



Republic of Namibia
Ministry of Health and Social Services

NATIONAL GUIDELINES: ANTENATAL CARE FOR A POSITIVE PREGNANCY EXPERIENCE





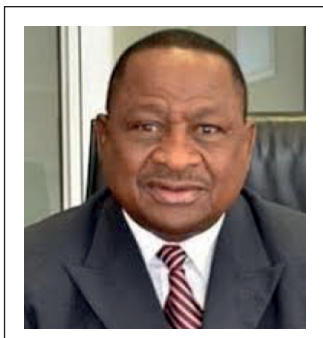
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Date: December 2020

Foreword



The Ministry of Health and Social Services is mandated to provide up-to-date guidance on the provision of quality and equitable services to improve the health of the population including women, newborns and children. The Ministry has achieved many successes in the past years in terms of increasing access to various services including sexual reproductive health, nutrition, PMTCT and HIV/AIDS throughout the country.

The national commitments, as evidenced in the National Policy on Sexual, Reproductive and Child Health (2013), the Harambee Prosperity Plan (2016 – 2020) and the Fifth National Development Plan (NDP5, 2017 – 2022) demonstrate the high level of attention and priority given to the health of women and children. In addition, Namibia is signatory and committed to various international commitments, including the goals for ending preventable maternal and child deaths by 2035 and the Sustainable Development Goals (SDGs) by 2030. With a decade left to achieve the SDGs targets, it is crucial that accelerated actions are taken to lead to the achievement of the national and global targets articulated for maternal, newborn and child health.

Maternal and perinatal death rates remain a major challenge of health care in Namibia and antenatal care (ANC) benefits both the mother and the baby. Quality and effective ANC reduces complications from pregnancy and delivery, reduces stillbirths and perinatal deaths, and offers an opportunity for integrated care during pregnancy. Namibia has been implementing Focused Ante Natal Care (FANC) since 2014. However, the FANC model with four ANC visits was found to increase perinatal mortality and was associated with poor satisfaction of pregnant women and is no longer recommended.

Thus, in line with the latest global evidence and the WHO recommendations, Namibia has adopted the standard ANC model with eight contacts. The new ANC model aims to ensure equitable access to, and appropriate utilization of quality antenatal care services provided by appropriately skilled health-care workers to enable the client to achieve a positive pregnancy experience. In this regard, the Ministry has developed the “*National Guidelines for Antenatal Care for a Positive Pregnancy Experience 2020*” to guide health workers to provide integrated antenatal care services to all pregnant women and adolescent girls for the delivery of evidence-based interventions to improve maternal, fetal, and neonatal health and survival.

I, therefore, urge all stakeholders, Government ministries, development partners, NGOs, faith-based organizations and academia to support the nation-wide implementation of the new guideline which is expected to contribute to the reduction of preventable maternal and perinatal deaths in the country.



Dr Kalumbi Shangula, MP
Minister

Preface



Globally, evidence during the last few years have shown that the focused antenatal care (FANC) model is associated with more perinatal deaths (stillbirths) than ANC models that comprise at least eight contacts between the pregnant woman and the health care provider. Besides, women were not satisfied with the quality of antenatal care they were receiving during their focused ANC visits.


These findings and other evidence informed the development of the WHO's 2016 "*Recommendations on Antenatal Care for a Positive Pregnancy Experience*". Given evidence that perinatal deaths increase with only four ANC visits and that an increase in the number of ANC contacts is associated with an increase in maternal satisfaction, WHO recommends a minimum of eight contacts; one contact in the first trimester, two contacts in the second trimester and five contacts in the third trimester.


The new ANC model aims to provide pregnant women with respectful, individualized, person centred care at every contact and to ensure that each contact delivers effective, integrated clinical practices (interventions and tests), provides relevant and timely information, and offers psychosocial and emotional support to ensure positive pregnancy experience and healthy outcome for both the mother and baby.

Thus, the Ministry of Health and Social Services, with the support of WHO and other partners, has adopted the new ANC model with eight antenatal contacts as a guide for Namibian health professionals at all levels of the health care system in providing quality antenatal care services for pregnant women and adolescent girls. It is hoped that the implementation of this guideline will contribute to improvement in the quality and utilization of ANC services, more maternal satisfaction and reduction in perinatal mortality and overall improved pregnancy outcomes.

The National Guidelines for Antenatal Care for a Positive Pregnancy Experience 2020 contain eleven informative chapters and thirteen detailed appendices, which cover all areas related to the provision of quality and woman centered antenatal care services in Namibia. The first nine chapters deal with the basics of antenatal care while chapter ten covers the management of physiological symptoms and complications of pregnancy. Besides, monitoring and evaluation aspects are addressed under chapter eleven.

The Ministry of Health and Social Services expresses our gratitude and calls up on the support and cooperation of all health professionals, programme managers, academia and partners to contribute to the effective implementation of this very important approach and guideline to improve the quality and utilization of antenatal care services in Namibia.


Ben Nangombe
Executive Director



Acknowledgements

The Ministry of Health and Social Services would like to acknowledge the contributions of the WHO Inter Country Support Team for East and Southern Africa and the Country Office in Namibia for their technical leadership and financial support in the development and printing of this guideline.

The ministry equally expresses its gratitude to UNFPA, UNICEF, GF and CDC for their technical support. The efforts of the Directorate of Primary Health Care Services for spearheading the development process is highly appreciated.

We also acknowledge the contributions from Rhino Park Private Hospital, University of Namibia (UNAM) Schools of Nursing and Medicine, International University of Management (IUM), Namibia Planned Parenthood Association (NAPPA), Independent Midwifery Association of Namibia (IMANA) and Society for Family Health for their contributions during the development process.

Special thanks to the Regional Management Teams and staff of Khomas, Hardap, Omaheke, Oshana and Otjozondjupa regions; Directorate of Tertiary Health Care, Directorate of Special Programs, Health Information and Research Directorate; Quality Assurance Division, National Health Training Centre (NHTC) and Otjiwarongo Regional Training Centre, Department of Obstetrics and Gynaecology of Windhoek Central and Katutura Intermediate Hospitals and Windhoek Central Maternity.

Finally, the Ministry expresses its appreciation to Dr Nancy Kidula (WHO Africa Regional Office), Dr David Ntirushwa, Dr Josef Mufenda and Mrs Hilma Shikwambi, the resource persons who supported the development of the guideline at different stages as well all the administrative officers who provided logistics.

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Acronyms and abbreviations

- **AFB:** Acid Fast Bacillus
- **AIDS:** Acquired Immune Deficiency Syndrome
- **ANC:** Antenatal Care
- **APH:** Antepartum Haemorrhage
- **ART:** Anti Retroviral Treatment
- **ARVs:** Anti Retroviral Medicines
- **ALT:** Alanine Aminotransferase Test
- **ASB:** Asymptomatic Bacteria
- **AST:** Aspartate Aminotransferase Test
- **BMI:** Body Mass Index
- **BPACR:** Birth Preparedness and Complication Readiness plan
- **CBH:** Chronic Hepatitis B
- **CBHAS:** Community Based Health Assistants
- **CHW:** Community Health Worker
- **CBHAs:** Community Health Workers
- **COVID-19:** Corona Virus Disease 2019
- **CS:** Caesarean Section
- **CTG:** Cardiotocograph
- **DIC:** Disseminated Intravascular Coagulation
- **DM:** Diabetes Mellitus
- **EDD:** Estimated Date of Delivery
- **EIMC:** Early Infant Male Circumcision
- **EIA:** Enzyme Immuno-Assay
- **EmONC:** Emergency Obstetric and Newborn Care
- **eMTCT:** Elimination of Mother to Child Transmission
- **FANC:** Focused Antenatal Care
- **FHR:** Fetal Heart Rate
- **FP/HSTP:** Family planning /Health Spacing and Timing of Pregnancy
- **G6PD:** Glucose 6 Phosphate Dehydrogenase
- **GBV:** Gender Based Violence
- **GDM:** Gestational Diabetes Mellitus
- **GS:** Grain Stain
- **HAART:** Highly Active Antiretroviral Therapy
- **HBeAg:** Hepatitis B e-Antigen
- **HBsAg:** Hepatitis B surface Antigen
- **HBV:** Hepatitis B Virus
- **HB:** Haemoglobin
- **HCC:** Hepatocellular Carcinoma
- **HEV RNA:** Hepatitis E Virus Ribonucleic Acid

- **HGT:** Haemogluotest
- **HIV:** Human Immunodeficiency Virus
- **IEC:** Information, Education, Communication
- **IFA:** Iron and Folic Acid
- **IM:** Intramuscular
- **IPV:** Intimate Partner Violence
- **ITNs:** Insecticide Treated Nets
- **IUM:** International University of Management
- **IV:** Intravenous
- **IVI:** Intravenous Infusion
- **IYCF:** Infant and Young Child Feeding
- **LFTs:** Liver Function Tests
- **LMICs:** Low- and Middle-Income Countries
- **LMP:** Last Menstrual Period
- **MCPC:** Managing Complications in Pregnancy and Childbirth (WHO IMPAC Manual)
- **MCS:** Microscopy culture and sensitivity
- **MDR-TB:** Multidrug Resistant TB
- **MMR:** Maternal Mortality Ratio
- **MOHSS:** Ministry of Health and Social Service
- **MTB:** Mycobacterium Tuberculosis
- **MUAC:** Mid-Upper Arm Circumference
- **MUST:** Malnutrition Universal Screening Tool
- **MVA:** Manual Vacuum Aspiration
- **NAPPA:** Namibia Planned Parenthood Association
- **NASG:** Non-pneumatic Anti-Shock Garment
- **NDP5:** Fifth National Development Plan
- **NHTC:** National Health Training Centre
- **NVD:** Normal Vaginal Delivery
- **OGTT:** Oral glucose Tolerance Test
- **PE/E:** Pre-eclampsia /Eclampsia
- **PMTCT:** Prevention of Mother to Child Transmission
- **POC:** Point of Care
- **PPROM:** Preterm Pre-labour Rupture of Membranes
- **PrEP:** Pre-Exposure Prophylaxis
- **PROM:** Pre-labour Rupture of Membranes
- **PTL:** Preterm Labour
- **PV:** Per Vagina
- **R/O:** Rule Out
- **RAM:** Rapid Assessment and Management
- **RDT:** Rapid Diagnostic Test
- **RDTs:** Rapid Diagnostic Tests

- **RMNCAH:** Namibia National Strategy for Women’s Children’s and Adolescent Health
- **RT-PCR:** Reverse Transcription - Polymerase Chain Reaction
- **SDGs:** Sustainable Development Goals
- **SFH:** Symphysis Fundal Height
- **STIs:** Sexual transmitted infections
- **TB:** Tuberculosis
- **Td:** Tetanus and Diphtheria vaccine
- **TPT:** Tuberculosis Preventive Therapy
- **TT:** Tetanus Toxoid vaccine
- **UN:** United Nations
- **UNAM:** University of Namibia
- **UNFPA:** United Nation Population Fund
- **UNICEF:** United Nation Children’s Fund
- **UTI:** Urinary Tract Infection
- **VDRL:** Venereal Disease Research Laboratory
- **VMMC:** Voluntary Medical Male Circumcision
- **WHO:** World Health Organization

1. INTRODUCTION

1.1 Situation of Maternal and Newborn Health in Namibia

Globally, in 2017 about 300 000 women died from pregnancy and childbirth related complications, while many were left with lifetime complications. The majority of these deaths (94%) occurred in low-resource settings with Sub-Saharan Africa accounting for roughly two-thirds of all maternal deaths and most could have been prevented. More than 5 million stillbirth and neonatal deaths occur globally, 99% occurring in low- and middle-income countries. There is evidence that more than 70% of these women could be saved with quality maternal and newborn care services, hence the need to invest in skilled care during pregnancy, childbirth and the postnatal period. Reducing maternal and neonatal mortality is an essential component of the health Sustainable Development Goal 3 (SDG-3) specifically target 3.1 which aims to reduce the global maternal mortality ratio to less than 70 per 100 000 live births by 2030, with no country having a maternal mortality ratio of more than twice the global average.

The main factors that prevent women from receiving or seeking care during pregnancy and childbirth are documented as: poverty, distance to facilities, lack of information, inadequate and poor-quality services, cultural beliefs, and practices. To improve maternal health, barriers that limit access to quality maternal health services must be identified and addressed at both health system and societal levels. Namibia has put women and neonatal health to the fore of the national health agenda in order to achieve maternal and neonatal health related sustainable development goals. From the Namibian Demographic and Health Survey report of 2013, maternal mortality ratio (MMR) estimate was at 385 per 100 000 live births, a slight decrease from 449 per 100 000 live births in 2006. However, trends in maternal mortality from 2000 to 2017 by the UN group (WHO, UNICEF, UNFPA, World Bank and the United Nations Population Division), estimated maternal mortality ratio of 195 per 100 000 for Namibia. Further, it is estimated that the proportion of births attended by skilled personnel stands at 88% while neonatal mortality stands at 16 per 1000 live births. The current figures are still high and most of the deaths are preventable if effective measures are put in place before, during and after pregnancy.

To achieve stipulated maternal and neonatal goals set by the Country and SDGs, the country needs to identify and implement more innovations and scale up evidence-based interventions to improve the quality of care and achieve universal health coverage. A life course approach focussing on promoting women's health, sexual and reproductive health has a positive impact on future women's health including their pregnancy. However, pregnancy specifically is a high-risk period and requires proper and quality antenatal care to prevent severe maternal and neonatal morbidity and mortality. Because pregnancy is a critical period for both the mother and the unborn baby, quality care during pregnancy is essential.

ANC services link the woman and her family with the formal health system, increase the chance of the mother using a skilled attendant at birth, and contribute to optimal health through the life cycle. Inadequate ANC can interrupt the continuum of care, affecting both women and babies. To achieve the quality and continuity of ANC services, various approaches have been employed. In the 1990s, the traditional approach to ANC was criticized for irregular visits, long waiting times, little communication with women and maternity units, and lack of focus on the psychosocial aspects of pregnancy. To overhaul

the deficiencies of the traditional approach, WHO adopted focused antenatal care (FANC) in 2002, an evidence-based and goal-orientated approach. The FANC approach was based on a model of four ANC visits and low- and middle-income countries widely embraced it. However, globally only 64% of pregnant women had the recommended four visits during 2007–2014. Furthermore, studies showed that FANC had little or no effect on caesarean section rates or maternal mortality and was likely associated with more perinatal deaths than models with at least eight visits. A set of reviews was undertaken to determine the best way to improve maternal and newborn outcomes through improved uptake of ANC services. The results were included in the 2016 WHO recommendations on antenatal care for a positive pregnancy experience and ANC models with a minimum of eight contacts are now recommended to reduce perinatal mortality and improve women’s experience of care. Therefore, FANC is no longer recommended.

So far, Namibia had been implementing the Focused Antenatal Care (FANC) approach and ANC services are available free of charge and in all health facilities all over the country. Approximately 97% of pregnant women received ANC from a skilled provider during their last pregnancy, with nurse midwives as the provider of ANC services to most pregnant women (69%). However, less than half (42%) of the mothers had their first antenatal visit before the fourth month of their pregnancy in the 2010–2013 period and the median month of pregnancy at the ANC visit was 4.3 months. The percentage of pregnant women who had four or more ANC visits declined from 70% in 2006–07 to 63% in 2013. Urban, educated and higher socio-economic status women have more ANC visits compared to their counterparts. This shows that the accessibility, quality and utilisation of ANC services need to be improved and the new ANC model with eight contacts will contribute to the improvement in the quality of ANC services and impart a positive experience to the pregnant women. Rendering a positive pregnancy experience among pregnant women who attend ANC services is crucial for ensuring the utilization and continuity of services including the uptake of effective interventions.

To address these gaps and deliver essential quality services, this guideline serves as a catalyst to ensure that all women, regardless of ethnicity, place of residence, level of education, or financial status, receive ANC beginning as early as possible and continuing throughout their pregnancy. Further, the guideline can be deployed as a platform for placing ANC as a component of the national essential health care package and can ensure that the health system is prepared to provide quality and equitable ANC services at all levels of health care.

1.2 Definition of Antenatal Care

Antenatal care (ANC) refers to care provided by a skilled health care professional to pregnant women and adolescent girls in order to ensure the best health conditions and outcomes for both the mother and the baby during pregnancy, childbirth and the postnatal period. The goal is to provide regular check-ups that allow health providers to treat and prevent potential health problems throughout the course of the pregnancy while promoting healthy lifestyles that benefit both mother and baby. Antenatal care should focus on both the medical and psychosocial needs of each pregnant woman, within the context of the health care system and the sociocultural environment in which the woman lives.

Antenatal is a pillar of safe-motherhood and a key component in the continuum of maternal and newborn health care from pre-pregnancy, pregnancy, childbirth and post-partum. The components of ANC include health promotion, disease prevention, screening, and treatment. Quality and effective ANC reduces

complications from pregnancy and delivery, reduces stillbirths and perinatal deaths, and offers an opportunity for integrated care during pregnancy.

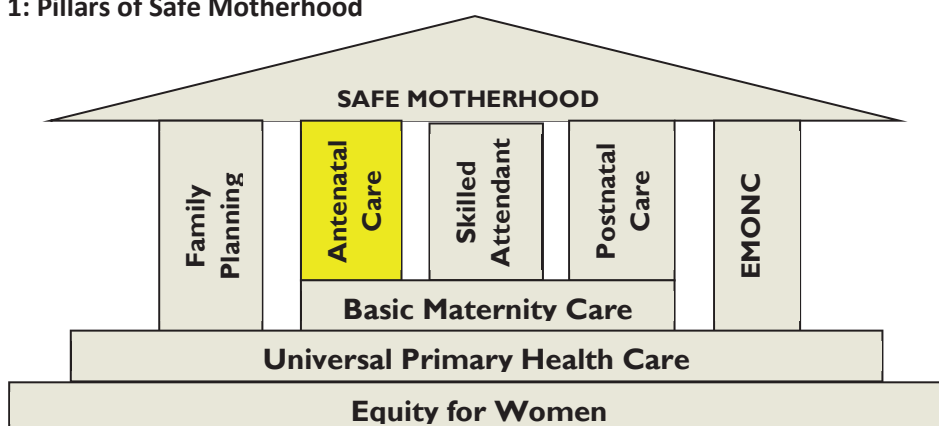
1.3 Benefits of quality ANC

The availability and high coverage of routine antenatal care services, coupled with the multiple contacts between the woman and the health services as recommended in the 8-contact schedule offers many opportunities for providing evidence-based interventions related to health promotion, disease prevention, screening, early recognition and management of pregnancy complications. This is important in reducing maternal deaths, perinatal deaths, miscarriages, birth defects, low birth weight, neonatal infections and other preventable health problems.

ANC is an important platform for providing integrated evidence-based interventions likely to affect maternal, fetal and neonatal health and survival - such as prevention of mother to child transmission of HIV, prevention and case management of malaria in pregnancy, prevention of maternal and neonatal tetanus, and prevention of maternal anaemia and malnutrition. Antenatal care provides an opportunity for the health provider to establish partnerships with pregnant women and their families that will endure beyond the pregnancy. Provision of quality antenatal care also facilitates education of women and their families to make informed choices about their care, promote healthy pregnancies and support women and family to prepare for childbirth and care of the new-born. Quality antenatal care is therefore fundamental in reducing maternal and newborn mortality and achieving the health-related SDG targets.

As shown in Figure 1 below, antenatal care is a key pillar of safe-motherhood and forms a key component in the continuum of maternal and newborn health care from pre-pregnancy, pregnancy, childbirth and post-partum. At inception, The Safe Motherhood Initiative defined four specific interventions which when delivered with quality would lead to a reduction in maternal and perinatal mortality. Whereas these pillars have evolved over time, ANC remains as one of the pillars of Safe motherhood. The four strategic interventions must be delivered through primary health care and rest on a foundation of greater equity for all women.

Figure 1: Pillars of Safe Motherhood



1.4 Antenatal Care for positive pregnancy experience

The WHO ANC for positive pregnancy experience highlights that a woman's contact with her provider should be more than a simple visit. It should be an opportunity for comprehensive, high-quality care, including medical care, support, and the provision of timely and relevant information throughout pregnancy.

The Namibian National Strategy for Women's, Children's & Adolescents' Health (RMNCAH-Nutrition, 2018-2022) also prioritizes maternal health, pregnancy, childbirth, and postnatal care. The strategy further identified the priority intervention in pregnancy as, equitable access to, and appropriate utilisation of quality antenatal care services provided by appropriately skilled health-care workers to enable the client to achieve a positive pregnancy experience.

1.5 Aim / Purpose of this antenatal Care guideline

The purpose of this guideline is to guide health care professionals to provide integrated antenatal care services to all pregnant women and adolescent girls through a continuum of care for the delivery of evidence-based interventions likely to improve maternal, fetal, and neonatal health and survival.

The delivery of quality ANC services and the utilisation of these services are key indicators of effective ANC, hence clear guidance is critical. This guideline therefore serves as practical guide for all ANC health care providers in Namibia to ensure provision of quality evidence based and equitable ANC to all women and adolescent girls, regardless of their location, social status, education, and economic ability. It also aims at improving the demand, utilization, and quality of routine ANC by ensuring that all women and adolescent girls can experience respectful, individualized and women-centred care at each contact.

1.6 Guiding Principles of Antenatal care

The ANC for positive pregnancy experience is guided by the following principles:

1. Quality of care
2. Individualized and person-centred care at every contact
3. Disease detection and not risk categorization.
4. Evidence-based practices for antenatal care.
5. Birth preparedness and complication readiness.

