not with severe signs of peritonitis).

- Azithromycin 1gm PO stat.
- Metronidazole (Flagyl) 400mg tds for 7 days or 2 gm PO stat
- The partner must also be treated with azithromycin & metronidazole.

Severe case (patient septic, vomiting or has a signs of severe peritonitis.).

- Admit the patient, commence IV N/Saline infusion.
- Morphine 10mg subcutaneous for pain regularly.
- Ampicillin 1g IV qid, Metronidazole 500mg IV bd & Gentamicin 240mg od until the patient is afebrile for 48 hours or becomes stable, then change to oral treatment as above.
- The partner must be treated with azithromycin & metronidazole.
- Remember to advise the patient to take food 30 minutes before taking these medications, as they are known to cause severe nausea and vomiting.

At the end of the antibiotic therapy, a repeat bimanual examination should be done. If a tender pelvic mass is found, refer the patient to the nearest hospital or discuss with the O&G doctor. This is to eliminate a pelvic abscess, which may only be treated with a surgery.

Chronic PID

Is diagnosed when there is recurrent or chronic lower abdominal pain, dyspareunia, dysmenorrhea, infertility; there maybe adnexal tenderness or masses present on bimanual examination.

Treatment

Antibiotics as above for mild/moderate acute PID. Refer or consult with O&G doctor.

Gonorrhoea

- This infection always goes hand in hand with chlamydial infection.
- **Treatment** (of the case with merely with urethritis or cervicitis, i.e. NO PID)
 - Both partner & sexual partner need:
 - Ciprofloxacin 500mg stat or Ceftriaxone 125mg IM stat + Doxycycline 100mg bd for 10 days.
 - Alternative: Augmentin 1 tab stat, Amoxicillin 2.5g stat & Probenecid 1g stat.

Gonorrhoea infection with any signs of PID need full PID treatment as above. As these infections are all STIs, counsel your patient and her partner about use of condoms for any 'unsafe' sex and having VDRL and HIV testing.

ABNORMAL UTERINE BLEEDING

Abnormal uterine bleeding (AUB) may be acute or chronic and is defined as bleeding from the uterus that is abnormal in regularity, volume, frequency, or duration and occurs in the absence of pregnancy.

Normal menstrual cycle

The normal length of the **menstrual cycle** is typically between 24 days and 38 days. A normal menstrual period generally lasts up to 8 days.

Abnormal Uterine Bleeding

Bleeding in any of the following situations is considered **abnormal uterine bleeding**:

- Bleeding or spotting between periods
- Bleeding or spotting after sex
- Heavy bleeding during your period
- Menstrual cycles that are longer than 38 days or shorter than 24 days
- "Irregular" periods in which cycle length varies by more than 7–9 days
- Bleeding after **menopause**.

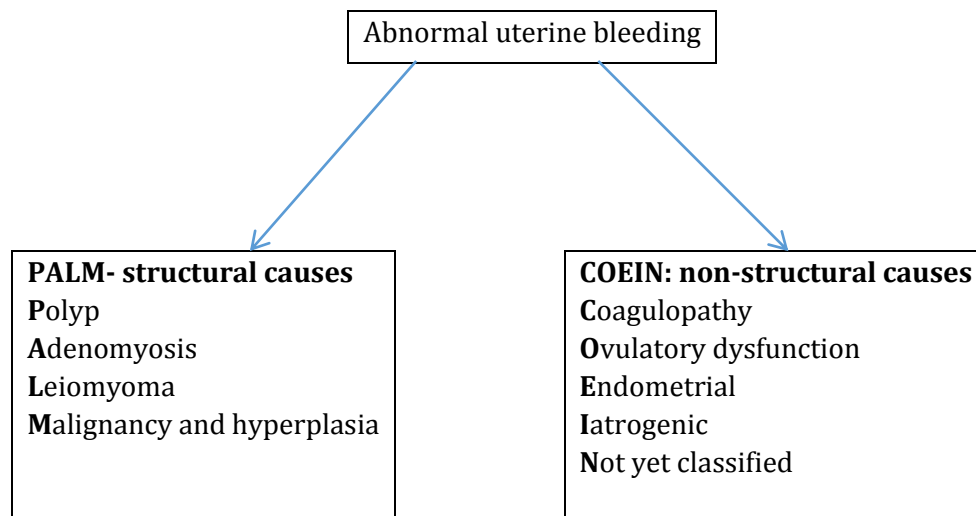
Causes of AUB

Abnormal uterine bleeding can result from structural and non-structural causes (see table 11.1 and figure 11.1)

Table 11.1: FIGO classification –PALM COEIN

Structural Causes (PALM)	Non Structural causes (COEIN)
Polyp	Coagulopathy
Adenomyosis	Ovulatory
Leiomyoma (fibroid)	Endometrial
Malignancy and hyperplasia	Iatrogenic
	Not yet classified

Figure 11.1: Causes of AUB



Management

Medical

- Non-hormonal
 - Non-steroidal anti-inflammatory drugs: ibuprofen 400mg tds 5 days
 - Anti fibrinolytics (not available in EDL)- tranexamic acid 1.3 grams PO TDS for 5 days
- Hormonal
 - Oral progestins-Norethisterone 10mg BD for 1 weeks or cyclical Microlut
 - Oral Combined hormonal contraceptives (microgynon)- cyclical
 - Depot-medroxyprogesterone acetate (depo)- 150mg IM every 3 months
 - Not available in Vanuatu EDL
 - Levonorgestrel-releasing intrauterine system (mirena)
 - Danazol
 - GnRH-agonists

Surgical

Indications for surgery for women with AUB include:

- Failure to respond to medical therapy,
- Inability to utilize medical therapies (i.e. side effects, contraindications),
- Significant anemia,
- Impact on quality of life, and
- Concomitant uterine pathology (large uterine fibroids, endometrial hyperplasia).

