Fifth edition 2024

NATIONAL INTEGRATED MATERNAL AND PERINATAL CARE GUIDELINES FOR SOUTH AFRICA

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Foreword

Dr SSS Buthelezi
Director-General of Health

The National Department of Health has identified maternal and new-born health care as a priority area requiring urgent action in South Africa. This is in line with the target to achieve the Sustainable Development Goals (SDG) as well as the targets set in our National Development Plan. SDG 3.1 aims to reduce the maternal mortality ratio to <70 deaths per 100 000 live births and SDG 3.2 aims to end preventable deaths of newborns and children.

To this end, we have supported the implementation of recommendations arising from the triennial Saving Mothers and Saving Babies Reports that have been produced by two Ministerially appointed committees: the National Committee on Confidential Enquiries into Maternal Deaths (NCCEMD) and the National Perinatal Morbidity and Mortality Committee (NaPeMMCo). Both committees have recommended regular updating and strengthening of guidelines on the clinical management of the common causes of maternal and new-born deaths in South Africa.

I am proud to announce that the guidelines for maternal and newborn care were expanded to have three distinct (but interlinked) documents- an updated version of maternal care, a completely new guideline on newborn care including management of small and sick neonates, and all related health system and policy issues are in a separate guideline aimed at management level.

There were substantive changes in the way antenatal and intrapartum care are rendered since the previous version of the maternal guideline (fourth edition; 2016) was published, based on a solid research evidence from the WHO. The WHO antenatal care guidelines encouraged more antenatal visits, and SA was one of the first countries to implement this schedule, called Banc Plus, on the 1st of April 2017. Many studies in the past decade, most of them done in Africa, has also demonstrated that the concept of all women following a rigid cervical dilatation rate of 1cm/hour during labour is not entirely correct, but that there is major variation in dilatation rate amongst women during normal labour. The WHO has introduced a new Labour Care Guide to replace the existing partogram. This tool will ensure quality, evidence-based, woman-centred care for a positive childbirth experience within the context of a broader, rights-based approach. During the bridging phase, SA is using an 'interim' partogram, described in this guideline, that have already incorporated most of the newer concepts.

The National Department of Health will support wide distribution, training in the guidelines and monitor their use. In addition, it is imperative that medical and nursing schools in the country use the maternity care guidelines in their training programmes. The guidelines contain the basic minimum that needs to be known by all professional nurses and doctors. Their use will lower high maternal and perinatal morbidity and mortality rates and improve the quality of care for women, their babies, and their families.

All chapters were carefully written or updated based on the best international evidence, adapted for local use. The medicine choices all align to the Essential Medicine List. New maternal chapters were added, including the use of a massive blood transfusion protocol, maternal mental health, respectful care, intimate partner violence, Covid-19 and fetal monitoring.

The team that reviewed and upgraded the guidelines are experts from all nine provinces, at all levels of care, and the guidelines were extensively workshopped and revised by many stakeholders. Although this edition should be regarded as National Guidelines, it should be developed into clinical protocols at provincial and institutional level, where necessary. I would like the provincial and district MCWH managers to ensure that these guidelines and the necessary clinical protocols are available and implemented in each facility at which maternity care is conducted.

Finally, I wish to thank all the experts for their time and effort put into making these guidelines essential reading for those caring for pregnant women, their family and their infants during the antenatal period, childbirth, the puerperium and beyond.

DR SSS BUTHELEZI
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Special thanks to the lead authors especially the clinical specialists and academia, who reviewed scientific evidence on clinical interventions and the WHO support with latest evidenced based recommendations on which these guidelines are based.

We thank all the attendants who represented various organizations during the guideline development process. We appreciate the feedback provided by a large number of frontline clinicians and stakeholders during the virtual meetings and physical writing retreats and workshops that took place as part of the guideline development process. We also appreciate Clinton Health Access Institute, who provided logistical support for writing retreats.

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Acronyms and abbreviations used in the text

3TC	Lamivudine
AC	Abdominal Circumference
AIDS	Acquired Immunodeficiency Syndrome
ANC	Antenatal Care
APH	Antepartum Haemorrhage
ARDS	Adult Respiratory Distress Syndrome
ART	Antiretroviral Therapy
ARVs	Antiretrovirals
AVPU	Alert, response to Voice, response to Pain, Unresponsive
AZT	Zidovudine
BANC	Basic Antenatal Care
BANC Plus	Basic Antenatal Care Plus
BMI	Body Mass Index
BP	Blood Pressure
BPD	Bi-Parietal Diameter
bpm	Beats per minute
BRB	Blood on Returnable Basis
Ca	Cancer
CBP	Childbearing Potential
CD	Caesarean Delivery
CD4	T-helper cells-a Unit Measure of the Immune System
CEO	Chief Executive Officer
CHC	Community Health Centre
CHW	Community Health Worker
CM	Cryptococcal Meningitis
CPAP	Continuous Positive Airway Pressure
CPD	Cephalo-Pelvic Disproportion
CPR	Cardio Pulmonary Resuscitation
CPT	Cotrimoxazole Prophylaxis Therapy
CrAg	Cryptococcal Antigen
CRL	Crown Rump Length
CTG	Cardiotocograph
CT-SCAN	Computerised Tomography
CTX	Cotrimoxazole
CVP	Central Venous Pressure
CXR	Chest X-Ray
DandC	Dilatation and Curettage
DCST	District Clinical Specialist Teams
DHIS	District Health Information System
DIC	Disseminated Intravascular Coagulation
DST	Drug Sensitivity Testing
DTG	Dolutegravir
DVT	Deep Vein Thrombosis
ECG	Electro Cardiogram
ECV	External Cephalic Version
EDD	Expected Date of Delivery
EFV	Efavirenz
EFW	Estimated Fetal Weight
EGK	Electronic Gate Keeping
EML	Essential Medicines List
EMS	Emergency Medical Services
EMTCT	Elimination of Mother to Child Transmission
EOST	Emergency Obstetric Simulation Training
EPI	Expanded Programme on Immunisation
ESMOE	Essential Steps in the Management of Obstetric Emergencies
FBC	Full Blood Count
FGR	Fetal Growth Restriction
FIGO	International Federation of Gynaecology and Obstetrics

FTC	Emtricitabine
FTIC	Fast Track Initiation Counselling
GTT	Glucose Tolerance Test
GXP	GeneXpert TB Test
Hb	Haemoglobin
HB	Haemoglobin
HC	Head Circumference
HCG	Human Chorionic Gonadotrophin
HCW	Health Care Worker
HEI	HIV-exposed Infant
HELLP	Syndrome of haemolysis, elevated liver enzymes and low platelets
HEU	HIV-exposed but uninfected
HIV	Human Immunodeficiency Virus
HOD	Head of Department
HPCSA	Health Professions Council of South Africa
HTS	HIV Testing Services
ICU	Intensive Care Unit
ID	Infectious Diseases
IM	Intramuscular
INH	Isoniazid
INR	International Normalized Ratio
IPV	Intimate Partner Violence
IRIS	Immune Reconstitution Inflammatory Syndrome
ISSHP	International Society for the Study of Hypertension in Pregnancy
ISUOG	International Society of Ultrasound in Obstetrics and Gynaecology
IUCD	Intrauterine Contraceptive Device
IUD	Intrauterine Death
IUGR	Intrauterine Growth Restriction
IV	Intravenous
IVI	Intravenous Infusion
LAM	Lipoarabinomannan
LMIC	Low- and Middle-Income Countries
LNMP	Last normal menstrual period
LP	Lumbar Puncture
LPA	Line Probe Assay
LPV/r	Lopinavir/ritonavir
LFT	Liver function tests
LTBI	Latent TB Infection
MCS	Microscopy, Culture and Sensitivity
MCR	Maternity Case Record
MCV	Mean Cell Volume
MCWH	Maternal, Child and Women's Health
MDNF	Maternal Death Notification Form
MDO	Missed Diagnostic Opportunity
MIP	Mother-infant Pair
MNCWH&N	Maternal Neonatal Child Women's Health and Nutrition
MOU	Midwife Obstetric Unit
MRI	Magnetic Resonance Imaging
MSL	Meconium Staining of the Liquor
MTCT	Mother to Child Transmission
MUAC	Mid Upper-Arm Circumference
MVA	Manual Vacuum Aspiration
NCCEMD	National Committee for the Confidential Enquiries into Maternal Deaths
Neb	Nebulisation
NGO	Non-Governmental Organisation
NHLS	National Health Laboratory System
NIBP	Non-Invasive Blood Pressure
NICE	National Institute for Health and Care Excellence
NPO	Nil Per Os
NSA	Non-suppression Algorithm

NSAIDs	Non-Steroidal Anti-Inflammatory Drugs
NTD	Neural Tube Defect
NVP	Nevirapine
OD	Once Daily
OI	Opportunistic Infection
OMBU	On-site midwife birthing unit
PCG	Parent/Caregiver
PCP	Pneumocystis jirovecii Pneumonia
PCR	Polymerase Chain Reaction
PCV	Packed Cell Volume
PEP	Post Exposure Prophylaxis
PET	Pre-Eclampsia
PHC	Primary Health Care
PICT	Provider Initiated Counselling and Testing
PID	Pelvic Inflammatory Disease
PMTCT	Prevention of Mother to Child Transmission
PNRM	Perinatal Review Meeting
PO	Per os (per mouth)
PP	Parietal-Parietal
PV	Vaginally
PPIP	Perinatal Problem Identification Programme
PrEP	Pre-Exposure Prophylaxis
PTT	Partial Thromboplastin Time
RfA	Results for Action NHLS Reports
Rh	Rhesus Factor
RPR	Rapid Plasma Reagin
RTHB	Road To Health Booklet
Rx	Treatment
SA	South Africa
SBAR	Situation-Background-Assessment-Recommendation
SC	Sub Cutaneous
sd	Single dose
SDG	Sustainable Development Goals
SFH	Symphysis-Fundal Height
SOP	Standard Operating Procedure
SRH	Sexual and Reproductive Health
STI	Sexually Transmitted Infections
TACO	Transfusion Associated Circulatory Overload
TB	Tuberculosis
Tdap	Tetanus, diphtheria, and pertussis
TDF	Tenofovir
TEE	ART Regimen containing Tenofovir, Emtricitabine and Efavirenz
TLD	ART Regimen containing Tenofovir, Lamivudine, and Dolutegravir
TPHA	Treponema pallidum haemagglutination assay
TPT	TB Preventative Therapy
TRALI	Transfusion Related Acute Lung Injury
TST	Tuberculin Skin Test
TT	Tetanus Toxoid
TTO	To Take Out (Drugs)
U&E	Urea and electrolytes
UTI	Urinary Tract Infection
VBAC	Vaginal Birth after Caesarean Section
VL	Viral Load
VLS	Viral Load Suppression
VMMC	Voluntary Medical Male Circumcision
VTP	Vertical Transmission Prevention
WASH	Water, Sanitation and Hygiene
WHO	World Health Organization
WLHIV	Woman Living with HIV

Medicolegal implications for these guidelines

These guidelines have been designed by the department of health to guide the care that is provided for pregnant women and neonates in South Africa. They represent the desired standard of care. Clinicians must be aware of the guideline contents and understand how to implement them.

These guidelines were designed by interdisciplinary healthcare teams to provide safe maternal care based on best evidence and our national context and are believed to be accurate and current at the time of release. These guidelines are intended to provide general advice and guidance and must not be solely relied upon as a substitute for assessing the individual needs of each mother. They must be used in conjunction with a thorough history and clinical examination and considering a particular clinical setting and resource availability.

Individual hospital and community health centres are encouraged to draw up their own protocols based on this content, adjusted to their own circumstances. Additionally, where resource constraints (staffing, infrastructure, equipment or other) prevent the full implementation of these guidelines, formal notification of the constraints and their impact on the ability of clinicians to follow these guidelines should be documented and sent to management.

Although great care has been taken to avoid any errors or omissions in preparing these guidelines, there exists the potential for both factual errors and differences of opinion. Clinicians should consult other sources of information, particularly if there is any doubt, including product information sheets for drug dosages. The authors cannot be held responsible for any errors and take no responsibility for matters arising from changed circumstances or information that may have become available after the issued or reviewed date.

Implications for Hospital CEOs

All CEOs have a responsibility to ensure that every doctor and midwife working in maternity has easy access to a copy of these guidelines and that all staff understand they have a responsibility to follow the guidelines, or any local protocols derived from the guidelines.
Notification of any constraints (such as listed above) should be made to district or provincial management, as soon as possible, and reviewed at least annually. An example of a way of notifying challenges are provided in an addendum at the end of this guideline (Addendum 1).
In cases where resource constraints directly impact the care of individual patients, these impediments should be documented in the clinical notes (for example, an unusually busy theatre, or concurrent emergencies) and the CEO informed.

Training

All midwives and doctors working in maternity should aim to complete the ESMOE and other training programmes, with modules aligned to these guidelines. The aim is that ESMOE drills should occur at least monthly at every facility.

Litigation

Great strides have been made in improving health care in South Africa including maternity and neonatal care, however significant resource constraints still limit the full realisation of national health goals, and substantial disparity remains within and between provinces.

In the current South African medico legal context, the courts appear to have largely interpreted previous versions of these guidelines as an absolute set of standards without due consideration of the particular circumstances of the healthcare centre in question. The intention of section 27 of the Constitution requires progressive realisation of health care in South Africa and not an exact portrait of what is portrayed in the guidelines. It should be reiterated that the guidelines reflect best practice standards which may not yet be attainable in all circumstances.

The courts, when referencing these guidelines in the determination of whether negligent care was present or not, are urged to consider the matter from the perspective of section 27(2) of the Constitution, including, without limitation, the context in which the care took place, and whether the actions of the health care team under the particular circumstances were reasonable or not. Considering the matter from the perspective of section 27(2) of the Constitution requires a realisation that “the obligations imposed on the State by … s 27 in regard to access to … health care, [is] dependent upon the resources available for such purposes, and that the corresponding rights themselves are limited by reason of the lack of resources.”

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Chapter 1: RESPECTFUL MATERNITY CARE

Respect the dignity and autonomy of all women at all times, regardless of their race, gender, sex, pregnancy, marital status, ethnic or social origin, age, disability, religion, belief, culture, language, number of children, economic, marital and health status, type of work (e.g. sex workers), legal status, and level of poverty (homeless and uneducated women).

All staff should be respectful. This includes health care providers, administrative, support and security staff.

Respectful care upholds the dignity and standing of the health professions and can increase health worker satisfaction and morale. It is associated with improved mental and physical health outcomes of women and their newborns.

All maternity care staff should do the following:

- Introduce themselves.
- Call women by their preferred name.
- Speak in a warm and friendly manner.
- Never turn women away from receiving care.
- Allow women to be accompanied by their choice of companion.
- Communicate anticipated delays to clients and their companions.
- Respect all cultures and beliefs.
- Treat all people equally.
- Listen to the woman's concerns, encourage and answer any questions.
- Obtain informed consent and only perform necessary examinations and procedures. Where possible, consent should be obtained when a woman is able to ask questions and engage, not while in pain or discomfort.
- Provide education and explanations in a woman's language of choice (if possible) and in a simple manner that is understandable. Check the woman has understood and answer her questions.
- Maintain privacy and confidentiality.
- Do not share the woman's information unnecessarily, including verbally.
- Do not share the woman's health information with non-health care workers.
- All examinations should be conducted in private settings.
- Ensure continuity of care. At change of shift, introduce staff who are taking over the woman's care and explain why handover needs to occur.

Disrespect and abuse occur in many ways, including:

- Stigma and discrimination - such as the failure to provide services or providing poor quality care due to prejudicial beliefs.
- Poor rapport between women and providers such as dismissal of women's concerns, poor staff attitudes, lack of supportive care; denial or lack of birth companions; denial of food, water, or mobility; lack of respect for preferred birth positions; denial of traditional practices; objectification of woman
- Physical abuse - Unwanted and/or unauthorised physical contact (including slapping, pinching, denial of pain relief, physical restraint)
- Unnecessary medical interventions (these may be unindicated episiotomy, caesarean section, tubal ligation, and hysterectomy)
- Verbal abuse including shouting, shaming, scolding, humiliating and rude language; for example saying, "you opened your legs to get pregnant, why don't you open your legs now"; "you will kill your baby if you don't co-operate")
- Sexual abuse (inappropriate touching during physical exams, unnecessary vaginal exams, rape)
- Failure to meet professional standards breaking clinical and policy guidelines, lack of informed consent, threats and coercion, breaking confidentiality, performing unconsented procedures, denying pain medication, neglecting, and abandoning women.
- Health system conditions and constraints lack of accountability and management, staffing and other resource shortages (e.g. supplies and equipment), poor hygiene, infrastructure creating lack of privacy.

Respectful care during labour and giving birth

- If possible, triage women who arrive in labour ward within 15 minutes of arrival (or as soon thereafter as possible).
- Conduct rapid screening of whether women are bleeding or not - fetal heart rate detection and status of labour.
- Follow admission protocol formally.
- Communicate the likely process, explain to the woman whether she will stay in one area or move as labour progresses.
- Encourage and support women and their birth companions.
- Provide adequate pharmacological and non-pharmacological pain relief.
- Encourage women to eat and drink during labour.
- Encourage women to choose their birth positions, if safe.
- Ensure privacy during birth by covering women with a sheet and if possible dividing the space between birthing women with a curtain, when separate rooms are not available in a labour ward.
- Always gently clean the woman and her baby after birth.

Respectful postnatal care

- Do not leave infants unattended.
- Do not unnecessarily separate woman and infant.
- Encourage skin to skin / kangaroo care after delivery.
- Never transfer infants to other facilities without parental consent.
- Ensure woman and infant are well prior to discharge.
- Families who have experienced pregnancy loss, miscarriage, neonatal death or who are caring for sick or underweight infants need additional support.

Managing a difficult situation

Clients may shout, question your skill and ability or be un-communicative and resistant. Remember that they are likely scared or worried and physically uncomfortable. Always act professionally, even if this is hard.Treat all clients with respect, regardless of the circumstance.

What you can do

1. Remain calm	2. Acknowledge their emotion.	3. Connect	4. Retain
Take a deep breath Be gentle and warm Do not argue or get angry Be empathetic	Say" I can see that you are upset". Be aware of your body language.	Find out what their expectations are, and what is upsetting them. Ask questions gently "Please explain how I can help you?/ What is making you feel this way?"	Encourage the woman to come back for follow-up antenatal/postnatal care.

Respectful care: birth companions

The World Health Organization advocates for birth companions as this is a low-cost and effective intervention for improving the quality of maternity care and improving outcomes for women and newborns.

- All women throughout labour have the right to a birth companion of their choice. All institutions need to have baseline protocols for including birth companions - cases where they aren't allowed should be the exception and should be centred around patient safety. These should be clearly communicated to all using the facility and all staff, including security and clerical staff.
- Discuss birth companion matters with women during antenatal care.
- A birth companion can be a partner, a trusted relative, friend or a trained doula.
- Counsel birth companions on providing emotional, and practical support, without interfering with the work of the health provider.
- A birth companion can assist women in addressing situations when they are not being treated respectfully. Ideally women should select their birth companion (and a back-up companion) before delivery.
- Birth companions should be registered (name and contact number) in the Maternity Case Record (MCR) or maternity notes. This is not the same as registering next of kin.

Role and responsibilities of birth companion

Before the birth

Health workers to educate birth companions to:

- Attend ante-natal care visits and support the woman to attend regularly.
- Know layout of the facility e.g. bathrooms.
- Ensure that there is a bag packed with necessary items for mother and baby for when labour begins.
- Have a plan for transport to the hospital or clinic when labour begins.
- Plan to care for other children in the home.
- Prepare food and beverages for the hospital stay.

During labour

Health workers to educate birth companions to:

- Be informed about infection prevention and hand hygiene.
- Know not to administer medication or handle medical equipment.
- Use of techniques to reduce stress and make women more comfortable - verbal encouragement, singing softly, holding the woman's hand, rubbing her back and helping her relax with deep, slow breathing.
- Encourage women to mobilise between contractions and to eat and drink during labour.
- Alert health providers to any change in the woman's condition.

During caesarean delivery

- If the CD happens under a spinal anaesthetic, and the procedure is uncomplicated, the birth companion may be with her during the birth (if woman and birth companion both want this).
- Sometimes, a woman may be disappointed if she was planning a vaginal birth. Birth companions can encourage her and praise her as much as possible, and give her the chance to talk about her feelings.
- Help to bring her baby to her as soon as possible after the birth.

After labour and at home post-birth

- Companions can provide support to women for physical and mental health and breastfeeding

Concerns raised regarding birth companions

Concern	Solution
Security concern with unknown people attending the facility	Ensure excellent access control. Encourage women to register birth companions, in Maternity Case Record or notes, and check if companion is registered at every ANC visit. This enables facility staff to easily identify them.
Limited space and no privacy for other labouring women.	Local SOPs can be developed around gender of companion allowed according to privacy and safety situations. Curtains to separate existing delivery rooms, if full partitions not available. Even if a birth companion cannot be present while the woman gives birth, their role during pregnancy and after birth is still valuable.
Lack of confidentiality	Staff to educate birth companions on importance of confidentiality.
Fear of infection	Staff to educate birth companions on importance of infection control and hand hygiene.
Fear of increased workload on staff by presence of more people	Health providers report companions are helpful. They provide support of getting food and drink, calming, emotionally supporting, and encouraging women in labour, and alerting staff about women's sudden needs. There is no cost for the additional help!

Providing services to foreign clients

- Every person, including foreign nationals, regardless of their legal status has the right to access health care and be treated with respect and dignity.
- In South Africa, all pregnant women, all breastfeeding women and all children under the age of 6 years can access health care at any level.
- South African law and health policy provide for inclusive care to all people. Healthcare workers' respectful care builds trust with foreign women, especially the many who are displaced, and faced extreme trauma in their country try of origin and South Africa.

Engaging clients where there is a language barrier

- Healthcare workers and managers should educate themselves about different cultures so that you can speak about sensitive topics with care and respect.
- Introduce yourself warmly with a gentle, welcoming smile. Warm body language can be a useful tool for communication.
- If unable to converse in the woman's language:
  - Ask if there is a family member present, who the woman is comfortable with, to assist with communication.
  - Ask if any staff can speak the language of the woman to assist with translation.
  - Keep sentences short and simple
- If breaking bad news - there must be a translator present.
- Clinic managers are to educate staff to learn "May I?", "Thank you", and "Please" in common languages.
- Attempt non-verbal communication with pictures and equipment to improve communication e.g. demonstrate taking a blood pressure (BP) using a cuff on yourself or another member of staff, before taking the clients BP.
- If you have a smartphone, download Google Translate, which translates what both you and the client are saying in your respective languages of choice.

Engaging with adolescents

- Adolescents are often harshly judged by health workers, other staff and adult women in the maternity setting.
- They face higher risks of eclampsia, puerperal endometritis and systemic infections that older pregnant women. Babies are at greater risk of being pre-term, underweight and having a severe neonatal condition.
- Young women and girls may not have sufficient information about their sexual and reproductive health and rights, suffered from sexual abuse, been pressured to have sex by peers or to have transactional sex by older men for support. They often face stigma or rejection from family or community.
- Adolescents often feel very alone and scared – and may not have disclosed their pregnancy to anyone. They need gentle and welcoming help. If not treated respectfully, they are less likely to attend regular antenatal care which increases poor birth outcomes.

The following communities are vulnerable to disrespectful and abusive care by the health system, and by society. Be particularly attentive to providing un-biased, respectful and equal care to all, and especially to vulnerable persons such as: persons with physical and mental disabilities, women, youth, children, older persons, those with limited resources, those living with chronic conditions, victims of gender-based violence, LGBTQI communities, children with special needs, (e.g. orphans, child-headed families), homeless persons, abandoned neonates, inmates, sex workers, displaced and migrant populations, domestic workers, ethnic minorities, families who have been bereaved, alcohol and drug users and people living in far to reach areas (e.g. rural areas)

Respect in the workplace

- Create a respectful work environment through positive feedback and praising respectful actions
- Staff should feel supported by their line managers and colleagues. When staff feel supported, it is easier to hear and consider constructive feedback on poor performance.
- Mentor/ mentee relationships are important for quality and respectful maternity care.
- Never criticise a colleague in public. Provide constructive feedback.
- Focus on learning, and solutions to address problems.
- Do not speak behind a colleague's back.

Self-care for health workers

How to minimise burn out?

- Get enough sleep
- Exercise
- Eat healthily
- Take care of your physical and mental health
- Take time out to relax
- Do things that you enjoy, including creative activities
- Spend time with loved ones
- Identify support networks and use them
- Ask for help when you need it.

HealthworkerConnect provides quick info and practical advice on how to manage shifts, improve your sleep, deal with conflict and so much more! To learn practical resilience techniques to handle stress, send "resilience" to +27 60 060 1111 or tap on this link on your phone https://wa.me/27600601111?text=resilience

Help line numbers

Try to find local resources in your area. It is helpful to have referral sources where you can refer clients, so that they can get additional help and their wellbeing is not entirely your responsibility.

National help lines

- SADAG http://www.sadag.org/ offers referrals to mental health professionals or support groups by trained counsellors. Seven days/week: 8am to 8pm.
    - Telephone: 011 234 4837 or 0800 21 22 23 or 0800 70 80 90
    - Suicide Crisis line: 0800 567 567 or SMS 31393
    - Mental health information and links to group/individual support available
- Lifeline offers support for personal crisis, trauma, abuse or rape. Toll-free: 0861 322 322
- FAMSA (Families South Africa) offers counselling for couples and families, with branches throughout South Africa. National office: 0119757106/7
- Childline SA (ages 0-16) For children and young adolescents who are in crises, abuse or at risk of abuse and violence Toll free: 116 (children and adults)
- Department of Social Development Substance Abuse 24hr Helpline: 0800 12 13 14 or SMS 32312
- National Shelter Movement of SA https://www.nsmsa.org.za/ 24hr Toll free: 0800 001 005
- Alcoholic Anonymous counselling, education and support groups for patient with alcohol misuse 24 hour helpline: 0861 435 722
- Women's Legal Centre www.wlce.co.za free legal advice for women 021 424 5660

Violence

- SAPS (Police) Crime Stop 0860 10111 / SMS Crime Line: 32211
- Gender based violence (GBV) - related service complaints (SAPS) 0800 333 177
- GBV Command Centre 0800 428 428 / Send a "Please Call Me" by dialing *120*7867# from any cell phone, SMS 'help' to 31531, 'Helpme GBV' via skype
- People Opposing Women Abuse (POWA) www.powa.co.za, 0800 029 999
- Lifeline Domestic Violence helpline 0800 150 150
- Rape Crisis 24-hour support including how to access Thuthuzela Care Centres for medical and forensic assistance to rape survivors
    - Afrikaans: 021 633 9229
    - isiXhosa: 021 361 9085
    - English: 021 447 9762
    - WhatsApp 083 222 5164
- MOSAIC Telephone counselling and referrals for survivors of abuse: 021 761 7585 (08:30 – 16:00)

Reporting disrespect and abuse

- It is each healthcare worker's professional and ethical obligation to report observed abuses to senior management.
- If abuse occurs, it is extremely important to report those abuses, and for those reporting abuses to be protected. The Protected Disclosures Act (2017) protects health workers who support patients, and report violations to accountable officers, provided staff report abuses within the prescribed manner, in good faith and in truth.
- Anonymous reporting is available through the Office of Health Standards and Compliance. Toll free: 080 560 4157.
- Office of Health Ombud: WhatsApp support line: 0600 123456, Toll free: 080 911 6472, email complaints to: complaints@ohsc.org.za

Chapter 2: MATERNAL MENTAL HEALTH

- Pregnancy, childbirth and the first year after birth are often stressful times for women. Social and financial challenges are often worse at this time. Emotional distress and mental health conditions are also linked to physical health problems for mother and child.
- Fathers or partners may also be at risk of mental health conditions at this time. This can affect the wellbeing of mothers and infants.
- Mistreatment of pregnant and postnatal women is a human rights violation. It adds stress and can worsen mental health conditions already experienced by the woman. It can also cause new mental health conditions such as Post Traumatic Stress Disorder. See the chapter on respectful care.
- Mental health conditions affect a person's feelings, thoughts and behaviours. Mental disorders are not the same as temporary distress. Mental disorders affect a person's functioning: at work/school, home and in the community. People with mental disorders may struggle to use health and social services that are available and may struggle to bond with and parent their children.

Types of mental health conditions

Selected conditions are described in the table (see later) together with management. Any condition may present for the first time or become more severe during or after pregnancy.

- 'Common mental disorders' include depression, anxiety, posttraumatic stress disorder, and substance use – they are common.
    - Symptoms may be mild, moderate, or severe.
    - A person may have more than one mental health condition at the same time (comorbidity). Comorbidity is common and increases the severity of common mental disorders. When comorbid, each condition can have separate and cumulative (additive) negative effects for mother and child.
    - Prevalence of perinatal anxiety and/or depression in South Africa (antenatal or postnatal): 1 in 3 women.
- 'Severe mental disorder' usually refers to bipolar and psychotic disorders.
    - These are uncommon (2–3% of the general population) but are always severe as they cause significantly impaired functioning.
    - Remember that puerperal sepsis and other physical causes of delirium may look similar to postnatal psychosis.

Possible negative effects of untreated mental health conditions:

- Pre-conception – increased risk of non-adherence to treatment or contraception, unwanted or unintended pregnancy
- Pregnancy – preterm labour, intrauterine growth restriction hypertension, pre-eclampsia, gestational diabetes
- Newborn – low birthweight babies; premature birth, severe disorders associated with increased neonatal morbidity, problems with bonding and breastfeeding
- Infancy and childhood – poor mother-child attachment, poor or inadequate infant nutrition in the first year of life, and childhood developmental and behavioural problems, incomplete immunisations

Risk factors for maternal mental health conditions

- being a teenager
- living with a chronic disease including HIV
- poor support / poor relationships
- unwanted / unintended pregnancy
- difficult life events / trauma (e.g. bereavement and current or past abuse)
- intimate partner violence / domestic violence
- alcohol or substance abuse
- past psychiatric history
- serious physical problem in mother or baby
- being a refugee, asylum seeker, displaced person
- previous or current pregnancy loss, miscarriage, still birth and neonatal death
- preterm birth, congenital disorders, or physical illness in neonate
- chronic physical illness in woman
- poverty and food insecurity

Screening

- Screening is important as mental disorders are often not easy to identify and symptoms may change over time.
- Screening for anxiety, depression, and suicidality is included as a 3-item tool in the Maternity Case Record (MCR) developed and validated in South Africa.

How to screen

- screen at least once during pregnancy at booking. If resources permit, repeat for each trimester and once during the postnatal period (from 6 weeks to 3 months) and regularly thereafter up to one year.
- offer to all women, but if a facility does not have adequate referral resources, certain high-risk groups can be selected for screening –develop a local screening Standard Operating Procedures (SOPs) accordingly
- conduct screening as part of the routine history taking process – this minimises stigma
- first develop rapport with the woman: the way in which screening is offered is linked to how a woman will respond. If the screener has a gentle and kind attitude, the woman is much more likely to respond openly and take up any referrals.
- use clinical judgement and refer women, that you are worried about, for support, even if their screening test is negative.
- designate staff to screen: all grades of nursing staff, medical staff and community health workers may screen. Ensure training and supervision for those who do screening.

Mental Health Screen

Suggested words to use before screening:
"We would like to know about all the women who come here: how they are doing physically and emotionally. This helps us to understand the best sort of care we can offer. Please may I ask you three questions about how you are emotionally?

Please answer 'yes' or 'no' to each question." See Figure 2.1

Figure 2-1 the mental health screening tool from the MCR

In the last 2 weeks, have you on some or most days felt unable to stop worrying or thinking too much?	☐ Yes [1]	☐ No [0]
In the last 2 weeks, have you on some or most days felt down, depressed or hopeless?	☐ Yes [1]	☐ No [0]
In the last 2 weeks, have you on some or most days had thoughts **and** plans to harm yourself or commit suicide?*	☐ Yes [1] **Refer**	☐ No [0]
TOTAL SCORE	0 or 1 2 >>>>>>>>>> refer 3 >>>>>>>>>> refer	
Offered Counselling	☐ Yes	☐ No
Accepted counselling	☐ Yes	☐ No

*If a patient answers 'yes' to the self-harm question refer urgently for a mental health assessment with a medical officer or a mental health professional if:

- both thoughts AND plans for self-harm or
- previous attempt of self-harm.

Risk factor assessment improves screening outcomes.

- If screen is negative but woman has risk factors refer for psychosocial support.
- If a screen is positive, consider risk factors when referring (select appropriate referral options accordingly)

Referral

Refer if needed to appropriate service, such as mental health nurse, social services, NGO, medical officer, counsellor, occupational therapist, psychiatrist, toll free counselling (SADAG, Lifeline) etc and Community Health Workers or other services in the community (see free resources at end of this chapter).
See how to do 'Resource Mapping' under 'Comprehensive Care' later in this chapter.

General management principles

Promotion and prevention

- Create environment to support mental wellbeing: provide respectful care, engage empathically
- Connect women to social support services (social grants, community services, relevant NGOs) and other activities to strengthen social support (women's groups, support groups, faith-based activities and include partners and families)
- Share information about mental health: provide mental health talks in waiting rooms, discuss strategies for self-care and stress management, warning signs and when and how to self-refer; address stigma and myths
- Promote companionship for women in pregnancy, labour, birth and postnatally: develop local SOP that encourages and welcomes companion of choice for women or doula involvement – see Chapter 1 on Respectful Maternity Care

Mother-infant matters

- Assess mother-child interaction as part of post-natal care and refer when appropriate and resources available.
- For women with existing mental health conditions, a multidisciplinary approach to care is essential, with a clear treatment plan and continuity of care across different clinical settings.
- Arrange for observation of infants exposed to psychoactive medications or illicit substances during pregnancy.
- If a mother with a severe postnatal episode requires hospital admission, avoid separation from her infant, where possible.
- Provide gentle breastfeeding support to all women with mental health problems. Breastfeeding challenges are common in women with mental health conditions.
- Women (and their partners) who have experienced a pregnancy loss, miscarriage and stillbirth, as well as neonatal death require special attention and support for bereavement.

Managing pregnancy loss

- Assess whether they want to be left alone for some time or they want someone to be with them.
- Where appropriate:
    - allow them to express grief, rage or any other emotions,
    - allow them to ask any questions, explain the causes, if known, using understandable language,
    - address any thoughts of blame parents may have,
    - separate woman from those with viable pregnancies or live babies,
    - offer for woman and companion to hold the wrapped baby,
    - explore wish for mementos (photos, lock of hair, footprint),
    - offer follow-up debriefing at facility or see resources for counselling below.

Information sharing for mental health promotion and psychoeducation

- Share useful information about mental health issues and self care.
- Explain that emotional difficulties are not a sign of weakness (or any other myth, e.g. laziness).
- Explain symptoms may be similar to many others in the same circumstances.
- Explain too much stress can affect how people think and their actions. It can affect their work and relationships and is not good for the baby. This is true for all people in the home.
- People living with mental health problems can and do get better with good support and/or treatment from trusted family, friends and health workers.

Treatment

Psychoeducation can improve symptoms of mental health conditions and help with treatment adherence.

- Give the person the chance to talk about how they feel about their mental health challenges and treatment and effect on their life.
- Provide information, as needed, on treatment, prognosis and coping methods.

Evidence-based 'Talking' Psychotherapies

Include: Interpersonal Therapy (IPT), Cognitive Behavioural Therapy (CBT), Problem Solving Therapy (PST)/Problem Management and Motivational Interviewing (MI).

- do not need to be given by a mental health specialist (other health workers can be trained)
- not yet routinely available
- clinical supervision is required for these providers

Medications

Moderate to severe anxiety or depression - see treatment algorithm in the Adult Hospital Standard Treatment Guideline (EML, latest version).

- During pregnancy and breastfeeding. SSRIs can be used as first line treatment.
- The medications can be prescribed by a medical officer and do not necessarily need a psychiatrist to prescribe.

Comprehensive care

- Use allied health professionals: Social workers, registered counsellors, and occupational therapists are all able to assist with different aspects of management, including self-esteem, motivation, insight, and judgement. Physiotherapists may also assist with motivation and somatisation, and in reducing mood symptoms through exercise.
- Do resource mapping: Find out what is available in your area.
- Prepare a list of support and referral resources with as much details as possible.
    - Examples: government resources, social workers, specialised mental health professionals, NGOs – especially those running good quality support groups, parenting classes, community health workers, shelters for abused women, drug counselling, bereavement support organisations, church or youth groups.
    - Check how they would like to receive referrals.
    - Get to know people who work there.
    - Check for changes to the resources over time.
- When you make a referral, give as much information as possible to the woman. She may be afraid to go or have practical problems to use the referral.
- Note that women who are upset, frustrated, or refuse treatment are not necessarily aggressive or agitated. See Chapter 1 on Respectful Maternity Care for management. If there is aggressive and/or disruptive behaviour that needs intervention, refer to the appropriate algorithms in the STG.
- See Table 2-1 for a summary of mental health conditions in the perinatal period.

Table 2-1 Mental health conditions in the perinatal period

Condition	Symptoms	Management
Baby Blues • temporary psychological state; not a disorder • usually starts 3rd day post partum • linked to hormonal changes. • 60-80% of women.	• sudden mood swings (feeling very happy, then very sad) • crying for no obvious reason • feeling impatient, • unusually irritable, • restless, • anxious, • lonely or sad	• Usually resolves with compassionate support. • Symptoms may last only a few hours or up to two weeks after birth • Careful monitoring - about 20% of women who experience the 'baby blues' will progress to having postnatal depression.
Depression • low mood, • loss of interest and enjoyment, • as well as reduced energy for at least two weeks. • 15-35% of women in pregnancy or postpartum every year in South Africa.	• extreme sadness • tearfulness • difficulty in concentrating, • Forgetfulness • disturbed appetite or sleep (too much or too little) • thoughts that one is worthless (low self-esteem) • feelings of guilt • helplessness • irritability • extreme tiredness • loss of sex drive • Similar symptoms to anxiety disorders • Many physical symptoms such as body aches and pains • Many women with Postnatal Depression have had symptoms during pregnancy. • Ideas or attempts of self-harm or suicide.	• Screen for common mental disorders • Refer to community mental health team, ward based outreach teams or medical officer if screen is positive or there is clinical impression of a problem • Psychoeducation about depression and treatment options • Women with a past history of a severe mental health condition: comprehensive mental health assessment before conception or in the antenatal period and additional support (particularly in the early postnatal period) by mental health professional • Women experiencing mild depressive or anxiety symptoms in the early postnatal period: practical and emotional support (e.g. advice on parenting, sleep, support groups, etc) and follow up • Women without current symptoms but experiencing significant psychosocial risk: ongoing psychosocial support and targeted management of the risks. • For all levels of severity: supportive counselling, an 'evidence-based talking therapy' and peer support. • Moderate to severe symptoms, consider antidepressant medication – see STG for latest drug advice

Anxiety Disorders • Anxiety symptoms in response to ordinary events, interferes with daily tasks over a period of months (not all anxiety disorder types appear below) Generalised Anxiety Disorder (GAD) • 6 in 100 perinatal women globally. • (Likely higher in SA women) Tocophobia • Abnormal and persistent fear of labour or childbirth. • 14 in 100 pregnant women globally.	Abnormal and great sense of uneasiness, worry or fear. Emotional symptoms: Tiredness Nervous/ Worry/ Panic/ Irritability/ Feeling of dread/ Fear of being alone. Physical symptoms: Sleep problems/Physical tension/Sweating/ Increased pulse/ Body aches/ stomach problems (nausea, diarrhoea)/ Difficulty concentrating. GAD: • Symptoms for at least 6 months • excessive, uncontrollable, and irrational worry about everyday things, • anticipates disaster Tocophobia: • Can be related to previous traumatic birth experiences, • Sexual abuse/ rape. • may be panicking or aggressive • may have obstructed or prolonged labour	• Management of anxiety disorders, in general- see STG for management of depression and use the same management plan. • In addition, relaxation and breathing exercises • consider the short-term use of benzodiazepines for treating moderate to severe symptoms of anxiety while awaiting onset of action of an SSRI in pregnant or postnatal women. • The medications can be prescribed by a medical officer and do not need a psychiatrist to prescribe. Management of Tocophobia • Individualized management and dependent on cause. • Early psychosocial support is important • woman needs to be involved in development of a birth plan • If phobia well managed, refer to secondary or tertiary level care for consideration of an elective CD.
Post-Traumatic Stress Disorder (PTSD) • Result of a traumatic event such as a sexual/ physical attack, unexpected death of a loved one, accident, war, torture, or natural disaster. • Usually associated with serious physical, emotional or psychological harm/ the threat of harm • Prevalence: 2 in 100 for the general population in SA	• Repeatedly re-living the traumatic event through realistic nightmares or flashbacks • Avoidance: a woman with PTSD may avoid thoughts, feelings or conversations that remind her of the event. • Increased agitation • Physical symptoms: Similar to anxiety disorders • Often presents with depression and/or anxiety symptoms	• Refer: Community mental health team / NGO that provides trauma counselling • Psychoeducation about PTSD and treatment options • Medication: SSRI antidepressants - first line treatment for severe PTSD • Obstetric care level: regional hospital for most cases (district hospital if mild and tertiary/central hospital if severe) • Evidence-based Talking Therapy: Trauma focussed Cognitive Behavioural Therapy (CBT). Core principles of trauma-informed care are: • ensure physical and emotional safety • explain any procedures • maximise client choice and control • prioritise empowerment and skill building.
Panic attacks • One or two panic attacks in a person's life – very common • Recurrent attacks and long periods of fear of another attack – may be panic disorder	• Sudden episode of intense fear • Occurs when no real danger nor obvious cause, no warning • Person feels they are losing control, having a heart attack or dying (many physical symptoms possible) • Can have a lot of fear of future possible attacks, can lead to avoidance of some situations • May occur with anxiety, mood, and psychotic disorders, and with alcohol and other substance misuse. • Can indicate increased severity of the primary disorder and possible heightened risk of suicide.	• A doctor needs to exclude physical and other causes of the symptoms before a diagnosis can be made Get treatment • Talking therapy (psychotherapy) • Medications (usually SSRI antidepressants) • Stick to the treatment • Get regular physical activity Acute treatment • Keep calm and reassuring for the patient (most attacks resolve on their own in 30 mins) • If severe, refer to doctor to exclude physical or other problem • If severe, refer to doctor to prescribe a benzodiazepine (watch for respiratory depression)

Bipolar Disorder (BD) • Women with bipolar disorder – greater risk of adverse pregnancy outcomes, e.g. gestational hypertension, antepartum haemorrhage, severe fetal growth restriction and neonatal morbidity. • One in four chance of experiencing a psychotic episode around the time of the birth, if not managed carefully. • Prevalence: 2 in 100 for the general population	• Mania: extreme elevation in mood together with increase in energy and activity. • The period during which a person experiences mania is called a manic episode. Common symptoms of mania: • very happy mood • Irritability • Racing thoughts • Rapid talking • Not sleeping • Excessive self-esteem • Unrealistic plans or ideas • Spending lots of money • Increased sexual energy or inappropriate sexual behaviour • Little insight that behaviour is unusual • Often alternating with episodes of severe depression or mixed depression and anxiety, resistant to treatment with antidepressants. • The manic or hypomanic episodes are often only elicited with probing.	• Long term case management needed. • Aim for pre-conception counselling and control. • Psychoeducation about bipolar disorder and treatment options • Refer: Community mental health team. Management by a psychiatrist is necessary. • Obstetric care level: If possible, regional, or tertiary with psychiatry co-management but not MOU birth • Medications should be prescribed by experienced medical officer or psychiatrist and effects carefully monitored.
Alcohol and Substance Use Disorder • Many women who suffer from a mental illness also present with alcohol and substance use disorders • and alcohol and substance use can lead to a mental disorder or symptoms of mental illness (e.g. depression, hallucinations, memory loss). • Use of alcohol and substances during pregnancy is associated with low weight gain during pregnancy, diminished fetal growth and premature delivery. • During pregnancy, women can be particularly motivated to quit or reduce the use of alcohol and substances. • South Africa has one of the highest prevalence rates for Fetal Alcohol Spectrum Disorders (FASD) globally. • Prevalence: between 9 and 19 in 100 pregnant women in South Africa.	Alcohol or substance use withdrawal symptoms: • Trembling hands • Sweating • Vomiting / Agitation. Symptoms on examination: • increased heart rate and blood pressure. • Withdrawal from different substances may present with different symptoms: • Alcohol: Tremor, gastrointestinal problems • Nicotine (cigarettes): Irritability, restlessness, anxiety, insomnia, fatigue, poor concentration • Cannabis: Irritability, anxiety, insomnia, lack of appetite • Cocaine: Crash phase: fatigue, increased appetite • Cocaine withdrawal phase: Irritability, insomnia, strong cravings, sadness • Methamphetamine ('Tik'): Crash phase: fatigue, increased appetite • Withdrawal phase: Irritability, insomnia, strong cravings, sadness • Opioids ('Heroin' and prescription opioids): Flu-like symptoms, vomiting, anxiety, insomnia, strong cravings, abdominal cramping	General • The priority is to keep the mother in the health system. Don't put too much pressure on her to stop using substances, she may feel judged and avoid future appointments. • Listen carefully and without judgment. • Provide information about the negative effects of substance use for herself and her baby in a neutral, factual way, without blame • If willing, refer her to social worker with experience working in substance abuse/ Community Mental Health Team /mental health counsellor / Substance abuse NGO During pregnancy • Screen to identify substance misuse • Psychosocial interventions like Motivational Interviewing (MI) • Provide medically assisted withdrawal for heroin (including whoonga and nyaope)/prescription opioids or alcohol misuse • Dependence management Obstetric care level • Dagga/weed/cannabis- District hospital • TIK/methamphetamine – regional hospital • Heroin/ cocaine – preferably at tertiary level During labour • Pain relief - often avoided by health staff, but proper analgesia can make labour far safer for women with addiction problems • Compassion, reassurance, nonjudgement, respect For postnatal women • Medical treatment for withdrawal • Observe newborn for withdrawal or actively manage withdrawal • Monitor for postnatal depression, and refer for counselling and medication • Encourage connection with her support system • Refer to appropriate counselling service or rehab when she is ready • Discuss breastfeeding

Postnatal/Postpartum Psychosis • Psychotic disorders are severe mental conditions that cause abnormal thinking and perceptions. • People with psychosis lose touch with reality. • Main symptoms: delusions and hallucinations. • Postnatal psychosis • (puerperal/ postpartum psychosis) usually begins within the first days or weeks after birthing. • Sudden and severe mental illness affecting both the woman and her ability to care for her baby. • May harm themselves or their babies or other children. • Symptoms often relate to circumstances at the time, e.g, the mother may believe that her partner or care provider is trying to harm her, or her baby is dangerous. • Can rapidly deteriorate from slightly bizarre behaviour to frank psychosis – pay attention to family concerns • Prevalence: 1 in 1 000 women who give birth.	Differential diagnosis: • Before making a diagnosis of postpartum psychosis - important to exclude physical illness such as sepsis or organ failure which can cause acute delirium and mental confusion. • All women with suspected psychosis must have a comprehensive medical assessment to look for a medical cause for delirium, e.g. sepsis, stroke from hypertension/ eclampsia, metabolic causes, medications or substance use • Where there is doubt of the diagnosis, women need to be referred to a regional or tertiary hospital where a combined obstetric, medical and psychiatric evaluation can occur. • Early stages of psychosis can be mistaken for substance withdrawal or an aggressive personality. Symptoms can include: • Strange behaviour, for example talking to herself or not talking at all • Inappropriate emotions, for example laughing at something sad • Paranoid or violent behaviour • Agitation and restlessness • Blunted behaviour or emotions (very slow and restricted movements) • Poor concentration • Social withdrawal • Thoughts of suicide and/or harming the baby.	Prevention: Pay attention to other factors known to increase the risk of postnatal psychosis. • Medication is often advised in women with severe mental disorders to optimize functioning and prevent relapse. The choice of medicine depends on the severity of illness and assessment of risks versus benefits. • Obstetric care level: women with a previous episode of postnatal psychosis • should be referred to regional or tertiary level of care if possible • Psychiatric supervision: Women at high risk of postnatal psychosis may decide to start medication in late pregnancy or after the birth to reduce risk. • Antipsychotics and lithium are sometimes used. While first trimester exposure to lithium is associated with an increased risk of congenital disorders, the risk is lower than previously thought. However, lamotrigine may be safer and as effective as lithium in prevention of postpartum relapse in selected patients. Pre-conception: Women already being managed for pre-existing psychotic conditions should have medications reviewed before conception. • If an unintended pregnancy, healthcare workers should be informed as soon as possible. There are risks involved with both the decision to continue or to stop medication in pregnancy. The options should be discussed with a psychiatrist. • If the risk of postnatal psychosis seems high and you think the mother is in danger, do not leave her alone. Get help urgently from a medical officer.
Suicide • Suicide is not considered to be a mental disorder in itself. • Often, but not always associated with mental disorders (e.g depression, anxiety, substance misuse) but may be separate. • Suicide is a leading cause of maternal mortality in developed countries. • Pregnant and postnatal women are at increased risk for suicidal ideation and behaviours compared to the general population. • Younger women and teens at higher risk.	Danger signs for suicide • direct comments about wanting to end her life • says she wants to die or that there is no point in going on. • talks about plans to end her life • feels that 'the baby would be better off without me'. • getting her affairs in order, like making plans for her children, or giving away important possessions. Other signs of high risk of self harm: • previous suicide attempts • history of severe mental disorder or severe depression • dependent on drugs/ alcohol. • victim of violence, e.g. rape, domestic violence, abuse. • a person who 'acts out' her feelings instead of 'talking them out'	Risk assessment • See Standard Treatment Guidelines (Primary Health Care) - Suicide Risk Assessment or assessment in Adult Primary Care Guide Ask about: • suicidal thoughts / plan / suicide history • lethality – are her plans life threatening? • means – does she have the opportunity to act out her plans? • Consider the mental health of the mother and risk to the infant or other children, at all times Low risk: fleeting thoughts of self-harm or suicide, no current plan or means Medium risk: Suicidal thoughts and intent but no current plan High risk: Specific suicidal thoughts, intent, plan and means, previous suicide attempt • Any threat of suicide must be taken seriously. • Let the mother know you care about her. • Do not ignore her feelings, put her down, or scold her. • Be supportive, but not make unrealistic promises. It is not your job to 'rescue' the mother: make sure you refer her so she can get the help she needs. • Do not leave her alone. Get help urgently! • Inform the doctor or sister-in-charge • Call her partner or a family member (if she trusts them) • If available, contact mental health nurse or social worker at the nearest facility. • Call a helpline • Level of obstetric care- Those women assessed to have had an episode of medium or high risk of suicide, should be referred for the rest of their obstetric care to regional or tertiary facilities, unless a mental health specialist has assessed their safety for obstetric care at district level.

Aggressive or agitated behaviour (Refer to the STG EML Primary Healthcare Chapter on Mental Health Conditions) • Please note: If a woman is upset, afraid, or agitated – it does not necessarily mean she is an aggressive or disruptive person. • If a woman refuses treatment advice – this is her choice and right. However, all advice should be provided with understanding of the woman's perspective. ALL women – whether aggressive, agitated, upset or afraid – need • Acknowledgment of their feelings • Respect and care • See chapter 1 on Respectful Maternity Care	Agitation may escalate to overt aggression and often manifests with restlessness, pacing and loud or demanding speech. Aggressive behaviour includes • verbally abusive language • specific verbal threats • intimidating physical behaviour and/ or actual physical violence to self, others or property. All agitation and aggression must be considered an emergency and violence prevented wherever possible. Multiple causes for aggressive, disruptive behaviour include: • Physical: acute medical illness, delirium and its causes (consider HIV or sepsis as causes): • Delirium with acute confusion and aggression in adults), epilepsy (pre-, intra-, and post-ictal), intracerebral lesions, traumatic brain injury. • Psychiatric: psychosis, mania, agitated depression, neurocognitive disorders (e.g. dementias, traumatic brain injury), developmental disorders (e.g. intellectual disability and autistic spectrum disorder, severe anxiety. • Substance misuse: alcohol, cannabis, methaqualone (mandrax) intoxication or withdrawal; stimulant (cocaine, methamphetamine (tik), methcaninone (cat) intoxication; benzodiazepine withdrawal. • Psychological factors: high levels of impulsivity and antagonism, hypersensitivity to rejection or insult, poor frustration tolerance and maladaptive coping skills may contribute to aggression and rage. CAUTION • People with mental illness or intellectual disability may also have physical health conditions, trauma or substance misuse. • Do not assume Aggressive behaviour is due to mental illness or psychological factors, it could be due to physical factors also.	Be prepared: • Be aware of high risk patients e.g. those known with previous violence, substance misuse, public sector patients. • Step-wise protocol to ensure safety of the patient and all in the clinic. • Clear roles for all staff members. • Triage plan for early signs of aggression. • Available backup – security, SAPS and EMS. • A designated calming area – suitable for regular monitoring. • De-escalate and contain: • Be calm, confident, kind and reassuring. • Maintain a submissive posture with open hands; do NOT turn your back. • Do NOT argue, confront delusions or attempt to touch the patient. • Include family or partners to support containment if suitable. Beware when these people make the situation worse. • Be vigilant for delirium, medical and other causes while calming the patient. Mechanical restraint: • Only use when absolutely necessary to protect the patient and others in an acute setting for as short a period of time as possible. • Type, sites and duration of any restraints used must be documented, with 15-minute monitoring of vital signs, the mental state, restraint sites and reasons for use. • Complete MHCA Form 48 and submit to Mental Health Review Board if mechanical restraint was used. Pregnant women: • Never leave unattended. • Use restraint sparingly, with care, with woman in a supported semi-seated position (not supine or prone). MEDICINE TREATMENT (refer to STG for drugs, doses and level of prescription required). • Oral treatment: • Benzodiazepines, e.g.: Diazepam, oral, 5 mg, immediately. • OR • Midazolam, buccal, 7.5–15 mg, immediately, using the parenteral formulation. • If alcohol use is suspected: • ADD • Thiamine, oral 300 mg immediately and daily for 14 days. • If oral treatment fails after 30–60 minutes, • Inadequate response to oral benzodiazepine (after 30–60 minutes) or oral treatment refused, • Then, administer parenteral or oro-dispersible olanzapine: Olanzapine 5–10 mg oro-dispersible tablet or IM • Repeat after 30–60 minutes if needed

Additional resources for HEALTH WORKERS and service users

- **MomConnect** aims to support maternal health through the use of cell phone based technologies. Messages are available via WhatsApp in English. Targeted health promotion messages are sent to pregnant women to improve their health and that of their infants and there is an interactive mechanism to feedback on the service they have received. Dial *134*550# from a cellphone to register.
- **HealthworkerConnect** provides quick info and practical advice on how to manage shifts, improve your sleep, deal with conflict and so much more! To learn practical resilience techniques to handle stress, send "resilience" to +27 60 060 1111 or tap on this link on your phone https://wa.me/27600601111?text=resilience
- Lifeline offers support for personal crisis, trauma, abuse or rape. Toll-free: 0861 322 322
- FAMSA (Families South Africa) offers counselling for couples and families, with branches throughout South Africa. National office: 0119757106/7
- Childline SA (ages 0-16) For children and young adolescents who are in crises, abuse or at risk of abuse and violence Toll free: 116 (children and adults)
- Department of Social Development Substance Abuse 24hr Helpline: 0800 12 13 14 or SMS 32312
- National Shelter Movement of SA https://www.nsmsa.org.za/ 24hr Toll free: 0800 001 005
- Alcoholic Anonymous counselling, education and support groups for patient with alcohol misuse 24 hour help-line: 0861 435 722
- Women's Legal Centre www.wlce.co.za free legal advice for women 021 424 5660
- Violence
    - SAPS (Police) Crime Stop 0860 10111 / SMS Crime Line: 32211
    - Gender based violence (GBV) - related service complaints (SAPS) 0800 333 177
    - GBV Command Centre 0800 428 428 / Send a "Please Call Me" by dialing *120*7867# from any cell phone, SMS 'help' to 31531, 'Helpme GBV' via skype
    - People Opposing Women Abuse (POWA) www.powa.co.za, 0800 029 999
    - Lifeline Domestic Violence helpline 0800 150 150
    - Rape Crisis 24-hour support including how to access Thuthuzela Care Centres for medical and forensic assistance to rape survivors
        - Afrikaans: 021 633 9229
        - isiXhosa: 021 361 9085
        - English: 021 447 9762
        - WhatsApp 083 222 5164
    - MOSAIC Telephone counselling and referrals for survivors of abuse: 021 761 7585 (08:30 – 16:00)

Other relevant guidelines and resources

- It is recommended that the chapter is read together with resources on the NDOH Knowledge Hub www.knowledgehub.org.za/e-library
- The 'Mental Health and Substance Use' chapters and the Obstetrics chapters of the NDOH Primary Healthcare and Adult Hospital Standard Treatment Guidelines
- Adult Primary Care guidelines for further general information on mental health, women's health and clinical communication skills
- Resources of the Perinatal Mental Health Project, UCT www.pmhp.za.org
- The Bettercare Maternal Mental Health book (2018) https://bettercare.co.za/maternal-mental-health/
- Mental health resources for health workers, patients and their families, including manuals, pamphlets etc. https://pmhp.za.org/resources/

Chapter 3: INTIMATE PARTNER VIOLENCE AND DOMESTIC VIOLENCE

Introduction

- During and after pregnancy, approximately 1 in 4 women in South Africa face harm by current or past partners, called Intimate Partner Violence (IPV). Women may also experience harm from people who live in their home, such as extended family. This is known as Domestic Violence (DV).
- Both IPV and DV have negative impacts on physical health, for the mother, the pregnancy and the infant. IPV and DV also both have negative effects on mental health for the mother, infant and other people in the home.
- Health workers are in a good position to respond to IPV and DV during and after pregnancy because they often see women many times during this phase. Also, health workers who are trained to identify and respond to these types of violence may help women achieve better physical and mental health for themselves and their infants.
- This response is also now required by South African legislation and policy. The Domestic Violence Amendment Act (2021) says that health workers should be given the skills and tools to respond to IPV among patients. Maternal Perinatal and Neonatal Health Policy states that IPV prevention and response is an "essential life-saving intervention." Health workers have a responsibility to identify abuse, do a safety risk assessment (see below) and refer to other services such as an NGO, Thuthuzela Care Centre, police, social worker as required.

Types of IPV and DV

IPV and DV may present for the first time or become more severe during or after pregnancy.
The behaviours included in definitions of IPV or DV include:

- Physical: hitting, slapping, pushing, choking, pulling hair, burning, locking in a room
- Sexual: forcing sexual intercourse (rape), threatening her if she does not do a sexual act
- Psychological: threatening her safety or the safety of her child, stalking, humiliating, controlling movements
- Financial: withholding money for essentials like healthcare, banning women from working, taking a woman's earnings against her will
- Technological: sending threatening messages, stalking online, tracking where she is

IPV/DV is often not visible. Few women who experience IPV will have physical injuries that are visible to others. Intimate partner femicide (killing of a woman by her intimate partner) is the most extreme form of abuse. SA has the highest intimate femicide rate in the world. It is therefore very important to ask about abuse in the home.

Possible health outcomes associated with IPV/DV

- Pre-conception – 50% higher HIV incident infection, high- risk sexual behaviour, decreased contraception use, higher unintended pregnancy
- Pregnancy – twice more likely to result in perinatal death, preterm labour, antepartum hemorrhage, miscarriage, vaginal bleeding, high blood pressure, later uptake of antenatal care, lower skilled birth attendance, mental health symptoms (depression, anxiety, post-traumatic stress, heavy drinking or drug use to cope)
- Newborn – twice the risk of infant and neonatal death, stillbirths, pre-term delivery, low birth weight, worse maternal viral suppression (increasing risk for vertical HIV transmission), congenital disorders
- Infancy and childhood –infant illness (e.g. diarrhoea), lower immunisation uptake, stunting, developmental delays, learning impairment, emotional dysregulation, cognitive difficulties, poor mother-infant attachment (which predicts many later outcomes), increased likelihood of child abuse or neglect

Often occurring with IPV/DV

- Multiple parity, unwanted or unintended pregnancy
- Symptoms of poor mental health: such as depression, anxiety or post-traumatic stress symptoms. See Chapter 2 on Maternal Mental Health for identification and management.
- Physical injury seen on examination, especially when the explanation does not make sense.

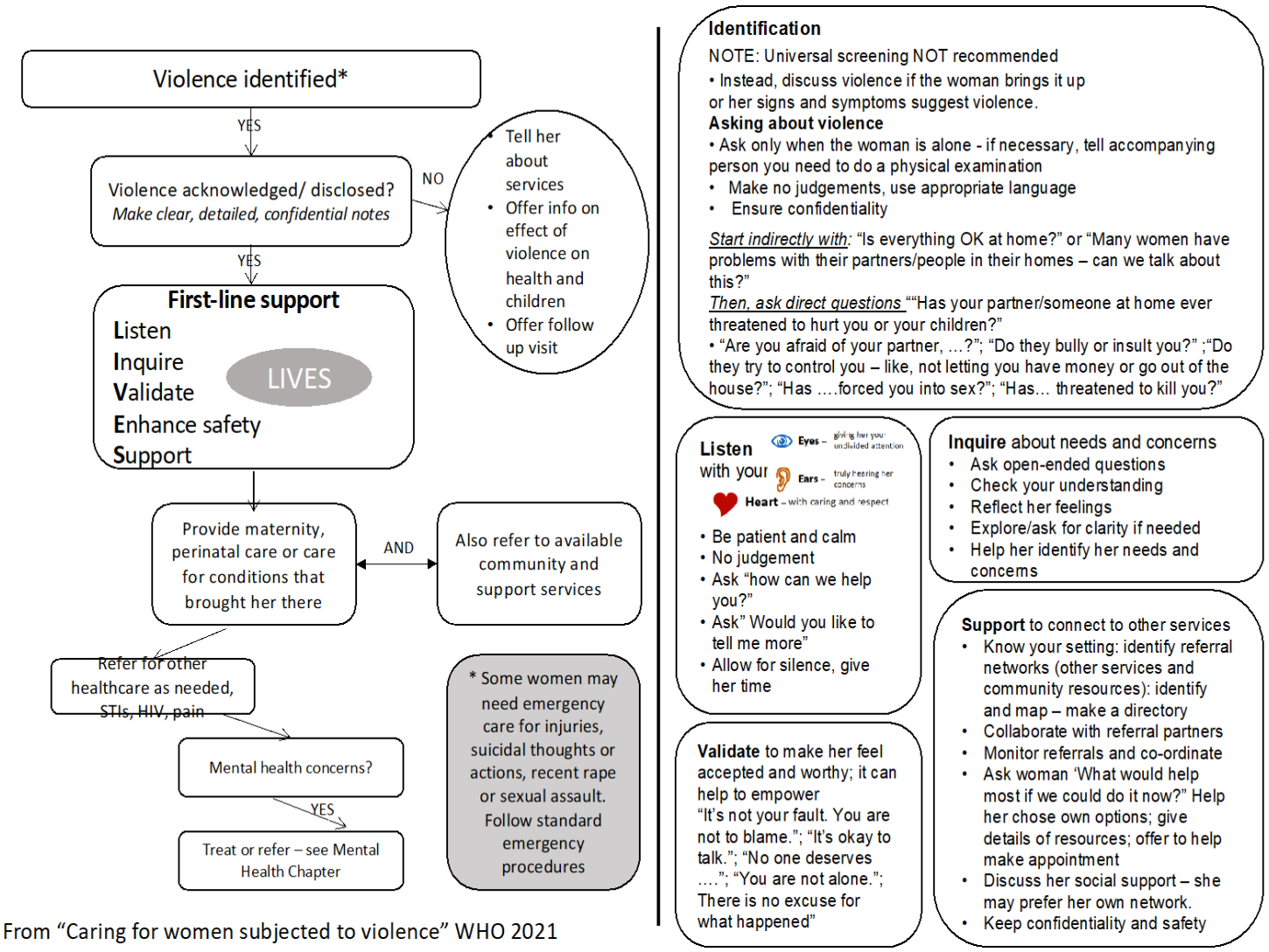
Also may occur with IPV/DV

- Woman is withdrawn, avoidant, or aggressive during antenatal care.
- Partner insists on attending antenatal care with the woman and dominates the consultation (is intrusive); does not allow the woman to speak for herself, attempts to make all healthcare decisions for her.
- Woman may not be able to follow medical advice, such as adhering to HIV treatment.
- Woman may present with repeated STIs; unexplained chronic pain or conditions; repeated health consultations with no clear diagnosis
- Woman may miss follow-up appointments (there might be many reasons for this)
- Woman may have thoughts, plans or acts of self-harm or attempted suicide.

Risk Factors linked to IPV/DV

- Poor social support (including being a migrant, refugee or asylum seeker)
- Rape/incest or exposure to family violence as a child
- Current alcohol or substance misuse
- Poverty, food or housing insecurity (when a woman depends on a partner for security)
- Living with a chronic disease, including HIV

Figure 3-1. What to do if you are concerned that a woman or girl is experiencing IPV/DV



From "Caring for women subjected to violence" WHO 2021

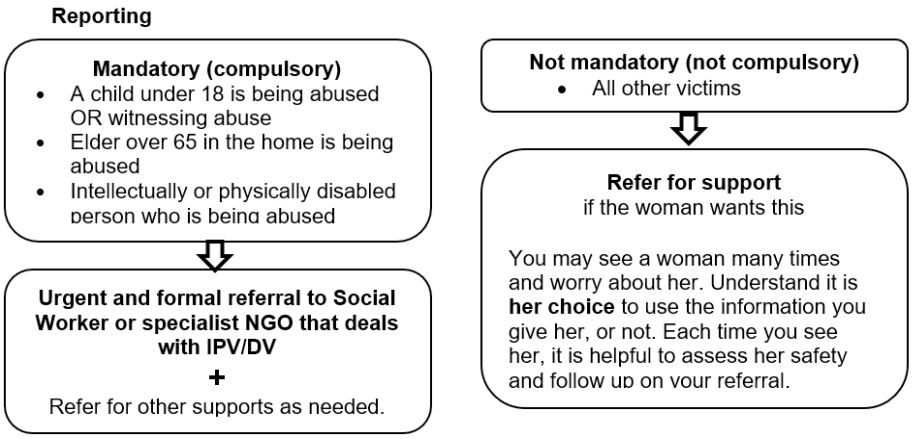
Safety planning

IPV and DV survivors are often very skillful at telling what times are more dangerous than others. If the woman feels safe right now, you can help her plan for a future crisis now, while things are calm.

Never instruct a woman to leave if she is not ready to. Many women want or need to stay with a partner or another person who is violent towards them. Leaving is the most dangerous time; 75% of intimate femicides occur within 3 months of leaving. Leaving must be carefully planned in order to be safe. It is best done in partnership with the National Shelter Movement or an NGO.

Even when a woman is staying with the abuser, it is possible to prevent new episodes of violence by helping her with a Safety Plan.

1. Help her to identify a safe person to disclose the violence to (family member, friend, neighbour). Then, she could ask them if she could alert them to when she is in danger by sending them a code.
2. Encourage her to organise her important documents and keep them ready and in a safe place if she needs to leave in a hurry (birth certificates, marriage certificates, ID, SASSA or bank card).
3. Advise her to have a ready-packed bag with basic necessities for herself (and her children) if she needs to get away or go to a shelter. She should keep this at a friend or relative's house so that the abuser doesn't find it.
4. Ask that she teaches her children to run to a room with a lockable door or a safe neighbour's house if an argument breaks out. This can prevent children from getting hurt.



Make clear, detailed confidential notes whether reporting or not. These can be used as evidence to assist with protecting the woman in future. Document all injuries, details, and examples of all types of abuse occurring in the woman's own words in quotation marks.

Referrals to NGOs, social services, and police

Ask the woman if she would like you to refer her to another service after the clinic. The way you speak to her and the kindness you show will make a big difference to how she is able to understand and take up the referral.

Many victims of IPV or DV do not want to leave their home - they just want the violence to stop. This is ok, and the woman will tell you what the safest thing for her to do is.

Ask her directly: "Is it safe for you to return home today? How about for your child(ren)?"