1.6.1 Quality of Care

Quality of care is defined by WHO as *“the extent to which health care services provided to individuals and patient populations improve desired health outcomes. To achieve this, health care must be safe, effective, timely, efficient, equitable and people-centred.*

From the health care providers perspectives, the Operational definitions of the characteristics of quality of care are as follows:

- **Safe** – delivering health care that minimizes risks and harm to service users including avoiding preventable injuries and reducing medical errors
- **Effective** – providing services based on scientific knowledge and evidence-based guidelines
- **Timely** – reducing delays in providing and receiving health care
- **Efficient** – delivering health care in a manner that maximizes resource use and avoids waste

- **Equitable** – delivering health care that does not differ in quality according to personal characteristics such as gender, race, ethnicity, geographical location or socioeconomic status
- **People-centered** – providing care that takes into account the preferences and aspirations of individual service users and the culture of their community

The health system approach provides the structure for quality improvement in the two interlinked dimensions of provision and experience of care:

1. Provision of care includes the use of evidence-based practices for routine and emergency care, information systems in which recordkeeping allows review and auditing and functioning systems for referral between different levels of care
2. Experience of care consists of effective communication with women and their families about the care provided, their expectations and their rights; care with respect and preservation of dignity; and access to the social and emotional support of their choice

The cross-cutting areas of the quality of care framework includes the availability of competent, motivated human resources and of the physical resources that are prerequisites for good quality of care in health facilities (*WHO Standards of Care*).

1.6.2 Individualized and Person-Centered Care at Every Contact

A unique feature of care during pregnancy is that a long-term relationship can be established between the care provider and a client. For many women, pregnancy is the first event which brings them into contact with the formal health care system. Their perceptions of the quality of care and their relationship with the care provider can have long-term effects on whether they come to a health facility for childbirth and their future use of the health care system. Individualized care means that women are provided with person-centered care that meets their personal needs, medical condition, cultural and socio-economic circumstances. Individualized care depends on good rapport and communication between the care provider and the pregnant woman.

a) Person - Centered Antenatal care

In person centered care, the pregnant woman's health and survival, basic human rights and comforts are given clear priority. The woman's personal desires and preferences are also regarded as important. This may be displayed in the following ways:

- i. Family members are included in the care of the woman - as the woman desires.
- ii. The clinic organization is designed with the convenience, comfort and needs of the pregnant women in mind.
- iii. The clinic design is organized to ensure a private place for examination and counselling which ensures that discussion between care giver and pregnant woman cannot be overheard
- iv. The woman's resources and capabilities are taken into consideration when health messages are given, and recommendations made.
- v. The woman is informed about good health practices and her health situation. Her consent is sought in all decisions relating to her health and care.
- vi. The pregnant woman and her family are supported to become active participants in her care, particularly in making decisions.
- vii. She is assisted to overcome problems or challenges that impede her well-being.

viii. Her culture, beliefs, traditions, gender roles and relations are respected.

b) Good rapport and communication between the care provider and the pregnant woman.

Quality care requires that, to the extent possible, the antenatal care provider establishes a unique relationship with his/her client and assumes responsibility for all decisions on that client's care at each visit. This implies that one care provider should have all the needed information (including sensitive information) about the woman to make appropriate decisions about the woman's care.

Antenatal clinics in which several care providers are responsible for the different care components - sometimes called "*the factory assembly line*" approach- usually results in poor quality care. For example, when one provider takes blood pressure, another request laboratory tests and another one provides counselling and preventive measures, establishing good rapport is unlikely. The client is not managed wholly or comprehensively, certain problems are overlooked, and her needs are therefore never entirely met.

To foster a good relationship with the client the ANC provider must:

- Know and appreciate the cultural milieu from which her client originates and provide antenatal care within this cultural context
- Provide a respectful and positive environment to the person/ family member accompanying the pregnant women
- Maintain privacy and confidentiality during all contacts with a pregnant woman
- Communicate in a respectful, individualized and person-centered way
- Have good communication skills essential to building rapport and effective care. (Effective communication is needed to make the woman and her companion feel welcome, elicit input from the woman about her symptoms or concerns, provide information related to the woman's needs, and help the woman to understand her options and make decisions).

Women want a positive pregnancy experience from ANC. Social, cultural, emotional and psychological support provided in a respectful way will improve a woman's perception of her pregnancy and her care.

1.6.3 Disease Detection and Not Risk Categorization

Previously, information gathered during the assessment of the pregnant women was used to classify them by risk category to determine their chances of complications and the level of care required. However, evidence has shown that all pregnant women remain at risk of complications. Many women who have risk factors may not develop complications, while women without risk factors may do so and may die from the complications.

Antenatal care for positive pregnancy outcomes entails comprehensive assessment of each pregnant woman and taking necessary actions to optimize each woman's individual situation. This includes taking medical and obstetric history including identifying factors associated with poor pregnancy outcomes (risk factors), performing a physical examination and interpreting the gathered information to make a diagnosis and plan proper management of the condition. Conditions that may adversely influence the pregnancy outcome such as endemic malaria are addressed through preventive interventions, such as sleeping under

an insecticide-treated bed-net while diseases including syphilis, HIV, TB or anaemia are detected and treated.

a) Factors Associated with Poor Pregnancy Outcomes

Various factors influence the health of women during pregnancy. It is important to understand how they can be avoided or influenced to produce the best outcomes possible. Avoidable Factors are factors causing or contributing to maternal death where there is departure from generally accepted standards of care. **Risk Factors** are factors which make a condition more likely to happen or more dangerous. Risk factors in the context of pregnancy refer to those which increase the likelihood of adverse outcomes for the mother and the baby. "Risk factors" should not be used to predict complications. The system of risk categorization, or the "risk approach", previously used for selecting women for specialized management is not useful, because evidence shows that many women categorized as "high risk" do not actually experience a complication, while many women categorized as "low risk" do. All pregnant women should therefore be considered "at risk" of developing a complication.

b) Risk Factors During Pregnancy

There are many risk factors that can influence the health of the pregnant woman and her unborn child. These may include individual risk factors, community risk factors and even health services risk factors. Examples of these factors are listed below

Individual Risk Factors

- Adolescent pregnancy
- HIV positive status
- Anaemia
- Complications of previous pregnancy
- Multiple pregnancy
- Syphilis and other pre-existing infections
- Low educational status
- Low economic status
- Poor health status
- Sociocultural and religious beliefs that are harmful during pregnancy
- Victim of gender-based violence

Community Risk Factors

- Endemic malaria infection
- Endemic iodine deficiency
- Endemic vitamin A deficiency
- Great distance from a woman's home to a health facility where the required care is available
- Lack of transportation between home and a health facility
- Low socioeconomic status
- Low educational status
- Prevailing sociocultural and religious beliefs that are harmful during pregnancy
- Violence against women

1.6.4 Evidence-Based Practices During Antenatal Care

Antenatal care providers should implement only essential care practices that are proven to promote the health and survival of mothers and babies. These essential care practices are well described in Chapter 7.

Evidence-based interventions in antenatal care for positive pregnancy experience include:

- Assessing a client's birth preparedness and complication readiness
- Prevention of malaria through use of ITNs by pregnant women living in endemic areas
- Prevention of mother-to-child transmission of HIV
- Prevention of anaemia through daily oral iron and folic supplementation
- Early ultrasound scan to estimate gestational age and monitor fetal development
- Involvement of the client's partner or support person in the process of ANC and in preparation for childbirth.

1.6.5 Birth preparedness and complication readiness

Birth preparedness is the process of planning for safe childbirth. It considers the woman's condition, preferences and available resources. Complication readiness is anticipating the actions needed in case of an emergency. It is the process of identify complications and agreeing on all the actions that need to take place quickly in the event of an emergency, ensuring that the details of the plan are understood by everyone involved, and the necessary arrangements are made. The birth preparedness and complication readiness plan (also known as "***Birth and Emergency Plan***") documents the pregnant woman's wishes and preferences on what should be done when labour or complications occur for ease of reference by her care provider, family and support persons.

2. GOVERNANCE, COORDINATION AND ORGANISATION

2.1 Policies and guidelines

Namibia has put in place enabling policies, strategies, guidelines, and tools to guide the implementation of standard clinical practices including ANC. Since ANC provides a platform for delivery of various interventions, the following policies, standards and guidelines complement the National Guidelines for Antenatal Care.

- Emergency Obstetric and Newborn Care/Life Saving Skills Training Manual, 2014
- Guidelines on Essential and Emergency Obstetric Care 2009
- The National Guidelines for the Prevention of Mother to Child Transmission of HIV 2017
- Clinical Handbook on the health care of survivors subjected to intimate partner violence and/or sexual violence, Namibia 2016
- The National Guidelines for Review and Response to Maternal Deaths, Near Misses, Stillbirth and Neonatal Deaths 2019
- The infant and young child feeding guideline 2011
- The national policy on sexual, reproductive and child health 2013
- The sexual and reproductive health, HIV integration guideline 2013
- Family planning guidelines (2019)
- Infection Prevention and control guidelines 2015
- Namibia Standard Treatment Guidelines 2020
- Guidelines for the Management of Sexually Transmitted Infections using the Syndromic Approach 2009
- National Guidelines for Antiretroviral Therapy - Sixth Edition 2019
- National Guidelines for the Management of Tuberculosis 2019
- National Malaria Case management guidelines (Draft 2020)
- National Cervical Cancer Prevention and Control Guidelines 2018
- Guideline for the implementation of the National referral Policy 2015
- Maternal and Child Health Standards Operating Procedures 2016

Other related guidelines include:

- Namibia National Strategy for Women's, Children's & Adolescents' Health 'RMNCAH-Nut Strategy' (2018-2022)
- Education sector policy for prevention and management of learner pregnancy 2010
- National Health Policy Framework 2010-2020

2.2. Governance and coordination

The leadership and governance of health system, also called stewardship, is arguably the most complex but critical building block of any health system. The Ministry of Health and Social Service (MoHSS) is the administrator and provider of Public Health Services and employs a 3-tier system to facilitate service delivery and Universal health coverage. The levels of care include: Primary health care level, secondary health care level and tertiary health care level.

2.3. Levels of care providing ANC

Different levels of health care are required for the efficient functioning of the health system. Most medical conditions do not require the facilities of large hospitals. For cost effective health management, primary care facilities and hospitals should share the load of patient care, whereby the former manage common and low risk conditions and hospitals the more difficult clinical entities. Thus, it is essential to have a functional referral system in place with clear protocols of management, referral patterns, transport, and responsibilities of the various levels of health care. **Appendix 1** provides a list of equipment and supplies to be in place for ANC unit. In addition to **Appendix 2** for conditions that can be managed at different levels of care, referral for antenatal care related conditions should be made in reference to the referral criteria in public health facilities as per the Guidelines for the implementation of the National referral Policy (2015).

a) *Primary Care level*

This is the level of care where most women and adolescent girls access their ANC. It includes Clinics, Health Centres and outreach /mobile services. Nurses and midwives are mainly the one who provide ANC services. Close collaboration with higher levels including a well-functioning referral system is critical to ensure access to services that may not be available at this level. In case of pregnancy complications or the need for specialized services e.g., ultrasonography, the affected women may be referred to a higher level for the elective intervention or for further management of identified complication based on recommended guidelines and standards.

b) *Secondary care level*

This is mainly composed of District Hospitals, which are staffed by midwives and Medical Doctors. At this level, most of laboratory tests and radiological examinations including sonography needed for both complicated and uncomplicated pregnancy are available. Hence, the District hospitals provide direct support to primary health care facilities and are their first level of referral. In the roll out of the new ANC guidelines, selected District Hospitals will be offering continuity of care to women referred by nearest health centres or clinics for obstetric ultrasound before 24 weeks with the aim to scale up this service to all district Hospitals. In addition, District hospital staff will be involved in clinical mentorship and supportive supervision of their colleagues at the primary care level including the community. Progressively staff at the primary care level need to be capacitated and equipped with mobile ultrasound machines to be able to conduct routine scanning of pregnant women in their facilities.

c) *Tertiary care level*

This is the highest level comprising of the National Referral Hospital and the intermediate Hospitals. All cases requiring specialised care will be referred here.

Women are referred to tertiary level for specialized care either at the first contact when a high-risk factor is identified on history or clinical findings or when high risk condition arises. Some of the conditions eligible for ANC at tertiary care level are listed in **Appendix 2**. These specific conditions are dealt with by specialists, who may refer a patient downstream once stabilised and a plan has been proposed for the pregnancy and delivery.

Figure 2: Level of care, main cadres and service provided at each level.

Level of care	Facility	Main cadres	Service provided at each level
Tertiary Level	National referral and Intermediate Hospitals	Nurse-Midwives Medical Officers and Specialists	<ul style="list-style-type: none"> • Health education and counseling • Screening • Diagnostic and treatment • Follow up of women with complicated pregnancies • Management of complicated cases
Secondary Level	District Hospitals	Nurse-Midwives Medical Officers and Specialists	<ul style="list-style-type: none"> • Health education and counseling • Screening • Obstetric ultrasound • Diagnostic and treatment • Follow up of women with complicated pregnancies • Referral to the tertiary care level
Primary Level	Health Centers, Clinics and Outreach Services	Nurse-Midwives Medical officers	<ul style="list-style-type: none"> • Health education and counseling • Screening • Ultrasound at selected health facilities (Task shifting) • Diagnosis and treatment • Referral
	Community Based Health Assistants	Community based health assistants	<ul style="list-style-type: none"> • Sensitization of women for early ANC • Advice and information on nutrition and healthy eating • Offer education on maternal danger signs, importance of adherence to 8 contacts within health facilities • provide basic prevention and care at the community level

This National ANC guideline for positive pregnancy experience contains an essential core package of interventions to be provided to all pregnant women at each contact and at all levels of care from the primary health care level to tertiary health care level. Community ANC services are provided by CBHAs and involve education and mobilization activities aimed at increasing the utilization of ANC services and adherence to the recommended contact’s schedule. A strong interaction between the health facility and the community is critical for successful antenatal care services.

2.4. Cadres providing ANC

Quality antenatal cannot be achieved without qualified and skilled ANC providers. This guideline is designed as a reference to health care professionals providing ANC services in Namibia. The following cadres have been trained and mandated to provide ANC in the Country:

- Registered Nurse midwives,
- Enrolled Nurse midwives,
- Medical Interns,
- Medical Officers
- Obstetricians and Gynaecologists

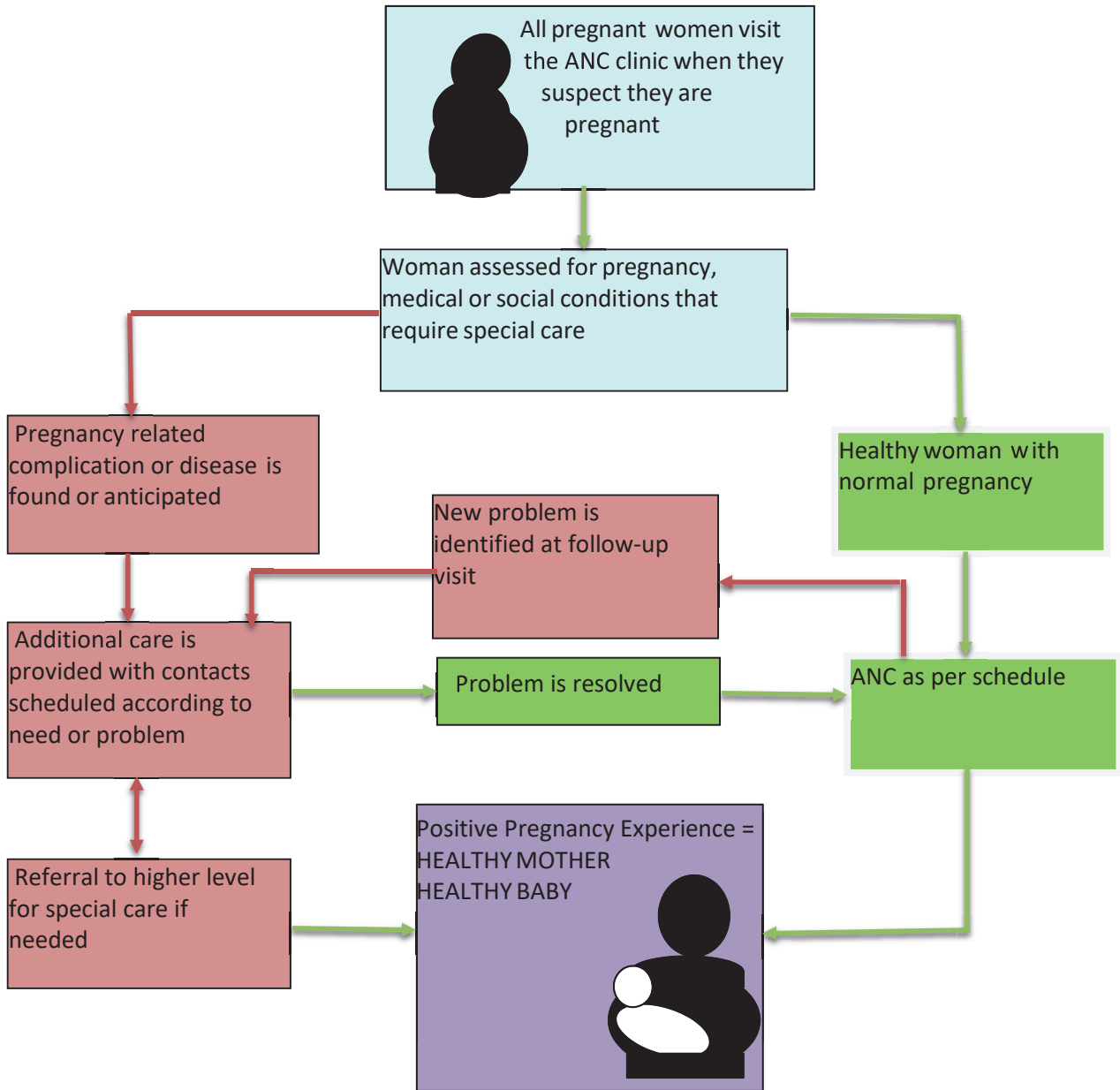
2.5. Organization of services/ and management/ client flow

For pregnant women and adolescent girls to receive quality ANC services, the health care facility should meet certain minimum requirements as stipulated below:

- A conveniently designated service area that facilitates privacy and dignified care.
- Capability to screen women for danger signs at reception using Quick check (**Appendix 3**) for Rapid Assessment and Management (RAM) (**Appendix 4**)
- Once women are waiting for individual ANC consultation, the unit should have a comfortable waiting area with adequate seating for clients and companions and containing education materials such as audio-visual aids with relevant contextualized information for the pregnant women and those accompanying them.
- A complete consultation room, which ensures privacy, with an examination table, light source, and required equipment to perform a complete physical exam
- Equipment for fetal assessment including Pinard fetal stethoscope
- Capacity to provide basic ANC laboratory and sonographic examinations and offer basic pharmaceutical commodities.
- Access to an ambulance should be available if an emergency occurs.

Moreover, ANC services should be organized in a way that facilitates efficient service delivery and reduce waiting time. The steps of routine care with the sequence of actions to enable efficient client flow for ANC which can be customized to suit facilities unique context is shown in the flow chart below (Figure 3):

Figure 3: Client flow, Antenatal Care for a positive pregnancy experience



2.6. Effective referral mechanisms

While complications of pregnancy and childbirth may not be predictable, they are often life threatening especially in the absence of systems and competent staff to handle them. All facilities offering ANC should therefore have in place a system and a protocol to manage clients who need an emergency referral and transfer to a higher level of care to ensure the continuum of care. In this regard:

- Coordinate with higher level facilities to facilitate referrals
- Meet with the health providers in higher level facilities in your locality and agree on modalities for referring pregnant women with problems to a higher level
- Emergency ambulance system should be on site and ready for emergency response
- The facility should know where to transfer and there should be a clear communication mechanism between the two facilities
- The facility should have a team in charge of emergency transfer and ready to accompany the patient
- The facility should use the already designed patient referral form
- In case of an essential ANC intervention e.g., ultrasound or laboratory test is not available in the facility; the managers should consult and make arrangements with the referral facility and agree on a timetable to handle elective procedures.

2.7. Strengthening quality of ANC including Clients experience of Care

Quality of ANC services especially at the first contact determines the level of adherence to subsequent contacts and overall ANC service utilization. In addition, women attending ANC want “*a positive pregnancy experience*”. Four themes that matters to women during their antenatal period for a positive pregnancy experience are:

- maintaining physical and sociocultural normality;
- maintaining a healthy pregnancy (including preventing and treating risks, illness and death);
- effective transition to a positive labour and birth; and
- achieving positive motherhood (including maternal self-esteem, competence and autonomy).

Based on what pregnant women need, ANC service in Namibia aim to be women centered through:

- Tailored, rather than routine, clinical/therapeutic practices
- Relevant, timely information and support (physiological, biomedical, behavioral and sociocultural, emotional and psychological) to the pregnant women.

3. COMMUNITY AWARENESS AND ENGAGEMENT FOR ANC

Community awareness and engagement increases antenatal care services utilisation, skilled birth attendance and facility deliveries, and results in better pregnancy outcomes. This can be optimized through strong advocacy, appropriate communication and education of pregnant women, their families and communities, and effective utilization of community health workers.

3.1. Advocacy, Communication and Social Mobilization

a) Advocacy:

Community leaders (gate keepers) e.g. political leaders, traditional leaders, church leaders, schoolteachers, etc, are crucial in managing health related issues in the community. They enable entry into the community thereby facilitating health promotion activities and increased ANC service utilization. It is therefore important to advocate with community leaders their role in promoting good clinical practices, including healthy and balanced diet during pregnancy, rest, addressing negative community practices like GBV/IPV, negative myths and misconceptions and understanding the importance of adherence to the 8 contacts antenatal schedule to improve pregnancy outcomes.

b) Communication:

Effective communication is critical for influencing health seeking behaviours and attitudes and to increase demand, adherence and support for health services utilization. Effective communication helps the client to overcome fear and anxiety; and facilitates informed decision making. Health Care workers providing ANC services should therefore:

- Prioritize sharing of information, educate and communicate with pregnant women including what to expect in pregnancy.
- Emphasize the importance of feedback.
- Draw up a health education schedule containing ANC key messages to be given in-group or individual counselling at every contact.
- Offers take home IEC materials e.g. leaflets in addition to the clinical package of ANC.
- Inform pregnant women about all decisions and procedures undertaken during their pregnancy and the importance of follow up.

c) Social mobilization:

To enable acceptability and uptake of the ANC package of interventions., a broad range of community stakeholders need to be engaged, in order to drive the change and create demand for services including adherence to the contact schedule. Health workers can employ facilitated participatory learning and action to mobilise and retain pregnant women in ANC services. Community support groups represent an opportunity for women to discuss their needs during pregnancy, including barriers to reaching care, and to increase support to pregnant women especially those from rural settings.