Surgical options include

- Dilation and uterine curettage (D&C)
- Hysteroscopic polypectomy,
- Endometrial ablation,
- Myomectomy, and
- Hysterectomy

Health Centre and Dispensary

- Take a thorough history and examination.
- Exclude pregnancy – such as abortion and ectopic pregnancy.
- **Do a pregnancy test on all women presenting with irregular bleeding.**
 - FBC and Pregnancy test
- Commence medical management if there are no local lesions on the vagina or cervix.
- Consult and refer

Hospital

- Admit for investigation and management
- Investigations;
 - Blood: FBC, X-match, pregnancy test (urine), coagulation profile and thyroid function if indicated.
 - Imaging: abdo/pelvic ultrasound,
 - Others: screen for NCDs if indicated, endo-sampling (if available).
- Treatment as above

GESTATIONAL TROPHOBLASTIC DISEASE

Gestational trophoblastic disease (GTD) forms a group of disorders

- Benign- complete molar and incomplete molar pregnancy: a mass of vesicles resulting from abnormal proliferation of chorionic villi.
- Malignant- invasive mole, choriocarcinoma and the very rare placental site trophoblastic tumour (PSTT).

Symptoms and signs of molar pregnancy

- The classic features of molar pregnancy are irregular vaginal bleeding, hyperemesis, excessive uterine enlargement and early failed pregnancy. May also experience pelvic pain secondary to ovarian theca lutein cysts.
 - Clinicians should check a urine pregnancy test in women presenting with such symptoms.
- Rarer presentations include signs of hyperthyroidism, early onset pre-eclampsia or abdominal distension due to theca lutein cysts.
 - Very rarely, women can present with acute respiratory failure or neurological symptoms such as seizures; these are likely to be due to metastatic disease.

Management

- The diagnosis can only be confirmed at this stage by ultrasound scan.
- Where the cervix opens, passage of the typical grape-like vesicles confirms the diagnosis. Bleeding may be very heavy when a Mole aborts spontaneously.

Health Centre

If a woman have hydatidiform mole and continues to bleed, assess and determine the vital signs. That includes: Pallor, low BP, increased pulse rate and cold or clammy periphery. These are signs

of shock or she has lost a lot of blood. Talk to the doctor immediately after your assessment. The doctor will ask you to do the following;

- Treat any shock with IV 1 Litre N/saline rapidly, followed by 1 more litre Normal saline or Hartman's. In the Hospital, blood should be administered after initial fluid bolus.
- If a lot of mole has been passed, administer as an infusion of 20 Units Oxytocin in 1 litre of N/Saline or Hartman's and run at 60drops per minute.
- Transfer to hospital for evacuation of the mole by suction curettage.

Hospital

- Assess for shock and stabilise patient.
- Investigations- FBC, X-match, pelvic and abdominal ultrasound, CXR, urine hCG or serum β -hCG (quantitative), TFTs (if indicated).
- Suction curettage is the method of choice for evacuation of molar pregnancy.
- Oxytocin infusion (40 units in 1 Litre N/saline) can be commenced during the procedure and another 40 units infusion at 42drops/min post evacuation.
- Follow up patient urine hCG every 2 weeks until pregnancy test is negative 3 weeks in a row then monthly until undetectable for 12 months.
 - Or β -hCG (quantitative) weekly until undetectable for 3 consecutive weeks then monthly until undetectable for 12 months.
- Give the woman reliable family planning for 1 year.
 - Depo-Provera, Jadelle, IUCD or sterilisation.

If at any time, pregnancy test is positive, refer immediately for further tests in hospital.

CHORIOCARCINOMA

- Is suspected if any of the following occur.
 - Recurrent bleeding,
 - The pregnancy test remains positive for more than 2 months after the evacuation,
 - The pregnancy test becomes negative and then positive again.
 - Persistent or rising level of β -hCG (quantitative).

Metastases of choriocarcinoma

- Vagina (granulomatous or fleshy lesions in the vagina, on the vulva or perineum)
- Lungs (cough, SOB and haemoptysis (coughing out blood))
- Others- Liver, Brain.

If choriocarcinoma is suspected discuss the case with gynaecology team at Vila Central Hospital for immediate referral for further investigation and management.

MASSES (LOWER ABDOMEN)

If a woman presents with an abdominal mass, think about common causes. Exclude pregnancy.

Other causes include:

- Uterus (fibroid)
- Ovaries (ovarian cyst or tumour)
- Bladder (full bladder)
- Bowel (full bowel)

Obtain a full history and carry out a thorough examination to determine where the mass is originating.

- **Normal pregnancy** – menstrual history, clinical signs and Doppler sonicaid and/or ultrasound if available. Do a pregnancy test.
- **Distended bladder** - ask when was the last time she passed urine. Catheterize if necessary.
- **Infection of uterus and endometriosis:**
Ask about infertility, chronic lower abdominal pain, dysmenorrhea (pain with periods), dyspareunia (pain with sex) that might indicate chronic PID or tubo-ovarian abscess, endometriosis (endometrium)

Do a routine physical examination for fever and abdominal pain or mass. Pelvic examination will reveal more information. If there is cervical discharge and tender cervix, you will suspect PID. If there is no discharge but tender uterus and sometimes a stuck uterus to the back or sidewall, you suspect endometritis or endometriosis. Document all findings and consult and refer to O/G specialist or senior staff.

If cannot refer immediately, treat accordingly – e.g. if woman has a tender pelvis with negative pregnancy, treat with Antibiotics (Amoxyl/Doxycycline).

- **Uterine fibroids**
Uterine fibroids are a common cause of abdominal mass. Common features include:
 - heavy menses
 - painful menses
 - anaemia secondary to heavy menstrual flow
 - over 30 years old
 - infertility

On vaginal bimanual examination the mass is firm, nodular, non-tender and moves with the cervix. Consult and refer to O/G specialist or senior staff.

- **Ovarian Mass**
 - **Benign- Ovarian Cyst:** Ovarian cysts are a common cause of abdominal mass. Common features include:
 - Increasing abdominal girth (similar to pregnancy)
 - Any age group
 - Menses usually normal

On abdominal examination the mass is cystic and mobile; can be tender. May undergo torsion, which causes severe or acute pain. If <6cm re-examine after 6 weeks; if >8cms or persistent, do laparotomy and either ovarian cystectomy or salpingo-oophorectomy. Consult and refer to O/G specialist.

- **Malignant- Ovarian Cancer:** This condition may present with abdominal mass especially in women over 40. Common features include:
 - abdominal swelling
 - ascites
 - progressive weight loss
 - anaemia

On abdominal examination the mass is usually fixed, irregular. Consult and refer to O/G

specialist. Women with an ovarian mass and over the age of 50 should be considered for a laparotomy to remove tumour.