"YES." If she wants to return home today:

- Refer to social worker (if possible, walk her over to the social worker office and make the introduction).
- Refer to a helpline and make sure she has a safe phone with battery charged to call.
- If available to your health facility, refer to trauma counsellor/psychiatric nurse/psychologist.
- Many women will not want to report to police. If she does want to report, it can be documented in her clinic notes for future use. Make sure that this is NOT written on any records that she takes with her, as this could put her in great danger from her abuser if he finds out that she has spoken about the abuse.
    - Refer to police Victim Empowerment office or family violence NGOs for assistance.
    - If she would like to open a case, explain she can apply for a protection order at local magistrate's court. Protection orders apply to any kind of IPV. The GBV helpline can assist with this process. Police are not involved with applying for protection orders.
    - Encourage woman to file a J88 form and report case to police if she is willing. J88 forms are only issued from the police in the case of physical or sexual violence, damage to property or stalking.

"NO." If it is unsafe to return home today:

- Refer her to National Shelter Movement. Many women's shelters have waiting lists and she may not be able to get a place immediately. If you need a shelter and there isn't one, then the woman can be 'admitted' until one is found, or she goes back home with the safety plan.
- If it is unsafe to return and she is afraid, phone your closest SAPS Victim Empowerment office while she is in the clinic. She can go to the SAPS station or talk to the VEP commander.
- Explain that she must never declare to her abuser that she plans to leave, even if is she is planning to. This can be very dangerous for her.
- An abuser is often a breadwinner. There is a lot that can be done through the courts for emergency monetary relief or maintenance, and this is all done through a protection order at a Magistrate's Court. A woman can go straight to the clerk of the court for this, or an NGO's can assist.

Helplines

Lifeline support for personal crisis, trauma, abuse or rape. Toll-free: 0861 322 322

FAMSA (Families South Africa) counselling for couples and families, branches throughout South Africa. National office: 011 9757106/7

Childline SA (ages 0-16) For children and young adolescents in crises, abuse or at risk of abuse and violence.Toll free: 116 (children and adults)

Department of Social Development Substance Abuse
24hr Helpline: 0800 12 13 14 or SMS 32312

National Shelter Movement of SA
https://www.nsmsa.org.za/ 24hr Toll free: 0800 001 005

Alcoholic Anonymous counselling, education & support groups for alcohol misuse 24 hour helpline: 0861 435 722

Women's Legal Centre www.wlce.co.za free legal advice for women 021 424 5660

SADAG http://www.sadag.org/ Mental health information and referrals to mental health professionals or support groups by trained counsellors. 7 days/week: 8am to 8pm. Telephone: 011 234 4837 or 0800 21 22 23 or 0800 70 80 90; Suicide Crisis line: 0800 567 567 or SMS 31393

Violence

- **SAPS (Police) Crime Stop** 0860 10111 / SMS Crime Line: 32211
- **Gender based violence** (GBV) - related service complaints (SAPS) 0800 333 177
- **GBV Command Centre** 0800 428 428 / Send a "Please Call Me" by dialing *120*7867# from any cell phone, SMS 'help' to 31531, 'Helpme GBV' via skype
- **People Opposing Women Abuse** (POWA) www.powa.co.za, 0800 029 999
- **Lifeline Domestic Violence helpline** 0800 150 150
- **Rape Crisis**
  Afrikaans: 021 633 9229
  isiXhosa: 021 361 9085
  English: 021 447 9762
  WhatsApp 083 222 5164
- **MOSAIC**
  - 021 761 7585
  - admin@mosaic.org.za

What about the health worker?

Your role

- Do no harm
- Identify violence
- Be kind
- Offer clinical care
- Referrals as needed
- Document in clinic records, but NOT on any records that the woman takes with her.

NOT your responsibility

- Solving violence-related issues
- Addressing all violence-related needs
- Addressing all aspects of treatment, care & support in one consultation
- Following up on whether women take up referrals

Health worker wellbeing

Many of us are affected by violence in our personal lives or feel distressed by the violence that we hear about with our patients/clients. We need to take care of ourselves in doing this work to protect our own mental health and to ensure our ability to be effective professionals.

See resources above and HealthworkerConnect provides, via WhatsApp, information and practical resilience techniques for managing stress, improving sleep, dealing with conflict and more! Send "resilience" to +27 60 060 1111 or tap on this link on your phone https://wa.me/27600601111?text=resilience

Chapter 4: ANTENATAL CARE

Antenatal care attempts to ensure, by antenatal preparation, the best possible pregnancy outcome for women and their babies. This can be achieved by:

- screening for pregnancy problems (physical and mental)
- assessment of pregnancy risk (physical, mental and social)
- treatment of problems that may arise during the antenatal period
- giving medications and supplements that may improve pregnancy outcome
- provision of information to pregnant women
- physical and psychological preparation for childbirth and parenthood

Preconception care

This is the optimisation of a woman's health or knowledge before she plans or conceives a pregnancy. All health workers (not only midwives and obstetric doctors) who care for women in the reproductive age group need to consider the possible effect of pregnancy on women they care for. Such women may be asked if there is a possibility of a pregnancy soon. If pregnancy is not desired, appropriate counselling and advice on contraception may be offered.

If a woman is considering pregnancy, the following considerations will assist in preparing her in terms of her own health and that of the baby that will be conceived:

- the presence of any medical conditions (including HIV) controlled or uncontrolled
- in WLHIV, take antiretroviral therapy to minimise viral load and ensure viral replication is suppressed (viral load<50 copies per ml)
- medication (prescribed, over the counter, herbal or traditional)
- family history and genetic risks
- use of tobacco, alcohol, cocaine and other recreational drugs
- possible occupational and environmental exposures
- social, economic and family issues (include paternal involvement)
- the past obstetric history
- nutritional issues, e.g., under weight or obesity
- mental health issues (see mental health chapter)
- the value of peri-conceptual folate in prevention of neural tube defects (five milligrams daily, starting one month prior to conception continuing into the first trimester of pregnancy)

While designated preconception clinics are not yet the norm in South Africa, all health workers who look after women in the reproductive age have a responsibility to encourage women to make reproductive choices and assist those who are considering pregnancy to optimise their health and knowledge appropriately. Realise that often women do not have good access or choice regarding contraception.

Risk for genetic disorders and teratogenic exposure

The following are risk factors for congenital disorders:

- mother aged 37 years or more at conception
- alcohol and recreational drug and smoking use by the mother
- a child conceived of a consanguineous relationship
- a family history of genetic disorders
- poorly controlled medical conditions in pregnancy (e.g. diabetes, epilepsy, hypothyroidism- see chapter on medical conditions)
- Iodine deficiency
- teratogenic or unapproved medications in pregnancy (see Appendix III in the Adult STG for a complete list of medicines associated with congenital disorders).
- maternal infections, e.g. rubella and syphilis, during pregnancy

Women at risk for having a child with a genetic disorder:

- Counsel the woman about potential risks and decide with her about possible referral for further antenatal investigation and management options.
    - Ask an experienced clinician if you are unsure about the risk and refer as early as possible in cases where the risk is felt to be significant.

The Maternity Case Record

- All pregnant women that present to a public healthcare facility, should have, or should receive, the latest version of the Maternity Case Record (MCR).
- This standardised national document is the principal record of the pregnancy, and it must be completed at each antenatal clinic visit and retained by the mother until delivery, after which it will be kept at the place of confinement or final referral.
- It is not necessary for antenatal clinics to keep a duplicate record of the MCR.
    - Only a record of attendance, with observations, SF height and results of special investigations and medicines prescribed, needs to be kept at the antenatal clinic for audit and backup purposes, or use the Adult Female Patient Health Record or similar stationery for clinic record of attendance.
    - The MCR serves as official communication tool between the different levels of care and health facilities that the client may visit during her pregnancy and should always be kept up to date.
    - Some pages need to be completed in duplicate (use carbon paper) and the copy can be detached and retained at the clinic.

Relationship with private caregivers

Private midwives, general practitioners and obstetricians are responsible for the pregnancy care of many South African women. Dialogue and mutual respect should be encouraged between private caregivers and the government service. Women that are referred from private providers to public service care should carry letters or cards that summarise all relevant antenatal care up to that point. Ultrasound reports less than 24 weeks are particularly valuable, as they assist in accurate dating of pregnancies. Private colleagues are encouraged to use the MCR as well.

The first antenatal visit

Confirmation of pregnancy and timing of the first visit
A woman should visit her healthcare provider as soon as she suspects pregnancy, even as early as the first missed menstrual period. Urine pregnancy tests must be available at all healthcare facilities. Women who present to primary care clinics and are found to be pregnant must be issued with a MCR and receive the first visit of the Basic Antenatal Care plus package as soon as feasible (preferably the same day). Those who request termination of pregnancy should be appropriately counselled and referred for TOP services.

The importance of the first antenatal visit

- Develop a respectful and warm relationship with the person. This will set the foundation of how she uses maternity services and is related to maternal, fetal and child outcomes.
- Orientate the person to the birthing unit, if feasible.
- Complete assessment of gestational age and risk factors can be made at the first antenatal visit. It is not necessary to wait until the second visit before such assessments are finalised. After one visit, a pregnant woman can be regarded as ‘booked’.
- At the first visit, find out what health care the woman has received so far in the pregnancy, especially from private practitioners. If she has had previous antenatal care obtain information (records) from the provider, if possible and regard that as the first visit.

History taking

- Take a full and relevant history including:
- current pregnancy
- previous pregnancies, any complications and outcomes
- medical conditions, including psychiatric problems and previous operations
- familial and genetic disorders
- allergies
- use of medications including over the counter, herbal or traditional
- use of alcohol, tobacco and other substances
- family and social circumstances
- experience of violence - see chapter on gender based violence

Physical examination

- Ask permission to do a physical examination. Ensure privacy.
- Do a general examination including weight, height, heart rate, colour of mucous membranes, blood pressure, a check for edema, and palpation for lymph nodes.
- Do a systemic examination including teeth and gums, breasts, thyroid, and heart and lungs. Refer women with dental problems to a dentist or dental therapist.
- Examine the pregnancy including inspection and palpation of the pregnant uterus; with measurement of the symphysis-fundal height (SFH) in centimetres (only from 18 weeks).

Mid-upper arm circumference

The MUAC gives useful information on nutritional status and pregnancy risk and is easily done during the antenatal period or during labour. MUAC is advantageous over body mass index because height does not need to be measured, accurate scales are not required, the woman does not have to stand up straight, no calculations need be done, and MUAC, unlike weight, does not normally increase significantly during pregnancy.

A MUAC ≥33 cm:

- suggests obesity
- is associated with an increased risk of pre-eclampsia and maternal diabetes
- is associated with an increased risk of delivery of a larger than normal infant
- indicates that blood pressure measurement with a normal-sized adult cuff may be an overestimation (use a large rather than normal-sized cuff instead)
- raise concerns about potential anaesthetic risks
- should ideally be referred to level of care above BANC plus (see chapter on obesity)

A MUAC <23 cm:

- suggests malnutrition or a chronic wasting illness (e.g. infection or neoplasia)
- can be associated with delivery of a smaller than normal infant (SGA)
- raise vigilance for fetal growth restriction/, and for careful SFH measurement and uterine palpation at all antenatal visits
- refer for nutritional supplementation if needed

How to measure the MUAC:

- measure the MUAC just before checking the blood pressure
- use a soft tape-measure, the same used for symphysis-fundal height measurement
- the arm should hang freely (elbow extended)
- measure the MUAC at any gestation, or during or after labour
- measure the arm circumference in either the right or left arm, midway between the tip of the shoulder (acromion) and the tip of the elbow (olecranon). Record the measurement to the nearest centimetre
- record the MUAC in the MCR on the antenatal card page

Estimation of gestational age

Indicate on the antenatal card how the gestational age was estimated (dates, SF, ultrasound or combinations thereof). The first estimation of gestational age, with the expected date of delivery, should be used for the remainder of the pregnancy and must not be changed unless important new information becomes available.

Methods available:

1. Last menstrual period
   - This is valid if the woman is sure of her dates and was having regular periods, and where palpation of the uterus and SFH measurement are compatible with the given dates (within 2-3 weeks if SFH below umbilicus, within 4 weeks if SFH above umbilicus).
   - Gestation age must be calculated from the first day of the last menstrual period.
2. Symphysis-fundal height (SFH) measurement
   - This is used for estimation of gestational age if the dates from the last menstrual period are unknown or unreliable, in the presence of a normal singleton pregnancy, and when no early ultrasound is available.
   - When using the SFH chart to determine gestation at the first visit, the measured SFH is plotted onto the 50th centile line on the SFH graph, allowing the corresponding gestational age to be read from the graph on top.
   - This gestational age estimate is then used as a baseline from which gestational age at subsequent visits is calculated.
3. Palpation
   - The SFH measurement is of little value for estimation of gestational age at less than 20 centimetres and more or equal to 35 centimetres (corresponding to less than 20 weeks and term respectively).
   - In early pregnancy, bimanual and abdominal palpation can be used, and at term, palpation of the fetal head is of some value.
   - Gestational age assessment by palpation requires care, skill and experience.
4. Ultrasound
   - Offer at least one routine ultrasound before 24 weeks if the service is available.
   - Fetal measurements by ultrasound give reasonably accurate gestational age estimates before 24 weeks of gestation.
   - Ultrasound as a means of determining gestational age after 24 weeks is less reliable, but if no other reliable dating option is available, it can be used provided all measurements are concordant with each other and the liquor volume and biometry planes are normal (see ultrasound chapter).

Routine screening investigations

- HIV serology, using rapid test kits. This must follow the national guidelines on routine counselling and voluntary testing.
- HBV testing (see chapter on infections in pregnancy)
- TB screening for both HIV positive and negative women at each antenatal visit (see HIV chapter and follow national guidelines).
- Syphilis serology. Rapid tests are preferable, as results are immediately available.
    - Take care to follow the instructions from the manufacturer to avoid false negative results (see chapter on infections in pregnancy).
- Rhesus (D) blood group, using a rapid test.
- Haemoglobin (Hb) level, using a portable haemoglobinometer.
    - Repeat Hb measurements at 30 and 38 weeks of gestational age, or if there is clinical anaemia at any stage.
- Urine dipstick testing for protein, glucose, nitrates, and leukocytes at each antenatal visit.
- Mental health screen. This brief screening tool is in the MCR. Screen if there is a referral pathway available (e.g. to mental health nurse, social worker, NGO, medical officer etc).
    - First, build empathic relationship with the person otherwise screening results will be invalid.
    - Refer for care if concerned, even if screen negative. Consider repeat screening in each trimester and postnatal.
    - Consider referral of all teens, women experiencing violence, even if screen negative.
        - See the chapter on mental health on how to screen and refer.

All the above tests can be performed by midwives or appropriately trained auxiliary staff at the clinic 'on site', with the results provided to all antenatal attendees prior to their departure.

Screening tests that are not offered routinely

Inform the pregnant women that the following screening tests are not offered routinely, but may be indicated in specific circumstances:

- ABO blood group (usually only if blood transfusion may be needed)
- screening for Down's syndrome and other congenital disorders (advanced maternal age- see ultrasound chapter)
- rubella serology (only when in contact with a known case)
- blood glucose screening (see section on diabetes for criteria for selective screening)
- cervical (Papanicolaou) smear (follow the national screening guidelines and do when indicated)
- urine culture (do MCS on any woman at risk for preterm labour)
- Group B Streptococcus screening (not yet routinely offered due to lack of evidence of benefit)

Medications

The following are given to all pregnant women (tick the appropriate block on the antenatal card when dispensed):

- Ferrous sulphate compound BPC (dried), oral, 170 mg (± 55 mg elemental iron) 12 hourly with meals.
  OR
- Ferrous fumarate, oral, 200 mg once daily (± 65 mg elemental iron).
    - Taking iron tablets with meals decreases iron absorption, but improves tolerability. (Note: Do not take iron tablets with milk).
- Calcium tablets 1000 mg daily, to try and prevent complications of pre-eclampsia (e.g. calcium carbonate 500mg 12 hourly). This is best taken four hours before or after iron supplements.
    - A simplified regimen would be to take the calcium supplementation in the morning and the iron at night, just before dinner
- Folic acid, oral, 5 mg daily:
    - All women intending to become pregnant or pregnant women (first trimester of pregnancy).
    - If high risk, throughout pregnancy, i.e.: - on anticonvulsants - especially valproic acid and carbamazepine, or a previous child with NTD; or a family history of NTD.

General recommendations for vaccinations in pregnancy

- Tetanus toxoid (Tdap) immunisation, to prevent neonatal tetanus, diphtheria, and pertussis (Tdap)
    - Tdap ensures antibody protection for the newborn against tetanus, diphtheria and pertussis (whooping cough)
    - Aim to administer a dose of Tdap during each pregnancy irrespective of the patient's prior history of receiving Tdap.
        - To maximize the maternal antibody response and passive antibody transfer to the infant, optimal timing for Tdap administration is between 27 and 36 weeks of gestation although Tdap may be given at any time during pregnancy or postpartum
        - Administer intramuscularly, preferably in the deltoid muscle
        - Record the Tdap dose in the Maternity Case Record
- Covid-19 vaccine. Recommended. Safe to use during pregnancy. (Follow national protocols).
- Influenza vaccine. Recommended. Safe to use during pregnancy (only inactivated vaccines). (Follow national protocols)
- Hepatitis B vaccine (see chapter on infections). Safe to use during pregnancy, if indicated.
- Polio (IPV) immunisation in pregnancy
    - if a pregnant woman is at increased risk for infection and requires immediate protection against polio, IPV can be administered in accordance with the recommended schedules for adults
- HPV vaccines are not recommended for use in pregnant women.
    - If a woman is found to be pregnant after initiating the vaccination series, the remainder of the 3-dose series should be delayed until completion of pregnancy.
    - Pregnancy testing is not needed before vaccination.
    - If a vaccine dose has been inadvertently administered during pregnancy, no intervention is needed
- Yellow fever vaccine is a live virus vaccine and poses a theoretical risk to the fetus.
    - Pregnant women should avoid or postpone travel to an area where there is risk of yellow fever.
    - Yellow fever vaccine should be avoided in breastfeeding women.
    - However, when nursing mothers cannot avoid or postpone travel to areas endemic for yellow fever in which risk for acquisition is high, these women should be vaccinated
- MMR (measles, mumps, rubella) or varicella vaccination during pregnancy should not be administered to women who are pregnant or attempting a pregnancy within 28 days.
    - women should be counselled to avoid becoming pregnant for 28 days after receipt of live vaccines.
    - Inadvertent MMR or varicella vaccination during pregnancy should not be considered a reason to terminate a pregnancy.
- BCG vaccination should not be given during pregnancy.
    - Even though no harmful effects of BCG vaccination on the fetus have been observed, further studies are needed to prove its safety.
- Rabies- pregnancy is not considered a contraindication to postexposure prophylaxis.

Assessment and management plan

The final assessment at the first antenatal visit should include:

- Complete a checklist for risk factors (use the 'BANC Plus Clinic Checklist - Classifying (first) visit tick sheet) and a plan for further antenatal care and delivery at the appropriate level of care.
- a best estimate of gestational age, based on the evidence obtained from the date of the last menstrual period, fetal palpation, measurement of SFH and ultrasound if available
- a plan for management or appropriate referral for any problems

Information for pregnant women

Certain essential information must be provided to all pregnant women, verbally and (where possible) in the form of written or illustrated cards or pamphlets. Use the counselling and education list in MCR - provide as appropriate for gestational age:

- Fetal movements
- Parental preparedness
- Nutrition
- Danger signs (see below)
- HIV
- Mental health
- Alcohol
- Tobacco
- Substances
- Domestic violence
- Labour and birth preparedness
- Breast care
- Infant feeding
- Postpartum contraception or tubal ligation: share information and counsel already during the pregnancy.
    - A person may need time to consider and consult and return for more counselling.
        - Never do this for the first time during labour; and never coerce any form of contraception or tubal ligation.
            - Use the counselling and consent forms in the surgery insert of the MCR when tubal ligation is planned.
- Newborn and infant care
    - plans for infant feeding options, supporting and promoting breastfeeding as best
    - details of follow up care: immunisation and where this can be obtained
    - information on congenital disorders
    - newborns exposed to HIV or born to mothers living with HIV must have a PCR test at birth and will get preventive medication for the baby (see chapter on HIV)
- plans for practical and emotional support from important persons in the woman's life
- plans for applying for Child Support Grant, if qualifies. If needed, refer woman to get an ID document as soon as possible.

Five danger signs of pregnancy

- severe headache
- abdominal pain (not discomfort)
- drainage of liquor from the vagina
- vaginal bleeding irrespective of amount
- reduced fetal movements

A woman that experiences any of these danger signs should report immediately to her clinic or hospital with her MCR. The danger signs are also visually displayed on the first page of the Maternity Case Record.

Self-care in pregnancy

- register for MomConnect if she has access to data and a smartphone
- healthy diet and exercise (see nutrition chapter)
- personal hygiene and breast care
- advice on sexual activity in pregnancy (use of condoms)
- be aware that self-medication may be harmful however, continue taking prescribed medications including ART if living with HIV; iron, folic acid and calcium supplements
- do not use alcohol, tobacco or recreational drugs (seek support for quitting or seek mental health support to reduce motivation to use substances)
- activities to promote mental well-being (healthy social connections, e.g. family, friends, support groups, community activities, volunteering, exercise, creative activities, especially if done in groups, e.g. music making, gardening, cooking, dancing)

A delivery plan

At the end of the first visit, all pregnant women should be given a provisional delivery plan:

- the expected date of delivery, based on the best estimate of gestational age
- the expected place of delivery, whether community health centre or hospital
- the expected mode of delivery, whether vaginal or caesarean delivery (if there is already a clear indication for CD (e.g. previous CD x 2)
- who will be her birth companion, and back-up birth companion and their contact numbers - refer to chapter on Respectful Maternity Care
- a transport plan for an emergency or for the onset of labour, including important contact numbers
- the practice of home birth without a skilled birth attendant should be discouraged

Use the BANC plus clinic checklist – classifying (first) visit for risk assessment (Figure 4-1)

Subsequent antenatal visits schedule for return visits

- After the first visit, the subsequent BANC Plus visits each have their own aims and content and are recorded on the patient's antenatal record page in the MCR.
    - The first visit is where the first page of the antenatal record is filled in.
    - The follow-up visits are filled in on the second page of the antenatal record (the graph in the MCG).
- At the end of the first visit, it should be clear who qualifies for BANC and who needs further assessment.
    - The woman should be given a date for follow-up and told where that will be.
- A Basic Antenatal Care plus schedule of 7 follow-up visits (8 visits in total) is provided for women without any risk factors.
    - Following the early booking visit (preferably <14 weeks), return visits should be scheduled for around 20, 26, 30, 34, 36, 38 and 40 weeks (36 and 40 are short visits- see below). See Figure 4-2.
- Each follow-up visit, except the short visits at 36 and 40 weeks, will last about 20 minutes.
    - At the short visits there is no need for the woman to lie on a bed or undress, unless she has a problem that requires physical examination.
    - What should be performed at each BANC Plus visit is detailed in the table below.
        - At the end of each visit, the woman's clinic checklist should be checked to see that all the things have been performed
    - At each visit, care must be taken to ensure that all the actions that need to be performed are performed, and problems identified are acted upon.
    - It is stressed to the woman that she can attend the clinic at any time and must do so if there is anything that is worrying her.
    - If still pregnant one week after the visit at 40 weeks, the woman should be advised to attend directly at the hospital antenatal clinic at 41 weeks, with a view to possible induction for post-dates.
- The BANC+ schedule of visits is not applicable for women with risk factors or who develop a risk factor during pregnancy, whose return visits schedules will depend on their specific problems.
- A pregnant woman can have all her antenatal care visits at a primary health care clinic if she qualifies for BANC+, or she can have her antenatal care visits in the referral hospital if she has a special risk factor or factors.
- She can also have combined (or shared) care; that is care at both the primary health care clinic and the referral hospital. For example, a woman could have had a caesarean section in her previous pregnancy due to a big baby. She should be referred to the referral hospital after the first visit at the clinic.
    - The referral hospital will evaluate her and, if everything is normal, may refer the woman back to the primary health care clinic to continue with basic antenatal care. There may be instructions for the clinic to refer her back to the hospital at 38 weeks' gestation, and the hospital may take over antenatal care and plan the delivery with the woman.
    - Should any new problem occur during the antenatal care at the clinic the woman would be referred immediately back to the referral hospital.

Fetal movements and fetal heart auscultation in low risk antenatal care

- As long as there are good fetal movements and good SF growth with each subsequent visit, in a low-risk person, there is no additional value of listening to the fetal heart rate.
- Auscultation will confirm that the fetus is alive but is unlikely to have any predictive value.
- Routine auscultation is therefore not recommended.
- If requested by the mother, auscultation of the fetal heart may provide reassurance.

See the management of reduced fetal movements in the chapter on fetal monitoring.

Figure 4-1 BANC plus clinic checklist- classifying (first) visit

Name of patient_____ Clinic record number | | | | | | |

Address _____

_____ _____

INSTRUCTIONS: Answer all the following questions by placing a cross mark in the corresponding box

Obstetric History	**No**	**Yes**
1. Previous stillbirth or neonatal loss?		
2. History of 3 or more consecutive spontaneous miscarriages?		
3. Birth weight of last baby < 2500g?		
4. Birth weight of last baby >4500g?		
5. Last pregnancy: hospital admission for hypertension or pre-eclampsia/eclampsia?		
6. Previous surgery on reproductive tract (e.g. Caesarean section, myomectomy, cone biopsy, cervical cerclage)		
Current pregnancy		
7. Diagnosed or suspected multiple pregnancy		
8. Age < 16 years		
9. Age > 37 years		
10. Isoimmunisation [Rh (-) WITH ANTIBODIES] in current or previous pregnancy		
11. Vaginal bleeding		
12. Pelvic mass		
13. Systolic BP ≥140mmHg and/or diastolic BP 90 mmHg or more at booking, or known chronic hypertension		
General medical		
14. Diabetes mellitus on insulin or oral hypoglycaemic treatment		
15. Cardiac disease		
16. Renal disease		
17. Epilepsy		
18. Asthmatic on medication		
19. Tuberculosis (currently on treatment)		
20. Known 'substance' abuse (including heavy alcohol drinking)		
21. Any other severe medical disease or condition		
22. Mental health screen positive (only if suicide item is endorsed)		
23. Any severe mental health condition: bipolar affective disorder, schizophrenia, severe depression		

Please specify _____

A yes to any ONE of the above questions (i.e. ONE shaded box marked with a cross) means that the woman is not eligible for the basic component of antenatal care and needs appropriate referral.

Is the woman eligible (circle) **No** **Yes**

If NO, she is referred to _____

Date_____ Name _____ Signature _____

(Staff responsible for antenatal care)

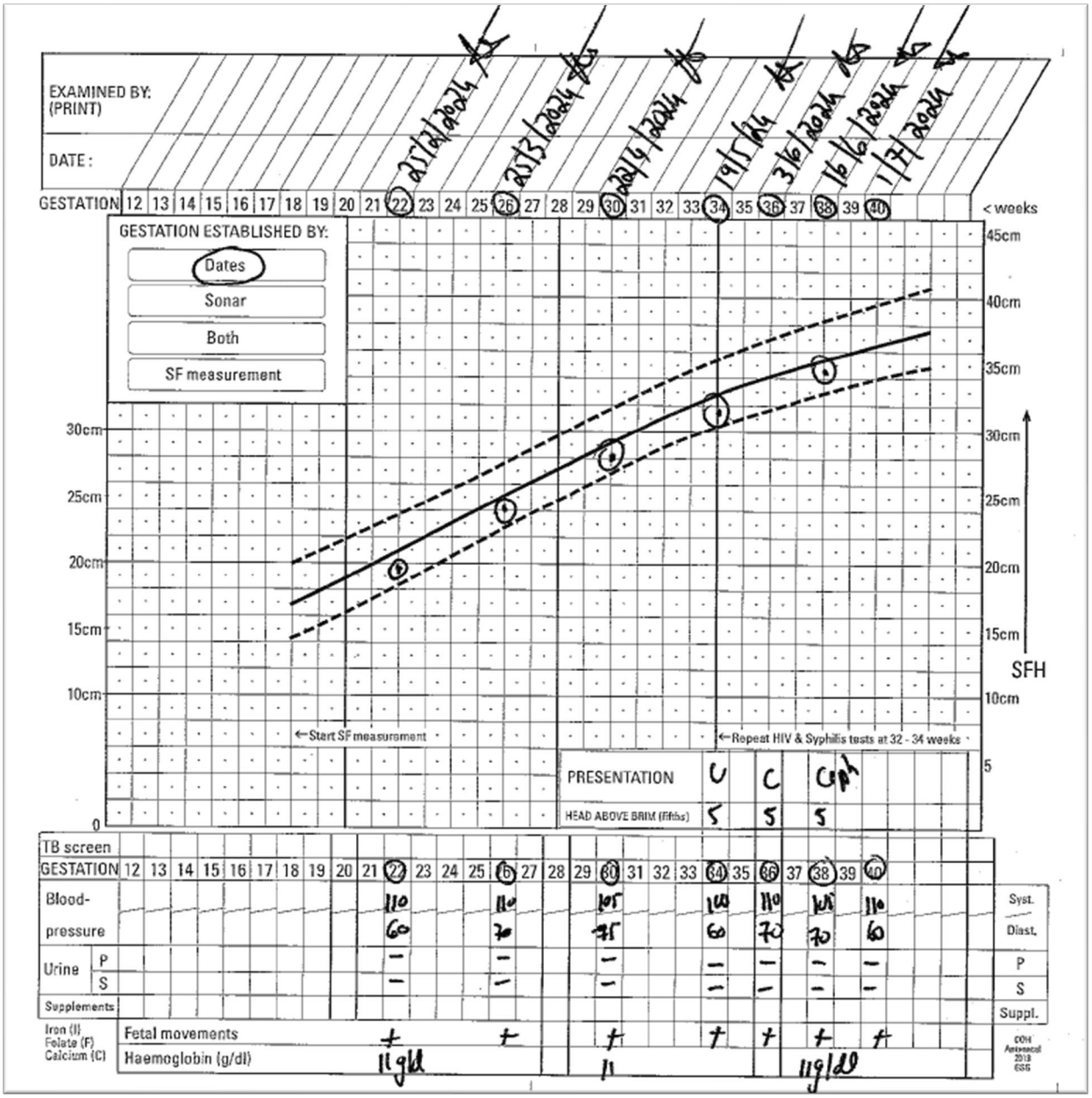
Figure 4-2 BANC plus checklist for subsequent visits

First visit for all women at first contact with clinics, regardless of gestational age. If first visit later than recommended, carry out activities up to that time	VISITS 1	2	3	4	5	6	7	8
DATE:								
Approximate gestational age (weeks)	<14	20	26	30	34	36	38	40
Classifying form indicating eligibility for BANC								
History taken								
Full clinical examination								
Estimated date of delivery calculated								
Blood pressure taken								
Maternal height/weight/MUAC/BMI								
Haemoglobin test								
Rapid syphilis test performed		Retest monthly if syphilis negative						
Urine tested for protein, sugar								
Rapid Rh performed								
Mental Health Screen	Screen in each trimester							
HIV counselling and testing		Retest monthly if HIV negative						
ART for HIV-infected women	Viral load monitoring as per guidelines							
Tdap given			Give a single dose of Tdap at any one of these visits					
Iron and folate supplementation provided								
Calcium supplementation provided								
Information for emergencies given								
Antenatal record completed and given to woman								
Prepare person for what to bring for labour and delivery (KMC wrap, woollen hat and booties)								
Link and arrange Ward Based Community Outreach Teams home visits								
Asked if fetal movements felt and normal	Do if 1st visit was >20 weeks							
TB symptom screen								
Clinical examination for anaemia								
Urine tested for protein								
Uterus measured for growth - twins, IUGR	Do if 1st visit was >20 weeks							
Instructions for delivery/transport to institution								
Recommendations for lactation and contraception								
Detection of breech presentation and referral								
Remind woman to bring MCR in labour								
Doctor or senior midwife to review gestational age								
Give hospital visit date at 41 weeks for induction								
Initials staff member responsible								

Figure 4-3 Actions to be taken at each subsequent BANC plus visit

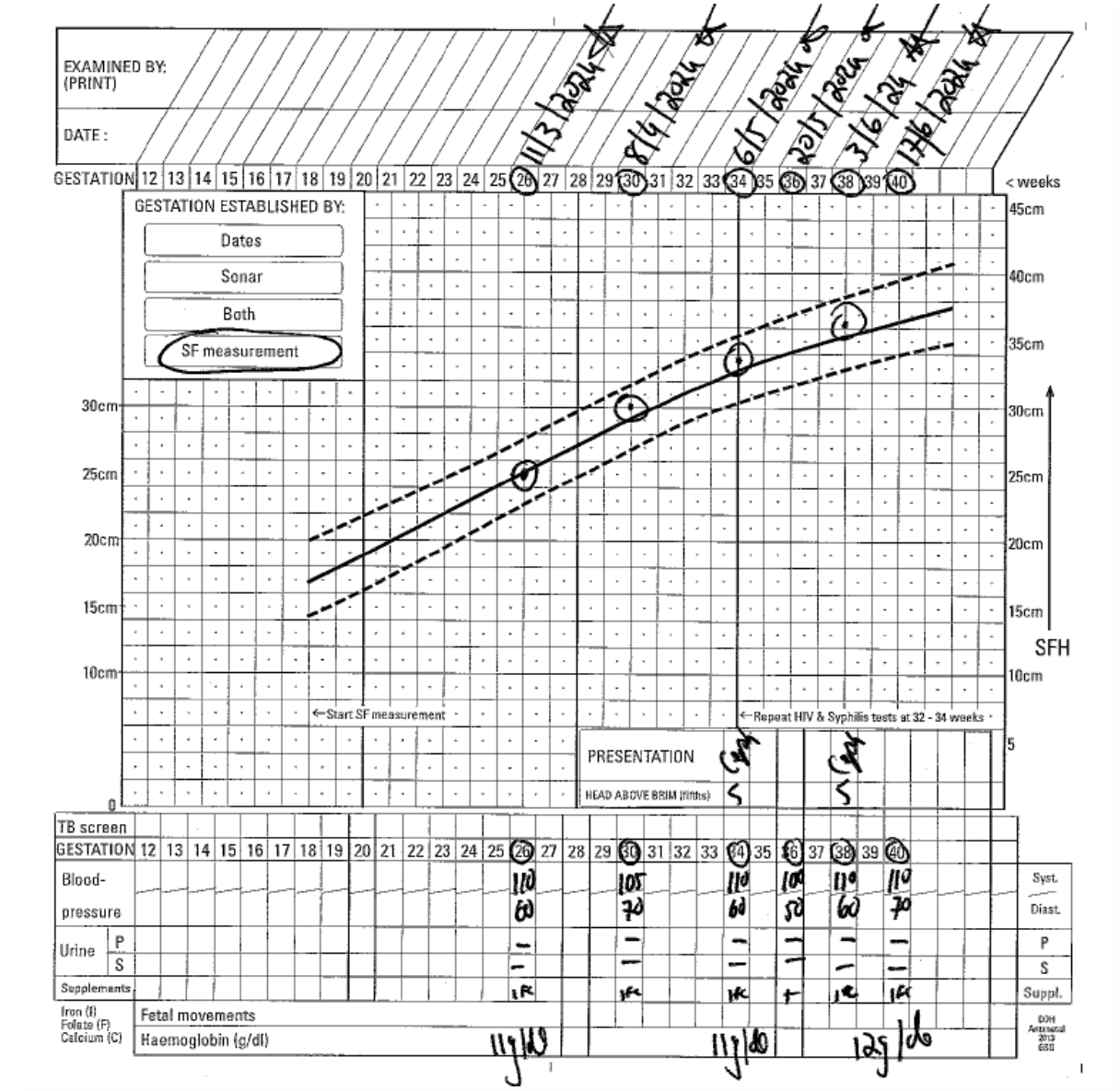
		BANC plus visits (weeks)							Concerns/Actions to be taken
Assessment		20	26	30	34	36	38	40	
Ask	How are you?	x	x	x	x	x	x	x	Identify mental health problems
	Is the baby moving?	x	x	x	x	x	x	x	Refer if no movements after 28 weeks
	Have you had any bleeding?	x	x	x	x		x		Refer (see chapter on APH)
	Have you any concerns/ symptoms of?	x	x	x	x	x	x	x	
	• Vaginitis								Risk of ascending infections
	• Urinary tract infection								Risk of ascending infections
	• Cough, no weight gain, night sweats, fever								Tuberculosis, other chest infections
	• Malnutrition								Chronic disease, poverty
	• HIV								Ensure proper management
Check antenatal record									
	Calculate current gestational age	x	x	x	x	x	x	x	Check fetal growth and confirm at 40 weeks
	Syphilis testing	x	x	x	x		x	x	Check result and treat if necessary
	Haemoglobin			x			x		Check result and treat for anaemia if Hb low
	HIV counselling and testing	x	x	x	x		x		Check if retested, start ART if HIV positive
	HIV care and monitoring	x	x	x	x		x		Monitor viral load as per guidelines
	Previous visits concerns	x	x	x	x	x	x	x	Have these been resolved?
Examine (Look, feel, listen)									
	Pallor	x	x	x	x		x		Screen for anaemia, repeat Hb 30 & 38 weeks
	Blood pressure	x	x	x	x	x	x	x	Screen for hypertension
	Urine; protein/glucose	x	x	x	x	x	x	x	Screen for pre-eclampsia and diabetes
	Uterine growth (SFH)	x	x	x	x		x		Screen for IUGR
	Fetal presentation				x		x		Screen for abnormal lie, e.g. breech
Fill in antenatal record and revise birth plan if needed		x	x	x	x	x	x	x	
Implement interventions	Iron and folate supplementation for all women	x	x	x	x		x		To prevent anaemia
	Calcium supplementation to all women	x	x	x	x		x		To prevent hypertension
	If RPR positive – treat for syphilis	x	x	x	x	x	x	x	To prevent congenital syphilis and stillbirths
	Rh negative- send Coombs test		x		x				To identify Rh-isoimmunisation
	HIV-positive – start/continue ART	x	x	x	x	x	x	x	To support, treat and prevent transmission
	In malaria endemic areas: appropriate prophylaxis (see chapter on Malaria)	x	x	x	x		x		To prevent malaria
General advice	Safe sex	x	x	x	x		x		Prevent STIs
	Stop tobacco, alcohol	x	x	x	x		x		Prevent IUGR and congenital abnormalities
	Infant feeding advice	x	x	x	x		x		Prepare for feeding choice and vertical transmission reduction
	Plan for haemorrhage or warning signs	x	x	x	x		x		Early identification of complications
	Birth plan	x	x	x	x	x	x	x	Make sure there is a transport plan to get to the institution and which institution is to be used
	Contraceptive advice	x	x	x	x		x		Plan for future pregnancies and space children
Questions and answers		x	x	x	x	x	x	x	Enable woman to voice concerns
Date next follow-up visit		x	x	x	x	x	x	x	
Maintain complete records		x	x	x	x	x	x	x	Ensure antenatal care and clinic checklist completed

Figure 4-4 Example of a completed antenatal card of a woman with certain (correct) dates



At booking (25 February 2014) she was 22 weeks pregnant by dates. The SF measurement of 20cm is in keeping with her dates. SF growth was normal, just above the 10th centile.

Figure 4-5 Example of a completed antenatal card of a woman with uncertain dates at booking



She booked on 11 March 2024. The SF height of 25cm was correctly plotted on the 50th centile, giving a gestational age of 26 weeks. Subsequent SF growth was close to the 50th centile and appeared normal.

Certain risk factors may only arise later during antenatal care or in labour. Table 4-1 (by no means comprehensive) gives an overview of the level of care for antenatal referrals. Also consult each individual chapter for more information on medical conditions that can arise in pregnancy (e.g. hypertension, diabetes) or complications (e.g. eclampsia, APH etc).

Table 4-1 new risk factors identified at subsequent visits.

Condition	Emergency referral to hospital	Referral to the next high-risk clinic	Referral to the high-risk clinic at 36 weeks	Advise delivery in hospital
Parity 5 or more; and/or previous PPH				x
Anaemia not responding to iron therapy		x		
SF- measurement (after rechecking with another HCW) large for dates (>90th centile)		x		
SF- measurement (after rechecking with another HCW) small for dates (<10th centile)		x		
SF growth decreasing; crossing centiles or below the 10th centile for gestation		x		
Breech or transverse lie at >34 weeks			x	
Reduced fetal movements after 28 weeks	x			
Extensive vulval warts that may obstruct delivery				x
Pregnancy after 40 weeks		x		
Any severe mental health condition: bipolar affective disorder, schizophrenia, severe depression or severe anxiety and suicidal plans or attempts		x		
2 or more previous Caesarean deliveries			x	
Severe phobia of labour or birth				x

Chapter 5: MATERNAL NUTRITION

- Women's nutrition is an important determinant of maternal health, children's nutrition, growth, and development outcomes especially during the 1 000-day window from conception to age two and beyond.
- South Africa is faced with a triple burden of malnutrition (obesity, underweight and micronutrient deficiency) affecting women and children.
    - A package of interventions is needed to prevent and manage maternal malnutrition.
    - Micronutrient supplementation is needed for all pregnant women. However, some women resort to their own supplements and to complementary medicine, which is often not regulated and might not provide adequate nutritional support. It is essential to check medications and all supplements for adequacy of dosing.
    - To address maternal overweight and obesity, counselling about healthy eating and keeping physically active is recommended. This should be done with respect and taking into consideration the feasibility of the advice and exploring alternatives.

Nutrition before pregnancy (preconception period)

- The goal of preconception care is to clarify and minimize the risk to a pregnancy from any pre-existing medical conditions and lifestyle patterns to optimize maternal health before conception and improve pregnancy outcome.
- Preconception care can occur whenever a healthcare provider meets a woman of childbearing potential, and this would include offering support for pregnancy planning and contraception counselling.
- Healthcare providers should initiate a dialogue on women's health, nutrition, and weight management before conception.

Nutrition interventions throughout the continuum of care

Preconception

- Assess weight, height, mid-upper arm circumference (MUAC) and interpret it correctly
- Ask the woman about her diet, including a discussion on healthy eating (see Addendum 2 at the end of this guideline) and physical activity to stay healthy, attain or maintain a healthy weight and/or prevent excessive weight gain.
- Assess for pre-pregnancy nutritional risk factors and manage accordingly.
- Assess dietary supplements intake (vitamins, minerals, traditional/home remedies, herbal products, weight loss products, etc.) and advise about what is or is not known about their impact, safety, and efficacy
- Screen for anaemia
- Provide iron, folic acid and calcium supplementation (see antenatal care chapter)
- Assess lifestyle choices and discourage the use of harmful substances

Antenatal Care

- Nutrition education and counselling on healthy eating to meet nutrient needs, food safety and hygiene
- Avoidance of smoking, alcohol and substance abuse
- Nutrition education, to increase energy and protein intake in undernourished pregnant women to reduce risk of low-birth-weight neonates
- Nutritional management of minor ailments such as nausea, vomiting, constipation and heartburn
- Nutritional management of nutrition-related chronic illnesses such as hypertension and diabetes
- Nutritional counselling and support to identify and promote the consumption of an adequate, quality nutrient-dense diet based on locally produced/available foods.
- Counsel on safe infant feeding choices and breast health

The nutritional management of minor ailments during pregnancy is shown in Table 5-1.

Table 5-1 Nutritional management of minor ailments during pregnancy

Conditions	Nutritional recommendations
Constipation	• High fibre diet • Fluids should be increased to 8 to 10 glasses daily (preferably water) • Exercise
Haemorrhoids	• Treat constipation • Kegel exercises • If symptomatic, sitz baths
Cravings and aversions	• Evaluate nutritional adequacy of diet
Pica The eating of earth or compulsive eating of ice in pregnancy is a commonly a sign of iron deficiency	• screen for anaemia and specifically iron deficiency • ensure iron supplements are being taken regularly • encourage foods with higher iron content
Physiological edema	• Ensure adequate protein intake • Rest • Leg elevation • Avoid prolonged standing • Daily leg exercises • Encourage fluid intake
Heartburn	• Advise on diet and lifestyle to prevent and relieve heartburn • Recommend small frequent meals • Limit caffeine, carbonated drinks, spicy foods, fried foods • Avoid lying down after eating • Consider antacid preparations for women with troublesome symptoms not re-solved by lifestyle changes
Nausea, vomiting and ptyalism (excess saliva production)	• Small frequent carbohydrates/protein snacks reduce nausea • Consider cold foods or food at room temperature • Some women find ginger or chamomile tea helpful • Pyridoxine, oral, 25 mg 8 hourly • Metoclopramide 10 mg 8 hourly orally if severe • Consider mental-health related reasons for vomiting

Key recommendations:

- All pregnant women should receive counselling about healthy eating, physical activity and adequate rest during pregnancy to stay healthy. This should be done with respect and taking into consideration the feasibility of the advice and exploring alternatives.
- Daily oral ferrous sulphate, folic acid and calcium supplementation is recommended for pregnant women (see antenatal care chapter for doses).
- The use of other multiple micronutrients, (e.g. Zinc, Vit D, etc) without the prescription from a qualified and certified medical practitioner and for very clear indications are not recommended.
- Women with anaemia, obesity and pre-existing medical conditions should be managed appropriately (refer to medical conditions chapter).

Nutrition during labour and delivery (Intrapartum period)

- During the first stage of labour, intake of oral fluids and food is recommended and should be encouraged for women, with respect for the women's wishes.
- During active pushing in the second stage of labour, intake of oral fluids should be encouraged.
- The available evidence on oral fluid and food restriction shows no harm or benefit on outcomes including Mendelson syndrome, i.e. aspiration of stomach content during general anaesthesia.
- There is no evidence of benefit of administration of intravenous fluids for low-risk women who can take in fluids orally. Low-risk women should therefore not routinely get an intravenous line with administration of fluids, as this will limit mobilisation during labour.

Immediately after delivery

- Delayed umbilical cord clamping (at least 1 minute after birth) is recommended. This applies for both term and preterm births as well as both vaginal deliveries and caesarean sections. There is no evidence for increased HIV transmission due to delayed cord clamping.
- Delaying cord clamping has been shown to improve infant health and nutrition outcomes. Delayed cord clamping reduces perinatal mortality. In the infant particularly, delayed cord clamping can improve iron status until 6 months after birth.

Postpartum

- Postpartum women should be advised on and encouraged to consume a balanced and healthy diet. All women without any contraindications are recommended to undertake regular physical activity during the postpartum period.
- Postpartum constipation is common and enhanced by hormonal changes during pregnancy and delivery, perineal pain, anxiety, potential presence of haemorrhoids and disrupted food and water consumption during labour and delivery.
    - Good dietary advice is crucial to prevent and treat postpartum constipation, including good hydration and fibre-rich diet including items such as bread, whole grains, bran/cereals and fruits.
- Oral iron and folate supplementation can be continued in the postpartum up to 12 weeks after delivery for women who had anaemia during pregnancy.
- Vitamin A supplementation for the mother is not recommended.

Nutrition while breastfeeding

- The postnatal period represents an important opportunity to restore maternal nutrient reserves after childbirth and ensure they are sufficient to meet the additional energy needs associated with breastfeeding. This is particularly important among women who are undernourished.
- Nutrition counselling and micronutrient supplementation are recommended for women after delivery to replenish nutrients lost due to pregnancy, childbirth and to encourage healthy weight loss after pregnancy.
    - Counselling mothers on the benefits of early and continued breastfeeding for their own health is particularly important, as breastfeeding is associated with short-term benefits (including postnatal weight loss, mother-infant bonding, lactational amenorrhea) and longer-term benefits (infant health).

Nutritional requirements during lactation

- Increased nutrient needs and healthy eating
- Food safety and hygiene
- Avoidance of alcohol, smoking and substance abuse
- Counselling on breastfeeding benefits and safe infant feeding choices
- Women in KMC should be supported to breastfeed

Nutrition of adolescents and at-risk women

- Some women may be at increased risk for malnutrition and poor pregnancy outcomes, and as such, require additional attention and support. Women who are nutritionally at-risk and in need of additional support include those who are underweight prior to and during pregnancy, those who gain inadequate weight during pregnancy, and those suffering from anaemia, pre-existing medical conditions, mental health concerns and other micronutrient deficiencies.
- The rapid rise in overweight and obesity among women in South Africa also means that more attention must be paid to the distinct needs of this group before and during pregnancy.
- Adolescent girls who are pregnant are also at higher risk of poor pregnancy outcomes because they are still growing; they have important nutritional requirements of their own, resulting in even higher nutritional requirements during pregnancy.
- Other groups that may be at higher risk of poor nutritional outcomes are women with disabilities, women with mental health concerns and women living with infectious diseases (e.g., HIV and tuberculosis).

The following should be screened for, to identify at-risk pregnant women:

- Nutritional status to identify underweight or overweight.
- Assess food insecurity and diet
- Pre-existing medical conditions: Hypertensive disorders, DM, Autoimmune disorders and chronic infections
- Previous Obstetric history: History of IUGR or low birth weight babies, abruptio placentae
- Use of alcohol and other substances (past and present) as well as their tobacco use (past and present) and exposure to second-hand smoke as early as possible in the pregnancy and at every antenatal care visit.

Table 5-2 shows recommended actions for at-risk groups during pregnancy

Table 5-2 At-risk groups and recommended actions

Risk	Cut-off points	Consequences	Actions
Underweight	• BMI before pregnancy <18.5kg/m² Or • MUAC <23cm (during first trimester)	• BMI is not an accurate indicator, but a very low pre-pregnancy BMI shows severe wasting of both fat and lean tissue • Increased risk of low birthweight, SGA and newborn stunting	• Raise vigilance for under nutrition or chronic illness. • Ensure good nutritional status: assess and provide nutritional supplementation if needed. • Nutrition education and counselling (annexure 1) with the aim of increasing energy and protein intake. • Ideally provide enriched maize-meal porridge for pregnant women who are underweight to reduce the risk. • The consumption of diverse nutrition locally available foods should be encouraged in line with the Food-Based Dietary Guidelines.
Overweight	• BMI >30Kg/m² before pregnancy Or • MUAC ≥33 cm (during first trimester)	• Increased risk of complications including hypertensive disorders of pregnancy, gestational diabetes mellitus, delivery of LGA infants	• Raise concerns about risks of pre-eclampsia and gestational diabetes • Counselling on nutritious diets (Annexure 2) • Nutrition counselling should include what a healthy diet contains- adequate energy, protein, vitamins and minerals, obtained through the consumption of a variety of foods, including green and orange vegetables, meat, fish, beans, nuts, whole grains and fruit. • Counselling should include improving the balance and quality of the diet, decrease energy intake, increase physical activity, and encouraged to consider enrolling in structured weight-loss programs • Encourage physical activity: aerobic physical activity and strength-conditioning exercise aimed at maintaining a good level of fitness throughout pregnancy.
Intestinal worms	• Positive ova and parasite test based on stool sample	• Risk of malnutrition (anaemia) among mother and adverse fetal outcomes	• Mebendazole for soil-transmitted helminthiases (500mg as a single dose).

Key nutrition principles

- This should be done with respect and taking into consideration the feasibility of the advice and exploring alternatives.
- Healthcare workers at every level should familiarise themselves with evidence-based nutrition interventions that would drive behaviour change, steering women away from poor nutritional habits and where necessary case referrals.
- Antenatal care should include assessment, nutritional counselling and support to identify and promote the consumption of an adequate, quality nutrient-dense diet based on locally produced/available foods.
- Women should be supported but ultimately responsible for adopting a healthy lifestyle including physical activity, discouraging consumption of alcohol and use of tobacco during preconception, pregnancy and lactation periods to mitigate adverse effects
- Pregnant women require additional iron, and folic acid, and calcium to meet their nutritional needs as well as those of the developing fetus.
- The use of multiple micronutrients, (e.g. Zinc, Vit D,) without the prescription from a qualified and certified medical practitioner and for very clear indications is not recommended
- All babies should be initiated on breastfeeding within 1 hour of birth except where there is a clinical reason not to do so.
- All facilities rendering maternity and newborn care should implement the WHO/UNICEF ten steps to successful breastfeeding as a standard of care.
- Maternity practices that are not supportive of breastfeeding should be discouraged, including prelacteal feeds to breastfed infants or other supplements such as water, glucose water, formula and other fluids (interferes with breastfeeding and contribute to early cessation) unless medically indicated.
- Enteral and parenteral feeding for neonates should follow stipulated algorithms and guidelines for enteral feeding.
- Support women to access the Child Support Grant which has been shown to increase food security in households.
    - Preparation for the processing of the CSG should occur during pregnancy when the woman can be encouraged to get an ID, and postpartum when birth registration can be supported.

Chapter 6: EARLY PREGNANCY COMPLICATIONS

- Early pregnancy complications are sometimes neglected because they are often not seen as part of the maternity skills package. Complications in early pregnancy however require specific skills best provided by competent midwives and medical practitioners appropriately trained to manage any problems in early gestation.
- At least 15% of recognised pregnancies are associated with complications in early gestation which account for 7% of all institutional maternal deaths recorded in South Africa.
- Miscarriages are usually spontaneous but could be induced processes. Induced miscarriages (termination of pregnancy) could have been done through legal or illegal sources. Consider physical trauma and domestic violence as a cause. See chapter on Gender-Based Violence.
- Refer women with three consecutive first trimester or two consecutive midtrimester losses to a regional hospital for workup before the next pregnancy
- Progesterone therapy is available at hospital level for women with recurrent early losses (see chapter on preterm labour as well as the STG hospital level for more information).

Bleeding in early pregnancy

Bleeding in early pregnancy is defined as vaginal bleeding that occurs within the first 22 weeks of gestation. Follow the steps below for diagnosis and treatment:

1. Do a rapid assessment of the patient including:

- vital signs: pulse rate, respiration rate and BP
- followed by a systematic assessment: use the ESMOE approach (Big 5, forgotten 4)
- abdominal assessment: tenderness, size of uterus
- other: vaginal examination, pallor, assess the extent of vaginal bleeding (vaginal bleeding is regarded as “heavy” if a new pad is soaked within five minutes and “light” if it takes more than five minutes to soak)
- If a urine sample can be obtained, do a pregnancy test if there is any doubt about whether the woman is pregnant or not

2. Assess for complications

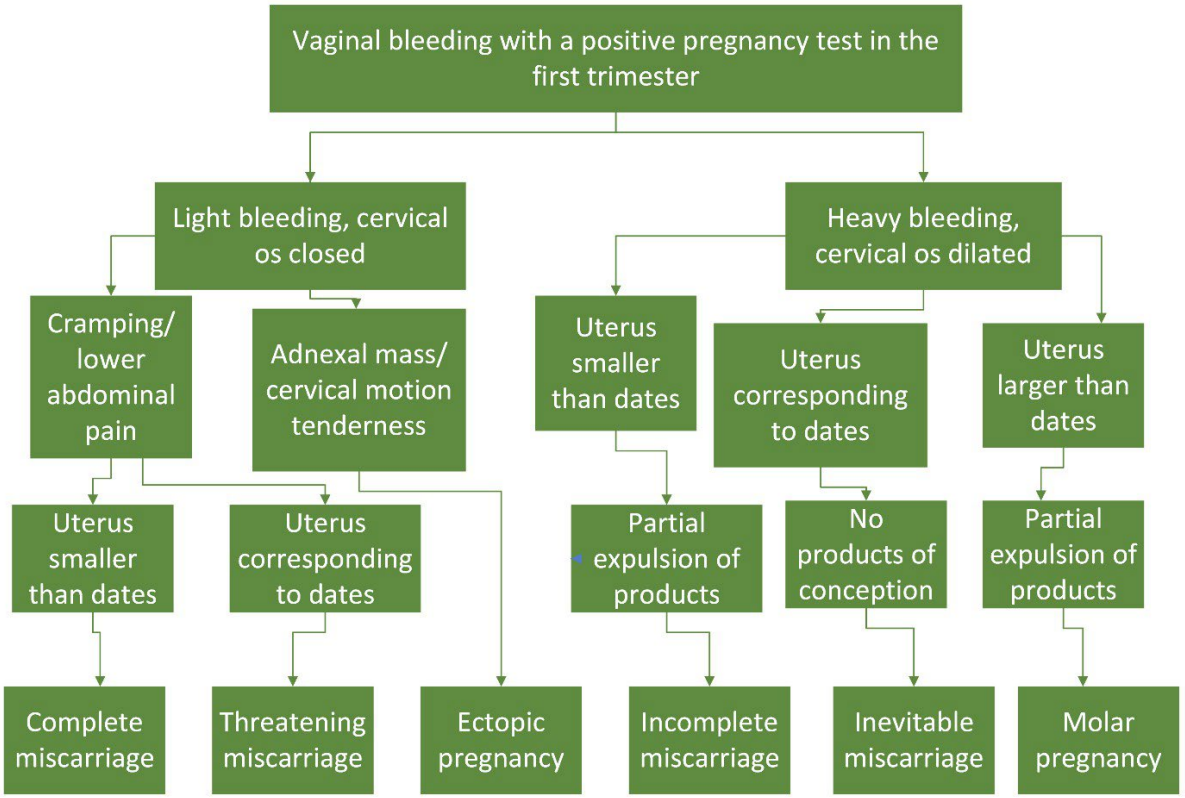
- if shocked, the patient needs active resuscitation
- determine if the patient has had a safe or unsafe miscarriage (see below)

Differential Diagnosis

- Consider miscarriage, ectopic pregnancy or molar pregnancy.
- Non-pregnancy specific bleeding, e.g. from cervical carcinoma

Safe miscarriages are those unlikely to have a serious adverse outcome to the patient. Unsafe miscarriages are more likely when done illegally or where existing conditions makes it likely for the women to develop sepsis.

Figure 6-1 Algorithm for vaginal bleeding in the first trimester



Miscarriage

All types of miscarriages may be very distressing for the woman, whether the pregnancy was intended or not, and whether she knew she was pregnant or not.

Health workers should:

- show kindness and compassion; gently explore what the woman's feelings and thoughts are - validate these and support her with these (e.g. she can be reassured that she is not to blame)
- give clear information about possible causes, procedures and outcomes
- take informed consent for all procedures and ensure privacy
- if possible, manage the woman away from pregnant women or postpartum mothers
- involve partners/companions of the woman, at her choosing
- never show disapproval or any judgement if the miscarriage was induced i.e. termination of pregnancy.

Safe miscarriage:

- Pulse rate <90 beats per minute
- Respiratory rate <20 breaths per minute
- Temperature <37.5°Celsius
- Haemoglobin ≥10g/dl
- Uterus <12 weeks in size
- Products of conception not foul smelling
- No clinical signs of infection
- No suspicious findings on evacuation of the uterus

Safe miscarriages can be managed at community health centres and district hospitals. If there is any abnormality among the criteria for safe miscarriage, stabilise and refer the patient to a district hospital with a 24-hour theatre available. If there is any organ dysfunction present which does not resolve with initial fluid resuscitation and emergency blood transfusion (in cases where there is severe anaemia due to blood loss), refer urgently to a specialist facility.

Signs of organ dysfunction with miscarriage (unsafe miscarriage):

- Systolic blood pressure <90mmHg
- Respiratory rate >24 breaths per minute
- Oliguria (urine output <30mL for 2 hours despite fluid load)
- Signs of tissue hypoperfusion:
    - Altered mental status
    - Decreased capillary filling

Threatening miscarriage

- Mild bleeding in early pregnancy without cervical dilatation can indicate a threatening miscarriage.
- The uterus size corresponds to the expected gestation.
- An ultrasound scan is required for the diagnosis, which should demonstrate a live fetus within the uterus
    - surgical treatment is usually not needed.
    - not necessary to admit patient to hospital.
    - advise the woman to avoid strenuous activity and any sexual activity.
- if bleeding stops, continue antenatal care as scheduled.
- if the bleeding continues, re-assess for fetal viability with ultrasound examination.

Complete miscarriage

- After a complete miscarriage the bleeding is usually mild and the cervical os closes.
- The uterus on palpation is smaller than expected for the gestational period.
- Pain that was experienced during the miscarriage should now have settled.
- Medical treatment or surgical evacuation of the uterus is not needed.
- Advise the woman to report any continuous bleeding and make a booking for post-miscarriage follow-up if bleeding persists.

Inevitable miscarriage

- When a threatening miscarriage progresses, the volume of vaginal bleeding increases and the cervix dilates.
- Intact membranes may be felt at the cervical os
- This is usually associated with an increase of cramping lower abdominal pains.
- Management
    - If bleeding, infuse oxytocin 20 units in one litre Sodium Chloride 0,9% at 125ml/hour; this will also help achieve expulsion of products of conception.
    - Wait for expulsion of the products of conception.
    - If products are incomplete on inspection, evacuate the uterus to remove any remaining products of conception.

Incomplete miscarriage

- With an incomplete miscarriage, the cervix remains open, products of conception may be visible or felt, and the bleeding may be light or heavy. The uterus size does not correspond with the gestation.
- In pregnancy in the first trimester (<14 weeks):
    - Remove visible or palpable products of conception with fingers or a ring forceps (swab holding forceps) and observe.
    - Set up an intravenous line and infuse oxytocin 20 units in one litre Sodium Chloride 0,9% at 125ml/ hour
        - if the bleeding is heavy after removal of visible or palpable products of conception the uterus must be evacuated
        - After removal of visible or palpable products, if bleeding is mild, and there are no features of an unsafe miscarriage, expectant management, or medical management with 600mcg oral or 400mcg S/L misoprostol are options that can be offered to the client.
            - Ask her to return for a check-up if bleeding has not settled completely by 2 weeks or if she develops increasing pelvic pain or fever.
            - Alternatively, an MVA can be done if the patient prefers this.

- In pregnancy 14 weeks or more (second trimester):
    - Later in the pregnancy, chances are better that complete spontaneous expulsion of the products of conception may occur.
    - Set up an intravenous line and infuse oxytocin 20 units in one litre Sodium Chloride 0,9% at 125ml/ hour until expulsion of the products of conception occurs.
        - Check sodium after 24 hours (risk of dilutional hyponatremia)
    - After expulsion, examine if the products are complete and examine the uterus
    - If there is ongoing heavy bleeding or clinically or ultrasonically evident retained products, then evacuation should be done by curettage (not MVA)
        - sedation or anaesthetic are likely to be required for this

Unsafe miscarriages

- Unsafe miscarriages should not be managed at community health centres or district hospitals without appropriate operative facilities.
- Any miscarriage with signs as above (for unsafe miscarriages) should be considered to be a possible septic miscarriage and must be systematically assessed and resuscitated accordingly.
    - Exclude the possibility of an underlying medical condition as a cause for fever (e.g. pneumonia) with an incidental miscarriage
    - A septic termination of pregnancy/miscarriage and must be referred immediately to a specialist facility.
        - Commence with the standard sepsis miscarriage management protocol below.

Management of a septic miscarriage

- Stabilise before referral as follows:
    - do a rapid assessment of the patient- circulation, airway and breathing
    - insert an intravenous infusion and start rehydration with one litre Sodium Chloride 0,9%.
        - Oxytocin 20 units can be added to this drip if needed.
    - prescribe antibiotics (see below) and aim to give the first dose before transfer
- At the referral hospital:
    - Antibiotic therapy:
        - Amoxicillin/clavulanic acid, IV, 1.2 g, 8 hourly.
            - Change to oral treatment after clinical improvement:
                - Amoxicillin/clavulanic acid, oral, 875/125 mg 12 hourly for 7–10 days.
        - If Severe penicillin allergy: Clindamycin, IV, 600 mg 8 hourly AND Gentamicin, IV, 6 mg/kg daily.
            - Change to oral treatment after improvement: Clindamycin, oral, 450 mg 8 hourly for 5 days AND Ciprofloxacin, oral, 500 mg 12 hourly for 5 days.
    - if the patient is shocked (pulse rate > systolic blood pressure), determine if the shock is due to hypovolemia or sepsis:
        - give one litre Sodium Chloride 0,9% rapidly over 20 minutes in an attempt to raise the blood pressure levels and decrease the pulse rate
        - if the blood pressure value increases and the pulse rate normalises, it is most likely hypovolemic shock due to haemorrhage.
            - Continue resuscitation.
        - if there is poor response (blood pressure values do not increase), repeat with another litre of Sodium Chloride 0,9%
        - if there is still no response in spite of adequate fluid therapy, the patient is in septic shock
    - reduce the toxic load through surgical removal of source within two to four hours after commencing appropriate antibiotics
    - all women in septic shock with organ dysfunction must ideally be managed at a specialist hospital (resuscitate and refer).

Post-miscarriage follow-up

- Woman who has had a miscarriage often experience distress at the time of the miscarriage, shortly afterwards or in the future.
- Kind and gentle emotional support by the health worker may be very useful.
- Explore the feelings of the woman and validate these. These may be grief, guilt, emptiness, fear, loneliness, confusion, out of control. If she feels guilty, reassure her she is not to blame with clear explanations.
- Explore who she would like to be with for emotional support. Explain that it may be very helpful if she can share her distress and recovery with someone she trusts. If this person is the partner, realise that this person may also be distressed and may need support.
- Suggest ways she can cope with the emotions: allow these feelings; find a special way to remember the pregnancy (if she calls it 'a baby', follow this use of language) or do something like a small ceremony to 'say goodbye'.
- Encourage her to rest, eat healthily and avoid things that 'numb' the pain like alcohol.
- Explain that if she is finding it hard to cope, she should seek mental health or counselling support: give contact details and options
- It is possible to develop mental health problems because of the grief. Depression and anxiety are common, but some women may develop Post-Traumatic Stress Disorder.
    - If the woman has a mental health history, refer for mental health support.
    - If little available in your setting, give her numbers SADAG 0800 456 789/ 0800 70 80 90 or Lifeline 0861 322 322 or FAMSA.

Women who have had a miscarriage must be provided with appropriate clinical information:

- Inform her that spontaneous miscarriage is common and occurs in one out of every seven 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).
- Women should only consider a next pregnancy after full recovery from the miscarriage.
- Women who have had an unsafe miscarriage must be counselled regarding the factors that affected her pregnancy, and how to prevent this in future. Appropriate counselling must be done for family planning and the methods available to her.
    - Hormonal pills, injections, implants as well as intrauterine devices and tubal ligation may be provided immediately.
    - Women undergoing medical or expectant management of incomplete miscarriage, who choose IUCD as their contraceptive method
        - delay insertion until 6 weeks post miscarriage
    - Implants, intrauterine devices and surgery should be delayed if:
        - infection is present or suspected.
            - Delay until such infection is cleared
        - severe anaemia (Hb <7g/dL).
            - Delay until anaemia has improved (urgent transfusion may be necessary)

- Screen for other health problems and correct if needed:
    - Anaemia
    - Rh factor (if unknown) and give Rh prophylaxis if Rh negative (Anti-D immunoglobulin, IM, 100 mcg as a single dose)
    - Sexually transmitted infections (including HIV and syphilis).
        - All women must be offered HIV counselling and testing
    - Ask patient to return for a cervical cytology smear if indicated (national policy) 6 weeks after the miscarriage.

Manual Vacuum Aspiration Technique

- Manual Vacuum Aspirations (MVA) is the best technique for the removal of products of conception in women with safe incomplete miscarriages prior to 14 weeks gestation; molar pregnancies or delayed post-partum haemorrhage due to retained placental fragments.
- Advantages of MVA:
    - can be done as an out-patient procedure
    - does not require anaesthesia or an operation theatre
    - significantly reduces blood loss and the need for blood transfusion
- Initial steps:
    - inform the patient of the diagnosis and treatment options
    - obtain informed written consent
    - the patient must empty her bladder just before the procedure
    - provide emotional support and encouragement
    - provide pre-procedure analgesics: Paracetamol 1g 30 minutes before the procedure

- When starting the procedure:
  - make sure the bladder is empty
  - prepare an MVA syringe by closing the valves and then withdrawing the plunger and locking the plunger arms
  - select an MVA cannula of an appropriate size for the cervix
  - give the patient 10 units oxytocin intramuscularly to make the myometrium firmer
  - perform a bimanual examination to assess the size and position of the uterus
  - insert a vaginal speculum and clean the vagina and cervix with an antiseptic solution (water based)
  - check the cervix for tears or products of conception. (If products are visible, remove with a sponge holding forceps)
  - gently grasp the anterior lip of the cervix with sponge holding forceps
  - gently introduce the widest gauge suction cannula through cervical os, push the cannula into uterine cavity until it touches the fundus (max 10 cm) and pull back slightly
  - attach the MVA syringe to the cannula and release the valves to transfer vacuum to the uterine cavity
  - evacuate uterine contents by gently rotating the syringe and moving the cannula backward and forward
  - check for signs of completion:
    - red or pink foam but no more tissues
    - a grating sensation
    - uterus contracts around the cannula
  - withdraw the cannula.
  - empty contents of the syringe into a waste bin
  - remove the speculum and perform bimanual examination to check the uterus size and firmness
- Post procedure care
  - give analgesia (Paracetamol 1 g six hourly orally as needed)
  - encourage the woman to eat, drink and walk around as she wishes
  - offer other health services before discharge:
    - Family planning, including the option of immediate IUCD insertion
    - HIV and syphilis testing and counselling
    - Rh blood group screen if not known
- Discharge the patient in one to two hours if there are no complications and advise her to watch for symptoms that would require immediate action. Ask the patient to return if she experiences:
  - prolonged cramping (more than two days)
  - prolonged bleeding (more than two weeks)
  - bleeding more than a menstruation
  - severe or increasing pain
  - fever, chills or malaise
  - fainting
- It is important to carefully document all actions, procedures and observations.