3.2. Role of Community-Based Health Assistants (CBHAs)

Namibia already has a functioning CBHAs programme, which has considerably contributed to the improvement of maternal and child health. As the country implements the new ANC guideline, CBHAs

have a role to play to ensure utilization of these services. The following are selected interventions by CBHAs that will increase the uptake of ANC services, improve women's satisfaction and outcomes for the mother and the baby.

- Identification of pregnant mothers during home visits.
- Sensitization of pregnant women for early initiation of ANC before 12 weeks gestation.
- Conduct regular follow up contacts to the pregnant mothers as recommended.
- Ensure and remind pregnant mothers on the 8-contact schedule.
- Referrals to the health facilities using a program designed referral letter, ensure that the referral letter is signed by the health facility staff and given back to the CBHAs.
- Health promotion- advice and information on nutrition and healthy diet, rest, birth preparedness, danger signs of pregnancy, etc.
- Distribution of IEC materials.
- Monitoring and Evaluation- Record daily activities in the daily activity register.
- Compile monthly reports and submit to the health facility on monthly basis.
- Share monthly findings/reports during regular community meetings (Village health committees).

3.3. Key messages for Community-Based Health Assistants (CBHAs)

During education and mobilization of the community, CBHAs have a set of key messages to address to pregnant women and adolescent girls in preparation of any emergency during pregnancy. The messages play a significant role in reducing the delay to seek for care once a complication occurs during pregnancy. Below is a list of key messages for CBHAs to advise pregnant women.

a) Key message on danger signs during pregnancy

CBHAs should advise women to go to the nearest health facility immediately if she experiences any of the following:

- Vaginal Bleeding
- Abnormal vaginal discharge
- Rupture of membranes
- Headache, dizziness, nausea, vomiting, blurred vision,
- Severely swollen hands, feet and face
- Difficulties in breathing
- Severe abdominal pain
- Fever
- Fitting, fainting
- Reduced fetal movement

b) Key messages on emergency preparedness

During pregnancy, emergencies can happen, and women should be prepared for that. Women should make sure she has organized the following:

- Identify a person, who will be available to come with her in case of emergency. If she is a teenager this must be a parent/legal guardian.
- Have credit on her phone and the telephone number ready.
- Have some money put aside to pay a taxi and have the telephone number ready.

- Have the ambulance number or hospital emergency number or the number for the transport provider in her community. She can write the numbers down and have them visible in her house.
- Have a bag packed with nightgowns, panties, blanket, facecloth and towels, soap, toothbrush and toothpaste, some lotion, toilet paper and pads. For the baby she should bring the following: baby blanket, baby clothes including hat, nappies, facecloths, towel and unscented baby lotion/cream.
- Make sure to take her health passport with her when going to the Hospital.

c) Other proposed key messages

I. Nutrition

CBHAs should advise women to:

- Eat a variety of foods during pregnancy for example: foods that give energy (maize, millet mahangu pap, potatoes, sweet potatoes, rice); body building foods (chicken, red meat, fish, eggs, nuts); foods that protect the body (fruits, vegetables, beans) and foods that replenish the blood (liver, spinach, green leafy vegetables and beans).
- Drink plenty of safe clean water.
- Avoid coffee, energy drinks, chocolate, raw and undercooked meat.

II. The Eight (8) Contacts

Inform every pregnant woman that:

- Every pregnant woman should visit the clinic at least 8 times during a pregnancy.
- Each contact is important and the woman should not miss any.
- They should go for the first contact before 3 months.
- They should remember that now ANC is 8 times, and they will get more information from the clinic.

III. Alcohol and drug abuse

- Avoid drinking alcohol and smoking tobacco or exposure to second-hand smoke because these are dangerous to the fetus, newborn and mother.

IV. Ultrasound/Sonar

- Ultrasound is a useful diagnostic tool during pregnancy.
- Ultrasound helps to estimate gestation/age of the pregnancy.
- The ultrasound also helps the doctor or nurse to know if the fetus is alive and structurally normal.
- It also helps the health worker to see how many fetuses there are in the womb.
- Therefore, every pregnant woman, should have one ultrasound scan before six (6) months.

4. ANC CONTACTS

4.1 Why change from FANC?

Namibia has been offering Focused ANC (FANC) - an ANC approach developed in the 1990s in which key interventions were provided in four focused visits. However, recent evidence suggests that the FANC model is associated with an increase in perinatal mortality including stillbirths; and that women want more contacts with a skilled health worker during pregnancy for a positive experience. Moreover, increased contacts enhance the likelihood of early detection and management of pregnancy complications with improved maternal and fetal outcomes. Thus, Namibia has adopted the new WHO ANC model for a positive pregnancy experience (2016) with evidence-based interventions to offer:

- delivery of ANC in at least 8 contacts to reduce the number of stillbirths and perinatal deaths
- integrated and comprehensive ANC services including prevention, screening, early diagnosis and treatment of complications during pregnancy
 - change of terminology from **visit** to **contact**; ‘contact’ implying an active connection between the pregnant woman and the health care provider, which enhances women centered care that is not implicit with the word ‘visit’
 - improved overall experience of pregnancy by pregnant women and adolescent girls by promoting respectful and dignified maternity care.

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

4.2 New schedule of ANC contacts

This ANC guideline has adopted the eight ANC contact model as recommended by WHO. The eight contacts are scheduled as follows:

Table 1: The Eight contacts

Trimester	Contacts	Weeks
1 st Trimester	1 st Contact	As soon as the woman suspects she is pregnant up to 12 weeks
2 nd Trimester	2 nd Contact	20 weeks
	3 rd Contact	26 weeks
3 rd Trimester	4 th Contacts	30 weeks
	5 th Contact	34 weeks
	6 th Contact	36 weeks
	7 th Contact	38 weeks
	8 th Contact	40 weeks

This is the recommended schedule for a pregnant woman without any complications. The schedule is adjusted accordingly depending on pregnancy complications. Take note of the more frequent contacts in the 3rd trimester. If the pregnant woman has not delivered by 40 weeks, she should return. **Appendix 5** provides mapped interventions for the 8 scheduled ANC contacts.

4.3 Essential package of ANC interventions by contact

Below is a table capturing all the package of essential interventions for each of the 8 required antenatal contacts.

Table 2 Essential Package for ANC interventions by contact

Contact	Maternal Assessment	Fetal Assessment	Counselling Topics & Documentation	Point of Care (POC) Tests	Lab Investigations	Radiological tests	Preventive measures	Essential Good clinical Practices	Treatment/ Management
Contact 1 As soon as the woman is pregnant up to 12 weeks	<ul style="list-style-type: none"> • Quick check • Take Full History, • Calculate Expected Date of Delivery (EDD) • Do physical examination • Identify pregnancy related or other medical conditions that require referral (See section 5.1) 		<ul style="list-style-type: none"> • Educate on ANC schedule, interventions, adherence etc. • Discuss pregnancy discomforts, sexual relations • Counsel on nutrition and healthy eating • Counsel on hygiene and self-care • HIV post-test counselling • Counsel on recognition of danger signs in pregnancy • Discuss STI/HIV/AIDS and condom use • Advise on self-care for common discomforts of pregnancy • Develop birth and emergency plan (Appendix 6) • Record all findings in ANC register and client card as appropriate (See Chapter 7) 	<ul style="list-style-type: none"> • HIV test • Syphilis • Hepatitis B • Urine dipstick for protein & glucose • Haemoglobin (Hb), • Haemoglobin test (HGT) 	<ul style="list-style-type: none"> • Blood group and Rhesus • Full blood count, • Check for ASB (Gram stain or Culture), • If POC tests unavailable, send samples to laboratory for HIV, Syphilis, Hep B • HGT random or fasting 	<ul style="list-style-type: none"> • Ultrasound (<i>location of pregnancy</i>), • <i>estimation of Gestational Age (GA); viability, R/O multiple pregnancy</i> 	<ul style="list-style-type: none"> • Iron and folic acid (IFA) • TT/Td immunisation (refer to immunisation, Table 4) • Combination HIV prevention (PrEP, Condom, offer VMNC for partner) 	<ul style="list-style-type: none"> • BP • Weight, • Height, • MUAC, • Calculate BMI • STI Screening 	<ul style="list-style-type: none"> • Treat common physiological disorders. • Treat complications of early pregnancy • Treat ASB, • Treat anaemia • ART and TPT for HIV positive women • Treat any identified disease • Refer to appropriate level of care if indicated (See Chapter 3)

Contact	Maternal Assessment	Fetal Assessment	Counselling Topics & Documentation	Point of Care (POC) Tests	Lab Investigations	Radiological tests	Preventive measures	Essential Good clinical Practices	Treatment/ Management
Contact 2 At 20 weeks	<ul style="list-style-type: none"> Quick check Ask how woman is doing, Do observations (BP, Pulse, ...) Do clinical estimation of GA & abdominal palpation, Identify pregnancy related or other medical conditions that require referral (See section 5.1) Screen for TB Screen for GBV/IPV 	<ul style="list-style-type: none"> Enquire about quickening 	<ul style="list-style-type: none"> Provide appropriate counselling (nutrition, self-care, hygiene, rest, adherence to schedule, preventive measures, and treatments; etc.) Review danger signs in pregnancy Review appropriate counselling topics as in contact 1 (see Chapter 7) Update birth and emergency plan Record all findings in register and client card as appropriate Set appointment for next contact and write the date on client card 	<ul style="list-style-type: none"> Urine dipstick for protein & glucose HIV for those not tested at 1st contact and those who tested negative more than 12 weeks ago Syphilis & HBV test for those not tested at 1st contact 	<ul style="list-style-type: none"> If POC test is not available, draw blood for HIV and Syphilis Trace outstanding laboratory investigations 	<ul style="list-style-type: none"> Ultrasound for dating (GA) and fetal anomalies if not yet done 	<ul style="list-style-type: none"> Iron and folic acid (IFA) TT/Td immunisation (refer to immunisation, Table 4) Combination HIV prevention (PrEP, Condom, offer VMMC for partner) 	<ul style="list-style-type: none"> BP, Weight, MUAC, STI screening 	<ul style="list-style-type: none"> Treat common physiological disorders Treat complications of early pregnancy ART and TPT for HIV positive women Treat any identified diseases including STIs, Refer to appropriate level of care if indicated (See Chapter 3)
Contact 3 at 26 weeks	<ul style="list-style-type: none"> Quick check Ask how mother is doing, Do observations (BP, Pulse, ...) Do clinical estimation of GA, SFH/abdominal palpation, Identify pregnancy related or other medical conditions that require referral (See section 5.1) Screen for TB Screen for GBV/IPV 	<ul style="list-style-type: none"> FHR auscultation, Ask about fetal movements, 	<ul style="list-style-type: none"> Provide appropriate counselling (nutrition, self-care, hygiene, rest, adherence to schedule, preventive measures, and treatments; etc.) Counsel on recognition of danger signs in pregnancy Update birth and emergency plan Provide information on breast feeding Record all findings in register and client card as appropriate Set appointment for next contact and write the date on client card 	<ul style="list-style-type: none"> Urine dipstick for protein & glucose Hb test Re-test HIV for those tested negative more than 12 weeks ago, and those not tested before 	<ul style="list-style-type: none"> FBC if necessary Check for ASB (urine Gram Stain or culture if available), Trace outstanding laboratory investigations 	<ul style="list-style-type: none"> Ultrasound if indicated 	<ul style="list-style-type: none"> IFA, Combination prevention (PrEP, condom, VMMC for men) Check TT/Td immunisation status and vaccinate if due or not vaccinated (see Table 4) 	<ul style="list-style-type: none"> BP, Weight, MUAC, STI screening 	<ul style="list-style-type: none"> Treat common physiological disorders Manage complications of pregnancy Treat any identified disease including STIs, ART and TPT for HIV positive women Refer to appropriate level of care if indicated (See Chapter 3)

Contact	Maternal Assessment	Fetal Assessment	Counselling Topics & Documentation	Point of Care (POC) Tests	Lab Investigations	Radiological tests	Preventive measures	Essential Good clinical Practices	Treatment/ Management
Contact 4 at 30 weeks	<ul style="list-style-type: none"> • Quick check • Ask how mother is doing, • Clinical estimation of gestational age, • Measure SFH/abdominal palpation, • Screen for TB • Screen for GBV/IPV 	<ul style="list-style-type: none"> • FHR auscultation, • Ask about fetal movement, 	<ul style="list-style-type: none"> • Provide appropriate counselling (nutrition, self-care, hygiene, rest, adherence to schedule, preventive measures and treatments; etc.) • Counsel on recognition of danger signs in pregnancy • Discuss what to expect in labour and delivery • Counsel on Postpartum Family Planning • Provide information on breast feeding • Record all findings in register and client card as appropriate • Set appointment for next contact and write the date on client card 	<ul style="list-style-type: none"> • Urine dipstick for protein & glucose, • HIV for those not tested at previous contact and those tested negative more than 12 weeks. 	<ul style="list-style-type: none"> • Trace outstanding laboratory investigations 	<ul style="list-style-type: none"> • Ultrasound if indicated 	<ul style="list-style-type: none"> • IFA, • Combination prevention (PrEP, condom, offer VMMC for men) • Check TT/Td immunisation status and vaccinate if due or not vaccinated (see Table 4) 	<ul style="list-style-type: none"> • BP, • Weight, • MUAC, • STI screening 	<ul style="list-style-type: none"> • Treat common physiological disorders • Treat complications of pregnancy • Treat any identified disease including STIs, including STIs, • ART and TPT for HIV positive women • Refer to appropriate level of care if indicated (See Chapter 3)

Contact	Maternal Assessment	Fetal Assessment	Counselling Topics and Documentation	Point of Care (POC) Tests	Lab Investigations	Radiological tests	Preventive measures	Essential Good clinical Practices	Treatment/ Management
Contact 5 at 34 weeks	<ul style="list-style-type: none"> Quick check Ask how mother is doing, Clinical estimation of gestational age, Measure SFH/abdominal palpation, Screen for TB Screen for GBV/IPV 	<ul style="list-style-type: none"> FHR auscultation, Ask about fetal movements, 	<ul style="list-style-type: none"> Provide appropriate counselling (nutrition, self-care, hygiene, rest, adherence to schedule, preventive measures, and treatments; etc.) Counsel on recognition of danger signs in pregnancy Discuss what to expect in labour and delivery Counsel on Postpartum Family Planning Provide information on breast feeding Counsel on postnatal care including infant feeding Record all findings in register and client card as appropriate Set appointment for next contact and write the date on client card 	<ul style="list-style-type: none"> Urine dipstick for proteinuria, glucose, leucocytes and nitrates, HIV for those not tested during previous contact and those tested negative more than 12 weeks. Syphilis retest for those who were negative 	<ul style="list-style-type: none"> Check ASB (midstream urine gram stain or culture - if available) Trace outstanding laboratory investigations 	<ul style="list-style-type: none"> Ultrasound indicated 	<ul style="list-style-type: none"> IFA, Combination prevention (PrEP, condom, offer VMMC for men) Check TT/Td immunisation status and vaccinate if due or not vaccinated (see Table 4) 	<ul style="list-style-type: none"> BP, Weight, MUAC, STI screening 	<ul style="list-style-type: none"> Treat common physiological disorders Treat complications of pregnancy Treat any identified disease including STIs, ART and TPT for HIV positive women, Refer to appropriate level of care if indicated (See Chapter 3)

Contact	Maternal Assessment	Fetal Assessment	Counselling Topics and Documentation	Point of Care (POC) Tests	Lab Investigations	Radiological tests	Preventive measures	Essential Good clinical Practices	Treatment/ Management
Contact 6 at 36 weeks	<ul style="list-style-type: none"> • Quick check • Ask how mother is doing, • Clinical estimation of GA; • Measure SFH & abdominal palpation • Check for presentation and lie of the fetus. • Screen for TB • Screen for GBV/IPV • Identify and counsel high risk clients e.g. previous C/S, multiple pregnancy, previous surgery, etc. who need hospital follow up or elective delivery; 	<ul style="list-style-type: none"> • FHR auscultation, • Ask about fetal movements, • Observe and feel for fetal movements 	<ul style="list-style-type: none"> • Provide appropriate counselling (nutrition, self-care, hygiene, rest, adherence to schedule, preventive measures, and treatments; etc) • Counsel on recognition of danger signs in pregnancy • Counsel on signs of labour, including pain relief, birth companion and birth positions • Discuss what to expect in labour and delivery • Counsel on Postpartum Family Planning • Counsel on postnatal care including breastfeeding, • Discuss Mode of delivery • Review birth plan • Record all findings in register and client card as appropriate • Set appointment for next contact and write the date on client card 	<ul style="list-style-type: none"> • Check Hb • Urine dipstick for protein and glucose, • HIV re-test unless already tested negative at 32-35 Weeks 	<ul style="list-style-type: none"> • Trace outstanding laboratory investigations 	<ul style="list-style-type: none"> • Ultrasound indicated 	<ul style="list-style-type: none"> • IFA, • Combination prevention (PrEP, condom, offer VMMC for men) • Check TT/Td immunisation status and vaccinate if due or not vaccinated (see Table 4) 	<ul style="list-style-type: none"> • BP, • Weight, • MUAC, • STI screening 	<ul style="list-style-type: none"> • Treat common physiological disorders • Treat complications of pregnancy • Treat any identified disease including STIs • ART and TPT for HIV positive women • Refer to appropriate level of care if indicated (See Chapter 3)

Contact	Maternal Assessment	Fetal Assessment	Counselling Topics and Documentation	Point of Care (POC) Tests	Lab Investigations	Radiological tests	Preventive measures	Essential Good clinical Practices	Treatment/ Management
Contact 7 at 38 weeks	<ul style="list-style-type: none"> Quick check Ask how mother is doing, enquire about symptoms /signs of labour, clinical estimation of gestational age, Measure SFH/abdominal palpation for presentation and lie Check for TB Screen for GBV/IPV R/O PROM, Identify and counsel high risk clients e.g. previous C/S, multiple pregnancy, previous surgery, etc. who need hospital follow up or elective delivery 	<p>FHR auscultation, ask about fetal movements</p> <ul style="list-style-type: none"> Ask about fetal movements 	<ul style="list-style-type: none"> Provide appropriate counselling (nutrition, self-care, hygiene, rest, adherence to schedule, preventive measures and treatments; etc) Counsel on recognition of danger signs in pregnancy Counsel on signs of labour, including pain relief, birth companion and birth positions Counsel on Postpartum Family Planning Counsel on postnatal care including breastfeeding, Record all findings in register and client card as appropriate Set appointment for next contact and write the date on client card 	<ul style="list-style-type: none"> Urine dipstick for proteinuria and glycosuria, HIV re-test for those who missed a test at 36 weeks 	<ul style="list-style-type: none"> Trace outstanding laboratory investigations 	<ul style="list-style-type: none"> Ultrasound if indicated 	<ul style="list-style-type: none"> IFA, Combination prevention (PrEP, condom, offer VMMC for men) Check TT/Td immunisation status and vaccinate if due or not vaccinated (see Table 4) 	<ul style="list-style-type: none"> BP, Weight, MUAC, STI screening Partner or companion involvement 	<ul style="list-style-type: none"> Treat common physiological disorders Treat complications of pregnancy Treat any identified disease including STIs ART and TPT for HIV positive women Refer to appropriate level of care if indicated (See Chapter 3)

Contact	Maternal Assessment	Fetal Assessment	Counselling Topics and Documentation	Point of Care (POC) Tests	Lab Investigations	Radiological tests	Preventive measures	Essential Good clinical Practices	Treatment/ Management
Contact 8 at 40 weeks	<ul style="list-style-type: none"> Quick check Ask how mother is doing, • Clinical estimation of gestational age, Measure SFH/abdominal palpation, Check for previous CS scars, presentation and lie Screen for TB Screen for GBV/IPV Ask about signs of labour (regular contractions, show and ROM), Review EDD and ask her to follow up at 41 weeks at an appropriate level of care if not delivered 	<ul style="list-style-type: none"> FHR auscultation, Ask about fetal movements, Observe and feel for fetal movements 	<ul style="list-style-type: none"> Provide appropriate counselling (nutrition, self-care, hygiene, rest, adherence to schedule, preventive measures and treatments; etc) Counsel on recognition of danger signs in pregnancy Discuss what to expect in labour and delivery Counsel on Postpartum Family Planning Counsel on postnatal care including breastfeeding, Record all findings in register and client card as appropriate Review and Update birth and emergency plan Ask her to return at 41 weeks if she has not yet delivered 	<ul style="list-style-type: none"> Urine dipstick for proteinuria and glycosuria 	<ul style="list-style-type: none"> Trace outstanding laboratory investigations 	<ul style="list-style-type: none"> Ultrasound indicated 	<ul style="list-style-type: none"> IFA, Combination prevention (PrEP, condom, offer VMMC for men) 	<ul style="list-style-type: none"> BP, Weight, MUAC, STI screening Partner or companion involvement 	<ul style="list-style-type: none"> Treat common physiological disorders Treat complications of pregnancy, Treat any identified disease including STIs, ART and TPT for HIV positive women, Refer to appropriate level of care if indicated (See Chapter 3)

NB: At each contact, it is required to

1. Complete ANC card (Antenatal Care record) and give it to woman
2. Issue educational information leaflet to pregnant women during the first contact
3. Fill ANC register
4. Complete and give referral letter, if applicable
5. Fill in the Family Planning/Antenatal/Postnatal Tally sheet for DHIS

5. PROVIDING ANTENATAL CARE SERVICES

Pregnant women attending ANC desire to receive quality services that allow them to have a positive pregnancy experience and result in a healthy outcome for the mother and the baby.