RAPE AND SEXUAL ASSAULT

Definitions of Sexual Assault

This refers to any sexual behaviour that makes a person uncomfortable, frightened and threatened. A sexual activity which a person does not consent and may use emotional or physical violence. In Vanuatu, the age of consent is 18.

Health workers should adopt a non-judgemental approach, ensure privacy and confidentiality, and document all pertinent findings.

Follow the algorithm on sexual assault/abuse (figure 11.2 below)

- Do the best you can to provide a private and quiet area.
- Health care providers should always be compassionate and respect confidentiality.
- Ensure that a support person or trained health worker of the same sex accompanies the person throughout the examination.
- Explain what is going to happen during each step of the examination, why it is important, what it will tell you, and how it will influence the care you are going to give.
- Reassure that the examination findings will be kept confidential.
- Ask her if she has any questions before you start taking a history and again before you examine her.
- Limit the number of people allowed in the room during the examination to the minimum necessary and do not allow people to walk in and out of the room.
- Undertake the examination as soon as possible. Do not force or pressure the survivor to do anything against her will.

There are three basic components to the acute care:

- **Physical;**
 - Examination.
 - Treatment of injuries.
 - Prophylactic against STIs and pregnancy.
 - Physical protection if she is likely to be assaulted again.
- **Emotional;**
 - Keep telling her “It is not your fault”.
 - Counselling and follow up.
- **Medico-Legal;**
 - Taking samples for forensic evidence where required and where possible.
 - It might involve taking photos to identify injuries (should take consent).
 - Writing good notes and exactly the way told and examination findings for a medico-legal report. Minimise your opinions.

At first presentation

- Assess any injuries that require urgent management

- Take a history and document it
 - When? Where? Who?
 - How many assailants?
 - Witnesses to any of the events before, during or after the rape? Their names?
 - What actually happened during the assault? Ask about type of sex.
 - LNMP? Current contraception? Last sex with usual partner? Was a condom used during rape?

Thorough General Examination;

- Document bruises/lacerations/abrasions using body charts and diagrams as well as text. Take photos.
- Consider concealed injuries (e.g. Spleen, head injury etc).
- Document general emotional condition of victim and condition of clothes and hair.

Thorough Genital Examination (Do EUA if child or very anxious young person);

- *Observe:* Bruises/abrasions / mucosal splits /tears/bleeding.
- *Speculum:* Bruises/ mucosal splits / abrasions/tears, some may be tiny. Swabs/ smear for infection and injuries to other body cavities.
- *Digital PV:* rarely necessary at time of acute assault if Speculum examination does not show any mucosal breaches.

Forensic specimens in Vanuatu; Laboratories in the main referral hospitals can assist with speculum collection;

- Smear for sperm (just like a Pap).
- If you have a microscope, do wet preparation and look for active sperm.
- Photos if camera available and if patient consents.
- Other samples; e.g. soil and twigs, pubic hair, all the patient's clothing).

Investigate:

- ALWAYS consider and exclude pre-existing pregnancy if possible.
- ALWAYS consider the prospect of conception resulting from the assault.
- Counsel about and do VDRL and HIV.

Treatment

- Pregnancy prevention: Always give Emergency contraception.
- Hospitals have prepared Emergency Contraceptive called Postinor Pack. Consult your Doctor to achieve appropriated dose of pills. (see section on Family Planning on page 111).
- STI prophylaxis/treatment: Doxycycline 100mg bd for 10 days and Metronidazole 400mb bd for 1 week.
- HIV Post Exposure Prophylaxis.
- Tet. Toxoid if physical injuries seen.

Follow up

- Advise to come back after one week for STI results
- She should seen again after one month for pregnancy test
- Ensure ongoing safety and support, thus involve social workers if necessary.
- May need emergency housing if her home is not safe.
- Advice regard to where she can come for further help.

- Advice regard to;
 - What to do if she misses a period.
 - What to do if she has symptoms that concern her.
 - The need for repeat follow up HIV & VDRL tests at about 3months.
- Counselling by relevant support team (Women's Violence Centre at Nambatu, O&G unit, social workers trained in counselling); Counsel the victim, partner and family.

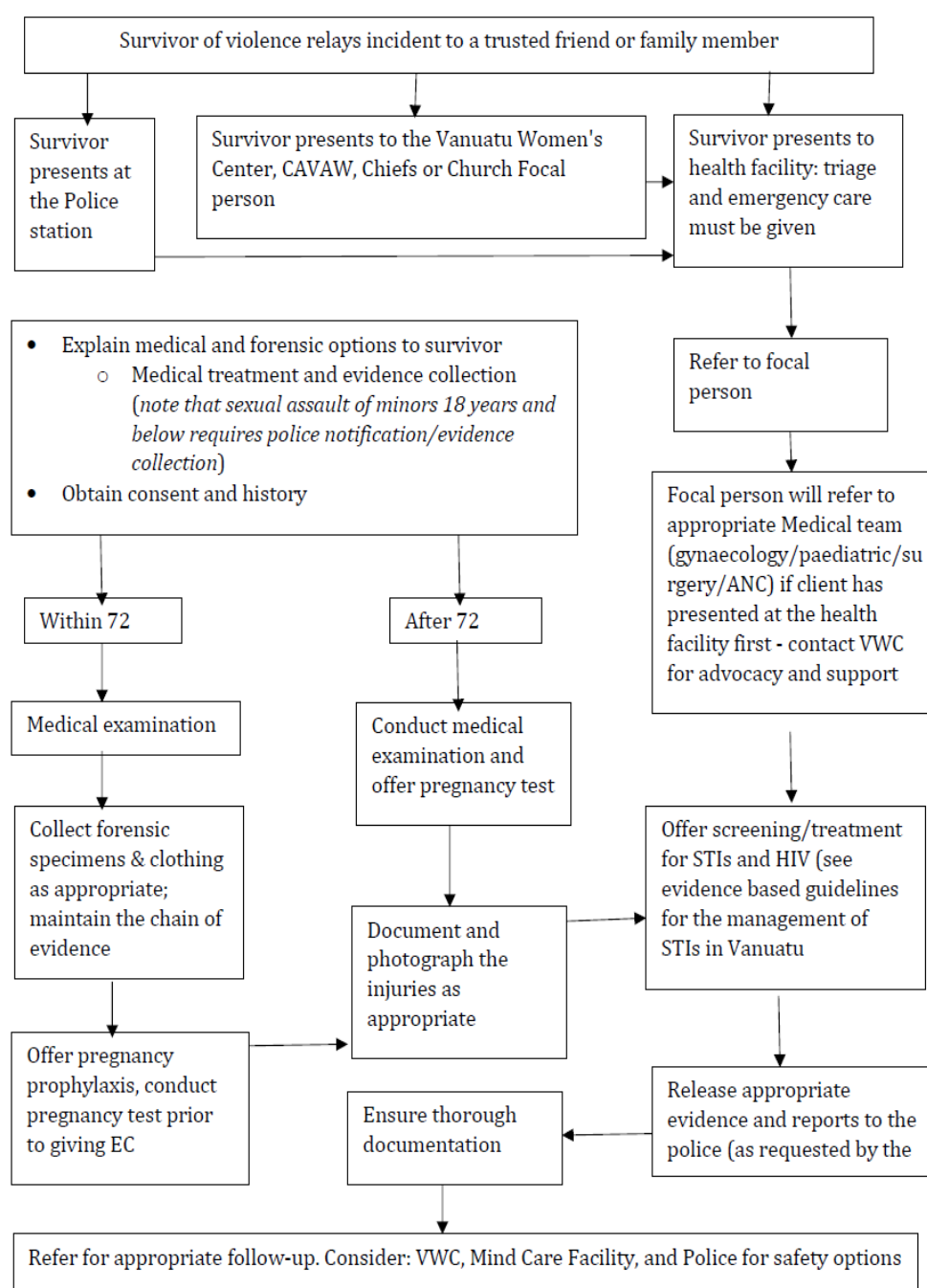
Document: (best to use a proforma from your hospital);