Ectopic pregnancy

- A woman with a positive pregnancy test and an acute abdomen mostly likely has a ruptured ectopic pregnancy.
- This is a surgical emergency, and the patient must be taken to the operating theatre immediately for explorative laparotomy.
- Order blood, but do not wait for the blood to arrive before doing the laparotomy.
- Ultrasound may assist with the diagnosis, especially if it shows an empty uterus and free fluid in the abdomen, but with an acute abdomen the investigation of choice is most likely surgery.
- If ultrasound is not available and the diagnosis is doubtful, a culdocentesis or paracentesis may be of value; if non-clotting blood is obtained, this indicates a ruptured ectopic pregnancy.

Surgical management of a ruptured ectopic pregnancy

- Do adequate fluid resuscitation on the way to theatre, but do not delay surgery to try and correct the fluid balance first- see anaesthetic notes below. The woman is bleeding actively and unless you stop the bleeding surgically, she will die.
- Do a midline (up-and-down) incision in the abdomen, as there may be other unexpected pathology. A transverse incision allows very limited exposure and should only be used for elective surgery or if the site of the ectopic pregnancy can be clearly identified on ultrasound.
- Be careful not to damage the bowel when opening the peritoneum as the bowel will be pushed against the peritoneum by the blood clots in the abdomen.
- Use a large suction and your hand to remove as much blood clots as possible to quickly visualise the tubes; if there is too much blood put your hand behind the uterus and feel on which side the ruptured tube is.
- Clasp the ruptured tube between your fingers to temporarily stop the bleeding; then remove all the clots until you have good visibility.
- Identify both ovaries and make sure they are left intact (except if one is involved in the mass). Inspect the other tube and the uterus.

- If there is extensive damage to the tube, the surgery of choice is partial or total salpingectomy, removing the pregnancy and the tube at the same time.
- Apply clamps on both sides of the ectopic or ruptured tube with 45-degree angles to the tube, so that their points touch.
- Excise the ruptured part and then gently tie off each clamp, ensuring good haemostasis. Be careful not to damage or tear the very friable tissue below the tube, as it will cause more bleeding.
- As soon as haemostasis is obtained, remove all the remaining clots and rinse the abdomen with saline. Inspect the rest of the abdomen and remove all swabs. Inform the anaesthetist of the amount of blood loss.
- Close the abdomen.
- In your notes, state which side was removed and how much, the condition of the remaining tube and of the ovaries, and if any additional pathology was present.

Anaesthetic management of an unstable ruptured ectopic pregnancy

- When a patient is too unstable for a referral to a specialist centre, but the anaesthetic skills to manage such an unstable patient are not available at the district hospital, the management of such a case is difficult.
- A spinal anaesthetic must not be administered, as the cardiovascular effects of such an anaesthetic will lead to severe shock and possibly death.
- Initial attempts to stabilise the patient to a suitable condition for transfer should be made.
    - If the patient has not responded to two litres of Sodium Chloride 0,9% then surgery will need to be performed urgently.
- Mobilise the most skilled practitioners available to assist with this case.
- Prepare theatre and all resuscitation equipment.
- Assess patient and the potential for a difficult airway.
- The following is a suggested way to do general anaesthesia in these emergency circumstances, but follow advice from an experienced person where available, even telephonically:
    - Monitor the patient with ECG, NIBP and Pulse oximeter.
    - Pre-oxygenate with 100 per cent oxygen anaesthesia.
    - Induce anaesthesia by administering Etomidate 0.3 mg/kg intravenously or ketamine two milligram/ kilogram intravenously (provide cricoid pressure if the skills are available).
    - Suxamethonium 100 mg intravenously can be given by practitioners confident of intubation (usual dose is 1-1.5mg/kg).
    - The trachea should be intubated.
    - Capnography and agent analysis should be utilised (confirm position of the tube by capnograph trace, and auscultation of both axillae and over the stomach.)
    - Ventilation should be provided at 12 breaths per minute and 400 mL tidal volume.
        - Where possible PEEP of five centimetre H2O should be applied.
    - Isoflurane 0.3 to 1.0 per cent should be titrated to provide anaesthesia.
    - Muscle relaxation should be provided by giving Vecuronium 0.08-0.1 mg/kg (only after intubation and commencement of satisfactory ventilation).
- After the abdomen is opened and the bleeding controlled attempt further resuscitation with fluid and blood.
- Once the Systolic blood pressure is >100 mmHg, one miligram IV morphine titration each five minutes can be commenced until 0.1 mg/kg has been given.
    - Treat any resulting hypotension with further fluid and blood administration.
- Reverse the muscle relaxation with 2.5 mg of Neostigmine and 0.4 mg glycopyrrolate once spontaneous movement has been observed to occur.
- Discontinue the isoflurane and allow the patient to extubate herself.
- If the patient does not stabilise after clamping the abdominal bleeder and fluid resuscitation keep the patient intubated and ventilated for transport to a more specialised level of care.
- This method of anaesthesia will be associated with a high incidence of awareness. Counsel the patient with respect to this if it occurs.
- If the skills exist to provide more complete and effective anaesthesia this description should not be followed.
- A stable, unruptured ectopic can be referred to a specialist centre for medical or laparoscopic management, but it remains an urgent referral as the tube can rupture on the way.
- A summary of the symptoms and signs of ectopic pregnancy is given in Figure 6-2.

Figure 6-2 symptoms and signs of ectopic pregnancy

Unruptured ectopic pregnancy	Ruptured ectopic pregnancy
Symptoms and signs of early pregnancy. Patient haemodynamically stable.	Haemodynamically unstable patient (low blood pressure, tachycardia, tachypnoea, collapse, weakness, pallor).
Abdominal and pelvic pain.	Acute abdominal and pelvic pain.
Tenderness with vaginal examination.	Abdominal distension.
	Rebound tenderness; marked cervical excitation tenderness.

- If there is access to ultrasound and quantitative serum beta HCG (human chorionic gonadotrophin), it is much easier to diagnose doubtful, early and stable ectopic pregnancies:
    - If the serum beta HCG is ≥1500 mIU/mL and the uterus is empty on transvaginal ultrasound, there is a pregnancy of unknown location and further work-up is needed.
    - If the serum beta HCG is <1500 mIU/mL and the uterus appears empty on transvaginal ultrasound in an otherwise stable patient, it may be a very early normal pregnancy or an ectopic pregnancy.
        - Keep the patient for observation and repeat the beta HCG 48 hours later.
        - if the beta HCG value doubles in 48 hours it is most likely an early intra-uterine pregnancy and ultrasound can be repeated in two weeks' time
        - if the beta HCG value increase by less than ⅔^{rds} it is most likely an ectopic pregnancy
    - if the value decreases it may be possible to manage the patient conservatively or with medical management; discuss with your specialist referral hospital for further management.

Chapter 7: NORMAL LABOUR AND DELIVERY- INTRAPARTUM CARE

Labour is diagnosed if there are regular painful uterine contractions accompanied by at least one of the following:

- Cervical changes
- Ruptured membranes
- Show

Admission of a woman in labour

All women presenting in (suspected) labour must be fully evaluated. This includes history taking, review of the antenatal record, clinical examination, and special investigations. At the end, two questions should be addressed:

1. What is the risk classification of this woman?
   Each woman must be risk classified to determine the level at which she should be managed. Consult with or refer to a district hospital depending on risk factors and specific problems identified. Women at low risk should be able to give birth at a Midwife-run obstetric unit (MOU): This could be at a PHC, CHC, or an OMBU.

2. Is she in labour?
   The clinician must make the diagnosis of labour and not only rely on the woman's history. The differential diagnosis includes but is not limited to labour, urinary tract infection, amniotic fluid infection, (early) abruptio placentae, false labour or gastro-enteritis.

History taking and review of the antenatal record

- Carefully review the antenatal record, especially the gestational age, blood results and HIV status. Clearly note all the risk factors. Interview "unbooked" women as if they are attending antenatal clinic for the first time.
- Note the nature of labour pains (onset, frequency, duration), show, vaginal bleeding, fetal movements, passage of liquor and any other relevant symptoms.

Physical examination

- Note the psychological state, record the vitals (heart rate, temperature, blood pressure, respiratory rate) and any oedema or pallor.
- Do a systematic assessment, using the ESMOE approach (Big 5, forgotten 4)
- Examine the abdomen:
  - Inspect for previous scars, possible multiple pregnancy or abnormal lie
  - Measure the symphysis-fundal height in centimeters
  - Determine the fetal lie (longitudinal, oblique or transverse), presentation (cephalic or breech) and attitude of the head (the amount of flexion or extension)
- Assess:
  - Level of the head in fifths palpable above the pelvic brim
  - Liquor volume (probably normal if the fetal head is ballotable)
  - Duration and frequency of uterine contractions
- Auscultation of the fetal heart rate before and immediately after a contraction
- Clinical estimation of fetal weight

Perform a vaginal examination:

- Ensure privacy and ask for consent.
- Inspect the vulva and vagina: look for abnormal discharge, warts or ulcers
- Cervix: effacement (length in cm), position, consistency, and dilatation in cm
- Membranes ruptured or not
  - If ruptured, assess features of the liquor (e.g. copious or scanty, clear, blood-stained, meconium-stained, offensive smelling)
- The presenting part: its position, degree of sagittal (parietal-parietal or PP) moulding and presence of caput

Special investigations

- Test the urine for glucose, ketones and protein.
- For unbooked women presenting in labour, or where their antenatal blood results are not available, repeat all the routine booking blood tests
- Counselling and testing for HIV and syphilis to all women who tested negative earlier in the pregnancy.
  - Manage results according to the National VTP Guidelines (see HIV chapter)
- Measure the Hb

Suspected labour

- Unless the woman is in active labour already, it is difficult to confirm on admission whether the woman is really in labour or not, and a period of observation is required to assess whether the contractions are regular and persistent.
    - It should in most cases be clear by 6 hours, whether or not the woman is in labour.
    - For high-risk women such as those with a previous Caesarean delivery, this 6-hour period of observation should be conducted in the labour ward, as long as there is a bed available
- Observations to be done as follows:
    - Fetal heartrate and maternal heartrate: 2-hourly (important for differentiation)
    - Contractions: 2-hourly
    - Maternal blood pressure, respiratory rate and temperature: 6-hourly
    - Vaginal examination (including head above brim, cervical dilatation, cervical length and state of membranes): 6-hourly
    - Urine: when passed
- The vaginal examination can be repeated after 4 hours if NO contractions are palpated on the 2-hourly assessment. The woman can be discharged home (or to a maternity waiting home) if:
    - The maternal and fetal condition are both reassuring
    - There is no increase in contractions / irregular contractions or contractions have ceased completely
    - No ruptured membranes (ROM)
    - No cervical changes since admission and no further descent of the presenting part
    - Warning signs have been explained: increased pain, ROM, vaginal bleeding, reduced fetal movement – counsel the mother and verify she has understood.
    - The woman was provided with a follow-up date.

Document the observations in the Maternity Case Record (use the chart for women in whom labour is doubtful). Clinical notes (such as main complaint) need to be made on the pages in the MCR for women who are not in labour.

General care of women in labour

Respect, privacy and companionship

- Treat all women in labour with respect and courtesy.
- All women must be treated this way, including those who are unbooked, sex workers, teenagers, foreigners, homeless, disabled, with STIs, on recreational drugs, or not heterosexual.
- Address the women by her name.
- Ensure privacy and always perform intimate examinations behind screens
- All procedures and examinations need to be done with full consent of the woman.
- Allow family and friends to provide companionship during labour:
    - A reasonable policy for most labour wards is to allow one companion of the woman's choice to stay with her during labour
- Support the companion to help the woman.
- Give clear, understandable information about progress, reasons for investigations, approaches for managing the pain.
- Try to use the woman's own language. If you cannot speak her language, seek an interpreter that is acceptable to her.
- Never shout, hit, mock, belittle or threaten.
- Never accuse the woman of 'bad behaviour' for whatever reason.
- Remember, women who have experienced sexual trauma or previous birth trauma may be particularly afraid of the labour and birth experience.
    - It is not always easy to recognise these factors in the women's history.
    - The fear can present as 'aggression' or 'non-co-operation' or 'panic' or withdrawal.
    - Some of these women present in false labour or arrive late in labour.
    - They especially need emotionally supportive care, focused on gentleness and empowerment

Diet and fluids

- Allow low-risk women to eat and drink during labour. An intravenous drip is not routinely needed.

Mobility and posture

- Encourage women in the latent phase of labour and early active phase to walk around.
- Any posture (sitting, standing, lying) is acceptable, except the flat supine position (lying on the back), which may compress the vena cava, causing low blood pressure and reduced blood flow to the uterus.

Enema, pubic hair shaving and insertion of urinary catheter:

- None of these procedures is necessary or desirable in the routine management of normal labour.

Routine artificial rupture of membranes (AROM or amniotomy)

- Amniotomy may contribute to neonatal sepsis and vertical transmission of various infections and should not be part of the routine management of normal labour.
    - It is, however, one of the interventions that can be considered in cases of poor progress in labour

Analgesia in labour

- Pain relief should be offered to all women in labour:
  - Support and companionship have been shown to reduce the need for analgesic medication in labour. Companionship in labour should be encouraged at all times and be planned for during antenatal care.
  - Morphine, IM, 0.1 mg/kg 4 hourly as needed, to a maximum of 10 mg with promethazine 25 mg intra-muscularly 4 hourly is acceptable in both the latent and active phases, even up to full dilatation of the cervix.
  - Inhaled Entonox® (a mixture of 50% nitrous oxide and 50% oxygen) by mask is useful in the active labour.
  - Regional anaesthesia (epidural or combined spinal/epidural) is generally not available in CHCs and district hospitals. Some institutions may however have the necessary skills, equipment, and staff to provide this form of pain management.

The first stage of labour

Latent phase of labour (cervix <5cm dilated)

- The woman is in the latent phase of labour if the cervical dilatation is less than 5cm.
- The duration of latent phase of labour (LPL) can be up to 24 hours (after the diagnosis of labour has been confirmed, up to and including 4cm of dilatation).

Frequency of observations:

- Fetal heartrate and maternal heartrate: 2-hourly (important for differentiation)
- Contractions: 2-hourly
- Maternal blood pressure, respiratory rate and temperature: 6-hourly
- Vaginal examination (including head above brim, cervical dilatation, cervical length and state of membranes): 6-hourly
- Urine: when passed

Indications for earlier vaginal examination (than the 6-hourly interval):

- If the frequency, intensity and/or duration of the contractions change
- If the healthcare worker has subjective impression that the woman is in active phase of labour (APL)
- If there is a need for opiate analgesia
- If the woman has an urge to bear down
- If the fetal and/or maternal condition is non-reassuring

NOTE: Rupture of membranes is not a reason to repeat a vaginal examination earlier, a speculum examination is preferred. The fetal heartrate should be checked after ROM.

Indications for referral:

- If the maternal and/or fetal condition is non-reassuring
- If ROM >12 hours AND still in the latent phase
- If the liquor is meconium stained (MSL) AND the woman is in the latent phase (all MSL: thick and thin)
- If 5cm dilatation (active labour) is not reached after 12 hours: CHCs have to refer a woman in latent labour to the hospital if 5cm has not been reached after 12 hours.

Active phase of labour (cervix ≥5 cm dilated)

The active phase of labour starts when a cervical dilatation of 5cm or more has been reached.

Frequency of observations:

- Fetal heartrate and maternal heartrate: every 30 minutes (important for differentiation)
- Contractions: 2-hourly
- Maternal blood pressure, respiratory rate and temperature: 4-hourly
- Vaginal examination (including head above brim, cervical dilatation, cervical length and state of membranes): 4-hourly (2-hourly after 8cm dilatation has been reached)
- Urine: when passed

Indications for earlier vaginal examination (than 4-hourly interval):

- If the woman has an urge to bear down
- If the fetal and/or maternal condition is non-reassuring

Indications for referral:

- If the maternal and/or fetal condition is non-reassuring
- If there is MSL AND delivery is NOT imminent
- If there is poor progress of labour
- If there are signs of cephalo-pelvic disproportion (CPD) i.e. 2+ or 3+ sagittal moulding and the head is not engaged, or severe generalised caput

NOTE: no need for referral for ROM > 12 hours in a woman in active phase of labour with good progress and reassuring fetal condition

Completion of the partogram

- The partogram is a tool to monitor labour where all maternal, fetal and labour observations can be recorded, and should be completed in real time as labour progresses, for all labouring women.
- The partogram in the Maternity Case Record has been updated to the "interim partogram" to accommodate the updated WHO intrapartum care recommendations.
- The World Health Organization has developed a new labour-monitoring tool called the Labour Care Guide (LCG), which is currently being piloted. Both tools – the interim partogram and LCG – use the frequency of observations as described above. Both start with name, parity, onset of labour and risk assessment of the labouring woman.

The interim partogram

- The interim partogram accommodates both the latent and the active phase of labour. All observations should be planned as per intervals recommended above and recorded on the partogram and signed off by the healthcare worker.
- Latent phase: there are 12 blocks, 2 hours each, for 24-hour monitoring.
    - Only start the plotting of latent phase observations on the partogram once true labour has been confirmed, which will usually be after a period of observation of up to 6 hours
    - Enter the first observation in the latent phase on the utmost left line of the partogram.
- Active phase: each block is 1 hour.
    - As soon as the active phase of labour is diagnosed (≥5cm dilated), place the first entry for the active phase at the point where the recorded cervical dilatation is exactly on the alert line.
    - At that point on the alert line, now enter the time on the vertical line and count one hour per block from that time (when plotting later observations) as the active phase progresses
    - The alert line starts at 5cm and is drawn at 1cm/hour.
    - The "action" line (= review line) is drawn 2 hours to the right of and parallel to the alert line.
    - The action line represents poor progress, and warrants action (e.g. review, refer to hospital, assess for CPD, assess contractions)

The second stage of labour
The second stage starts when the cervix reaches full dilatation (10 cm) and ends with delivery of the baby.

The passive second stage:

- If full cervical dilatation has been diagnosed, but the woman has no urge to bear down and is not actively pushing, allow 1 hour for the head to descend.
- However, rule out cephalo-pelvic disproportion (CPD) and confirm reassuring fetal condition (every 30 minutes).
- During this time continue the observations as during the active phase of labour.
- The bladder should be empty or emptied, using a catheter if necessary.

The active second stage:

- Efforts at bearing down are only encouraged when the woman has an urge to push.
- Observations should be done as follows:
    - Fetal heartrate: every 5 minutes or after every 2nd contraction (whichever comes first) with maternal heartrate.
    - Maternal vitals (other than FHR): at onset of the 2nd stage
    - Urine: when passed
    - Assess the descent of the fetal head every 15 minutes (by assessing head above brim)
- When the woman is ready to push (bear down):
    - Always communicate clearly and kindly with the woman to gain cooperation.
    - various birthing positions can be demonstrated to the woman so she knows about the possibilities
    - Be supportive and encouraging; keep calm - your calm energy will help her
    - Allow the woman to adopt the position of her choice: propped up, sitting, squatting, kneeling, semi-Fowler's or wedged supine. Avoid the flat supine position (lying flat on the back), as the pregnant uterus will compress the inferior vena cava
    - Encourage pushing/ bearing down only during contractions
    - Protect the perineum when the fetal head crowns
- Duration of active pushing:
    - In an institution without caesarean delivery (CD) facilities and without healthcare workers present skilled in performing assisted vaginal delivery (AVD)
        - Para 0: 45 min of pushing before referral
        - Para >0: 30 min of pushing before referral
        - In case of maternal or fetal compromise, immediate intervention is required; then the time limits above do not apply.
    - In an institution with CD facilities
        - Para 0: 2 hours (but call senior/doctor after 45 minutes)
        - Para >0: 1 hour (but call senior/doctor after 30 minutes)
        - In case of maternal or fetal compromise, immediate intervention is required; then the time limits above do not apply.

THE LABOUR CARE GUIDE

- The new WHO LCG allows for monitoring of only the active phase of labour.
- The LCG uses "alerts" for all observations during the active phase labour: action is required in case an alert value has been recorded (e.g. systolic blood pressure of 163mmHg is over the alert value of 140mmHg so requires action).
- The LCG has also abandoned the alert and action lines and uses 95th centiles as cut-offs for poor progress in labour.
- This guide is still only being piloted in some centres but will eventually replace the interim partogram.

Episiotomy

- Selective episiotomy (only when indicated, routine episiotomy is not indicated) – consider under the following circumstances:
    - Thick or rigid perineum preventing delivery and prolonging the second stage
    - Expediting the second stage (e.g. fetal distress or maternal condition e.g. cardiac disease)
    - Breech or forceps delivery
    - Previous third degree tear
- Explain the procedure to the woman BEFORE starting; ask for her permission
- Infiltrate the perineum with lignocaine (lidocaine) 1% solution (maximum dose: 3 mg/kg; usually a maximum of 20ml to be infiltrated into the perineum).
- Perform a mediolateral episiotomy, where the cut is started in the midline at the fourchette, bearing laterally at about 45 degrees during active bearing down and perineal distension. Avoid median or lateral or bilateral episiotomy.
- Episiotomy repair:
    - An absorbable suture (1/0 to 2/0) should be used, for all layers of the episiotomy.
    - Polyclagtin has been shown to be better than chromic for subcuticular perineal skin closure, but that is not usually available at most clinics
    - Place a vaginal tampon high in the vagina with an artery forceps attached
    - Make sure that the anal sphincter is not disrupted
    - Insert a suture close to the apex of the episiotomy in the vaginal epithelium
    - From the apex down, close the vaginal epithelium with a continuous suture
    - Ensure correct alignment by checking the apposition of the hymen and the vaginal-perineal junction
    - Approximate the perineal muscles and fascia with interrupted sutures
    - Close the skin with interrupted sutures or a continuous subcutaneous suture
    - Always remember to remove the vaginal tampon and record this in the notes
    - Do a rectal examination after suturing, check for any stitches placed in the rectum and record the absence of any sutures in the notes. Remove any sutures found in the rectum and repair again (use clean gloves).

After birth of the baby:

- Dry the baby and place the baby on the woman's abdomen, skin to skin, for her to hold immediately after delivery for at least an hour.
- Postpone all routine neonatal procedures that are not lifesaving (e.g. washing, weighing and non-urgent medical procedures).
- Refer to examination and resuscitation of the newborn in the newborn guide.
- Congratulate the mother and affirm what she was able to do well during the labour and birth.
    - Explore whether she has any questions or requests. If practical, allow her companion to stay with her, if she wishes.
    - Suggest that the mother or her companion sing, talk and make eye contact with the baby.
        - Explain that the baby knows the mother's voice and smell as different from other people's.
- Help the mother to initiate breastfeeding within an hour after birth (which can decrease the risk of maternal haemorrhage, new-born hypoglycaemia and increase successful exclusive breastfeeding) unless there is a medical indication not to breastfeed.
- Assess the baby's Apgar score at one minute
- Wait one to three minutes before clamping the umbilical cord, but clamp and cut the cord earlier if the baby needs urgent resuscitation.
- Record the times of onset of the second stage, onset of bearing down efforts and delivery, as well as the status of the fetal heart rate during the delivery

Management of the third stage of labour

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

- Immediately after delivery of the baby, ensure by abdominal palpation that there is no previously undiagnosed second twin, even if antenatal ultrasound found a singleton pregnancy
- If there is no second twin, immediately give oxytocin ten units intramuscularly
- Await uterine contraction for two to three minutes then feel for uterine contraction every 30 seconds (no sustained uterine massage indicated to expedite delivery of the placenta)
- When the uterus is felt to contract, put steady tension on the umbilical cord with the dominant hand, while pushing the uterus upwards with the non-dominant hand (controlled cord traction with non-dominant hand preventing uterine inversion)
- Deliver the placenta by applying continuous gentle traction on the umbilical cord
    - If the placenta does not easily separate and deliver, do not persist in pulling on the cord.
    - There is no urgency to deliver the placenta as long as there is no active bleeding.
    - Await signs of separation (a sudden small gush of blood as the uterus contracts) and then attempt controlled cord traction again
- Examine the placenta for completeness and for any abnormalities (see https://www.youtube.com/watch?v=4tAFOszuEdI for a video demonstration)

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 observed closely.
- Use the page in the MCR for 'observations immediately after delivery' to record observations for the first two hours after delivery
    - Check the woman's vitals (blood pressure, pulse, respiratory rate and temperature), pads and uterine contraction every 15 minutes for the first hour after delivery.
    - Check the woman's vitals (blood pressure, pulse, respiratory rate and temperature), pads and uterine contraction 30 minutes for the second hour after delivery.
    - Where equipment (eg calibrated drape or tray) exists to objectively measure blood loss volume, then the cumulative blood loss should be measured every 15 minutes
- Additional uterotonics can be considered for women at risk of postpartum haemorrhage (PPH)- see chapter on PPH for correct dose:
    - Oxytocin infusion (10-20 IU in 1000mL 0.9% saline)
    - Oxytocin/ergometrine or ergometrine (if the woman is not hypertensive and does not have a cardiac condition)
- 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.
    - if there are inadequate beds in labour ward to allow two hours of observation, then transfer after one hour is acceptable as long as the appropriate schedule of observations is continued in the post-natal ward.
- Use the early warning chart (EWC) for further observations- it is included in the Maternity Case Record.

Chapter 8: FETAL MONITORING

Purpose

- Fetal monitoring aims to assess fetal wellbeing during viable pregnancies – antenatally and during labour.
- Clinicians should be confident in CTG interpretation and respond to the CTG pattern by applying the standardized process of interpretation, documentation, and management of cardiotocographs (CTG), in particular where variations from 'normal' occur.
- The goal of the assessment is to provide information that will guide decision making around whether medical intervention is required and the timing and nature thereof.
- CTGs should be interpreted in the context of the entire clinical situation, including the gestational age, fetal growth, fetal movements, and progress and stage of labour.

How does a CTG work?

- CTGs are an indirect measure of several aspects of fetal health, including central nervous system function, fetal oxygenation, autonomic control of heart rate, fetal movements and sleep-wake cycles.
    - These are all influenced by the condition of the baby and its in-utero environment.
- When the baby has limited reserve, he or she may become hypoxic during uterine contractions.
    - When oxygen deprivation occurs temporarily during labour contractions, this mechanism may cause repetitive slowing of the heart rate (decelerations).
    - Because it takes some time after the end of the contraction for oxygen to reach the baby again, in a more compromised baby, recovery of the heart rate after the end of the contraction takes more than 30 seconds (a 'late' deceleration).
- Decelerations can also be due to
    - compression of the baby's head during labour (early decelerations) or
    - cord compression (variable decelerations)

Antenatal approach

Antenatal cardiotocography

- CTGs done prior to labour onset and therefore in the absence of contractions are sometimes called "non-stress tests" (NST).
    - For simplicity, the term antenatal CTG can be used (even if there are no 'toco' or contractions).
- Low-risk antenatal women do not need CTG monitoring.
- If the antenatal CTG has 2 accelerations in 20 min (acceleration of baseline fetal heart rate of 15 bpm for >15 seconds), this is reassuring, and if all the other aspects are normal, the CTG is classified as normal, indicating that the fetus is almost certainly well.
- If there are no accelerations after 40 minutes, try changing the maternal position or administer acoustic stimulation. Continued absence should prompt referral for a further, more detailed assessment - including of growth - by ultrasound and Doppler. See algorithms below.

Figure 8-1 Fetal monitoring at routine clinic visits

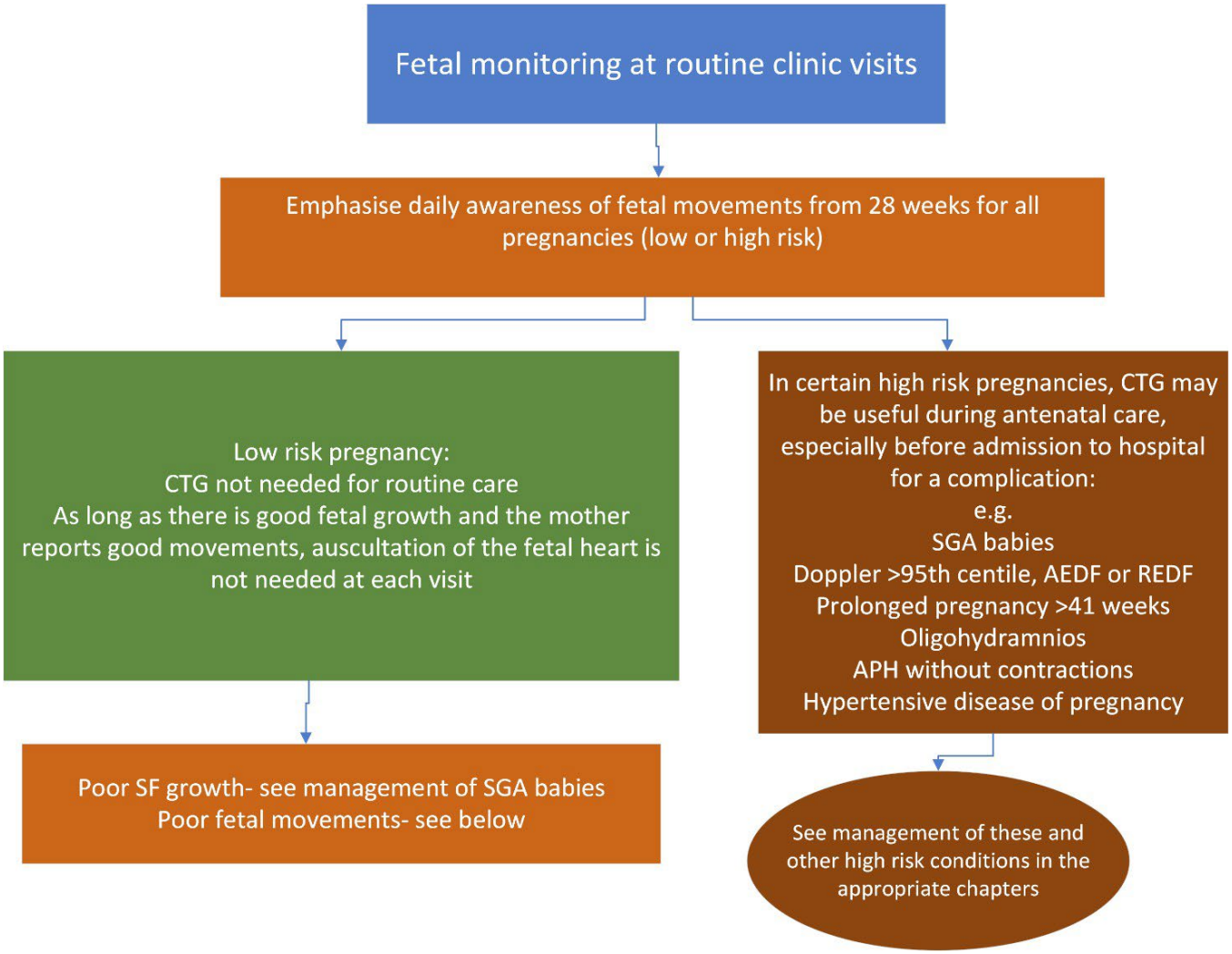
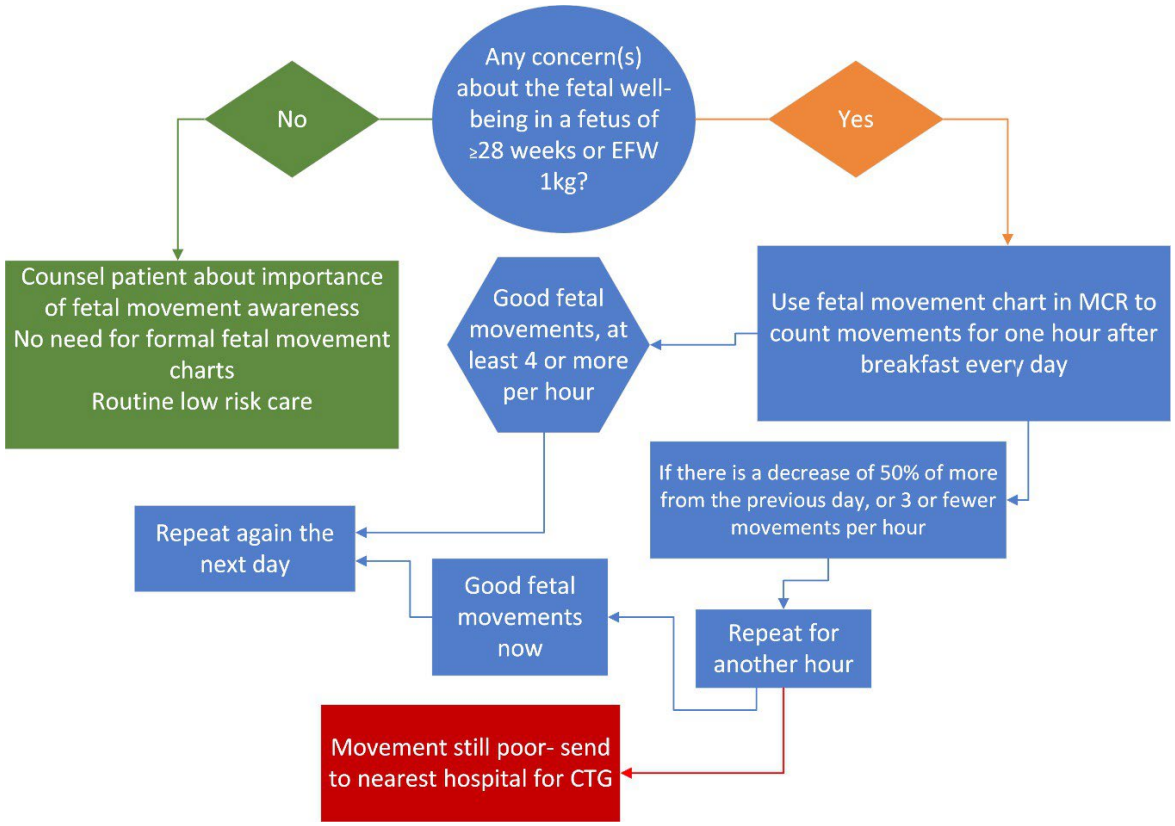


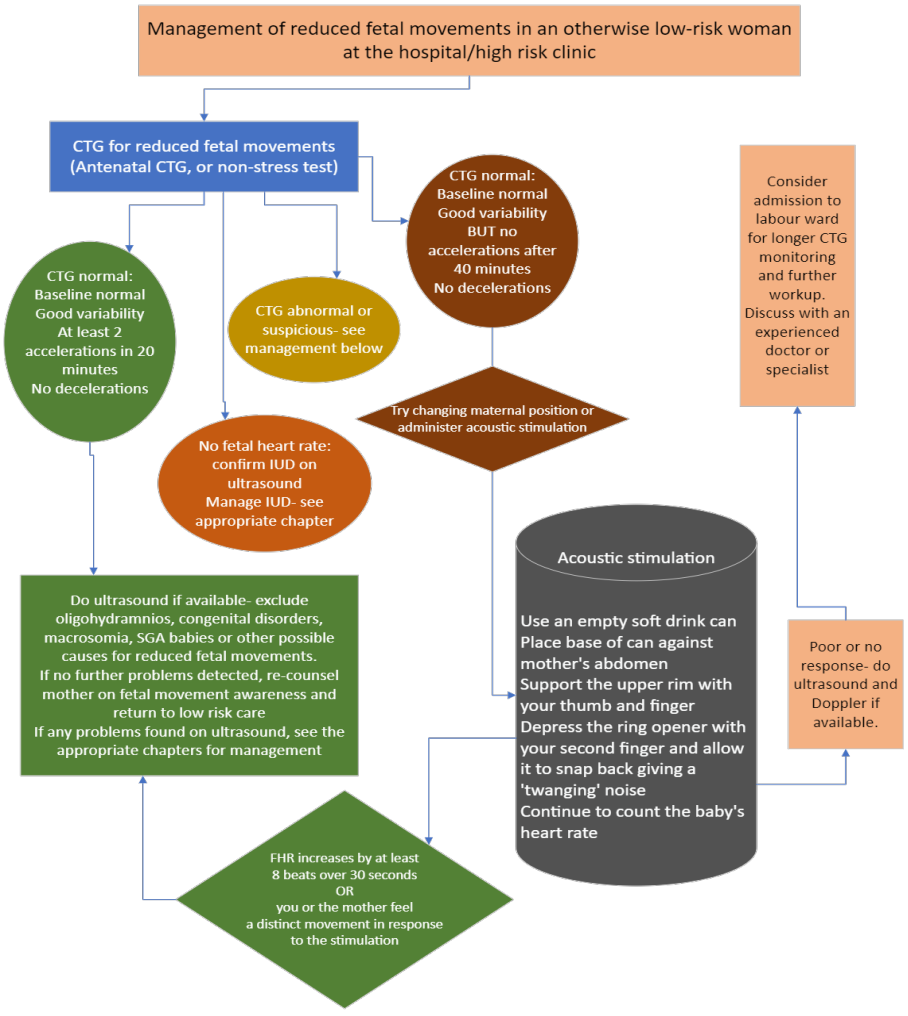
Figure 8-2 When and how do we use Fetal Movement Charts?



Reduced fetal movements- management at the clinic

- A healthy baby moves about 10 times per hour.
- Fetal movements can be felt from about 20 weeks.
- Counsel woman at each visit for an urgent (same day) attendance at a health facility if there are reduced movements (less than 4 movements per that hour persist for 2 consecutive hours)
- When a woman presents to the clinic complaining of reduced or absent fetal movements:
    - check the gestational age and SF measurement.
    - listen to the fetal heart (preferably with a Doppler fetal heart rate monitor) to exclude an intra-uterine death.
    - If the heart rate is normal, let her rest and count fetal movements over a few hours (all movements- not just kicks)
        - If there are 4 or more movements, re-assure her and ask her to use a fetal movement chart the next morning, after breakfast (see flow diagram above)
        - If there are 3 or less movements in 6 hours, and the gestation is ≥28 weeks (or EFW ≥1kg)- refer urgently for a CTG.

Figure 8-3 Reduced fetal movements at the hospital or high-risk clinic



Intrapartum diagnosis

- Inadequate intrapartum diagnosis of fetal compromise (hypoxia) is the major avoidable factor relating to medical personnel in perinatal deaths caused by “intrapartum asphyxia” in South Africa.
- It is essential that midwives and doctors are familiar with the indications for monitoring, what is expected, how to analyse a CTG trace and what to do in the case of abnormalities.

Intrapartum fetal heart monitoring

- Low risk women should be monitored with fetal heart auscultation before and after contractions: the main requirements of intrapartum fetal heart monitoring in low risk women are:
    - establish the baseline fetal heart rate by listening in between contractions for a minute, as long as the heart rate seems regular at that time.
    - check the fetal heart rate immediately after a contraction to ensure that there is no late deceleration from the baseline rate.

  - Pinard (fetal) stethoscope and conventional stethoscope are acceptable
  - Handheld ultrasound (Doptone) preferred as woman, her companion and midwife can hear sound and be reassured

- CTG machines should be used for high-risk labour only (see below). They are not recommended for intrapartum use in CHCs/MOUs.
  - at CHCs/MOUs where CTG machines are already in use, the management has a responsibility to ensure that all midwives using the CTG machine have been trained on CTG interpretation and CTG trace and on appropriate actions to be taken in response to different categories of the CTG trace
- Unless delivery is imminent, low-risk women in labour should be referred immediately to hospital if any of the following fetal heart rate features are noted:
  - fetal tachycardia of 180 or more for 10 minutes
  - fetal bradycardia of less than 110 for 10 minutes
  - persistent late decelerations for 10 minutes
  - single deceleration lasting over 3 minutes
- Measures should be taken to try to improve the fetal condition while awaiting transfer (intrapartum resuscitation)

Other abnormalities of the fetal heart rate such as mild tachycardia (<180), require careful evaluation of maternal condition (e.g. is she pyrexial), stage and progress of labour and a decision about the need for referral can be made after discussion with the doctor at the hospital

Intrapartum cardiotocography

- CTG machines should be available in all hospitals managing high risk women in labour.
  - 1 CTG machine for every two labour ward beds is appropriate at most hospitals, but if the hospital only admits high-risk patients, then there should be a CTG machine for every labour ward bed
  - If at any point there are inadequate numbers of CTG machines, this must be documented, the CEO informed and monitoring by auscultation must continue.

Table 8-1 Some Indications for intrapartum cardiotocography

The frequency of CTG monitoring required in labour may vary according to the risk factor and the stage of labour. Where CTG monitoring is intermittent, then auscultation should be used in between the periods of CTG monitoring
Vaginal bleeding during labour
Oxytocin augmentation
Meconium-stained liquor
Epidural anaesthesia
Labour after Caesarean section in a previous pregnancy
Suspected chorioamnionitis
Impaired fetal growth
Concern about FHR on auscultation or previous suspicious trace
Tachysystole (>5 contractions in 10min, FHR normal) / uterine hypertonus (contractions lasting >2min)
Maternal diabetes
Pre-eclampsia
Multiple pregnancy
Post-term pregnancy (≥42 weeks)
Stillbirth or labour-related neonatal death in previous pregnancy
Oligohydramnios prior to labour
Preterm labour <34 weeks (or EFW <2000g) (On admission to exclude fetal distress prior to tocolysis, then as indicated)
Poor progress in labour

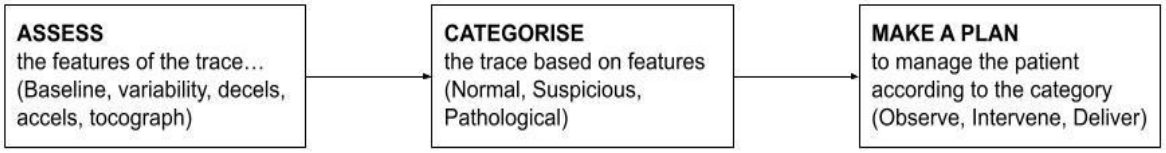
CTG analysis guide

Important general principles

- Always talk to the woman and her birth companion(s) about what is happening and take her preferences into account. Explain what the CTG does and what your findings are.
- **The CTG should never be interpreted in isolation from the patient.**
  - Do not make any decision about a woman's care in labour based on cardiotocography findings alone - take into account any antenatal and intrapartum risk factors, the current wellbeing of the woman and unborn baby and, intrapartum, the progress of labour.
  - The CTG is never a substitute for good clinical observation and judgement.
- Ensure that the focus of care remains on the woman rather than the cardiotocography trace.
- A running CTG is never a reason to leave the woman unattended during labour. Continue observations and support.
- It is common for the FHR to drop during expulsive efforts in the second stage. This is a vagal response to pressure on the head. Focus on the FHR immediately after the contraction – has it recovered to baseline? If it has and there is no other reason to intervene, continue expectant management.

Steps for intrapartum cardiotocography trace interpretation

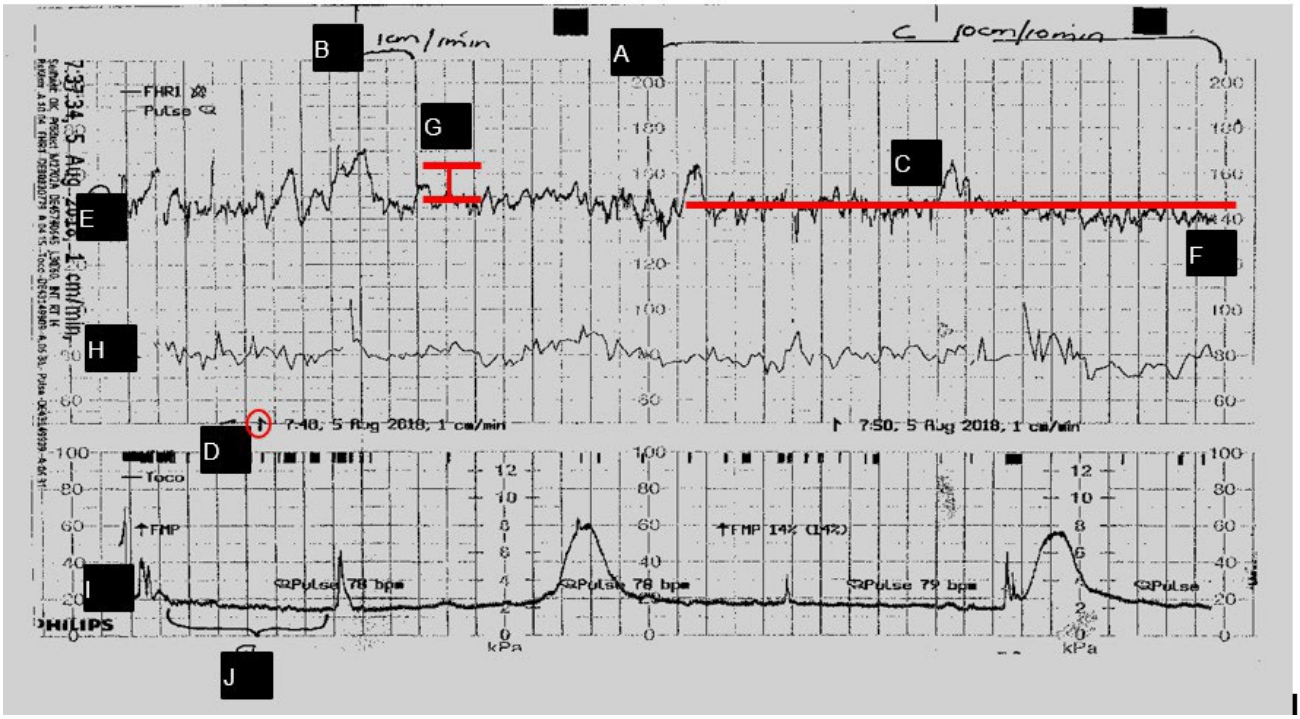
1. Check the paper speed. It should be 1cm/min. If the paper speed is set at 2 or 3cm/min, adjust it to 1cm/min.
2. After applying the toco probe, ensure that the tocograph is zeroed, and recording.
    - Assess the contraction pattern; any fetal heart rate abnormalities should be assessed in relation to the contraction pattern
3. Assess all 4 features of fetal heart rate: baseline rate; baseline variability; presence or absence of decelerations (and concerning characteristics of variable decelerations if present); presence of accelerations.
4. Use these four features to then categorise the trace
5. Then make a management plan based on the category.



4 CTG tips

1. If it is difficult to categorise or interpret a cardiotocography trace, obtain a review by a more senior and experienced midwife or a medical officer.
2. If there is doubt about the significance of a finding compare it to previous tracings.
3. When in doubt, continue the tracing until it becomes clear whether there is cause for concern or not.
4. Always document your interpretation of the CTG trace (see Documentation, below)

Figure 8-4 Worked example of a CTG



A	Fetal heart rate and contraction intensity scale	F	Baseline FHR (Average over 10 min – about 140bpm in this example)
B	1cm = 1 min (Paper speed is recorded next to date stamp)	G	Variability over 1 min (10bpm in this example)
C	10cm between scales = 10 min	H	Maternal heart tracing (not al machines have this function)
D	Date and time stamp (circle indicates exact point)	I	Baseline uterine tone
E	Fetal heart tracing	J	Uterine contractions (tocograph)

Elements of the trace to be assessed

The interpretation of CTGs is dealt with in detail in guidelines produced by FIGO and NICE and the latest versions of these can be consulted for more info. A summary of the core aspects is included here.

Contractions

- Assess duration, frequency, form and relationship to the FHR.
- Uterine action should be considered excessive if there are more than 5 contractions in a 10 minutes period (tachysystole) or contractions last more than 2 minutes (uterine hypertonus) and intervention planned (see algorithms).

Baseline fetal heart rate

- Differentiate between fetal and maternal heartbeats.
- A stable baseline fetal heart rate between 110 and 160 beats/minute is normal.

Baseline variability

- Assess baseline variability by estimating the difference in bpm between the highest peak and lowest trough of fluctuation in 1-minute segments of the trace.
    - Normal variability is 5-25 beats per minute.
    - Use a ruler to measure.
- Run any concerning trace for 50 minutes to exclude “quiet sleep” periods (which last 20-40 minutes). (Preterm fetuses may also have lower variability. Increased variability is common in second stage of labour.)

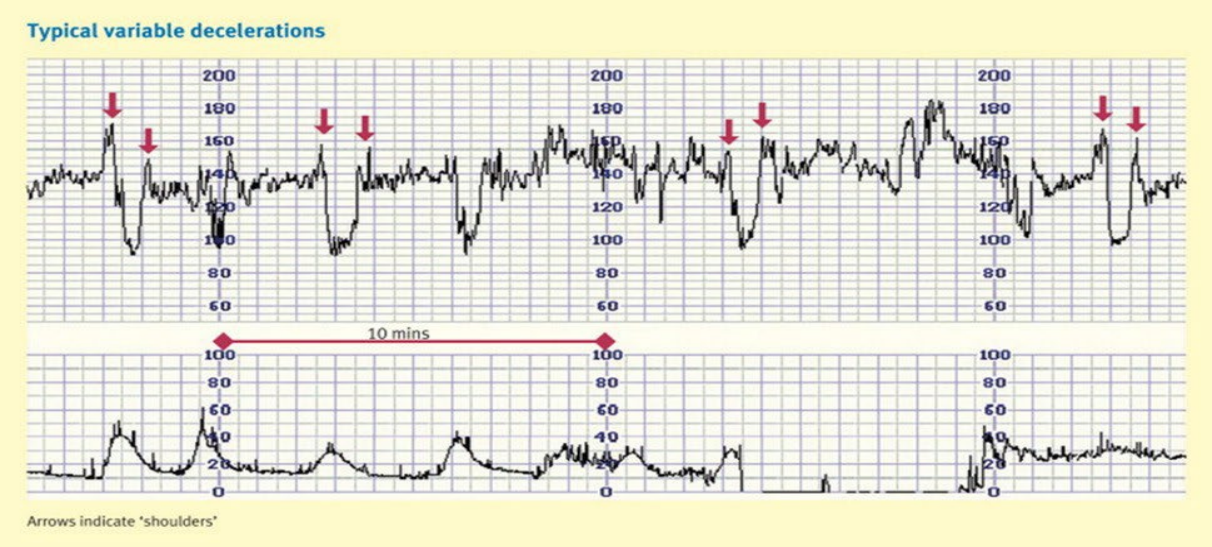
Accelerations

- An acceleration is a rise in the baseline heart rate for >15bpm, lasting at least 15 seconds.
- The presence of fetal heart rate accelerations, even with reduced baseline variability, is generally a sign that the baby is healthy.
- The absence of accelerations on an otherwise normal cardiotocograph trace during labour does not indicate fetal acidosis.
- With regard to antenatal fetal heart traces, once 2 accelerations are seen within a 20 minute period, and all other parameters are normal, then this confirms fetal well-being

Decelerations

- Decelerations are transient episodes of decrease of FHR below the baseline of more than 15 bpm lasting at least 15 seconds. The specific features of the deceleration inform the classification.
- When describing decelerations specify:
    - their timing in relation to the peaks of the contractions
    - the duration of the individual decelerations
    - whether or not the fetal heart rate returns to baseline
    - how long they have been present for
    - whether they occur with over 50% of contractions (defined as ‘repetitive’)
    - the presence or absence of shouldering
    - the presence or absence of reduced variability within the deceleration.
    - depth of deceleration
- Describe decelerations as ‘early’, ‘variable’ or ‘late’. Do not use the terms ‘typical’ and ‘atypical’ because they can cause confusion.
- Early decelerations are usually benign and often associated with head compression.
    - If there are no other non-reassuring or abnormal features, they should not prompt further action.
    - They only occur during labour when there is pressure on the fetal head.
    - Early decelerations are uncommon.
- Variable decelerations are the most common type of fetal heart rate decelerations during labour.
    - They are intermittent and periodic slowing of the fetal heart rate with a variable time in relation to the contraction.
    - Concerning features of variable decelerations:
        - Reduced variability within the deceleration
        - Failure or slow return to baseline FHR after the end of the contraction
        - Loss of pre and post deceleration shouldering (abrupt brief increases in FHR baseline)
        - Lasting more than 60 seconds

Figure 8-5 Example of variable decelerations without concerning features



- Late decelerations are repetitive and periodic slowing of the fetal heart rate with onset mid to end of the contraction and the lowest point more than 20 seconds after the peak of the contraction, and ending after the contraction
    - They can be indicative of fetal hypoxemia.
    - In the presence of a tracing with no accelerations and reduced variability, the definition of late decelerations also includes those with an amplitude of 10–15 bpm.

- The sinusoidal pattern is a regular, smooth, undulating signal, resembling a sine wave, with an amplitude of 5–15 bpm, and a frequency of 3–5 cycles per minute. This pattern lasts more than 30 minutes.
    - The presence of this pattern must prompt discussion with a senior doctor, who should exclude the possible causes, all of which are serious.
    - In placental abruption, with loss of variability and late decelerations following one after the other, the pattern may have a sinusoidal appearance, however the frequency is usually <1 per minute as opposed to 3-5 per minute for the true sinusoidal pattern. This requires urgent action.

- The pseudo-sinusoidal pattern resembles the sinusoidal pattern but has a more jagged “saw-tooth” appearance, rather than the smooth sine-wave form.
    - The duration seldom exceeds 30 minutes and is characterized by normal patterns before and after.
    - It is sometimes difficult to distinguish the pseudo-sinusoidal from the sinusoidal pattern.
    - The short duration of the former may be the most important variable to discriminate between the two.
    - Call a doctor to assess the trace and document a plan.

Categorise the CTG trace

- Use the features of the CTG to categorise the trace in order to draw conclusions about the likelihood of hypoxia. This will guide further appropriate action.

Step 1: Decide whether the CTG features are Reassuring, Non-Reassuring or Abnormal

DESCRIPTION OF FEATURE	REASSURING	NON-REASSURING	ABNORMAL
Baseline (bpm)	110-160	100-109 or 161-180	Less than 100 > 5min or Greater than 180
Variability	5-25 bpm	Reduced <5 bpm for 30 to 50 min	Reduced <5 bpm for >50 min or Sinusoidal pattern
Decelerations	None or Early decelerations	Variable decelerations without concerning features	Variable decelerations with concerning features or Late decelerations or A single prolonged deceleration lasting 3 minutes or more.

Note that this table has been simplified for practical implementation, to make it safe and understandable. Clinicians are encouraged to consult references such as the 2022 NICE Guidelines (https://www.nice.org.uk/guidance/ng229) for more detail.

Step 2: Categorise the trace based on the presence of Reassuring, Non-Reassuring or Abnormal features.

TRACE CATEGORY	NORMAL	SUSPICIOUS	PATHOLOGICAL
CTG features	All CTG features normal	1 non-reassuring feature, others normal	2 non-reassuring features or 1 abnormal feature
Hypoxic changes?	No- all normal features	Feature UNLIKELY to be associated with fetal compromise when occurring in isolation	Features LIKELY to be associated with fetal compromise
Action required	NO further action	*OBSERVE if only 1 feature	IMMEDIATE MANAGEMENT (see flowcharts- stop induction or augmentation, give tocolysis, change position, attend to maternal compromise) OR DELIVERY if pattern persists

*A suspicious CTG is not an indication of fetal hypoxia. Many CTGs fall into the suspicious category, and in most cases, there is nothing wrong with the fetus. However, it is an indication for ongoing CTG monitoring to see if the CTG becomes reassuring or whether further non-reassuring or abnormal features develop.

Step 3. Make a management plan

- Call for help if you're unsure. A second opinion, from a more experienced medical officer or midwife is helpful to obtain and document.
- Start Intrauterine fetal resuscitation:
    - Intrauterine fetal resuscitation should be a specific response to a likely or diagnosed problem.
    - Consult the CTG Action Plan algorithms below and make an appropriate management plan.
        - Do not use maternal facial oxygen therapy for intrauterine fetal resuscitation, because it may harm the baby (but it can be used where it is administered for maternal indications such as hypoxia or as part of preoxygenation before a potential anaesthetic)
        - Do not offer amnioinfusion for intrauterine fetal resuscitation.
    - Salbutamol bolus dose (see algorithms below): 250 mcg IV, slowly over 2 minutes.
        - Reconstitute the solution as follows: Add 1 mL (i.e., 0.5 mg/mL) salbutamol to 9 mL sodium chloride 0.9% to make a solution of 50 mcg/mL. Administer 5 mL (250 mcg) of this solution.
        - Exclude contra-indications for salbutamol, (e.g. cardiac disease, maternal tachycardia, hypertension)

Figure 8-6 CTG action plan for abnormalities in fetal heart rate

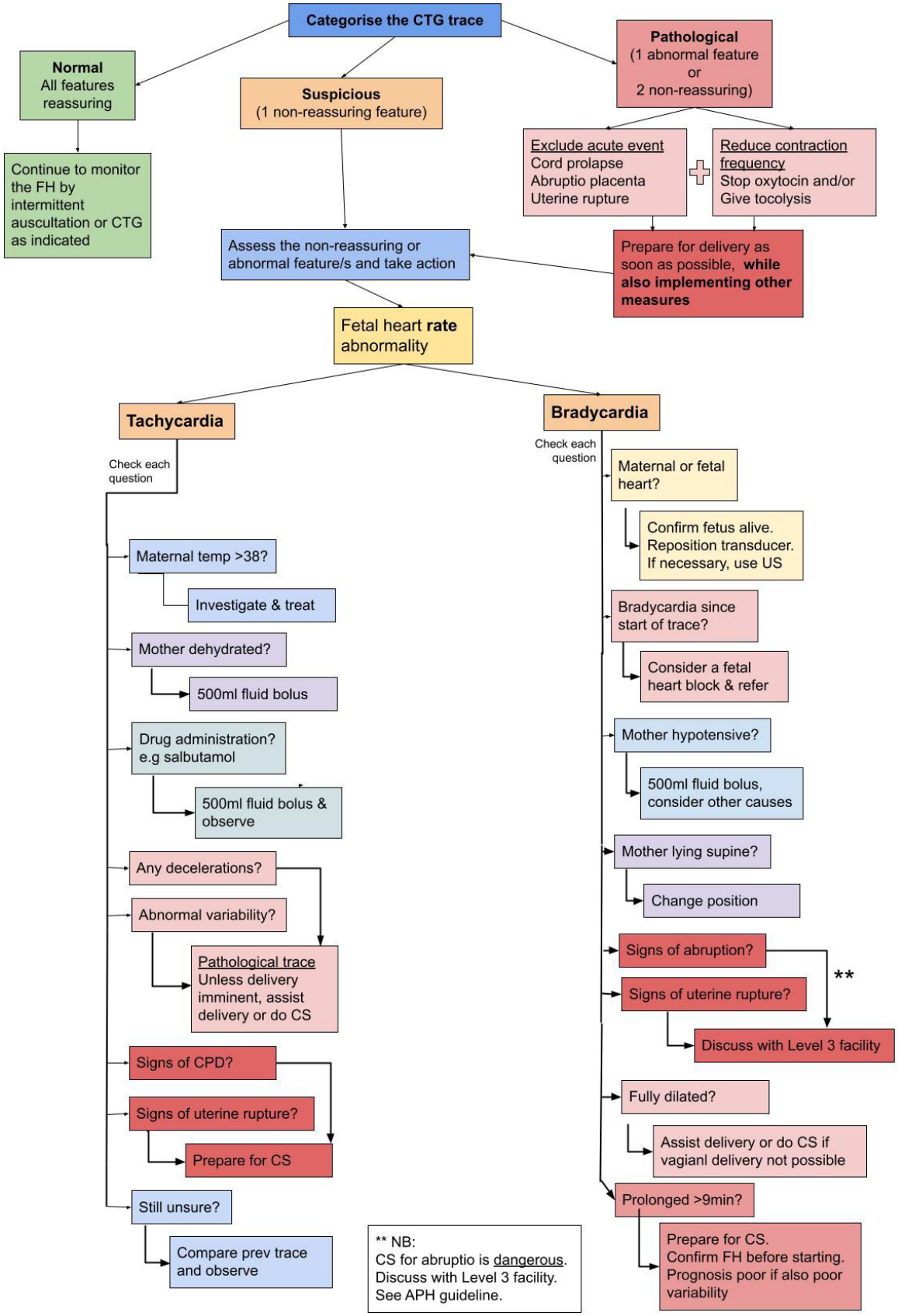
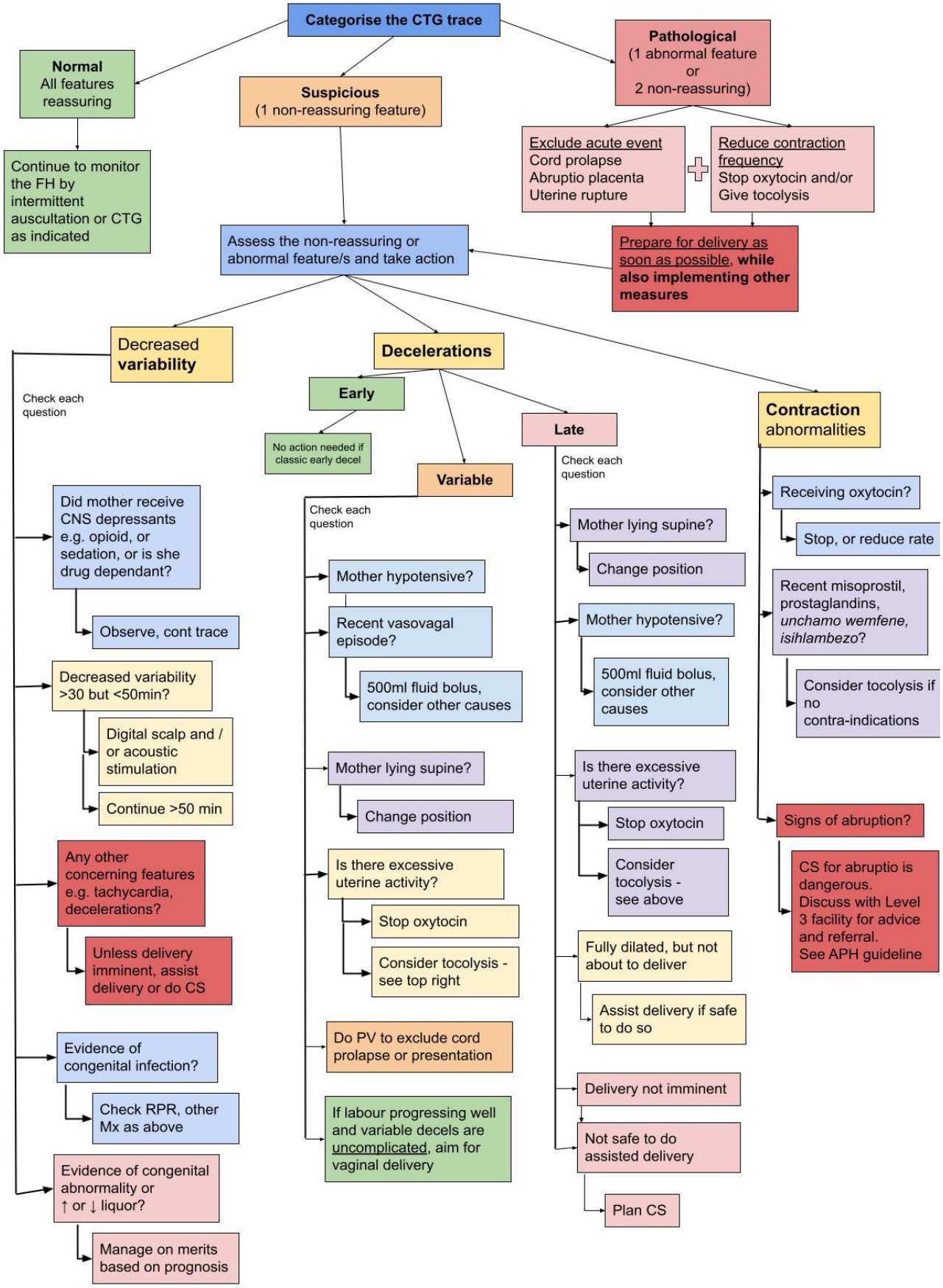


Figure 8-7 CTG Action Plan for abnormalities in variability, decelerations and contractions



Documentation

- After CTG interpretation, write a note about the findings in the woman's notes, so that a record of the CTG is still available even if the CTG tracing is lost.
    - Describe each element. Do not just write "reactive" for normal traces.
- For intrapartum CTGs, this is best done using the table in the Maternity Case Record, which summarises this process of assessment, categorisation and making an action plan.