A positive pregnancy experience is defined as:

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

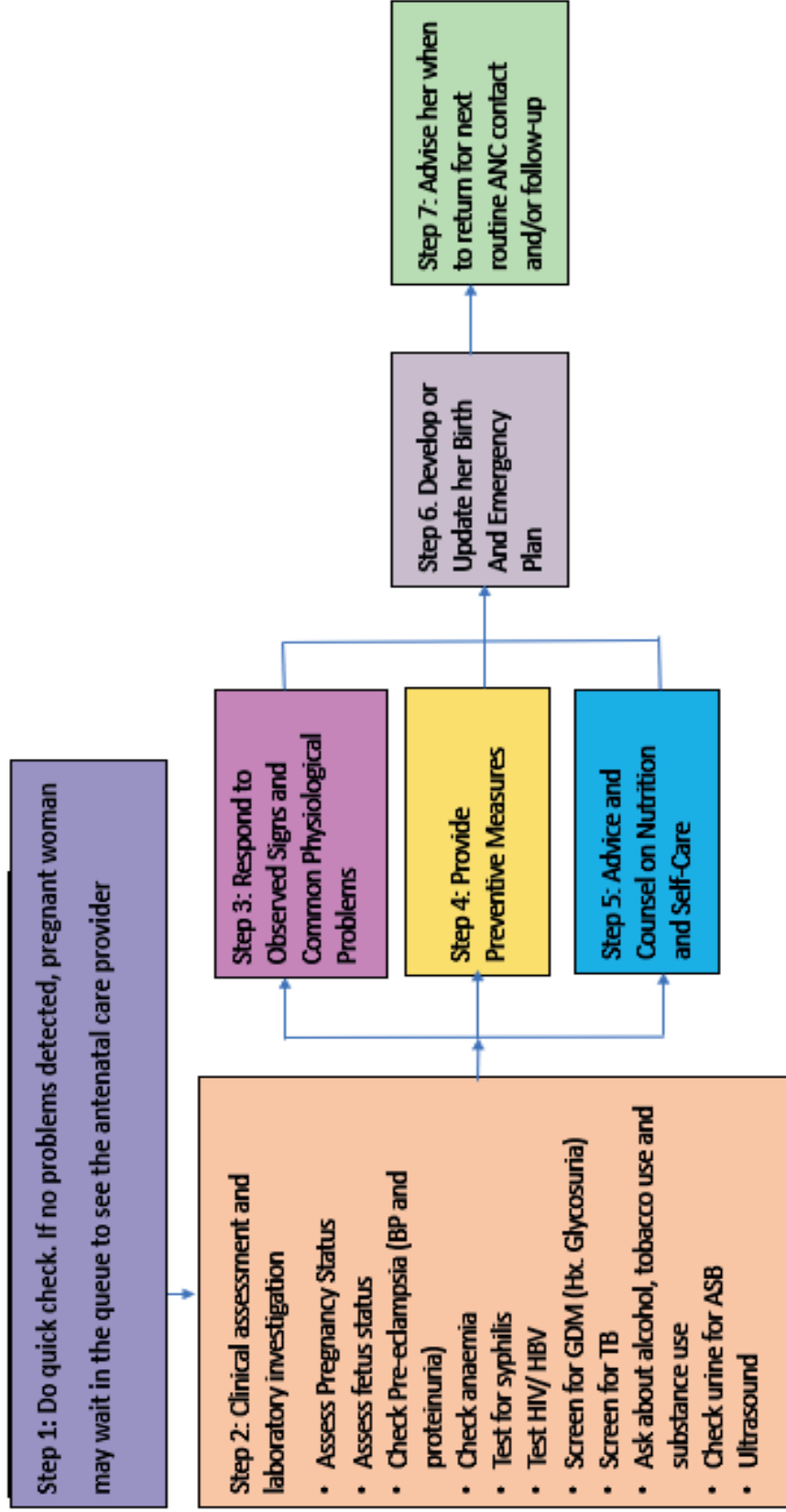
Individualized care defined as “woman-centred care *that meets her personal needs, medical condition, cultural and socioeconomic circumstances*” is critical and depends on good rapport and communication between the care provider and the pregnant woman. At each ANC contact, the healthcare provider should be prepared to offer a core package of interventions that includes:

- maternal and fetal assessment including laboratory investigations and imaging tests
- information, education and counselling
- identification and management of pregnancy complications
- provision of relevant preventive measures and essential good clinical practices

5.1 Steps in Routine Antenatal Care

The following steps are crucial in provision of ANC for each contact and all baseline information has to be obtained at the first contact. To provide antenatal care, the care provider will follow the steps of routine care as shown in the flow chart below, Figure 4.

Figure 4: Steps in Routine Antenatal Care



Step 1. Quick Check

Every time the pregnant woman is seen, care should begin with a Quick Check (**Appendix 3**). This is a brief assessment of the pregnant woman to quickly identify any signs that indicate serious problems needing emergency care and taking immediate appropriate measures to minimize delays in providing life-saving care. The quick check is conducted by the personnel responsible for initial triage of pregnant women seeking care. If a woman is very sick, talk to her companion. Check for danger signs and conditions indicating the need for emergency care. Women with critical conditions or danger signs indicating the need for emergency care should not be left in the queue. They should immediately be identified, and corrective management instituted. Routine care is provided only after ascertaining that no emergency problems are present. Check for the following danger signs and conditions indicating the need for emergency care:

- bleeding vaginally
- convulsing
- looking very ill
- unconscious
- in severe pain
- in labour
- delivery is imminent
- fever
- draining liquor
- headache
- severe vomiting

Step 2: Clinical assessment and laboratory investigation

Maternal assessment

Adequate maternal assessment is an essential step of ANC as it helps to identify risks and complications that can affect pregnancy and lead to poor maternal and fetal outcome. Accurate maternal assessment leads to detection of conditions like, pre-eclampsia, anaemia, diabetes, HIV, syphilis, TB, ASB, GBV/IPV. Maternal assessment is carried through history taking, physical examination, laboratory testing and other special investigations to form basis for planning and providing care to a woman during her pregnancy. This includes calculating her estimated date of delivery (EDD) and gestational age. At subsequent antenatal visits, her pregnancy status should be assessed, and her care plan reviewed and modified, if necessary.

Assess nutritional status

Check mother's physical characteristics including, height, weight gain, dietary history, and for micronutrient intake particularly iron and folate supplementation. 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, milk, beans, nuts, whole grains and fruit. Nutrition in pregnancy is in Chapter 8.

Check fetus growth and well being

During each contact, an abdominal palpation is carried out. It is important that the growth of the fetus and its wellbeing are assessed. Quickening indicates when the mother is first able to feel the fetal movements. It should usually occur between 18 weeks and 20 weeks. The perception of fetal movements

changes with gestational age, sleep and wake cycles, and location of placenta. Pregnant women should be advised to seek medical attention as soon as possible if they have any concern with fetal movements rather than waiting for weeks before they consult.

Perform symphysis-fundal height or palpation to assess fetal growth at each ANC contact. Detecting a fetus who is not growing well or who seems large for dates is essential during pregnancy.

Check for fetal heart rate. Note if the fetal heart is found to be outside the normal range of 110-160 bpm. If the woman reports reduced fetal movement, further investigations are required.

The fetal lie and presentation are checked at 36 weeks, if abnormal such as breech or a transverse lie, refer for consultation at higher level.

One ultrasound scan before 24 weeks of gestation (early ultrasound) is recommended for all pregnant women to estimate gestational age, improve detection of fetal anomalies, multiple pregnancies, localization of the placenta and improve a woman's pregnancy experience.

Screen for Common Diseases and Complications

a. Check for pre-eclampsia/eclampsia (PE/E)

The pregnant woman is screened for PE/E at every antenatal contact by asking her about danger signs, measuring her blood pressure and by testing her urine for protein. A woman with pre-eclampsia should be referred to hospital. A woman who has severe pre-eclampsia or eclampsia should be provided with emergency treatment and then referred to hospital, as described in Chapter 10.

b. Test for anaemia

The pregnant woman is screened for anaemia at every antenatal contact. During the first contact, full blood count testing is the recommended method for diagnosing anaemia during pregnancy. Where full blood count testing is not available, point of care Haemoglobin is measured. At all subsequent contacts, the woman is assessed for signs of anaemia (pallor) and Haemoglobin estimation repeated at Contact 3 (26 weeks) and contact 6 (36 weeks). Management of anaemia is described in Chapter 10.

c. Test for syphilis

Pregnant women should be routinely screened serologically for syphilis early in pregnancy. Adverse pregnancy outcomes such as miscarriage or stillbirth, congenital syphilis in the newborn and progression of the disease in the mother are anticipated complications if the mother is left untreated for syphilis. Thus, an RPR test should be routinely performed on pregnant women in their first trimester and treatment should be instituted if the RPR test shows reactivity. Every pregnant woman should be tested for syphilis at the first antenatal contact and her status checked at 34 weeks or 5th contact. Assess for other STIs by inquiring about vaginal discharge, genital ulcers, urethral discharge. Treatment for syphilis is described Chapter 10.

d. Test for HIV

All pregnant women with the exception of known positive should be offered HIV counselling and testing services at the first antenatal contact irrespective of previous HIV negative test. The woman is informed that an HIV test will be done routinely and that she may refuse the HIV test. If the HIV test is positive, anti-retroviral drugs (ARV) will be provided to prevent transmission of HIV to her baby and for her own health. If tested negative for HIV, re-test woman after 12 weeks and at 36 weeks of gestation (unless already tested negative at 32- 35 weeks). Management of HIV in pregnancy is in Chapter 10, with further reference to the latest national guidelines; *The National Guidelines for the Prevention of Mother to Child Transmission of HIV 2017 and National Guidelines for Antiretroviral Therapy - Sixth Edition 2019*.

e. Test for Hepatitis B Virus (HBV) Infection

Prevention of mother-to-child transmission is an important component of global efforts to reduce the burden of chronic HBV since vertical transmission is responsible for approximately one-half of chronic infections worldwide. The pregnant woman is screened for Hepatitis B virus infection at the first antenatal care contact. If the test is positive for hepatitis B surface antigen (HBsAg), the infant must be offered the HBV vaccine at birth (within 24 hours). The infant may also be given Hepatitis B immunoglobulin (HBIG) at the same time as their birth dose of vaccine. The woman must also be referred and/or evaluated and followed up for her liver function and wellbeing. The management of Hepatitis B is in Chapter 10.

f. Gestation Diabetes Mellitus (GDM)

Routine screening for GDM is not recommended in pregnancy. Women who present with the following: symptoms of polyuria, polydipsia, nocturia, a family history of diabetes, past obstetric history of glucose intolerance, stillbirth, and fetal macrosomia should all be screened for GDM. Routine urine test for glucosuria and HGT is performed on first ANC contact. Management of Diabetes in pregnancy is in Chapter 10.

g. Screen for TB

Every pregnant woman should be asked and screened for TB at every ANC contact by inquiring about cough, fever, night sweats, weight loss, hemoptysis, loss of appetite and enlargement of lymph nodes. Also inquire if they have been in contact with someone with active TB. Investigation and management of TB in pregnancy is in Chapter 10.

Routine ANC investigations

Perform all routine maternal health tests at the first contact and repeat them on subsequent contacts if clinically indicated, or as scheduled on the following table, Table 3.

Table 3: Routine ANC investigations

Investigations	Contact
1. Haemoglobin (Hb) Full blood count if needed and available.	• Contact 1, 3 & 6
2. Blood group & RH	• Contact 1, or any contact if not done on contact 1
3. Haemoglucotest (HGT)	• Contact 1, or any contact if not done on contact 1
4. HBsAg	• Contact, 1 or any contact if not done on contact 1
5. Syphilis test (RPR). If POC syphilis test is available, retest previously negative ones at 36 weeks of gestation	• Contacts 1 & 6
6. HIV test	• Contacts 1, 3, 6
7. Urine dipstick for glucose and protein	• All contacts
8. Mid-stream urine Gram Stain (GS) or culture; urine dipstick for nitrites and leucocytes if gram stain or culture not available.	• Contacts 1, 3 and 5 to rule out Asymptomatic Bacteriuria (ASB)

h. Assess for Gender Based Violence (GBV) and Intimate Partner Violence (IPV)

Gender based violence during pregnancy is associated with increased risk of trauma, sexually transmitted infections, miscarriage, premature labour, low birth weight, still birth and high maternal and infant mortality. Women are reluctant to discuss GBV with strangers and may not readily divulge this information. A high index of suspicion is required by health care providers to identify this risk. Red flags for GBV include reports or observation of anxiety, depression or stress, signs of physical injury. The care provider must screen clients by establishing good rapport and asking direct questions about GBV. (Refer to the clinical handbook on the health care of survivors subjected to intimate partner violence and/or sexual violence). Management of GBV and IPV is in Chapter 6.

Step 3: Respond to Observed Signs and Common Physiological Problems

Most pregnant women experience some problems and discomforts (nausea and vomiting, heartburn, leg cramps, low back and pelvic pain, constipation, varicose veins, oedema, etc.). These can be managed conservatively and with self-care behavior modifications and/or home remedies. See Chapter 10. The care provider must however recognize when symptoms indicate a serious problem and manage them promptly and appropriately.

Step 4: Provide Preventive Measures

The preventive measures provided during ANC include tetanus toxoid immunization (TT or Td), iron/folate supplementation and use of insecticide-treated bed nets. These preventive measures are described at the end of this chapter. Ensure that all women who attend ANC are assessed for risks and obtain preventive intervention at each contact. Check the immunization status, maternal nutrition status, HIV and syphilis status and intervene as applicable.

Table 4: Preventive Measures

Risk or condition	Records and assessment	Treatment and advice	Scheduled contact
Tetanus	<p>Assess if the pregnant mother is protected against neonatal tetanus</p> <ul style="list-style-type: none"> At least two Td injections during the current pregnancy Two or more injections, having received the last one within three years of the current pregnancy Three or more injections, the last one within five years of the current pregnancy Four or more injections, the last one within 10 years of the current pregnancy Five or more injections any time prior to the current pregnancy. 	<p>Give Td to all pregnant women whose fetus are not protected against neonatal tetanus</p> <ul style="list-style-type: none"> Td1 at first contact or as early as possible in pregnancy Td2 at least 4 weeks after Td1 Td3 at least 6 Months after Td2 or during subsequent pregnancy Td4 at least one year after Td3 or during subsequent pregnancy Td5 at least one year after Td4 or during subsequent pregnancy 	<ul style="list-style-type: none"> Start on contact 1 or on subsequent contact if missed on contact 1.
Nutritional anaemia	<ul style="list-style-type: none"> Check if the pregnant woman is already on iron and folic acid 	<ul style="list-style-type: none"> Offer a daily tablet or syrup containing 60mg of elemental iron and folic acid 400mcg (0.4mg) Counsel on sides effects and adherence to prevent anaemia Refill iron-folate supply at each subsequent contacts 	<ul style="list-style-type: none"> Contact 1 Review and refill the dose on subsequent contacts
Malaria	<ul style="list-style-type: none"> Ask whether she is living in malaria area If so, ask whether she is sleeping under an ITN every night Ask for symptoms of malaria if from malaria area or has recent travel history to endemic area 	<ul style="list-style-type: none"> Encourage and if possible, offer all pregnant women insecticide treated nets (ITNs) or Long-Lasting Insecticide Treated Net (LLINs) and advise her and her under-five children to sleep under it every night Treat malaria if case identified 	<ul style="list-style-type: none"> Each contact
HIV	<ul style="list-style-type: none"> Check knowledge on HIV and STIs Check risk (High risk population) 	<ul style="list-style-type: none"> Offer pre-testing counselling Offer post testing counselling if accepted Offer counselling about testing the partner If tested HIV positive, consult the latest HIV guideline and start ARVs and TPT Counselling on adherence on treatment and breast feeding Offer Pre-exposure prophylaxis (PrEP) to HIV negative if high risk Treat woman and partner for syphilis if RPR positive 	<ul style="list-style-type: none"> Contact 1, 3 and 6

Step 5: Advice and Counsel on Nutrition and Self-Care

During routine antenatal care pregnant women should be given advice and counselling on a wide range of topics to promote good self-care. Counselling on healthy eating and active living should be done in relation to her weight gain relative to pre-pregnancy BMI or to increase balanced energy and protein intake if she is not gaining weight adequately. Special attention should be paid to those with detectable nutritional deficiencies which require supplementation – e.g. if she has vitamin A deficiency or is anaemic. The client should also be counselled on rest and avoidance of heavy lifting, sleeping under insecticide-treated bed net, safer sex, avoidance of alcohol, illicit drugs and smoking, and avoidance of medication that is not prescribed at the health facility. During the third trimester of pregnancy, the woman is also

counselled on the importance of family planning and on how to care for her newborn, including early and exclusive breastfeeding. This is described in Chapter 8.

Step 6. Develop or Update her Birth and Emergency Plan

The woman (with her support person) is helped by her care provider to develop a birth and emergency plan. The health care provider:

- a. Explains why birth at a health facility is recommended.
- b. Advises the woman on how to prepare for childbirth, including saving money, identifying transport, and gathering supplies.
- c. Counsels the woman, her partner and family on the danger signs during pregnancy, and that if they occur, she must go immediately for help.
- d. Advises them where to go for emergency help, and to plan for transportation and blood donors in case of emergency.

At each subsequent visit, the care provider reviews the plan with the woman and her support person and updates according to new findings. Developing a birth plan and emergency preparedness is discussed in Chapter 7.

Step 7: Advise her when to Return for the Next ANC Contact

The care provider informs the woman on when she should return to the health facility for her next routine antenatal check. This date must be written in the client's card. The eight-visit schedule is recommended for the healthy client with no existing or anticipated problems (See **Chapter 4** for recommended schedule). However, if ANC check is needed sooner than the recommended scheduled contact, for example, to monitor a treatment or for additional emotional support, the care provider should tell her when to come back for this follow-up, write this in her ANC card and where possible have a mechanism to remind her to come for the follow-up. The ANC provider should also emphasize to the woman that she should come back promptly anytime she does not feel well or has any danger sign. The woman should be encouraged to bring her partner to at least one antenatal visit. This is described in Chapter 7.

The routine care components of the eight recommended antenatal care contacts are summarized in Chapter 4 **Table 1**, and details on how to provide ANC at all contacts is described below.

5.2 The First contact of Antenatal Care

The first ANC contact should take place as soon as the pregnancy is suspected or confirmed, preferably before 12 weeks of gestational age. The first contact is the longest compared to subsequent uncomplicated contacts due to volume of information to be exchanged between the health care provider (HCP) and pregnant woman. The quality of the first antenatal contact and the level of satisfaction by pregnant women might determine future utilization of antenatal care services. Detailed maternal assessment, screening and prevention of complications including extensive counselling and education starts with the first contact.

Goal:

- Ensure best practices in ANC initiated
- Comprehensive patient assessment
- Perform key baseline investigations
- Plan for ANC as a positive pregnancy experience
- Give health education
- Start preventive interventions

- Develop birth and emergency plan

Obtain a comprehensive history

- Do a quick check
- Ask mother how she is doing

Use ANC card as a guide when obtaining history

General information:

- Name, Date of birth, Age, Physical address and contact details, Marital status, Religion, Next of kin.