- Everything she has said, what you observed on examination.
- What any witness may have said to you (not through a third party).
- What you found on examination (use body diagrams).
- Consider using digital photography (non-identifying) where available.
- What you did in the way of;
 - Samples/investigation.
 - Treatment.
 - Arranging follow up and check results of tests.

REFERENCES

1. Society of O&G Canada guideline(JOGC 2013 Vol 35,#5)
2. Green Top Guideline #38 (molar and Choriocarcinoma)
3. FIGO classification AUB(International Journal of Gynaecology and Obstetrics 113 (2011) 3–13)
4. ACOG (AUB committee opinion 2013)
5. Ministry of Health, 2016. Comprehensive Guidelines for the Health Care Professionals Responding to Gender Based Violence in Vanuatu, 2016.

Appendix 11.1: Algorithm on management of survivors of sexual assault



Reproduced from the Comprehensive Guidelines for the Health Care Professionals Responding to Gender Based Violence in Vanuatu, 2016.

CHAPTER 12: EARLY NEWBORN CARE

This section of the guideline have been compiled as an aide-memoire for the Skilled Birth Attendant and all the Health Care Workers concerned with the management of the new born.

AT BIRTH AND IMMEDIATE NEW BORN CARE ^{15, 11, 9,5}

At birth, call out time of birth and sex of the baby

- Deliver baby onto dry linen over the mother's abdomen or on her arms
 - Start drying baby within 5 seconds after birth – wipe eyes, face, head, back, arms and legs thoroughly
 - Check breathing while drying
- Remove wet cloth and start **skin-to-skin contact for at least 60 minutes if mother and baby well**
- Cover baby with dry cloth and cover head with bonnet
- **Do not do routine suctioning**
- Delay cord clamping for 1-3 minutes and clamp and cut when pulsation stops 2m from the umbilical base.
- Encourage the mother to initiate breastfeeding within the first hour as the baby shows signs of readiness to feed or feeding cues (sucking reflex, rooting reflex). Provide breast feeding support to ensure good positioning and attachment.
- Apply antibiotic eye ointment or drops to each eye from inner corner outwards. Do not wash eye ointment away.
- If identification band is used, place on the baby's ankle.

See appendix 12.1 for essential newborn care algorithm⁵.

Resuscitation –if baby is not breathing ^{15,11,9,5}

- Clamp and cut cord immediately.
- Call for help and assist to establish breathing.
- Dry and stimulate breathing.
- Assess Apgar score as per table 12.1 below.
- Use neonatal bag and mask to initiate breathing (Start Positive Pressure Ventilation (PPV) to initiate breathing with Bag and Mask). Oxygen is not necessary unless baby is premature. Have an assistant listen with a stethoscope to assess air entry.
- If heart rate is below 60/min after 30 secs of effective bag and mask ventilation, start chest compressions.

Table 12.1: APGAR Score

SIGN (Indicator)	SCORE			TOTAL SCORE	
	0	1	2		
Pulse (Heart Rate)	Absent	<100	>100		
Respiratory Rate	Absent	Weak, irregular	Good, crying		
Activity (Muscle Tone)	Flaccid	Arms and legs flexed	Well Flexed		
Grimace (Reflex Irritability)	No Response	Grimace	Cough or sneeze		
Appearance (Skin Colour)	Blue, pale	Hands and feet blue	Completely pink		



See appendix 12.2 for resuscitation algorithm⁵

Severely Depressed 0 - 3
Moderately depressed 4 - 6
Excellent condition 7 - 10

Follow up Care:

- Record Apgar scores at 1, 5 and 10 minutes
- Inject a single dose of vitamin K (phytomethadione) 1mg IM.
- Keep baby warm
- Take birth weight, length and head circumference and record.
- If low birth weight <2.5kg, assess for prematurity
- If the weight is over 4kg observe for low blood sugar of less than 2.6 mmol/litre (<46 mg/dl) ^{15,16,2}. Give IV 10% glucose at 3ml/kg or if IV access cannot be quickly established then give 10% glucose or sucrose solution by nasogastric tube. Consult with the Paediatrician for further plan of management
- All babies should be encouraged to commence breastfeeding early. Document records of immediate new born care and treatment given in child health book and emphasis the need for future check-ups and immunization.

ROUTINE CARE OF NEW BORN⁵

Essential new born Care must be provided for all births. **Premature babies** and **sick new born** must be treated with **urgency** and **special care**.

After 1 hour – examine the baby

After the baby is detached from breast, do a full examination from head to toe and record findings. *See Appendix 12.1 for algorithm.*

If baby has signs of illness manage urgent conditions accordingly.