Figure 8-8 Example of the CTG analysis sticker in MCR

CARDIOTOCOGRAPHY (CTG) (FIGO 2015) – CTG ONLY INDICATED FOR HIGH RISK PREGNANCIES

DD/MM/YYYY	HH/MM	Indication:	Mat pulse:

Refer to page:	Normal	Suspicious	Pathological (any one feature)
Baseline	110-160 bpm ☐	Lacking at least one characteristic of normality, but no pathological features ☐	<100 bpm ☐ (make sure it is not maternal pulse)
Variability	5-25 bpm ☐		Reduced (<5 bpm) variability >50 minutes ☐
Decelerations	No repetitive* decelerations ☐ (*Decelerations are repetitive in nature when they are associated with more than 50% of uterine contractions)		Repetitive* late decelerations ☐ OR Prolonged (>3min) decelerations during >30 minutes ☐ OR Prolonged (>3min) decelerations during >20 minutes with reduced variability ☐ OR One prolonged deceleration >5 minutes ☐
Interpretation	Fetus with no hypoxia	low probability of hypoxia	Fetus with high probability of hypoxia/acidosis
Contractions	None ☐ Irregular ☐ Regular ☐ Mild ☐ Moderate ☐ Strong ☐ Expulsive ☐		
Clinical management:	**No intervention necessary ☐**	**Action to correct reversible causes if identified ☐ Alert doctor of findings ☐**	**Immediate action to correct reversible causes ☐ If not possible, or no recovery; immediate delivery ☐ Call doctor immediately ☐**
I have explained the nature of the findings and planned action to the person and her birth companion ☐			
Evaluation done by:			

Figure 8-9 Example of completed CTG analysis sticker

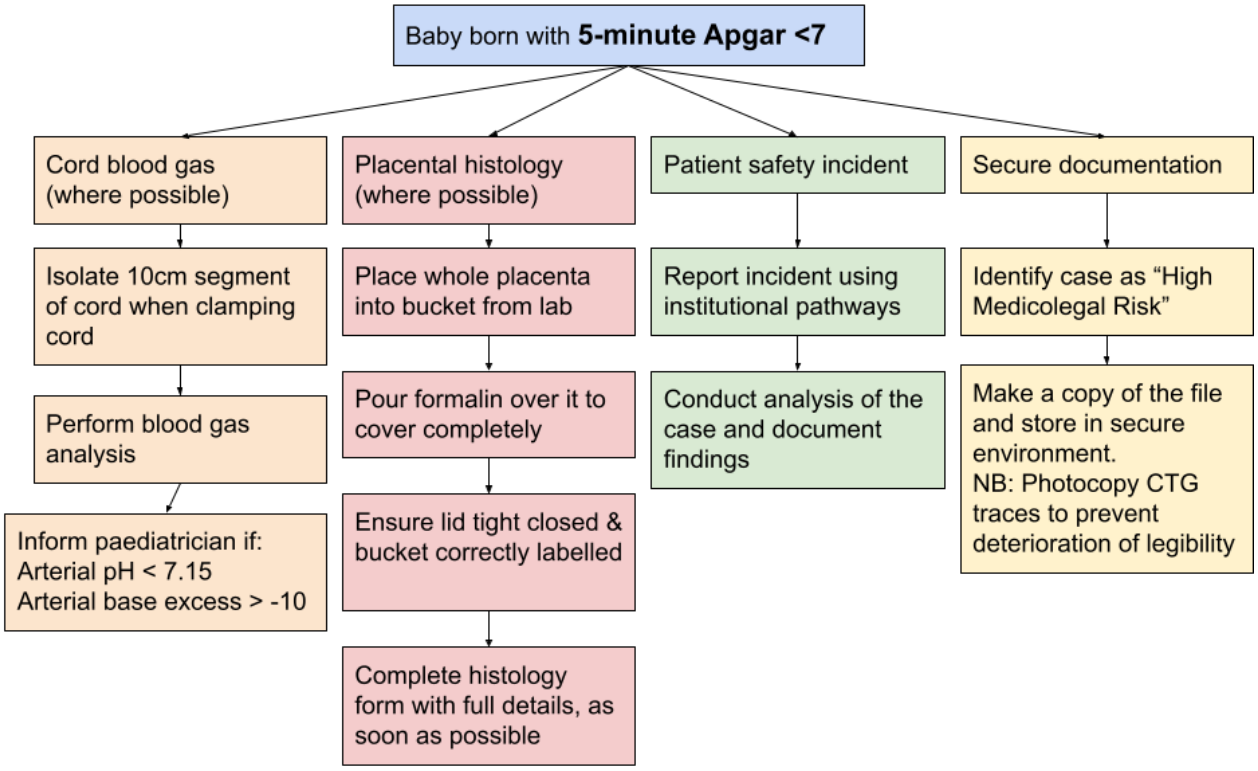
CARDIOTOCOGRAPHY (CTG) (FIGO 2015) – CTG ONLY INDICATED FOR HIGH RISK PREGNANCIES

04/05/2022 DD/MM/YYYY	11h44 HH/MM	Indication: Hypertension	Mat pulse: 98bpm

Refer to page:	Normal	Suspicious	Pathological (any one feature)
Baseline	110-160 bpm ☐ 155bpm	Reduced variability for 40min AND Variable decels w concern	<100 bpm ☐ (make sure it is not maternal pulse)
Variability	5-25 bpm ☐	Lacking at least one characteristic of normality, but no pathological features ☐	Reduced (<5 bpm) variability >50 minutes ☐
Decelerations	No repetitive* decelerations ☐ (*Decelerations are repetitive in nature when they are associated with more than 50% of uterine contractions)	TWO non-reassuring features therefore PATHOLOGICAL	Repetitive* late decelerations ☐ OR Prolonged (>3min) decelerations during >30 minutes ☐ OR Prolonged (>3min) decelerations during >20 minutes with reduced variability ☐ OR One prolonged deceleration >5 minutes ☐
Interpretation	Fetus with no hypoxia	low probability of hypoxia	Fetus with high probability of hypoxia/acidosis
Contractions	None ☐ Irregular ☑ Regular ☐ Mild ☐ Moderate ☐ Strong ☐ Expulsive ☐		
Clinical management:	No intervention necessary ☐	Action to correct reversible causes if identified ☐ Alert doctor of findings ☐	LL position, fluid bolus 500ml, salbutamol 100mcg Immediate action to correct reversible causes ☑ If not possible, or no recovery; immediate delivery ☐ Call doctor immediately ☑ prepare for CS if no improvement
I have explained the nature of the findings and planned action to the person and her birth companion ☑			
Evaluation done by:	Mrs Caring Midwife		

- All CTG tracings must be kept safely in the woman's file and be stored with the file after delivery.
- Label the tracing with name, file number, date, time
- All CTGs should also be signed and dated/timed on the CTG when assessed
- Make a photocopy of any traces where the mother or baby had a poor outcome as CTGs are on heat sensitive paper and deteriorate in quality over time. This point is especially important for litigation purposes.

Action to be taken following birth if 5 min Apgar <7



Chapter 9: INDUCTION OF LABOUR

- Induction of labour is the process of artificially initiating labour with the aim of a vaginal delivery.
- The most frequent indications for induction of labour at district level are post term pregnancy (>41 weeks certain gestation), hypertensive disorders and pre-labour rupture of membranes.
- Only induce labour in a hospital with 24-hour emergency operating theatre capacity.
- Non-urgent elective delivery must only be done with a valid indication and beyond 39 weeks gestation (or with proven lung maturity if gestation is unsure and the indication valid).

- The need for labour induction post-term may be reduced by routine sweeping of the membranes during antenatal visits from 39 weeks onwards.
    - Using sterile precautions, a finger is introduced through the cervix and swept in an arc between the membranes and the lower uterine segment through 360 degrees.

- The decision-making process for IOL includes two stages:
    1. Is it better to curtail the pregnancy or to wait?
    2. If the pregnancy is to be curtailed, is it better to perform IOL or CD?
- At each stage one must consider and balance the interests of the mother and the baby individually:
    1. What is best for the mother?
    2. What is best for the baby?
- For example, with severe pre-eclampsia remote from term, delivery is usually in the best interest of the mother but not the baby. A balance needs to be struck weighing the severity of the situation of the mother and the baby.
    - If the mother's condition is stable and the baby is very immature, it may be reasonable to place the mother at increased risk from longer pregnancy in the interest of the baby.
- Similarly, with suspected fetal compromise, CD may be in the best interest of the baby but not the mother.
    - If the mother is at very high risk for complications of CD, it may be necessary to accept greater risk for the baby in the interest of the mother's safety.
- When in doubt, always discuss with a senior colleague.

CONTRA-INDICATIONS FOR INDUCTION OF DELIVERY AT A DISTRICT HOSPITAL

- Breech presentation
- Fetal distress
- Previous caesarean section
- Parity ≥5
- HDP with severe features
- Large fetus (>4.5kg in non-diabetic mothers, >4.0kg in diabetic mothers) based on best clinical judgement, not necessarily ultrasound

Approach to induction of labour

- confirm the indication
- assess the mother carefully to confirm gestational age and presentation
- assess the cervix clinically.
- perform a pre-induction cardiotocograph (CTG) if available and repeat 4-hourly once contractions begin. If no CTG available, assess fetal movements and fetal heart rate clinically
- If all prerequisites are fulfilled, and the pre-induction CTG is normal, induction of labour can be performed using one of the available methods.

GENERAL MEASURES

Counsel the woman about the risks: failed induction or uterine hyperstimulation, which may require emergency Caesarean delivery.

ACTIONS WHEN Cervix clinically favourable:

If HIV negative, (or HIV positive on ART >4 weeks or with recent undetectable viral load) - rupture the membranes; and start oxytocin if there are not adequate contractions within two hours.

- If HIV positive and viral load unknown, or on ART for <4 weeks; start oxytocin with membranes intact, or use misoprostol.
- Oxytocin, IV infusion, 2 units in 200 mL sodium chloride 0.9%.
    - Start at an infusion rate of 12 mL/hour (i.e. 2 milliunits/minute). If absent or inadequate contractions, increase infusion rate according to the Table 9-1.

Table 9-1 Oxytocin infusion dose:

Time after starting (minutes)	Oxytocin dose (milliunits/minute)	Dilution: 2 units in 200 mL sodium chloride 0.9% (mL/hour)
0	2	12
30	4	24
60	6	36
90	8	48
120	10	60
150	12	72
180	14	84
210	16	96
240	18	108
270	20	120

Note:

- Avoid oxytocin in women with previous Caesarean section or parity ≥5, unless approved by a specialist
- Continuous electronic fetal heart rate monitoring is recommended
- Aim for adequate uterine contractions (3–5 contractions in 10 minutes). Once adequate contractions achieved, do not increase the oxytocin rate further.
- Once in the active phase of labour, stop oxytocin
- Most women will experience adequate contractions at a dose of 12 milliunits/minute.
- If tachsystole develops (>5 contractions in 10 minutes), reduce or stop the oxytocin infusion to achieve 3-5 contractions in 10 minutes. If there are fetal heart rate abnormalities which persist despite stopping the oxytocin, administer salbutamol as follows (if no contra-indications, e.g. cardiac disease, maternal tachycardia, hypertension):
  - Salbutamol bolus, 250 mcg IV, slowly over 2 minutes. Reconstitute the solution as follows: Add 1 mL (i.e., 0.5 mg/mL) salbutamol to 9 mL sodium chloride 0.9% to make a solution of 50 mcg/mL. Administer 5 mL (250 mcg) of this solution.

ACTIONS WHEN Cervix clinically unfavourable

Extra-amniotic Foley catheter

- This is the first choice due to least risk of uterine hyperstimulation:
- Pass a Foley catheter with 30 mL bulb through cervix with sterile technique using a speculum or digital vaginal examination.
- Inflate bulb with 50 mL water or sodium chloride 0.9%.
- Tape catheter to thigh with light traction. To maintain gentle traction, periodic repositioning of the distal tip on the thigh may be necessary. This is the most effective method, but alternatively, traction can be applied with a piece of string suspended over the foot end of the bed with 1-2 x 200 mL bags of fluid, or 300ml water in a soft drink bottle suspended.
- Remove the bulb after 24-48 hours. If labour induction not urgent, consider a pause and re-starting at a later date.
- After the bulb is expelled, if not in established labour, do ROM or start oxytocin as for favourable cervix above. Recently two or 3 Foley balloons side by side, with catheters taped together to keep them at the same level, have been used when considered safer than use of AROM or uterine stimulants.

Extra-amniotic saline infusion (EASI) Technique:

- **Could be considered if the induction is urgent or catheter expulsion has not occurred after 4-6 hours.**
- Infuse initial 200ml saline bolus at room temperature
- Infuse saline now at room temperature at 40-50ml/h through the intra-cervical catheter
- Do not exceed 2 litres in total

Bulb induction should preferably not be done for patients with overt lower genital tract infection or severe immuno-compromised patients/AIDS

- If bulb induction is unsuccessful, use extra-amniotic Foley catheter (as above) PLUS one of the options below:

Prostaglandins, e.g.:

- Dinoprostone gel, intravaginally, 1 mg.
  - Repeat after 6 hours.
  - Do not exceed 4 mg.

  OR

- Dinoprostone tablets, intravaginally, 1 mg.
  - Repeat after 6 hours.
  - Do not exceed 4 mg.

  OR

- Misoprostol, oral, 25 mcg 2 hourly until in labour, or up to 24 hours.
  - Misoprostol is not registered for use in labour in South Africa, but its use has been extensively studied and the WHO recommends a low dose (25 microgram) orally two hourly for induction of labour.
  - CTG is required once the woman is in labour.
  - Oral misoprostol may be given as freshly made-up solution of one 200 mcg tablet in 200 mL water, i.e. 1 mcg/mL solution.
    - Label clearly with date and time, and discard solution after 24 hours.
    - Give 25 mL of this solution 2 hourly.
    - In nulliparous patients, consider increasing to 50ml orally 2-hourly if no response after 3 doses.
    - Maximum 24 hours.
    - Course may be repeated after a break if necessary.
- As soon as the patient reports painful contractions, do a vaginal examination and a CTG. If she is in established labour, stop the misoprostol.
- If there are no contractions in 24 hours, repeat the cervical assessment and act accordingly (bulb, oxytocin or rupture of membranes if Bishop ≥ 7; if < 7 repeat misoprostol).
  - Do not give oxytocin less than four hours after giving misoprostol.
  - Never use oxytocin and misoprostol simultaneously.
  - Misoprostol and other prostaglandins are contraindicated in women with previous Caesarean delivery and relatively contra-indicated in grand multiparous women.

Note:

- Misoprostol in larger doses than indicated here for labour induction at term, may cause uterine rupture.
- Do not repeat the misoprostol course more than twice.
- If there are no cervical changes after two courses of misoprostol, review the indication for induction. Consider combining misoprostol with the Foley bulb method.
- Do a Caesarean section for failed induction only if all the methods above have failed, and delivery is essential and urgent.
- If not urgent, consider deferring induction to a later date.

Induction of labour after Intra-Uterine Fetal Demise

- Following fetal demise, it may be more difficult to initiate labour.
- Fetal demise is not a reason to increase the dose of misoprostol – the risk of uterine rupture remains the same.
- In a stable patient with fetal demise, the safest is to await spontaneous labour for up to 4 weeks. This requires considerable counselling to explain that the demised fetus will not cause any harm, and this is the safest approach. Some women are unable to cope with this concept and may need to be offered induction.
- If the pregnancy is 29 weeks and beyond:
    - Induction should follow the same methods and drug dosages as for a pregnancy with live fetus, apart from AROM.
- If the pregnancy is 27-28 weeks, a higher dose of misoprostol can be used:
    - Mifepristone 200mg orally in an outpatient setting, followed 12-24 hours later by
    - Misoprostol 100µg vaginally or buccal or sublingual every 4-6 hours (limit dosing to 5 times)
    - If there is a previous CD scar, do not use misoprostol or consult with a specialist first.
- If the pregnancy is 20-26 weeks, a higher dose of misoprostol can be used:
    - Mifepristone 200mg orally in an outpatient setting, followed 12-24 hours later by
    - Misoprostol 200µg vaginally or buccal or sublingual every 4-6 hours (limit dosing to 5 times)
    - If there is a previous CD scar, do not use misoprostol or consult with a specialist first.
- After fetal demise, CTG remains a useful technique to assess uterine activity, particularly monitoring for a hyperstimulation pattern (usually >5 contractions per 10 minutes).
- This situation can be extremely distressing for the woman, and her partner, if present.
    - Provide gentle, supportive care and conduct the IOL in a location separate from women with live fetuses.
    - Ensure companionship for as long as the woman wants.
    - Consider referral after discharge to mental health support services - see mental health chapter.

IOL after prolonged ROM at term

- For ROM >16 hours, antibiotic cover should be instituted.
- IOL can follow the usual protocol.
- Studies have indicated that that Foley catheter IOL may be used safely with ruptured membranes and antibiotic cover.

IOL after PPROM (at 34 weeks)

- PPROM is managed conservatively provided there is no evidence of amnionitis (see chapter on problems in pregnancy)
- When IOL is needed follow the same procedures as above, including the use of foley catheter with antibiotic cover.

IOL in a scarred uterus

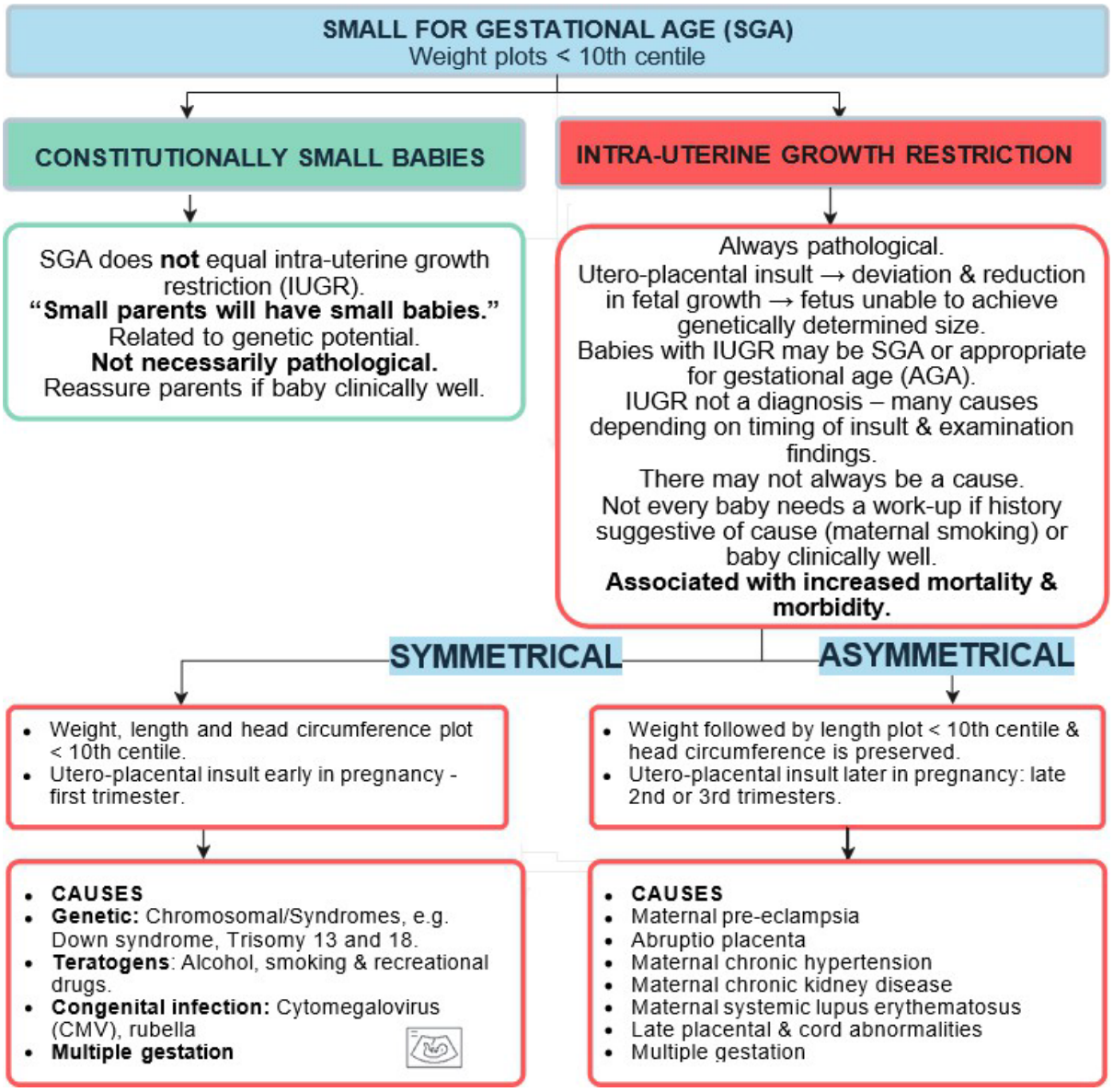
- Misoprostol should not be used with a scarred uterus beyond 24 weeks (discuss with a specialist first).
- The method of choice is Foley catheter as this does not involve any exogenous uterine stimulant.
- Once the cervix is favourable, consider ROM.
- Oxytocin may be used cautiously, with specialist approval.

Chapter 10: PROBLEMS IN PREGNANCY

If any of the conditions below cause demise of the fetus, see compassionate care approaches for managing pregnancy loss in the mental health chapter.

Small for gestational age babies

A measurement less than the 10th centile for gestational age (as noted on the antenatal SFH graph), or failure of SFH to increase on serial measurements, should raise suspicion of a small-for-gestational age fetus (SGA), and the mother should be referred for Doppler and/or ultrasound assessment of the fetus.



- Clinical features that suggest IUGR include
  - palpation of a relatively large hard fetal head with a small body,
  - engagement of the head before 37 weeks,
  - reduced liquor volume,
  - an irritable uterus before 37 weeks.
- Such findings should lead to referral for ultrasound to exclude IUGR.

DIAGNOSIS

Ultrasound scanning, including Doppler flow studies, is needed to make a diagnosis of a small-for-gestational age fetus. If ultrasound facilities are not available, clinical assessment must be used, or the mother must be referred to a specialist health facility. Stand-alone Doppler machines can also be used to screen for placental insufficiency.

Verify correct dating (correlate with history, first scan)
Perform growth scan including liquor volume [deepest vertical pool (DVP)] and UAD
Plot ultrasound biometry, estimated fetal weight and UAD on graphs for correct gestation
If the ultrasound findings are in keeping with an SGA baby (current EFW < P10 OR HC/AC >2 standard deviations (P>97.5); OR AC < P5 if head measurements difficult for the correct gestation), further management can remain at a district or regional hospital.
If not SGA on ultrasound as defined above, and the Doppler is normal, the patient can be referred back to her clinic.
If the UAD is abnormal (> 95th centile) see section below on abnormal Doppler.

SGA pregnancies are at risk of term (rarely preterm) intra-uterine fetal demise (IUFD), fetal distress in labour and pre-eclampsia
These risks are not contra-indications to vaginal delivery, but requires continuous CTG monitoring throughout labour

Figure 10-1 Management of SGA babies at hospital

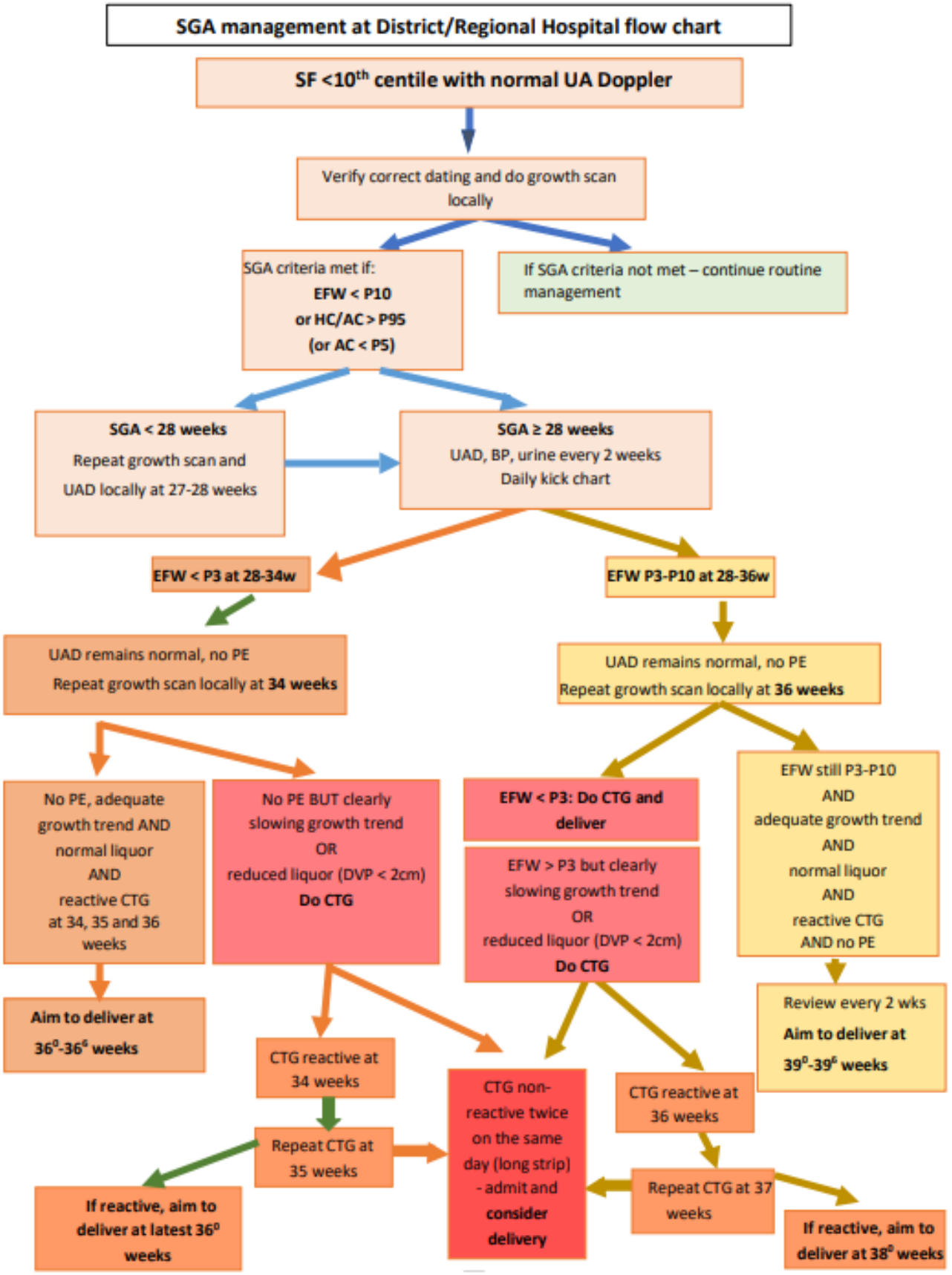


Figure 10-2 Abnormal umbilical artery doppler

Absent or reversed end diastolic flow on Doppler: Refer for specialist care within 24 hours (if baby already viable)

MULTIPLE pregnancy

Multiple pregnancies are diagnosed most accurately by ultrasound examination. Where this is not routinely offered to all pregnant women, multiple pregnancy needs to be suspected on history and clinical examination. A family history of multiple pregnancies and history of ovulation induction should raise suspicion.

Pregnancies with the following signs need referral for ultrasound assessment:

- exaggerated symptoms of pregnancy
- symphysis-fundal height >90th centile for gestational age (if no previous ultrasound)
- an unusually wide and round uterus
- increased liquor volume
- more than two fetal poles felt
- head feels smaller than expected for the uterine size

Antenatal visits must take place at a hospital with access to ultrasound, it can be shared care with a BANC clinic. Refer twins as early as possible to make a correct ultrasound diagnosis of chorionicity. Monochorionic pregnancies is best managed at a tertiary hospital.

Figure 10-3 Clinic checklist for uncomplicated DCDA twins

Clinic checklist: Schedule of visits for Uncomplicated DCDA twins

The first (booking) visit for all women are done at first contact with the BANC/MOU clinc regardless of gestational age. If twins are diagnosed at booking, refer to a specialist Clinic as soon as possible.	VISITS									
	1	2	3	4	5	6	7	8	9	10
Approximate gestational age in weeks	**< 20 weeks**	**20 weeks**	**22 weeks**	**24 weeks**	**27 weeks**	**29 weeks**	**31 weeks**	**33 weeks**	**35 weeks**	**37 weeks**
Level of care for particular visit	**Clinic (as soon as possible after diagnosis).**	**Clinic and sonar**	**BANC/ MOU**	**BANC/ MOU**	**Clinic and sonar**	**Clinic**	**Clinic and sonar**	**Clinic**	**Clinic and sonar**	**Clinic**
Urine MCS										
Blood pressure										
Urine tested (dipsticks) for protein and glucose										
Haemoglobin test										
Do rapid syphilis test										
Ultrasound	Confirm chorionicity and book detail @20W	Detail			Follow up U/S		Follow up U/S		Follow up U/S	
Check Rh results										
Check HIV result										
Retested for HIV if booking test negative or unknown										
Iron and folate supplementation provided										
Information for emergencies given										
Clinical examination for anaemia										
Digital examiniton of the cervix to assess risk of preterm labour										
Instructions for delivery/transport to institution										
Recommendations for lactation and contraception										
Complete Case Record and remind woman to bring it when in labour										
Plan for admission for elective delivery at 38 weeks										

Multiple pregnancies should preferably be delivered in a hospital with ultrasound, 24 hour caesarean section and 24 hour neonatal facilities (preferably at specialist level).

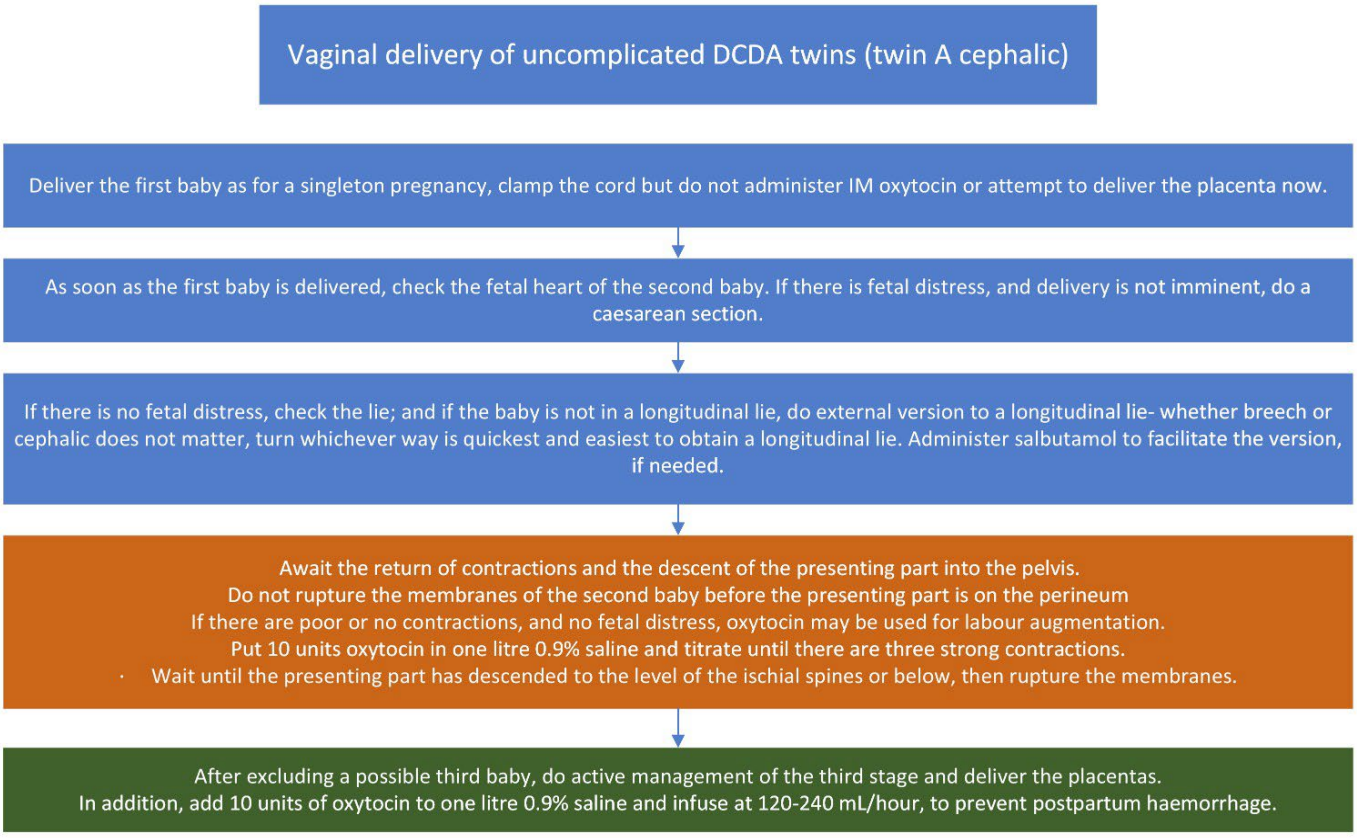
Indications for elective caesarean delivery

- triplets (or higher order pregnancy)
- intrauterine growth restriction
- first twin breech or transverse lie after 37 weeks
- previous caesarean section

Principles of labour and delivery

- treat preterm labour as for singleton pregnancies
- induction of labour is not contraindicated
- use a partogram for observing labour progress
- monitor both fetusses during labour with CTG

Figure 10-4 vaginal delivery of uncomplicated twins



BREECH presentation

EXTERNAL CEPHALIC VERSION

External cephalic version (ECV) can be attempted on all normal singleton breech presentations from 36 weeks gestation, with the following precautions:

- exclude contraindications, i.e. hypertension, scarred uterus, antepartum haemorrhage, or ruptured membranes
- only perform ECV in a hospital with an available theatre
- obtain informed consent
- give Anti-D 100 micrograms IM to all rhesus-negative mothers after the procedure
- do not anaesthetise or sedate the mother
- use salbutamol IV to relax the uterus if necessary (same dose as for intrapartum resuscitation)
- never use excessive force
- perform CTG tracings before and after ECV, whether successful or not
- observe the mother for a few hours after the procedure for complications, i.e. labour, rupture of membranes, antepartum haemorrhage

See https://www.youtube.com/watch?v=fKaNZfUno50 for a video demonstration on ECV

Breech: labour and delivery

- transfer the mother from a clinic or community health centre to a district hospital
- exclude fetal abnormality or multiple pregnancies by ultrasound if necessary
- attempt external cephalic version if there are no contraindications
- estimate fetal weight and pelvic adequacy
- determine cervical dilatation and station of presenting part
- perform caesarean section unless suitable for vaginal delivery

See https://www.youtube.com/watch?v=G5c4GAxmEgE&list=PL68EE6D503647EA2F&index=10 for a video demonstration on breech delivery

Breech presentation suitable for vaginal delivery:

- Mother understands and accepts vaginal delivery
- operator experienced and confident with vaginal breech delivery
- no signs of pelvic contraction on clinical assessment
- estimated fetal weight less than 3.5 kg
- frank or complete breech
- presenting part at or below the level of ischial spines
- labour progress ≥1 cm per hour

Technique of breech delivery

- Put the mother in lithotomy position.
- Consider an episiotomy after infiltration of the perineum with local anaesthetic.
- Encourage spontaneous breech delivery and only assist in keeping the fetal back facing upwards.
- or extended knees, assist by flexing at the knees and gently delivering each leg.
- After delivery of the trunk, allow the breech to hang, pull the cord down and cover the delivered parts with a cloth.
- As the scapulae appear, be ready to assist with delivery of the arms.
- Deliver the arms if necessary, by running your fingers from the fetal back over the shoulder and sweeping the arms down in front of the chest, and then out.
- The neck will deliver up to the nape.
- Deliver the head by laying the baby over the right forearm (right-handed midwife or doctor) and inserting the right middle finger into the baby's mouth, with the index and ring fingers supporting the cheek, to flex the head.
- Simultaneously, the left hand exerts suprapubic pressure to flex the head (Wigand-Martin method) or pushes directly onto the occiput to assist flexion (Mauriceau-Smellie-Veit method).
- Alternative method of delivery of the head is the Burns Marshall method, where the baby's feet are brought out in a wide circle towards the maternal abdomen.
- Ease the baby out, with gentle traction, and continuous flexion as described.
- Should the fetal back face downwards after delivery of the arms, the head may be trapped. The best chance of delivery is to swing the baby anteriorly over the maternal abdomen to flex the head.

Transverse lie

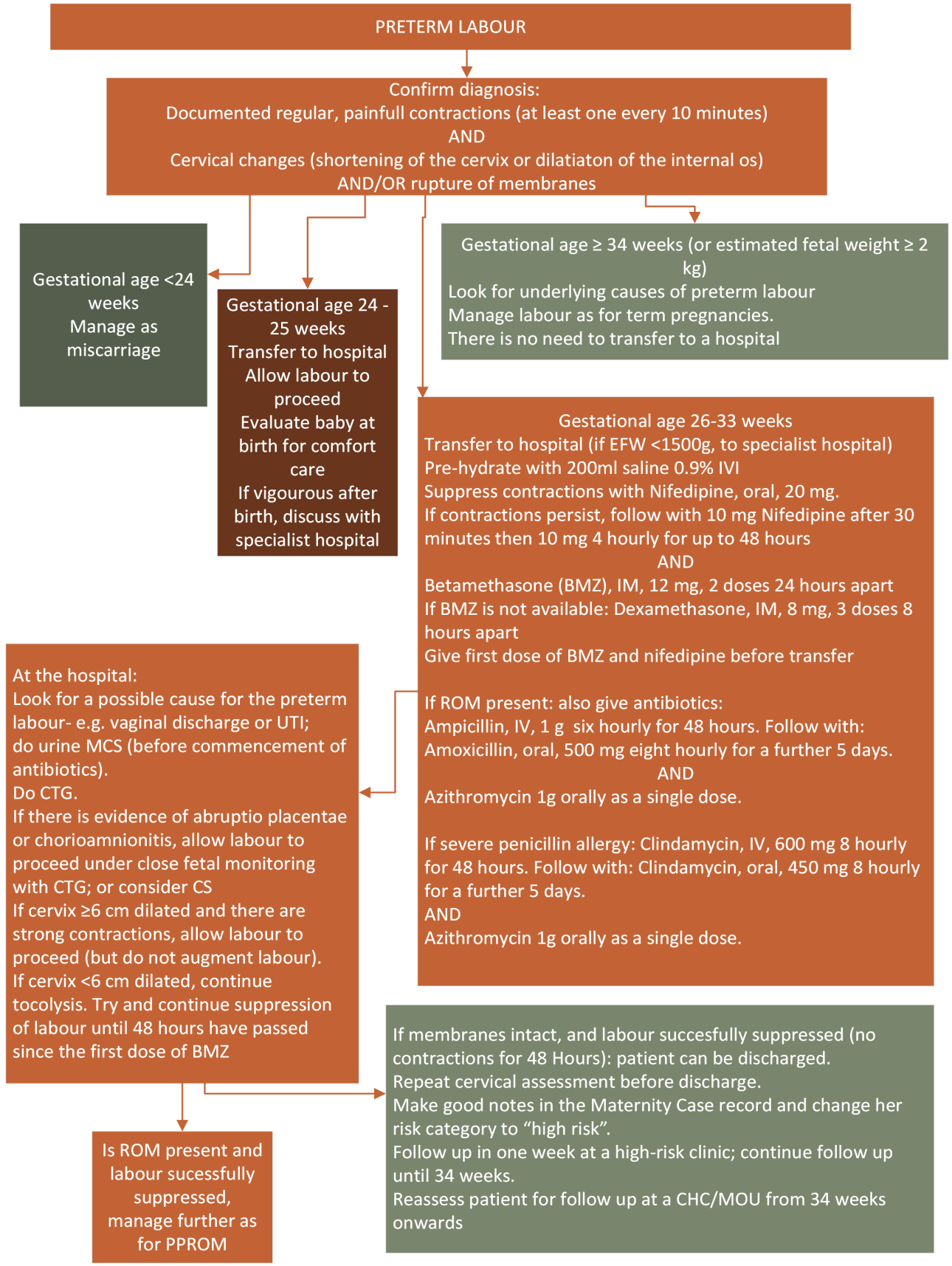
Do an ultrasound scan to exclude a cause such as placenta praevia, congenital abnormalities, or multiple pregnancy.
External version may be attempted from 37 weeks' gestation.
Caesarean delivery is required if version fails to achieve a stable longitudinal lie.
Any woman presenting in labour with a transverse lie needs delivery by caesarean delivery preferably by a specialist or experienced doctor.
A classical or low vertical uterine incision should be considered.

Chorioamnionitis

Figure 10-5 management of chorioamnionitis

PRETERM labour

Figure 10-6 Management of preterm labour



There is no benefit in continuing suppression of labour for longer than 48 hours.

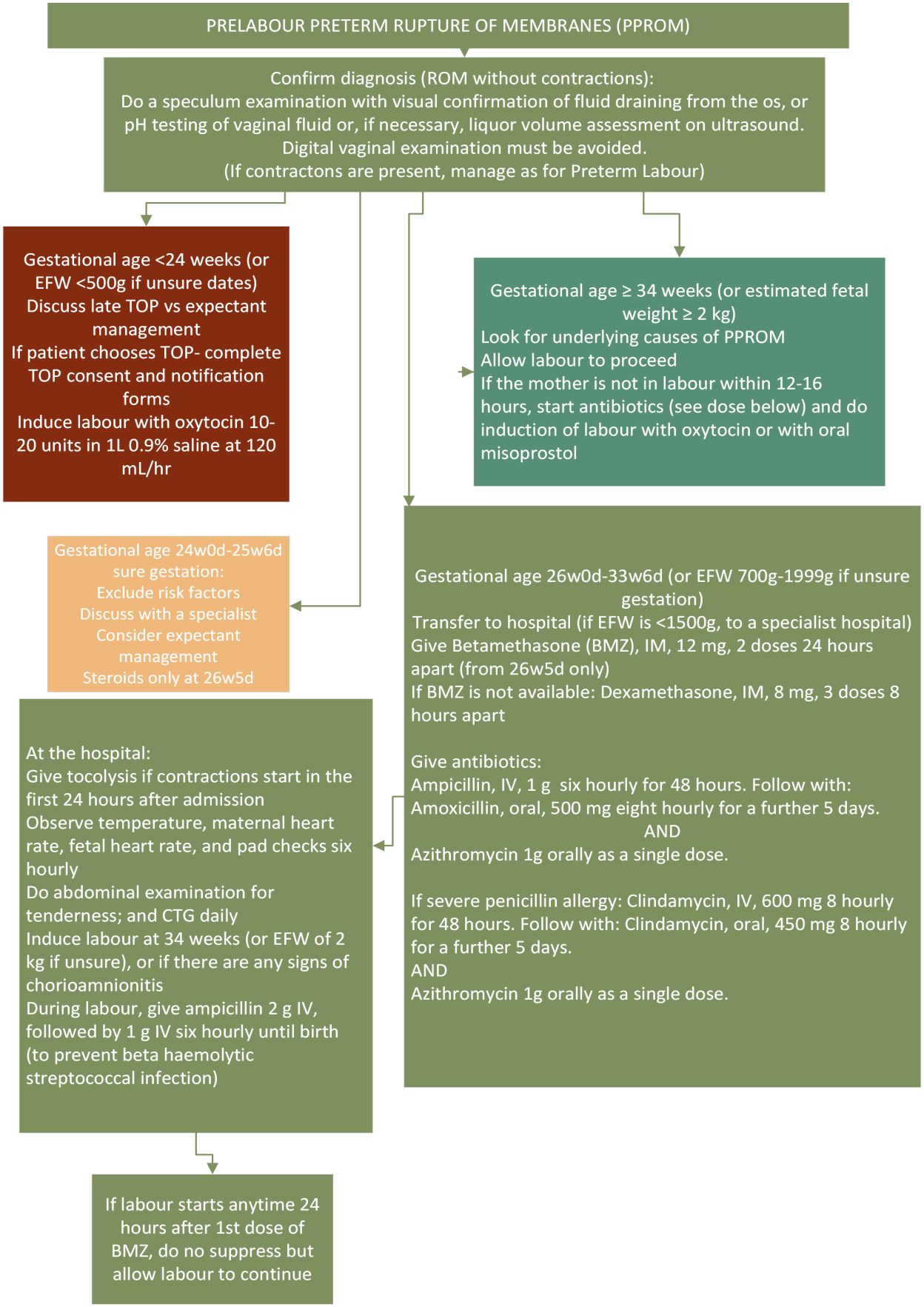
Contra-indications for tocolysis:

- Mother does not consent to suppression
- Pathological or suspicious fetal heart rate pattern
- Lethal fetal anomaly
- Intra-uterine death
- Suspected chorio-amnionitis (clinical signs of infection)

- Severe hypertensive conditions of pregnancy
- Abruptio placentae
- Sever IUGR

PRELABOUR PRETERM RUPTURE OF MEMEBRANES (PPROM)

Figure 10-7 Management of PPROM



Prolonged pregnancy

- Prolonged pregnancy:
  - Pregnancy exceeding 42 weeks (294 days) from the first day of the LNMP.
- Postdates pregnancy
  - Pregnancy exceeding the Estimated Date of Delivery (EDD, which is 280 days from the first day of the LNMP).
- Clinical (uncertain) prolonged pregnancy
  - Where the dates are unsure, and it is clinically estimated (no early ultrasound) that the pregnancy exceeds 42 weeks.
- Post maturity syndrome
  - When placental insufficiency has developed in a prolonged pregnancy. This is only diagnosed after delivery.

The most serious associated problems with prolonged pregnancy are intrapartum related birth asphyxia, meconium aspiration, feto-pelvic disproportion and postmaturity syndrome. The management is as follows:
With certain gestation:

- pregnancy is induced beyond 41 weeks. Ensure that the gestational age has been correctly calculated
- at 41 certain weeks of gestation, stretch and sweep the membranes and refer the mother from a clinic or community health centre to a district hospital for induction of labour within the next three days
- If IOL was done, monitor the fetus with CTG if possible

When the EDD is unsure, induction at a suspected 42 weeks is not advisable but careful fetal surveillance is done. Do a stretch and sweep of the membranes at every visit.

- fetal surveillance: check with the mother if the baby is moving well and do a weekly CTG and ultrasound amniotic fluid assessment
- induce labour only once the deepest vertical pool of amniotic fluid is ≤3 or the AFI ≤5
- if ultrasound is not available, assess liquor clinically, check fetal movements and do weekly CTG; and do IOL if clinically reduced liquor.

RHESUS incompatibility

- Rapid rhesus (D) blood group testing must be done on all pregnant women at the first antenatal visit, or at delivery in unbooked mothers. Rhesus-positive mothers need no further specific management.
- If a mother is rhesus-negative*, send blood for atypical antibody testing at 26, 34 and 40 weeks (six weekly, align with the BANC visits):
  - if no antibodies are found, continue with antibody testing every six weeks
  - if antibodies are found at a titre of < 1:16, repeat the antibody test every two weeks
  - if antibodies are found at a titre of ≥ 1:16 send the mother to a unit that specialises in managing rhesus incompatibility (usually a specialist referral hospital) within three days
- NOTE that different labs may have different reporting values for abnormal titres- check with the lab what value they regard as abnormal.
- If no antibodies are found, give prophylactic anti-D 100 µg intra-muscularly as follows:
  - after delivery to all rhesus-negative mothers, if the baby is rhesus-positive or its rhesus status is unknown, within 72 hours
  - if amniocentesis or external cephalic version is performed
  - if there is significant antepartum haemorrhage
  - if the mother suffers any abdominal trauma
  - after termination of pregnancy, miscarriage, or ectopic pregnancy.

*If the father of the baby is tested and also found to be rhesus-negative, no further management will be necessary, as the baby will then be Rhesus-negative.

POOR obstetric history

- This is a history of poor obstetric outcomes (a history of stillbirth or pregnancy-related neonatal death, or severe neonatal morbidity)
- Women with a poor obstetric history should be referred from a clinic or community health centre to a hospital for assessment and further management directly after the first booking visit.
- These women may experience distress and symptoms of anxiety or depression.
- Mental health screening and support is very important.
  - Compassionate and respectful care throughout the pregnancy, any investigations, procedures, and the labour are essential.

Recurrent miscarriages

- This is defined as two or more consecutive previous second trimester miscarriages or three or more consecutive first trimester losses
- Need referral to a specialised unit after booking (if <34 weeks). In the older (>35 years) woman, consider referral earlier. Manage the woman according to the plan from the specialist referral unit.
- A cervical cerclage is only done for specific indications and in singleton pregnancies at a specialist referral centre. It should preferably not be done at district level.
    - The specific indications include a history of three or more preterm deliveries and/or second trimester losses; or a short cervix on transvaginal ultrasound scan (≤25mm) before 24 weeks plus a history of one or more spontaneous mid-trimester loss or preterm birth.
    - Daily vaginal progesterone can be offered as an alternative to cervical cerclage- [only if there is a short cervix on transvaginal ultrasound scan (≤25mm) before 24 weeks] (Progesterone, PV, 200 mg daily until 34 weeks gestation).

Previous spontaneous preterm delivery

This refers to the delivery of a preterm baby (<34 weeks) that died or required special care, in the last previous pregnancy. Patients must be referred to a district hospital for initial work up.

- At the district hospital:
    - do an ultrasound scan at the first antenatal visit, including estimation of the cervical length by trans-vaginal scan
    - obtain a good history of the preterm birth(s)
    - evaluate for specialist referral for possible cerclage or progesterone treatment (cervical length ≤25mm after 16 weeks gestation with prior loss(es) before 34 weeks gestation).

Chapter 11: ABNORMAL LABOUR AND DELIVERY

Mental health and respectful care matters

- Prolonged labour (all stages) may be linked to psychological distress
- Encourage one companion during labour (doula, staff, partner, family or friend or the woman's choice)
- Provide gentle support (encourage, affirm where the woman is doing well and emphasise her capabilities, calm compassionate interactions, appropriate calming touch, reflection of her feelings)
- Give as much choice as suitable (position, pain relief, movement)
- Always give clear, full information to explain progress and management plan - this may need to be repeated in different ways, in a language she understands
- Always ask permission for any procedures including vaginal examinations and ensure privacy and confidentiality (even under emergency situations)
- Remember that many women have experienced sexual assault or past traumatic births. Harsh treatment in labour can cause a re-experiencing of the assault situation. If kind and supportive care is provide, and the woman is helped to feel empowered, this can help to heal the past trauma.
- Remember that an abnormal labour does not need to be traumatic for the woman. If it feels traumatic for her, she may go on to develop mental health problems and may struggle to breastfeed or bond with the baby; future pregnancies and labours may be negatively affected.
- Never: shout, threaten, hit, scare or use language like "If you don't cooperate you will damage the baby"
- Abnormal labour and delivery can be very stressful for staff.
    - Ensure staff remain calm and there is adequate support from more experienced staff during the labour/ birth as well as for debriefing among staff afterwards

ABNORMALITIES of the first stage of labour

Prolonged latent phase of labour

- The latent phase of labour is prolonged when it exceeds 24 hours from the time that it was confirmed that the woman was in labour (this would usually be after a period of a few hours of observation when the diagnosis of labour was initially doubtful).
    - It is recommended that if 12 hours have passed since labour was confirmed at an MOU, and the woman remains in the latent phase (4cm dilated or less), that she should be transferred for further care in labour to hospital .
    - Prolonged latent phase can be difficult to diagnose but is unlikely if there are cervical changes and increasing uterine activity over 24 hours of observation.
- Management of apparent prolonged latent phase
    - Exclude other causes of abdominal pain, e.g. abruptio placentae, urinary tract infection.
    - Consider false labour, characterised by no cervical changes and no increase in duration, regularity or frequency of labour pains. Women with false labour may be discharged home if there are no other obstetric problems.
    - If certain that the woman has a prolonged latent phase, exclude fetal distress and CPD, then 'stretch and sweep' the cervix, rupture the membranes and/or start an oxytocin infusion as for active phase augmentation
    - Transfer the women from the CHC (MOU) to the hospital if the latent phase exceeds 12 hours.

Poor progress in the active phase of labour

- There is poor progress if the cervix dilates at a rate of <1 cm/hour in the active phase (crosses the partogram alert line).

- Management of poor progress in the active phase
    - Use the rule of 4Ps in the assessment (Patient, Powers, Passage, Passenger- see block below).
    - Ensure adequate maternal hydration:
        - Give a bolus of Sodium Chloride 0,9% (200-300 mL intravenously) and continue with an IV infusion of Sodium Chloride 0,9% to run at 120 mL/hour.
        - She can also take oral fluids
    - Ensure that the bladder is empty: catheterise if necessary.
    - If there is evidence of CPD in a multipara (increasing grade of sagittal moulding with no descent, or grade two sagittal moulding with the head ≥3/5 palpable above the brim), arrange CD or transfer from CHC to hospital.
    - Exclude malpresentation: for breech and oblique/transverse lie, arrange for CD or transfer from CHC (MOU) to hospital.
    - Exclude fetal distress (late decelerations, thick meconium): if the fetus is in distress, do immediate CD or transfer from CHC to hospital urgently.

- With good hydration, bladder empty, no CPD, no malpresentation and no fetal distress:
  - Support and reassure the woman
  - Encourage mobilisation
  - Offer analgesia
  - Rupture the membranes if still intact
  - Continue labour observations as before and reassess progress in two hours
  - If progress crosses the two hour action line:
    - transfer from CHC to hospital
  - if no CPD in a primigravida and no evidence of fetal distress, start oxytocin infusion (see dose in IOL chapter)
    - Continue with two hourly assessments: if progress in cervical dilatation is still less than one cm/hour, consider caesarean delivery or discuss with an experienced doctor for a second opinion on the need for CS

Table 11-1 Elements to evaluate when there is poor progress in labour

Patient	Psychological condition
	Pain
	Hydration
	Bladder empty?
	Position
Power	Adequate uterine contractions?
Passage	Cervix (dilation, effacement)
	Membranes
	Application
	Presenting part
	Pelvic size and shape
Passenger	Fetal size
	Fetal lie
	Fetal presentation and position
	Level of presenting part

Meconium staining of the liquor

- Meconium in the amniotic fluid (thick meconium) needs monitoring with a CTG continuously in labour- refer to a hospital, except if delivery is imminent.

PROLONGED second stage of labour

- If the woman is not bearing down after one hour of full dilatation:
  - re-examine the woman to make sure the cervix is truly fully dilated
  - rupture the membranes if they are intact
  - if the woman still has no urge to bear down, despite rupture of membranes, she should be referred to hospital.
    - However, while awaiting transfer, if she develops the urge to bear down, she should be reassessed and allowed to deliver

Failure of the head to descend despite maternal pushing

- If delivery has not occurred after 45 minutes of pushing in a nullipara, or after 30 minutes in a multipara (at a CHC):
  - take care with assessing the level of the head: excessive caput or moulding may give the impression that the head is deep in the pelvis when it is not truly engaged. Use fifths palpable above the brim to assess descent of the head
  - perform ventouse delivery if the head is 0/5 palpable above the brim. Transfer from CHC to hospital if skills and equipment are not available for ventouse delivery, or if the fetal head is ≥1/5 palpable (can attempt to do ventouse in hospital with 1/5 palpable head.
- At hospital: allows for 2 hours of pushing for primigravida and 1 hour for multigravida if fetal and maternal condition stable

Vacuum extraction/ ventouse delivery

- Vacuum extraction (ventouse delivery) may be performed at CHCs by (skilled) advanced midwives and in hospital by skilled advanced midwives and doctors.
- Disposable vacuum cups are preferred because they are easy to use and reliable.

Conditions for safe vacuum extraction

- Woman fully informed and co-operative.
- Vertex presentation.
- Fetal Head 0/5 or 1/5 palpable above the brim (0/5 only at a CHC).
- Certainty about the position of the presenting part.
- Cervix fully dilated.
- Membranes ruptured.
- Bladder empty.
- Strong (regular) uterine contractions

Technique

- Ventouse delivery techniques vary with different equipment and operators:
    - 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 on the disposable cups)
    - apply traction only during contractions
    - the ventouse delivery has to be abandoned if
        - there is no noticeable head descent during traction despite applying string traction (even if it is just the first pull)
        - the head has not delivered after three strong pulls (one pull = one contraction) with functioning equipment
        - there have been two cup detachments with functioning equipment
- abandoned ventouse delivery requires CD unless the baby's head has already extended and can be easily delivered by pushing without further use of the ventouse
- document /record the procedure fully: indication, initial findings, times, cup type and size, number of pulls, number of detachments and baby's condition at delivery- use the form in the MCR.

See https://www.youtube.com/watch?v=GthnX-jYT5s for a video demonstration on ventouse delivery

Forceps delivery

- Forceps delivery should only be performed in hospitals, by experienced operators, where all conditions for forceps delivery are met.
- If a ventouse has had to be abandoned despite functioning equipment, do not then attempt delivery by forceps as this is likely to cause excessive morbidity for mother and baby. Opt for a caesarean section in this circumstance.

Emergencies during labour

CORD PROLAPSE

- In cord prolapse, the umbilical cord comes out of the cervix in front of the fetal presenting part, with the membranes ruptured. Frequently, the cord may appear at the vulva.
    - call for help
    - explain the problem to the woman
    - perform vaginal examination
- If the fetus is alive (fetal heart heard) and viable gestation:
    - If the cervix is fully dilated and the fetal head has engaged in the pelvis immediately deliver the baby by vacuum extraction or forceps delivery if necessary.
    - If the cervix is not fully dilated, arrange for urgent CD or for transfer from CHC to hospital, and proceed as follows:
        - replace the umbilical cord in the vagina and try to keep it inside the vagina using sanitary pads and closing the mother's thighs
        - handle the cord as little as possible
        - if the presenting part is felt to be compressing the cord, push the presenting part up with the fingers, and turn the woman to a knee-elbow position with the fingers continuing to hold the presenting part, if necessary
        - insert a urinary catheter, at least size 18 G, and empty the bladder
        - fill the woman's bladder with 400 mL of normal saline and clamp the catheter
        - start an IV infusion of Sodium Chloride 0,9%
        - give a slow Salbutamol bolus, 250 mcg IV, slowly over 2 minutes.
            - Reconstitute the solution as follows: Add 1 mL (i.e., 0.5 mg/mL) salbutamol to 9 mL sodium chloride 0.9% to make a solution of 50 mcg/mL.
            - Administer 5 mL (250 mcg) of this solution slowly.
            - Monitor maternal pulse and stop salbutamol injection if pulse increases >120bpm.
            - Do not administer if mother has cardiac disease or severe hypertension.
    - if the presenting part is not compressing the cord, place the woman in a left lateral (Sims) position with a pillow under the hips
    - make accurate notes of all that has been done, with times
    - before starting the CD ensure that the fetus is alive
- if the fetus is dead or not viable, and there is no other indication for caesarean delivery, await vaginal birth

SHOULDER dystocia

- In shoulder dystocia delivery of the baby's head is not followed by delivery of the rest of the body because one or occasional both shoulders are stuck above the pelvic brim.
- It is more common with babies of diabetic mothers and other large babies but is unpredictable.
- Emergency management is as follows:
    - call for at least two assistants
    - explain the problem to the woman
    - immediately move the woman to the edge or to the lower end of the delivery bed
    - help the woman to hyper flex the hip joints (McRoberts' position). Her knees should almost touch her shoulders
    - apply suprapubic pressure. Do not apply fundal pressure
    - tell the woman to push, even if she does not have a contraction
    - gently guide the head downwards to help delivery but do not stretch the neck or jerk forcefully on the head
- if unsuccessful so far, deliver the posterior arm by locating the posterior shoulder in the vagina and sweeping the arm in front of the baby's chest. Once the posterior arm is delivered, delivery of the anterior shoulder should not be very difficult
- if the posterior arm cannot be easily delivered, insert a loop of plastic tubing, e.g. urine bag tube or feeding tube, through the posterior axilla of the baby and pull down on the loop until it becomes possible to deliver the posterior arm as above or use the loop to rotate the posterior arm in the direction of the baby's back to anterior, while pushing on the back of the anterior shoulder.
    - Never use a rubber or silastic catheter which causes skin laceration due to stretching.
    - Posterior arm delivery may be easier if the woman turns to a knee-elbow position (all-four position)
- 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
- if delivery has not been achieved at this point the baby is likely to die.
    - If the baby is dead, await spontaneous delivery and call for help or advice to deliver the baby without injuring the woman
- irrespective of the outcome for the baby, debrief the woman after the delivery, giving a full explanation of the emergency management and potential complications
- The management of shoulder dystocia frequently features in litigation.
    - It is essential that good notes are made, including which manoeuvres were attempted, number of attendants, and the time from delivery of the head to delivery of the baby.
    - See https://www.youtube.com/watch?v=d0rt-6Yxz64 for a video demonstration on shoulder impaction.

Third degree perineal tear

- In a third degree tear the anal sphincter is disrupted; if there is also injury to the rectal mucosa it is a fourth degree tear.
- It is important after every vaginal birth to inspect tears and episiotomies well to identify third degree tears.
- Women with third degree tears must be transferred from a MOU to a district hospital.
- If there is no expertise to suture 3rd or 4th degree tears at the district hospital, transfer to a specialist facility.

Repair of a third-degree tear

- The repair should be performed by an experienced doctor in theatre, ideally using spinal anaesthesia.
- Use polyglactin absorbable suture: repair the rectal mucosa first with 3/0 suture, continuous or interrupted.
- Follow this by repairing the rectal muscularis layer with 3/0 suture, continuous or interrupted. Include the internal anal sphincter in this suture.
- Identify the disrupted ends of the external anal sphincter on each side just above the anal verge and extract and hold them with Allis clamps.
- Repair the external sphincter with four simple 2/0 sutures, either as an end-to-end or as an overlapping anastomosis.
- Complete the repair as for episiotomy, but taking special care to place strong interrupted sutures to close the perineal muscles and re-establish a strong perineal body between the vagina and the anus.
- The use of broad-spectrum antibiotics is recommended to reduce the risk of postoperative infections
- Give oral analgesia e.g. paracetamol one gram orally six hourly or ibuprofen (if not contraindicated) 400 mg orally eight hourly for three to four days.
- Prescribe stool softeners e.g. ispaghula or bran, or lactulose 10g twice daily orally for five days. Advise on a high fibre diet and pelvic floor exercises.
- Write a clear discharge summary with clear instructions for a follow-up doctor visit.

Chapter 12: CAESAREAN DELIVERY

- All district hospitals should aim to have staff and facilities for the performance of a caesarean delivery 24 hours a day.
- Surgical techniques vary according to the circumstances and the experience of the operator.
- All hospitals should aim to perform an emergency caesarean section within one hour of the decision to operate.
    - If it is not possible to meet this target e.g. other more urgent cases before it, theatre occupied etc, this reason should be recorded in the notes.

Requests by pregnant women for caesarean delivery (CD)

- Caesarean delivery is associated with an increased risk of maternal infection, haemorrhage, thromboembolism, postpartum death, and obstetric complications in subsequent pregnancies.
    - Women who request a CD and have no clinical indication for the operation should be counselled about the risks and benefits of the procedure.
- Women who ask for CD and have a relative indication, e.g. previous CD, may be booked for CD after counselling.
- This counselling should be done without any tone of reprimand or disapproval.
    - Understand that the request for CD may be linked to real fears of labour and birth
- In general, the performance of a CD without a valid indication is unacceptable practice.

Fetal maturity testing before elective caesarean delivery with uncertain gestational age

- If elective (non-urgent) caesarean delivery is planned for a woman at term, and the gestational age is uncertain but apparently close to term, fetal lung maturity testing may be helpful.
    - After performing amniocentesis, amniotic fluid is sent to the laboratory to assess surfactant content.
        - The local laboratory will first need to be consulted to ask what fetal lung maturity tests, if any, they perform.
- Alternatively, consider doing a foam test at the bedside:
    - obtain a sample of amniotic fluid, in which there is no visible trace of blood or meconium
    - add one mL of amniotic fluid to one mL of 95 per cent alcohol in a clean dry test tube; cover with clean plastic or plastic top (not rubber)
    - shake the tube vigorously for 30 seconds
    - tap the side of the tube to get rid of large bubbles
    - examine the meniscus (surface) of the fluid mixture 30 seconds after shaking, holding the tube upright
    - if at least a thin and complete ring of foam remains on the meniscus, the fetus is likely to have mature lungs and is unlikely to develop hyaline membrane disease
    - absence of an adequate ring of bubbles suggests that the fetus is immature, but sometimes does occur with a mature fetus. Rather postpone the procedure for a week
    - NB: If HIV positive, the patient needs to be virally suppressed. If Rhesus negative, Anti-D needs to be administered.

Preparation and precautions before caesarean delivery

- Obtain signed informed consent for surgery with the operation and its indication clearly explained to the woman.
- Ensure that emergency blood for transfusion is available in the hospital.
- Measure the woman's Hb level.
- Ensure an experienced operator is available to do, or to assist at, caesarean deliveries in the second stage of labour.
- Consider transfer to a specialist hospital if difficulties with surgery are expected, e.g. placenta praevia, previous myomectomy, abruptio placentae with a dead baby, transverse lie, morbid obesity and serious co-existing medical or surgical conditions.

Just before starting the operation, ensure that:

- The adapted WHO surgical safety checklist has been commenced. This is in the Surgery Insert of the MCG (also at the end of this chapter)
- Contraception such as IUCD and tubal ligation have been discussed, and informed consent obtained if requested by the woman.
- The fetal presentation and position are known, and the fetal heart can be heard.
- The indication for the CD is still valid.
- Broad-spectrum intravenous antibiotics have been given.
    - These may be either prophylactic or therapeutic antibiotics.
    - Routinely, a dual regimen of IV prophylactic antibiotics (cefazolin 1g and Azithromycin 500 mg) is given one hour pre-op, irrespective of whether the operation is an emergency or elective procedure, and there is no need to give further doses of antibiotics post-op.
    - If, however, the patient has evidence of intra-uterine sepsis, or there are factors which put her at high-risk of post-operative sepsis, then intravenous therapeutic antibiotics should be started pre-op and continued post-op for five days, although intravenous antibiotics could be changed to oral antibiotics after a few days depending on the patient's condition.

Indications for therapeutic rather than prophylactic antibiotics include:

- evidence of chorioamnionitis (including offensive liquor)
- prolonged labour with many vaginal examinations after rupture of membranes
- obstructed labour IF there are signs of sepsis
- caesarean delivery following abandoned attempt at a vacuum extraction

Haemorrhage during caesarean delivery

- At CD, excessive bleeding and its complications can be prevented by:
    - having an experienced surgeon available or transferring to specialist care pre-operatively if severe bleeding is anticipated, e.g. placenta praevia or caesarean delivery in the second stage of labour
    - having blood for transfusion available if Hb <10 g/dL pre-operatively
    - routinely giving oxytocin 2.5 units IV immediately after delivery of the baby (anaesthetist) and repeating it if uterus does not contract; followed by routine oxytocin infusion of the remaining 7.5 units; which should be maintained in the postnatal ward
- delivery of the placenta by cord traction, not manual removal
- good surgical technique
- ensuring haemostasis

Manage bleeding:

- call for help.
- remove excessive blood with suction or swabs.
- inform the anaesthetist to administer tranexamic acid 1 gm by slow iv injection, additional uterotonics, fluid resuscitation and blood replacement if needed.
    - We strongly recommend that tranexamic acid be stored outside of the theatre itself. Its packaging is easily confused with heavy macaine. Inadvertent administration of intrathecal tranexamic acid is fatal and has caused several maternal deaths in the past.
- See the chapter on Blood Transfusion for Obstetric Haemorrhage
- determine whether blood loss is from an atonic uterus, placental site, or from bleeding incisions or tears.
- Consider adding a uterine tourniquet early on in management of excessive bleeding at CD
- check bleeding is not from adhesions or intersecting blood vessels between the rectus sheath and muscle beneath
- if blood loss is from an atonic uterus, proceed as for atonic uterus after vaginal delivery.
- if blood loss is from the placental site (e.g. placenta praevia):
    - place square sutures in the placental bed
    - consider balloon tamponade in lower segment
    - consider a brace suture (e.g. B-Lynch suture), systematic devascularisation, or hysterectomy
- if hysterectomy is required but cannot be done, tie a Foley catheter as a tourniquet around the uterus (to arrest bleeding) and await help or transfer to specialist care.
- if blood loss is from tears or extension of uterine incision:
    - define anatomy clearly
    - remove sutures if necessary to expose bleeding areas
    - arrest bleeding with figure-of-eight sutures
    - Identify vertical tears and suture separately after securing apex, avoid placing sutures near the ureters in the base of the broad ligament
    - consider mass uterine artery ligation where tears have extended laterally into the broad ligament
    - consider systematic devascularisation or subtotal hysterectomy
    - consider other causes of bleeding, e.g. ruptured liver in pre-eclampsia, ruptured spleen
- With persistent bleeding from the uterus, tie a Foley catheter tightly around the uterine lower segment including the broad ligaments and wait for help, or transfer to specialist care for hysterectomy.
    - If a uterine tourniquet was left in place during referral, the patient should be re-operated to remove the tourniquet as soon as possible, preferably within 4 hours
- Ensure that blood pressure and heart rate are stable before transfer, and consider use of Non pneumatic Anti Shock Garment (NASG).
    - Details of NASG are in the PPH chapter.

Postoperative orders

- Prescribe analgesia:
  - opiate, e.g. morphine 0.1mg/kg intramuscularly up to a maximum dose of 10mg, with promethazine 25mg mg intramuscularly four to six hourly when necessary for 24 hours
  - ibuprofen 400 mg orally three times daily (not in patients with asthma, peptic ulcer, pre-eclampsia, kidney dysfunction or immune deficiency) for two or three days when necessary
  - paracetamol one gram orally four times daily when necessary
- Prescribe intravenous fluids: one litre Sodium Chloride 0,9% with 20 units oxytocin over eight hours
- Prescribe ongoing doses of therapeutic antibiotics for five days in women who have evidence of infection or are at high risk of infection
- Give prophylaxis against thromboembolism for women at risk (see VTE Prophylaxis in the chapter on medical conditions).
- Encourage early oral intake and mobilization in women with uncomplicated CD.
- Explain again to the woman, the reason for the CD. She may not have been able to take in the information prior to the operation.
  - Some women may feel like they have failed as women and mothers by not having a vaginal birth.
  - Reassure and affirm them, e.g. baby grew well inside them, they are breastfeeding well etc.

Haemorrhage after caesarean delivery

- PPH may occur after the operation in the theatre recovery area or in the postnatal ward.
- Haemorrhage may be internal (intraperitoneal, extraperitoneal), or external (vaginal).
- Internal bleeding can be difficult to diagnose clinically - be aware of a post-CS patient with tachycardia and tender abdomen, as the Hb does not drop immediately and the bleeding is concealed.
- PPH after CD can be prevented by:
  - all the steps above for preventing haemorrhage at caesarean section (above)
  - routinely checking all incisions and tubal ligation sites for bleeding before closing the abdominal cavity
  - by ensuring (with the anaesthetist) that the mother's pulse rate is less than 100/minute, systolic BP is greater than 100 mmHg and that the respiratory rate is less than 24 /minute before closing the anterior abdominal wall. Any abnormality of the vital signs requires a call for help
  - routinely giving oxytocin 20 units in one litre Sodium Chloride 0,9% over the first eight hours postoperatively
  - routinely rubbing the uterus and expelling clots immediately after completing the CD
  - regular postoperative observation of general condition, BP, heart rate and pad checks
  - intensive observation (in high care) of women who had excessive bleeding at CD or who are at risk for further haemorrhage

Manage excessive bleeding after caesarean delivery as follows:

- record general condition, heart rate, respiratory rate and BP
- insert one or two large bore IV lines and resuscitate with Sodium Chloride 0,9%
- insert a urinary catheter
- determine the cause of bleeding:
  - if the uterus is atonic, massage the uterus (this can be painful) and evacuate clots, then give uterotonics and 1 gm tranexamic acid as for atonic uterus after vaginal delivery (see PPH chapter)
  - if the uterus is well contracted, arrange a "re-look laparotomy" and proceed as for haemorrhage at CD (as above)
- NB: Re-laparotomy may be life-saving and should be done in preference to referral of an unstable patient.
  - If at a district hospital the surgeon should get advice from the specialist at the referral hospital and be able to perform conservative surgical measures and apply uterine tourniquet to stabilize the patient before referral after laparotomy.
  - The doctor performing anaesthesia must be skilled in general anaesthesia as well as regional.