Take a full and relevant history including the following

- **Obstetric History**
 - Number of previous pregnancies (Gravidity and Parity) and date (month and year) of each pregnancy outcome (miscarriage, preterm, term, alive, stillbirth),
 - Mode of delivery (indication if not normal vaginal delivery)
 - Birth weight of previous pregnancies (if known)
 - Sex of the baby/ babies
 - Puerperium (eventful or uneventful)
 - Periods of exclusive breast-feeding: when? For how long?
 - Special maternal complications and events in previous pregnancies
 - Any obstetric operation: caesarean section (indication, if known) forceps or vacuum extraction, manual removal of the placenta
 - Date of last menstrual period (LMP); certainty of dates (by regularity, accuracy of recall and other relevant information including contraceptive history, date of pregnancy test).
 - Determine the expected date of delivery based on LMP and all other relevant information **(See Appendix 7)**.
- **Gynaecological history:** abortion, ectopic pregnancy, infertility treatment, previous pap smear (date and results), contraception used
- **Medical history:** any chronic conditions such as, HIV, TB, STI, DM, HPT, asthma, epilepsy, cardiac disease, allergies etc
- **Surgical History:** Any previous operations, including previous caesarean section, myomectomy, cerclage, hysterotomy
- **Family History:** diabetes mellitus, tuberculosis, hypertension, multiple pregnancies, congenital abnormalities, genetic disorders, mental disorders.
- **Lifestyle factors:** nutrition, physical activity,
- **Social history:** alcohol intake, smoking/exposure to second-hand smoke, caffeine intake, GBV/IPV
- **Immunization history** – tetanus (TT) vaccination
- **Tuberculosis screening:**
 - All pregnant women should be symptomatically screened for the following most common symptoms and signs of TB at every ANC contact:
 - Persistent cough for 2 weeks or more

- Haemoptysis (coughing up blood)
- Chest pain
- Profuse sweating mostly at night
- Dyspnoea (shortness of breath)
- Swellings in the neck, armpits or groin
- Loss of appetite
- Loss of weight
- Past history of TB and treatment completion/outcome
- **Cardiovascular diseases screening:** easy fatigability, shortness of breath, awareness of the heart beating fast (palpitations), orthopnoea, haemoptysis, fainting attacks, worsening pedal/pre-tibial oedema especially prior to 36 weeks

PHYSICAL EXAMINATION: Look, listen and feel

- Do a full systemic examination: including blood pressure, pulse, respiration, temperature, weight, height and calculate Body Mass Index (BMI) (**Appendix 8**) and MUAC (**Appendix 9**)
- Check for presence of conjunctival or palmar pallor or jaundice
- Examine the oral mucosa, teeth, tongue and gums
- Examine the thyroid glands for enlargement and nodularity
- Examine the Breasts, including areola and nipple
- Respiratory examination: Auscultation of Lungs
- Cardiovascular examination: Listening for heart sounds
- Abdominal examination: (**Appendix 10**)
 - palpate fundal height and measure Symphysis-Fundal Height (SFH) and confirm gestational age,
 - fetal lie and presentation, engagement of presenting part, fetal heart sounds
 - Presence of any scars
- Genital inspections:
 - Inspect for genital warts
 - Inspect for haemorrhoids
- Inspect the Spine and Pelvis: scoliosis, lordosis and any spinal or pelvic deformities
- Inspect the Extremities: for mobility, disability check for pedal & pretibial oedema, varicose veins

Fetal Assessment

- Auscultation: Check fetal heart using either Pinard's fetoscope or handheld Doppler starting from 20 weeks gestation.
- Ask about fetal movements if pregnancy is 20 weeks or more.
- Perform or refer for an Ultrasound if gestation is below 24 weeks for dating and fetal anomaly

Point of care tests and laboratory investigations

The following investigations are carried out on the first visit. In the absence of point of care testing, a lab sample is taken for investigation:

- Haemoglobin
- Haemoglucoest
- Urine test for glucose and protein
- Urine for ASB
- Blood group and Rhesus Factor
- Human immunodeficiency virus (HIV)
- Syphilis serology
- Hepatitis B test

Preventative measures, treat and manage

- Give TT- as appropriate
- Give iron/folic acid
- If HIV positive, refer to PMTCT for treatment
- Address any observed common physiological disorder
- Offer PrEP and Condoms
- Develop birth and emergency plan
- Provide ITN and counsel on nightly use
- Involve husband/support person in ANC as desired by client
- Treat any identified disease or refer to next level if there is an indication for referral

Information, education and counselling

- Educate on ANC schedule, interventions, adherence etc.
- Discuss pregnancy discomforts, sexual relations
- Counsel on nutrition and healthy eating – Counsel on hygiene and self-care
- HIV posttest counselling
- Teach danger signs during pregnancy
- Discuss STI/HIV/AIDS and condom use
- Advise on self-care for common discomforts of pregnancy
- Record all findings in register and client card as appropriate

5.3 The Second Contact of Antenatal care: at 20 weeks

Goal

- Provide evidence based individualized care
- Continue preventive interventions
- Check maternal wellbeing and assess fetal growth
- Give Health education

Maternal and fetal assessment

- Quick Check
- Ask mother how she is doing
- Ask if she can perceive fetal movements
- Probe adherence to preventive measures as appropriate
- Measure BP, Pulse, weight, MUAC
- Assess pallor
- Assess fetal growth (palpation or SFH)
- Abdominal exam
- Check fetal heartbeat
- Obstetric ultrasound – if not yet done (routine U/S should be done before 24 weeks)

Point of care and laboratory investigations

- Check urine for protein and sugar
- Trace outstanding laboratory investigation results from previous visit HIV for those not tested at 1st contact and those tested negative more than 12 weeks.
- Syphilis and Hep B tests for those not tested at the first contact

Preventative measures, treat and manage

- Give TT/Td as per schedule
- Refill iron/folic acid
- Offer PrEP and Condoms
- Address any observed common physiological disorders
- Treat any identified disease or refer if there is an indication for referral

Information, education, and counselling

- Review danger signs in pregnancy
- Update birth and emergency plan
- Set appointment for next contact and write the date on client card
- Review appropriate counselling topics as in contact 1-
- Record all findings in register and client card as appropriate

5.4 The Third Contact of Antenatal Care at 26 weeks

Goal:

- Provide evidence based individualized care
- Continue preventive interventions
- Check maternal wellbeing and fetal growth

Maternal and fetal assessment

- Quick Check
- Ask mother how she is doing
- Ask if she can perceive fetal movements
- Probe adherence to preventive measures as appropriate
- Measure BP, Pulse, weight, MUAC
- Assess pallor
- Assess fetal growth (palpation or SFH)
- Abdominal exam
- Check fetal heartbeat
- Obstetric ultrasound – if indicated

Point of care and laboratory investigations

- Trace outstanding lab investigations
- Check urine for protein and sugar
- Urine exam for ASB (Gram stain or culture if available, if not urine dipstick)
- Check Haemoglobin
- HIV for those not tested at previous contacts and those tested negative more than 12 weeks

Preventative measures, treat and manage

- Refill iron/folic acid
- Offer PrEP and Condoms
- Address any observed common physiological disorders
- Treat any identified disease or refer if there is indication for referral

Information, education and counselling

- Provide appropriate counselling (nutrition, self-care, hygiene, rest, adherence to schedule, preventive measures and treatments; etc.)
- Counsel on recognition of danger signs in pregnancy
- Record all findings in register and client card as appropriate
- Update birth and emergency plan
- Provide information on breast feeding
- Set appointment for next contact and write the date on client card

5.5 The Fourth Contact of Antenatal Care at 30 weeks

Goal:

- Provide evidence based individualized care
- Check maternal wellbeing and fetal growth
- Continue preventive interventions

Maternal and fetal assessment

- Quick Check
- Ask mother how she is doing
- Ask if she can perceive fetal movements
- Probe adherence to preventive measures as appropriate
- Measure BP, Pulse, weight, MUAC
- Assess pallor
- Assess fetal growth (palpation or SFH)
- Abdominal exam
- Check fetal heartbeat
- Obstetric ultrasound – if indicated
- Probe adherence to preventive measures as appropriate

Point of care and laboratory investigations

- Check urine for protein and sugar
- HIV for those not tested at previous contacts and those tested negative more than 12 weeks
- Trace outstanding lab investigations

Preventive measures, treat and manage

- Refill iron/folic acid
- Offer PrEP and Condoms
- Review and Update birth and emergency plan Address any observed common physiological disorders
- Treat any identified disease or refer if there is indication for referral

Information, education and counselling

- Provide appropriate counselling (nutrition, self-care, hygiene, rest, adherence to schedule, preventive measures and treatments; etc.)
- Counsel on recognition of danger signs in pregnancy
- Discuss what to expect in labour and delivery
- Counsel on Postpartum Family Planning
- Provide information on breast feeding
- Record all findings in register and client card as appropriate
- Set appointment for next contact and write the date on client card

5.6 The Fifth contact of Antenatal Care at 34 weeks

Goal:

- Provide evidence based individualized care
- Check maternal wellbeing and fetal growth
- Continue preventive interventions

Maternal and fetal assessment

- Quick Check - Ask if she has experienced any danger signs including preterm labour and PROM
- Ask mother how she is doing
- Ask if she can perceive fetal movements
- Probe adherence to preventive measures as appropriate
- Measure BP, Pulse, weight, MUAC
- Assess pallor
- Assess fetal growth (palpation or SFH)
- Abdominal exam
- Check fetal heartbeat
- Obstetric ultrasound – if indicated

Point of care and laboratory investigations

- Trace outstanding lab investigations
- Check urine for protein and sugar
- **Urine test for ASB**
- HIV for those not tested at previous contacts and those tested negative more than 12 weeks
- **Syphilis retest for those who were negative**

Preventive measures, treat and manage

- Refill iron/folic acid
- Offer PrEP and Condoms
- Address any observed common physiological disorders
- Review and update birth and emergency plan
- Treat any identified disease or refer if there is an indication for referral

Information, education and counselling

- Provide appropriate counselling (nutrition, self-care, hygiene, rest, adherence to schedule, preventive measures and treatments; etc.)
- Counsel on recognition of danger signs in pregnancy
- Discuss what to expect in labour and delivery
- Counsel on Postpartum Family Planning
- Provide information on breast feeding
- Counsel on postnatal care including infant feeding
- Record all findings in register and client card as appropriate
- Set appointment for next contact and write the date on client card

5.7 The Sixth Contact of Antenatal Care at 36 weeks

Goal:

- Provide evidence based individualized care
- Check maternal wellbeing and fetal growth
- Prepare for labour and safe delivery

Maternal and fetal assessment

- Quick Check
- Ask mother how she is doing
- Ask if she can perceive fetal movements
- Probe adherence to preventive measures as appropriate
- Measure BP, Pulse, weight, MUAC
- Assess pallor
- Assess fetal growth (palpation or SFH)
- Abdominal exam
- Check fetal heartbeat
- Obstetric ultrasound if indicated
- Abdominal palpation to check presentation and lie
- Check previous surgery e.g. C section or myomectomy and refer to higher level of care as appropriate

Point of care and laboratory investigations

- Trace outstanding lab investigations
- Check urine for Protein and Sugar
- **Check HB level**
- **HIV test unless already tested negative at 32-35 weeks.**

Preventive measures, treat and manage

- Refill iron/folic acid
- Offer PrEP and Condoms
- Address any observed common physiological disorders
- Treat any identified problems/disease or refer if there is an indication for referral
- Review and Update birth and emergency plan

Information, education and counselling

- Provide appropriate counselling (nutrition, self-care, hygiene, rest, adherence to schedule, preventive measures and treatments, etc)
- Counsel on recognition of danger signs in pregnancy
- Counsel on signs of labour, including pain relief, birth companion and birth positions
- Discuss what to expect in labour and delivery
- Counsel on Postpartum Family Planning
- Counsel on postnatal care including breastfeeding,
- Discuss Mode of delivery
- Review birth and emergency plan
- Record all findings in register and client card as appropriate
- Set appointment for next contact and write the date on client card

5.8 The Seventh Contact of Antenatal Care at 38 weeks

Goal:

- Provide evidence based individualized care
- Check maternal wellbeing and fetal growth
- Prepare for labour and safe delivery

Maternal and fetal assessment

- Quick Check
- Ask mother how she is doing
- Enquire about symptoms of labour
- Ask if she can perceive fetal movements
- Probe adherence to preventive measures as appropriate
- Measure BP, Pulse, weight, MUAC
- Assess pallor
- Assess fetal growth (palpation or SFH)
- Abdominal exam
- Check fetal heartbeat
- Obstetric ultrasound – if indicated
- Abdominal palpation - check presentation and lie
- Review Mode of Delivery
- Identify Previous C/S, multiple pregnancy who need hospital follow up or elective delivery

Point of care and laboratory investigations

- Check urine for protein and sugar
- HIV test for those who missed the Test at 36 weeks
- Trace outstanding lab investigations

Preventive measures, treat and manage

- Refill iron/folic acid
- Offer PrEP and Condoms
- Address any observed common physiological disorders
- Treat any identified disease or refer if there is any indication
- Review and Update birth and emergency plan

Information, education and counselling

- Provide appropriate counselling (nutrition, self-care, hygiene, rest, adherence to schedule, preventive measures and treatments, etc)
- Counsel on recognition of danger signs in pregnancy
- Counsel on signs of labour, including pain relief, birth companion and birth positions
- Counsel on Postpartum Family Planning
- Counsel on postnatal care including breastfeeding,
- Record all findings in register and client card as appropriate
- Set appointment for next contact and write the date on client card

5.9 The Eighth Contact of Antenatal Care at 40 weeks

Goal:

- Provide evidence based individualized care
- Check maternal wellbeing and fetal growth
- Prepare for labour and safe delivery

Maternal and fetal assessment

- Quick Check
- Ask mother how she is doing
- Enquire about symptoms of labour
- Ask if she can perceive fetal movements
- Probe adherence to preventive measures as appropriate
- Measure BP, Pulse, weight, MUAC
- Assess pallor
- Assess fetal growth (palpation or SFH)
- Abdominal exam
- Check fetal heartbeat
- Obstetric ultrasound – if indicated
- Abdominal palpation - check presentation and lie
- Review Mode of Delivery
- Check previous surgery e.g. C section or myomectomy- if not yet done -and refer to higher level of care as appropriate
- Review EDD and ask her to follow up at 41 weeks at an appropriate level of care if not yet delivered.

Point of care and laboratory investigations

- Check urine for protein and sugar

Preventive measures, treat and manage

- Refill iron/folic acid
- Offer PrEP and Condoms
- Address any observed common physiological disorders
- Treat any identified disease or refer to next level if there is indication for referral
- **Review EDD and ask her to follow up at 41 weeks at an appropriate level of care if not yet delivered.**

Information, education and counselling

- Provide appropriate counselling (nutrition, self-care, hygiene, rest, adherence to schedule, preventive measures and treatments, etc)
- Counsel on recognition of danger signs in pregnancy
- Discuss what to expect in labour and delivery
- Counsel on Postpartum Family Planning
- Counsel on postnatal care including breastfeeding
- Record all findings in register and client card as appropriate

- Set appointment for next contact and write the date on client card
- Ask her to return at 41 weeks if she has not yet delivered
- Review and update birth and emergency plan

5.10 Communication

Once done with maternal and fetal assessment and laboratory investigations, discuss with the mother the findings and inform her of the rationale of different preventive measures taken.

- Inform her about your assessment and reassure her if all is well, and let her know if her pregnancy requires additional special considerations like the need for referral or further investigations, mode and timing of delivery etc.
- Give the woman and /or her companion opportunity to ask any questions and offer clear answers to their concerns.
- Let the woman know the next date of her visit and explain why it is important to respect the next contact.
- Findings obtained during these assessments at each contact during pregnancy determine whether the woman needs routine care for her pregnancy, needs some additional care, or needs to be referred for special care.
- When a client has an identified problem, she receives appropriate treatment and care.

When the problem is resolved, she may rejoin the routine antenatal care schedule.

6. MANAGING PREGNANT WOMEN AND ADOLESCENTS WITH SPECIAL NEEDS

During antenatal care, some women need additional care, counselling and support to ensure optimum pregnancy outcomes. Such pregnant women include: adolescent/ teenage pregnancies, women with poor partner/family support, women with physical disability, mental health problems, and women experiencing intimate partner abuse.

Women with special needs are likely to:

- Delay seeking antenatal care.
- Not attend ANC.
- Not adhere to medications and treatments.
- Experience mental health issues.
- Be less motivated for self-care such as good nutrition.
- Have general poor maternal health and/or fetal growth.

Pregnant women with special needs should be provided counselling and additional support during antenatal care. In some cases, it may be necessary to refer them to another level of care or to a support group.

Providing emotional support to the woman with special needs:

- Create a comfortable environment for the woman:
 - Be aware of your own attitude.
 - Be open and approachable.
 - Use a gentle, reassuring tone of voice.
- Guarantee privacy and confidentiality:
 - Communicate clearly about confidentiality by telling the woman that her visit, discussion or plan will not be discussed with anyone else without her consent.
 - If brought by her partner, parent or other family member, make sure there is time and space to talk privately, and ask the woman if she would like to include her family members in the discussion.
- Convey respect:
 - Do not be judgmental.
 - Be understanding of the woman's situation.
 - Overcome personal discomfort with the woman's situation.
- Be a good listener:
 - Be patient, as women with special needs may require more time than usual to talk about their problems and make decisions.
 - Pay attention to the woman as she speaks.
- Provide information according to the woman's situation, which she can use to make decisions. Verify that the woman has understood the most important points of the discussion.
- Suggest extra follow-up visits as necessary to give emotional support.
- Link the client to additional sources of support through:
 - community groups, women's groups, community leaders, etc.
 - peer support groups
 - other health service providers
 - community health workers and counsellors

6.1 Pregnant Adolescents girls

When working with adolescent girls, whether married or unmarried, it is particularly important for the health care provider to remember the following:

- Do not be judgmental. Be aware of, and overcome, personal discomfort with adolescent sexuality.
- Use simple and clear language and guarantee confidentiality.
- Encourage the girl to ask questions and tell her that any topic can be discussed.
- Support the girl when discussing her situation and ask if she has any concerns (fears of parental discovery, adult disapproval, social stigma, etc).
- Does she live with her parents and can she confide in them? Does she live as a couple? Is she in a long-term relationship? Has she been subjected to violence or coercion?
- Determine who knows about this pregnancy- she may not have revealed it openly.
- Support her concerns related to puberty, social acceptance, peer pressure, forming relationships, social stigma and violence.

Help the adolescent to consider her options and make decisions

- Birth planning: Delivery in the hospital is highly recommended. She needs to understand why this is important.
- Prevention of HIV/STI is important for her and her baby. They should use of condoms in all sexual relations. She may need advice on how to discuss condom use with her partner.
- Spacing of the next pregnancy — for both the woman and baby’s health, it is recommended that any next pregnancy be spaced by at least 2 or 3 years. The adolescent girl, with her partner if applicable, needs to decide if and when a second pregnancy is desirable, based on their plans. Healthy adolescent girls can safely use any contraceptive method. The adolescent girl needs support in knowing her options and in deciding which is best for her. Be active in providing family planning counselling and advice.

6.2 Providing care to women with intimate partner violence /Gender Based Violence

- Intimate partner violence is a very sensitive topic and ANC providers have to ensure privacy and confidentiality before discussing the issue of violence.
- Demonstrate empathy and understanding, and keep in mind that victims of IPV/GBV may not be able to disclose their concerns unless prompted by the health care provider. Screen at every contact for GBV/IPV and follow the instructions in the *Clinical Handbook: Health Care for Survivors of Intimate Partner Violence or Sexual Violence*.

Explore the possibility of GBV/IPV if the pregnant woman has any of the following:

- traumatic injury (like bruising or black eye), particularly if repeated and with vague explanations,
- intrusive partner present at consultations,
- low self-esteem and poor physical health,
- adverse reproductive outcome including multiple unintended pregnancies and or terminations, delay in seeking ANC, repeated STIs,
- alcohol and substance abuse,
- psychological issues such as self-harm, suicidal symptoms, depressed mood or anxiety.

Response to GBV/IPV:

- Provide a space where the woman can speak to you in privacy where her partner or others cannot hear. Do all you can to guarantee confidentiality and reassure her of this.
- Gently encourage her to tell you what is happening to her. You may ask indirect questions to help her tell her story.
- Listen to her in a sympathetic manner. Listening can often be of great support. Do not blame her or make a joke of the situation. She may defend her partner's action. Reassure her that she does not deserve to be abused in any way.
- Help her to assess her present situation. If she thinks she or her children are in danger, explore together the options to ensure her immediate safety (e.g. can she stay with her parents or friends? Does she have, or could she borrow, money?) .
- Explore her options with her. Help her identify local sources of support, either within her family, friends, and local community or through NGOs, shelters or social services, if available.
- Remind her that she has legal recourse, if relevant.
- Offer her an opportunity to see you again. Violence by partners is complex, and she may be unable to resolve her situation quickly.
- Document any forms of abuse identified or concerns you may have in the file.
- Consider transfer to facilities with expertise in offering supportive responses to GBV/IPV where appropriate (e.g. woman and child abuse centers).
- Refer to the information in the Clinical Handbook on GBV/IPV.

6.3 Providing care for the pregnant women living with physical and mental disability

Persons living with disabilities include women who have visual, hearing, neurological, physical and mental disabilities. They face a variety of health and non-health challenges because of these disabilities.

- They frequently suffer abuse, stigma, poverty and social rejection. In many societies they are often stereotyped as not "normal" and their legitimate right to becoming parents even questioned.
- The challenges they face may become aggravated during pregnancy further limiting the outcomes of pregnancy for themselves and their babies. Care providers must remember that women with disabilities experience the same fears and uncertainties experienced by all other women who are pregnant, but their concerns are further compounded because of their disabilities.
- Physical barriers and financial burdens for example limit their access to and use of antenatal care services. Negative attitudes, poor reception and communication barriers at the antenatal clinic may prevent them from receiving the desired positive care experience when they visit the clinics.
- The disabilities the women have and/ or the treatments (drugs) they require to treat these conditions may be associated with increased risk of pregnancy complications. For example, some neurological drugs may have teratogenic effect on the baby whilst risk for caesarean section delivery section is increased in women with hip deformities.

In addition to the typical history taking, additional history is obtained on:

- woman's general health status and social support systems,
- nature of the disabling condition,
- medications used to treat the disabling condition, or any secondary conditions related to it,
- client concerns related to the interaction of pregnancy and the disabling condition.

In order to provide women with disabilities the positive pregnancy experience they desire, care providers must:

- Explore their own views and perceptions about disability and childbearing in women with disabilities, and how this influences their attitudes and behaviours
- Understand effects of the disabling condition on pregnancy and vice versa
- Understand the need for women with disability to have access to all antenatal care resources that will enable her to have a healthy pregnancy, safe labour and delivery, and smooth postpartum period.
- At each visit, screen and manage clients for obstetric risks and complications known to be associated with her disabilities, e.g. UTI in women with neurological disorders, deep vein thrombosis in women with mobility disorders etc.
- Deliver client centered counselling messages which should include management of the effect of the disability on pregnancy and on effect of pregnancy on the disability and/or its treatment.

Additional Care Requirements

- Women with disabilities should ideally receive preconception counselling to make sure that they are in the healthiest condition possible prior to embarking on their pregnancies.
- Barriers that limit access to care at the antenatal clinic should be addressed.
- For pregnant women with communication impairments (e.g., deaf, hard of hearing, impaired speech), care providers must take steps to ensure that the two-way communication between the woman and herself are maintained using a variety of innovative approaches e.g. writing, speech/lip reading, use of sign-language or use of interpreters. The pregnant women's opinion is first sought about type/method of communication she prefers.
- Physical barriers at clinic setups that limit access for those with mobility disabilities should be removed: e.g. provide ramps for wheelchairs, equip examination beds with stepping stools

7. COUNSELLING ANTENATAL CARE CLIENTS

As part of antenatal care, counselling and health messages can be provided to the pregnant woman through three different approaches: group counselling, couple counselling or individual counselling. Depending on the subject, health concerns and/or clinic situations, antenatal care providers should select the most appropriate counselling approach by considering the advantages and disadvantages. Good counselling is an important determinant of quality antenatal care and the following principles should be considered:

- All health providers should offer health education and undertake counselling to pregnant clients at each ANC contact
- Health education and counselling can be conducted as group or individual based counselling through different methods for example: interactive sessions, information, education and communication (IEC), demonstrations or health talks.
- Health care providers should ensure to conduct counselling in a conducive environment, be respectful and ensure privacy and confidentiality.
- Special attentions need to be offered to special groups including women with high-risk pregnancies, women with HIV/AIDS, adolescent girls and victims of GBV/IPV

The antenatal period is a nine-month long period during which the pregnant woman experiences many changes with different health needs and concerns along the way. Different pregnant women also have different needs during their pregnancies. It is therefore important to also individualize health messages and counselling by prioritizing the messages for each individual woman. This means selecting topics to discuss and/or emphasize at different times relative to the client's gestational age and clinical situation. Prioritization is also important especially because of the limited time available at each contact for client-provider interaction.