If baby does not show signs of illness, continue the following:

- Inject Hepatitis B vaccine IM and BCG intradermally as per national guidelines. (See Appendix 12.3)
- Sick and premature babies are given BCG vaccination on the day of discharge from the nursery
- Encourage frequent breastfeeding
- Observe baby daily for jaundice and treat appropriately. If jaundiced in first 24hrs, refer to Paediatrician.

Additional care for small babies – premature or twins

- Skin-to-skin contact
- Give extra warm clothes and blankets to keep baby warm.
- Do not bath within the first 24 hours. Wipe the vernix if present.
- Use heater if room is less than 28 degrees Celsius.
- For babies <1500grams or born >2months early refer to Vila Central Hospital for SCN care. Keep in skin-to-skin contact while waiting to reach referral hospital.

After 24hrs

- Bath baby after 24hrs
- Counsel mother about:
 - Personal hygiene with frequent washing of hands before and after handling baby.
 - Cord care:
 - Show mother how to keep cord stump loosely covered with clean clothes
 - fold diaper below stump
 - **don't apply anything on stump**
 - If cord is soiled, wash with water and soap and dry with clean cloth.
 - seek medical care if skin around umbilicus is red (it is normal for the cord to be smelly and moist)

Before discharge⁵

Do not discharge before 24hrs. Both mother and baby must be examined and put under observation in first 24hrs.

- Mother-baby bonding with exclusive breastfeeding on demand, day and night.
- Assess breastfeeding to ensure mother is doing it right. Help her if she is having difficulty. Explain to the mother the importance of exclusive breast feeding.
- Keep baby warm with warm blanket and with bonnet
- Skin-to-skin contact as much as possible.
- Ensure baby has passed meconium and urine before discharge
- Bathe after 24hrs and repeat daily after discharge. Sponging is sufficient in first few days.

Pre-discharge examination

- Look for **DANGER SIGNS⁵**
 - not feeding well
 - convulsions
 - drowsy or unconsciousness
 - movement only when stimulated or no movement at all,
 - fast breathing (60 or more breaths per min)

- grunting
- chest in-drawing
- central cyanosis
- fever/high body temperature (Temp: > 38 ° C)
- low body temperature < 35.5 °C)
- Check for jaundice on face, palms and soles of feet
- Check for signs of infection
 - Infected umbilicus
 - Eye discharge (neonatal conjunctivitis)
 - Pustules on skin

Seek medical help if any of these above

Discharge counselling for mothers:

- Breastfeeding on demand and discourage bottles or pacifiers. Ensure she knows how to breastfeed
- Allow baby to sleep on back or side
- Keep away from all types of smoking
- Use bed nets if the house does not have mosquito screen
- Baby booklet – fill important information
- Advise on birth registration, immunisation schedule
- Make arrangements for postnatal baby checks at specific dates and places

For home delivered babies, arrange for home visits.

The first visit must be done within first 24 hours by a trained health provider (midwife, nurse or doctor) or well-trained nurse aids and follow up will depend on the nature of birth. Consult the Paediatrician for expert opinion and proceed with the routine reviews as per MCH guidelines/practise.

Follow the above guideline (care of the normal or sick new born).

If not delivered by SBA give 0.5 ml of tetanus toxoid IMI.

At 6 week postnatal visit:

Check Baby for:

- Weight, length and head circumference - plot on child health book
- Ensure exclusive breastfeeding
- Do full examination and ask and look for danger signs
- Do vaccination according to national immunisation schedule

Check Mothers for:

- Vaginal bleeding
- Foul smelling discharge
- Check for hygiene and advise
- Painful urination
- Abdominal pain or perineal pain
- Constipation

- Fever and headache
- Counsel on contraception and family planning

MEDICATIONS AND DOSES ^{15,6}

Table 12.2: Medication and doses

Ampicillin	50mg/kg/dose twice daily first week, 8 hourly (2-4 weeks), then every 6 hourly if older than 4 weeks
Ceftriaxone	100mg/kg/dose once daily (for meningitis)
Chloramphenicol	25mg/kg/dose twice daily (Do not use in premature babies < 2.5kg)
Cloxacillin	25-50mg/kg/dose twice daily first week, 8 hourly (2-4 weeks)
Diazepam	0.1mg/kg 4-6 hourly (if continuous fits every 5 min apart x 3 doses)
Gentamycin	3-5mg/kg/dose daily, LBW 3mg/kg/dose once daily, Normal term 5mg/kg/dose once daily
Naloxone	0.1mg/kg once stat
Penicillin (benzyl)	50mg/kg/dose twice daily first week, 6 hourly (2-4 weeks)
Procaine penicillin	30mg/kg/dose once daily (50,000 units/kg)
Phenobarbitone	Loading dose 20mg/kg stat IMI or iv over 20 minutes, then 5mg/kg/dose daily (IMI or Oral) 12 -24 hrs after loading dose
Phenytoin*not compatible with glucose hence flush with normal saline pre and post infusion	Loading dose 15mg/kg – 20 mg/kg over 30 mins(IV).Start maintenance 12 -24 hrs after loading dose Initial maintenance, oral or IV: 2mg/Kg 12H (preterm); 4-5mg/kg 12H (1 st week of life), 8H (2wk – 4yr),
Tetanus toxoid	0.5 ml IM
Vitamin K	1mg IMI stat

IV FLUIDS AND FEEDS IN NEONATES ^{15,9,1,7}

Breast feed whenever possible. If not, use EBM using cup and spoon. A nasogastric tube may be used if baby cannot suck or drink from spoon/cup.

Daily Fluid Requirement in neonates (either IV or enteral or both combined):

- Day 1: 60 ml/kg/day**
- Day 2: 90 ml/kg/day**
- Day3: 120ml/kg/day**
- Day 4: 150ml/kg/day**
- Day 5+: 160ml/kg/day**

To calculate fluid requirements, use birth weight or current weight - whichever is greater.

EBM = divide above daily volume by 8 for volume per feed for 3hourly feeds
 IV fluids = divide above daily volume by 24 for hourly rate

***Ideally calculate feeds and IV fluids using birth weights and daily Fluid Requirement whenever possible. Table 1 and 2 below can be used as a guide if you can't calculate Enteral Feed or IV fluid:**

Enteral Feed (as Cup or Nasogastric feed) is given every 3 hours for a total of 8 feeds a day.