The following Algorithms outline the approach to excessive bleeding at and after CD. They are followed by a diagram of Uterine compression suture /B Lynch.

Figure 12-1 Management of postpartum haemorrhage (PPH) at caesarean delivery

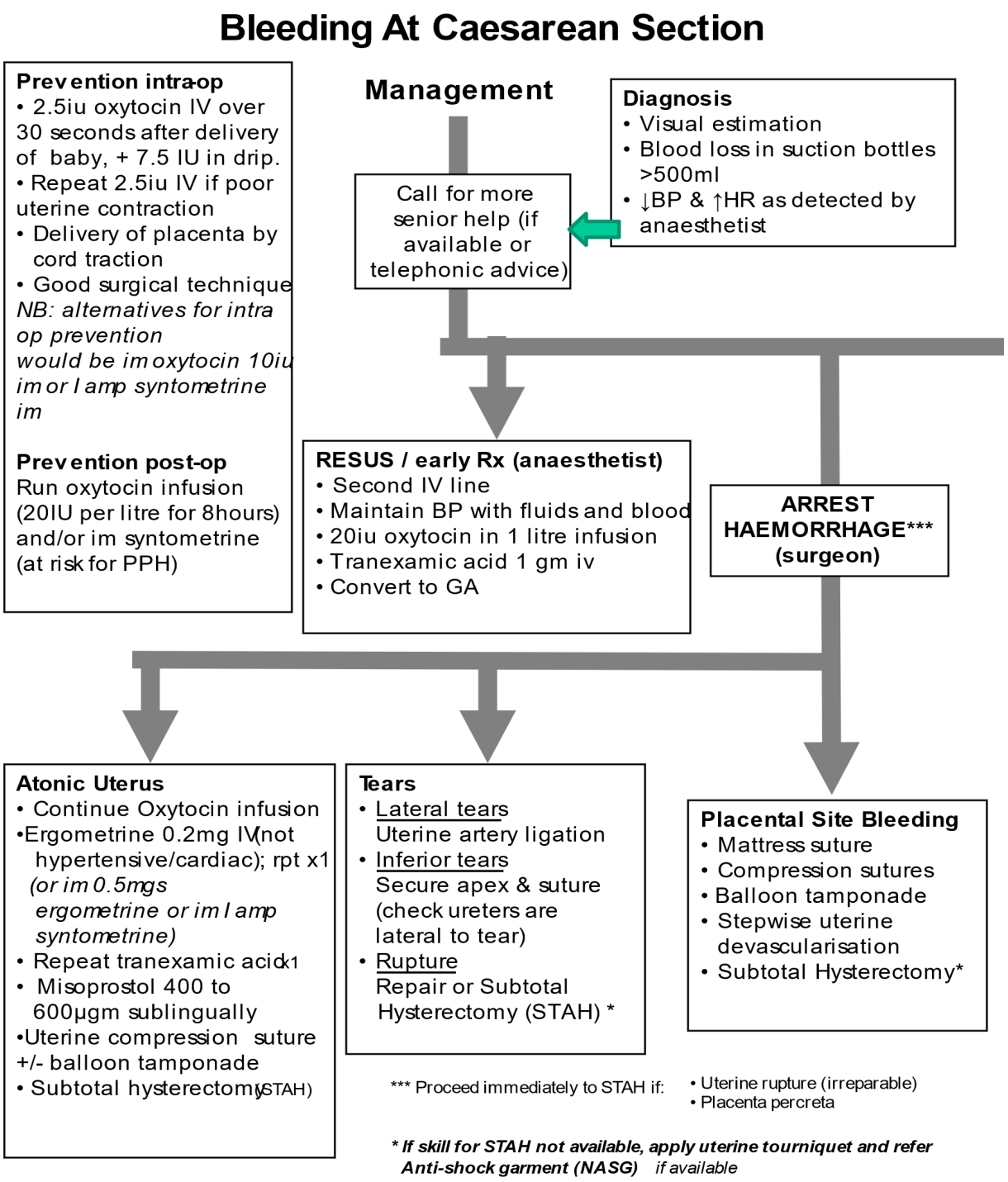
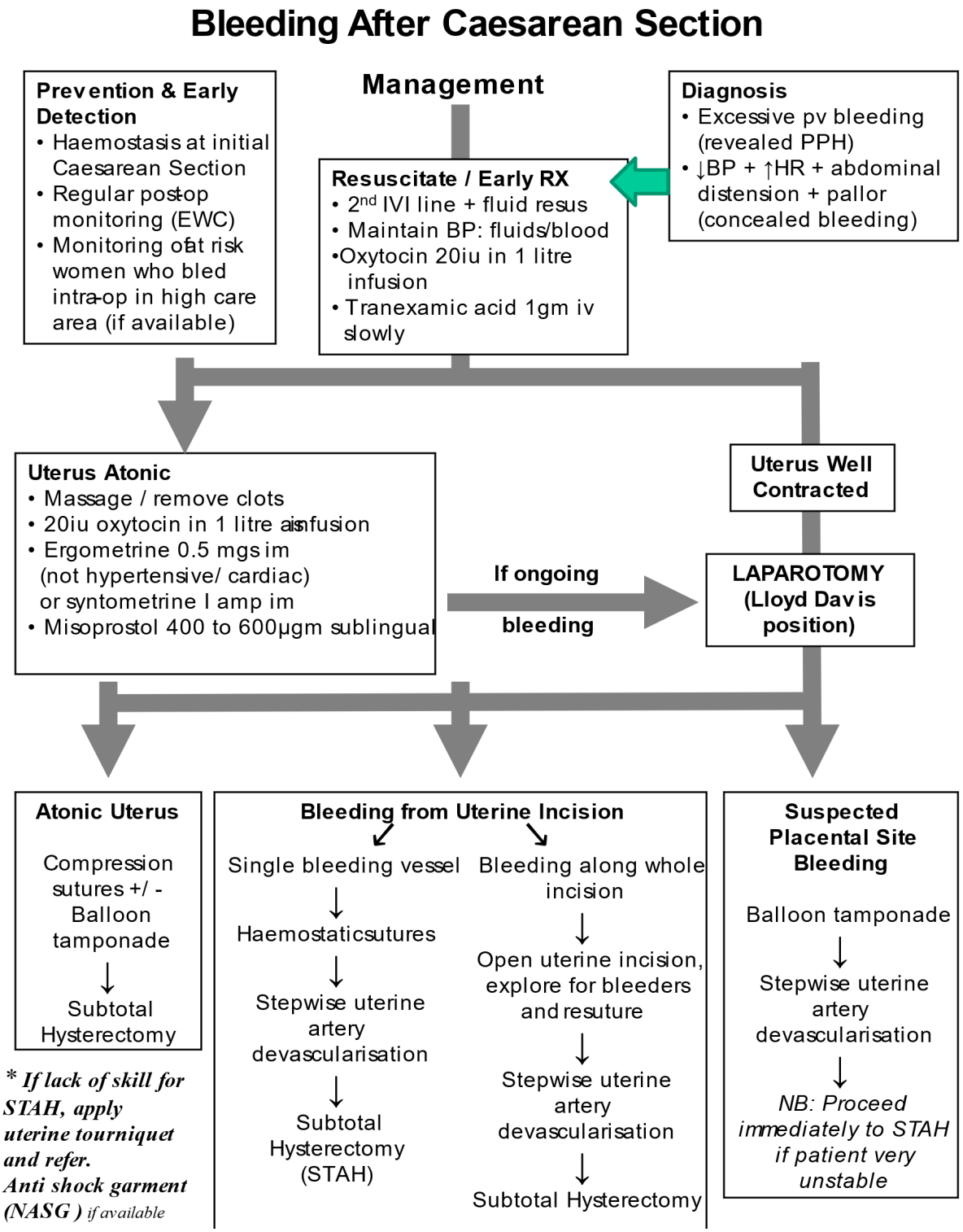


Figure 12-2 Management of bleeding after caesarean delivery

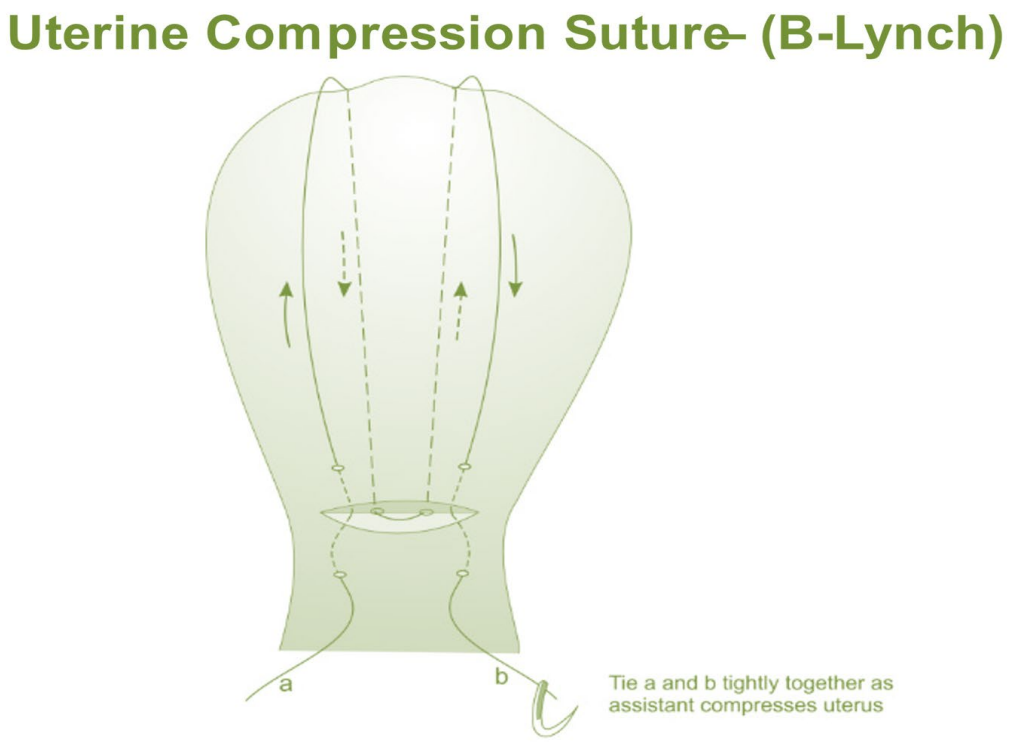


Insertion of uterine compression suture

Inserting a uterine compression suture suture

- This may be done for PPH after normal delivery (Hayman) or after caesarean section (B.Lynch).
    - Put the woman in a modified Lloyd Davies position (thighs spread but not flexed much), to allow surgery while observing for vaginal bleeding.
    - Exteriorise the uterus and open the lower segment (if post CS) with a transverse incision.
    - Compress the uterus with the hands. If this stops the bleeding, a B-Lynch brace suture or Hayman sutures) is likely to be successful
- Use a single 1 metre length of thick absorbable suture material (chromic or polyglycolic 1 or 2) with a large needle.
- Ensure that the assistant compresses the uterus well while the suture is tightened and tied.

Figure 12-3 Uterine compression sutures



Vaginal birth after previous caesarean section (VBAC)

Antenatal care for a woman with one previous CD may be conducted at a clinic or community health centre, but labour must be managed in hospital with continuous CTG and 24-hour theatre facilities.

- A doctor should preferably see the mother at the first antenatal visit (to review the history) and again at 36 weeks (to plan the mode of delivery).
- Women with a previous CD are at risk for ruptured uterus during labour.
    - The woman must have reliable transport if she chooses to VBAC; or stay in a maternity waiting home close to the hospital to await the onset of labour.

Indications for elective repeat caesarean delivery

- a previous vertical uterine incision (classical scar or any scar that extends into upper segment)
- previous ruptured uterus
- previous caesarean delivery for a very preterm baby where the type of incision is unknown
- two or more previous caesarean deliveries
- where the mother requests an elective CD after appropriate counselling (do not consent to a trial of labour after previous CD)
- other obstetric problems, e.g. multiple pregnancy, breech, transverse lie
- an estimated fetal weight >3500 g or a SF of 40 cm or more at term.
    - This may indicate a large baby and one should be very cautious to allow VBAC; but this is not an absolute contra-indication to vaginal delivery
- maternal BMI> 40 kg/m^2
    - one should be very cautious to allow VBAC; but this is not an absolute contra-indication to vaginal delivery

MANAGEMENT OF VAGINAL BIRTH AFTER CAESAREAN DELIVERY/SECTION (VBAC)

- Management is similar to normal labour with the following precautions:
    - exclude all the contraindications for VBAC listed above
    - conduct labour in a hospital that can perform CD on a 24-hour basis
    - run an intravenous drip with one litre Sodium Chloride 0,9% at 80-120 mL/hour and pass a urinary catheter to monitor urinary excretion
    - monitor with continuous CTG
    - always use a partogram (do two hourly vaginal examinations once in active labour) and intervene timeously
    - do not augment labour with oxytocin
- observe carefully for signs of imminent uterine rupture and do an emergency CD immediately if rupture is suspected (any of the following signs):
    - fetal tachycardia or fetal heart rate decelerations
    - significant vaginal bleeding
    - macroscopic haematuria
    - strong abdominal pain between contractions or pain over the scar
    - sudden cessation of contractions

Indications for emergency caesarean delivery at attempted VBAC:

- progress in the active phase of labour crosses to the right of the alert line (progress <1 cm/hour)
- there are signs of imminent uterine rupture (above)

Postpartum observations

- Close observation is necessary during the fourth stage of labour, as the uterus may occasionally rupture during vaginal delivery of the baby and only become evident after delivery.
- Signs of rupture, which should immediately be reported to a doctor, include:
    - rising maternal heart rate
    - a fall in blood pressure values
    - lower abdominal pain
    - moderate to severe lower abdominal tenderness
    - postpartum haemorrhage
    - haematuria
- If uterine rupture is suspected, do a laparotomy to repair the uterus. Obtain prior consent for hysterectomy, should this become necessary.

CAESAREAN DELIVERY SAFETY CHECKLIST

SIGN IN (To be said out loud before induction of anaesthesia)	TIME OUT (To be said out loud before skin incision)	SIGN OUT (To be said out loud before patient leaves the operation room)
Patient has confirmed ☐ Identity ☐ Procedure ☐ Consent	☐ Confirm all team members have introduced themselves by name and role	Practitioner verbally confirms with the team: ☐ Name of the procedure and any additional procedure has been recorded? ☐ Instruments, swabs and sharp counts are correct? ☐ Specimens have been labelled? ☐ Blood loss has been recorded?
☐ Anaesthesia safety check completed (Equipment and medication)	To Surgeon Are there any potential problems the team should be aware of? ☐ No ☐ Yes ☐ Mothers rhesus status known Does cord blood need to be taken? ☐ No ☐ Yes	
☐ Neonatal safety check completed (Equipment and medication)		
☐ Pulse oximeter on patient and functioning		
Is a difficult airway anticipated? ☐ No ☐ Yes and equipment and assistance is available		
Does patient have a known allergy ☐ No ☐ Yes	To Anaesthetist: ☐ Wedge placed? ☐ Any patient specific concerns?	Obstetrician, Anaesthetist and Scrub Nurse have discussed: ☐ Concerns for recovery and further management? ☐ Need for post-operative VTE prophylaxis? ☐ Need for postoperative antibiotics? ☐ Equipment problems that have been identified? ☐ Oxytocin 20 IU in 1000mls IVI ready to be administered
Assess bleeding risk (Pre op Hb .....g/dl) Risk factors for PPH. ☐ No ☐ Yes (i.e. prolonged labour, multiple pregnancy, big baby, polyhydramnios, grand multiparity, clotting dysfunction, PPH in the past). If yes, ☐ There is adequate IV access? Is emergency blood available? ☐ No ☐ Yes Are there any concerns about the placental site ☐ No ☐ Yes	To Scrub Sister ☐ Sterility of instruments confirmed ☐ Any equipment issues / concerns ☐ Diathermy and suction functional	
☐ Antibiotic prophylaxis give in the last hour? ☐ Appropriate / recent antacid prophylaxis given? ☐ Urinary catheter is draining	Patient Name: _____ Patient Surname: _____ Date of Birth: _____ Hospital number: _____ Date of Surgery: _____	Midwife has confirmed that ☐ Baby/ies been correctly labelled? ☐ Relevant cord bloods have been taken?
Are any additional procedures planned? ☐ IUCD ☐ BTL ☐ N/A		
Is the foetal heart present? ☐ No ☐ Yes		
NAME AND SIGNATURE OF HEALTHCARE WORKER	NAME AND SIGNATURE OF HEALTHCARE WORKER	NAME AND SIGNATURE OF HEALTHCARE WORKER

Figure 12-4 Caesarean delivery safety check list adapted from the WHO for use in SA

Chapter 13: HYPERTENSIVE DISORDERS IN PREGNANCY

- Hypertensive disorders in pregnancy (HDP) are a common cause of maternal and perinatal morbidity and mortality.
- HDP are the commonest direct cause of maternal deaths in South Africa.
- Therefore, identifying women at risk, eliciting clinical signs, providing immediate emergency medical care in cases with acute severe hypertension or eclampsia and timely stabilisation and referral to an appropriate higher level of health care will prevent complications.
- There is an association between hypertensive disorders in pregnancy and antenatal depressive and anxiety symptoms. Nulliparous women are especially at high risk. Thus, it is important to conduct mental health screening (see chapter on mental health) for women at high risk of pre-eclampsia and /or gestational hypertension.

Definitions

Hypertension

- A systolic blood pressure ≥ 140 mmHg but <160 mmHg on two occasions, taken at least 4 hours apart, AND/OR a diastolic blood pressure ≥ 90 mmHg but < 110 mmHg on two occasions, taken at least 4 hours apart.
- A raised systolic pressure is indicative of hypertension even in the absence of a raised diastolic blood pressure.
- A single systolic BP ≥ 160 mmHg AND/OR a diastolic BP ≥ 110 mmHg is also diagnostic of HDP.
    - This is called acute severe hypertension and is a medical emergency.
    - Such levels of blood pressure require urgent management and referral.

Significant proteinuria

- The presence of ≥2+ proteinuria on a visual test strip (dipstick) in a clean catch urine specimen on two occasions, at least 4 hours apart.
- Screening for proteinuria using visual urinary test strips / dipsticks must be done at each routine antenatal visit or admission to hospital.

Classification

Chronic Hypertension

- Hypertension that is present before 20 weeks of pregnancy.
- It usually predates pregnancy (the woman was taking antihypertensive medication/s prior to the pregnancy).
- Patients with chronic hypertension are at increased risk for super-imposed pre-eclampsia and therefore should be seen more frequently than the standard practice during the antenatal period.

Gestational Hypertension

- New onset of hypertension presenting for the first time after 20 weeks of pregnancy without significant proteinuria and with normal biochemical and haematological parameters (see below).
- Gestational hypertension usually occurs after the 34th week of pregnancy and is usually not associated with intra-uterine fetal growth restriction.
- About a quarter of women with gestational hypertension will develop superimposed pre-eclampsia, particularly those that present with gestational hypertension <34 weeks.

Pre-eclampsia

- Hypertension associated with significant proteinuria occurring for the first time after 20 weeks of pregnancy.
- The diagnosis of pre-eclampsia can also made in the absence of proteinuria but there must be evidence of maternal organ damage such as acute kidney injury, liver dysfunction, thrombocytopenia or fetal intra-uterine growth restriction.
- Pre-eclampsia may also occur for the first time during the intrapartum or in the early post-partum period.

White Coat Hypertension

- This refers to hypertension that is present from early pregnancy when measured at a clinical examination, but is normal at home. It conveys an increased risk for pre-eclampsia.

Significant proteinuria without hypertension

- Can be chronic (prior to pregnancy) or new (which may be the first sign of the development pre-eclampsia).

Figure 13-1 Maternal features of severe hypertensive disease

Any one or more of the following:

- Acute severe hypertension (diastolic BP of ≥ 110 mmHg and/or systolic ≥ 160 mmHg).
- New-onset severe headache unresponsive to medication.
- Visual disturbances.
- Thrombocytopenia (platelet count <100 000/µL).
- Impaired liver function (ALT or AST >40 IU/L).
- Severe persistent right upper quadrant or epigastric pain.
- HELLP syndrome (platelets <100 000 and AST >70 µl and LDH >600 µl).
- Serum creatinine ≥120 micromole/L.
- Pulmonary edema

Eclampsia

- Generalised tonic-clonic seizures after 20 weeks of pregnancy and within 7 days after delivery, associated with hypertension and proteinuria.
- Note that pregnant women with epilepsy are more likely to develop pre-eclampsia.
    - Therefore, epileptics who manifest with new onset hypertension and seizures must be managed as eclampsia.

HELLP Syndrome

- This refers to the presence of haemolysis, elevated liver enzymes and low platelets, in association with hypertension and proteinuria.
- The HELLP syndrome is a variant of pre-eclampsia; it is not a separate disorder but a serious complication and requires specialist management.

Measurement of blood pressure

- Measure BP with the patient preferably in a relaxed sitting position with both feet flat on the ground, keeping the arm at the level of the heart.
- Measure BP in each arm and use the arm in which the BP is higher for all future measurements.
- Measure the BP with a device validated for use in pregnancy.
    - Use the correct cuff size (length of 1.5 times the circumference of the arm)
    - Use “obese cuff” (15x33 cm) if the middle upper arm circumference is > 33 cm
- Patient may sit or lie on her side – never flat on her back!
- Cuff should be at the level of the heart during measurement
- Measure the diastolic blood pressure at the point where the sounds disappear (Korotkoff phase five). In patients where the sounds do not disappear, use the point of muffling (Korotkoff phase four).

Women at risk for the development of pre-eclampsia

- ANY pregnant women CAN develop pre-eclampsia. Those most at risk are antenatal attendees who have at least one of the features below:

    - primigravidae, in particular teenagers
    - age 35 years and above
    - previous pregnancy complicated by HDP
    - previous abruptio placentae or unexplained intra-uterine death
    - multiple pregnancies
    - medical complications such as chronic hypertension, renal disorders, diabetes, connective tissue disorders or antiphospholipid syndrome
    - obesity
    - women who develop edema in the mid trimester or have excessive or rapid weight gain

Assessment of antenatal patients at PHC clinics, community health centres and district hospitals

- Ensure that a detailed history and examination of the patient is performed at first presentation. (Take a detailed history of the presence of risk factors of pre-eclampsia).
- All Primary Heath Care providers must know the indications for and the site of next level of health care for referral of patients with an HDP.
- The main regional hospital in the health district should develop and send out referral indicators, next level of health care/expertise and guidelines for management at a local level.
- Inform women, their families and the community of the early symptoms and signs of the onset of pre-eclampsia.
    - The information should be disseminated to communities by the primary health care nurse and by all maternity care health professionals to pregnant women at every antenatal visit, through group sessions and pictorial charts illustrating swollen feet, symptoms of persistent headaches, visual disturbances and nausea and vomiting.

The role of district hospitals in managing hypertensive disorders in pregnancy

- District hospitals (DH) should be able to manage women with gestational hypertension and women with pre-eclampsia without severe features in conjunction with a specialist at their regional hospital of referral.
- Staff at DHs should stabilise and refer patients with acute severe hypertension, severe pre- eclampsia, imminent eclampsia or eclampsia; to a specialist centre.
- Patients can be stabilised by judiciously lowering high blood pressure, instituting emergency obstetric care and transferring the patient (following telephonic contact) to a specialist hospital.

Actions to take if there is a rise in blood pressure from a previous visit

- If the patient still has normal blood pressure, but there was a rise in systolic or diastolic of 30 mmHg or 15 mmHg respectively since booking, ensure she is given an appointment to return in three to five days to repeat blood pressure measurement.

Measures to prevent pre-eclampsia

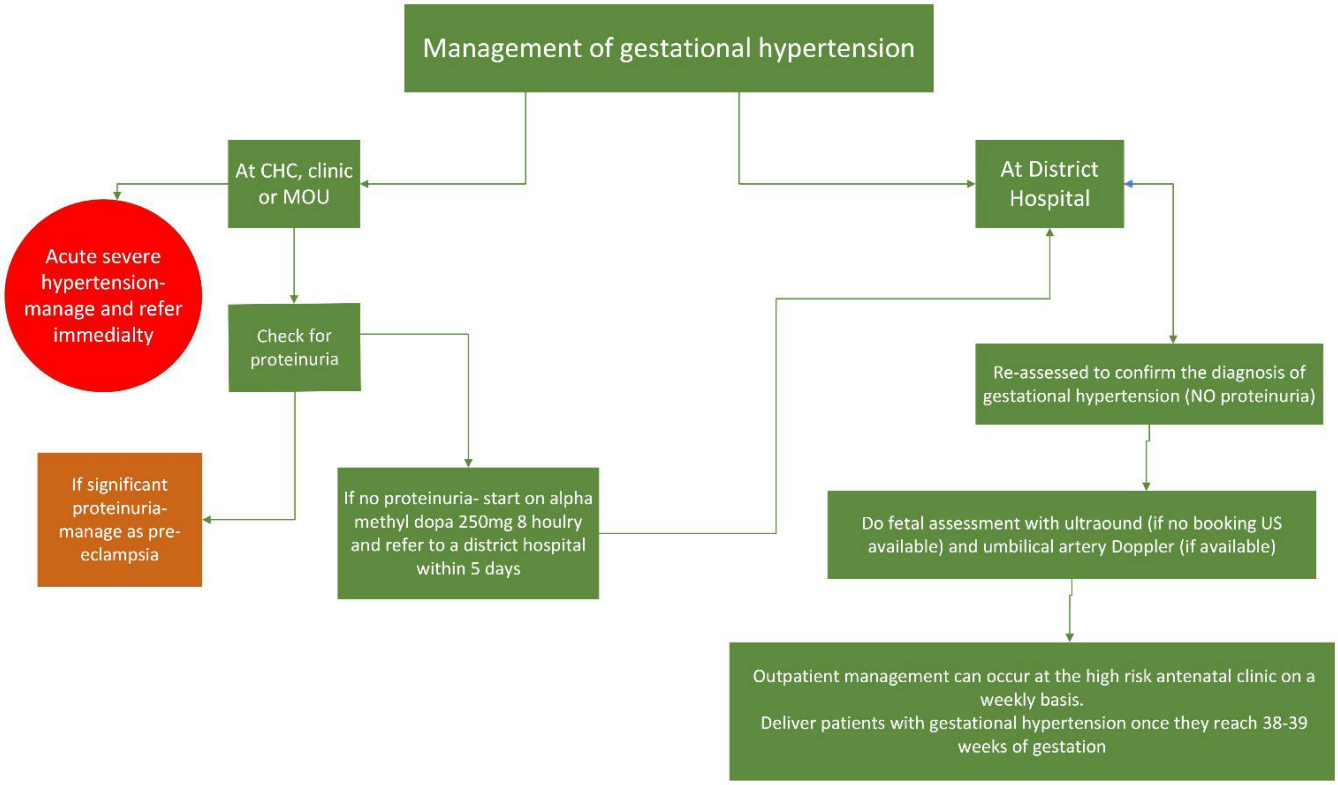
- The following may help to reduce the chance of a women getting pre-eclampsia:
- Calcium supplementation to all pregnant women:
    - 1 gram elemental calcium in divided doses (e.g. calcium carbonate, oral, 500 mg 12 hourly or 1 g in the morning).
- For women at high risk of pre-eclampsia, e.g. pre-eclampsia in a previous pregnancy, chronic hypertension or diabetes:
    - Aspirin 150mg taken at bedtime (at night – to prevent gastric irritation) from 6 weeks of gestation (but preferably before 16 weeks) until 36 weeks.

How to manage hypertensive disorders in pregnancy:

Gestational hypertension

(Hypertension only (no proteinuria) without organ involvement on blood investigations)- see Fig 13-2

Figure 13-2 Management of gestational hypertension



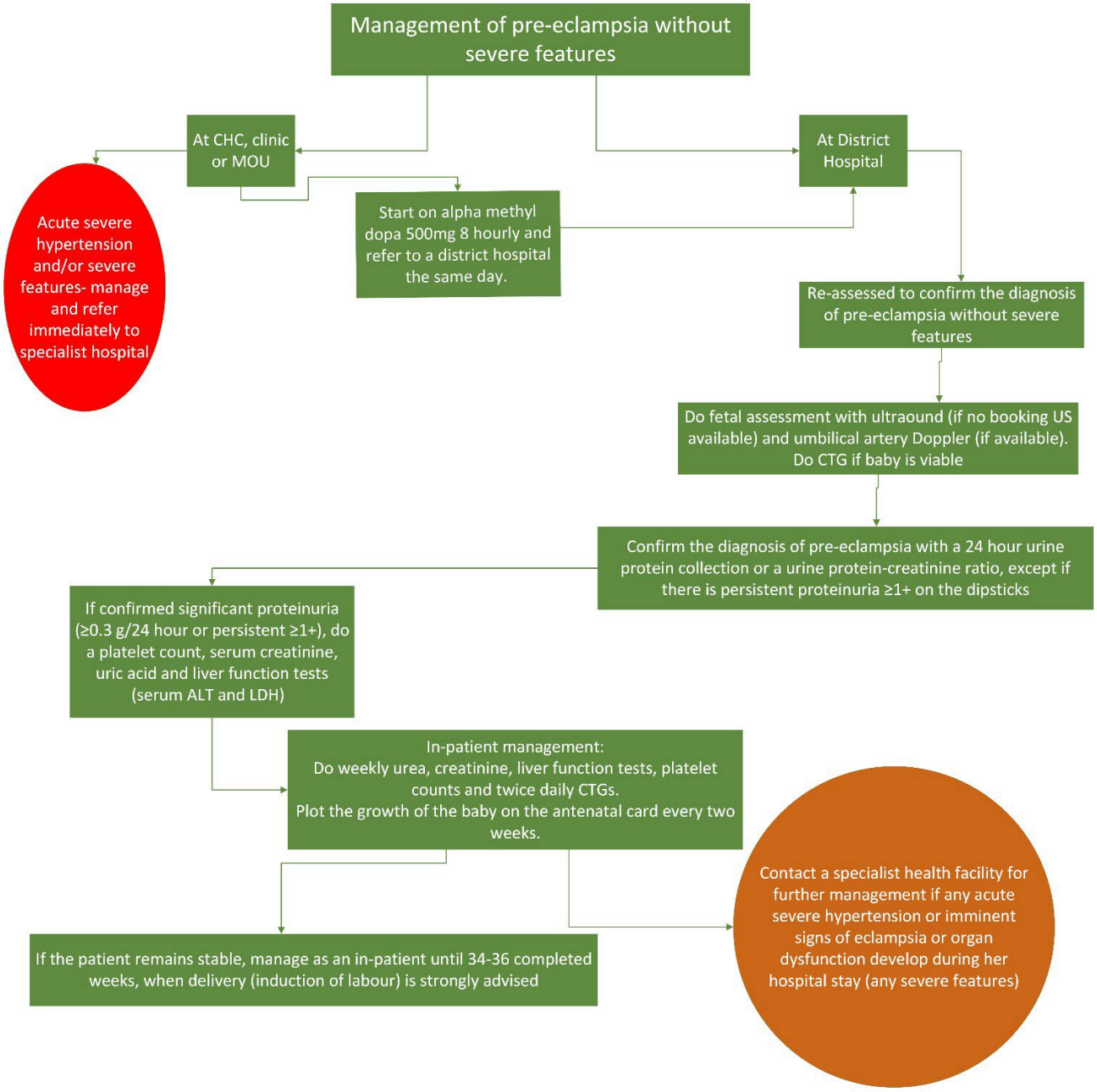
Chronic hypertension

(Hypertension only without organ involvement on blood investigations)

- Switch pre-gestational medication (e.g. ACE-inhibitors or diuretics) to methyldopa and/or amlodipine at the first visit
- Add aspirin and calcium for pre-eclampsia prophylaxis (see dose above)
- Refer to a doctor's clinic or district hospital clinic within 5 days
- Aim to keep BP<140/90mmHg
- At district hospital: manage as above for gestational hypertension

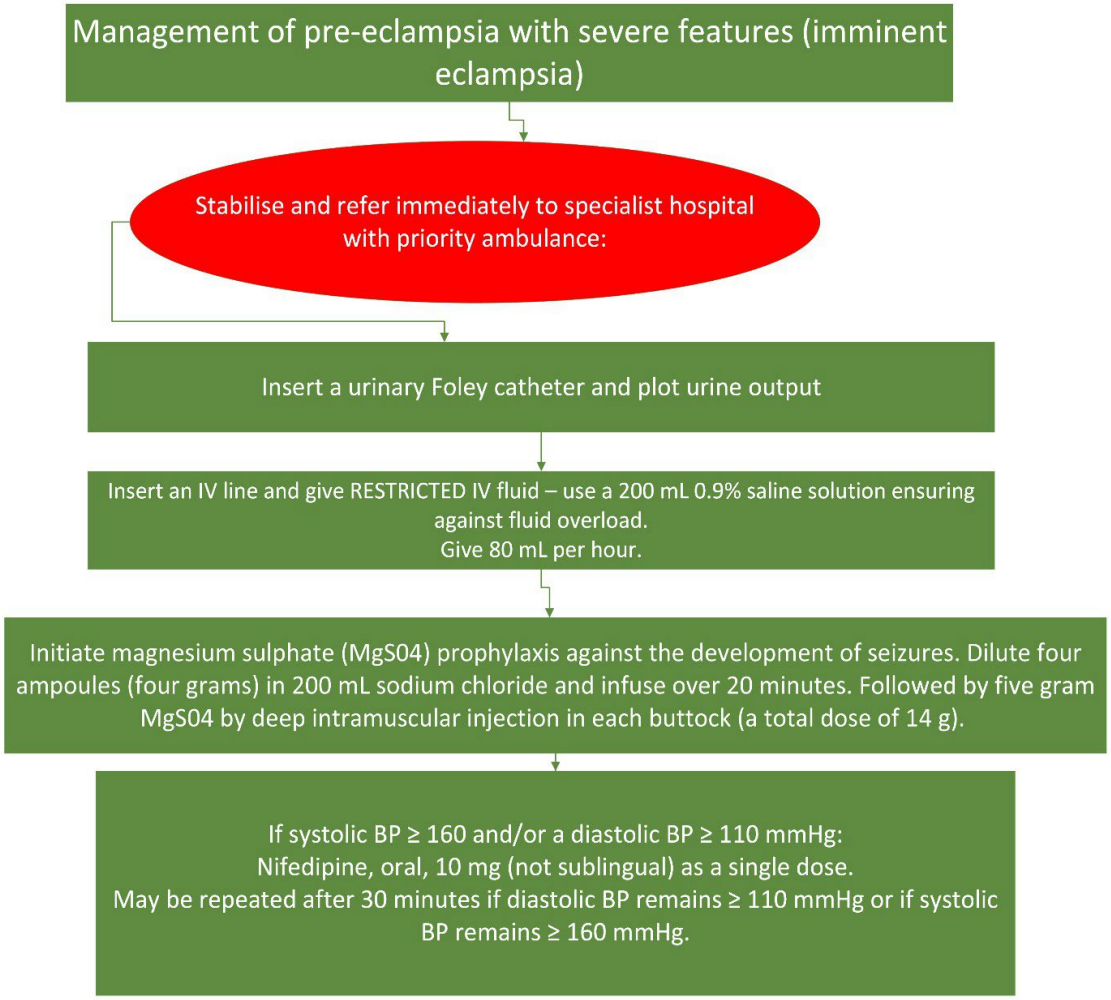
Pre-eclampsia without severe features

Figure 13-3 Management of pre-eclampsia without severe features



Pre-eclampsia with severe features

Figure 13-4 Management of pre-eclampsia with severe features



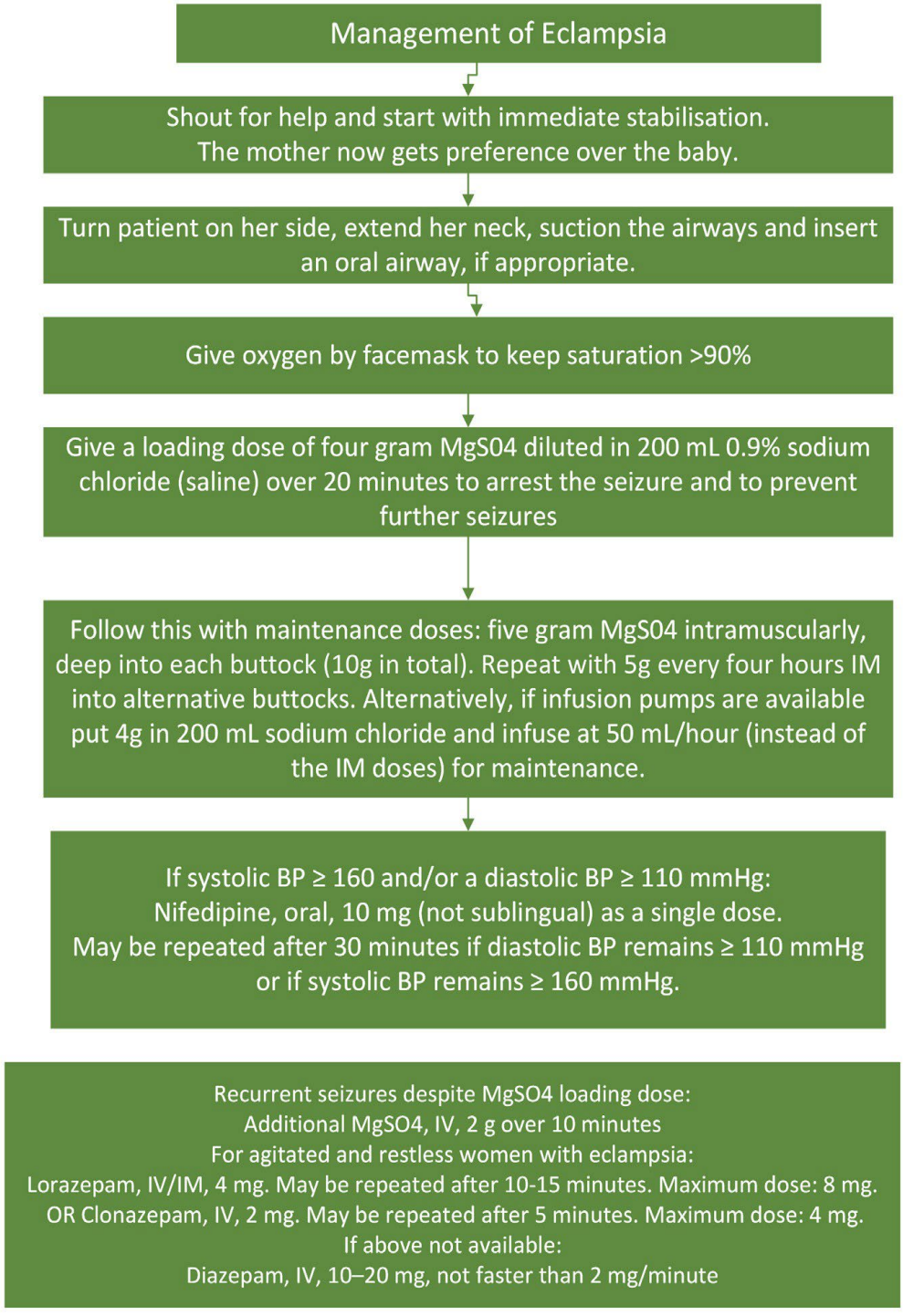
- Make all efforts to transfer to specialist care immediately, as the mother and or baby may need high care or ICU during the course of the disease.
- If transfer is not possible (e.g. mother very close to delivery) manage as follows at the district hospital:
    - blood pressure levels must be kept below 160 mmHg systolic and 110 mmHg diastolic with the use of quick acting nifedipine 10 mg orally
- If there is still acute severe hypertension after three doses of quick acting nifedipine, the patient needs intravenous labetalol to control her high blood pressure- by this time she should preferably already be at specialist level of care, as labetalol is not available at primary care.
- This should preferably take place within a high care setting with invasive blood pressure monitoring:
    - Labetalol, IV infusion, 2 mg/minute to a total of 1–2 mg/kg.
    - Reconstitute solution as follows:
        - Discard 40 mL of sodium chloride 0.9% from a 200 mL container.
        - Add 2 vials (2 x 100 mg) of labetalol (5 mg/mL) to the remaining 160 mL of sodium chloride 0.9% to create a solution of 1 mg/mL.
        - Start at 40mL/hour to a maximum of 160 mL/hour.
        - Titrate against BP – aim for BP of 140/100 mmHg.
- Once hypertensive crisis has resolved, switch to an oral preparation.
- Alternatively, if emergency use is needed on the way to a high care setting and an infusion is not possible:
    - Give labetalol 20 mg IV
    - if there is still acute severe hypertension after 20 minutes give a further 40 mg labetalol IV
- be aware of fluid balance and check the pulse rate, respiratory rate and chest examination for signs of pulmonary edema, and urine output at each time/period of observation
- be aware of a pre-eclamptic patient with respiratory rate >24/minute- examine the lungs carefully for pulmonary edema
- continue observations following delivery in a high care area or designate a bed in which regular observations are done (blood pressure, pulse rate, respiratory rate, chest examination and fluid balance – use the early warning charts in the MCR or similar. Observations should be done:
    - half hourly for two hours
    - then hourly for four hours
    - then two hourly for eight hours
    - then four hourly
- MgSO4 should be continued for up to 24 hours after delivery.
- the best mode of delivery for severe pre-eclampsia and eclampsia is vaginally; CD is only done for the usual

indications.

- Anaesthesia for severe pre-eclampsia is complicated and should best be done by a specialist anaesthetist.
    - If the patient is in labour or has a favourable cervix, there is no contraindication for vaginal delivery. Always seek specialist advice.

Management of eclampsia

Figure 13-5 Management of eclampsia



Once stabilised:

- Draw blood for haemoglobin, platelet count, creatinine, ALT and LDH.
- Assess the fetal condition ONLY once the mother is completely stable AND the platelet count is known. Rule out abruptio placenta or intra-uterine growth restriction. Do a CTG only if the baby is viable.
- Assess whether the patient is in labour, as women with eclampsia often go into spontaneous labour.
    - In these circumstances, if vaginal delivery is not contraindicated, allow spontaneous vaginal delivery before transfer.
    - However, ensure that there is no excessive bearing down and do not use ergometrine containing drugs.
    - Instead, use oxytocin 10 units intramuscularly for the active delivery of the placenta and for prevention of postpartum haemorrhage.
- Notify the person who will resuscitate the newborn that a benzodiazepine and/or magnesium has been given to the mother
- Note that irrespective of an eclamptic woman's condition, advice must be obtained from an experienced

obstetrician, and detailed notes made.

- If the patient is not in labour, once the mother is stable, she must be transferred to a specialist level of care.
- Assess the general condition of the patient using the AVPU scale (whether the patient is Alert, responds to Verbal questions, responds to Pain, or is Unresponsive). The Glasgow Coma Scale is an alternative.

- Ideally patients with acute severe hypertension, pre-eclampsia with severe features or eclampsia should be managed at a specialist health care facility as soon as they are stable enough for transfer.
- Anaesthesia in woman with eclampsia is extremely complicated and should preferably be done by a specialist.
- Stop magnesium sulphate if knee reflexes become absent or If urine output <100 ml/ 4 hours or respiratory rate <16 breaths/minute.
- If respiratory depression occurs, give Calcium gluconate 10%, IV, 10 mL slowly at a rate not exceeding 5 mL/ minute.

Postpartum and postnatal care

- Women who develop severe features or eclampsia for the first time after delivery need referral to specialist care after stabilisation.
    - Use MgS04 as above to stabilise and for transfer.
- Patients with hypertension during pregnancy need to stay in hospital after delivery until the blood pressure is well controlled (< 150/100 mmHg) for at least 24 hours.
- Use quick acting nifedipine 10 mg orally as needed to manage acute severe hypertensive spikes in the post-partum period.

Management of the asymptomatic patient who had isolated high blood pressures during labour only (no hypertension in the antenatal period and no significant proteinuria):

- Observe post-partum until the blood pressure settles (usually one to three days).
- If diastolic blood pressure repeatedly raised ≥110 mmHg OR the systolic blood pressure rises to >160 mmHg (treated with 10 mg doses of nifedipine), start on maintenance anti-hypertensive medication.
- If the systolic blood pressure is 140-150 mmHg and/or the diastolic blood pressure is 90-100 mmHg, treatment is not necessary. Observe patient for 24-48 hours and follow up at a district health service postnatal clinic within three days.
- The patient should return for care if she experiences persistent dizziness or headaches.

Patients who had gestational hypertension

- Preferably, stop the methyldopa after delivery (as it can exacerbate post-partum depression) and switch to other anti-hypertensive medication if needed.
- Confirm that the blood pressure is stable for 24-hours before discharge.
- Follow up at a district health service post-partum clinic within three days and again at six weeks post-partum, to evaluate the need for continuation of medication.
- If maintenance therapy is needed, provide a prescription for four weeks with discharge so that the client is without medication for two weeks when followed up at the six weeks visit. A good assessment can then be made as to whether she will need further workup for hypertension and chronic medication.
- If she was discharged on more than one drug to control the blood pressure, rather do a step-wise withdrawal of one drug at a time with more regular follow up, preferably at a specialist high-risk clinic.
- The patient should return for care if she experiences persistent dizziness or headaches.

Patients with chronic hypertension

- Can be changed to the drugs they used before pregnancy (if it is safe to use during lactation) and discharged as soon as they are stable.
- They can be followed up after three days and again after 6 weeks at the district health service postnatal clinic.
- The patient should be managed with anti-hypertensive medication after delivery and kept in hospital until blood pressure is controlled for 72-hours and all the biochemistry / organ systems are back to normal.
- Follow up three days after discharge and again at six weeks post- partum at a high-risk postnatal clinic, to evaluate the need for continuation of medication.
- If there is good control with one drug only, provide a prescription for four weeks with discharge, so that the client is without medication for two weeks when followed up at the six weeks visit. A good assessment can then be made as to whether she will need further workup for hypertension and chronic medication.
- If she was discharged on more than one drug to control the blood pressure, rather do a step-wise withdrawal of one drug at a time with more regular follow up at a high-risk clinic.
- The patient should return for care immediately if she experiences persistent dizziness or headaches.

Choice of drugs for post-partum hypertension

- A general approach would be to use the cheapest effective drug available at all levels of care and to adhere to the guidelines on hypertension outside of pregnancy, as the clients will be managed after the puerperium according to those guidelines.
- A first choice would thus be an ACE inhibitor e.g. enalapril at a dose of 5 mg in the morning, can be increased to 20 mg daily. (Only prescribe if the patient's renal function is within normal limits.)
- When a second drug is needed, add a calcium channel blocker e.g. amlodipine 5 mg daily and increase to 10 mg daily when needed.
- When a third drug is needed, use a beta blocker (atenolol) 50 mg daily. Can be increased to 100 mg daily if needed.
- Hydrochlorothiazide can be started as a first line drug in cases of chronic hypertension (12.5 mg daily, increase to 25 mg daily when needed).
- As with the prescription of any drug, check for contra-indications and possible drug interactions before prescription.

Remember to counsel the patient and or family about

- contraception (see chapter on contraceptive choices)
- future pregnancies
- the need for follow up visits
- the potential development of cardiovascular disorders and metabolic disorders in later life.

Most frequent causes of maternal deaths associated with hypertensive disorders:

- Cerebral haemorrhage and severe cerebral edema usually due to acute severe uncontrolled high blood pressure. Therefore, lowering of very high blood pressure requires drugs which act rapidly. Lower high blood pressure using quick acting Nifedipine tablets or intravenous Labetalol in such circumstances. Methyldopa should be used at the same time, but its onset is variable and may take 12 to 24 hours to act. Note that Magnesium Sulphate is not antihypertensive, therefore rapid acting agents must be used to lower very high blood pressure over two hours to stabilise prior to transfer.
- Pulmonary edema which may be due to iatrogenic fluid overload, therefore do not overload patients with IV fluids and closely monitor urine output and fluid intake.
- Be aware of abruptio placentae or liver rupture in cases of pre-eclampsia with severe features.
- Renal impairment and acute renal failure may occur following delivery therefore fluid balance monitoring is essential.

Chapter 14: ANTEPARTUM HAEMORRHAGE (APH)

- Antepartum haemorrhage (APH) is defined as any bleeding from the genital tract from 20 weeks of pregnancy up to delivery of the baby.
- This can cause a lot of fear and anxiety for the woman and can be stressful for the staff member.
    - Remember to remain supportive and empathic during management

Causes

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

NB: do not ignore bleeding if postcoital, it still can signify pathology.

Emergency management

At a clinic or community health centre

- Start an intravenous infusion of one litre Sodium Chloride 0,9%.
- If the mother is in shock, resuscitate with one to two litres of Sodium Chloride 0,9%.
- Do not do a digital vaginal examination unless placenta praevia has been excluded by an ultrasound scan.
- Transfer urgently from a clinic or community health centre to a specialist facility where 24 hour CD services and adequate blood supply is available.
- Use NASG (Non-Pneumatic Anti-Shock Garment) if available if patient is in shock for transfer to the specialist unit (do not apply the abdominal panel). NASG is described in the PPH chapter.

At the hospital

- Re-evaluate the patient.
- If bleeding is mild:
    - Take blood for Full Blood Count and cross match and perform point of care Haemoglobin estimation.
    - Do an ultrasound scan to help with the diagnosis.
    - If placenta praevia is found, manage accordingly.
    - If no placenta praevia, exclude an abruptio placentae by doing a full clinical examination and CTG.
    - Frequent uterine contractions (>5/10 minutes), an irritable uterus and an audible but abnormal fetal heart suggest a small abruptio placentae
    - A tender hard uterus and absent fetal heart suggest a major abruptio placenta (NB: distinguish CTG tracing from maternal pulse, and if in doubt confirm fetal viability with ultrasound scan)
    - Do a speculum examination to exclude a local cause.

Further management depends on the cause:

If bleeding is severe

- Take blood for FBC and cross match and resuscitate with IV fluids and blo od.
- Make a clinical diagnosis of whether abruptio placentae or placenta praevia and manage according to the cause.
- For a distinction between abruptio placentae and placenta praevia, see Table 14-1

Table 14-1 Guide to distinguish between abruptio placentae and placenta praevia

	Abruptio placentae	**Placenta praevia**
Patient	Often hypertensive	
History of abdominal trauma	May be present	
Symptoms	Pain almost always present. Fetal movements may be absent or reduced.	Usually, painless. Often history of previous caesarean section. Fetal movements usually normal.
Abdominal examination	Hard, tender uterus, large for expected dates.	Soft, non-tender uterus, often with malpresentation or high presenting part.
Bleeding	Dark blood with clots, occasionally no external bleeding visible.	Bright red blood.
Ultrasound	Fetus may be dead, placenta normally situated. Retroplacental clot may be seen.	Placenta implanted in lower segment; close to or over the cervix.

Management of placenta praevia

- Continue resuscitation.
- Check Hb level and cross match.
- If less than 10 g/dL, commence blood transfusion and transfer urgently to a specialist hospital.
- Patient must preferably be accompanied by life support personnel if transfusion in progress.

At the Specialist hospital

- Distinguish major praevia (placenta partially or completely covering cervical os) from minor (placenta within 2cm if internal os), by ultrasound.
- Obtain consent for CD and hysterectomy (hysterectomy may be necessary with excessive intraoperative bleeding; more likely with major praevia or morbidly adherent placenta which is often associated with previous CD).
- Blood must be available for surgery.
- If the bleeding is significant, perform a caesarean delivery supervised or done by an experienced doctor or specialist, and with an anaesthetist who is skilled in general anaesthesia as well as regional.
    - Note that PPH may occur.
- If less than 36 weeks, and bleeding subsides, manage conservatively. Keep in hospital, administer steroids if less than 34 weeks, and observe vital signs.
    - Deliver electively after 36 weeks by CD.
- If patient is Rhesus negative and expectant management followed, give anti-D immune globulin to protect against RhD alloimmunization.

Management of abruptio placentae

- Abruptio placentae is strongly associated with pre-eclampsia: the blood pressure may be low due to the presence of clinical shock and there will be tachycardia, but hypertension may manifest as soon as the patient is resuscitated.
- Proteinuria may be an indicator of underlying pre-eclampsia with abruptio placentae.

If the fetus is alive and viable

- If the fetal heart rate is >100/minute as recorded on CTG, resuscitate the patient and perform emergency CD, unless delivery is imminent (cervix ≥9 cm dilated).
    - NB: Be sure that the patient is haemodynamically stable, and that the fetus really is alive on ultrasound before surgery. A CTG occasionally picks up a maternal heart rate when the fetus has already died.
- For a non-viable baby, rupture the membranes and plan vaginal delivery. Occasionally, augmentation of labour with oxytocin may be necessary.
    - Monitor blood loss carefully.

If the fetus is dead

- A dead fetus with abruptio placentae signifies massive blood loss and early onset of coagulopathy.
- Rupture the membranes urgently, even if the cervix is not favourable, and resuscitate with IV fluids and blood and fresh dried plasma (if available, otherwise fresh plasma) and transfer urgently to a specialist hospital unless delivery is imminent.

On arrival at specialist hospital, manage as follows:

- Aim to deliver vaginally within eight hours.
    - Rupture membranes if not done yet, as soon as possible, even if the cervix is unfavourable
- Take blood for cross-match, FBC, INR, PTT, and urea and creatinine.
    - Can also do whole blood clotting time in glass tube; it should be less than 7 minutes.
- Blood transfusion (two to four units) is usually necessary, with two units of Freeze Dried Plasma (FDP) or fresh frozen plasma (see massive transfusion protocol in the blood transfusion chapter)
- Give oxygen via face mask and keep patient warm.
- Consider a central venous pressure (CVP) line through a cubital vein, if feasible
- Insert an indwelling urinary catheter and monitor hourly urine output.
- Give fluids to maintain the systolic BP ≥100 mmHg, or a CVP of six cm H20, but beware of fluid overload in patients with underlying pre-eclampsia
- If there is no progress of labour within one to two hours after membrane rupture, augment with oxytocin if not contraindicated.
- Give analgesia using morphine (0.1mg/kg to a maximum dose of 10mg) IM four hourly if necessary.
- Caesarean delivery is indicated if:
    - there is lack of progress despite oxytocin augmentation, life-threatening haemorrhage, ongoing DIC, or severe oliguria
    - the patient is not near delivery after eight hours
    - there is doubt about the diagnosis and there could be uterine rupture (especially if previous CS)
- This is a high-risk procedure and must preferably be done in a specialist institution.

Following delivery, there is a significant risk of complications (Massive PPH, Coagulopathy and Acute Kidney Injury)

- Active management of the third stage is mandatory.
- In addition, add oxytocin 20 U in one litre Sodium Chloride 0,9% immediately after delivery and observe for bleeding. Do not remove the IV line for at least 12 hours.
- Monitor vital signs hourly, fluid balance and observe for postpartum haemorrhage for at least twelve hours.
- Manage associated pre-eclampsia
- Check Hb, platelet count, urea and creatinine on the day after delivery.
- Be aware of complications (DIC, renal failure, pulmonary oedema) and take the necessary precautions.
- Provide psychological support and advice about contraception and future pregnancies.

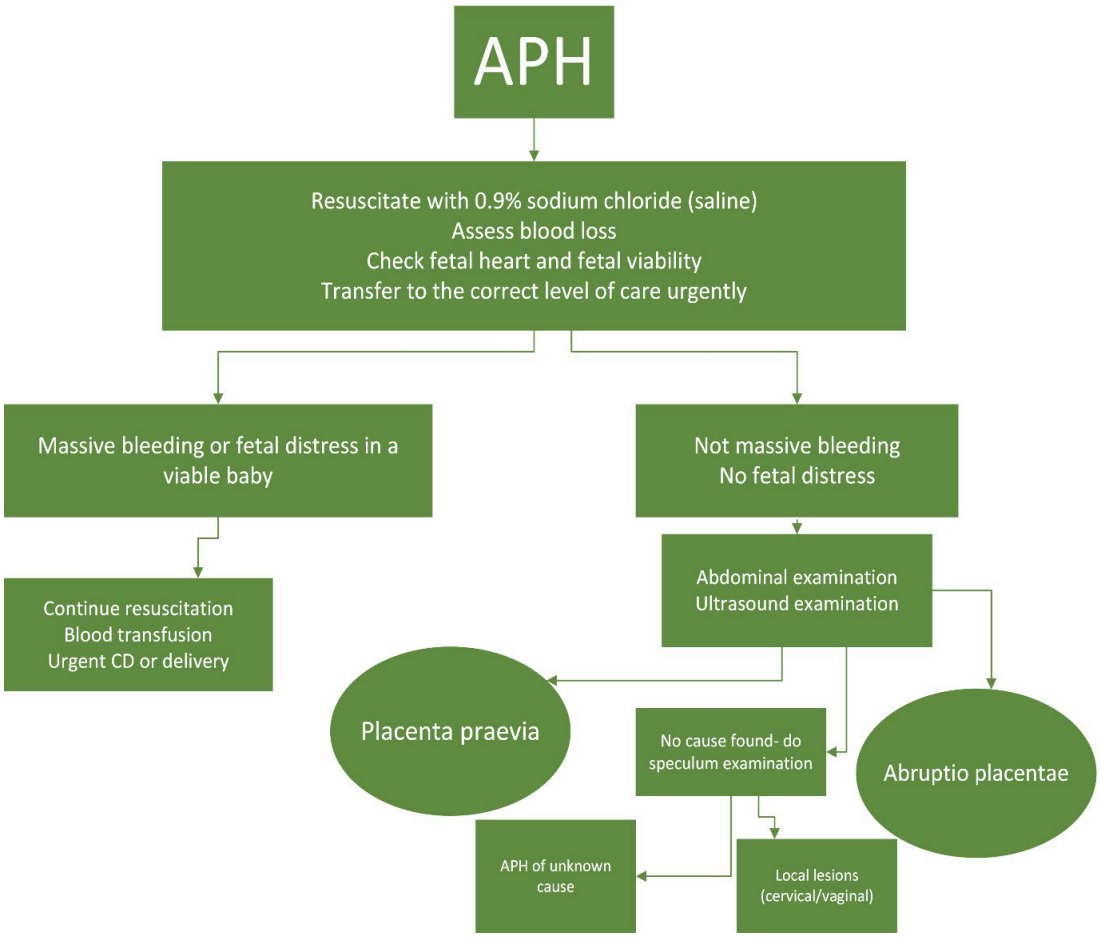
If delivery occurred at a District hospital, transfer to a Specialist Facility if:

- the woman also has severe pre-eclampsia or eclampsia.
- there is evidence of coagulopathy; spontaneous bleeding from the mouth or puncture sites, or prolonged clotting time
- urine output is less than 30 mL/hour for more than four hours.
- there is pulmonary edema.
- there is evidence of acute renal failure - increasing urea and creatinine levels.
- there is severe thrombocytopenia (<50,000/mm^3).

Antepartum haemorrhage of unknown origin

- This is a common problem in obstetrics, where APH occurs with no evidence of abruptio placentae, placenta praevia, or cervical or vaginal (local) causes.
    - admit the mother to hospital to exclude an abruptio that may not initially be clinically apparent
    - do six hourly CTG until the bleeding stops; then daily CTG
    - observe for symptoms and signs of abruptio placentae
    - give steroids if less than 34 weeks and delivery may be imminent
    - discharge from hospital 24-48 hours after bleeding has stopped
    - assess the cervix before discharge to excluded imminent preterm labour
    - continue antenatal care visits at hospital, with attention to fetal growth and fetal movements; consider delivery at 38 weeks

Figure 14-1 Algorithm for the diagnosis and management of APH



Chapter 15: POSTPARTUM HAEMORRHAGE (PPH)

- PPH is associated with postpartum depression, and possibly post traumatic stress symptoms.
- During PPH, the woman may experience intense fear of death, especially if she is a sole carer for other children.
- Continuous compassionate communication with the woman during and after the PPH is key.
- Offer debriefing at the facility or with a mental health support organisation after discharge - see resources in mental health chapter

Primary PPH

- This is defined as excessive blood loss from the genital tract during the first 24 hours after delivery.
- PPH is considered mild with blood loss from 500-1000 mL, severe with blood loss from 1000-2500 mL, and massive with blood loss of >2500 mL.
- However, estimating blood by visual estimation is subjective and tends to underestimate the true volume of blood loss.

PPH after vaginal delivery

PPH and its complications can be prevented or minimised by:

- Ensuring skilled attendance at delivery if necessary
- By providing maternity waiting homes for women who have no reliable transport to get to the delivery facility when in labour
- Referring women with risk factors (e.g, placenta praevia) to the appropriate higher level of care for delivery
- Iron supplementation in pregnancy and antenatal screening and treatment of anaemia
- Partogram/labour graph-based management of the first stage of labour to prevent prolonged labour
- Routinely practising active management of the third stage of labour
- Identifying women at risk for atonic uterus and giving additional oxytocin (20 units in one litre Sodium Chloride 0,9% at 120- 240 mL/hour) after active management of the third stage
- Close observation of vital signs, uterine contraction, and bleeding in the fourth stage of labour

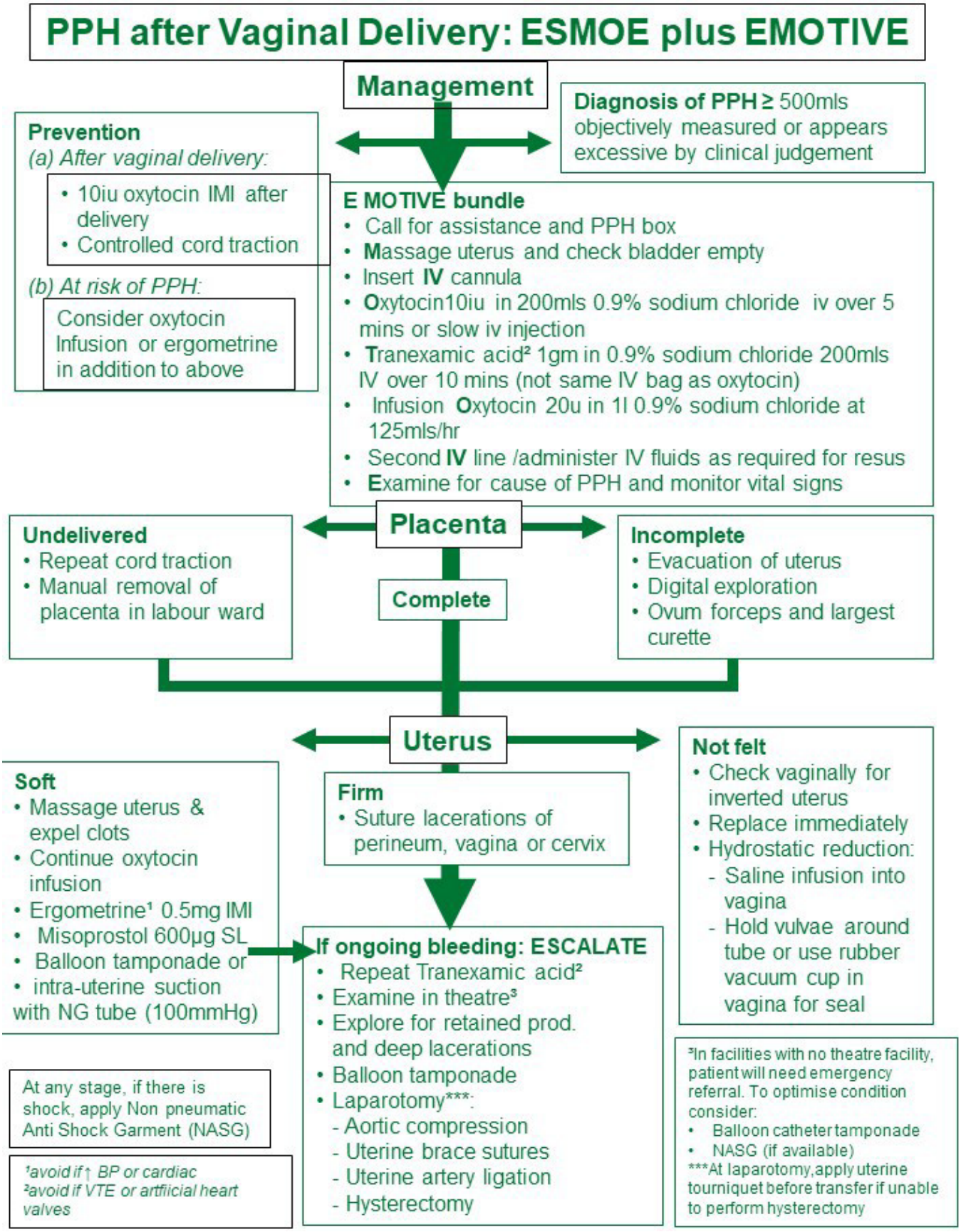
Management of PPH after vaginal delivery

- This is outlined in the following Algorithm, the components of which are described in more detail in the following sections.
- Treatment should be commenced immediately when blood loss ≥ 500mls is suspected. Do not wait for vital signs to change; this may only occur when PPH has become severe.
- The WHO E-MOTIVE approach has shown a significant reduction in severe PPH following vaginal delivery.
    - The key is **E**arly detection of PPH, using an objective method of blood loss measurement such as a calibrated drape or tray or good visual estimation.
    - As soon as the PPH has been diagnosed or is suspected, a standard bundle of interventions (MOTIVE) is administered as soon as possible, by whoever is available to assist in the labour ward
    - (**M**=massage of the uterus; **O**=Oxytocin; **T**= tranexamic acid; **IV**= IV Fluids, **E**=Escalation to the most appropriate level of care).
    - All labour wards should aim to have a PPH box stocked with the necessary consumables required for the first response to PPH.
        - All labour ward midwives and doctors must receive training in how to detect PPH early and respond immediately with the MOTIVE bundle.

Early recognition of PPH and treatment saves lives.

- All women with PPH must be transferred from a CHC or MOU to hospital after the MOTIVE bundle has been administered.
- CHC midwives and doctors should take whatever emergency steps they can, as listed below, to arrest bleeding and achieve fluid resuscitation.
- Patients with PPH must, wherever possible, be adequately stabilised before transfer from CHC to hospital.
- Tranexamic acid is available at primary care, but can only be initiated by a nurse with prior approval of a medical practitioner.

Figure 151 Management of PPH after vaginal delivery



Details of PPH management:

First response to PPH for all cases, using the MOTIVE bundle:

- Call for help and Massage the uterus to expel clots and induce contraction
- Insert an Intravenous line and infuse 10 IU Oxytocin in 100 or 200mls 0.9% sodium chloride over 5-10 minutes (if there is delay in securing an IV line, give 10iu Oxytocin IM)
- Then infuse Tranexamic acid 1g (if available) in 200mls fluid over 10 minutes (do not mix in the same bag as the 10IU oxytocin)
- Then infuse 20 IU oxytocin in one litre Sodium Chloride 0,9% over 4-8 hours as a maintenance infusion (125-250mls/hr)
- Insert a second IV line and run fast if the patient is shocked
- Ensure the bladder is empty (insert Foley's catheter if not already done)
- Examine for placental completeness and genital tract tears.
- Escalation to the senior doctor or next level of care if needed.