To individualize counselling:

- Respond to the client's specific questions and concerns.
- Next provide the client with essential messages that may have a direct impact on the well-being and survival of the client and her baby (e.g. birth planning, anaemia treatment).
- Ensure that advice and counselling on the preventive and self-care measures are timed to occur during provision of the services to the client.

Below is a guide on counselling topics at the various stages of pregnancy.

The following topics should be covered:

- Importance of antenatal care including ANC components and the eight schedules
- Birth preparedness, complication readiness and identification of danger signs in pregnancy
- Body changes in pregnancy
- Common discomforts and body changes in pregnancy (see Chapter 9)
- Nutrition in pregnancy (see Chapter 8)
- Care during pregnancy
- PMTCT of HIV/ syphilis and other STIs
- Avoidance of alcohol, drug abuse and smoking
- Restriction of caffeine Intake
- Malaria prevention (ITN)
- Partner /support person identification

- Intimate partner violence /Gender Based Violence
- Signs and symptoms of labour
- Breast feeding and post-natal care
- Family planning
- Essential newborn care including Kangaroo Mother Care, etc.

7.1 Importance of antenatal care including ANC components and schedules

All pregnant women should be informed that it is very important to start ANC as early in pregnancy as possible during the first trimester. She should visit the health facility at least 8 times during pregnancy even if she does not have any problems. She must always bring her ANC card for every contact. She will always be informed when to return. If at any time she has any concern about herself or her baby's health, she should go to the health facility. Women should be informed that during ANC, health care workers will:

- check her health and the progress of her pregnancy
- help her make a birth and emergency plan
- answer questions or concerns she may have
- provide treatment for identified problems e.g. malaria and anaemia
- give other preventative measures such as vaccination for TT

Women should also be informed that health care workers will provide education on:

- breastfeeding
- birth spacing after delivery
- nutrition during pregnancy
- HIV counselling and testing
- Prevention of STIs
- Other matters related to her health and her baby

Women with previous caesarean sections, multiple pregnancy and pre-existing medical conditions need special care and should receive the following information:

Women with previous caesarean sections

- Inform women who have had only one caesarean section that there is a possibility to have their next baby normally, but in a hospital with availability of advanced fetal monitoring due to the risk of uterine rupture and its associated morbidities. Birth should occur in hospital able to provide 24-hour access to caesarean section.
- Tell women who have had more than 1 previous caesarean section that they have to avoid any delay at home with contractions as the risk of rupturing their uterus is high. Tell them that birth should occur in secondary or tertiary level health facility by caesarean section before contractions starts, usually one week before the due date (at around 39 weeks).
- Tell women who have had more than one previous caesarean section that in addition to first trimester ultrasound (sonar) that they may need another one late in pregnancy to exclude abnormal placenta implantation.

- Counsel women about the increased health risk associated with subsequent pregnancies and the availability of immediate postpartum contraception and the importance of spacing pregnancy to at least an interval of 2-3 years.

Women with multiple pregnancies (twins, triplets.)

- Tell women with multiple pregnancies that risks associated with multiple pregnancies are higher compared to women with a singleton pregnancy.
- Discuss the common complications of multiple pregnancies including pre-eclampsia, pre-term labour and preterm deliveries.
- Inform women with multiple pregnancies that the majority of women usually give birth at around 37 weeks and their delivery should occur in a hospital able to provide 24 hour access to CS.
- Tell women that ultrasound (sonar) examination might be needed more frequently to determine the chorionicity and amnionity early in pregnancy and to monitor the pregnancy as it progresses.

Women with pre-existing health conditions

- Inform women with pre-existing health conditions like: HPT, DM, HIV, Epilepsy, mental illness, cardiac disease, patients with clotting disorders/ hematological disorders, genetic abnormalities, renal and liver disease, women with poor obstetric history that they need to be reviewed by the specialist or most senior medical officer.
- Their medication needs to be reviewed for safety during pregnancy.
- Counsel pregnant women with pre-existing medical conditions about the possible need of increased number of contacts due to high risk of developing maternal complications like pre-eclampsia late in pregnancy and increased risk of poor perinatal outcome.
- Advise women with medical conditions to seek care before planning their subsequent pregnancy (pre-conception care).

7.2 Birth preparedness and complication readiness including recognition of danger signs

Most complications leading to maternal and newborn death and ill-health occur around the time of childbirth. These complications are worsened by delays in seeking or receiving care. Antenatal care emphasizes the importance of preparing well for childbirth and any emergency as an essential intervention for saving women's lives. The care provider assists the client and her family to prepare for childbirth by identifying the place for childbirth, planning how to get there and what items to have in readiness. **Appendix 6** shows a tool to assist a health care worker develop a birth preparedness and complication readiness plans.

7.2.1 Birth Preparedness

All pregnant women or adolescent who come for ANC must be educated on birth preparedness. Share with women the essential information while pregnant. The health care worker prepares the client for emergencies by educating her and her family to recognize danger signs and symptoms and to seek immediate help. He / She provides advice on where to go for emergency care and how to get there. These

plans are documented in the woman's Individual Birth and Emergency Plan. The key messages can be also displayed on a poster in the ANC Clinic.

Health care workers should advise the woman to:

- make sure to bring her antenatal care passport during all facility visits
- bring her identification document to enable birth registration after birth
- identify a person, who will be supporting her during birth
- have some credit on her phone and the telephone number ready
- have some money put aside to pay a taxi and have the telephone number ready
- have the ambulance number or hospital emergency number or the number for the transport provider in the community. She can write the numbers down and have them visible in her house.
- have a bag packed with nightgowns, panties, blanket, facecloth and towels, soap, toothbrush and toothpaste, some lotion, toilet paper and pads.
- For the baby to bring at least the following, baby blanket, baby clothes including hat, nappies, 2x facecloths, towel and unscented baby cream or lotion.
- organize childcare for her older children in her absence
- deliver in a health facility.

7.2.2. Complication readiness

All pregnant women or adolescent girls who come for ANC should be reminded about possible complications in pregnancy. They must be prepared and ready for action whenever one of them occurs. Educate and give the following clear message to women who attend the ANC and share it on a leaflet/flyer so that every pregnant woman can read the message herself.

Advise her to go to the nearest clinic if she experiences any of the following signs during her pregnancy:

- vaginal bleeding
- abnormal vaginal discharge
- water breaking
- headache, dizziness, nausea, vomiting, blurred vision, severely swollen hands, feet and face
- difficulties in breathing
- severe stomach pain
- fever
- fitting, fainting
- reduced fetal movements

During pregnancy, emergencies can happen. The pregnant woman needs to be prepared for that and counsel her to make sure she organizes the following:

- identify a person, who will be available to come with her in case of emergency
- have credit on her phone and the telephone number ready
- have some money put aside to pay a taxi and have the telephone number ready
- have the ambulance number or hospital emergency number or the number for the transport provider in her community. She needs to write the numbers down and have them visible in the house.

- have a bag packed with nightgowns, panties, blanket, facecloth and towels, soap, toothbrush and toothpaste, some lotion, toilet paper and pads. Baby blanket, baby clothes including hat, nappies, 2x facecloths, towel and vaseline are also needed for the baby.
- to take her health passport with her

7.3 Care during pregnancy

Women should be informed of the following during ANC contacts:

- to eat more and healthier foods (**see Chapter 8**).
- Take iron tablets and other supplements or medicines given by the health care workers.
- Rest when she can and to avoid lifting heavy objects
- Sleep under a treated net
- To not take any medication unless prescribed by the health care workers
- To not drink alcohol or smoke
- To use a condom in all sexual relations to prevent STIs

7.4 Prevention of Mother to Child transmission of HIV/ syphilis and other STIs

If the mother is HIV positive, advise both her and the husband/partner on how to reduce transmission from mother to baby by:

- Starting ART or strict adherence if already on treatment to ensure viral suppression
- Avoiding unprotected sex during pregnancy (use a condom)
- Ensuring a safe delivery by coming to the clinic or hospital
- Accessing ARV prophylaxis for the baby immediately after birth
- Adopting safer feeding options (i.e. exclusive breastfeeding for the first 6 months)
- For more information refer to the latest guidelines; the national PMTCT (2017) and National guidelines for antiretroviral therapy (2019).

Providers must ensure that women are offered HIV/STI related counselling and testing as routine package of ANC at each contact.

- Discuss with women the importance of HIV, Syphilis and Hepatitis B testing and the available treatment options.
- Discuss TPT for women tested HIV positive and TB negative
- Discuss the possibility of PrEP for HIV negative women, who are at high risk (refer to PrEP guideline)
- Discuss with women the high risk of mother to child transmission when no intervention is done.
- Inform and discuss with women the service offered when the test is positive including HIV treatment and the role of ARVs in prevention of mother to child transmission

7.5 Avoidance of alcohol, drug abuse and smoking

- Discuss with the pregnant woman about the harmful effects of consumption of alcohol, smoking (cigarettes, marihuana, hubbly/bubbly) and the use of illicit drugs on her health and the health of her baby
- Advise the pregnant woman to avoid smoking, alcohol and illicit drugs during pregnancy

- Remind the pregnant woman that secondhand smoking is as harmful as smoking and involve the partner in the discussion
- Discourage the use of any medications, supplements or herbs during pregnancy unless prescribed by a health care provider
- Health care providers should ask all pregnant women about their alcohol, tobacco and substance use - including exposure to secondhand smoke as early as possible in the pregnancy and at every ANC contact.
- Offer advice and psychosocial interventions for cessation of smoking; provide advice to pregnant women and their partners on the risk of second-hand smoke and how to minimize exposure in the home.
- Advice on potential effects of alcohol and drug use on fetal development; refer all women dependent on alcohol and drugs to detoxification centers.

7.6 Restriction of caffeine intake

- Discuss with women the importance of reducing the quantity of daily caffeine in order to reduce the risk of pregnancy loss and low birth weight newborn.
- Discuss with women about the common sources of caffeine, like coffee, tea, soft drinks, energy drinks, chocolate and some medicines. Inform her that coffee and tea are the commonest sources of caffeine.
- Explain to women that a cup of coffee contains about 60mg of caffeine while black tea, green tea or soft drinks contain around 50 mg of caffeine each per 250ml.
- Counsel women with high daily caffeine intake (> 300 mg per day) to limit their coffee/tea intake to 4 or less cups per day with due consideration of intake of other caffeine containing drinks.

7.7 Tuberculosis

TB increases the risk of preterm birth, perinatal death and other pregnancy complications. Initiating TB treatment early is associated with better maternal and neonatal outcome. Offer systematic TB screening at each contact to all pregnant women.

During antenatal care:

- Discuss with pregnant women about the high prevalence of tuberculosis in the country, its associated risks on pregnancy and its common symptoms including cough lasting more than two weeks, hemoptysis, weight loss, fever or night sweat.
- Counsel women with suspected TB that further investigations are needed including sputum exam and chest radiography
- Inform and reassure pregnant women about the availability of treatment and the advantage of initiating early treatment
- Counsel about the increased risk of developing TB in an HIV positive woman
- Some pregnant women will need TB Prophylaxis Treatment (TPT); for more information refer the latest National Guidelines for the Management of Tuberculosis (MoHSS, 2019)

7.8 Family planning /Healthy Timing and Spacing of pregnancy

It is important to start talking about family planning when women are still pregnant:

- Offer counselling and education about the importance of family planning and encourage partner participation on counselling session
- Explain the importance of birth spacing (at least 2-3 years) and risks associated with short inter-pregnancy interval
- Inform the woman that she may become pregnant within several weeks after delivery if she engages in sexual relations and not breast feeding exclusively
- Allow a woman to choose a family planning method which best meets her and her partner's needs

Explain the methods of family planning and their timing of use in postpartum period, including the availability of immediate postpartum contraception. Refer to the National Guidelines on Family Planning 2019.

Tips for successful counselling

- Show every client respect, and help each client feel at ease.
- Encourage the client to explain needs, express concerns, and ask questions.
- Let the client's wishes and needs guide the discussion.
- Be alert to related needs such as protection from STIs including HIV, and support for condom use.
- Listen carefully. Listening is as important as giving correct information.
- Give just key information and instructions. Use words the client can understand. Avoid medical jargon.
- Explore relevant options for each decision and respect and support the client's informed decisions.

7.9 Breast feeding and Post-natal care

7.9.1 Breastfeeding

The physiological preparation for breastfeeding is a natural part of pregnancy and success with breastfeeding an important part of the positive experience of childbirth. Explain how it works, the importance of early initiation of breastfeeding; importance of colostrum for the newborn's health; transitional and mature milk; function of lactation hormones and their effects; breastfeeding and mother's and baby's emotional and physical health; mother-child bonding, prevention of PPH; emotional, economic and health implications of breastfeeding for the mother and other family members. Examine breasts to determine if there are physiological or psychological barriers to lactation (flat or inverted nipples, immune status, very small or very large breasts, etc), counsel on common difficulties with breastfeeding and how to overcome them. Support persons should be helped to understand how important their psychosocial support to the mother during pregnancy and postpartum is for a successful and fulfilling experience of breastfeeding.

Educate the woman about the advantages of breastfeeding for the baby including:

- During the first 6 months of life, the baby needs nothing more than breast milk — not water, not other milk, not cereals, not teas, not juices.
- Breast milk contains exactly the water and nutrients that a baby's body needs. It is easily digested and efficiently used by the baby's body. It helps protect against infections and allergies and helps the baby's growth and development.

Advantages of breastfeeding for the mother:

- When the baby suckles, the uterus contracts. This helps reduce bleeding but may be painful at first.
- Breastfeeding can help delay a new pregnancy.

Suggestions for successful breastfeeding: inform the Mother that:

- Immediately after birth, she should keep her baby in the bed with her, or within easy reach.
- She should start breastfeeding within 1 hour of birth.
- The baby's suckling stimulates her milk production. The more the baby feeds, the more milk she will produce.
- At each feed, let the baby feed and release her breast, and then offer her second breast. At the next feed, alternate and begin with the second breast.
- She should give her baby the first milk (colostrum). It is nutritious and has antibodies to help keep her baby healthy.
- At night, let her baby sleep with her, within easy reach.
- While breastfeeding, she should drink plenty of clean, safe water, eat more healthier foods and rest when she can.

The Health worker can:

- Help the mother to correctly position the baby and ensure that the baby attaches to the breast. This will reduce breast problems for the mother.
- Show the mother how to express milk from her breast with her hands. If she needs to leave the baby with another caretaker for short periods, she can leave her milk and it can be given to the baby in a cup.
- Encourage woman to get in contact with breastfeeding support groups where possible.

7.9.2 Postnatal Care

Care of the Mother: counsel the mother to:

- Eat more and healthier foods, including more meat, fish, oils, nuts, cereals, beans, vegetables, fruits, cheese and milk.
- Take iron tablets as explained by the health worker.
- Rest when she can.
- Drink plenty of clean, safe water.
- Sleep under a bed net treated with insecticide.
- Do not take medication unless prescribed at the health centre.
- Do not drink alcohol or smoke.
- Use a condom in every sexual encounter to prevent sexually transmitted infections (STI) or HIV/AIDS.
- Wash frequently and keep the perineum clean and dry.
- Change pad every 4 to 6 hours. Wash reusable pads or dispose single use safely.

7.10. Prevention of Infection

During antenatal care service provisions, infection control precautions must be strictly observed to protect health care providers, other hospital personnel and clients from acquiring or transmitting infections.

Counsel the woman on infection prevention measures including hand washing and household waste management.

a) **Hand washing**

Hand hygiene is an important measure to prevent the spread of infections among all categories of people (health providers and clients). Washing hands with soap should always be considered:

- Before handling or preparing food
- Before and after eating
- After visiting the toilet
- After changing nappies

b) **Housekeeping and waste management**

- Keep the house environment clean
- Keep utensils clean and away from dirt
- Keep the house in order
- Safe handling and storage of food (wash fruits and vegetables, covering of food, warming food before consumption, not to eat raw meat)
- All waste products should be disposed by digging a pit or burning

8. NUTRITION IN PREGNANCY

Pregnancy requires a healthy diet that includes adequate intake of energy, protein, vitamins and minerals to meet maternal and fetal needs. Undernutrition leads to poor perinatal outcomes; however, obesity and overweight are also associated with poor pregnancy outcome. During ANC, women should be educated on the available foods and the how to meet the nutritional needs of pregnancy.

Table 5 Nutritional Status Reference

Parameter	Why															
Height (just once, on first contact)	Stunted women are at increased risk of obstetric complications															
Weight gain (depending on pre-pregnancy BMI) *	* The 2009 Institute of Medicine Gestational Weight Gain Recommendations															
	<table border="1"> <thead> <tr> <th>Pre-pregnancy BMI category</th> <th>Total weight gain</th> <th>Rate of weight gain in 2nd and 3rd trimesters: Mean (range)</th> </tr> </thead> <tbody> <tr> <td>BMI < 18.5 (underweight)</td> <td>12.5 – 18.0 kg</td> <td>0.51 (0.44-0.58) kg/week</td> </tr> <tr> <td>18.5-24.9 (normal weight)</td> <td>11.5 – 16.0 kg</td> <td>0.42 (0.35-0.50) kg/week</td> </tr> <tr> <td>25-29.9 (overweight)</td> <td>7.0 – 11.5 kg</td> <td>0.28 (0.23-0.33) kg/week</td> </tr> <tr> <td>≥30 (obese)</td> <td>5.0 – 9.0 kg</td> <td>0.22 (0.17-0.27) kg/week</td> </tr> </tbody> </table>	Pre-pregnancy BMI category	Total weight gain	Rate of weight gain in 2 nd and 3 rd trimesters: Mean (range)	BMI < 18.5 (underweight)	12.5 – 18.0 kg	0.51 (0.44-0.58) kg/week	18.5-24.9 (normal weight)	11.5 – 16.0 kg	0.42 (0.35-0.50) kg/week	25-29.9 (overweight)	7.0 – 11.5 kg	0.28 (0.23-0.33) kg/week	≥30 (obese)	5.0 – 9.0 kg	0.22 (0.17-0.27) kg/week
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8.1 Healthy eating during pregnancy and breastfeeding

A healthy diet contains adequate energy, proteins, vitamin and minerals. To achieve a balanced diet, pregnant women and adolescent girls should consume a variety of foods including green and orange vegetables, meat, fish, beans, nuts, whole grains and fruits. Different foods play different roles in the body, it is important to eat a variety of foods from all the groups together because some nutrients depend on each other for their availability and utilisation. For example, eating fruits rich in vitamin C, such as lemons or oranges with meals helps the body absorb iron from green vegetables. Cook vegetables with a little fat because the body needs fat to absorb and use vitamins A, D, E and K.

Educate women about eating meals containing all the following three categories of food

- Energy providing food such as cereals and grains, tubers and roots.
- Protein (bodybuilding component) providing food such as meat, beans, chicken, eggs, milk and milk products, nuts and seeds).
- Vitamins and minerals (protective component) providing food such as fruits and vegetables.

For detailed sorts of available food in Namibia, see **Appendix 11**.

8.2 Food preparations and safety

During the nutrition education session, let women know how to prepare food to ensure that the quality and benefits remain intact. Give the following advice to pregnant women or adolescent girls attending the ANC.

- Always wash your hands well with running water and soap or ash, before you prepare, handle, or eat food.
- Wash all surfaces and equipment used to prepare or serve food with soap and water.

- Protect kitchen areas and food from insects, pests and other animals.
- Improve the nutrient and energy content and digestibility of local diets by enriching, steaming, germination and fermentation (explain with illustrations how to do this with the local available food).
- Steam vegetables to preserve nutrients. (explain how to do).
- Improve the flavour of food by roasting or adding spices such as garlic, ginger and lemon juice.
- Meat should be cooked well before consumption.
- Demonstrate mashing, pureeing or sip feeding foods for easy swallowing.
- Separate raw meat, poultry, fish, and seafood from other foods to avoid contaminating them with germs.
- Keep food at safe temperature:
 - Do not leave cooked food at room temperature for more than 2 hours. If more than 2 hours have passed, reheat the food thoroughly, bringing liquids to a boil before serving.
 - Do not store prepared food longer than 3 days in a refrigerator.
 - Protect food from pests by covering it with netting or a cloth or keeping it in closed containers.
 - Dry the meat and fish in absence of a refrigerator.

8.3 Nutrition supplements

In addition to a balanced diet, all pregnant women should be informed of the importance of iron and folic acid supplementation during pregnancy. Health care providers must ensure that all pregnant women are offered daily supplementation of folic acid and iron to meet the need of pregnancy and prevent maternal anaemia, puerperal sepsis, low birth weight and preterm birth. Take advantage of the first contact, give oral iron containing 60mg of elementary iron daily and 0.4mg of folic acid to pregnant women and renew the prescription during subsequent contacts. Other nutrition supplements do not appear to be mandatory unless a deficiency is observed in certain individual groups.