Table 12.3: Volume of EBM per feed by Birth Weights

Weights (Kg)	Days after Birth				
	Day 1	Day 2	Day 3	Day 4	Day 5
1.5 – 1.9*	10	20	25	30	35
2.0 – 2.4	15	25	35	40	45
2.5 – 2.9	20	30	40	50	55
3.0 – 3.4	25	35	45	55	60
3.5 – 4.0	30	40	50	60	70

*For Low Birth Weight (1.5 – 1.9) Feed should start at 5mls EBM increasing by 2 ml every **second** feed (**every 6 hours**) until total feed of 35 is achieved.

*The amount of feed remains the same after day 5.

*Reduce amount if baby is not tolerating and Give more EBM if Baby demands more.

IV Fluids:

Type of IV fluids:

- Day 1: give 10% dextrose (90 mls of 5%dextrose + 10mls of 50%dextrose)
- Day 2: give 10% dextrose (90 mls of 5%dextrose + 10mls of 50%dextrose)
- Day 3 onwards: give 10% dextrose in Normal saline (80 mls Normal Saline + 20 mls of 50% dextrose)
- Consult Paediatrician at VCH if neonate is not feeding by Day 4 as extra electrolytes might be required.

Table 12.4: Hourly Rate for IV fluids by Birth Weights

Weights (Kg)	Days after Birth				
	Day 1	Day 2	Day 3	Day 4	Day 5
< 1	2.5	3.8	5	6	6.5
1.0 – 1.5	3.8	5	7.5	10	10
1.6 – 2.5	5	7.5	10	12.5	13
>2.5	6.5	10	12.5	15.5	17.5

LOW BIRTH WEIGHT ^{15,9}

Low birth weight (LBW)	-	less than 2500 g at birth
Very low birth weight (VLBW)	-	1000 to 1500 g
Extremely low birth weight (ELBW)	-	below 1000 g

Skilled and dedicated nursing and medical attention is needed to care for LBW infants. With limited resources available in Vanuatu, it is unrealistic to expect ELBW babies to survive. Our hospital facilities can only provide basic care for VLBW and LBW babies and good outcomes have been achieved without the use of expensive high technology.

Low birth weight babies include 2 groups: Preterm and Small for dates

Preterm - gestation less than 37 weeks. The problems associated with prematurity are:

- Respiratory distress syndrome
- Apnoeic attacks
- Feeding difficulties
- Intraventricular haemorrhage
- Jaundice
- Infections
- Hypothermia
- Hypoglycaemia
- Congenital Heart Defect

Small-for-dates - underweight for the period of gestation. The problems associated with small-for-dates babies are:

- Intra-uterine malnutrition
- Intra-uterine hypoxia and birth asphyxia
- Meconium aspiration
- Hypoglycaemia
- Hypothermia
- Infections.

Management of LBW infants

- Give vitamin K 1 mg IMI after birth.
- Keep baby warm. This is the most important aspect of the management of low birth weight babies. Keep room temperatures 27-30 °C.
- Premature babies should be kept well wrapped up with bonnets and warm blankets. **Kangaroo care** - nursing the baby between the mother's breasts - is a highly effective way of ensuring the baby is kept warm. Encourage "kangaroo care" for as much of the day as possible and during the night when it gets cooler. Mother can walk outside with the baby carrying the baby this way. Kangaroo care is not always an easy concept for the mothers or the staff to adapt to - but dramatic reduction in mortality of VLBW babies has been documented in many countries. It reduces the risk of reflux and aspiration, reduces apnoea and infection and cuts down the length of hospital stay. It also encourages bonding between mother and baby, and improves lactation.

Other basic care for LBW babies:

- Handle the baby as little as possible
- Keep the baby pink and warm
- Keep the baby fed
 - Start Breastfeeding if birth weight is 1.8 kg or more.
 - Consider cup feed or NGT feed if less than 1.8kg or discuss with Paediatrician.
- Prevent infection

Follow up of LBW Infants

- **Discharge:** The baby is ready to go home when breast feeding fully and gaining weight. There is no particular weight to reach before discharge – 2.5kg is a guide but discharge can be earlier if mother knows how to keep baby warm and give demand breastfeeding.
- **Vaccination:** BCG vaccine and Hepatitis B should have been given before discharge.
- **Follow-up:** Tell mother when and where to attend MCH clinic. First clinic in 3-5 days.

- At Follow-up clinic
 - Check feeding
 - Check for any signs of infection/ check for hygiene practices in the home
 - Check weight
 - Advise on feeding, warmth and hygiene (wash hands before and after handling baby).

NEONATAL SEPSIS ^{15,14,10,8}

Infection in the newborn baby may have originated before, during or after birth.

Predisposing factors

- Low birth weight
- Delivered < 37 weeks of gestation
- Prolonged rupture of membranes (>18 hours)
- Babies who have been handled a lot and who have tubes (e.g. umbilical catheter)
- Intrapartum Maternal Temperature >38 °C
- Maternal history of chorioamnionitis
- Positive maternal serology

The symptoms may be vague and nonspecific. The following symptoms are suggestive of an infection:

- Poor perfusion
- Lethargy
- Irritability
- Poor/weak sucking on breast (Poor feeding)
- Hypothermia (<35.5)
- Hyperthermia (≥38.5)
- Respiratory distress
- Tachychardia

CONSULT PAEDIATRICIAN

Take bloods for full blood examination and blood culture if able and start empirical antibiotics only for neonates with documented risk factors for infection. Give IMI or IV ampicillin and gentamicin for at least 2 days and reassess; continue treatments only if there are signs of sepsis.

NEONATAL CONJUNCTIVITIS (Sticky eyes with conjunctivitis)¹⁵

- Treat as outpatient if the child has no other serious problems
- Show the mother how to wash the eyes with water or breast milk and how to apply the eye ointment
- Apply tetracycline or chloramphenicol eye ointment 4 times a day for 5 days
- Review 48 hours after commencement of treatment
- If the child is not improving then consult Paediatrician
- Start treating for possible STI (e.g. Gonococcal). Give a single dose of 50mg/Kg of ceftriaxone. Get guidance from paediatrician if ceftriaxone is unavailable. then give a single dose of
- Ensure mother receives treatment as per obstetrics protocol

BABIES OF RPR OR TPHA POSITIVE MOTHERS ^{15,3,4}

If no signs or symptoms of intrauterine infection, give:

Benzathine penicillin 50 000 units/Kg (30mg/Kg) IM single dose

If signs of intrauterine infection are present

- Blisters or rash especially on palms or soles
- Hepato-splenomegaly
- Petechiae or bruising
- Early onset of jaundice, or prolonged jaundice

Rx: Give benzathine penicillin stat; should the neonates shows the congenital syphilis symptoms then start the neonate on benzyl penicillin (Crystapen):

- Procaine benzyl penicillin 50mg/Kg IMI daily for 10 days

OR

- Benzyl Penicillin 30mg/Kg 12 hourly IV for 7 days and give 8 hourly for a further 3 days

Check that both parents are treated.