Further examination of abdomen and management of ongoing bleeding

- Atonic uterus: suggested by a large soft uterus:
  - add ergometrine 0.5 mg IM or ergometrine/oxytocin combination one ampoule IM (if not contraindicated by cardiac disease or hypertension)
  - and Tranexamic acid (if available) 1g in 200ml 0.9% sodium chloride by slow (over 10 minutes) intravenous injection.
  - Continuously massage the uterus and manually remove newly formed clots.
- Lacerations: suggested by a well contracted uterus with fresh bleeding.
  - Tranexamic acid helps reduce blood loss (see above).
  - The lacerations need to be repaired following examination of the entire birth canal, in the lithotomy position, under local anaesthesia.
  - Complex vaginal and cervical tears may require repair under regional or general anaesthesia.
  - If the apex of a cervical laceration cannot be reached from a vaginal approach, suspect uterine rupture and perform laparotomy for definitive repair, foley catheter tourniquet or total hysterectomy.
- Uterine inversion: suggested by inability to feel the uterus through the abdominal wall and can be confirmed by performing a vaginal examination.
  - Uterine inversion needs immediate reduction (see below).

If haemorrhage from an atonic uterus cannot be controlled:

- perform bimanual uterine compression
- continue with oxytocin infusion and give one repeat dose of 0.5mg ergometrine
- continue fluid resuscitation and order blood for transfusion
- give repeat dose of tranexamic acid 1 g IV after 30 minutes (also useful with lacerations)
- give misoprostol 400-600 mg sublingually or rectally as a single dose
- If genital tract trauma and retained placental fragments have been excluded, uterine balloon tamponade (UBT) with a pre-assembled balloon tamponade device or condom catheter can be considered, but if heavy vaginal bleeding continues past the balloon after insertion and/or persists after 10- minutes, remove the device and initiate other treatment.

Recommendations and pre-requisites for the use of uterine balloon tamponade

Uterine Balloon Tamponade (UBT).

There is currently uncertainty about efficacy of uterine balloon tamponade, with some trials suggesting it can delay effective treatment.

Until more evidence is available, the Recommendations specified by WHO (2021) should be adhered to.

WHO recommendations on uterine balloon tamponade for treating postpartum haemorrhage 2021:

Uterine balloon tamponade is recommended for the treatment of postpartum haemorrhage due to uterine atony after vaginal birth in women who do not respond to standard first-line treatment, provided the following conditions are met:

Immediate recourse to surgical intervention and access to blood products is possible if needed.

A primary postpartum haemorrhage first-line treatment protocol (including the use of uterotonics, tranexamic acid, intravenous fluids) is available and routinely implemented.

Other causes of postpartum haemorrhage (retained placental tissue, trauma) can be reasonably excluded.

The procedure is performed by health personnel who are trained and skilled in the management of postpartum haemorrhage, including the use of uterine balloon tamponade.

Maternal condition can be regularly and adequately monitored for prompt identification of any signs of deterioration

Consider a suction tube uterine tamponade as an alternative to balloon tamponade: Observational comparative studies have shown that vacuum induced tamponade is 7x more effective than balloon tamponade.

Management of Refractory PPH.

- Refractory PPH refers to persistent bleeding after the first response and cause directed management as described above, has been performed.
- It requires a stepwise approach:
    - Aortic compression; apply firm and sustained pressure to the aorta above the level of the umbilicus while awaiting help
    - Intensify resuscitation with up to 3 litres crystalloid and emergency blood transfusion (see Blood transfusion chapter for massive blood transfusion protocols)
    - urgent examination in theatre for identification of high vaginal/cervical tears, manual exploration of the uterus for rupture and for retained products.
    - A short trial of balloon tamponade could be considered if not done already, with adherence to provisos in the UBT box above.
    - Laparotomy with uterine compression suture (Hayman), stepwise devascularisation (uterine and ovarian arteries- first do the uterine arteries and review the bleeding per vagina, only proceed to ovarian if bleeding still not controlled), or hysterectomy.
        - See below for details of uterine compression sutures.

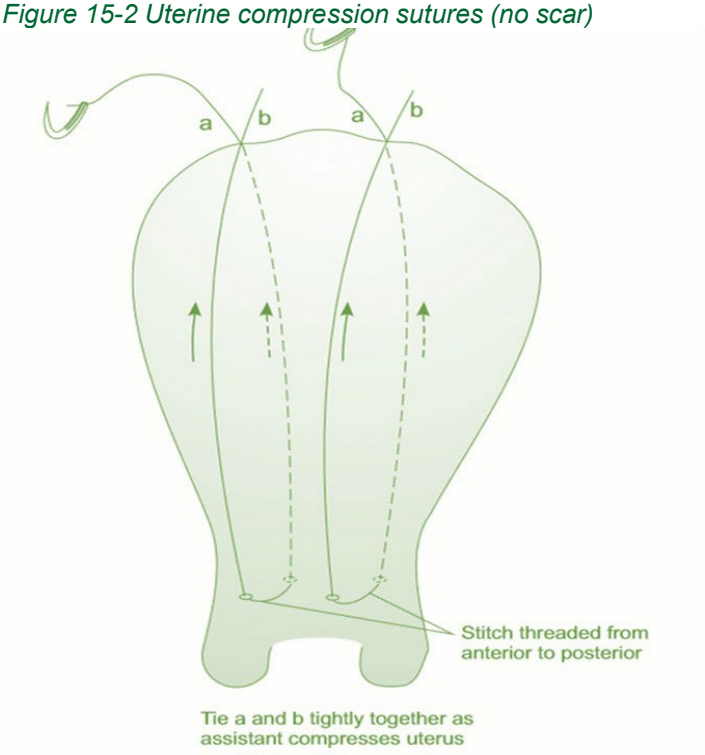
If the doctor is unable to do hysterectomy and there is persistent bleeding from the uterus, tie a Foley catheter tightly around the uterine lower segment, including the broad ligaments, and transfer to specialist care for urgent hysterectomy.

Insertion of uterine compression suture

Inserting a uterine compression suture:

- This may be done for PPH after normal delivery (Hayman), during or after caesarean section (B.Lynch).
- Put the woman in a modified Lloyd Davies position (thighs spread but not flexed much), to allow surgery while observing for vaginal bleeding.
- Exteriorise the uterus.
- Compress the uterus with the hands. If this stops the bleeding, a B-Lynch brace suture (CS incision) or Hayman sutures (no uterine incision) is likely to be successful.
- Hayman suture is shown below, B Lynch suture shown in the CD chapter.
- Use a single 1 metre length of thick absorbable suture material (chromic or polyglycolic 1 or 2) with a large needle.
- Ensure that the assistant compresses the uterus well while the suture is tightened and tied.

Figure 15-2 Uterine compression sutures (no scar)



Retained placenta

The placenta is retained when it is not delivered from the uterus within 30 minutes of delivery of the baby. There are two possible scenarios:

1. Placenta retained but minimal bleeding from the uterus.
2. Placenta retained with active or heavy bleeding (PPH)

Placenta retained with minimal bleeding

- Make sure the placenta is not just lying in the vagina.
- If the placenta remains inside the uterus, the placenta is likely to still be attached to the uterus and may be morbidly adherent.
    - Do not attempt removal at the MOU or CHC.
    - Set up an oxytocin infusion and arrange transfer to a hospital with theatre and blood transfusion facilities.
    - While awaiting transfer, signs of placental separation may occur and attempts can be then made to proceed with delivery of the placenta using controlled cord traction.
- If the placenta remains retained when the woman reaches hospital, plan a controlled manual removal in theatre, under anaesthetic, ensuring the most experienced obstetric doctor is available and that anaemia has been corrected and blood for transfusion is available.

Placenta retained with active bleeding

- In this case the placenta has probably partially or completely separated from the uterus, but remains trapped within the uterine cavity.
- This is an acute emergency which is best managed without delay in the labour ward, by whichever midwife or doctor is immediately available:
- Insert a urinary catheter.
- Start an infusion with oxytocin 20 units in one litre Sodium Chloride 0,9% at 120-240 mL/hour.
- Manually remove the placenta by inserting one hand into the uterus, grasping the placenta and pulling it out.
    - It is helpful to have elbow length gloves for this procedure.
    - Place the other hand on the abdomen to stabilize the uterine fundus while entering the uterus with the first hand.
    - If the placenta is located at an awkward site within the uterus, and is difficult to grasp, try using the other hand.
- Observe the woman constantly for vaginal bleeding or placental delivery.
- If there is excessive vaginal bleeding insert a second intravenous line as fluid resuscitation and attempt manual removal of the placenta if the cervix is sufficiently open or if the placenta is partially expelled.
- If the placenta cannot be delivered or if it has not been delivered after one hour of oxytocin infusion, arrange for manual removal in operating theatre with anaesthesia, or transfer from CHC to hospital.
    - Take blood for Hb and cross match.
    - For manual removal try to remove the whole placenta with the hands. Use the ulnar surface of the palm to create a cleavage plane.
    - If instruments are required to remove retained cotyledons or products, use the largest available forceps and curettes to prevent uterine perforation.
- Call for help if bleeding persists or if placenta accreta is suspected, or transfer to specialist level facility after stabilising the patient.
- After successful manual removal, maintain uterine tone with an oxytocin infusion and consider uterine balloon tamponade if placental site bleeding is suspected
- Give ampicillin one gram IV followed by amoxicillin 500 mg three times daily orally and metronidazole 400 mg three times daily orally for five days after a manual removal.

Acute inversion of the uterus

- This emergency requires immediate action.
- Acute uterine inversion may be caused by inappropriate cord traction on a fundal placenta in a flaccid uterus, without providing the necessary upward counter-pressure on the uterus.
- At times it occurs spontaneously.
- Clinical shock may be greater than expected for the amount of blood loss.
    - Immediately treat shock with Sodium Chloride 0,9% given through one or two lines using large bore (16G) IV cannulas.
    - Order blood for transfusion if there is haemorrhage.
- Give morphine 0.1mg/kg IM if systolic BP≥90 mmHg (maximum dose 10mg)
- Do not remove the placenta if it is still attached to the uterus.
    - Give salbutamol 250 µg (½ of a 500 µg ampoule diluted in 20 mL saline) IV to relax the uterus (if no contra-indications).
- Place the flat hand against the inverted surface of the uterus and push the uterus (with placenta if attached) 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 filling the vagina with 500-1000 mL of saline, using a soft vacuum cup or other device to provide an external seal.
- Once reduction is achieved, give ergometrine 0.5 mg IM and oxytocin 20 units in one litre Sodium Chloride 0,9% at 240 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.
- Failed reduction requires laparotomy.

  - Using Allis clamps, pull on the round ligaments where they enter the uterine constriction ring, with an assistant pushing the inverted uterus up from below.
- A tight constriction ring may prevent reduction.
  - At laparotomy, the ring can be opened by a one centimetre low vertical posterior incision in the uterus. Then proceed as discussed in the point above.

Referral of patients with PPH

- This will be required for:

  - All PPHs at a primary care unit without a doctor or operating theatre must be referred urgently for doctor or preferably specialist care to the hospital.
  - Patients with refractory PPH require specialist care at a regional or tertiary hospital
  - Before transferring a patient with PPH, ensure resuscitation is in process and that the blood pressure and heart rate are stable before transfer.
  - An ambulance, preferably with a paramedic, should aim to arrive to collect the patient withing 30 minutes.
    - If no paramedic is available and staffing allows, a doctor or midwife (when available) can accompany the patient.
  - A senior doctor at the referral hospital must have been contacted to inform them of the referral and to provide further advice before transfer.
  - All medical and surgical treatment available at the referring facility must have been performed.
    - Uterine balloon tamponade for ongoing uttering atony, vaginal packing of extensive lacerations and uterine tourniquet inserted at laparotomy can be considered as temporising methods for the duration of transfer.
  - The patient must not be left alone whilst awaiting emergency transport and all observations should be continued.
  - A Non-pneumatic Anti Shock Garment (NASG) (if available) can be applied to prevent or treat shock during referral.
  - Make sure the patient and family members know what the problem is and why the patient is being referred.
  -

Non-pneumatic anti shock garment (NASG)

- The Saving Mothers reports have cited major problems during referral of critically ill patients especially following haemorrhage.
- Many are transferred in severe shock and die enroute or shortly after arrival at the next facility.
- Also, many do not have a paramedic accompanying them to continue resuscitation.
- This problem has been assisted in some countries such as Ethiopia where referral times are long due to mountainous terrain by the NASG (non-pneumatic anti- shock garment).
- The NASG is a neoprene garment with compression panels on lower limbs and abdomen which treats shock by maintaining blood flow to essential organs during transit.
- It was introduced in SA in 2018 in Kwa Zulu Natal and is being used in several provinces with success.
  - It has great potential for improving the condition of shocked women during transfer so they arrive alive and can be definitively managed at the next level of care.
- It is reusable after washing and the aim is for it to be carried by ambulances for transporting shocked patients.
- Vaginal and abdominal surgery can also be performed with the garment still applied if the patient is still unstable.
- Removing the NASG needs to be done slowly and in a systematic way. Training is required for application and removal, and a training video is available online. https://www.youtube.com/watch?v=tSGC7VHoN_E

Note: The NASG (where available) should be used to assist with resuscitation of any woman in hypovolaemic shock following PPH, irrespective of whether she is to be transferred or not.

Secondary postpartum haemorrhage

- This is passage of fresh blood or clots from the vagina more than 24 hours after delivery.
- Common causes are uterine sub-involution, retained products of conception, and wound breakdown or haematomas.
- Emergency management
  - Assess general condition, especially consciousness, temperature, colour, BP, heart rate and respiratory rate.
  - Resuscitate if necessary, as for management of primary postpartum haemorrhage.
  - Take blood for FBC and cross-match.
  - Give oxytocin 10 units intramuscularly as a single dose.
  - Add oxytocin 20 units to one litre sodium chloride 0.9% and run at 125 mL/hour.
  - Consider adding ergometrine 0.5 mg IM as a single dose unless the mother is hypertensive or has cardiac disease.
  - Admit the patient or transfer from CHC to hospital.
  - Look for and treat the cause of bleeding:
    - if there is evidence of puerperal sepsis, proceed as for puerperal sepsis

Chapter 16: MEDICAL DISORDERS IN PREGNANCY

- Medical disorders in pregnancy require careful attention to clinical management protocols.
- These correctly focus on physical health matters.
- It is also very important to take care of the mental health of women with medical disorders.
    - Women with medical disorders are at higher risk of experiencing mental health difficulties.
    - At the same time, women with mental health difficulties have a greater chance of experiencing medical disorders.
    - They may face greater challenges in adhering to treatment protocols.
- Thus, for optimal outcomes for mother, fetus and infant
    - ensure compassionate, respectful care for all women with medical disorders
        - focus on the woman as much as you focus on the disorder
        - Avoid lecturing the woman about lifestyle factors in a tone that indicates disapproval
        - share information in lay terms and check for understanding
        - explore whether advice is feasible for the woman in her context. If not, provide alternatives or explore ways the woman can be supported to follow advice (e.g. access to social grant or social services to address food insecurity; support with transportation to referral locations)
        - highlight where there has been progress or improvement
        - for acute or emergency situations, remember that the woman and her companion may be very afraid or confused which can affect her physical status. Be calm, reassuring, kind, give explanations (and ask if she has any questions) and ask for permission for procedures. Give power to the woman.
- Involve partners/companions of the woman, at her choosing
- conduct mental health screening and appropriate referrals as per Mental Health Chapter
- Ensure the woman is informed about planned postpartum care for her condition before discharge from delivery.

Anaemia

- All pregnant women should have a haemoglobin (Hb) measurement at the first antenatal visit, and if ≥10g/dL it should be repeated around 30 weeks and again at 38 weeks.
- Any Hb level of <10 g/dL should be followed up with more frequent Hb measurements after initiating treatment. A haemoglobin meter should be used if available, so that the result is available at the same visit.

- Risk Factors
    - Poor diet and/or food insecurity related to poverty
    - Parasitic infections such as hookworm and bilharzia
    - Anaemia of chronic disease
    - Short inter-pregnancy interval
    - Multiple gestations
    - History of heavy menses
    - Gastro-intestinal tract disease affecting absorption
    - Malaria
    - Grand-multiparity
    - Eating disorders

Prevention of anaemia

- Give all women with Hb ≥ 10g/dL prophylactic iron:
    - ferrous fumurate 200 mg oral daily
      OR
    - Ferrous sulphate compound BPC (dried), oral, 170 mg (± 55 mg elemental iron) twice daily
      AND
    - folic acid 5mg oral daily (at least for the first trimester, but ideally for the duration of the pregnancy (combined iron and folic acid preparations do not usually contain an adequate folic acid dose, so folic acid should be given separately).
- Continue with iron and folic acid supplementation during lactation.
- Give advice on a balanced diet to prevent nutritional deficiency.
- Steps to be taken to improve compliance with and absorption of oral iron tablets:
    - Encourage honesty about compliance with medication
    - Discourage consumption of soil, charcoal, etc.
    - Iron supplementation should preferably be taken with meals
    - Avoid taking the iron tablets at the same time as calcium tablets (take calcium in the morning and iron at dinner)

Management of anaemia

- Look for an underlying cause, and address where possible – iron deficiency is the most common cause
- Take a full history with emphasis on diet, blood loss (menstruation) and obstetric history (number of pregnancies)
- Refer from a primary health clinic/ community health centre as follows:

Hb <6.0 g/dL	Urgent transfer to hospital the same day.
Hb 6.0-7.9 g/dL	Urgent transfer to a hospital if symptomatic (dizziness, tachycardia, shortness of breath at rest). If not symptomatic, refer to the next high-risk clinic within one week.
Hb 8.0 to 9.9 g/dL	Transfer to a high-risk clinic if no improvement after one month of treatment.
Hb <10 g/dL at 36 weeks gestation or more	Transfer to hospital for further antenatal care and delivery.

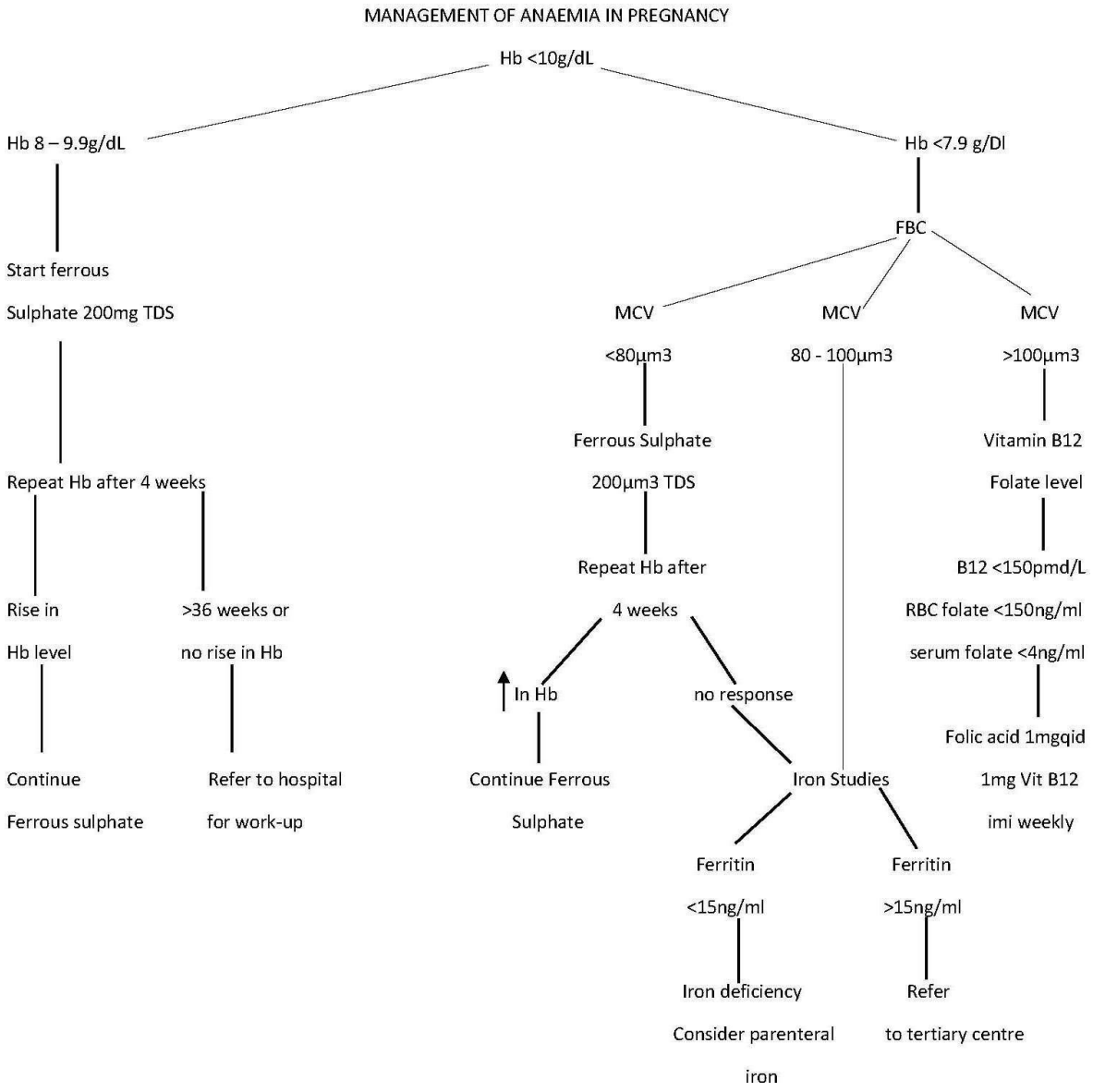
Management of mild anaemia (haemoglobin 8-9.9 g/dL)

- Ferrous sulfate compound BPC, oral (dried), 170 mg (± 55 mg elemental iron) 12 hourly OR Ferrous fumarate, oral, 200 mg (± 65 mg elemental iron) 12 hourly.
- Follow up all women < 36 weeks pregnant with mild anaemia with a repeat Hb after four weeks.
- If there is no response to oral iron/folate treatment or if ≥ 36 weeks, refer to the district hospital for further investigation.
- If no response to oral iron treatment or if ≥ 36 weeks, and if iron deficiency confirmed (minimum investigation: full blood count and smear), consider intravenous iron therapy (in hospitals only). Intravenous iron will raise the Hb faster than oral iron.
- Avoid blood transfusion if there are no other complications.

Management of moderate to severe anaemia (Hb ≤7.9 g/dL)

- Investigate the anaemia at the hospital/high risk clinic and look for underlying causes:
    - Take blood for a full blood count (FBC): the mean cell volume (MCV) indicates the probable cause of anaemia:
        - MCV < 80um^3 suggests iron deficiency anaemia (microcytic)
        - MCV (80-100um^3) suggests anaemia of chronic disease (normocytic)
        - MCV (>100um^3 suggests folate or vitamin B12 deficiency anaemia (macrocytic)
    - If the FBC shows a microcytic picture, it is reasonable to initially treat as iron-deficiency anaemia
    - if the FBC shows a normocytic or macrocytic picture, do further tests:
        - iron studies, red cell folate and vitamin B12 levels to identify the cause
- Send urine away for microscopy and culture, and a stool sample for occult blood and parasites.
- Do a malaria smear, where relevant
- Start treatment for anaemia with ferrous sulphate 200 mg oral 3 times daily, and continue with folic acid 5mg orally daily
    - If the Hb is <6.0 g/dL or if the patient is symptomatic (dizziness, tachycardia, shortness of breath at rest), then she must be admitted to hospital
    - Avoid overloading with intravenous fluids
    - Transfuse only if symptomatic
    - Transfuse one unit at a time over four to six hours
    - Review need for further transfusion after each unit transfused, based on symptoms rather than Hb level. Give furosemide 20 mg intravenously after each unit transfused.

Figure 16-1 Management of anaemia in pregnancy



- If there is a failure to respond to oral iron therapy, compliance with the supplements should be considered and the results of iron studies, red cell folate and vitamin B12 levels should be checked and treated accordingly.
- If there is no response to oral iron treatment or if ≥36 weeks, and if iron deficiency confirmed, consider administering parenteral iron therapy (in hospitals only, in consultation with a specialist).
    - Iron sucrose, IV, 200 mg in 200 mL sodium chloride 0.9%, over 30 minutes, given on alternate days until the total dose has been given. Check the package insert and EML for exact dosage schedule.
    - Test dose is not required, but only administer where personnel and therapies are readily available to manage anaphylactic-type reactions.
    - An initial total dose of 600 mg is usually adequate to raise the Hb to acceptable levels.
    - For markedly anaemic or very obese women, consult the package insert on the total dose of iron infusion.
    - Women on oral iron therapy should continue treatment for a further 3 months after normalisation of haemoglobin levels so that iron stores are replenished.

Blood transfusion for anaemia

(See chapter on blood transfusion for further details)

- As a guideline, an anaemic patient should be transfused at least one unit of packed red cells if:
    - Hb <8.0 g/dL and the woman is going for an emergency caesarean delivery
    - Hb <6.0 g/dL and the woman is in labour (vaginal delivery anticipated)
- Patients booked for elective caesarean section should have their anaemia corrected, preferably by means other than transfusion, before they undergo their caesarean delivery.

Diabetes mellitus

Pregestational diabetes mellitus

- This is diabetes that has been present before the current pregnancy.
- These women require tight control of their blood glucose levels from the time of conception and should book for antenatal care as soon as pregnancy is confirmed.
- Ideally, women known to have diabetes should plan their pregnancy, and attend a specialist clinic to optimise control of their diabetes (aim for a HbA1c <6.7%), before they get pregnant.
- Diabetic women who get pregnant should be referred to a specialist health facility/clinic with expertise in managing diabetes in pregnancy.
    - Follow-up care may be continued at a district hospital, in accordance with instructions from the specialist clinic, depending on facilities, levels of skill, and the stability / control of her diabetes.
- Stop sulphonyl ureas, statins and ACE-inhibitors.
- Metformin is safe in pregnancy and should not be stopped.
    - Note that metformin interacts with dolutegravir, and the maximum dose of metformin for women on dolutegravir is 500mg twice a day.
- If a woman presents before 16 weeks gestation start on Aspirin 150 mg orally at bedtime as well.
- Ideally, all pregnant women with pre-gestational diabetes should be referred for a detailed scan for dating the pregnancy and to screen for congenital disorders.

Diagnosis of overt diabetes mellitus in pregnancy

- If a pregnant woman meets any of the criteria for overt diabetes mellitus, she can be diagnosed as an overt diabetic:
    - Random glucose ≥11.1mmol/l
    - Fasting glucose ≥7mmol/l
    - 2-hour glucose on 75g-2h-OGTT ≥11.1mmol/l
    - HbA1c >6.5%

Gestational diabetes mellitus

- This is diabetes that develops during pregnancy or is diagnosed for the first time during the current pregnancy and resolves within 6-weeks post-partum.

Screening and diagnosis

- All pregnant women with risk factors (see below) for diabetes in pregnancy should be screened at the first antenatal visit and again at 24 – 28 weeks, if the initial screen was negative.

For patients with pre-gestational diabetes (i.e. already known to be diabetic before pregnancy), there is no need for diabetes screening with an OGTT.

Screening is for pregnant women who have not yet been diagnosed as diabetic.

Figure 16-2 Risk factors for gestational diabetes

Underlying patient factors	Patient from an ethnic group with high prevalence of diabetes (e.g. Indian)
	Obesity (patient BMI ≥35)
	Age ≥40 years
Previous history	Previous history of gestational diabetes (diabetes in a previous pregnancy)
	First degree relative with diabetes
	Previous unexplained intrauterine fetal death
	Previous baby with congenital abnormalities
	Previous macrosomic baby (birth weight ≥4 kg)
Current pregnancy	Polyhydramnios
	Fetus large for gestational age
	Glycosuria (glucose 1+ or more on urine dipstick on 2 or more occasions)
	Chronic use of corticosteroids

Screening method

- There is a lack of consensus regarding the best screening method for gestational diabetes.
- Different screening methods may be used depending on the preference at the local specialist referral centre.
    - Clinics and district hospitals are therefore advised to liaise with their specialist referral centre and follow their local recommendations regarding screening method and diagnostic criteria.

- Laboratory glucose measurements are the gold standard for the diagnosis of gestational diabetes.
- Point-of-care glucometer tests can also be used.
- The referral centre should make individualised decisions on whether to repeat the OGTT at the laboratory.

Example of a diagnostic test

- The patient must be fasting (drink only water from 22:00 the night before). Testing should be performed first thing in the morning.
- Take a fasting glucose test, and then give oral glucose 75 g dissolved in 50-300 mL water and take blood for glucose level two hours after giving glucose.
- Either the NICE or WHO 2015 diagnostic criteria can be used, depending on the referral area:
    - NICE criteria: A fasting blood glucose level of ≥5.6mmol/l or a two-hour value of ≥7.8 mmol/L indicates diabetes, and the woman should be managed as a gestational diabetic.
    - WHO 2015 diagnostic criteria: A fasting blood glucose level of ≥ 5.1mmol/l or a two-hour value of ≥ 8.5 mmol/L indicates diabetes and the woman should be managed as a gestational diabetic.

Management of diabetes mellitus

Referrals

- All pregnant women with pre-gestational diabetes should be referred to a clinic with expertise in managing these conditions in pregnancy, usually at a specialist hospital.
    - Follow-up care may be continued at a district hospital, in accordance with instructions from the specialist clinic, depending on facilities, levels of skill, and the stability / control of her diabetes.
- Screening for gestational diabetes can be done at clinics/CHCs.
- Any woman who tests positive should be given dietary advice on diabetic diet in pregnancy and appropriate gestational weight gain and referred to the next high-risk clinic at the local hospital within one week at the latest.
- Women with gestational diabetes can be managed at the district hospital level if blood sugar levels are controlled on diet (fasting blood sugar <5.3 mmol/L, two hours post-prandial <7 mmol/L).
- If diet alone is inadequate to control blood sugar levels, then the patient should be referred to a hospital with expertise in managing diabetes in pregnancy.
    - She may be started on oral hypoglycaemic agents (metformin), or insulin, as appropriate.
- Follow up care may be continued at a district hospital, in accordance with instructions from the specialist clinic, depending on facilities, levels of skill, and how stable the diabetic control is.
- Management of any diabetic at a district hospital must be “shared care” with a specialist health facility.

Initial management of gestational diabetes

- Advise the woman to start with lifestyle modifications (stop smoking, stop alcohol, moderate exercise), dietary advice immediately and refer to a dietician.
- Provide clear explanations about screening and management in lay terms.
    - Explain compassionately without blaming.
    - Acknowledge psychosocial stress and identify social support.
    - For lifestyle changes: acknowledge difficulty in changing lifestyles, support gradual changes, explore barriers to self-management, do not blame, rather affirm
- Call the woman back to the high-risk clinic two weeks later; advise her to come “fasted” in the morning, carrying her breakfast with her.
- Check fasting blood glucose level (glucometer) on arrival and then two hours after breakfast (post-prandial).
    - If fasting blood sugar <5.3 mmol/L, post-prandial <7 mmol/L, it is appropriate to continue with dietary management.
    - Recheck fasting and post-prandial blood glucose every two weeks.
- If fasting glucose is >7 mmol/l, after two weeks, or no response on lifestyle changes:
    - Metformin, oral, 500 mg daily.
    - Increase dose to 500 mg 12 hourly after 7 days.
    - Titrate dose to a maximum of 850 mg 8 hourly according to glucose control.
    - Contra-indications to metformin: liver or renal impairment.
- If not tolerated, or not managed on metformin only, change to insulin or add insulin. This needs to be done in a specialist hospital, so refer appropriately.

Management of the Infant of Diabetic Mother (IDM) (refer to neonatal guideline as well)

Before delivery:

- Anticipate need for resuscitation based on expected birthweight, gestational age, known congenital disorders, labour complications and mode of delivery.

After delivery:

- Rapid assessment and resuscitation as needed.
- Examination to identify congenital disorders.
- Feed within 30 minutes, feeds 2-3 hourly.
- Monitor blood glucose: 30 minutes after 1st feed, and 2-3 hourly pre-feed thereafter; may stop monitoring once three consecutive normal blood glucose readings pre-feed, baby is feeding well and asymptomatic.
- Maintain blood glucose ≥ 2.6 mmol/L
- If blood glucose < 2.6 mmol/L manage according to hypoglycaemia protocol in the newborn guideline.

Signs of Hypoglycaemia in the baby:

- Irritability
- Jitteriness
- Exaggerated Moro reflex
- High pitched cry, seizures
- Lethargy
- Hypotonia
- Hypothermia
- Apnoea
- Cyanosis
- Poor feeding
- Some babies may be asymptomatic.

Cardiac disease

- Women with heart disease should ideally have a planned pregnancy managed by a multi-disciplinary team consisting of a maternal-fetal specialist, a cardiologist, a paediatrician and an anaesthetist.
- Pre-pregnancy counselling allows the patient to make an informed decision prior to embarking on a pregnancy.
- At the first antenatal visit, all women should be asked about a history of heart disease (including heart operations and attendance at cardiac clinics), and about current symptoms of heart disease.
    - Clinical examination of the cardiovascular system should include auscultation of the heart.
    - As a minimum the blood pressure must be checked and the pulse rate checked separately (manually).
    - Check for scars on the thorax from heart surgery as a child.
- All women with heart disease require referral for specialist evaluation and risk assessment.
- The following are symptoms and signs suggestive of cardiac disease in pregnancy
    - Shortness of breath at rest or with mild exercise
    - Shortness of breath when lying flat
    - Haemoptysis
    - Palpitations
    - Chest pain
    - Tachycardia at rest (≥100/min) or irregular heart rate
    - Loud heart murmurs

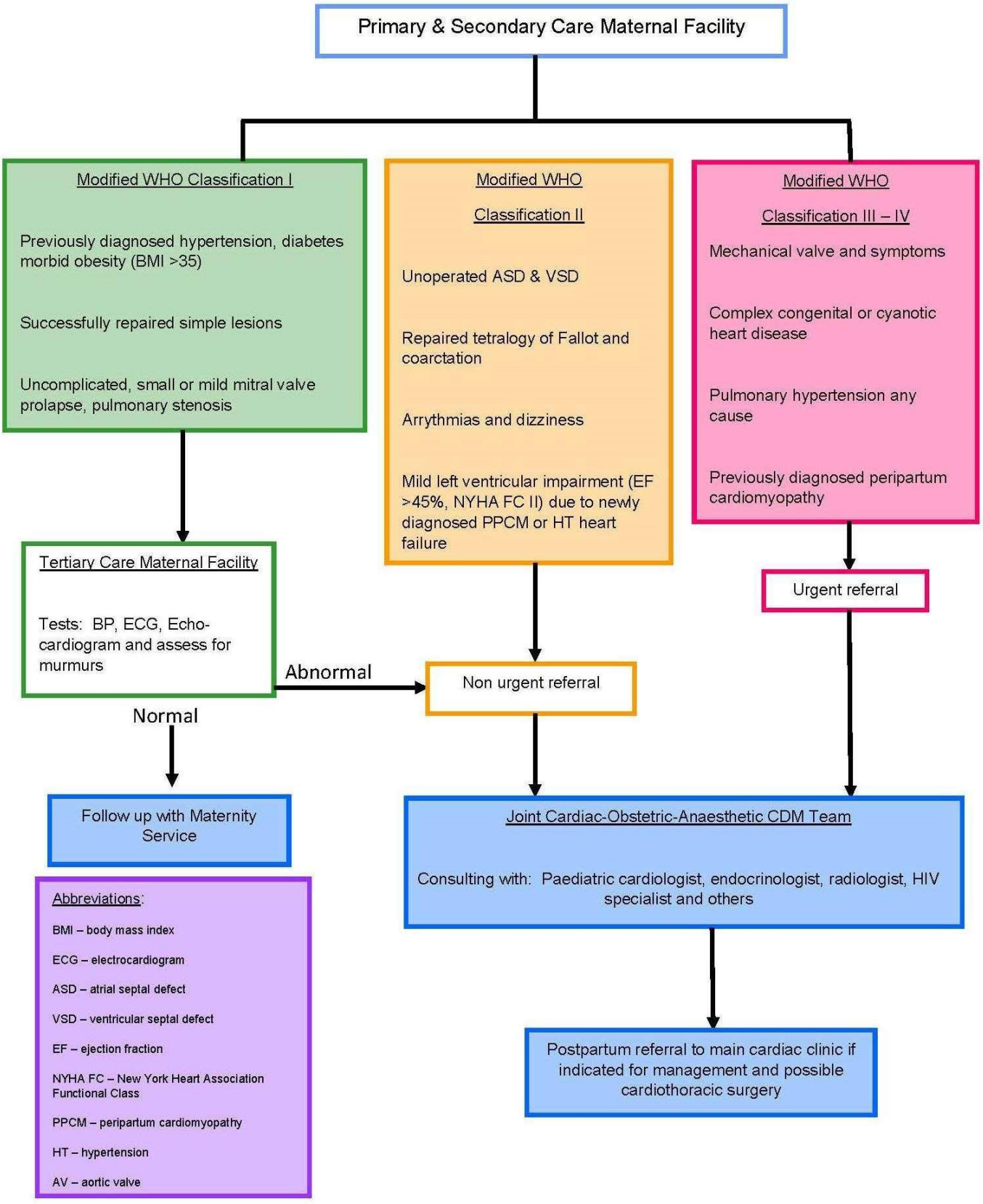
New York Heart classification (NYHA) for heart failure

Class 1	No limitation of physical activity. Ordinary physical activities do not cause undue fatigue, palpitations, shortness of breath, chest pain
Class 2	Ordinary physical activities do cause undue fatigue, palpitations, shortness of breath, chest pain
Class 3	Less than ordinary physical activities do cause undue fatigue, palpitations, shortness of breath, chest pain
Class 4	Symptoms at rest. Fatigue, palpitations, shortness of breath, chest pain occurs at rest

Referral of women with suspected or confirmed cardiac disease in pregnancy

- Women with suspected cardiac disease and who are in a stable condition should be referred to a tertiary centre, within one week, where the diagnosis can be confirmed.
- Women presenting with difficulty in breathing, systolic blood pressure <100mmHg, heart rate >120 bpm or appearing cyanotic need to be referred to a tertiary centre by ambulance within 24 hours.
- Women with NYHA class 2-4 need to be referred to tertiary centre by ambulance within 24 hours.
- In women with known cardiac disease in pregnancy, the following referral algorithm should be used to guide for referral to higher levels of care.

Figure 16-3 Referral Algorithm for suspected and previously known Cardiovascular Disease in Maternity



Management during labour

- Cardiac patients should deliver in a specialist health facility and can be referred there if in early labour.
- However, there may be occasions when a cardiac patient presents in advanced labour to the MOU/CHC or the district hospital 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), but 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, IM, 0.1 mg/kg 4 hourly as needed, to a maximum of 10 mg with Promethazine 25 mg IM.
    - In late labour, nitrous oxide 50 per cent and oxygen 50 per cent as required.
- Give Ampicillin 1 g IV six hourly and Gentamicin 240 mg IV as a single dose; or Vancomycin 1 g IV as a single dose (for women allergic to penicillin).
- Monitor intravascular fluids, pulse, respiratory rates and regular auscultation of maternal lung bases is required during labour.

Second and third stage of labour

- Spontaneous delivery is usually preferable to Caesarean delivery, unless there are obstetric reasons for surgery.
- Avoid the lithotomy position: the mother must remain upright or semi-upright when delivering, with her legs supported by two assistants below the level of her chest.
- Once the fetal head has engaged and the mother is bearing down, perform instrumental delivery unless delivery is rapid and easy.
- Local anaesthetics for episiotomy should not contain adrenaline.
- Episiotomy should not be done routinely.
- Do not give ergometrine in the third stage; instead use oxytocin 10 units intramuscularly.
- In women with NYHA grade II dyspnoea or more, consider the use of furosemide 40 mg intravenously after delivery of the baby.

Fourth stage and puerperium

- The first 24 hours post-delivery is the most common time for the cardiac patient to decompensate and go into pulmonary edema.
- Try to avoid intravenous fluids. If an oxytocin infusion is required to control or prevent PPH, it should be given in concentrated form (20 units in 200 mL, at 20 mL/hour).
- Observations in a high-care setting are required for at least 24 hours post-delivery.
    - Thus, even after an uneventful delivery, transfer to a specialist hospital is recommended for observations and specialist assessment, and to arrange follow-up for the cardiac problem and for post-partum tubal ligation if agreed to by the mother.
- Screen newborn for congenital heart disease in mothers with congenital heart disease.
- Offer contraceptive advice:
    - Estrogen containing oral contraceptives should be avoided
    - Progesterone containing agents are safe and effective
    - Tubal ligation is safe if she is fit for anaesthesia
    - Vasectomy

MANAGEMENT OF PULMONARY EDEMA

- Have a high index of suspicion
- Nurse the mother with her upper body raised to 45 degrees.
- Give oxygen by facemask.
- Secure intravenous access (for drug administration), but avoid giving intravenous fluids.
- Give furosemide 40 mg intravenously, and repeat if necessary.
- Give morphine 5mg as a slow intravenous bolus.
- As soon as she is stable, transfer immediately to a specialist hospital for further care.

Asthma

Referral

- Pregnant women with an acute asthmatic attack must be referred as an emergency from a clinic / CHC to the district hospital.
- Women with a history of asthma (no current attack) should be referred to the next high-risk antenatal clinic.
- Women with recurrent severe attacks should be referred to a centre with specialist physicians/ pulmonologists.
- The aim of treatment is to achieve freedom from symptoms such that lifestyle of the individual is not affected.
- Management of asthma in pregnancy does not differ from that in non-pregnant women.
    - Beta-2 stimulants (e.g. salbutamol), inhaled and systemic steroids, aminophylline and ipratroprium bromide 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 six hourly during labour or at the time of caesarean section.
- Babies born to mothers on high dose short-acting beta-agonists should have their blood glucose monitored after birth.

Thromboembolism (VTE)

Pregnancy is a hypercoagulable state

Prevention of VTE in pregnancy

- Women are at increased risk of thromboembolism in pregnancy and in the puerperium.
- A risk assessment should be ideally done in early pregnancy/pre-pregnancy and repeated if the woman is admitted to hospital for any reason.
- A risk assessment should ideally be repeated intra-partum or immediate postpartum.
- Patients with a previous VTE episode should ideally be discussed or managed in conjunction with a specialist hospital.

Risk assessment:

- A patient with a previous VTE episode (DVT or pulmonary embolism) needs VTE prophylaxis during pregnancy and for up to 6 weeks post-delivery. Refer for specialist care.
- A patient with any ONE of the following HIGH RISK factors may benefit from up to 5 days postnatal low molecular weight heparin (LMWH) (or longer duration if still admitted in hospital):
    - Emergency Caesarean section
    - BMI > 40 kg/m^2
    - Prolonged hospital stay post-delivery
    - Intravenous drug user

- A patient with any TWO or more of the following INTERMEDIATE RISK factors may benefit from up to 5 days postnatal LMWH (or longer duration for prolonged hospital stay):
    - Age > 35 years of age
    - BMI 35-40 kg/m^2
    - Parity ≥ 3
    - Smoker
    - Elective caesarean section
    - Any surgical procedure in the puerperium
    - Gross varicose veins
    - Current acute systemic infection
    - Immobility e.g paraplegia, long distance travel
    - Current Pre-eclampsia
    - Prolonged labour > 24 hours
    - PPH > 1 litre or requiring blood transfusion

- If ONLY ONE of the above INTERMEDIATE RISK factors is present, prevent dehydration and encourage early mobilisation.

Prophylactic dose

- For post-partum prophylaxis, start 6-12 hours after delivery.
- Use Low molecular weight heparin, e.g.
    - Enoxaparin, SC:
        - Patient weighs <100 kg: 40 mg daily
        - Patient weighs ≥100 kg: 60 mg daily

Diagnosis and initial management of VTE in pregnancy and post-partum

- Symptoms and signs of deep vein thrombosis
    - acute unilateral diffuse leg swelling (significant preponderance to L-sided DVT)
    - pain
    - redness
    - warm lower limb
- The diagnosis is confirmed using compression duplex ultrasound

Pulmonary embolus

- A high index of suspicion is needed.
- The clinical indications for imaging evaluation of suspected pulmonary embolus in pregnancy includes shortness of breath, pleuritic chest pain, hypoxemia, tachycardia and to a lesser extent tachypnoea, hemoptysis, syncope, cough, unexplained hypotension and chest pain
- Diagnosis
    - Arterial blood gas may reveal hypoxemia and hypocapnia
    - Lung scan
    - Computer tomographic pulmonary angiography

Referral

- Any suspected case of DVT or pulmonary embolus should be referred urgently from clinic / CHC to hospital for review by a doctor.
- If clinical assessment by the doctor at the district hospital suggests DVT or pulmonary embolus, anticoagulation should be started and, if needed, referred to a specialist facility to confirm the diagnosis.

Management of VTE in pregnancy

- If there is a strong suspicion of DVT or pulmonary embolus start treatment with low molecular weight heparin. e.g. enoxaparin 1 mg/kg sub-cutaneous twice a day.
- Arrange transfer to a specialist centre to confirm diagnosis if necessary.
- Warfarin therapy is only recommended in the post-partum period- convert to warfarin only 5 days or more after delivery.

Shortness of breath in pregnancy

- Shortness of breath is common among healthy women with normal pregnancies and is considered a normal physiologic response to pregnancy.
- However, shortness of breath may also be the result of underlying heart or lung pathology.
- Women presenting with any red flags e.g. difficulty in breathing, systolic blood pressure of <100mmHg, heart rate >120 beats per minute or appearing cyanotic need to be transferred with an ambulance to a tertiary centre within 24 hours.
- Patients presenting with signs of fluid overload (pulmonary or pedal edema or a raised JVP) should receive a bolus of furosemide 40mg IVI and oxygen per face-mask prior to transfer.

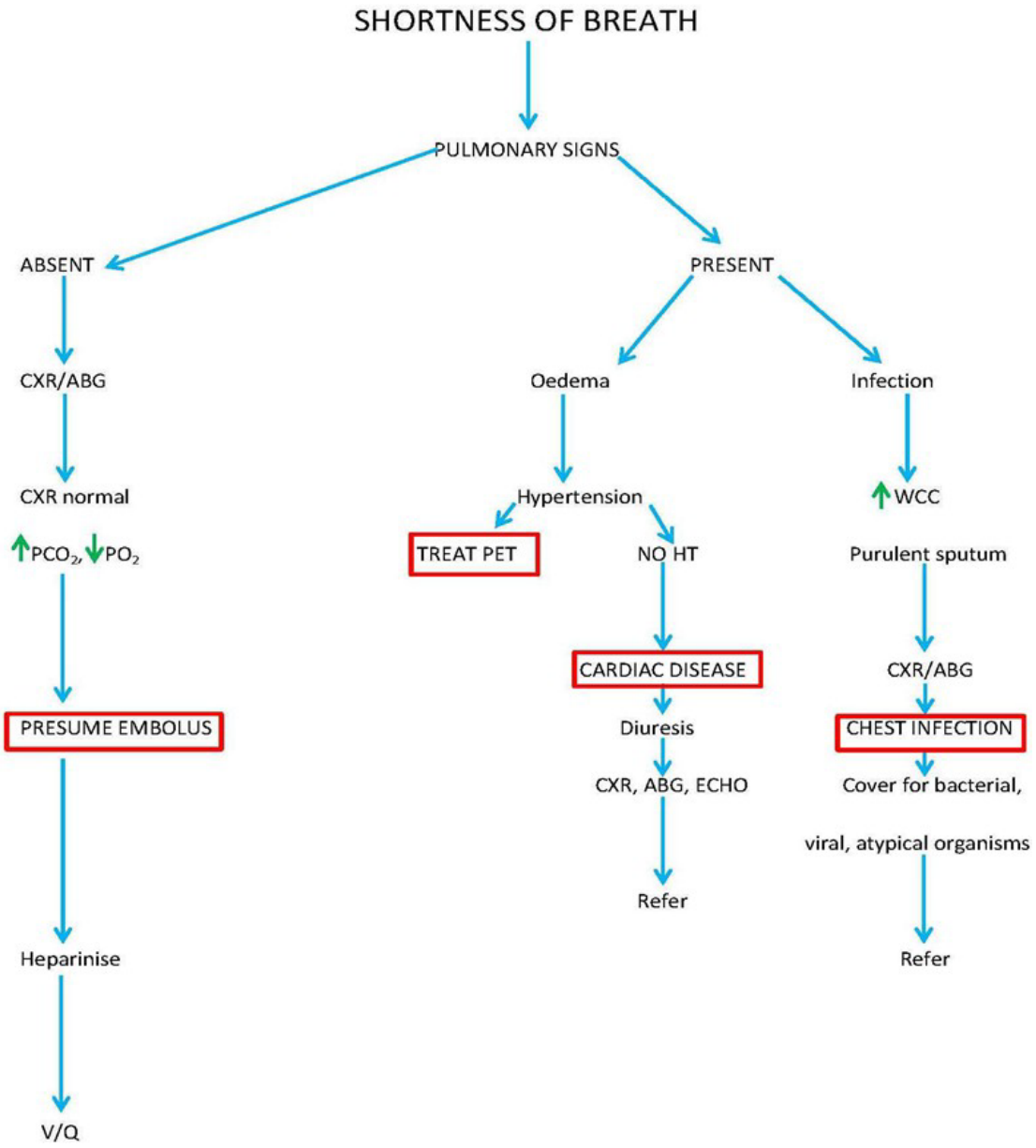
Any red flags?

    - Sat O_2<95%
    - HR>120bm
    - RR>24bm
    - Altered mental status
    - Stridor
    - Diffuse crackles
    - Difficulty speaking full sentences

- Clinicians should have a low threshold for investigating pregnant or recently delivered (up to 6 months postpartum) women, especially those with cardiovascular risk factors (hypertension, diabetes), suspected rheumatic heart disease or with symptoms such as shortness of breath or chest pain.

- Appropriate investigations include:
    - Blood tests: FBC, UKE, LFT, CRP, clotting profile, arterial blood gas
    - Remember to exclude respiratory infections e.g. influenza or COVID-19
    - ECG, chest X-ray, echocardiogram and CT pulmonary angiography if indicated.
    - If a clinician is not confident/competent in interpreting any of the above investigations they should ask for help.

Figure 16-4 Management of shortness of breath in pregnancy



Epilepsy

- Ideally, women with epilepsy should plan their pregnancy, and attend a specialist clinic to optimise the control of their disease and review the anti-epileptic drug regimen, before they get pregnant.

Referrals

- A pregnant woman with an acute epileptic seizure should be stabilised and referred from clinic/CHC to hospital for further treatment and observation.
    - Mothers should be transported in a lateral semi-prone position to prevent injury.
    - Secure airway breathing and circulation
- A pregnant woman with epilepsy or suspected epilepsy (no acute seizure) should be referred to the next high-risk antenatal clinic.
- A pregnant woman with recurrent seizures despite treatment should be referred to a specialist health facility for multidisciplinary care.

Management of epilepsy in pregnancy

- All women receiving anti-epileptic drugs should take 5mg folic acid daily from 12 weeks prior to conception.
- The anti-epileptic medicine of choice in pregnancy is carbamazepine, lamotrigine or levetiracetam.
    - Women receiving phenytoin or sodium valproate should be referred to a tertiary centre for counselling regarding effects of the drug in pregnancy and to change to another drug.
- A baseline serum drug level is useful in early pregnancy to establish compliance and to inform future changes in drug levels.
- Use monotherapy with the lowest effective dose if possible.
- The dose of antiepileptic medication may need to be increased from the pre-pregnancy dose to maintain control during the pregnancy due to the increased volume of distribution.
- Prenatal fetal screening for congenital disorders is recommended in the first and second trimester, if feasible.
- From 36 weeks add vitamin K 20 mg oral once daily (for all women on phenytoin).
- Always exclude other causes of seizures e.g. eclampsia or meningitis, even in a known epileptic.
- Treat status epilepticus as for non-pregnant women.
- Postpartum contraceptive choices must be carefully considered particularly for women on enzyme-inducing anti-epileptic drugs (see chapter on family planning)
- Obstetric care, labour and delivery are the same as for non-epileptic women. Breastfeeding is not contra-indicated when the mother is on anti-epileptic drugs.

Thyroid disease

- Women with known thyroid disease should ideally be referred for specialist care during pregnancy
- The thyroid gland should be examined during the first booking visit; women should be referred for an ultrasound examination and thyroid function tests if a goitre is suspected clinically
- Thyroid function testing is indicated for women with symptoms and signs of thyroid disease.
    - These include:
        - Clinical features of hyperthyroidism – heat intolerance, tachycardia, palpitations, palmar erythema, emotional lability, vomiting, goitre, weight loss, tremor, lid lag and exophthalmos
        - Clinical features of hypothyroidism – weight gain, lethargy, tiredness, hair loss, dry skin, cold intolerance, slow pulse rate

Management of the neonate following delivery

- Clinical examination of the baby
- Cord blood for TSH and FT4
- If cord blood screening not performed, send formal thyroid function tests preferably after 48 hours of life (TSH and FT4).
- Discuss with specialist if abnormal.
- Hypothyroidism must be treated within the first 28 days of life due to the risk of mental impairment which is irreversible if treatment with thyroid hormones is delayed past one month of age.

Renal disease

- Acute cystitis or Acute pyelonephritis- see chapter on Infections in pregnancy

Chronic kidney disease

- Women with known renal disease should be referred to a specialist to evaluate for the presence and severity of renal impairment, proteinuria and/or hypertension.
- Women with hypertension and proteinuria prior to 20 weeks gestation should be referred for tertiary care for further work-up.
- Pregnancy is contra-indicated in women with stage 4-5 chronic kidney disease. (Glomerular filtration rate < 30 mL/minute and serum creatinine > 250 umol / L)

Acute kidney injury

Causes

- Infection – septic miscarriage, puerperal sepsis
- Blood loss – postpartum haemorrhage, abruption
- Volume contraction – pre-eclampsia, hyperemesis gravidarum, diarrhoea

Management

- Treat the underlying cause.
  - Accurate assessment of fluid balance is important.
  - Fluid intake and output should be recorded hourly.
  - Venous blood gas and lactate (where possible), serum creatinine and electrolytes should be measured at least daily.
  - Treat any associated coagulopathy
- Fluid overload must be prevented especially in women with preeclampsia
- Women with deteriorating renal function or oliguria should be referred for tertiary care

Obesity in pregnancy

- Women with a high BMI are at an increased risk for maternal and neonatal complications.
- The health risk is increased during antenatal, intrapartum and peripartum period. See also the chapter on maternal nutrition
- Assess for co-morbid conditions and look out for risk factors associated with obesity (cardiovascular disease, HDP, GDM).
- All pregnant women should have a weight, height and MUAC measurement at the first antenatal visit.
- Do not mock, shame or blame the woman for living with obesity.
  - Obesity is often related to previous traumas and losses experienced by the woman

Definition

- Obesity is a body mass index (BMI) ≥30kg/m^2
  - Class I obesity: BMI 30-34.9 kg/m^2
  - Class II obesity: BMI 35-39.9 kg/m^2
  - Class III obesity: BMI 40 kg/m^2 and above (morbid obesity)
- BMI should be recorded on the antenatal card at the first visit using the pre-pregnancy weight (if available).
- Calculating the BMI
  - If booked in the first trimester, use the first trimester weight to calculate the BMI.
  - If booked in the second trimester, subtract 4kg from the weight and then calculate the BMI.
  - If booked in the third trimester, subtract 8kg from the weight and then calculate the BMI.

Management of obese pregnant women

- Preconception
  - Review history and chronic conditions
  - Counsel regarding pregnancy complications
  - Evaluate health status, nutritional support needs
  - Glucose screen (pre-existing diabetes)
- Antenatal
  - Confirm pregnancy and gestational age
  - Book for detailed sonar at 20 weeks where available (beware of the limitations of fetal ultrasound in an obese woman)
  - Do standard risk assessment
  - Screen for gestational diabetes – OGTT
  - Identify women with pre-existing medical conditions
  - Identify women with previous adverse pregnancy outcomes
  - Consider fetal growth ultrasound in third trimester - repeat as needed
  - Nutritional support and counselling (refer to dietician, can be at local clinic if available)
  - Management at BANC Plus and/or High Risk Clinic for BMI >40 kg/m^2 and appropriate assessments should be done to decide on delivery site based on risk factors (at 36 weeks)
  - Anaesthesia considerations in third trimester (anaesthetic consult ideal prior to delivery in women with a BMI ≥ 45 kg/m^2)
- Intrapartum
  - Allow for normal vaginal delivery if there are no contra-indications
  - Induction of labour only for obstetric indications
  - Spontaneous delivery is usually preferable to CD, unless there are obstetric reasons for surgery
  - If CD is indicated- closure of subcutaneous fat ≥2cm
- Postpartum
  - Early mobilisation and hydration
  - Graduated compression stockings if available and prophylactic VTE prophylaxis where indicated (see VTE prophylaxis above)
  - Encourage breastfeeding
  - Offer contraceptive advice

Antenatal care and referral routes

- BMI of < 35 kg/m^2 can be managed at a MOU or BANC+ clinic if otherwise low risk.
- BMI of 35-39 kg/m^2 should ideally be managed at a district hospital, or MOU if otherwise low risk.
- BMI of 40 kg/m^2 or more should ideally be managed at a regional hospital or specialist outreach clinic, referred for specialist care where available.
- BMI of ≥ 50 kg/m^2 will need management and delivery at a specialist or tertiary institution.

Substance abuse

- The antenatal period is a vital period for screening, diagnosis and treatment.
- Identify those affected and at risk and offer appropriate counselling.
- Antenatal contact must follow respectful care principles.
- Look out for multiple drug use, risk of domestic violence and other mental health concerns- see chapter on mental health.
- Look out for associated maternal and neonatal adverse outcomes.
- Do not shame or blame women who use substances.
    - This often is linked to very difficult life circumstances

Referral of women identified to higher level of care

- A pregnant woman with an acute overdose should be stabilised and referred from clinic/CHC to hospital for further treatment and observation.
    - Mothers should be transported in a lateral semi-prone position to prevent injury.
    - Secure airway breathing and circulation.
- A pregnant woman known with substance abuse should be referred to the next high-risk antenatal clinic for assessment and pregnancy review.
- A pregnant woman with recurrent substance abuse despite treatment should be referred to a specialist health facility for multidisciplinary care.

Management principles

- Counsel and educate women about risks associated with drugs/substance used
- Encourage women to decrease and ideally discontinue drug/substance
- Identify co-morbid conditions and treat sexually transmitted diseases
- Multidisciplinary team management
    - Address psychosocial aspects: support systems, place of safety, look out for suicidal ideations
    - Address nutrition: advise on the importance of good nutrition
    - Monitor maternal and fetal status
- Pain management plan: they are more sensitive to pain, and may need high doses of analgesia
- Withdrawal symptoms: offer support care, nutrition, hydration, analgesia
- Inform paediatricians to look out for neonatal withdrawal
- Discuss risks and benefits of breastfeeding
- Offer contraceptive advice

Chapter 17: POSTPARTUM (PUERPERAL) SEPSIS

Puerperal sepsis

- The World Health Organization defines maternal sepsis as a 'life-threatening condition with organ dysfunction resulting from infection during pregnancy, childbirth, post-abortion, or the postpartum period'.
- Puerperal sepsis is infection of the upper genital tract after delivery, which may involve the endometrium (decidua), myometrium, operative incisions, pelvic peritoneum or the entire peritoneal cavity.
- Severe puerperal sepsis is life threatening and is one of the leading causes of maternal mortality.
    - Its early signs can easily be missed because of atypical presentation or incomplete clinical assessment on admission.
- The most common presentation of puerperal sepsis is fever, vaginal bleeding, lower abdominal pain and/or abnormal vaginal discharge during the postpartum period.
    - Puerperal infection is a more encompassing term and includes infections secondary to puerperal sepsis, as well as extra-genital and incidental infections.

Clinical risk factors for puerperal sepsis

- Caesarean delivery
- Prolonged labour
- Frequent vaginal examinations in labour
- Prolonged rupture of membranes
- Vaginal lacerations during delivery
- Antenatal anaemia
- Poor immunity – HIV infection, diabetes mellitus or chronic use of corticosteroids
- Extensive vulvar warts
- Retained placenta or products of conception
- Intravenous cannulation (drip)

Mild puerperal sepsis

- Clinical features include
    - temperature <37.5 degrees Celsius (temperatures of up to 38 degrees Celsius can be physiological in the first 24hrs post-delivery, however early recognition is important),
    - mild uterine tenderness without evidence of peritonitis,
    - heart rate < 100/minute,
    - and offensive lochia (discharge).

Management

- On vaginal examination, exclude retained products of conception by speculum examination, visualization of the cervix as well as digital examination and bimanual palpation.
- If products are retained, arrange for evacuation in theatre with IV antibiotic cover and oxytocin:
    - Amoxicillin/clavulanic acid, IV, 1.2 g 8 hourly, until patient apyrexial for 24 hours
    - Follow with: Amoxicillin/clavulanic acid, oral, 875/125 mg 12 hourly.
- Encourage adequate intake of oral fluids.
- Follow up for reassessment in 36-48 hours at local facility.
- If not improving, admit and transfer to specialist level.

Severe puerperal sepsis

- Clinical features include
- temperature ≥37.5 degrees C and
- a heart rate ≥100/min in the presence (not always) of
- offensive lochia and
- uterine/abdominal tenderness.
- Consider other causes of infection by performing a systemic examination, e.g.
    - exclude meningitis, TB, pneumonia, drip site sepsis.
- After initial assessment and emergency management, patients with severe puerperal sepsis should be transferred to specialist level care.

Emergency management

- Take a full but relevant history of the pregnancy and delivery with reference to documentation if available.
- Do a full physical examination, with special attention to consciousness, temperature, heart rate, respiratory rate, colour, chest, abdomen and vaginal examination.
- Watch out for signs of septic shock and proceed as below, with additional measures for septic shock (below).
- Evaluate organ systems clinically using the ESMOE approach: big five (cerebral, cardiovascular, respiratory, liver and kidney), forgotten four (haematological, immune, endocrine, musculoskeletal, and core one (urogenital).
- Take blood for FBC, U&E and blood culture.
- Insert an intravenous line with crystalloid fluid, e.g. sodium chloride 0.9% and run at 120-240 mL/hour.
- Insert a urinary catheter.
- Ensure that antibiotics are given within one hour of presentation: start with Amoxicillin/clavulanic acid, IV, 1.2 g 8 hourly
- Refer within 48 hours to specialist care. Patient may need a laparotomy or hysterectomy for source control.
    - Adjust antibiotics according to sensitivity from cultures if needed, and continue with IV antibiotics until patient apyrexial for 24 hours.
    - Follow with: Amoxicillin/clavulanic acid, oral, 875/125 mg 12 hourly or according to sensitivity from cultures.
    - Monitor heart rate, blood pressure and urine output hourly.

Emergency treatment of septic shock

- Treat for septic shock if the systolic BP is less than 90 mmHg with a heart rate ≥100/minute in the presence of signs of infection.
- Give a rapid infusion of crystalloid fluid, e.g. sodium chloride 0.9% one to two litres (20 mL/kg).
- Observe BP, heart rate and respiratory rate half hourly, oxygen saturation (if equipment available) and urine output continuously
- Give oxygen by face mask.
- Aim for systolic BP ≥ 100 mmHg, or mean arterial BP ≥ 65 mmHg, respiratory rate < 30/minute, oxygen saturation > 90 per cent, haematocrit > 30 per cent, and urine output of 30mls/hour.
- Consider adding adrenalin and emergency blood transfusion.
- Transfer to a specialist health facility with full documentation of treatment given, as soon as the patient is reasonably stable.
- Postpartum sepsis with septic shock is usually an indication for laparotomy and hysterectomy.

Caesarean delivery wound sepsis

- This usually presents four to ten days after CD, although earlier presentations can occur.
- The wound is tender and indurated, and with severe infection, pus may be expressed from the suture line.

Assessment and management

- Assess for mild or severe wound sepsis, including full physical and gynaecological examination, and manage as above, including transfer from CHC to hospital, or to specialist care if necessary.
- Open the wound and remove sutures from the skin and subcutaneous tissue.
- Aspirate tender or fluctuant areas with a needle and syringe, and send blood or pus for MCS.
    - If a pus swab is preferred, it should be a deep wound swab.
- Subcutaneous abscesses may be drained using local and/or opiate analgesia.
- If the wound is frankly necrotic or the surrounding skin has areas of blistering or gangrene, treat for severe sepsis and transfer urgently to specialist care for surgical debridement and further management.
- Inspect the depth of the wound: if the rectus sheath is not intact, transfer to a specialist health facility.
- Antibiotic regimen: Ceftriaxone, IV, 2 g daily AND Metronidazole, IV, 500 mg 8 hourly.
    - Adjust according to culture sensitivity if needed.
- Order wound dressings as appropriate for the dressing method used.

Chapter 18: HIV AND TUBERCULOSIS IN PREGNANCY

15.1. Vertical Transmission Prevention (VTP) IN antenatal care

- The Vertical Transmission Prevention (VTP) programme (previously called prevention of mother-to-child transmission or PMTCT) is part of an expanded package of care for the mother-infant pair and their family.
- This chapter is a brief summary of the 2023 National ART and 2023 VTP Guidelines.
- For algorithms on treatment and follow up as well as more in-depth information, consult the full guidelines and any updated versions.
- Ensure that any guideline updates are available in your clinic and that any guideline changes are disseminated to all staff and are rapidly implemented.

There are four pillars for routine care for women of childbearing age and their families

- Primary prevention of new HIV cases, TB cases, syphilis, and other infections
- Preventing unintended pregnancies among women diagnosed with transmittable infections
- Preventing vertical transmission of HIV, syphilis, and other infections
- The care and treatment of the women living with, and their children exposed to HIV, syphilis and other infections.
- Remember, women with HIV, other STIs and TB may be facing high levels of psychosocial stress and stigma.
    - These stressors can make it difficult for them to seek help and adhere to treatment protocols.
    - They need respectful support care and referral for psychosocial care, as needed. See mental health chapter

HIV testing

- Provider Initiated Counselling and Testing (PICT) should be provided to all women with unknown or HIV-negative status
- Offer an HIV test at ANC first/booking visit.
    - If she tests negative, HIV testing should be repeated at scheduled antenatal visits, at approximately 4-weekly intervals, e.g., for BANC+ clients, this could be at 20, 26, 30, 34, and 38 weeks gestation and again during her labour/delivery admission.
    - Syphilis testing will be done at the same intervals (see chapter on infections in pregnancy)
    - If the woman and/or her partner test HIV-negative, provide HIV prevention information (see below)
    - If a woman tests HIV-positive at any stage, encourage testing of her other children, and linkage to HIV care and treatment as necessary

HIV prevention information for women who test negative:

- Seroconversion in pregnancy or while breastfeeding has a high risk of vertical transmission, due to a high maternal viral load and the absence of infant prophylaxis.
- All pregnant women (HIV+ or not) should be encouraged to use condoms to prevent seroconversion during pregnancy (safe sex practices)
- Partner involvement is important to promote condom use throughout pregnancy, the breastfeeding period and thereafter.
- Screen and treat other STIs
- Consider Pre-exposure prophylaxis (PrEP- if available)
- Give post-exposure prophylaxis (PEP) when applicable

Women who test positive for HIV (treatment)

- All pregnant women newly diagnosed with HIV are eligible for lifelong ART regardless of gestation, CD4 count, or clinical stage.
- Creatinine and CD4 count should still be done to determine her renal function and the need for prophylaxis for pneumocystis jerovecii pneumonia (PJP) and cryptococcal meningitis (CM).
- TDF, 3TC, and DTG (as the fixed-dose combination TLD) is the preferred regimen for women who are newly initiating, or re-initiating, ART. ART should be initiated on the same day as HIV diagnosis, and after contra-indications to ART have been excluded
- Pregnant women who are already on TLD at entry into antenatal care, should continue their current TLD regimen.
- Pregnant women who are already on ART at entry into antenatal care but not yet on DTG, should be transitioned to a DTG containing regimen as a matter of urgency
- Pregnant women on efavirenz-containing ART, or women on AZT, 3TC and DTG (as a second-line regimen), should be switched to TLD at their first antenatal visit. The result of their 1st VL (to be done at entry into antenatal care as outlined below) will not influence the decision to switch, and outstanding VL results should therefore not delay her switch to TLD.
- If a woman who is already on ART at entry into antenatal care will now collect her ART from the antenatal service point, ensure that she is documented as a transfer-out from her former ART clinic, and not classified as lost-to-follow-up.
- Known HIV-positive women, who are not currently on ART, but are ART-experienced (e.g. previous VTP, or previous LTFU on ART) should re-initiate TLD.
- All women living with HIV should be referred to a CHW to support adherence, breastfeeding and retention in care pre- and postdelivery.