8.4 Weight gain

Pregnant women should be educated about weight gain. During pregnancy, there is an anticipated increase of weight due to the increase of the maternal plasma volume and pregnancy itself (baby, amniotic fluids, placenta and a growing uterus). Women should be informed of the normal weight gain and the role of healthy eating and exercise to avoid low or excessive weight gain. Below is a summary of normal weight gain during pregnancy, encourage women to remain within the normal margin. It is recommended to calculate the BMI based on pre-pregnancy weight or before 20 weeks of pregnancy:

- Gestational weight usually starts increasing after 20 weeks of gestation.
- Women who are underweight at the start of pregnancy (i.e. BMI < 18.5 kg/m²) should aim to gain ranging between 12.5 kg - 18 kg.
- Women who are normal weight at the start of pregnancy (i.e. BMI 18.5-24.9 kg/m²) should aim to gain between 11.5 kg - 16 kg.
- Overweight women (i.e. BMI 25-29.9 kg/m²) should aim to gain between 7 kg - 11.5 kg.
- Obese women (i.e. BMI >30) should gain only 5 kg - 9 kg.
- See MUAC measurement tool to estimate BMI in subsequent ANC contacts (**Appendix 8 and 9**)

8.5 Physical activity

Women are encouraged to stay physically active during pregnancy to maintain their fitness level and avoid excessive gestational weight gain.

- Counsel women about healthy lifestyle including aerobic physical activities and strength – conditioning exercise aimed at maintaining a good level of fitness throughout pregnancy, without trying to reach peak fitness level or train for athletic competition.
- Examples of physical activity recommended: walking, swimming, Yoga, dancing.
- Let women know that their bodies change during pregnancy, therefore ask them to choose exercise accordingly. Tell women to avoid jerky, bouncy, or high impact movements when exercising. Avoid other vigorous activity during pregnancy, such as heavy lifting, prolonged standing and bending and any other exercise which can lead to trauma.
- Communicate to pregnant women about other advantages of staying physically active
 - Less back pain
 - Ease constipation
 - Improved overall general fitness

9. INFECTION PREVENTION AND CONTROL DURING ANC

During antenatal care service provisions, infection prevention and control precautions must be strictly observed to protect health care providers, other hospital personnel and clients from acquiring or transmitting infections. Health care providers should take precautions during the ANC procedures to minimize personal risks resulting from exposure to blood and other body fluids. Even when a sterile technique is used infections can still occur. The following are key areas abstracted from the infection prevention control measures that should be observed when providing services in health facilities.

9.1 The purpose of Infection Prevention

The primary purpose of infection prevention in health care facilities is two-fold:

- To minimize infections due to microorganisms causing serious wound infections, abdominal abscesses, pelvic inflammatory disease, gangrene and tetanus.
- To prevent the transmission of serious, life threatening diseases such as hepatitis B and COVID 19.

9.2 Principles of Infection Prevention

The recommended infection prevention practices are based on certain important principles, which are outlined below.

- Every person (patient or staff) should be considered potentially infectious,
- Hand washing is the most practical procedure for preventing cross-contamination,
- Wear gloves before touching anything wet – broken skin, mucous membranes, blood or other body fluids (secretions or excretions),
- Use barriers (protective goggles, face masks or aprons) if splashes and spills of any body fluids (secretions or excretions) are anticipated,
- Use safe work practices, such as not recapping or bending needles, proper instrument processing and proper disposal of medical waste.

9.3 Standard precautions

Standard precautions are a simple set of effective practices designed to protect health workers and patients from infection with a range of pathogens including blood borne viruses. They help to break the disease transmission cycle and these practices are used when caring for all patients regardless of diagnosis. They include the following:

- Maintaining a clean environment
- Both staff and patients to practice cough etiquette

Observe these precautions to protect the woman and her baby, and you as the health provider, from infections with bacteria and viruses, including HIV. Wash hands: hand washing or decontamination of hands before each patient contact, practice 5 moments of hand hygiene

- Wash hands with soap and water:
 - Before and after caring for a woman or newborn, and before any treatment procedure.

- Whenever the hands (or any other skin area) are contaminated with blood or other body fluids.
- After removing the gloves because they may have holes.
- After changing soiled bedsheets or clothing.
- Keep nails short.

Wear gloves: Safe handling of blood and body fluids by wearing of gloves, eye protection or face shields and gowns.

- Wear clean gloves when:
 - Drawing blood
 - Handling and cleaning instruments
 - Handling contaminated waste
 - Cleaning blood and body fluid spills
- Reusing gloves is NOT recommended. If it is necessary to reuse gloves because the supply in the health facility is limited, clean and disinfect them before and after each use.

Practice safe sharps disposal: Safe use and disposal of needles and sharps immediately after use (avoid re-capping of used needle)

- Keep a puncture resistant container nearby.
- Use each needle and syringe only once.
- Do not recap, bend or break needles after giving an injection.
- Drop all used (disposable) needles, plastic syringes and blades directly into this container, without recapping, and without passing to another person.
- Empty or send for incineration when container full.

Practice safe waste disposal: Promptly cleaning up blood and body fluid spills

- Dispose of placenta or blood, or body fluid contaminated items, in leak-proof containers.
- Burn or bury contaminated solid waste.
- Wash hands, gloves and containers after disposal of infectious waste.
- Pour liquid waste down a drain or flushable toilet.

Deal with contaminated laundry: Correct handling, transporting of used/soiled linens.

- Collect clothing or sheets stained with blood or body fluids and keep them separately from other laundry, wearing gloves or use a plastic bag. DO NOT touch them directly.
- Rinse off blood or other contaminants.

Sterilize and clean contaminated equipment: Use safe disposal systems for waste collection and disposal and processing of instruments and client care equipment

- Make sure that instruments which penetrate the skin (such as needles) are adequately sterilized, or that single-use instruments are disposed of after one use.
- Thoroughly clean or disinfect any equipment which comes into contact with intact skin (according to instructions).
- Use bleach for cleaning bowls and buckets, and for blood or body fluid spills.

a) Transmission based precautions

Specific procedures should be in place to reduce transmission of pathogens between health care workers and patients. On 30 January 2020, WHO declared the outbreak of a novel coronavirus (COVID-19) a Public Health Emergency of International Concern. Responding to COVID-19 requires critical preparedness and response which includes equipping healthcare workers (HCWs) and healthcare facility management with the information, procedures, and tools required to safely and effectively work. This section therefore provides information to protect HCWs from infection and prevent potential spread of COVID-19 within healthcare facilities.

b) Principles of IPC strategies associated with health care for suspected COVID-19.

To achieve the highest level of effectiveness in the response to the COVID-19 outbreak using the strategies and practices recommended in this document, an IPC programme with a dedicated and trained team or at least an IPC focal point should be in place and supported by the national and facility senior management. It is critical to start by ensuring that at least minimum requirements for IPC are in place as soon as possible at facility level, and to gradually progress to the full achievement of all requirements of the IPC core components. IPC strategies to prevent or limit transmission in health care settings include the following:

- ensuring triage, early recognition, and source control (isolating patients with suspected COVID-19)
- applying standard precautions for all patients
- implementing empiric additional precautions (droplet and contact and, whenever applicable, airborne precautions) for suspected cases of COVID-19
- implementing administrative controls
- using environmental and engineering controls.

9.4 Other precautions

- Wear gloves when performing vaginal exams, and blood drawing
- Respect all the standards and decontamination steps while sterilizing used instruments
- Sterilize and clean contaminated equipment
- Have facility arranged in a neat, clean and orderly manner
- Label items and rooms clearly for accessibility.

10. IDENTIFICATION AND MANAGEMENT OF PHYSIOLOGICAL SYMPTOMS AND COMPLICATIONS OF PREGNANCY

10.1 Common Physiological symptoms of pregnancy

Hormonal and mechanical effects of pregnancy lead to a variety of common symptoms including nausea and vomiting, lower back and pelvic pain, heartburn, varicose veins, constipation, and leg cramps. The severity of complaints associated with physiological conditions of pregnancy can vary from one pregnant woman to another and the presentation can change from one pregnancy to another pregnancy for the same woman. In severe form, if physiological conditions of pregnancy are untreated, they can cause severe discomfort and can negatively affect the quality of life and the overall pregnancy experience.

To improve pregnancy experience, health care providers should use ANC as a platform to counsel women about expected physiological changes of pregnancy, how to deal with them and when to seek for additional treatment. The management of common physiological symptoms of pregnancy is discussed in **Appendix 12**.

10.2 Common complications in pregnancy

Some of the common complications in pregnancy include anaemia, vaginal bleeding, gestational hypertension, hyperglycaemia, multiple pregnancies, premature rupture of membranes, preterm labour and reduced fetal movements. Several infections may occur during pregnancy affecting the health of the woman and her fetus including urinary tract infections, malaria, HIV, TB, syphilis and viral hepatitis among others.

10.2.1 Vaginal bleeding in early pregnancy

Vaginal bleeding before 24 weeks can be associated with the following conditions

- Miscarriage/Abortion
- Ectopic pregnancy
- Molar pregnancy

Abortion is defined as loss of pregnancy before fetal viability. The types of abortion may include:

- Threatened abortion (pregnancy may continue)
- Inevitable abortion (pregnancy will not continue and will proceed to incomplete/complete abortion)
- Incomplete abortion (products of conception are partially expelled)
- Complete abortion (products of conception are completely expelled)

An ectopic pregnancy is the one in which implantation occurs outside the uterine cavity. Fallopian tube is the most common site of ectopic implantation (greater than 90%).

Molar Pregnancy is also known as gestational trophoblastic disease. Gestational trophoblastic disease incorporates a spectrum of disorders ranging from benign to malignant subtypes. Molar Pregnancy is characterised by abnormal proliferation of chorionic villi.

Before conducting an in-depth assessment, it is important to perform a quick check and rule out signs of hypovolaemic shock through a rapid evaluation of the woman's general condition including vital signs (pulse, blood pressure and respiration), level of consciousness, anxiety and/or confusion, blood loss, finger prick Haemoglobin, colour and temperature of skin. Active vaginal bleeding and shock requires immediate intervention and initiation of treatment of shock with two large bore IV cannulas, infusion of IV fluids, oxygen if needed as you continue the assessment. The presence of shock should prompt high suspicion of ruptured ectopic pregnancy among other possibilities. If the woman is stabilized follow the following steps.

Take history(ask) with the aim:

- To confirm whether the woman is pregnant ask LNMP to calculate the gestational age
- Determine if she is actively bleeding, duration and whether the bleeding is getting worse or stopping
- Determine whether bleeding is associated with other symptoms like pain, fever, dizziness
- Obtain relevant obstetric, gynaecological, medical, surgical, social and family history

Physical exam: Look, listen and feel

- Vitals signs (BP, Temperature, pulse, respiration rate).
- Do a pregnancy test to confirm pregnancy
- Check the presence of conjunctival or palmar pallor or jaundice.
- Full systemic examination Including:
 - Abdominal examination inspects for scars, or distention, assess the uterine size, palpate for any tenderness.
 - Inspect the vulva for the bleeding, quantity, and colour or any foul-smelling discharge
 - Do a speculum exam: to see the source of bleeding, status of the cervix and the vagina
 - Do a digital (bimanual) vaginal exam; to access the cervix, uterus, and adnexa

Investigations

- FBC or measure haemoglobin with Haemoglobinometer
- Draw blood specimen for blood group/rhesus and crossmatch on standby
- Draw blood specimen for β HCG as needed (at the Hospital)
- Do ultrasound if available and required to confirm the diagnosis (at the hospital)

Table 6 Classification and management of bleeding before 24 weeks

Nature of bleeding and associated signs	Diagnosis	Management at primary health care level	Management at Secondary or Tertiary health care level
<ul style="list-style-type: none"> • Light bleeding or spotting • Abdominal pain, woman may specify unilateral pelvic pain • Closed cervix on digital vaginal exam • Uterus slightly larger than normal • Occasionally cervical motion tenderness on digital vaginal exam and adnexal tenderness • Might present in shock (if ruptured) 	<p>Ectopic pregnancy</p>	<ul style="list-style-type: none"> • Ensure management of shock is initiated if unstable vital signs • Urgent referral to the secondary health care level or tertiary health care level • Contact medical officer at referral hospital for advice and inform about arrival of patient 	<ul style="list-style-type: none"> • Ensure management of shock is initiated if unstable vital signs • Confirm the diagnosis by ultrasound • If needed Serial BHCG • Crossmatch blood • Prepare/arrange for surgical intervention (laparotomy/laparoscopy) • Counsel the woman about the risk of ectopic pregnancy in the future and need for early consultation on next pregnancy
<ul style="list-style-type: none"> • Light bleeding or spotting • Closed cervix on digital vaginal exam • Uterus corresponds to dates 	<p>Threatened miscarriage</p>	<ul style="list-style-type: none"> • Inform the patient the possible diagnosis • Refer to secondary level health care to confirm the diagnosis with ultrasound • Depending on distance to travel choose mode of transport (ambulance/private transport) 	<ul style="list-style-type: none"> • Inform the patient about the suspected diagnosis • Perform ultrasound to confirm viable (embryo or fetus with heart activity) intrauterine pregnancy • Rule out and treat infection, observation and rest • Advise pelvic rest • Counsel the woman about possible outcome • On discharge advise on follow up/ANC
<ul style="list-style-type: none"> • Heavy bleeding • Dilated cervix on digital vaginal exam • Uterus corresponds to dates • Cramping /lower abdominal pain • Sometimes tender uterus • No expulsion of products of conception or at the cervical os 	<p>Inevitable abortion</p>	<ul style="list-style-type: none"> • Ensure management of shock is initiated • Take two IV lines and give fluids Normal Saline or Ringers lactate to treat or prevent haemorrhagic shock • Counsel about the diagnosis • Give pain medication if the woman is in pain • Urgent referral to the secondary health care level or tertiary health care level if no staff is trained on MVA or medical management of abortion. • Contact medical officer at referral hospital for advice and inform about arrival of patient • Consider Speculum exam and use a forceps/swab holder to remove products of conception in the os as part of stopping active bleeding 	<ul style="list-style-type: none"> • Three possible options include: Surgical, Medical and Expectant • Consider <ul style="list-style-type: none"> • Urgency of the case (haemodynamic stability) • The skill of available staff • Health facility settings • Woman's preference after complete counselling on options and rule out contraindication to her choice. • Surgical Management: <ul style="list-style-type: none"> • If products of conceptions are visible in the cervix, use a sponge forceps to remove them • If products of conception are not visible, use MVA if gestational age is less than 13 (12+6) weeks • Proceed with evacuation of uterus if gestational age is more than 13 (12+6) weeks or MVA kit is not available • Consider antibiotics • Expectant management <ul style="list-style-type: none"> • If the woman is not ready for Medical and Surgical management and is haemodynamically stable

Nature of bleeding and associated signs	Diagnosis	Management at primary health care level	Management at Secondary or Tertiary health care level
<ul style="list-style-type: none"> • Heavy bleeding • Dilated cervix or closed • Uterus smaller than dates • Cramping/lower abdominal pain • Partial expulsion of products of conceptions 	<p>Incomplete abortion</p>	<ul style="list-style-type: none"> • Offer counselling about the possible diagnosis • Urgent referral to the secondary health care level or tertiary health care level if no staff is trained in MVA or medical management of incomplete abortion. • Contact medical officer at referral hospital for advice and inform about arrival of patient 	<ul style="list-style-type: none"> • Offer adequate counselling and offer surgical or medical management if expulsion does not occur in reasonable amount of time (14 days) or the woman changes her mind or feels ready for other options • Medical management <ul style="list-style-type: none"> • Misoprostol 400mcg per vagina, or sublingual or buccal every 6 hours (FIGO 2017) • Counsel about family planning
<ul style="list-style-type: none"> • Light bleeding • Closed cervix • Uterus smaller than dates • Uterus softer than normal • Light cramping / lower abdominal pain • History of expulsion of products of conception 	<p>Complete abortion</p>	<ul style="list-style-type: none"> • Counselling about the diagnosis • Usually evacuation of the uterus is not necessary • Observe for heavy bleeding and if heavy bleeding consider incomplete miscarriage and follow appropriate protocol • Give the patient a follow up plan • Encourage the woman to wait for complete recovery before she can conceive again and encourage ANC during her next pregnancy regardless of the time interval • Counsel about family planning 	<ul style="list-style-type: none"> • Use ultrasound to confirm empty uterus • Counsel about the diagnosis • Usually evacuation of the uterus is not necessary • Observe for heavy bleeding and if heavy bleeding offer MVA to ensure no remaining POC • Give the woman a follow up plan • Encourage the woman to wait for complete recovery before she can conceive again and encourage ANC during her next pregnancy regardless of the time interval • Counsel about family planning
<ul style="list-style-type: none"> • Heavy bleeding • Dilated cervix • Uterus larger than dates 	<p>Molar pregnancy</p>	<ul style="list-style-type: none"> • If heavy bleeding IV line and infusion of Normal saline or Ringers lactate bolus to treat or prevent hemorrhagic shock 	<ul style="list-style-type: none"> • Confirm diagnosis by ultrasound and speculum exam and visually confirming grape like products • If no active bleeding: do pre-op

Nature of bleeding and associated signs	Diagnosis	Management at primary health care level	Management at Secondary or Tertiary health care level
<ul style="list-style-type: none"> • Uterus softer than normal • Partial expulsion of POC which resemble grapes • Nausea / vomiting • Cramping/ Lower abdominal pain • Early onset of pre-eclampsia • No evidence of fetus (Absent heart beat on Doppler after 12 weeks) 		<ul style="list-style-type: none"> • Stabilize patients for transport • Urgent referral to the secondary health care level or tertiary health care level • Contact medical officer at referral hospital for advice and inform about arrival of patient 	<ul style="list-style-type: none"> • FBC, Serum βHCG, TSH, Rhesus, blood group, • Chest X-ray • Blood group and Screen • Before evacuation of retained products of conception, the patient must be stabilized. e.g. manage hypotension • Health providers have to consider the following recommendations while managing molar pregnancy: <ul style="list-style-type: none"> • Cervical priming and medical management is contraindicated for molar pregnancy • Management is surgical with dilation and aspiration using Suction Curettage under Ultrasound Guidance (with Specialist involved management) • Always send tissue for Histological evaluation • Post molar follow up is mandatory as there is risk of developing persistent disease or invasive mole which can be diagnosed by raising βHCG and/ or clinical or radiological features of metastasis and/or pathology report confirming malignancy (gestational trophoblastic neoplasm) • Offer at least one year of contraception to permit post molar monitoring (not oestrogen containing contraception) • Consider prophylactic chemotherapy in case of unreliable patient follow up.
<ul style="list-style-type: none"> • Pain over uterine fundus • Foul smelling discharge, or pus draining • Tender uterus/cervical motion tenderness • Cervical os may be closed or open • Fever, tachycardia, tachypnoea 	<p>Septic miscarriage</p>	<ul style="list-style-type: none"> • Manage shock (Refer Appendix 12) • Give first dose of antibiotics • Stabilize patients for transport • Urgent referral to the secondary health care level or tertiary health care level • Ensure patient is accompanied by a staff member competent in resuscitation • Contact medical officer at referral hospital for advice and inform about arrival of patient 	<ul style="list-style-type: none"> • Do septic work up • Prepare for evacuation in theatre, once patient is stable • Commence/continue antibiotics • If at district hospital and no improvement after 24 hours refer patient to intermediate hospital • If no improvement after 48 hours of treatment strongly consider laparotomy

10.2.2 Vaginal bleeding in late pregnancy or Antepartum Haemorrhage

Antepartum haemorrhage is defined as bleeding from or into the genital tract during pregnancy which occurs at or after 28 weeks and prior to the birth of the baby. The most common causes of APH are linked to placental causes, placenta praevia, abruptio placentae and ruptured uterus. Other causes of late bleeding in pregnancy include vasa praevia, cervicitis, trauma, cervical cancer, cervical erosion, GBV/IPV and others.

Placenta praevia is defined as implantation of the placenta at or near the cervix. Placenta praevia can be divided into low placenta implantation, partial placental praevia and complete placenta praevia. Abruptio placenta is the detachment from a normally located placenta from the uterus before birth of the baby. Ruptured uterus is when the muscular wall of the uterus tears during pregnancy or childbirth.

Before conducting an in-depth assessment, it is important to perform a quick check and rule out signs of haemorrhagic shock through a rapid evaluation of the woman's general condition including vital signs (pulse, blood pressure and respiration), level of consciousness, anxiety and/or confusion, blood loss, finger prick Hb, colour and temperature of skin.

Active vaginal bleeding and shock requires immediate intervention and initiation of treatment of shock. **See Appendix 14:** for details on the management of haemorrhagic shock.

Take the history, physical exam and investigation: refer to Chapter 10.2.1

- Avoid digital vaginal exam: This may be placenta praevia, which can bleed heavily with digital vaginal examination.