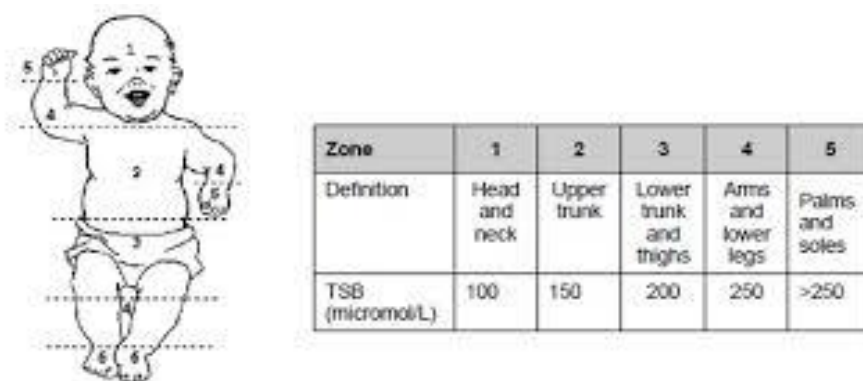
JAUNDICE

Mild jaundice will develop in many babies and this is quite normal. However, jaundice can also be a sign of infection. If baby is not sucking well and has jaundice, examine and assess for any sources of infection. Consult the Paediatrician for possible referral.

The table below shows Kramer's rule which describes the relationship between serum bilirubin levels and the progression of skin discolouration. The cephalocaudal progression of jaundice with increasing bilirubin level has is divided into 5 zones and can be traditionally used to visually assess the severity of jaundice.

Kramer Staging: Clinical Assessment of Jaundice¹²

Figure 12.5



CONGENITAL TUBERCULOSIS ¹⁵

Start Isoniazide prophylaxis (10mg/kg) on neonates born to mothers who have positive sputum for tuberculosis. Consult the respective TB focal personal for Isoniazide Prophylaxis Therapy Registration (IPT) and seek directive from a Paediatrician for further care.

Note that BCG vaccine can be given two weeks post IPT.

NEONATES BORN TO A HIV POSITIVE MOTHER ¹³

For pregnant women who are infected with HIV, there is sufficient evidence that there are effective ARV regimes that will significantly reduce transmission of HIV from the mother to her child.

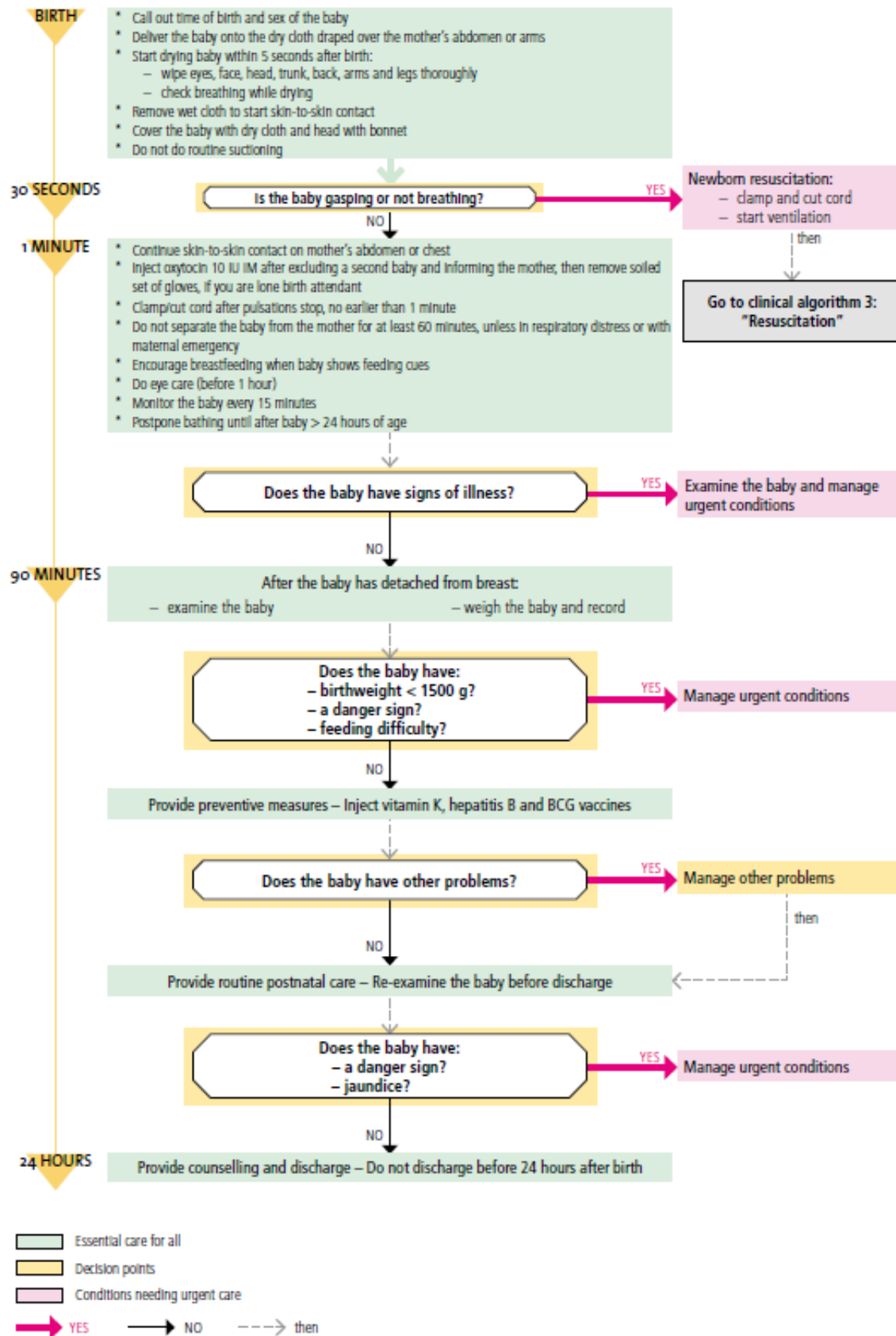
Give a single dose of Nevirapine (2mg/Kg) plus ZDV (4mg/kg) for 4 weeks.