Viral load testing

- Newly diagnosed and initiated ART for the first time:
  - Do 1st VL at 3 months on ART.
  - If VL < 50 c/mL, repeat VL at delivery.
- Known HIV-positive women already on ART:
  - VL at first/booking visit in ANC,
  - If VL < 50 c/mL, repeat VL at delivery.
- Known HIV-positive women, who are not currently on ART, but are ART exposed (e.g. previous VTP, or ART LTFU) and who are initiating a DTG-containing regimen:
  - Do 1st VL at 3 months on ART.
  - If VL < 50 c/mL, repeat VL at delivery.
- Remember to insert the laboratory barcode sticker and record all VL, TB, and syphilis results in the Maternity Case Record/ANC Card, and the ART Clinical Stationery (if available in that facility).
- Remember to put the correct PMTCT code in the EGK (gatekeeping) code field of the laboratory form for each VL done to ensure the electronic gatekeeping rules do not lead to sample rejection.
  - Use the code C#PMTCT for all VLs done during ANC or the breastfeeding period.
  - Use the code C#Delivery for all VLs done at the time of delivery.
- Ensure that the results of any VL test are checked within one week.
- If VL ≥ 50c/ml: Recall the mother-infant pair to the facility. Manage the mother according to the VL non-suppression algorithm in the VTP guideline.

Screening for Tuberculosis and other infections

- Screen for TB at every visit regardless of HIV status and consider TPT if eligible.
- Ensure any woman diagnosed with TB is adherent to TB treatment and that she is aware that her newborn may require TB prophylaxis.
- Initiate Cotrimoxazole Prophylaxis (CPT) if CD4 count ≤ 200 cells/μL, or WHO clinical stage 2, 3, or 4 disease
- If CD4 ≤100 cells/uL the laboratory will automatically perform a Cryptococcal Antigen test (CrAg).
  - CrAg-positive clients who are pregnant should be offered an LP (regardless of symptoms) and discussed with an expert before a decision is made regarding management.
- All women living with HIV will automatically be treated for HBV when they start routine ART containing TDF and 3TC /FTC. (See the chapter on infections in pregnancy regarding the management of Hepatitis B in pregnancy).

Labour and delivery: testing

- Provide respectful, compassionate care that takes into account that the woman may be experiencing psychological distress. Maintain full confidentiality.
- PICT should be provided to all women presenting in labour ward who are not known to be HIV-positive (including born-before-arrivals [BBAs]):
  - Offer couples counselling and partner testing.
  - Women who choose not to be tested should be offered ‘post-refusal’ counselling and offered a re-test at every subsequent visit.
  - If a woman tests positive at any stage, encourage testing of her other children, and linkage to HIV care and treatment as necessary.
  - If a woman has indeterminate or discrepant HIV test results, treat the baby as a high risk HIV-exposed infant until mother’s HIV status can be confirmed. Communicate clearly to the mother and document the results and plan of action in the maternal record and RTHB.

Labour and delivery: treatment

- Pregnant women already on ART should continue their current ART regimen at usual dosing times during labour.
- Newly diagnosed, or known HIV positive women not on ART:
  - Give a stat single fixed dose combination tablet of TDF, 3TC and DTG (TLD) and a stat single dose of NVP.
  - Lifelong ART should be initiated the following day after contra-indications to ART have been excluded.
    - TLD is the preferred regimen.
    - A contraceptive method is recommended.
    - Provide her with a choice of contraceptive options as desired.
  - Appropriate ART literacy education should be given to the women before she leaves the facility.
  - Mothers must understand and anticipate the adherence challenges that may be experienced in the postpartum period.

Labour and delivery: VL monitoring

- All women must have a VL test done at the time of delivery.
    - Remember to insert the laboratory barcode sticker into the postnatal discharge form and the RTHB.
- The results of the delivery VL will determine the infant's risk-profile. Until the results are known, all infants will receive dual prophylaxis with NVP and AZT.
- The results of the delivery VL must be checked within 3 to 6 days, and the management of the mother-infant pair adjusted accordingly.
- If the mother's delivery HIV VL < 50 c/mL
    - Affirm and encourage good adherence
    - Repeat maternal VL 6 monthly during breastfeeding
    - The infant should be re-classified as low-risk
- If the mother's delivery HIV VL ≥ 50 c/mL
    - Follow the algorithm for Management of a High Maternal Viral Load after Delivery in the VTP guideline
    - The infant should be re-classified as higher-risk and follow the algorithm for Prophylaxis for the HIV-Exposed Infant at Birth in the VTP guideline.

Management of labour

- Women living with HIV can be managed as any other woman in labour, according to the guidelines in other chapters. As with all woman in labour:
    - avoid unnecessary episiotomies
    - avoid unnecessary assisted deliveries
    - avoid unnecessary rupture of membranes, but when ROM is indicated to induce or augment labour, it can be done
    - avoiding excessive suctioning of the infant
- Encourage skin to skin contact with the baby within one hour after delivery and initiate exclusive breastfeeding.

Caesarean delivery

- CD in WLHIV is performed for the same obstetric indications and techniques as in HIV negative women.
    - Use the standard dual antibiotic prophylaxis (see chapter on CD).
- Postoperative prophylactic antimicrobial administration is not recommended for most surgeries as this selects for antimicrobial resistance.
- However, women living with HIV who have the following risk factors may be at higher risk of infection post caesarean delivery:
    - Advanced immunosuppression.
    - Prolonged rupture of membranes (>18 hours).
    - Multiple vaginal examinations during labour (>5 PVs).
    - Second stage CD.
- These women should be monitored carefully and have any infection treated appropriately.

Post-delivery discharge

At discharge, ensure contraception has been administered after appropriate counselling.

    - Re-emphasise the need for the consistent and correct use of condoms as part of dual contraception, and the importance of planned parenthood.
- Provide the mother with two-months' supply of ART and six-weeks supply of infant prophylaxis
- Communicate follow-up appointment dates for the six-day post-natal visit at a named facility.
    - Provide necessary referral letters.
        - Provide an ART transfer-out letter, if she will receive her ART at a different facility.
        - However, it is recommended that the mother-baby pair continue to receive integrated care within the maternal and child health stream until the baby is two years old or no longer breastfeeding.

Care of the HIV-exposed infant at delivery

- All HIV-exposed Infants should receive a birth HIV-PCR to identify HIV transmission that occurred in-utero.
- All HIV-exposed Infants should be initiated on dual post-exposure prophylaxis with NVP and AZT until the result of the delivery-VL can be reviewed.
    - If the mother-baby pair have already been discharged, this may be at the 3-6 day postnatal visit at the clinic. Clinicians working in postnatal clinics should therefore review the results of delivery VL.
    - If the baby is still admitted to hospital, ward staff should ensure that the results are reviewed.
- Once the result of the delivery VL is known, prophylaxis should be adjusted accordingly.
- If the mother's delivery HIV VL < 50 c/mL regardless of feeding choice:
    - Re-classify the infant as low-risk
    - Stop AZT
    - Continue NVP daily for six weeks
- If the delivery HIV VL ≥ 50 c/mL in a breastfeeding mother
    - Re-classify as higher-risk
    - Continue AZT twice daily for six weeks
- Continue NVP daily for a minimum of 12 weeks. NVP should only be stopped when the breastfeeding mother has a HIV VL of less than 50 c/mL, or until four weeks after she has stopped breastfeeding.
- All higher-risk infants who are exclusively formula fed should receive AZT for 6 weeks and NVP for 6 weeks

Care of the mother after birth- postnatal visits

- At the 6 days visit- retest the HIV negative mother if she was not retested during labour
- Retest every HIV-negative mother at the 10-week visit (about three months postpartum), the six-month visit, and every three months whilst breastfeeding.
- Continue VL monitoring every six months (at 6, 12,18, and 24 months) whilst breastfeeding. Ensure that the results of any VL test done is checked within 1 week.
- Remember to offer partner testing. If no longer breastfeeding, ensure that the HIV negative mother receives an HIV test at least every year. Offer/continue PrEP as needed.
- WLHIV to continue ART during the postpartum period and for life
- If she is newly diagnosed during the breastfeeding period, initiate ART after contra-indications to ART have been excluded
- This is a high-risk period for poor adherence.
    - Ensure that the mother understands the importance of continued viral suppression for her own health and that of her baby.
    - She must also understand and anticipate the adherence challenges that may be experienced in the postpartum period.
    - Link the mother to MomConnect, a CHW, a mentor mother, or a support group/club if available.
    - Whether continued ART care is provided at MNCWH services (preferred) or at PHC/Wellness services, ensure that mother is retained in care, adherent to ART, and maintains a suppressed viral load.
- Remember poor adherence is closely linked with psychosocial problems such as symptoms of anxiety and depression and lack of social support.
    - Getting angry with a person who is not adhering to ART is likely to make them less likely to adhere.
    - Explore barriers and opportunities with the woman.
    - Enable her to come up with plans in which her adherence can improve.
- Check ART adherence at every visit. Check, record and act on results of any earlier VL tests

For more information on infant prophylaxis, please refer to the newborn guideline as well as the VTP guideline.

TB and other opportunistic infections

- HIV positive pregnant women who are acutely or chronically unwell need investigation for TB and other opportunistic infections.
- Level one hospitals should refer to level two or three hospitals if:
    - they do not have the resources for appropriate investigation and management,
    - diagnosis of the underlying cause is not readily determined, or
    - there is evidence of organ dysfunction (jaundice, renal impairment, respiratory distress, or neurological problems).
- For chronically unwell women, there should be a low threshold for admission for inpatient investigation and management.
- Medical problems in HIV positive pregnant women should not be attributed to 'advanced HIV', the underlying cause must be investigated.
- Initiate treatment promptly, do not delay, reduce or withhold treatment because of pregnancy; the benefit of treatment far outweighs any theoretical risks to the fetus.
- Prophylaxis of opportunistic infections
    - All women with CD4 < 200, WHO stages two, three, or four disease, or active TB should start CPT (two tablets daily).
    - Discontinue when CD4 >200 for more than six months.

Tuberculosis (TB) in pregnancy and breastfeeding

- Refer to the national TB guideline, the ART guideline as well as the VTP guideline for more information.
- Non-pregnancy related infections remain the most common cause of maternal mortality in South Africa.
    - TB is the single most common cause.
    - The national consolidated guidelines strongly emphasise that screening for TB is an essential component of antenatal care.
    - Deaths from TB also occur in HIV negative women.
- All pregnant and lactating women should be screened for TB at every contact session during antenatal care, at delivery, and during the breastfeeding period.
    - Early detection and prompt initiation of TB treatment are essential.
- TB symptom screening may have lower sensitivity in pregnant women and any client newly diagnosed with HIV.
    - For this reason, a TB GXP should be done for the following women, regardless of TB symptoms:
        - Any pregnant women with a new HIV diagnosis
        - Any known WLHIV (whether on ART or not on ART) with a new pregnancy diagnosis

TB GeneXpert test:

- Collect two sputum samples (ask the patient to cough outside), and send to the laboratory for GeneXpert and microscopy and culture, as per National TB guidelines
- Sputum collection should happen at the antenatal clinic; do not refer to a TB clinic to collect sputum, this causes avoidable delays
- Ensure the patient has a follow-up appointment for the results
- If TB GXP and symptom screen are negative:
    - Initiate TB Preventative Therapy (TPT) after contra-indications have been excluded
- If TB GXP is negative, but symptom screen remains positive, do additional investigations according to the TB guidelines. If the CD4,100, do a urine LAM.
- If the sputum sample shows drug-sensitive TB
    - Start TB treatment as per national guidelines.
    - All oral TB drugs are safe to use in pregnancy.
    - Review in two weeks; if stable and tolerating TB treatment, initiate or continue ART.
    - If TB meningitis is diagnosed, defer ART for 4 to 6 weeks
    - If a woman is unwell with TB or other symptoms, discuss with a doctor or refer for further assessment as a matter of urgency. If TB is suspected, do not start ART until TB is excluded/diagnosed, as these women may be at a higher risk of developing IRIS.
- If the sputum sample shows rifampicin-resistant TB:
    - Drug-resistant TB should be confirmed by culture and sensitivity
    - Ensure that INH sensitivity and second-line sensitivities are requested
    - Discuss with local infectious diseases specialists or senior doctors at local TB hospital for advice on treatment

TB Preventative Therapy (TPT) for pregnant and breastfeeding women

- TPT has been shown to reduce the incidence of TB in all people living with HIV, including those on ART
- TPT is NOT currently recommended to pregnant HIV positive women, due to safety concerns, but can be initiated post-delivery where indicated
- TPT regimen:
    - Isoniazid 300mg daily
    - Pyridoxine 25mg daily
- Duration of treatment:
    - TPT should be given for 12 months
- Contra-indications for TPT
    - Positive TB symptom screen
    - Alcohol abuse
    - Liver disease
    - Known hypersensitivity to INH

Chapter 19: COVID-19 IN PREGNANT AND POSTPARTUM WOMEN

- COVID-19 is a respiratory tract infection caused by coronavirus- severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2).
- Pregnant and postpartum women with suspected or confirmed COVID-19 should be managed with supportive care and consider the immunologic and physiologic adaptations during and after pregnancy.
- Compared to other women of reproductive age with the same exposure risk, pregnant women are not at an increased risk of becoming infected with COVID-19.
- However, pregnant women who contract COVID-19 are likely to have severe morbidity and mortality, particularly in the third trimester of pregnancy.
- Follow updated national guidelines on any new communicable diseases.

COVID-19 testing in pregnant and postpartum women

- Pregnancy does not alter the criteria for testing. Pregnant women should be investigated and diagnosed as per local criteria.
- For pregnant women the same infection prevention and COVID-19 investigation and diagnostic guidance applies, as for non-pregnant adults.

Preventative measures for COVID-19

- COVID-19 vaccination is recommended
- Wear a face mask
- Social distancing
- Maintain good personal hygiene: Wash hands, use hand sanitizer
- Personal protective equipment (PPE) must be used by those working in the healthcare environment according to local guidelines

COVID-19 vaccination policy for pregnant and postpartum women

- COVID-19 vaccination is recommended in pregnancy. Vaccination against COVID-19 should be offered to all pregnant and lactating women, irrespective of the presence of co-morbidities.
- Pregnant and lactating women are to be immunized with any of the vaccines currently available in the country.
- Vaccines can be offered at any gestational age in pregnancy and breastfeeding period.
- COVID-19 vaccination should be offered at the same time as the rest of the population based on age and clinical risk (as per local national guidelines).
- Vaccination of pregnant and breastfeeding women during routine antenatal and postnatal visits should be encouraged and facilitated. Where this is not possible, women should be encouraged to access vaccination at nearby sites.
- Women planning a pregnancy or fertility treatment can receive the COVID-19 vaccine and do not need to delay conception.

Benefits of getting the COVID-19 vaccine during pregnancy

- The vaccines are effective at preventing COVID-19 disease, especially severe disease and mortality.
- Help transfer protective antibodies to the fetus or neonate. This may decrease the chance of a neonate getting COVID-19 by passive antibody transfer.
- Potential reduction in the risk of preterm birth associated with COVID-19.
- Potential reduction in transmission of COVID-19 to vulnerable household members.
- Potential reduction in the risk of stillbirth associated with COVID-19.

Side effects of COVID-19 vaccination in pregnant and breastfeeding women

- No additional safety concerns have been reported for vaccinated pregnant women or their newborns.
- Pregnant women receiving a COVID-19 vaccine show similar common minor adverse effects to non-pregnant population.
- The rare syndrome of vaccine-induced thrombosis and thrombocytopenia (VITT) is an idiosyncratic reaction not associated with any of the usual venous thromboembolism risk factors.
- There is no evidence that pregnant or postpartum women are at higher risk of VITT.

Risk factors for contracting severe COVID-19 or being hospitalised with COVID-19

- BMI ≥ 30 kg/m^2
- Pre- pregnancy co-morbidities (e.g. diabetes or hypertension)
- Maternal age ≥ 35 years
- Socio-economic deprivation
- Working in healthcare or public essential services

The effects of maternal COVID-19 on the fetus

- There is no reported increase in congenital disorders because of COVID-19 infection
- Vertical transmission is rare
- Increased risk of stillbirth
- Increased incidence of small-for-gestational- age babies
- Increased preterm birth rate

Investigations used to diagnose COVID-19 in pregnant and postpartum women

- Pregnancy does not alter the criteria for testing.
- Pregnant women should not be excluded from testing and investigations if clinically indicated.
- COVID-19 PCR testing is the gold-standard with the greatest sensitivity and specificity
- Use of an antigen-detecting rapid diagnostic tests is useful in the setting of pregnant women who may not be able to plan their admission, and allows immediate isolation of those who are positive.
- Each facility must assess their access to testing and determine which testing strategy is most appropriate based on local guidelines:
- During a COVID-19 wave, all pregnant women who need admission must be tested for COVID-19 using a rapid antigen test, conducted on arrival, on-site in the maternity admissions area, so that a result is available within 15-30 minutes of arrival. Further management will depend on the rapid antigen test result and the presence or absence of symptoms suggestive of COVID-19.
- During times when there is no COVID-19 wave, all pregnant women needing admission who screen negative for COVID-19 symptoms and who can provide evidence that they are fully vaccinated against COVID-19 do not need a COVID-19 admission test and can be managed as COVID-19 negative. They must be screened daily for COVID-19 symptoms.

	Symptoms of COVID-19 present	Symptoms of COVID-19 absent
COVID-19 rapid antigen test positive	Admit to designated COVID-19 section of the maternity unit at the appropriate level of care	Admit to designated COVID-19 section of the maternity unit at the appropriate level of care
COVID-19 rapid antigen test negative	Do COVID-19 PCR test. Admit to PUI cubicle of maternity unit until PCR result available	Admit and manage as COVID-19 negative patient. Daily screening for COVID-19 symptoms

COVID-19 symptoms in pregnant and postpartum women

- There is currently no known difference between the clinical manifestations of COVID-19 in pregnant and non-pregnant women.
- Most symptomatic women experience mild or moderate cold/flu-like symptoms
- The most common symptoms of COVID-19 in pregnant women are cough, fever, sore throat, dyspnoea, myalgia, loss of sense of taste or smell and diarrhoea.

Referral and admission criteria for women with suspected or proven COVID-19

- Obstetric risk factors or complications needing admission
- Co-morbidities
- Severity of COVID-19 disease (moderate and severe COVID-19 disease)
- Mild COVID-19 disease but, home isolation is not feasible
- Mild COVID-19 disease but monitoring by teleconsultation is not available

Level of care were pregnant women with COVID-19 should be admitted

- Mild COVID-19 can be managed at home or in a designated isolation facility if available.
- Moderately severe COVID-19 requiring oxygen by mask to maintain oxygen saturations above 95% must be managed in a hospital with a maternity service and a doctor full-time on-site.
- Severe COVID-19 requiring ICU care should be managed at a hospital that has ICU and or a multidisciplinary team were such services are available (regional, tertiary, central or private hospital).
- Pregnant women in labour or with obstetric risk factors and complications must be managed at the appropriate level of care according to existing obstetric referral criteria.
- Pregnant women with COVID-19 who need admission either because of obstetric problems or because of the severity of the COVID-19 should be managed within a designated section of the maternity department, under the care of midwives and doctors competent in obstetric care, rather than in a general COVID-19 ward, unless ICU care is required.

Figure 19-1 COVID-19 status and disease severity- management protocol

COVID-19 confirmed case with asymptomatic, mild disease	Isolate at home with healthcare facility surveillance by telemonitoring/SMS/WhatsApp unless other obstetric risk factors, co-morbidities, and social circumstances require admission. Provide supportive care: Paracetamol for fever and headache, hydration and rest. Women should monitor themselves for worsening symptoms and obstetric danger signs during home isolation. Worsening symptoms include difficulty breathing/talking, coughing blood, chest pain, unremitting fever, dizziness, confusion, and obstetric warning signs. If present, she should call a local facility or the Helpline 0800 029 999 The emergency services and the receiving facility should be informed that the woman is in self-isolation for COVID-19 so that IPC measures can be adhered to during transfer and arrival at the facility.
COVID-19 confirmed with moderate disease	An isolated bed or cubicle in the maternity unit. Obstetrics management individualised. Admit to dedicated COVID-19 hospital or wad as per local availability in consultation with a multidisciplinary team. Supportive care includes: Oxygen therapy: Maintain SpO2 >94%. Antibiotics for superimposed infection Corticosteroid therapy for severe disease Corticosteroids for fetal lung maturity to be individualised based on the woman's condition and GA Venous thromboembolism prophylaxis: low molecular weight heparin/ unfractionated heparin Hydration and rest
COVID-19 confirmed case or PUI with severe or critical disease	These patients should ideally be transferred to an ICU where specialist or multi-disciplinary care can be provided. Notify the receiving facility before transfer. Adhere to ICP and PPE.

Delivery site for pregnant women with suspected or confirmed COVID-19

- Pregnant women with confirmed COVID-19 infection should be managed at the appropriate level of care, as determined by the severity of their COVID-19 disease and her obstetric indications.
- All designated birthing sites should be able to identify potential COVID-19 cases, test for COVID-19, identify women with severe COVID-19 disease, and manage deliveries with asymptomatic or mild COVID-19 disease.
- A multidisciplinary team should manage women with severe COVID-19 disease at specialised COVID-19 facilities. Senior obstetric and medical input for a woman with severe or critical COVID-19 should be sought, particularly for birth-related decisions.
- At every level of care, intrapartum care, delivery, and immediate postnatal care for confirmed COVID-19 cases and PUIs should be conducted in an appropriate isolation room by staff wearing appropriate PPE
- If a woman who delivers in a non-COVID-19 facility is found to be COVID-19 positive, she should be referred to a COVID-19 dedicated facility/ward based on the needs of the mother and baby.

Method of induction of labour, mode and timing of delivery in pregnant women with suspected or confirmed COVID-19 infection

- Mode of delivery in pregnant women with COVID-19 should be guided by obstetric indications and physiological stability (cardiorespiratory status and oxygenation).
- COVID-19 infection is not an indication for caesarean section delivery.
- If a critically ill pregnant woman is having refractory hypoxemia, caesarean section may be indicated for better management of respiratory failure.

Timing of delivery

- Timing of delivery should be individualized and based on the disease severity, associated co-morbidities, and the gestational age.
- In asymptomatic/mild disease, delivery should be reserved for appropriate obstetric indications and should not be delayed solely due to COVID-19.
- In severe or critical disease, a multi-disciplinary team should assess and make the clinical decision. Delivery is indicated, if it is expected that it may improve the respiratory failure and aid in optimization of clinical status. Pregnancy may be continued if there is no imminent threat to maternal and fetal life.

Induction of labour

- COVID-19 infection per se is not an indication for induction of labour.
- Both the indication and the cervical status should be evaluated in pregnant women scheduled for labour induction. Those who have an unfavourable cervix (e.g., Bishop score <6) can be induced by mechanical or pharmacological methods as per the local/hospital protocol.
- Fetal monitoring as per standard guidelines according to obstetric risk factors. Not for fetal monitoring if the mother is unstable.
- Healthy neonates should be allowed to room-in with their mothers. This is very important for the wellbeing of the mother-baby pair. The mother-baby pair must be isolated from uninfected mothers and neonates.
- When roomed-in, exclusive breastfeeding must be promoted. Direct breastfeeding should be given. Mother should wash hands frequently including before breastfeeding and wear an appropriate mask. If direct breastfeeding is not feasible due to neonatal or maternal condition, expressed breastmilk may be fed.

Chapter 20: INFECTIONS IN PREGNANCY

Follow the latest version of the national Management Guideline to Sexually Transmitted Infections and the Essential Medicine List for antibiotic choices.

Vaginal discharge

- Common symptom in pregnancy
- Under influence of estrogen, glycogen broken to lactic acid which is responsible for the normal vaginal PH of <4.5
- Multiple factors can alter this normal PH, e.g. douching, some soaps, and perfumes
- Not all vaginal discharges are a result of sexually transmitted infections (STIs)
- Discharge considered abnormal if: itchy, excessive, yellow or green in colour, or offensive smell.

Classification

- Physiological
  - Clear to white in color and non-offensive
  - Non-adherent to vaginal walls, PH<4.5
- Contact dermatitis /mechanical/chemical irritation
  - Soaps, perfumes, certain types of underwear
- Infectious
  - Non-STIs (see Table 20-1)
  - STIs (see Table 20-1)

Table 20-1 Vaginal infections

Non-STIs	Characteristics	Treatment
Bacterial vaginosis	• Common cause of vaginal discharge • Due to alteration of vaginal ecosystem (Lactobacillus species replaced by Gardnerella vaginalis and anaerobes such as Bacteriodes and Mobiluncus species • Homogenous grey white in color • Malodorous smell • Associated with preterm labour, low birth weight and increased risk of mother to child HIV transmission	• Metronizadole 2g P.O. Stat (lower efficacy) or 400mg 12 hourly for 7 days (better efficacy)
Candida	• Thick, white cheesy and itchy	• Clotrimazole pessary 500mg PV stat or vaginal cream 12 hourly for 7 days in the evening

STIs	Characteristics
Gonorrhea	• Caused by Neisseria Gonorrhea, a gram negative diplococci • Mucopurulent vaginal discharge • Also causes urethritis • An important cause of postpartum endometritis and ophthalmic infections in the neonate • May be resistant to penicillin and ciprofloxacin (contraindicated in pregnancy)
Trichomonas	• Caused by flagellated Protozoa called Trichomonas Vaginalis • Infect squamous but not columnar epithelial cells • Can be found in association with other STIs
Chlamydia	• Caused by Chlamydia Trachomatis, an obligate intracellular parasite.

Approach to management

- Provide respectful care without judgment. Many women in South Africa are not empowered to negotiate safe sex.
- History and examination
  - Use of irritants, sexual history, ask about partner
- Inspect and document appearance of external genitalia: colour and presence of erythema
- Speculum examination:
  - Check and document colour and smell if discharge; appearance of cervix and vaginal wall
  - Do cervical cytology smear if not done in the past year (can be done up to GA of 20 weeks)
- Syndromic management
  - Ceftriaxone 250 mg IMI stat plus Azithromycin 1g PO stat plus Metronidazole orally 2 g stat
  - In case of severe penicillin allergy, omit ceftriaxone and increase Azithromycin to 2g orally, as a single dose.
  - Partner treatment needed as well
  - Add Clotrimazole pessary 500mg PV stat or vaginal cream 12 hourly for 7 days in the evening if suspect candida infection.
  - Doxycycline is contraindicated during pregnancy

Syphilis

- Refer to the latest version of the Guideline for the Prevention of Vertical Transmission of Communicable Infections

- Organism: Treponema pallidum, an obligate parasite in human
- All pregnant women need to be screened and tested for syphilis
    - At her 1st booking visit in antenatal care.
    - If she tests negative, syphilis testing should be repeated at scheduled antenatal visits, at approximately 4-weekly intervals, e.g., for BANC+ clients, this could be at 20, 26, 30, 34, and 38 weeks gestation
    - During her labour/delivery admission
    - At the time of diagnosis of an intrauterine death
    - At any time, if the mother has clinical symptoms or signs suggestive of syphilis
    - The frequency of syphilis testing should be aligned with the HIV testing schedule.
    - If a woman tests positive for HIV, but tests negative for syphilis, repeat syphilis testing should continue at the intervals described above.
- Rapid syphilis tests should be done using the manufacturer's instructions to avoid false negative tests. Rapid syphilis tests are available as a single rapid diagnostic test (RDT) that tests only for syphilis, and a dual RDT which tests for both syphilis and HIV using the same drop of blood. Dual syphilis-HIV rapid tests should only be used in clients:
    - Whose HIV status is negative or unknown AND
    - Who have not had a previous syphilis infection
- If a RDT is positive, this either indicates prior syphilis or current syphilis, as the test remains positive for life.
    - Give the first dose of penicillin (see below) and take blood for a RPR laboratory test.
    - Follow up in one week.
    - If the RPR is reactive, this is current syphilis infection, so continue with the second and third doses, a week apart.
- Repeat the RPR (laboratory test) after 3 months to confirm the response to treatment.
- If the lab RPR is negative (but the RDT was positive), this indicates prior syphilis infection, and no further treatment is needed. Continue to do monthly syphilis tests but use the lab-based RPR test now.

Treatment

Benzathine penicillin 2.4 million units diluted in 1% lidocaine without adrenalin IMI once weekly for three doses.

- For treatment of the baby, refer to the newborn guideline. The following asymptomatic babies of mothers with syphilis will need treatment:
    - mother did not complete three doses in full, or
    - mother received three doses but there was a delay of > 14 days between weekly IM doses
    - the last dose was less than 30 days before delivery
    - the dose that the mother received was incorrect, or
    - mother did not receive any treatment for syphilis, or
    - mother was treated for syphilis with an antibiotic that was not penicillin

Patient allergic to penicillin

- Do not use Doxycycline or Tetracycline: this contraindicated in pregnancy
- Consider desensitization (see the EML for guide to desensitisation)
- Desensitisation is best performed in an ICU with emergency resuscitation equipment (including IV line, ECG monitor and spirometer) in place in case of an anaphylactic reaction (regional hospital level)

Notify the partner to come for examination, syphilis and HIV testing, and treatment within one month.

Genital warts

- Caused by Human Papilloma Virus (HPV)
- Common sites: vulva, perineum, vagina and cervix
- Treatment
    - Cervical cytology smear if not done in the past year
    - Podophyllin contraindicated in pregnancy
    - No treatment for small lesions (<10mm) during pregnancy. Treat postpartum.
    - Large lesions- refer for assessment by a doctor.
        - CD is indicated if large lesions obstruct the introitus.

Genital ulcer syndrome (GUS)

Genital ulcer disease that persists despite appropriate syndromic management should be referred to a specialist.

Urinary tract infection

Asymptomatic bacteriuria

- Very common in pregnancy
- May precede cystitis and acute pyelonephritis
- Associated with preterm labour and low birth weight babies
- Treat if detected in urine culture

Cystitis

- Symptoms: Discomfort, frequency, dysuria, lower abdominal pain , offensive urine, sometimes haematuria
- Common pathogens: E coli (70-80%), Klebsiella. Proteus, Enterobacter, Staphylococcus Saprophyticus
- Associated with preterm labour and low birth weight babies
- Investigations
    - Urinalysis: Positive for Leucocytes AND nitrites.
- Treatment
    - Give empiric treatment if symptoms present with nitrites AND leukocytes on dipstick
    - Encourage increase in oral fluid intake
- Empiric treatment (no culture available or while waiting for culture):
    - Fosfomycin, oral, 3 g as a single dose

  OR
    - Nitrofurantoin 100mg 6 hourly for 5 days

Acute pyelonephritis

- Presentation: Dysuria, frequency, fever, rigors, abdominal pain, loin pain
- Examination: pyrexia, tachycardia, renal and abdominal tenderness
- Associated with preterm labour and low birth weight babies.
- Management
    - Admission
    - Investigations:
        - Urinalysis: Nitrites, leucocytes, blood, proteins
        - Midstream urine for MCS: to identify a definitive causative organism
        - Do FBC, CRP, U&E, Blood cultures
        - Renal ultrasound may be needed if no response to treatment (to rule out calculi or other renal pathology)
    - Treatment
        - Lower temperature: tepid sponging, wet towel, fan, antipyrexials (e.g paracetamol)
        - IV line with 0.9% sodium chloride for rehydration (may need up to 3 litres of fluid)
        - Empiric therapy:
            - Ceftriaxone, IV, 1 g, daily for 48 hours, or until fever subsides.

              OR
            - Gentamicin, IV, 6 mg/kg, daily (ensure normal renal function).
        - Switch to oral therapy as soon as the patient is able to take oral fluids:
            - Amoxicillin/clavulanic acid, oral, 875/125 mg 12 hourly for 7 days.
        - Thromboprophylaxis may be considered if there is reduced mobility and dehydration
- Repeat midstream urine MCS 7-10 days after completion of antibiotic treatment.

Malaria

Presentation

- Headache is a consistent symptom
- Always consider Malaria if pregnant woman presents as febrile illness
- May present with jaundice, anaemia, and hypoglycaemia. thrombocytopenia
- Others may present with history suggestive of eclamptic fit (hypoglycaemia) or picture suggestive of HELLP syndrome with normal blood pressure
- Beware of a pregnant woman who visited friends and relative and also pregnant women from Sub-Saharan Africa

Diagnosis

- Treat as a medical emergency
- Thick and thin smear
- For parasite counts, confirm species and stage of parasites
- Make sure you alert the laboratory of the specimen and your working diagnosis).
- Please note that a single blood film cannot rule Malaria especially in patients who are febrile.
    - In order to rule out malaria, perform three blood films over 12-24 hours.
- Rapid Diagnostic Test (RDT) can be used, but a negative test does not exclude malaria.

- See the National Malaria Diagnosis Quality Assurance Guidelines and the National Guidelines for the Prevention of Malaria, South Africa for more information on RDT.

Management

- Assessment of Severity of Malaria infection
- Clinical signs of severe malaria include one or more of the following
  - Severe general body weakness
  - Impaired level of consciousness
  - Convulsions
  - Hypotension (Systolic BP< 80mmHg)
  - Respiratory Distress (Acidotic breathing or RR >30 breaths/minutes)
  - Clinically jaundiced
  - Macroscopic Hematuria
  - Abnormal bleeding (retinal hemorrhages, DIC, etc.)

Laboratory

- Hypoglycemia (Glucose <2.2. mmol/L)
- Acidosis (PH <7.25 or plasma bicarbonate <15mmol/L)
- Renal dysfunction (serum creatinine >250umol/L)
- Hyperlactatemia (venous lactate >4mmol/L)
- Hyperbilirubinemia (bilirubin >50umol/L)

Uncomplicated Malaria

- Key features
  - Patient has none of the clinical or laboratory features in the above table
  - Symptoms are mild, ambulant with normal mental and absence of organ dysfunction.
  - Pregnant women with uncomplicated malaria still needs referral to hospital.
- Treatment
  - Admit to hospital and monitor blood sugar 4 hourly
  - Adequate hydration (Do not overhydrate- risk of ARDS)
  - FBC, UKE, LFTs
  - Artemether/lumefantrine, oral, 20/120 mg: give four tablets (80mg Artemether and 480mg Lumefantrine) immediately. Repeat the dose after eight hours.
  - Thereafter repeat dose 12hrly on following two days (total number of doses in 3 days = 6)
  - Give doses with fat containing food and also drinks to ensure adequate absorption
  - Give anti-emetic such as metoclopramide if patient is vomiting
  - Control pyrexia with tepid sponge, fan or paracetamol (avoid NSAIDS –nephrotoxic)

Severe (Complicated) Malaria

- Medical emergency
- Hospital admission
  - Multidisciplinary approach : High risk Obstetrician Specialist/Maternal and Fetal Medicine Specialist, Infectious Disease Specialist, Intensivist and Physician, Renal Physician if renal failure, etc
  - Reduce pyrexia: tepid sponge, fan, paracetamol
  - IV treatment:
    - Start treatment while waiting for transfer
    - Artesunate IV, 2.4 mg/kg at 0, 12 and 24 hours; then daily until patient is able to tolerate oral therapy.
    - Administer at least 3 IV doses before switching to oral artemether/lumefantrine:
    - Artemether/lumefantrine, oral, 20/120 mg: give four tablets (80mg Artemether and 480mg Lumefantrine) immediately. Repeat the dose after eight hours. Thereafter repeat dose 12hrly on following two days (total number of doses in 3 days = 6; i.e. 24 tablets)
    - If parenteral artesunate is not available:
      - Quinine, IV (1 mL = 300 mg quinine salt).
      - Loading dose: 20 mg/kg in dextrose 5% administered over 4 hours.
      - Maintenance dose: 8 hours after start of the loading dose, give 10 mg/kg in dextrose 5% over 4 hours repeated every 8 hours until there is clinical improvement, and the patient can take oral therapy.
      - Monitor for hypoglycaemia and dysrhythmias at least 4 hourly.
      - If there is significant renal failure increase dose interval to 12 hourly after 48 hours.
  - Monitor: RR, Oxygen saturation, intake and output, blood glucose, UKE, FBC
  - Add broad-spectrum, antibiotics to cover secondary bacterial infections
- Patient management after discharge
  - Monitor for Intrauterine growth restriction (uncomplicated and severe/complicated) after treatment.

Hepatitis B

- Hepatitis B virus (HBV) is transmitted through blood and other bodily fluids (i.e. saliva, semen and vaginal fluid) of an infected person, and can pass from mother to child during childbirth.
- Screening for Hepatitis B surface antigen (HBsAg) in a pregnant woman is gradually being introduced into antenatal care in South Africa and will become an essential component of antenatal care as HBsAg +ve serology implies maternal infection which can be transmitted to the baby during delivery.
- The following guideline is based on the current (2019) National Guidelines for the Management of Viral Hepatitis as well as the Essential Medicines List for SA, and reference should always be made to updated versions of these documents when they become available or when new evidence is reviewed.

Presentation

- There are two scenarios where a pregnant woman may present with HBV infection during the antenatal period.
    - Firstly, she may present with acute HBV infection, which should always be considered as a possible diagnosis when a woman presents with jaundice.
        - Any pregnant woman with jaundice should be referred urgently to hospital for admission and investigations, including a viral hepatitis screen.
        - Acute HBV infection during pregnancy can be life-threatening for the mother and results in a high risk of perinatal transmission to the baby (approximately 60%) when infection occurs in the third trimester.
    - The second scenario is the asymptomatic pregnant woman who has known chronic HBV infection, or who undergoes routine screening for HBV, and is found to carry the infection.
        - If the pregnant woman was born in South Africa after 1995, it is likely that she was vaccinated in infancy against HBV (HBV immunization was incorporated into the South African EPI schedule in 1995).
        - This is likely to have made her immune as the vaccine confers lifelong immunity in the majority of cases.
        - Therefore, in South Africa it is pregnant women born before 1996 that are more likely to present with HBV infection.
- Whilst neonatal infection tends to be asymptomatic, it usually leads to chronic HBV infection with the majority being asymptomatic until later in adulthood when they present with complications like liver failure, liver cirrhosis and or hepatocellular cancer.
- Whether the pregnant woman presents with an acute or chronic HBV infection, there are implications for ongoing monitoring of liver function in the mother and there is a risk of vertical transmission to the baby around the time of delivery.
    - This risk to the baby can be minimised with appropriate management of both the pregnant woman and her newborn baby.
- The basic screening test for HBV is the HBsAg blood test.
    - A pregnant woman who tests positive for HBsAg needs referral to a practitioner with some expertise in managing HBV infection, as further investigations are required to evaluate both the mother's liver function and the status of her chronic infection.
    - Factors which increase the risk of vertical transmission include HBeAg positive serology (which is often associated with high viral load) and co-infection with HIV.

Testing for HBV Infection (HBsAg test)

- Ideally, all pregnant women should be offered a test for HBsAg at the first antenatal visit irrespective of gestational age (follow national or provincial protocols for screening as they become available, as this process is still in the beginning phase in SA).
- A blood sample should be collected in a plain tube (with gel) and sent to the lab.
    - Tick HBV surface antigen on NHLS request form and indicate that the patient is pregnant so that NHLS can collect accurate data on HBV seropositivity rate in pregnant women.

HBsAg negative

- Consider offering HBV vaccine to any pregnant woman who screens negative for HBV.
    - The exact approach to vaccination in pregnancy will depend on availability of HBV vaccines.
    - In cases of limited availability, women at high-risk of HBV infection should be prioritised
- HBV vaccine is not a live vaccine and is safe to give in pregnancy. Follow the recommended schedule according to the latest guidelines/EML.
- There are two things to consider before deciding to vaccinate the pregnant HBV negative woman:
    1. Has she been immunized before?
    2. Is she at high risk due to her lifestyle or life situation (e.g. intravenous drug user, unprotected sex

with multiple partners, partner known to be infected with HBV etc.)

- If she is not at risk, she is not a priority for the vaccine
- If she is at risk, and has not been immunized, then she should be offered the vaccine, unless she declines after counselling
- If she has a high-risk lifestyle, but has had the vaccine, or probably had the vaccine, then there are two options, depending on the patient's choice (check first that she will be willing to have the vaccine if indicated):
  - Option 1: test for immunity against HBV (this can be checked with a blood test for anti-HBs antibody level); if antibody >10mIU/ml this implies immunity, and there is no need for further vaccination; if antibody level is below 10mIU/ml, then give the vaccine
  - Option 2: just give the vaccine, it should not harm the woman or her fetus, even if the woman has been vaccinated in childhood and is already immune.

HBsAg positive

- Counsel woman about her HBsAg status.
  - The presence of HBsAg indicates that the person is infectious, except when it might be transiently positive within 30 days after a dose of HBV vaccine
- Refer to a doctor experienced in managing HBV infection in pregnancy
- If possible, consult with a relevant specialist (virologist, infectious disease specialist, or hepatologist) to get clear guidance on further investigations, therapy for the maternal disease, and vertical transmission prevention (VTP)
- Those who are co-infected with HIV should take the standard first line ART regimen (TLD).
  - The tenofovir and lamivudine are also active against HBV and will serve for VTP of HBV as well as for HIV.
  - If the mother is on a different ART regimen, or needs to change from the TLD regimen, seek advice from an expert regarding the implications for the HBV disease.
- For those who are HIV negative, the indications for therapy for the maternal HBV disease are the same as for non-pregnant HBV infected people; follow expert guidance
  - Offer PreP to HIV-negative women who are HBsAg positive, as the TDF in PreP will decrease the risk for transmission
  - For those who are HIV negative, but declines PreP, the need for maternal antivirals (tenofovir-TDF) for VTP is dependent on the HBV viral load (TDF indicated if viral load > 200 000 IU/ml) and where this not available, on a positive HBeAg serological status.
  - Where TDF is indicated for VTP, it can be started between 28 and 32 weeks and continued until 12 weeks post-delivery
  - The WHO also recommends, where viral load or HBeAg testing (or results) are not available, that treatment with TDF can still be offered.
- Plan for the mother to deliver in a facility where the baby can get access to monovalent HBV vaccine (0.5ml IM) and Hepatitis B immunoglobulin (HBIG) (0.5ml IM) within 12 hours of birth.
  - One should be injected into the baby's right thigh and the other into the left thigh.
  - This is the most important intervention to minimise the risk of VTP of HBV.
  - HBIG is not always available. If not available, ensure that at least the HBV vaccine is given at birth.
- The baby can then continue with the routine vaccination schedule including the full course of HBV vaccinations
- Maternal HBV infection is not an indication for CD
- Notify HBsAg(+) pregnant women (Complete forms for Notifiable Diseases)
- Identify all household and sexual contacts for screening and vaccination if they test negative
- All HBsAg (+) mothers, including those on TDF, should be educated on the value and safety of breastfeeding and that HBV is not transmitted through breastmilk.
  - Breastfeeding mothers with cracked nipples should practice proper nipple care and be informed that the HBV vaccine and HBIG (if it was given) will protect against transmission to the baby from any blood exposures.
- Ensure all health workers (including cleaners) who are involved in the providing care in the labour ward and operating theatre have been vaccinated against HBV.
- Obtain infectious disease specialist or internal medicine physician opinion before stopping TDF as there is a risk for postpartum hepatitis flare.
- Consider continued treatment for HBV after delivery where indicated

Chapter 21: BLOOD TRANSFUSION

- Patient blood management principles should be applied to all patients, throughout all the phases of patient management.
- Patient blood management (PBM) is a multi-disciplinary approach, using evidence-based guidelines in the decision making process to ensure that patients receive transfusions only when clinically appropriate - after all alternatives have been considered.
- Prior to ordering blood products for any patient, an informed consent discussion must take place with the patient according to legal requirements.
- In order to ensure a safe blood transfusion, guidelines on ordering and administration of blood and blood products should be available in all facilities that include:
    - Ordering priority to be considered e.g. un-crossmatched emergency fridge blood vs. emergency crossmatch vs. standardly crossmatched blood.
    - Preparation of the patient, including correct aseptic technique for appropriate venous access.
    - Correct identification and verification of both the patient and the blood product/s.
    - Handling, storage and administration of blood and blood products.
    - Baseline and follow-up observations of patients.
    - Recognition, management and reporting of adverse transfusion events.

Request for blood and blood products

- The form should be completed in full and must include the patient's unique identifiers, the name of the hospital, ward / area to which the blood needs to be delivered, all clinical information requested on the form as well as products required.
- If special services are required the doctor must discuss his/her request with the blood bank prior to submitting the order, as some products are not stored at the blood bank and may need to be transported from the processing centre.
- Details of the blood order should be noted in the patient's records to ensure that the right blood is given to the right patient, to prevent duplication of services and to meet the legal obligation with regards to traceability of all blood products.

Specimen collection

- The doctor who orders blood is responsible for ensuring that the correct procedure is followed.
- Use the specimen tube supplied by the blood bank.
- The label on the specimen tube must be completed in full at the patient's bedside.
- Ensure that the label with patient's details is securely affixed to the specimen tube.
- Fill the tube to indicated line on tube.
    - Discuss all exceptions to this with the bloodbank to ensure an adequate sample.
- Record the date and time the specimen was taken.
- Both the specimen and the 'Request for Blood or Blood Components" form must be signed.

BLOOD ORDERING PRIORITIES

The requesting doctor must understand the safety implications that different ordering priorities (pre-transfusion testing) holds for patients. Always weigh benefits against risks when deciding.

Un-crossmatched blood
Use only in dire emergencies if there is acute, life-threatening haemorrhage.

Blood bank on site	No blood bank on site
Provide a sample and completed request form. A basic ABO grouping will be done. Group-specific, uncross-matched blood issued, to reduce strain on scarce group O stock. Red cells issued within 5 – 10 minutes of receiving the request.	Un-crossmatched group O blood is available in the emergency blood fridge. Perform an Rh test determine patient's Rh. Choose the appropriate Rh unit. Complete the form attached to the unit. Return the completed form to the bloodbank to ensure a replacement unit for the fridge.

- Un-crossmatched blood carries an additional risk as the patient may have an irregular antibody that could result in a haemolytic transfusion reaction.
- All blood products must be traceable from cradle to grave. All forms must be completed.
- All units transfused must be recorded in the patient's file.
- If Rh positive blood is incorrectly administered to an Rh negative women of childbearing age, anti-D globulin should be administered according to hospital policy / specialist's instructions.

Table 21-1 Other ordering priorities

Type of pre-transfusion testing	ABO and Rh typing	ABO and Rh typing PLUS Antibody Screen at room temperature	ABO and Rh typing, room temperature antibody screen PLUS Antibody screen at 37°C	Comments
NONE / Uncrossmatched red cell or whole blood products	√	Done after product was issued.	Done after product was issued	5 – 10 min to issue. If bloodbank have a sample, a full crossmatch will be done after issue. Only in life-threatening situations.
Emergency crossmatch	√	20°C Antibody screen (room temperature)	Done after issued	20 – 30 min lab time. Full crossmatch completed after product was issued. Requesting doctor must weigh the risk against the urgency of the case.
Standard crossmatch	√	√	√	45 min–2 hours Fully compatible product issued.
Type, Screen	√	√	Done after instruction to complete the order.	Telephonic instruction can “activate” completion of crossmatch and compatible product will be issued. 20 – 30 minutes. Hold 72 hours.

Table 21-2 Massive bleeding protocols- hospital with a blood bank

Obstetric Haemorrhage: Massive Bleeding Protocol

Hospitals with blood banks and laboratories on-site (an addition to the PPH protocol)

Activate MTP if:

- **Cardiovascular decompensation despite initial fluid bolus with ongoing bleeding;**
  - **Systolic BP < 80 mmHg; Heart rate > 120 bpm; Shock index > 1.5**
  - **Decreased level of consciousness; Cold peripheries.**
- Blood loss > 1500 ml
- Patient currently bleeding + at risk for uncontrollable bleeding.
- Actual or anticipated use of 4 units RBCs in < 4 hours + haemodynamically unstable + anticipated ongoing bleeding.
- Correction of coagulopathy required during initial resuscitation.

Determine and manage the cause of bleeding.

Immediately apply all appropriate medical, surgical and pharmacological interventions to arrest the bleeding as per departmental protocols.

Optimize
(aggressively)
Oxygenation,
Cardiac output,
Temperature,

Remain calm and **activate the MTP.**
Call the most senior doctors if not yet present.
Inform: Obstetrician, Anaesthetist (if appropriate); Bloodbank (to inform haematologist); Porter, Matron on duty.
Senior team member designates staff to specific focus areas for duration of the Massive Transfusion.

Immediate actions:

Oxygen via face mask
Put up 2 x 14 – 16 G peripheral lines.
Position patient left-lateral (APH) or flat /head-down (PPH)
Start fluid resuscitation with 1-2 litres crystalloid fluid, e.g. sodium chloride 0.9% or ringer lactate while waiting for RBCs.
Administer warmed fluids and blood products.
Administer:
2 un-crossmatched, Rh specific RBCs.
Tranexamic acid 1 g IVI – (check if 1st dose has been administered as part of existing PPH protocols)
2 units FFP / FDP for all cases of severe OH
Assess need for further resuscitation based on clinical status

Send blood for:
Cross match, FBC, Coagulation screens, U&E, Arterial blood gas.
Order MTP pack from bloodbank.

Continuous Documentation & Observations

Temperature,
BP, Pulse, Shock index, Respiration,
Peripheral perfusion, mental status
Urine output
Blood volume lost
Blood volume replaced with blood products / fluids
Drugs administered
Interventions / procedures
Monitor (every 30 – 60 min)

FBC	Coagulation screens
Ionized calcium	Arterial blood gasses

Consider use of cell saver – in appropriate setting.
After initial 2 RBCs aim for 1:1 ratio (RBC: FFP)
MTP pack: 4 RBCs, 4 FFPs, 1 adult platelet dose.
Consider use of cell saver – in appropriate setting.
Round 1: If need for further resuscitation exist.
MTP pack (Standard or emergency crossmatch)
Send samples for testing as per protocol
Assess need for further resuscitation

Round 2:
Ongoing bleeding normal laboratory results:
Repeat MTP pack (standard cross-matched) and lab tests.
Ongoing bleeding and abnormal laboratory results:
RBCs if failing Hb — 15ml/kg FFP if PT > 1.5
Cryoprecipitate if Fibrinogen < 2 g/dl.
Correct ionized calcium.
Ongoing bleeding and absent laboratory results:
Repeat MTP pack (fully cross-matched blood) and lab tests.
10ml, 10% calcium chloride after first 4 RBC units.
Cryoprecipitate after 8 units RBCs.
DEPLOY NASG
Assess need for further resuscitation and repeat round 2.

Aim for

Temperature > 35 / 36 °C
Ca^{2+} > 1.1 mmol/l
pH > 7.2 — Base excess < - 6
Lactate < 4 mmol/l
Fibrinogen > 2.0 g/dl
Platelets > 50 x 10^9/l
PT /APTT < 1.5 and INR ≤ 1.5 of normal

Monitor patient: In high care / ICU setting for biochemistry/ acid-base abnormalities, Pulmonary oedema, Transfusion reactions, Rh sensitization (if applicable).
Treat for: Rh sensitization (if applicable). Initiate thrombo-prophylaxis.

Deactivate when: Bleeding controlled, Normalized laboratory results, Respiration, BP, Pulse, Peripheral circulation and conscious level.

Table 21-3 Massive bleeding protocols- hospital without a blood bank

Obstetric Haemorrhage: Massive Bleeding Protocol:

Hospitals without blood banks and Laboratories on-site (an addition to the PPH protocol)

Activate MTP if:

- Cardiovascular decompensation despite initial fluid bolus with **ongoing bleeding:**
  - **Systolic BP < 80 mmHg; Heart rate > 120 bpm; Shock index > 1.5**
  - **Decreased level of consciousness; Cold peripheries.**
- Blood loss > 1500 ml
- Patient currently bleeding + at risk for uncontrollable bleeding.
- Actual or anticipated use of 4 units RBCs in < 4 hours + haemodynamically unstable + anticipated ongoing bleeding.
- Correction of coagulopathy required during initial resuscitation.

Determine and manage the cause of bleeding.

Immediately apply all appropriate medical, surgical and pharmacological interventions to arrest the bleeding as per departmental protocols.

Optimize (aggressively)
Oxygenation,
Cardiac output,
Temperature,
Tissue perfusion

Remain calm and **activate the MTP.**
Call the most senior doctors if not yet present.
Inform: Obstetrician, Anaesthetist (if appropriate); Bloodbank (to inform haematologist); Transport/EMS, Matron on duty.
Senior team member designates staff to specific focus areas for duration of the Massive Transfusion.
Determine level of care the patient may require and start to arrange communication with colleagues and transport if applicable.

Send driver to:
Collect Round 1 MTP pack from Blood bank
Deliver Cross match sample to Blood bank

Immediate actions:
Oxygen via face mask
Put up 2 x 14 – 16 G peripheral lines.
Position patient left-lateral (APH) or flat /head-down (PPH)
Start fluid resuscitation with 1-2 litres crystalloid fluid, e.g. sodium chloride 0.9% or ringer lactate while waiting for RBCs.
Administer:
2 un-crossmatched, Rh specific RBCs.
Tranexamic acid 1 g IVI - (check if 1st dose has been given as part of existing PPH protocols)
2 units FPD for all cases of severe OH.
Assess need for further resuscitation based on clinical status of patient (observations) and criteria for deactivation.

Continuous Documentation & Observations
Temperature,
BP, Pulse, Shock index, Respiration,
Peripheral perfusion, mental status
Urine output
Blood volume lost
Blood volume replaced with blood products / fluids
Drugs administered
Interventions / procedures

Ongoing bleeding MTP pack not received yet:
Administer: Additional 2 un-crossmatched RBCs
2 FDPs

Ongoing bleeding and MTP pack arrived from blood bank:
Administer: 4 RBCs, 4 FFPs,
1 adult dose platelets
Aim for 1:1, RBC: FFP ratio once MTP pack arrives.
Calcium replacement: 10 ml, 10% calcium chloride after the first 4 units of red blood cells (thereafter, re-assess and discuss with consultant).
DEPLOY NASG
Assess need for further resuscitation.

Deactivate when: Bleeding controlled, Normalized: Respiration, BP, Pulse, Peripheral circulation and conscious level.

Monitor patient: In high care / ICU setting for biochemistry/ acid-base abnormalities, Pulmonary oedema, Transfusion reactions, Rh sensitization (if applicable).

Treat for: Rh sensitization (if applicable). Initiate thrombo-prophylaxis.

NO Need

YES

Discuss with consultant and consider urgent transfer of patient to higher level of care if not able to manage bleeding in local facility.
Follow prescribed precautions during transfer.

This is where a decision will have to be made on the cut-off time/distance to send the patient or when to collect products.

Did you know?

- Shock index = Heart rate / Systolic blood pressure.
- Conditions with risk of early coagulopathy includes: Massive blood loss from any cause; Abruption placenta; Amniotic fluid embolism; IUD with retained products > 2 weeks; Sepsis; Pre-eclampsia; HELLP syndrome; Fatty liver of pregnancy.
- Hypothermia contribute to excessive bleeding, coagulopathy and worse patient outcomes.
- Avoid over-use of clear fluids (not more than 2-3 litres sodium chloride 0.9%) during resuscitation to prevent dilution coagulopathy.
- During a massive transfusion setting, administering > 1 blood product simultaneously via separate lines would be allowed – given the life-threatening circumstances.
- On arrival of the MTP pack, administer platelets immediately (over 15 minutes) via line 1, while transfusing FFP via line 2. On completion of platelets, change set and administer red cells via line 1.
- FFP and FDP may be used interchangeable.
- Change sets:
    - Between red cells of different groups.
    - Between different products.
    - After 4 units of red cells or every 12 hours.
- An emergency crossmatch takes approximately 20 -30 minutes. A blood grouping and partial screening for antibodies are performed prior to release of units. Rest of the crossmatch are performed after units are issued.
- A standard crossmatch will provide a fully compatible unit (if available and no irregular antibodies exist in the patient). This takes 45 – 120 minutes to complete.

- Aggressive resuscitation should immediately be commenced irrespective of decision to transfer or not.
- Start administrating red cells immediately when available. Do not delay administration of blood components to complete clear fluid administration.
- Temperature must be always maintained > 35^0C to prevent exacerbation of coagulopathy and / or bleeding.
- A maximum of 2 doses of Tranexamic acid may be administered – thereafter consult with a specialist on further doses.
- If the patient does not respond to resuscitation efforts as expected, without a clear reason, consult with specialist/most senior doctor (obstetrician/ anaesthetist/ haematologist) immediately.
- To prevent hypothermia during a massive transfusion, fluids and red cells should be warmed during with an approved, validated warming device. Never use water, kettles, etc. to warm.

Guidelines on the management of acute moderate/severe transfusion related adverse events

- Transfusion reactions may vary from mild (febrile non-haemolytic, allergic, etc) to life-threatening (acute haemolysis, TACO, TRALI, etc.)
- Early recognition of symptoms and the ability to diagnose and treat specific reactions is key to patient safety. All staff must have adequate knowledge on transfusion reactions.
- Management
    - Stop the transfusion.
    - Commence normal saline via a new / separate administration set.
    - Immediately contact the treating doctor (if not present).
    - Check for identification errors.
    - Perform a visual check for haemolysis.
    - Diagnose specific reaction and treat accordingly e.g.
        - Anaphylaxis with O2, adrenaline, steroids;
        - TACO with diuretics
        - Renal function maintenance and specialist consultation for acute haemolytic reactions.
        - Anti-histamines for allergic reactions.
    - Send blood unit with administration set and completed transfusion adverse event form to the blood bank urgently for post-transfusion reaction investigations.
    - Refer the patient timely should they require a higher level of care.
    - The treating doctor may contact a SANBS doctor for assistance if required.

Chapter 22: ROUTINE AND COMPLICATED POSTNATAL CARE

Postnatal care after normal vaginal delivery

What can postnatal care achieve?

- Improve maternal and infant health.
- Provide information to mother on:
    - Postpartum danger signs
    - Routine postnatal visits
    - Rest and sleep
    - Personal hygiene
    - Infant feeding
    - Nutrition
    - Contraception
    - HIV
    - Postnatal depression and other mental health problems

In the postnatal ward:

- Provide a warm welcome in the postnatal ward, waiting area or clinic. Ensure principles of Respectful Maternity Care are maintained.
- Do not separate the mother and her baby unless one of them requires special or intensive care.
- On the mother's arrival in the postnatal ward, check the BP, the heart rate, that the uterus is firmly contracted and that there is no evidence of active vaginal bleeding.
- Consider and note any problems that the women may have had during the antenatal period and during labour.
- Ensure that the mother is mobile and can pass urine.
- Prescribe paracetamol one gram orally if the mother complains of mild pain.
- Counsel on infant feeding, contraception, and self-care in the puerperium.
- Ensure that mothers are offered the support necessary to acquire the skills of correct positioning and attachment of their infants for optimal breastfeeding.
    - Explain the necessary techniques to the mother, thereby helping her to acquire the skill for herself.
    - Remember that low self-esteem, exhaustion, symptoms of depression and anxiety can make it challenging to initiate and continue breastfeeding.
    - Past sexual trauma or a traumatic birth can also make it very hard to breastfeed.
    - The woman may need additional emotional or mental health support if these issues are present.
- Mothers who have decided not to breastfeed after counselling and education should be given information on age specific types of infant formula to purchase and shown how to prepare and use formula safely
- Ensure four hourly BP, heart rate, temperature, and pad check assessments.
- Call a senior midwife or doctor if there are abnormalities: consider transfer from a CHC to hospital.

Discharge from clinic or hospital is permissible 6 hours after delivery provided that:

- The discharge check list in the Maternity Case Record is completed and there are no medical, surgical or obstetric problems that require attention
- the mother looks and feels well
- the mother has a safe place to stay
- there is no evidence of anaemia
- the heart rate (< 100/min), respiratory rate (< 20/minute) temperature (< 37.5 °C) and the blood pressure are all normal
- there is no unexpected uterine tenderness
- there is no active vaginal bleeding
- the woman is mobile and has passed urine normally
- there is no excessive pain in the abdomen or perineum
- infant feeding has been explained and demonstrated
- information where to get continued infant feeding support if she needs it after discharge
- contraception has been discussed and provided
- all blood results – Hb, syphilis, Rhesus group, and HIV – are recorded and appropriate actions taken
- a discharge summary form has been completed appropriately

The flowing information should be given to the mother at discharge:

Table 22-1 Postpartum danger signs

Attention: Immediately to hospital	**Attention: As soon as possible to hospital**
Vaginal bleeding • more than 2 or 3 pads soaked in 20-30 minutes • bleeding increases rather than decreases after delivery	Fever
	Abdominal pain
	Swollen, red or tender breasts, or sore nipple
Convulsions	Urine dribbling or pain on micturition
Fast or difficult breathing	Feels ill
Fever and too weak to get out of bed	Pain in the perineum
Severe abdominal pain	Foul-smelling lochia

BABY:

Attention: Immediately to hospital	Attention: As soon as possible to hospital
Difficulty breathing	Difficulty feeding
Convulsions	Pus from eyes
Fever or feels cold	Skin pustules
Bleeding	Yellow skin
Diarrhoea	Cord stump which is red or draining pus
Very small, just born	Feeds <5 times in 24 hours
Not feeding at all	

Self-care of healing episiotomy or perineal tear

- Advise on perineal hygiene: sitz baths twice daily in warm water (salt or antiseptics not essential).
- Advise that the sutures will absorb and fall out spontaneously (check that the sutures used are absorbable).
- Pain can be managed with ice packs and/or oral paracetamol one gram orally four times daily.
- The mother should return to the clinic if pain worsens or does not respond to simple measures.
- First and second degree tears heal faster than episiotomies.
- With episiotomy, it may take up to one month before sexual intercourse can resume.

The postnatal visit at three to six days

- All mothers should attend their local clinic three to six days after normal delivery, for check-up of themselves and their babies.
- Essential elements of the woman's check-up are as follows:
    - any orders or special concerns noted on the discharge summary
    - check temperature, heart rate, blood pressure, respiratory rate
    - palpate the abdomen and uterus for tenderness
    - examine the legs for evidence of thrombosis
    - check for vaginal bleeding and offensive vaginal discharge
    - check breasts and nipples for any problems - remember difficulties with breastfeeding may be linked to mental health difficulties
    - assess the baby's condition
    - counsel and advise on self-care, mental health problems, infant care and feeding, and the six weeks follow-up
        - conduct the mental health screen from MCR and respond accordingly
- postnatal blues is very common - see Mental Health Chapters for management (and how to distinguish from more severe mental health problems)
- explore the social and practical support available to the mother. Activate available resources (support groups, home visits from CHWs, NGO or social work referrals etc)
- call a senior midwife or doctor if there are abnormalities: consider transfer from a CHC to hospital

The postnatal visit at six weeks

- Most activities at the sixth weeks visit relate to care of the baby (HIV, vaccinations, weighing, feeding).
- When attending to the mother:
    - attend to special concerns noted on the discharge summary

- assess general well-being of the mother
- explore her social circumstances and where she may need support.
  - This is a critical investment of time that can reap benefits for maternal and child health outcomes.
  - Support the woman to apply for Child Support Grant as soon as possible.
- Activate available resources (support groups, home visits from CHWs, NGO or social work referrals etc
- repeat the mental health screen and manage as per Mental Health Chapter
- check for pallor and measure the BP and heart rate
- do bedside Hb test, if low send off full blood count and get advice from a specialist
- review contraception choices: an intrauterine device may be inserted at this time /alternately implants may be considered
- counsel on any problems
- remind HIV-negative breastfeeding mothers to return at three months for HIV testing

Postnatal care after caesarean delivery

- Do not separate the mother and her baby unless one of them requires special or intensive care.
- On the mother's arrival in the postnatal ward, check BP, heart rate, uterine contraction, wound dressing and pad for bleeding.
- Check the CD notes for indication and complications, and ensure all surgeon's and anaesthetists' orders and prescriptions are clearly understood and followed.
- Check BP, heart rate, respiratory rate, uterine contractions and pad checks:
  - Every 15 minutes for one hour, then every 30 minutes for the next hour (use the Observation Immediately After Delivery chart in the MCR).
  - If the patient is stable after two hours, observations (including urine output) can be done four hourly until discharge.
- Check the mother understands the reason for her CD and affirm where she has done well in her pregnancy and labour (if she did labour).
  - Remember some women feel they are inadequate as mothers or women if they did not have a vaginal birth
- Ask if she has any questions and answer these clearly and carefully.
- Remove the urinary catheter after six hours, unless there is a note from the surgeon to keep the catheter in.
- Allow the woman to be up and about as soon as she feels strong enough.
- After uncomplicated CD, give oral fluids and a light meal as soon as the woman feels hungry.
- Call a doctor if there are abnormalities: consider transfer from a CHC to hospital.
- A doctor's ward round must ideally be done at least once daily.
- The mother may be discharged on the second day (but at least 48 hours after the CD) after an uncomplicated caesarean section, if all observations are normal, as above for vaginal delivery.
  - In particular, women with a heart rate > 100/min or respiratory rate > 20/minute require thorough assessment and investigation and should not be discharged.
  - Use the pre-discharge checklist in the MCR.
- Women with risk factors for infection (HIV infection, prolonged labour, prolonged rupture of membranes, chorioamnionitis, or caesarean section in the second stage) may need to be kept in hospital longer to observe for infection.
- Write a clear discharge summary with orders for removal of sutures and follow-up visits (use the discharge summary in the MCR).
- The six-week postnatal visit will be the same as after normal vaginal delivery.

Table 22-2 Effective Screening; Classification and interventions during the Postnatal Period for the mother:

Signs	Classify	Screen/Diagnose	Treatment
• Diastolic blood pressure ≥90 and/or systolic BP≥140	Hypertension	• Check blood pressure and urine	• See chapter on HDP for management
• Haemoglobin <7g/dl • Severe pallor • >24 breaths per minute • Breathlessness at rest	Anaemia	• Check haemoglobin • Check pallor • Check number of breathes per minute.	• See chapter on Medical Conditions in Pregnancy for management of anaemia
Positive HIV test	HIV positive	PICT	See HIV chapter for management
More than 1 pad soaked in 5 minutes	Postpartum bleeding	Check pad soakings	See PPH chapter for management

Temperature >38◦ and • Abdominal tenderness • Foul smelling lochia • Uterus not well contracted • Lower abdominal pain • Heavy vaginal bleeding	Uterine Infection	• Fever • Abnormal lochia • Abdominal tenderness • Uterus not well-contracted	See Postpartum Sepsis chapter for management
Fever >38◦C and • Burning on urination • Flank pain	Upper Urinary Tract Infection	• Check temperature • Urine culture • Abdominal palpation	See Infections in Pregnancy chapter for management
Burning on urination Lower Urinary Tract Infection		Urine dipsticks Urine culture	See Infections in Pregnancy chapter for management
• Temperature >38◦C • Stiff neck • Lethargy	Very severe febrile disease ?Malaria	Check temperature	See chapter on Infections in pregnancy for management of malaria
Fever >38◦C	?Malaria	• Check temperature • Medical history	See chapter on Infections in pregnancy for management of malaria
Dribbling or leaking urine	Urinary incontinence	Check perineal trauma	• Give oral antibiotics (discuss with dr) • If condition persists more than 1 week, refer to hospital
Excessive swelling of vulva or perineum	Perineal trauma	Check perineum	Refer to hospital
Pus in perineum Pain in perineum	Perineal infection or pain	Check perineum	• Remove sutures, if present • Clean wound. Counsel on care and hygiene • Give paracetamol for pain • If no improvement after 2 days, refer to hospital
• Use the screening tool in the MCR to detect mental health problems	Postpartum depression	History taking Counselling Observations	Provide emotional support Refer urgently to hospital See Mental health chapter
Any of the above, from the mental health screening tool, for less than 2 weeks	Postpartum blues	Counselling	• Emotional support • Counsel partner and family • If no improvement after 2 weeks, refer to hospital See Mental health chapter
• Abnormal vaginal discharge • Vulval itching • Urethral discharge or • burning on passing urine by • partner	Gonorrhoea OR Chlamydia infection	• Check vaginal dis-charge • Vaginal examination	See chapter on Infections in pregnancy for management of STIs
Curd like vaginal discharge Intense vulval itching	Candida infection	History taking Vaginal examination	See chapter on Infections in pregnancy for management of candida infection
Abnormal vaginal discharge, 4 weeks or more after delivery	Bacterial OR Trichomonas infection	History taking Vaginal examination	See chapter on Infections in pregnancy for management of VDS
• Cough • Temperature > 38◦C • Breathlessness • Chest pain	Pneumonia	Check temperature History taking	Give IM/IV antibiotics (discuss with dr) Refer urgently to hospital
• Cough or breathing difficulty for > 3 weeks • Blood in sputum • Wheezing	Chronic lung disease	History – taking Observations	Refer to hospital for assessment If severe wheezing, refer urgently to hospital
Temperature < 38◦C Cough	Upper Respiratory tract infection	Check temperature History taking	Advise safe soothing remedy If smoking, counsel to stop smoking

• Weight loss • Fever > 1 month • Diarrhoea > 1 month	Strong likelihood of HIV infection	History –taking Check temperature Counsel for HIV testing	Counsel on benefits of testing her partner Counsel on safer sex including condom use Manage according to national HIV guidelines OR refer to appropriate HIV services If coughing, refer to TB centre.
Nipple sore or fissured Baby not well attached	Nipple soreness OR fissure	Check nipple	• Encourage breastfeeding • Teach correct positioning and attachment • Reassess after 2 feeds or 1 day, if not better teach mother to express milk from affected breast and feed baby by cup. • Continue breastfeeding on healthy side
• Both breasts swollen, shiny and patchy red • Temperature <38◦C • Baby not well attached • Not yet breastfeeding	Breast engorgement	Observe breasts Check temperature Counsel on breastfeeding	• Encourage breastfeeding • Teach correct positioning and attachment • Reassess after 2 feeds or 1 day, if not better teach mother to express enough milk before the feed to relieve discomfort.
• Part of breast is painful, swollen and red • Temperature > 38◦C • Feels ill	Mastitis	Feel gently painful part of breast Check temperature Observe a breastfeed if not yet done	• Encourage breastfeeding • Teach correct positioning and attachment • If no improvement in 2 days, refer to hospital • Let her breastfeed on healthy breast. • Express milk from affected breast and discard until no fever • If severe pain, give paracetamol

Refer to the newborn guidelines for care of the well term newborn

Table 22-3 Effective Screening; Classification and interventions during the Postnatal Period for the Baby

Signs	Classify	Screen/diagnose	Treatment
Jaundice (yellow colour of skin)	Many causes	Measure bilirubin etc	Refer to a district hospital
• Discharge from eyes, • Red conjunctiva • Oedema of eyelids	Conjunctivitis • Mild conjunctivitis slight discharge • Moderate conjunctivitis discharge red conjunctiva and pus • Severe conjunctivitis marked discharge and oedema of eyelids	Check eyes	• Mild clean with saline • Moderate saline + chloromycetin ointment 3 hourly • Severe- refer immediately; can lead to blindness
• Smelly cord with discharge of pus • Cord remains wet and soft • Redness of skin around base of cord	Umbilical cord infection	Check cord	• If only involves cord then apply surgical spirits 6 hourly • If spread to abdomen and further then refer to a district hospital
• Pus filled blisters around umbilicus /nappy area • Red raised velvety rash +++ in the skin creases (not like nappy rash –does not affect creases)	Skin infection 1.Impetigo 2.Candida	Check these areas	Refer to a district hospital, may be septicaemic. Uncover area

• Patchy white coating of tongue and mucous membranes • As above + red painful mucous membranes and poor feeding because of painful mouth	Oral thrush • Mild • Severe	Look at tongue and mucous membranes	• Mild – may not require treatment • Severe Nystatin suspension 100 000 IU/mL, oral, 1 mL 4 hourly • Must be rubbed onto mucous membranes with swab or clean finger • Treat for 1 week • Treat source of infection
• Lethargy, • generally unwell, • Poor feeding • May not gain weight or may loose weight, • abdominal distension • vomiting, • pallor, • jaundice, • purpura, • apnoea, • hypothermia • edema	Septicaemia		She chapter on infection in the newborn guideline Refer immediately to a district hospital
• Low birth weight, • Blisters and peeling of feet and hands, • distended abdomen, • pallor due to anaemia, • purpura, jaundice, • respiratory distress	Congenital syphilis	RPR test	See VTP guideline and chapter on syphilis in the newborn guideline
• Soft swelling on side of head	Trauma • Cephalhaematoma collection of blood under periosteum of skull • Absorption of blood may cause jaundice	No extension of swelling beyond edges of bone	No treatment unless jaundice appears Usually improves within a week Refer if not improving after a week
• Infant does not move arm • Cannot bend elbow or lift arm off bed Can move hand or fingers	Brachial plexus injury		• See newborn guidelines on management of brachial plexus injury. • Refer as soon as possible. • Involve physiotherapy early.
Extra fingers	Congenital disorders		• Can be tied off with suture thread or refer • Refer to district hospital
• Lower part of foreskin missing, • penis pointed down and opening of urethra not at end of penis	Hypospadias		Refer to a specialist hospital
Clubbed feet	Clubbed feet		Refer to a specialist hospital
Cleft lip or palate	Cleft lip or palate		Refer to a specialist hospital as soon as possible
• Infant dribbles or chokes because cannot Swallow, • vomit bile, • distended abdomen, • no anus	Bowel abnormalities		Refer to a specialist hospital urgently

Table 22-4 An example of a postpartum checklist that can be used

MOTHERS TICK SHEET

Mother's name: (Patient sticker)		Clinic no:	
Address:		Clinic no:	

Discharge summary from Hospital:	YES	NO	
Medical or surgical problems in pregnancy and delivery			

Examination at first postnatal visit				**Additional visit (optional according to risk)**				**Examination at 6 weeks**			
Date & Time:				Date:				Date:			
Exam by:				Exam by:				Exam by:			
Ask the mother the following:				**Ask the mother the following:**				**Ask the mother the following:**			
How have you been feeling? / Have you had any problems?	YES	NO		How have you been feeling? / Have you had any problems?	YES	NO		How have you been feeling? Able to resume normal activities?	YES	NO	
Poor appetite?	YES	NO		Poor appetite?	YES	NO		Poor appetite?	YES	NO	
Problems with infant feeding?	YES	NO		Problems with infant feeding?	YES	NO		Problems with infant feeding?	YES	NO	
Cough/Breathing difficulty?	YES	NO		Cough/Breathing difficulty?	YES	NO		Cough/Breathing difficulty?	YES	NO	
Inspect lochia - foul smelling?	YES	NO		Inspect lochia - foul smelling?	YES	NO		Problems with C/S wound?	YES	NO	
Heavy vaginal bleeding?	YES	NO		Heavy vaginal bleeding?	YES	NO		Problems with episiotomy	YES	NO	
Urinary symptoms (dysuria/incontinence)	YES	NO		Urinary symptoms (dysuria/incontinence	YES	NO		Vaginal discharge?	YES	NO	
Experiencing pain?	YES	NO		Experiencing pain?	YES	NO		Urinary incontinence?	YES	NO	
Examine the following:				**Examine the following:**				**Examine the following:**			
Temp / Pulse / BP				Temp / Pulse / BP				Temp / Pulse / BP			
Respiratory rate				Respiratory rate				Respiratory rate / MUAC			
Pale?	YES	NO		Pale?	YES	NO		Pale?	YES	NO	
If breastfeeding: are nipples cracked?	YES	NO		If breastfeeding: are nipples cracked?	YES	NO		If breastfeeding: are nipples cracked?	YES	NO	
Are breasts inflamed or engorged?	YES	NO		Are breasts inflamed or engorged?	YES	NO		Are breasts inflamed or engorged?	YES	NO	
Uterus involuted appropriately?	YES	NO		Uterus involuted appropriately?	YES	NO		**Ask the mother the following:**			
Uterine tenderness	YES	NO		Uterine tenderness	YES	NO		In the last 2 weeks, have you on some or most days felt unable to stop worrying or thinking too much?	YES	NO	
If C/S, wound infected	YES	NO		If C/S, wound infected	YES	NO		In the last 2 weeks, have you on some or most days felt down, depressed or hopeless?	YES	NO	
Sutures removed	YES	NO		Sutures removed	YES	NO		In the last 2 weeks, have you on some or most days had thoughts **and** plans to harm yourself or commit suicide?*	YES	NO	
Episiotomy infected	YES	NO		Episiotomy infected	YES	NO		**If 'yes' to 2 or more out of 3 there is a high chance of depression or anxiety – refer (*refer immediately)**			
Test/do the following				**Test/do the following**				**Test/do the following**			
Urine normal?	YES	NO		Urine normal?	YES	NO		Urine normal?	YES	NO	
Hb g/dl **(value)**				Hb g/dl **(value)**				Hb g/dl **(value)**			
Hb < 10g/dl	YES	NO		Hb < 10g/dl	YES	NO		Hb < 10g/dl	YES	NO	
TB signs?	YES	NO		TB signs?	YES	NO		TB signs?	YES	NO	
Contraceptive method	YES	NO	NA	Contraceptive method	YES	NO	NA	Eligible for cervical smear?	YES	NO	
Type of contraception				Type of contraception				Contraceptive method	YES	NO	NA
F/up date for contraception				F/up date for contraception				Type of contraception			
								F/up date for contraception			
***If ticks in shaded area comment on back→Refer, if cannot treat.**				***If ticks in shaded area comment on back→Refer, if cannot treat.**				***If ticks in shaded area comment on back→Refer, if cannot treat.**			
VTP				**VTP**				**VTP**			
On ART	YES	NO	NA	On ART	YES	NO	NA	On ART	YES	NO	NA
Date of last ARV visit:	YES	NO	NA	Compliant?	YES	NO	NA	If mother unbooked was results given?		YES	NO
ARV Clinic Name				ARV Clinic Name				Attending ARV clinic/has appointment date?	YES	NO	NA
Viral load done? Check results	YES	NO	NA	Viral load done? Check results	YES	NO	NA				

Infant's name (Pt. sticker)		Clinic no:	
Mother's name:			
Address:		Clinic no:	

Discharge summary from Hospital:	YES	NO

Examination at first postnatal visit

Date:	
Exam by:	

Ask the following:

Feeding:	EBF	FF	MIXED

Any feeding problems?	YES	NO
Passed urine?	YES	NO
Passed stool?	YES	NO
Vomiting? (If yes, what colour?)	YES?	NO
Are you worried about your baby?	YES	NO
Are you as Health Worker worried about this infant or this family: Any Warning signs?	YES	NO

Examine the following:

Temperature (axillary)		
Pale	YES	NO
Jaundiced	YES	NO
Conjunctivitis	YES	NO
Umbilical cord smelly/red	YES	NO
Does mother/care giver know the danger signs?	YES	NO

***If ticks in shaded area comment on RTHB → Refer, if cannot treat.**

VTP before discharge

Retest (HIV neg) if not tested in labour	YES	NO
Check ART adherence	YES	NO
Follow result of birth VL	YES	NO
Start appropriate treatment for the exposed baby if VL not yet available		
Baby attending clinic (name of clinic)		
Hearing screening done	YES	NO
Any additional notes:		

Additional visit (optional according to risk)

Date:	
Exam by:	

Ask the following:

Feeding:	EBF	FF	MIXED

Any feeding problems?	YES	NO
Passing urine?	YES	NO
Passing stool?	YES	NO
Vomiting? (If yes, what colour?)	YES	NO
Are you worried about your baby?	YES	NO
Are you as Health Worker worried about this infant or this family? Any Warning signs?	YES	NO

Examine the following:

Temperature (axillary)		
Pale	YES	NO
Jaundiced	YES	NO
Conjunctivitis	YES	NO
Umbilical cord smelly	YES	NO
Does mother/care giver know the danger signs?	YES	NO

***If ticks in shaded area comment on RTHB → Refer, if cannot treat.**

VTP at 3-6 days

Repeat VL if delivery-VL was ≥ 50 c/mL.	YES	NO
Check ART adherence	YES	NO
Record results of birth PCR:		
Record results of birth VL:		
Low risk? Stop AZT and continue NVP daily for six weeks		
Delivery VL ≥ 50 c/mL (higher-risk) • Continue AZT twice daily for six weeks • Continue NVP daily for minimum of 12 weeks		
Baby attending clinic (name of clinic)		
Hearing screening done	YES	NO
Any additional notes:		

Examination at 6 weeks

Date:	
Exam by:	

Ask the following:

Feeding:	EBF	FF	MIXED

Any feeding problems?	YES	NO
Excessive sleeping / Not alert?	YES	NO
Excessive (inconsolable) crying?	YES	NO
Do you feel that the infant is in contact with you? (Ask & observe eye contact of infant and interaction of mother & baby)	YES	NO
Are you as Health Worker worried about this infant or this family? Any Warning signs?	YES	NO

Examine the following:
Record weight and head circumference on Road to Health Booklet

Jaundice	YES	NO
Pallor	YES	NO
Cyanosis	YES	NO
Response to sound	YES	NO
Eyes - white or red light reflex	YES	NO
Thrush	YES	NO
Fontanelle abnormal (anterior)	YES	NO
Heart murmur	YES	NO
Abdominal mass	YES	NO
Failure to thrive?	YES	NO

*If ticks in shaded area comment on RTHB → Refer, if cannot treat.

VACCINATE

VTP at 6 weeks visit

Ensure that birth PCR and mother's VL results were checked, recorded and acted upon correctly	YES	NO	N/A
If delivery VL ≥ 50 c/mL, repeat VL at this visit		YES	NO
Provide ART for 2 DCs (2MMD) for mother		YES	NO
Provide breastfeeding support		YES	NO

Any additional notes:

Any additional notes:

Baby attending clinic (name of clinic)

Hearing screening done	YES	NO

Chapter 23: POSTPARTUM CONTRACEPTION

- The postpartum period is an ideal time to commence a contraceptive method.
- It is certain the woman is not pregnant, she is in a health facility staffed by skilled health practitioners and she is highly motivated to prevent a pregnancy.
- It is important to highlight to women that contraceptive method do not protect against HIV and STIs except for barrier methods hence dual contraception is advised.

These clinical guidelines are aligned with recommendations of the National Contraception clinical guidelines 2019. Provision of contraception in SA is guided by the WHO Medical eligibility criteria for contraceptive use.

Pregnancy risk postpartum

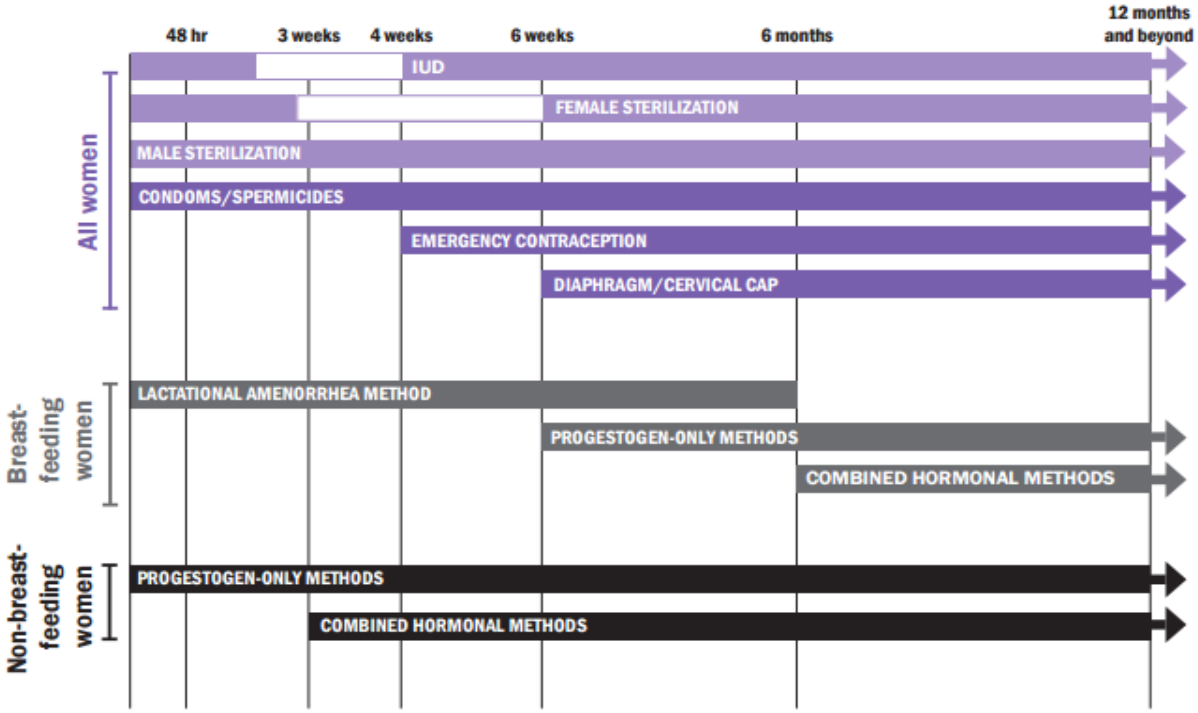
- It is beneficial for the patient to start a method before leaving the delivery facility because she may become busy with the newborn and not access family planning before resuming sexual activity
- Important benefits of postpartum contraception
    - Reduce maternal mortality.
    - Effective contraception use can avert 32% of maternal deaths.
    - Reduction in unintended pregnancy.
    - Reduction in the unmet need for contraception.
    - Reduce poorly spaced pregnancies. The recommended interval before attempting the next pregnancy is at least 24 months in order to reduce the risk of adverse maternal, perinatal, and infant outcomes.
    - Prevent maternal morbidity
    - Prevent unsafe miscarriage
    - Reduce VTP
    - Empower women and enhance education
    - Contribute to economic growth

Contraceptive Counselling

- Counselling is a powerful tool to give accurate information, address misconceptions and concerns and provide skills to negotiate safe sexual practices.
- It must be provided in a non-judgmental and respectful manner allowing the patient to make an informed choice.
- There are many approaches to counselling.
    - There should never be any coercion when counselling and providing contraception.
    - If a woman chooses her method after proper counselling she is more likely to stay on the method and tolerate side effects better.
- Contraceptive counselling should start in the antenatal period.
    - This gives the woman or couple enough time to consider the method she/ they want and ask questions.
    - They should be given information at each visit about all methods with the most effective methods discussed first.
    - During the consultation a risk assessment should be done to check which methods are safe for the individual.
    - During method specific counselling, include information about what the method is, how it works, efficacy, benefits, side effects, how it is administered/ inserted and removed as applicable.
    - Counselling includes dispelling misconceptions, making the patient understand the benefits of spacing, considering the patient's feeding preferences and future fertility plans.
    - Socio-cultural factors that limit use of contraception use in women include fear of side effects; partner disapproval; the absence of menses; abstinence; and low perception of pregnancy risk.
        - These aspects must be included in the discussion.
- Counselling tools are available and complement the process.
- Group and individual education are advised.
    - Verbal information can be reinforced with health education videos in the waiting rooms and written information to take home with links to helpful websites the women can access.
    - Counselling should be reinforced at each antenatal visit, during early labour and immediately postpartum.
    - After provision of a method, follow up and method specific advice must be given.

GREET	Greet and make her feel welcome. Build a rapport by greeting her and making her feel comfortable.
ASK	Ask questions in a friendly manner using words that she will understand. Listen patiently, without being judgmental. Identify her needs by asking relevant questions about personal, social, family, medical and reproductive health including reproductive tract infections, STIs, family planning goals and past/current use of contraceptive methods.
TELL	Tell her the relevant information that will help her to make an informed choice regarding contraception method.
HELP	Help her to make a decision and provide other related information, for example, how to protect herself from STIs.
EXPLAIN	Explain about the contraceptive method in detail including about its efficacy and potential side effects, and check understanding of how it should be used.
RETURN	Return for advice, further questions or need for information or discussion around a change in circumstances is encouraged.

Figure 23-1 Postpartum contraceptive options



Long-acting reversible contraception

- Long acting reversible contraceptives, (LARCs) are among the most effective contraceptive methods available with high continuation rates that has the greatest potential to reduce unintended and RRP and its associated problems.
- They are safe, convenient and can be provided at delivery.
- They obviate the need for multiple visits to the clinic for family planning allowing the patient to focus on the baby.
- LARCs include the copper intrauterine device (CIUD), levonorgestrel intrauterine device (LNG IUD) and subdermal implant. Their use is associated with high satisfaction and low unintended pregnancy.

Intrauterine device

- The IUD is over 99% effective.
    - It can be inserted within 48hrs post-delivery at vaginal or CD.
    - There is no increase in risk of perforation, infection compared to interval insertion.
    - There is a higher risk of expulsion with postpartum insertion (13.2%) compared to interval insertion (1.8%), however, this is reduced with post placental insertion (10%) (insertion within 10 minutes of delivery of the placenta)
- Despite higher expulsion rates, immediate PPIUD placement is associated with higher uptake and continuation of IUD compared to delayed placement.
    - An advantage is that it is a non-hormonal method hence not affected by drug interactions and safe for use in HIV positive women who are well on ARVs.
- If a patient opts for this method of contraception in the antenatal period her preference should be documented in her maternity record and confirmed when she presents in labour.
- The provider should prepare in advance so the insertion is within 10 minutes after delivery.
    - If the IUD cannot be provided immediately postpartum systems should be in place for the patient to access it at the 6-week postpartum visit.
    - Contraindications to insertion are postpartum haemorrhage, chorioamnionitis or rupture of membranes for longer than 18 hours.

Procedure of insertion

- Providers require training on insertion of a postpartum IUD.
- Placement of postpartum IUD differs from interval placement.
    - Insertion at CD entails placement of the IUD/IUS with the applicator or a swab holding forceps in the fundus of the uterus through the uterine incision. It is not necessary to stitch the device in place. The threads should be directed into the cervical canal with a swab holding forceps. The strings should not be cut.
    - It carries a lower risk of expulsion compared to post vaginal delivery placement.
- A midwife or doctor may conduct insertion at vaginal delivery.
    - After active management of the third stage and exclusion of post-partum haemorrhage the IUD should be inserted.
    - If the episiotomy is not bleeding excessively it may be sutured after insertion of IUD.
    - Insert a Sims speculum and clean the vagina with saline or water.
    - Visualise the cervix and apply a swab holding forceps to the anterior lip.
    - Hold the device with a placental or modified Kellys forceps and insert into the cervix.
    - There will be resistance to advancement due to anteflexion of the uterus.
    - At this moment move your non dominant hand from holding the swab holding forceps to the fundus of the uterus.
    - Reduce the anteflexion by pressing the uterus towards the spine and cephalad.
    - The Kelly's forceps will now advance easily and be palpable at the fundus.
    - At this point release the IUD and remove the forceps.
    - There is no need to trim the strings unless they are protruding beyond the introitus.
    - There is no need for prophylactic antibiotics after insertion.

- Once the IUD is inserted proceed with the rest of the post delivery procedures. It is important to complete documentation and inform the patient that the IUD was successfully inserted.
- In the postnatal ward the patient should be informed of signs of expulsion, given a family planning card confirming that she has had an IUD inserted and a follow up appointment in 6 weeks (which correlates with the baby's immunization visit).

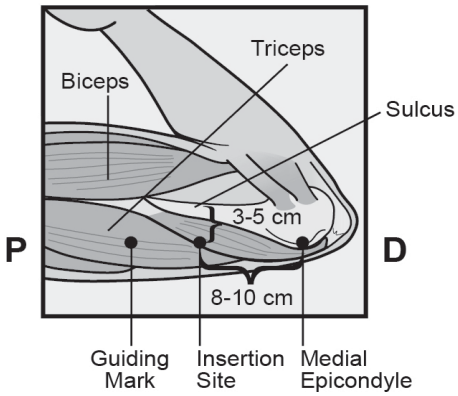
The six-week visit is important because:

- Most expulsions in the immediate postpartum occur by 6 weeks hence this visit must include examination of the patient to mitigate risk of unrecognized expulsion and unintended pregnancy.
- The strings can be trimmed and any concerns addressed.
- Post insertion care should be re-iterated
- There is limited evidence for use of ultrasound confirmation of placement.
    - If a machine is available, it might be prudent to include it in the 6 week visit due to the expected higher rates of expulsion especially at vaginal delivery and during the learning curve to ensure a high quality service and success of postpartum IUD service provision.

Implant

- The implant is a safe and highly effective method of contraception that can be used immediately postpartum including in breastfeeding mothers.
- It is easily provided before discharge from the postnatal ward.
- It requires trained providers to insert and remove.
    - Insertion is similar to interval procedure i.e. in the non-dominant arm sub dermally over the triceps muscle.
    - The specific site is at the intersection between points 3-4cm below the groove between the biceps and triceps and 8-10cm proximal to the medial epicondyle.
    - The patient must be given a family planning card that documents the type of contraception provided, the position of the implant and when it needs to be removed.
- There is no specific follow up check though the health care provider should assess patient's satisfaction and address any concerns at the 6 week and subsequent immunization visits.

Figure 23-2 positioning of arm and insertion site for etonogestrel subdermal implant



Tubal ligation

- Tubal ligation is considered a non-reversible method.
- Counselling and written informed consent are necessary.
- The process of counselling and decision making should start in the antenatal period.
- Female tubal ligation can be done immediately at CD or by minilaparotomy in the first 48 hours post-delivery.
- If the patient is scheduled for the procedure after 4 weeks post-delivery, she should be given an alternate method of contraception while she awaits her procedure

Injectable contraception

- This is the most popular method used in SA both by patients and health care providers.
- It is safe and effective however has less continuation rates compared with LARCS hence the increased risk of poorly spaced or unintended pregnancy.
- It can be administered immediately postpartum both in breastfeeding and non-breastfeeding mums. It does not have any drug interactions.
- The patient must be given a family planning card with the date for her next injection.

Oral Contraception

- Any type of combined hormonal contraception is contra-indicated in the immediate postpartum period due to the risks of venous thrombo-embolism (VTE).
- They can be used in non breastfeeding women after 3 weeks.
    - If however there are other risks for VTE then use should be further delayed or avoided all together.
- In breastfeeding women it can be started after 6 months.
- Progestogen only contraceptive pill is safe immediately postpartum however needs to be taken at the same time each day.
- If there is a delay of more than 4 hours, the efficacy reduces. The patient should be provided with enough stock to avoid multiple visits to the clinic.

Lactational amenorrhoea method (LAM)

- Although an effective method of birth spacing when used correctly, LAM cannot be used after 6 months postpartum and it requires women to be fully or nearly fully breastfeeding.
- Women can only rely on the contraceptive effects of lactation to prevent unintended pregnancy if they are amenorrhoeic AND fully or nearly fully breastfeeding AND less than 6 months postpartum.
    - Women choosing this method must be counselled that even when adhering strictly to this method, there is a failure rate of about 2%.

Chapter 24: BASIC ULTRASOUND AT DISTRICT LEVEL

- These ultrasound guidelines are written for public sector doctors, midwives and sonographers who are indemnified against medico-legal claims by the government.
- Recent changes in medical protection limits private general practitioners, radiographers, sonographers and other private sector non-specialists to the performance of very basic fetal dating scans during the first trimester only; and private sonographers and private sector clinicians are advised to make sure that they are insured against medico-legal claims that can arise from performing ultrasound.
- The results of the scan should be documented and communicated appropriately, and copies of the reports (and images if appropriate) should be stored for future reference.
    - Use the basic scan page in the MCG to document the report; or staple a printed report to this page.
    - Consult the ISUOG Practice Guidelines (updated 2022): performance of the routine mid-trimester fetal ultrasound scan (available for free online), for a standardised manner to do measurements.

District level (level 1 scan)

- This level scan should preferably be performed by accredited ultrasonographers, but due to capacity constraints can be done by radiographers without formal accreditation such as a National Diploma or B Tech degree, midwives who completed a basic ultrasound course, or medical officers and family physicians at district hospitals.
- At this level of scanning, one cannot expect to detect most of the serious fetal disorders and patients should be specifically informed about this limitation.
    - The basic scan is therefore only suitable for patients at a low risk for a congenital disorder and should only be offered to these women.
- The ideal is that all pregnant women should have access to one basic obstetric ultrasound examination, at 18-24 weeks gestation (if the infrastructure allows this) for the following:
    - to confirm an intra-uterine pregnancy
    - to determine fetal viability (cardiac activity)
    - to determine the number of fetuses
    - to determine the basic gestational age/fetal size
    - to confirm the location of the placenta
    - to determine the amniotic fluid volume

- Wherever possible, all patients should be referred to ultrasound as long as the SF measurement at booking is < 24 cm.
- Patients who book very early should only be referred for the scan when the SF is approaching or at the level of the umbilicus.

In addition, the following patients may need to be referred to ultrasound at district hospital level:

- Unsure presenting part and/or breech at the 34 weeks visit - refer for ultrasound at 36 weeks gestation.
    - If a non-cephalic presentation is confirmed at this 36 week visit - refer directly (within two days) to an experienced doctor or to a specialist hospital for appropriate management (external cephalic version or planned elective Caesarean section- see chapter on breech presentation).
- Amniotic Fluid Index (AFI) or deepest amniotic fluid pool for suspected (clinical) postdates pregnancy (at estimated 41-42 weeks with uncertain gestational age due to late booking- see chapter on postdates pregnancy).
- Clinical suspicion of multiple pregnancy at any gestation, with no previous ultrasound.
- Suspicion of intra-uterine fetal death.

Requests for doppler of the umbilical artery

The following patients can be referred for a Doppler test (in areas where this is available and if Doppler studies were not already performed during the ultrasound visit); or to the appropriate specialist hospital, high risk or district specialist outreach clinic (preferably to a unit with the appropriate ultrasound equipment) for evaluation by a specialist:

- SF growth <10th centile or no SF growth in 4 weeks (see SGA chapter on problems in pregnancy)
- all patients with hypertension in pregnancy (at 26 weeks or as soon as possible thereafter)
- previous unexplained mid-trimester or third trimester fetal loss (at 26 weeks or as soon as possible thereafter)
- diabetics at 26 weeks

Interpretation of umbilical artery Doppler (resistance index)

Manage the client according to the instructions from the high-risk clinic. If there are no instructions with the Doppler results, the suggested management is as follows:

- Resistance Index (RI) < 75th centile - normal. Repeat only if the clinical condition changes
- RI 75th -95th centile: repeat the Doppler after two weeks (patient preferably needs to be managed at a high risk clinic)
- RI > 95th centile - repeat the Doppler after one week (patient needs to be managed at a high risk clinic) and arrange twice weekly for CTG as soon as viability is reached (see chapter on problems in pregnancy)
- absent end diastolic volume (AEDV): refer for specialist/tertiary care as soon as the diagnosis is made; provided there is no fetal distress in a clearly viable fetus (the baby may need an urgent caesarean section if at a regional health facility (if gestational age <28 weeks - specialist at regional facility must discuss patient with tertiary unit before referral)
- reversed end-diastolic flow (REDV) - baby needs to be delivered by CD within 24 hours if it is viable; if possible transfer mother before delivery to a specialist/tertiary unit

Abnormal findings in the basic scan

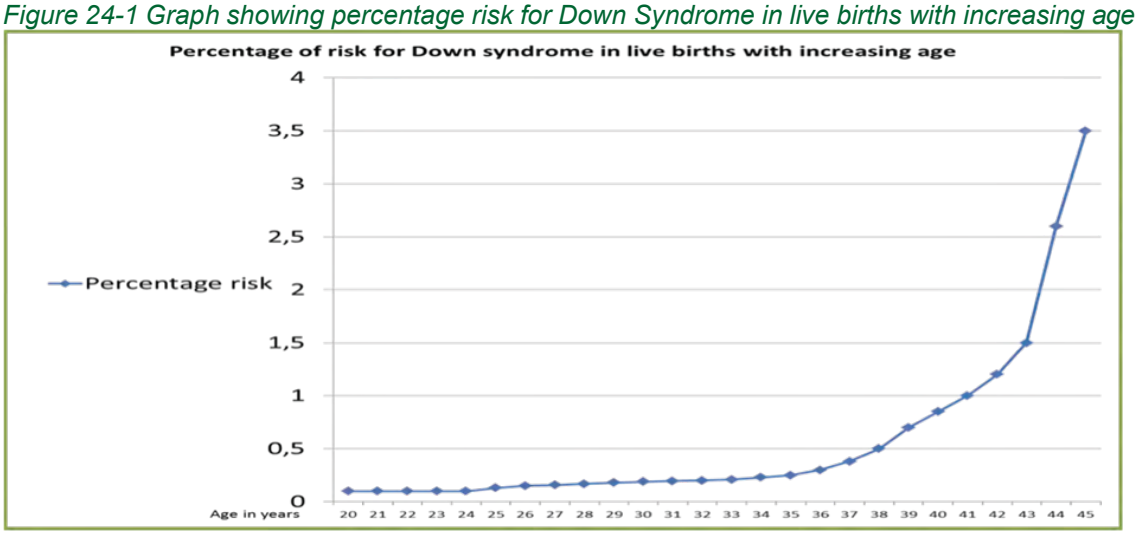
- Any of the following abnormalities noted in the BASIC ultrasound should ideally be scanned by a more experienced person-e.g., accredited sonographer (at any level of care) or referred to a specialist obstetrician supported service for evaluation (level two scan):
  - multiple pregnancies- as soon as possible; to determine chorionicity
  - discordant measurements- if there is (around 20 weeks) a discrepancy of 10 days or more between any of the following: BPD, FL, AC; refer within one week
  - placental location- if placenta < 2cm from the internal os around mid-gestation, the person performing the scan must make an appointment for a repeat scan by an accredited professional (sonographer or doctor) at 32 weeks of gestation to determine the exact placental location
  - if there is decreased amniotic fluid (deepest pool < 3cm) or increased fluid (deepest pool > 8 cm) - refer within one week
  - any “abnormality” seen or suspected by a non-accredited practitioner must be referred to an accredited sonographer or obstetric specialist with referral within one week; preferably discuss the specifics of the findings by phone prior to referral
- Any structural fetal disorder (or any soft markers for disorders) noted during the routine examination by an accredited sonographer should ideally be referred directly to a specialist health facility or maternal-fetal evaluation unit by the sonographer doing the initial scan.

CONGENITAL DISORDERS

Screening for congenital disorders

- Routine screening for structural and chromosomal congenital disorders is not yet practical in the public sector in South Africa.
- Targeted screening can be offered where available, and certain pregnant women (see below) may need referral to a specialist health facility or a maternal fetal ultrasound unit, depending on the availability of these services.
  - Women with advanced maternal age (usually 37 years or older with conception, but the age cut-off may vary due to local protocols):
    - Should be informed of their increased risk for trisomy 21 (T21).
    - Should be offered referral to a genetic clinic, if available, either at 11-13 weeks or as soon as possible from 16 or 18 weeks onwards, up to an estimated gestation of 22 weeks and six days.
    - Use Figure 24-1 to show women the increase in risk for T21 according to her age.

Figure 24-1 Graph showing percentage risk for Down Syndrome in live births with increasing age



The following high-risk women must ideally be referred at 18-24 weeks for structural screening and management decision to specialist hospitals (discuss with the referral service first to see if they are able to offer this service)

- Pre-gestational diabetes
- Exposure of the fetus to any known teratogenic drugs during the first trimester- refer at 18-24 weeks.
- Previous history or family history of structural, chromosomal or genetic disorders
- Monochorionic twins – at 11-13 weeks or as soon as diagnosis is made
- Any other abnormal ultrasound findings - on diagnosis.
    - To achieve all the above, it is essential that all unnecessary requests for ultrasound examinations are identified and declined.

The following are usually not indications for referral to ultrasound at any level

- Patient's request after 24 weeks for fetal sexing.
- Diagnosis of pregnancy.
- Vaginal bleeding with a negative pregnancy test.
- Amniotic Fluid Index (AFI) in suspected postdates less than 41 weeks.

Ultrasound dating policy

When a BANC+ clinic has access to routine basic obstetric ultrasound for every client, the ultrasonographer can determine the correct Gestational Age and Estimated Date of Delivery and record this on the antenatal card. If routine ultrasound is not yet available, or the person "books" after 24 weeks, the health professional at the BANC clinic must do the determination of gestational age according to the BANC protocols (see chapter on antenatal care).

Certain menstrual history is defined as

- certain of the exact date of the first day of the Last Menstrual Period (LMP)
- normal LMP i.e. normal amount and duration of vaginal bleeding
- regular cycle of 25-31 days, no bleeding since LMP
- no hormonal contraception within three months prior to LMP
- in-vitro fertilisation treatment: use as "LMP" the date 16 days before the day of embryo transfer

First trimester: CRL, BPD, HC, AC

- Crown Rump Length (CRL) can be used for dating purposes up to a CRL of 80 mm, provided the measurement is taken accurately with the fetus in a neutral position i.e. do not measure when the fetus is stretched out or significantly curled up.
    - Wait for the baby to move and re-measure when the fetal spine is only slightly curved.
- If possible, perform full fetal biometry even in the first trimester and gestational age (GA) will be determined by the composite GA of all measurements, rather than the CRL alone.
    - Femur Length (FL) is not used for dating since the reference ranges of the database are not accurate.
- If the first trimester Ultrasound (US) age is compatible with the menstrual age within a seven-day margin: accept the LMP-expected date of delivery (EDD).
- If discrepancy of more than seven days: Find out whether an early pregnancy scan was done and compare the results.
    - Re-date according to US if scans both give a compatible EDD.
- If US smaller than LMP: Check the timing of the first pregnancy test. If the pregnancy test was positive shortly after the first missed period: do not re-date from US but regard as early intrauterine growth restriction (possible chromosomal abnormality) and review in a few weeks.
    - If no early pregnancy test was done: re-date from CRL.
- If uncertain menstrual age or US larger than LMP: re-date from US but confirm at 18-22 weeks.
- Pregnancy following in-vitro fertilisation: never re-date from US.

Second trimester: BPD, HC, AC, FL (18-24w)

- Dating from US-measurements is only accurate if the different measurements are compatible with one another and the fetus is normal.
    - If there is significant discrepancy between head, abdomen or limbs, one should search for abnormalities or signs of intra-uterine growth restriction (IUGR).
- Dating in the second trimester relies heavily on head measurements.
    - Unless the head is significantly dolichocephalic (long, flattened head), the biparietal diameter (BPD) and head circumference (HC) are used for dating purposes.
    - In case of dolichocephaly, only the HC is used.
- If all measurements are concordant, the US-gestational age is determined as the average gestational age from all three or four parameters, provided “Chitty reference ranges” are used for all.
- If the biometry-age is compatible with certain menstrual age within a 14-day margin: accept LMP for EDD.
- If more than 14-day discrepancy with uncertain menstrual age: assign US-EDD if less than 24 weeks.
- If more than 14 day discrepancy with certain menstrual age:
    - if smaller but very early pregnancy test available: Consider as early IUGR and review in two to three weeks and do Doppler
    - if smaller but no early pregnancy test: re-date from US if no signs of abnormality or asymmetry and normal placenta and liquor

Third trimester (> 24 weeks) BPD, HC, AC, FL

- If > 24w: No accurate dating from US possible. If the patient is obese (Body Mass Index > 35kg/m2) ultrasound dating can still be used up to 28 weeks, but may be unreliable.
- Look for signs of IUGR in the measurements and fetoplacental features.
    - Dopplers should be done if any of these suggest IUGR in a more advanced gestation than what the measurements suggest.
- In the absence of any signs of IUGR, provisionally assign US-EDD but refer to the doctor for assigning a working EDD and offer rescan for growth in two to three weeks if indicated.
- Results of informal earlier scans that were done by inexperienced and non-accredited staff may be ignored for the purpose of allocating Expected Date of Delivery.
- NOTE: in any cases of uncertainty advice must be obtained telephonically from a fetal maternal unit or the specialist hospital or the high risk clinic at the district hospital.

Chapter 25: GUIDELINES FOR PERINATAL REVIEW MEETINGS

The PNRM is a key component of the broader audit process that aims at improving the quality of perinatal care and perinatal outcomes.

Purpose of the perinatal review meeting

The PNRM is a key component of the broader audit process that aims at improving the quality of perinatal care and perinatal outcomes.

- The following are achieved through the PNRM
- Reviewing perinatal (including maternal) outcomes.
- Following trends in perinatal indicators.
- Identifying gaps in the provision of quality perinatal care.
- Determining actions to prevent deaths and morbidity from similar causes.
- Identifying progress on action plans identified at the previous meeting.
- Sharing good practices and providing educational input.
- Building relationships between hospital and clinics, and amongst different the participants at the facility.
- Monitoring implementation of policy guidelines.

Which facilities should hold perinatal review meetings?

- Every hospital should hold perinatal review meetings, and these need to be attended by the representatives from the Community Health Centres, midwife obstetric units, and clinics in the catchment area of the hospital.
- Every community health centre and all midwife obstetric units conducting more than 50 deliveries per month (these facilities should still attend the PNRM at the referral hospital as well).

How often should the PNRM be held?

- At least monthly in District Hospitals.
- In CHCs and MOUs, it may be sufficient to conduct them quarterly, depending on the number of deliveries.
- In Regional or District Hospitals with large numbers of deliveries (e.g. over 500 per month), it may be useful to conduct PNRM weekly in order to accommodate discussion of a larger number of mortality or morbidity cases.
    - However, there are certain components of the meeting which are better suited to a monthly schedule, such as the statistics presentation and the setting of an action plan.
    - Therefore where weekly PNRMs are held, there should be a different format or agenda, depending on which week of the month it is.
- The PNRM should be scheduled at a regular time each month (or week) so that the participants can plan their schedule accordingly. The dates of the meetings should be distributed well in advance (e.g. yearly).

Who should attend the PNRM?

- An attendance register should be developed that specifies the people (designation) that should be present at the PNRM, with a space provided for them to enter their name and sign in their attendance.
- Participation in the perinatal mortality meetings should be included in the performance agreements of the participants listed below, and monitored.

District Hospital

- At least one representative from the senior hospital management (CEO, Medical Manager, Nursing Manager-all three if possible).
- The Doctor in charge of maternity.
- The Doctor in charge of neonatal ward.
- All available doctors, including sessional doctors, who have to cover maternity and/or neonates- even if just on- call.
- Operational managers in Maternity.
- Relevant facility-based programme coordinators (e.g. VTP) and trainers.
- All available hospital midwives (excluding those who never work in the maternity/neonatal sections).
- Hospital quality assurance manager.
- Hospital monitoring and evaluation manager.
- Facility information officer.
- Primary Health Care Supervisors who cover the catchment area of the hospital.
- Representatives from each of the community health centres and clinics in the catchment area of the hospital.
- Community outreach facilitators.
- DCST (ideally the obstetrician, advanced midwife and primary health care nurse should attend). At the minimum, there must be a representative.
- District MCWH and PMTCT Coordinators.
- Visiting outreach specialists (obstetric, neonatal) and medical students from regional and or tertiary referral hospital.
- Representative of relevant NGOs working in the district.
- Nursing College Representative and student midwives (where local college exists).
- According to the cases discussed, some may attend the PNRM by invitation, for example:
- social worker
- dietician
- ambulance representative
- anaesthetic specialist from regional and or tertiary referral centre

Regional Hospital

All of the above should attend, and in addition:

- medical students doing obstetrics or neonatal rotations
- medical interns doing obstetrics or neonatal rotations
- if meetings are held weekly, it is acceptable for the top management of the regional hospital to limit their attendance to the specific meetings (e.g. monthly) where the action plans are made and followed-up on
- according to the cases discussed, some may attend the PNRM by invitation, for example:
- HOD or other doctors from Anaesthetics, General Medicine Department, or other specialised departments.

What is the role of senior management in the perinatal review meetings?

- To take responsibility for the meeting occurring regularly and running smoothly according to the principles in this document.
- Be involved in decision making and action planning.
- Facilitate implementation of actions decided on at the meetings.
- To be role models for their junior colleagues in encouraging quality improvement in the facility.
- The representation of senior hospital management is required in the PNRM so that they can keep in touch with what is happening in their institution with regard to perinatal care.

How to encourage doctors to attend the meeting?

- Accreditation of PNRM for CPD points.
- Presence of senior management at the meetings.
- Include participation in PNRMs in performance agreements.

How long should the meeting take?

- For PNRMs which are held on a monthly basis, the recommended duration of the meeting is two hours.
- If a joint perinatal and child mortality meeting is held, then the meeting may take longer.
- If a weekly meeting is held, it may be reasonable to restrict the meeting to one hour per week.

Who should chair the meeting?

- Senior manager in maternity or neonatal department, either medical or nursing.
- Can have a rotating or a fixed chair, depending on the circumstances within the hospital.
- If the medical or nursing manager of the hospital has a special interest and expertise in perinatal care, they could chair the meeting. This would increase the ownership by management of the perinatal audit process and the actions that flow from the audit.
- However, whoever chairs the meeting must have been involved in preparing for the meeting and must be familiar with the statistics, the cases that will be presented, and the actions required. The chair is also responsible for ensuring the minutes are completed and distributed timeously.

What should the agenda include?

- welcome
- distribution and signing of attendance register
- apologies
- ratification of previous meeting minutes
- matters arising from minutes: with a specific focus on following-up on the actions planned at the previous meeting
- presentation and discussion of statistics. This should include information about referrals to the next level of care, and the outcomes of these cases at the referral unit
- case presentations and discussion of cases
- all maternal deaths need to be presented
- selected perinatal deaths
- educational topic (e.g. presentation/discussion/demonstration)
- summary of key issues and setting of new action plan
- announcements
- date of the next meeting

What preparation should there be for the meeting?

- A schedule of PNRMs for the year needs to be published at the beginning of the year, and dates planned should be adhered to.
- There should be a small committee at the facility responsible for the preparation of the meeting. As a minimum this should include the chairperson of the meeting, and a senior manager from both nursing and medical components (e.g. nurse manager and clinical manager for maternity).
- The committee must ensure the following is done in preparation for the meeting:
- every maternal and perinatal death should have been discussed and analysed prior to the meeting (ideally within 72 hours of the event). Where there is little mortality this could be extended to cases of severe morbidity. Perinatal deaths should have been analysed according to the PPIP format
- confirm the agenda for the meeting
- prepare monthly statistics (may be done together with Faculty Information Officer). While the previous month's stats should be prepared for presentation, it is also important to present the trends over time for certain key perinatal indicators
- select cases for presentation (all maternal deaths and selected perinatal deaths with learning points)
- prepare of educational topic for presentation
- select and notification of presenters for the various presentations
- prepare of preliminary action plan (based on stats and lessons to be learnt from selected cases). The action plan will be further developed through discussion at the meeting
- invitations can be sent by email or fax as a reminder prior to each PNRM. This is important especially for those who will have to travel to the meeting from other facilities
- organise transport to transport participants from the clinics where necessary
- copy the prepared attendance register
- prepare the venue
- copy minutes of the previous meeting (just a few copies, as the minutes of the previous meeting should have been distributed within a week of the previous meeting, and participants should come with their copy of the minutes)

What format should the minutes be written in?

- A standardised format (template) for recording the minutes should be used to make taking the minutes an easier task (a suggested template with instructions is attached).
- The minutes must be a functional document which contributes to the quality improvement process of perinatal audit.
- The minutes should be concise. They are not a detailed record of everything that is said at the meeting.
- The attendance register should be attached as an addendum.
- The key components of the minutes should be:
- the main issues/gaps in perinatal care identified through the statistics and the case presentations
- the action plan to address these issues
- feedback on progress with implementing the previous month's action plan
- In the minutes, a brief summary is all that is required regarding:
- monthly statistics (a few key indicators)
- cases presented
- educational topic presented
- However, if requested by the participants, copies of the full statistics presentation, the educational presentation, and the case presentations could be attached as an addendum.
- It is essential that any formal material produced and retained in respect of the meeting is completely anonymised so that it remains confidential and not discoverable in court. This includes the case presentations and the minutes. Audit meeting records should not be retained in the patient file but should be filed separately in the maternity unit.

Who should take the minutes and distribute them?

- The minutes should be taken by a medical or nursing member of staff, who is familiar with the terminology, and can write insightful minutes.
- If a ward clerk is to write the minutes, then the clerk must be trained and supervised.
- Following the meeting, the minutes must be typed up (if required, support staff can help with the typing). They must be checked and corrected by the meeting chairperson before distribution.
- The chairperson has responsibility for distribution of the minutes, but support staff may help with the process.
- Minutes must be distributed (usually by email) to all people on the attendance list within one week of the PNRM, so that people responsible for tasks in the action plan can be reminded of what they are meant to do.

What is the place of the PPIP in the perinatal meeting?

- If the PPIP database is up to date, the PPIP can be used to present the monthly key perinatal indicators with trends. However, this can also be done without using PPIP.
- All hospitals must use PPIP as a quality improvement tool.
- It is recommended that every six months a special PPIP meeting be held (this could be at the time of a scheduled PNRM) to review the accumulated data from the previous six months, in particular the major causes of death and the most common avoidable factors in the facility. Trends in the key perinatal indicators compared to the previous 6-month period can also be reviewed. An action plan should be made based on this data.

Should people responsible for poor perinatal outcomes be identified and counselled at the perinatal review meeting?

- The PNRM is not a forum for disciplinary action. It is primarily an educational meeting, and a meeting for setting action plans to prevent deaths from similar causes.
- If there has been substandard or negligent practice that has led to a maternal or perinatal death, there should be a meeting between the health workers concerned and their line managers in a private and confidential meeting before the PNRM, and disciplinary action taken if appropriate.
- To maintain anonymity and confidentiality, names of patients and healthcare workers should not be included in presentations.
    - If copies are made of the patient charts for educational purposes at the meeting, all identifying information for the patient and the health workers should be removed.
    - In addition to patient anonymity, all identifying information for health care workers should be removed from any presentations or minutes.

Who is custodian of the action plan?

- The quality assurance manager of the facility has a responsibility to follow-up on progress with implementing the action plan in between meetings, however this role could be delegated by the top hospital management to another suitable individual.
- This individual can follow-up to ensure that urgent actions get implemented without delay.
- Those named for specific responsibilities in the action plan should send progress reports during the month to the quality assurance manager.

What is the role of the district specialists in the facility based perinatal meeting?

- Ensure meetings happen in facilities.
- Ensure that the meeting follows the desired format.
- Ensure that a feedback process is in place, so that information and actions arising from the meeting are known throughout the sub-district.
- Ensure that good action plans are developed and that follow-up on the actions occurs.
- DCSTs can add value by sharing their clinical expertise.
- Support and mentoring role.
- Must not take over the meeting – if PNRM are not happening or are poorly conducted, the DCST can chair one meeting to demonstrate how a meeting should be run, can co-chair the next meeting, but by the third meeting they must observe the PNRM being chaired by someone from the hospital and provider reflective feedback.

Chapter 26: RESPONDING TO A MATERNAL DEATH

The following action must be taken to respond to a maternal death at a healthcare facility.

Immediately

- Inform most senior clinician on duty (e.g. consultant obstetrician on-call).
- Inform most senior nurse on duty (e.g. night matron).
- These senior staff must decide whether a post-mortem is required.
- Inform the family.
- Make arrangements for photocopying of the case file.

Within 72 hours

- Inform top management of facility (CEO, Medical and Nursing Managers).
- Inform District Clinical Specialist Team (DCST).
- Hold a formal meeting to:
- clarify all the facts about the case
- make and record an initial action plan to prevent a recurrence
- fill the maternal death notification form (Maternal Death Notification Form - draft)
- The meeting should include at a minimum:
- all health care personnel who were responsible for the care of the patient around the time of death (example: doctor on-call, including sessional doctors, nurses on duty in the relevant ward, doctors from other disciplines where relevant)
- the most senior clinician in the relevant disciplines at the facility (e.g. HOD or Clinical Manager for obstetrics, but also for anaesthetics, medicine etc where relevant)
- The assistant nurse manager for maternity and for other sections where relevant to the case (e.g. theatre, medical wards and casualty)
- at least one of the top management of the facility
- relevant member(s) of the DCST (includes obstetric specialist, advanced midwife, family physician, PHC nurse, and anaesthetist)
- Arrange a meeting to discuss the case with the family (an experienced senior doctor and nurse who know the case well should be present).
- Debriefing / supportive counselling should be conducted by senior staff for any members of staff closely involved in the case who feel physiologically effected by the death.
    - This should be strongly encouraged by management

Within one month

- All relevant documentation related to the case should have been compiled. This includes notes from other institutions who managed the patient during pregnancy (the patient may have been referred to the facility where she died), all theatre notes, ICU notes, investigation results and any provisional post-mortem report.
- Feedback should have been given to other facilities who may have managed the patient during her pregnancy (e.g. PHC clinics who conducted the antenatal care or District hospital that referred to the regional hospital. It is preferable to invite members of the referring hospital /clinic to the meeting).
- The case should have been discussed at a scheduled monthly perinatal mortality meeting, using the case to highlight any lessons learnt, and to give feedback on progress with the initial action plan. Representatives from all the referring clinics should be present at a hospital's perinatal meeting. The DCST should also be represented. Preliminary information of post mortem if done should be obtained if at all possible.
- Following the discussions at the PNMM, any additions to the action plan and to the filling of the maternal death notification form (MDNF) can be finalized. The MDNF must be signed by the head of the maternity unit
- As with PNRM minutes and presentations, formal documentation retained by the institution such as presentations, minutes or action plans (not the MDNF) should be anonymised for patient as well as staff confidentiality and stored separately from the patient record.
- A copy of all documentation related to the case, together with the completed MDNF must be delivered to the Provincial MCWH Office, for the purposes of the Confidential Enquiries into Maternal Death.

Within three months

- The case should be presented at the District Perinatal Meeting. At this forum, the focus should be on feedback regarding the implementation of the action plan drawn up at the facility in response to the maternal death.

CHAPTER 27: MANAGEMENT OF CANCERS IN PREGNANCY

Epidemiological background

Cancer in pregnancy is not common. Melanoma, Cervical, Breast, Ovarian, and Leukemia are the most common pathologies (in descending order). They present a diagnostic, therapeutic, and social challenge requiring a multidisciplinary team (MDT) approach. All cancers in pregnancy should be managed and delivered at tertiary/central hospitals.

Diagnosis and Challenges of Diagnosing Cancers in Pregnancy

Diagnosis is often delayed due to:

- Fear of interfering with pregnancy and subsequent poor outcomes.
- The physiological and anatomical changes of pregnancy which may mimic some of the presenting symptoms making it difficult to suspect a malignancy.
- The gravid abdomen also makes it difficult to examine for malignancies such as ovarian cancers.
- Breast changes including lumps associated with pregnancy changes make it difficult to suspect or diagnose breast cancer.
- Most tumor markers may pose an interpretation challenge as they change during pregnancy
- Imaging modalities such as Mammogram images are difficult to interpret owing to physiological hypervascularity and density of the breast tissue in pregnancy.
- The ultimate diagnosis of every tumor/malignancy is through tissue histological report. The cellular changes of pregnancy may pose a challenge at times due to cellular changes of pregnancy mimicking a pathology. Therefore, the specimen should be clearly labelled with the pregnancy status of the patient.

Note: *Computed tomography (CT scan) carries an unacceptable radiation risk and Magnetic resonance imaging (MRI) is considered safe as it lacks radiation. Ultrasound is the safest modality, but the diagnostic power may be reduced in pregnancy due to pregnancy changes*.

Cervical cancer

Introduction

Cervical cancer is the second most common malignancy diagnosed during pregnancy, with an incidence of 0.45 to 1 per 1000 live births.

Screening for cervical cancer in pregnant woman should be provided to eligible clients as part of routine preconception care. Pregnancy does not preclude screening for cervical cancer and it can be performed up to 20 weeks of gestation to avoid missed opportunity. When taking a pap smear during pregnancy, it is advisable to use the plastic brush /broom to minimise trauma to the cervix.

Should a screening be abnormal or a lesion detected at speculum examination, the patient should be immediately referred to a specialist for colposcopy. Due to the risk of significant bleeding the colposcopist should defer taking a biopsy until at least 12 weeks after delivery unless there is suspicion of invasive cancer. Treatment for precancerous lesions by cryotherapy, LLETZ or cold knife conisation is contraindicated in pregnancy or within 12 weeks postpartum as it is associated with a high rate of complications, including severe haemorrhage. Additionally, when excision is performed during pregnancy there is a high rate of incomplete excision and recurrence. Unless invasive cancer is suspected, any intervention should be delayed until after 12 weeks postpartum when she should be reevaluated and appropriate treatment provided then.

Note: *Due to physiologic changes of pregnancy , the interpretation of pap smear may be difficult and its always important to highlight the pregnancy status of the woman while sending the sample to the pathologist*

Diagnosis of Cervical Cancer

- Cervical Cancer in pregnancy commonly presents with:
    - Abnormal bleeding
    - Vaginal discharge,
    - And abdominopelvic pain.

Management of Cervical Cancer in Pregnancy

The management of Cervical Cancer in pregnancy is largely based on the stage of the disease and the gestation. With non-viable gestations, termination of pregnancy can be offered with appropriate management after pregnancy. With viable gestations, treatment can be offered during pregnancy or delayed until after delivery. All these decisions will be done at tertiary care, with multi-disciplinary input.

Cervical Cancer in Pregnancy: Aspects of Delivery

- The preferred method of delivery will depend on the tumour, but in most cases, CD will be advised, followed by radical surgery or other treatment modalities, according to the stage of the disease. It is important that women with cervical cancer have a delivery plan in place, scheduled at a tertiary/quaternary facility.

Breast cancer

Overview

Breast cancer, although uncommon, is the most prevalent malignancy encountered in pregnancy. Most patients are diagnosed in the late stages of the disease due to pregnancy-related changes in the breast that pose a diagnostic challenge and allow these cancers to be missed until late post-delivery.

Presentation

- Breast cancers in pregnancy usually present as larger tumors.
- Unlike in the non-pregnancy state, a palpable lump, swelling, and discharging nipples may all be confused with changes in pregnancy and not suspected to be from malignancy.

Diagnosis and Staging

- When breast cancer is suspected, it is essential not to delay confirmation of the diagnosis through a histological report of the tissue specimen examined from a core needle biopsy.
- Mammography and ultrasound are the safest and best imaging modalities for diagnosis (mammography) and assess the extent of the disease in the breast and lymph nodes (Ultrasound).
- Chest X-ray can safely be done, with the use of abdominal shielding, to evaluate the lungs and rule out metastases.

Treatment of Breast Cancer in Pregnancy

- There are no differences in modalities for pregnant women as compared to nonpregnant women.
- The goal is to achieve local control and prevent distant metastases.
- Surgery is the preferred method. This will be performed at a tertiary/quaternary facility
- Postoperatively, adjuvant chemotherapy can be started in the second trimester to prevent complications to the fetus and pregnancy in the first trimester.
- The use of radiation therapy is recommended during the postpartum period.
- The safety of some chemotherapeutic agents in the second trimester has been established
- Due to severe congenital abnormalities, if a woman becomes pregnant while on tamoxifen, pregnancy termination should be advised.

Ovarian cancer

Presentation

- Most patients will present with abdominal or pelvic pain and one-third of ovarian cancers are diagnosed incidentally.
- Diagnosis may be delayed due to pregnancy masking the signs of cancer.

Diagnosis

- Transvaginal and abdominal ultrasound have high sensitivity and specificity in the diagnosis of ovarian masses even in pregnancy. However, MRI would be the best radiological modality.

Treatment of Ovarian Cancer in Pregnancy

- Ovarian Cancer stages 1 and 2 can be treated surgically in the second and third trimesters with surgical staging, salpingo-oophorectomy, omentectomy, peritoneal biopsies, and evaluation of suspicious lymph nodes similar to non-pregnancy state.
- Both laparoscopy and laparotomy are accepted procedures.
- Certain chemotherapeutic drugs can be given safely in the second and third trimester for epithelial ovarian cancer.
- Unless indicated, delivery should be by vaginal route in women who were surgically treated for ovarian cancer in the early trimester.
- The risk of preterm labor, IUGR, and abortion still exist and the oncological outcomes are similar to non-pregnant women.

Considerations During Surgery

- When cancer surgery is indicated in pregnancy for the diagnosis, treatment, and staging, it should be done if it cannot be delayed until fetal maturity or the post-partum period.
- Surgical procedures are best undertaken in the second trimester to prevent spontaneous abortion from complications related to manipulation of the uterus.
- Due to the risk for preterm labor at or after surgery which is high, tocolytics and steroids may be indicated.
- If the malignancy is on both ovaries, bilateral salpingo-oophorectomy may be performed as this does not pose a risk to the pregnancy (Hormones essential for the maintenance of the pregnancy are from the placenta during this trimester).
- Regional anesthesia is preferred with a lateral tilt during surgery to help prevent aortocaval compression.

Special Considerations with suspected metastatic diseases to the placenta or the fetus

- Although metastatic disease to the placenta and the fetus is rare, when the malignancy is melanomas and hematological malignancies, it is essential to screen for metastasis.
- Where the metastasis is suspected or likely to occur, the placenta should be submitted for careful histologic evaluation.
- The fetus should also be examined carefully at birth and at regular intervals after birth for any signs of metastatic disease.

Counselling for Pregnant Woman with Cancer

- A multidisciplinary approach involving all stakeholders is important.
- Cancer during pregnancy represents both a psychological and biological dilemma as the treatment is directed at saving the mother but minimizing complications to the pregnancy.
- The patient and her family should be actively involved in all the decisions. At the least, the MDT should have an obstetrician, oncologist, pediatrician, and psychotherapist.

Conclusions

- The screening and treatment of malignancies during pregnancy should be able to mirror that outside pregnancy, with a balance between maternal versus fetal health.
- Should the need be identified, fertility-sparing surgery can be offered for various malignancies depending on the stage of the disease.
- Some malignancies such as cervical cancer may require a delayed treatment approach.
- Neoadjuvant and/or adjuvant chemotherapy can be given for advanced gynecologic cancers with good disease-free survival without significant adverse neonatal outcomes.
- A multidisciplinary approach and improved education of providers regarding the surgical and chemotherapeutic treatments in pregnancy are needed to fully inform patients regarding treatment options.

Evidence basis and further reading.

- All the medicine and intravenous fluids recommended in this guideline is based on the latest edition (2020-2024) of the Essential Medicine List for primary care as well as for hospital care. The evidence basis for the drug choices is referenced in the EML. Always refer to the EML for updates on medicine choices and if in doubt regarding the dose. They are available at https://knowledgehub.health.gov.za/
- Many of the chapters are based on the following WHO guidelines, which are freely available online. Consult the full guideline for more information as well as the evidence on which the recommendations are based:
    - WHO recommendations on antenatal care for a positive pregnancy experience (2016)
    - WHO recommendations: intrapartum care for a positive childbirth experience (2018)
    - WHO Improving maternal and newborn health and survival and reducing stillbirth - Progress report (2023)
    - WHO Maternal and perinatal death surveillance and response (2021)
    - WHO recommendations on Postnatal care of the mother and newborn (2013)
    - WHO guide for integration of perinatal mental health in maternal and child health services (2022)
    - WHO Pocket Guide for Clinical Management of Obstetric and Neonatal Emergencies in Africa (2022)
    - WHO Standards for Improving Quality of Maternal And Newborn Care In Health Facilities (2016)
- Many of the chapters are based on the following NICE (National Institute for Health and Care excellence) guidelines, which are freely available online. Consult the full guideline for more information as well as the evidence on which the recommendations are based:
    - NICE Antenatal Care (2021)
    - NICE Postnatal Care (2021)
    - NICE Caesarean Birth (2021)
    - NICE Ectopic pregnancy and miscarriage: diagnosis and initial management (2023)
    - NICE Fetal monitoring in labour (2022)
    - NICE Hypertension in pregnancy: diagnosis and management (2023)
    - NICE Inducing labour (2021)
    - NICE Intrapartum care for healthy women and babies (2022)
    - NICE Intrapartum care for women with existing medical conditions or obstetric complications and their babies (2019)
    - NICE Preterm labour and birth (2022
    - NICE Diabetes in pregnancy: management from preconception to the postnatal period (2020)
- In addition, the following evidence-based guidelines were consulted.
- FIGO Consensus Guidelines on Intrapartum Fetal Monitoring (2015)
- The hypertensive disorders of pregnancy: ISSHP classification, diagnosis and management recommendations for international practice (2018)
- ISUOG Practice Guidelines (updated): performance of the routine mid-trimester fetal ultrasound scan (2022)

ANNEXURES

Annexure 1: Example Of Notification of Resource Constraints

Note: This is an example only. Managers should create their own notification. The examples should be specific to each institution.

For the attention of the District Manager

As prescribed for in the 2024 National Maternity Guidelines, I would like to make you aware of the following resource constraints which impact the ability of _____ (Name of institution) to provide care that is fully in line with the Guidelines.

Staffing

1. Our nursing staff complement is below that recognised as ideal. There are insufficient staff to cover "surges" in need, and at times staff need to cover more than one area within the maternity unit.
    a. This may have an impact on the ability of staff to monitor patients strictly according to the Guidelines, although at all times they do their best to prioritise the most urgent and at-risk cases.
2. Our medical staff complement is below that recognised as ideal. In addition, the doctors are expected to cover the whole hospital and may sometimes be busy in other areas, such as casualty or theatre, when an emergency occurs in maternity.

Equipment and other supplies

1. The maternity unit has, from time to time, a lack of equipment, including:
    a. CTG machines in numbers sufficient to provide continuous monitoring to all high risk patients.
    b. Multi-parameter monitors
    c. Incubators
    d. Blood gas machines
2. In addition, the procurement of consumables can be a challenge, including continuous supplies of CTG paper, Maternity Case Record books, Road to Health Cards.
3. On occasions, depending on supply chain constraints, the procurement of medicines, and surgical consumables (such as syringes) can be a challenge.
4. Staff at the ward level, as well as those in supply chain and finance are aware of their responsibilities, and work at all times to ensure that the equipment needed for care is available, but the lack thereof is sometimes beyond their control, especially, but not exclusively at the end and beginning of new financial years.

Infrastructure

1. The infrastructure is not fully in line with that envisaged in the IUSS health facility standards. This may impact patients in various ways, including that they may be admitted, observed, monitored or even deliver in areas that were not designed for this purpose.

Emergency Medical Services

1. Our institution is served by only ____ ambulances. This is significantly fewer than provided for in national departmental guidelines. As a result:
    a. it often takes several hours for an ambulance to be available to respond to a request to transfer a patient.
    b. patients often need to obtain private transport to get to the institution when they are in labour or have an emergency.

Power supply

1. The Hospital has an emergency generator which supplies power to most parts of the hospital. It does not, however, supply power to all plug outlets, making it more difficult to provide good monitoring, especially in an emergency.
2. Despite diligent checking and ordering of fuel, there are times when:
    a. Loadshedding stages dramatically increase fuel usage
    b. Prolonged power failures due to grid instability in our rural area may cause fuel to be depleted.
    c. Deliveries of fuel are delayed because of strike action
    d. The generator breaks down
3. In such circumstances, the ability of the institution to provide care may be seriously affected.

Your assistance in addressing these constraints is much appreciated.

Yours sincerely

Hospital CEO

Annexure 2. Nutrition Education and Counselling for Pregnant Women During Antenatal Care

Nutrition education and counselling for pregnant women during preconception, pregnancy and breastfeeding antenatal care should focus on the following components:

- Encourage consumption of a variety of foods from each of the food groups.
- Encourage the consumption of the following nutrient dense foods:
- folate-rich foods such as green leafy vegetables (spinach, broccoli), oranges and legumes.
- Foods rich in Vitamin C (oranges, mangoes, guavas, tomatoes, raw cabbage). Vitamin C improves iron absorption.
- Include iron rich foods (liver, kidney, spinach, red meat, fortified maize meal and fortified bread) for prevention of anaemia.
- Calcium-rich foods (milk, maas, yogurt, cheese) for strong bones and teeth.
- Foods high in Vitamin A, e.g. leafy green vegetables (kale, spinach, broccoli), orange and yellow vegetables, liver, fish, eggs, and dairy products.
- Vitamin A improves immune system, protects from illnesses and in breastmilk helps with eyesight for the baby.
- Use iodated salt (salt with iodine) not more than one teaspoon per day.
- Choose high fibre foods such as fruits, vegetables, whole-wheat bread to prevent constipation.
- Avoid whole grain cereal, legumes, tea and coffee together with iron rich foods/ iron tablets as these foods reduce the absorption of iron.
- Encourage adequate fluid intake, drink at least 2 litres of water or other liquids every day.
- Discourage the use of alcohol and drugs to prevent malformations in the fetus and fetal alcohol syndrome.
- Eat regular meals and discourage skipping of meals.
- Encourage adoption of an overall healthy eating plan, physical activity, and avoidance of foods high in sugar and fat to maintain a healthy weight.
- Advise taking iron tablets during meals to avoid side effects and do not take the same time as calcium tablets. Iron absorption is better when taken on an empty stomach, but may cause more side effects that way.
- Encouraged women to bring in the labels or bottles of all dietary supplements (pills, powders, teas, etc) to determine whether excessive levels of specific nutrients (or other bioactive compounds) are being consumed on a daily basis.
- Incorporate breastfeeding promotion, counselling and support- minimal breastfeeding topics to be covered during antenatal care.

NOTES

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