Inform your respective HIV Focal Person for registration purposes. Consult the Paediatrician for further management care plans.

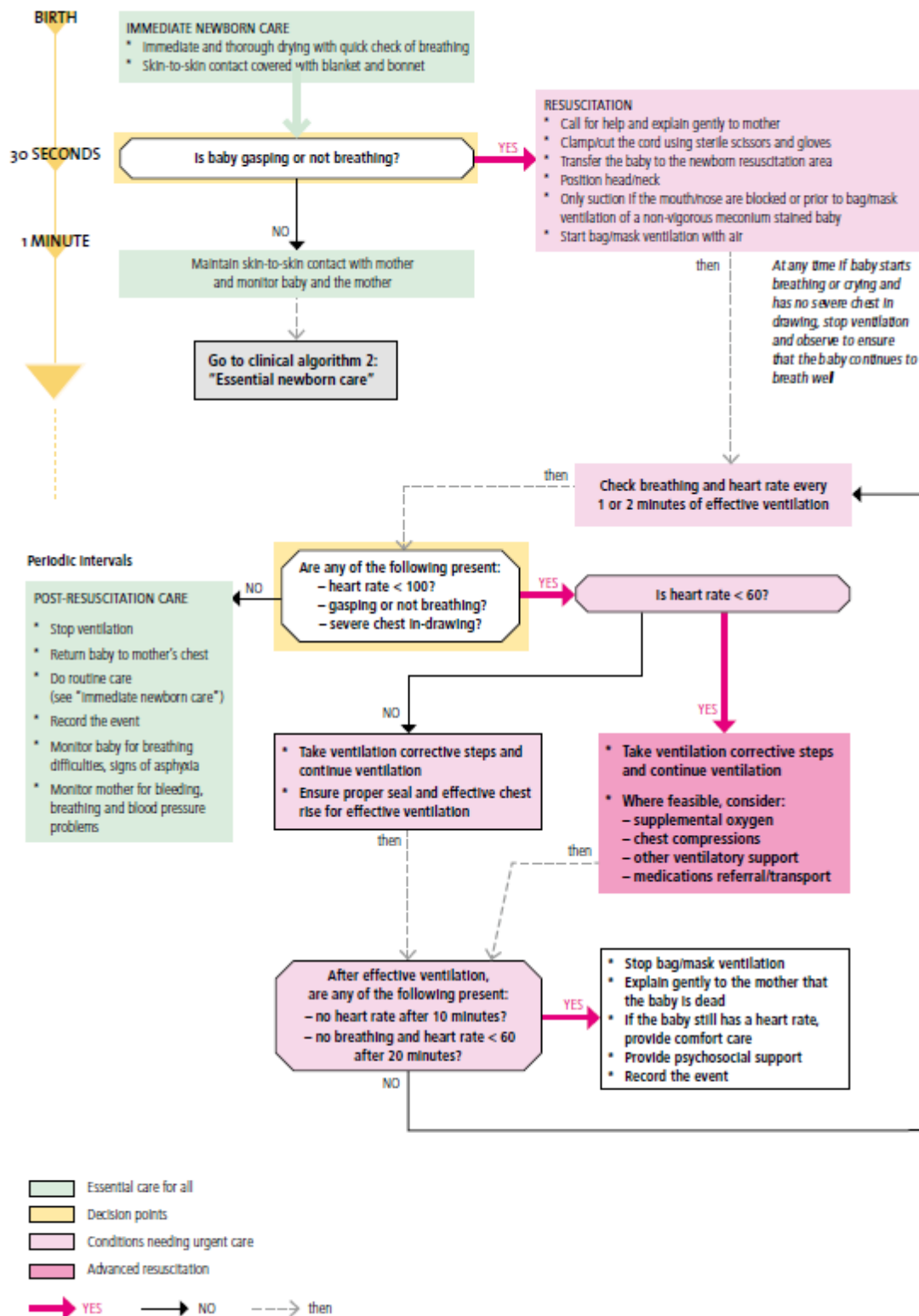
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Appendix 12.1: Essential New Born Care



Appendix 12.2: Newborn Resuscitation



Appendix 12.3: Vanuatu Immunization Schedule

VACCINATION	AT BIRTH	1 MONTH	2 MONTH	3 MONTH	1 YEAR
BCG	✓				
HEPATITIS B	✓				
OPV		✓	✓	✓	
IPV				✓	
PENTAVALENT		✓	✓	✓	
MEASLES / RUBELLA					✓

Appendix 12.4: NEONATAL RESUSCITATION SUPPLIES

- **Suction Equipment**
Bulb syringe
Mechanical suction and tubing
Suction catheters, 10F, 12F or 14F
8F feeding tube and 20-mL syringe
Meconium aspirator
- **Bag and Mask Equipment**
Device for delivering positive-pressure ventilation, capable of delivering 90% to 100% oxygen
Face masks, new born and premature sizes (cushioned-rim masks preferred)
Oxygen source with flowmeter (flow rate up to 10 L/min) and tubing
Pulse oximeter and oximeter probe
- **Intubation Equipment**
Laryngoscope with straight blades, No. 0 (preterm) and No. 1 (term)
Extra bulbs and batteries for laryngoscope
Endotracheal tubes, 2.5-, 3.0-, 3.5-, 4.0-mm internal diameter (ID)
- **Medication:**
Epinephrine 1:10,000 (0.1 mg/mL)—3-mL or 10-mL ampules
Isotonic crystalloid (normal saline or Ringer's lactate) for volume expansion—100 or 250 mL
Dextrose 10%, 250 mL
Normal saline for flushes
- **Miscellaneous**
Gloves and appropriate personal protection
Radiant warmer or other heat source
Firm, padded resuscitation surface
Clock with second hand (timer optional)
Warmed linens
Stethoscope (with neonatal head)
Tape, 1/2 or 3/4 inch