Table 7 Classification and management of Antepartum Haemorrhage

Nature of bleeding and associated signs	Diagnosis	Management at primary health care level	Management at secondary or tertiary health care
<ul style="list-style-type: none"> Dark red vaginal bleeding with or without clots associated with constant or intermittent abdominal pain (Bleeding might be concealed but with signs of shock) Tonically contracted (uterus), tense/tender uterus on palpation Fetal parts may not be palpable Decreased or absent fetal movements Non reassuring or absent heart beats 	<p>Abruptio placentae</p>	<ul style="list-style-type: none"> Diagnosis of abruptio placentae is by clinical examination Call for help Perform rapid assessment (Airway, Breathing and Circulation) Assess the haemodynamic stability (Pulse, BP, Respiration) and if shock is suspected immediately begin resuscitation (Take two large bore IV lines then IV infusion with Normal saline or Ringers lactate bolus, then continuous infusion and put the patient on oxygen. Monitor fluid balance and insert Foley catheter Stabilize patients for transport Urgent referral to the secondary health care level or tertiary health care level 	<ul style="list-style-type: none"> Call for help Perform rapid assessment (Airway, Breathing and Circulation) Perform ultrasound to exclude Placenta Praevia Patient should be managed in a high care or ICU setting. Assess the haemodynamic stability and correct shock Assess clotting status, use bedside clotting test (failure of a clot to form after seven minutes, or a clot that breaks down easily, suggest coagulopathy) Transfuse as necessary, preferably with RCC and FFP (Use goal directed resuscitation) If bleeding is heavy (evident or concealed), delivery of the mother is indicated as soon as possible: <ul style="list-style-type: none"> - If cervix is fully dilated and contraindications to vaginal and vacuum delivery have been ruled out, use vacuum to assist a quick delivery - Caesarean section if vaginal delivery is not imminent Abruptio with a live fetus: <ul style="list-style-type: none"> - if CTG is abnormal, perform Caesarean section if not fully dilated. - If fully dilated, expedite delivery with assisted delivery if no contraindication Abruptio and no live fetus <ul style="list-style-type: none"> - this is a GRADE 3 AP, with risks of hypovolemia, DIC - Seek Senior HELP - Vaginal delivery should be the expectation. Rupture membranes ASAP If bleeding is light to moderate without an immediate danger to the woman, act depending on: <ul style="list-style-type: none"> - Normal or absent FHR: if labour is progressing well, let labour progress and augment if necessary. Unfavorable cervix warrants a caesarean section - If FHR is abnormal <110 or > 160: perform an emergency caesarean section For further details about the management of complications including DIC refer to WHO 2017 MCPC guidelines

Nature of bleeding and associated signs	Diagnosis	Management at primary health care level	Management at secondary or tertiary health care
<ul style="list-style-type: none"> Painless vaginal bleeding usually bright red Bleeding may be precipitated by intercourse or other efforts Relaxed uterus Abnormal lie and Fetal presentation may not be in the pelvis Normal fetal heart beats and fetal movement present 	<p>Placenta praevia</p>	<ul style="list-style-type: none"> Call for help Perform rapid assessment (Airway, Breathing and Circulation) Assess the haemodynamic stability (Pulse, BP, Respiration) and if shock is suspected immediately begin resuscitation (Take two large bore IV lines then IV infusion with Normal saline or Ringers lactate bolus, then continuous infusion and give oxygen if needed) If haemodynamic instability start resuscitation with fluids, normal saline or lingers lactate Insert a Foley catheter and give oxygen if needed Stabilize patients for transport Urgent referral to the secondary health care level or tertiary health care level 	<ul style="list-style-type: none"> Perform rapid assessment (Airway, Breathing and Circulation) Assess the haemodynamic stability (Pulse, BP, Respiration) and if shock is suspected immediately begin resuscitation (Take two large bore IV lines then IV infusion with Normal saline or Ringers lactate bolus, then continuous infusion and put the patient on oxygen) Insert a Foley catheter and give oxygen if needed An ultrasound to confirm the location of the placenta and the type of praevia (complete, incomplete, marginal or low lying) If bleeding is light or has stopped and the fetus is alive but premature, consider expectant management until birth of the baby <ul style="list-style-type: none"> Keep the woman in the hospital till the woman has delivered Correct anaemia if present (see management of anaemia) Ensure blood is available for transfusion if needed Monitor fetal status Urine MSU for ASB For further details about management of placenta praevia including timing and mode of delivery refer to WHO 2017 MCPC guidelines or Hospital guideline.

10.3 Hypertension in pregnancy

Classification and management of Hypertension during pregnancy:

Hypertension in pregnancy is defined as systolic blood pressure of >140 mmHg and/or diastolic blood pressure >90 mmHg measured 4-6 hours apart. Hypertension in pregnancy can be classified into:

- Gestational hypertension
- Preeclampsia (with or without severe features)
- Eclampsia
- Chronic hypertension

Gestational hypertension is defined as persistent de novo hypertension that develops at or after 20 weeks gestation with absence of features of preeclampsia.

Preeclampsia can be classified into with or without severe features. Preeclampsia without severe features is blood pressure $\geq 140/90$ mmHg measured on two occasions after 20 weeks gestational age in a previously normotensive woman and associated with proteinuria ≥ 300 mg per 24 hours of urine specimen or $\geq 2+$ on dipstick.

Preeclampsia with severe features is blood pressure of $\geq 140/90$ mmHg with severe features or $\geq 160/110$ (repeated 15 min apart) with any of the following severe features:

- Headache
- New onset cerebral or visual disturbances
- Oliguria (less 400ml of urine in past 24hrs)
- Upper abdominal pain
- Pulmonary oedema
- Impaired hepatic function
- Impaired renal function: creatinine greater than $90 \mu\text{mol/L}$
- Platelets less than $100\ 000$ cells/ μl ($100 \times 10^9/\text{L}$)

Chronic hypertension is defined as known ($\geq 140/90$ mmHg) hypertension before pregnancy or new onset hypertension before 20 weeks of gestation.

Table 8 Classification and management of Hypertension during pregnancy

Blood pressure	Diagnosis	Management at primary health care level	Management at secondary or tertiary health care
<ul style="list-style-type: none"> SBP \geq140mmHg and < 160 mmHg or DBP \geq90mmHg and <110mmHg on two occasions occurred after 20 weeks gestational age in a previously normotensive woman Associated proteinuria \geq300mg per 24 hours of urine specimen or \geq 2+ on dipstick 	<p>Pre-eclampsia without severe features</p>	<p>Urgent referral to the secondary health care level or tertiary health care level.</p>	<ul style="list-style-type: none"> Due to unpredictability of pre-eclampsia, admit the patient to rule out any severe feature of pre-eclampsia (end organ damage) Offer her steroids for lung maturation if GA < 34 weeks. Dexamethasone IM 6 mg every 12 hours for 48 hours or Betamethasone 12 mg IM, 24 hours apart for 48 hours (total dose of 24 mg) The target is to reach 37 completed weeks if all measurements are normal (maternal and fetal wellbeing) Monitor, educate and counsel the woman about signs of severity of pre-eclampsia Encourage the woman to eat normal diet/ do not recommend low salt diet. Monitor BP 4 times a day and repeat biological investigations in 2 days (FBC, LFTs, U&E and proteinuria) Monitor fetal wellbeing with ultrasound (Biophysical profile or CTG daily while the woman is in the hospital and initiate fetal movement charts) If BP remains stable and normalizes: <ul style="list-style-type: none"> Advise the woman to watch for symptoms and signs of severity If the BP reaches 160/110 mmHg or the woman develop any severe feature of pre-eclampsia; admit her till she delivers usually between 34 and 37 weeks: See management of Pre-eclampsia with severe features
<ul style="list-style-type: none"> SBP \geq160mmHg or higher and /or DBP \geq 110 mmHg or higher after 20 weeks of Gestational age with or without proteinuria Plus (Repeated twice 15 minutes apart) Any of the following signs of severity: <ul style="list-style-type: none"> Headache New onset of cerebral or visual disturbances Oliguria (< 400 cc of urine in 24 hours) Upper abdominal pain Pulmonary oedema 	<p>Pre-eclampsia with severe features</p>	<ul style="list-style-type: none"> Give Adalat 10mg orally Give Magnesium Sulphate to prevent the occurrence of convulsions (consider IM route) <ul style="list-style-type: none"> Loading dose 4g IV in 200ml Normal Saline over 15 to 20 minutes Then administer 5g in each buttock (10 g) The maintenance dose 5g 4 hourly in alternative buttocks for 24 hours Place urinary catheter to measure diuresis 	<ul style="list-style-type: none"> Have to be managed actively to prevent eclampsia and other end organ damage Start IV line and start IV fluids, restrict IV fluids to 80 – 100 ml per hour (avoid overloading but pre-eclamptic patients are dehydrated) Preferably administer Normal Saline or Ringer's Lactate Administer Magnesium sulphate to prevent seizures which can occur at any time Loading dose 4g IV in 200ml Normal Saline over 15 to 20 minutes Then administer 5g in each buttock (10 g) Follow with maintenance: 5 g MgSO4 intramuscularly, into each buttock. Repeat with 5 g every 4 hours IM into alternative buttocks. If there is an IV infusion pump, consider the intravenous regimen: Loading dose 4g IV in 200ml Normal Saline over 15 to 20 minutes Follow with 1g iv of Magnesium sulphate hourly for 24 hours See the flow chart Magnesium Sulphate administration in case of pre-eclampsia (Appendix 14) Offer antihypertensive medications targeting a BP less than 160/110mmHg but keep the BP slightly above the upper normal limit

Blood pressure	Diagnosis	Management at primary health care level	Management at secondary or tertiary health care
<ul style="list-style-type: none"> Impaired hepatic function (Liver enzymes double the normal concentration) or severe right upper quadrant pain or epigastric pain not responding to medications Creatinine greater than 90 µmol/L Platelets less than 100,000 cells/µl (100 x 10⁹/L) 		<ul style="list-style-type: none"> Urgent referral to the secondary health care level or tertiary health care level. When Magnesium Sulphate is administered IM, use the 50% w/v, mix with 1ml Lignocaine 1% to minimize the pain When Magnesium Sulphate is administered IV, use 20% w/v (weight per volume) 	<p>Management at secondary or tertiary health care</p> <ul style="list-style-type: none"> Insert urinary catheter to monitor urine output Maintain a strict fluid chart to prevent fluids overload (See urine output >30 cc/hour, check for pulmonary oedema: (increased respiration rate, rales on auscultation or dyspnoea) If signs of pulmonary oedema: withhold fluid and administer Furosemide 40-80 mg IV once Give steroids for lung maturation if GA < 34 weeks and fetal status normal then delivery at 34 weeks (if maternal and fetal status are reassuring). -NB: Time for steroids would not prevent an indicated urgent delivery (HELLP Syndrome, abnormal fetal status, or any seriously affected end organ damage) If maternal or fetal condition is rapidly deteriorating, give only the 1st dose of steroids and delivery the woman. If conservative management due to reassuring maternal fetal status, do not go beyond 34 weeks. Observe for magnesium sulphate toxicity: <ul style="list-style-type: none"> Absent or depressed deep tendon reflexes Respiratory rate of < 12 breaths per minute Urinary output of < 25 ml/hour or 100 ml in 4 hours If the woman has acute hypertension with a systolic BP ≥160 mmHg and or a diastolic BP ≥ 110mmHg, choose either of the following options: <ul style="list-style-type: none"> Oral Nifedipine short acting, 10mg, repeat the dose after 30 minutes if inadequate response until targeted blood pressure. The maximum dose is 30 mg in acute treatment. Give short acting oral Nifedipine 10mg, then repeat BP after 20 minutes. Repeat oral nifedipine if BP remains >160/110 but give 20 mg dose. If still acute hypertension than change to the following below; Patient should be managed in High care/ICU setting Hydralazine 5mg IV, slowly, repeat every 30 min until the BP target is achieved. The maximum dose is 20 mg per 24 hours Oral labetalol 200mg, repeat dose after one hour until the treatment goal is achieved, the maximum dose is 1200 mg in 24 hours Labetalol IV 10 mg, if no response in 10 minutes, administer 20 mg IV. The dose can be doubled to 40 mg and then 80 mg with 10 minutes interval until the blood pressure reaches the targets needed. The maximum dose is 300 mg then oral treatment NB: Women with congestive heart failure, hypovolemic shock or predisposition to bronchospasm should not receive labetalol.

Blood pressure	Diagnosis	Management at primary health care level	Management at secondary or tertiary health care
			<ul style="list-style-type: none"> Oral Nifedipine short acting, 10mg, repeat the dose after 30 minutes if inadequate response until targeted blood pressure. The maximum dose is 30 mg in acute treatment Once the BP is reduced to non-severe levels (lower than 160/110 mmHg) use any of the following options. <ul style="list-style-type: none"> Oral Nifedipine 10-20 mg every 12 hours. The maximum dose is 120 mg per 24hours Oral labetalol: 200 mg every 12 hours. The maximum dose is 1200 mg per 24 hours Oral alpha Methyldopa 250-500 mg every eight hours, the maximum dose 3000 mg per 24 hours. Do not use if any liver abnormality.
<ul style="list-style-type: none"> Pre-eclampsia plus convulsions 	<p>Eclampsia</p>	<ul style="list-style-type: none"> For patient with convulsion: Call for help Turn patient on the left lateral position. Ensure that the airway is clear and the patient is breathing. Protect the patient from falling, injury. Do not place anything in the mouth. Oxygen by mask at 4-6 L per minute. Give Magnesium sulphate as in severe pre-eclampsia. Refer urgently to the secondary or tertiary care level If possible, draw bloods for investigations: FBC, liver functions tests (ALT, AST), kidney functions tests (urea, creatinine), uric acid. If recurrent convulsions occur IV dose of 1-2 g of magnesium sulphate may be given before the next maintenance dose is due. 	<ul style="list-style-type: none"> The same as severe pre-eclampsia If recurrent convulsions occur IV dose of 1-2 g of magnesium sulphate may be given before the next maintenance dose is due. If the patient fits again after loading dose or during maintained dose, administer Magnesium Sulphate 2 g loading dose Treat hypertension as above Decide on the mode of delivery The baby has to be delivered with 12 hours regardless of fetal status

Blood pressure	Diagnosis	Management at primary health care level	Management at secondary or tertiary health care
<ul style="list-style-type: none"> Systolic Blood pressure ≥ 140 mmHg, and /or Diastolic Blood Pressure ≥ 90mmHg before 20 weeks Usually diagnosed on the 1st Antenatal contact May be a new finding Women may be already on treatment 	<p>Chronic Hypertension</p>	<ul style="list-style-type: none"> Refer to the secondary healthcare or tertiary healthcare level 	<ul style="list-style-type: none"> If the woman is on medications for hypertension, review their safety during pregnancy and adapt the treatment if contraindicated Consider investigations to rule out other diseases like kidney diseases (Urea and creatinine, proteinuria) Heart (ECG), Eyes (Fundoscopy). Treat hypertension as above Consider Aspirin and Calcium Supplementation to prevent Preeclampsia Risk of developing superimposed preeclampsia
<ul style="list-style-type: none"> Two readings of SBP of 140 mmHg or higher but lower than 160mmHg and /or DBP of 90 or higher but less than 110mmHg, four hours apart after 20 weeks of gestational No proteinuria No other severe features of pre-eclampsia 	<p>Gestational Hypertension</p>	<ul style="list-style-type: none"> Refer to the secondary healthcare or tertiary healthcare level 	<ul style="list-style-type: none"> Assess the patient and rule out any possibility of pre-eclampsia Make a follow up plan: Weekly or twice weekly monitoring of the BP, fetal status and proteinuria Counsel the woman about danger signs indicating severe pre-eclampsia If observations remain stable, allow the pregnancy till 39 weeks for induction of labor If BP worsen of the woman develops features of Pre-eclampsia, manage as pre-eclampsia If there are signs of severe fetal growth restriction or fetal compromise, admit the woman for assessment and possible delivery If the woman is not reliable and can't afford a closer monitoring as ambulatory patient, admit her in the Hospital

10.4 Hyperglycemia in pregnancy

The term diabetes describes a group of metabolic disorders characterized and identified by the presence of hyperglycaemia in the absence of treatment. Hyperglycaemia first detected in pregnancy can be classified into diabetes mellitus in pregnancy and gestational diabetes. Diabetes mellitus in pregnancy is type 1 or type 2 diabetes first diagnosed during pregnancy. Gestational diabetes is a carbohydrate intolerance resulting in hyperglycaemia of variable severity with onset or first recognition during pregnancy.

Gestational diabetes mellitus should be diagnosed at any time in pregnancy if one or more of the following criteria are met:

- Fasting plasma glucose level of 5.1-6.9 mmol/L and/or
- A 1-hour plasma glucose level of 10.0 mmol/L following a 75g oral glucose load and /or
- A 2-hour plasma glucose level of 8.5-11.0 mmol/L following a 75g oral glucose load

Uncontrolled diabetes in pregnancy is associated with adverse maternal and neonatal outcome. Adverse maternal and neonatal outcome include big babies (macrosomia), pre-eclampsia, polyhydramnios, preterm deliveries, shoulder dystocia, postpartum haemorrhage etc.

In a primary health care level glycosuria may be the first sign of diabetes and glycosuria of 2+ on one occasion or 1+ at two or more occasions must be followed by a confirmatory blood sugar test to rule out diabetes in pregnancy. During routine ANC, if hyperglycaemia is detected for the first time in pregnancy, proceed with the classification as Gestational Diabetes Mellitus or Diabetes Mellitus in pregnancy. Women with Diabetes Mellitus usually have severe hyperglycaemic values and their condition does not resolve after delivery while GDM resolves postpartum and tends to be less severe. Women with gestational diabetes have an increased risk of developing diabetes mellitus in the future therefore need counselling about healthy lifestyle. Women with diabetes in pregnancy must be comprehensively assessed and their blood sugar has to be optimised to avoid serious maternal and fetal complications.

Undertake a comprehensive history: Ask

- To determine the gestation age by dates and /or by first trimester ultrasound
- Ask whether the patient was known to be diabetic before pregnancy, if yes
 - Was she put on folic acid 5 mg daily before conception?
 - Was her blood sugar controlled before conception? What tests were done; HbA1C? Blood sugar?
 - What medication was she taking before pregnancy (oral anti diabetic? insulin?)
- Risk factors:
 - Patient from an ethnic group with high prevalence of diabetes
 - Obesity (patient BMI ≥ 30 kg/m²)
 - Age ≥ 40 years
 - Previous history of gestational diabetes (diabetes in a previous pregnancy)
 - First degree relative with diabetes
 - Previous unexplained intrauterine fetal death
 - Previous macrosomia baby (birth weight ≥ 4 kg)
 - Polyhydramnios

- Fetus large for gestational age in current pregnancy
- Glycosuria (glucose 1+ or more on urine dipstick) in current pregnancy
- Previous Shoulder Dystocia
- Polycystic ovarian syndrome
- Ask about fetal wellbeing: Fetal movements

Physical exam: Look, listen and feel

- Vital signs (BP, Pulse, respiration rate and Temperature) and BMI
- Abdominal exam: Uterine size compared to Gestation age (macrosomia and hydramnious associated with a bigger fundal height), Pinard or Doppler for fetal sound, fetal movements

Investigations

- Urine dipstick for Glycosuria at Primary care level
- Fasting plasma glucose
- 75g 2-hours OGTT at secondary and tertiary level
- HbA1C in 2nd and 3rd trimester for women with diabetes to assess the level of risk for the pregnancy
- Use a 2-hour oral glucose tolerance tests for gestational diabetes in women with risk factors
- All women with risk factors for gestational diabetes need to be tested for diabetes between 24 and 28 weeks with a 75g 2-hour OGTT.

Table 9 Classification and management of Hyperglycaemia in Pregnancy

Glucose level	Diagnosis	Management at primary health care level	Management at secondary or tertiary health care
<ul style="list-style-type: none"> Glycosuria of 2+ or more on one occasion or of 1+ on two or more occasions detected by reagents strip testing during routine antenatal care 	Suspect undiagnosed gestational diabetes	<ul style="list-style-type: none"> Fasting glucose Refer to a dietician Refer the patient to exclude Gestational diabetes 	<ul style="list-style-type: none"> Conduct a 75g 2 hours OGTT to exclude Gestational diabetes or any other test by hospital protocol Fasting Glucose if not done at Primary level If confirmed gestational diabetes, manage her as Gestational diabetes Offer counselling to the woman to start with lifestyle modifications (e.g. stop smoking, moderate exercise), dietary advice immediately Refer to dietician
<ul style="list-style-type: none"> Fasting plasma glucose level of 5.1-6.9 mmol/L and/or A 1-hour plasma glucose level of 10.0 mmol/L following a 75g oral glucose load and /or A 2-hour plasma glucose level of 8.5-11.0mmol/L following a 75g oral glucose load 	Gestational diabetes Mellitus	<ul style="list-style-type: none"> Refer to the Hospital for medication and monitoring plan 	<ul style="list-style-type: none"> If glucose is not controlled with lifestyle modification, exercise and diet start metformin Start insulin if blood sugar is not well controlled with oral medications Target glucose: Fasting glucose < 5.3 mmol /liter, 1 hour after meal < 6.4 mmol /liter Delivery should be planned between 37 weeks and 39 weeks depending on glucose control and fetal status If preterm labour, steroids for lung maturation are not contraindicated For details about the management and control of blood sugar during pregnancy refer WHO 2017 MCPC guidelines, Standard Treatment Guideline Namibia 2011
<ul style="list-style-type: none"> Fasting plasma glucose 7.0 mmol/L (126 mg/dL) and /or 2-hour plasma glucose 11.1 mmol/L (200 mg/dL) following a 75 g oral glucose load Random plasma glucose 11.1 mmol/L (200 mg/dL) in the presence of diabetes symptoms. 	Diabetes Mellitus in pregnancy		<ul style="list-style-type: none"> The same principles as GDM For details about the management and control of blood sugar during pregnancy refer WHO 2017 MCPC guidelines

10.5 Multiple pregnancies

Women with multiple pregnancies are at increased risk of maternal and fetal complications compared to their counterpart with singleton pregnancies. They require special attention from their first antenatal consultation. An ultrasound/sonar is needed earlier in pregnancy to determine the types of twins (chorionicity and amnionicity) and gestational age. Knowing the type of twins with a correct gestational age is crucial in determine the time and mode of delivery with reduced late perinatal complications. T

Multiple pregnancy can be subdivided into:

- Dichorionic diamniotic twins: each baby has a separate placenta and amniotic sac
- Monochorionic diamniotic twins: both babies share a placenta but have separate amniotic sacs
- Monochorionic mono amniotic twins: both babies share a placenta and amniotic sac
- Triplet pregnancy

Undertake a routine comprehensive history: Ask

- Determine the gestational age and the rest of ANC history.
Obtain relevant obstetric, gynaecological, medical, surgical, social and family history

Physical exam: Look, listen and feel

- Vital signs (BP, Pulse, respiration rate, and temperature), **keep in mind risk of pre-eclampsia**
- Abdominal exam: Uterine size compare it to gestational age, fetal heart beats in two focal areas (Pinard or Doppler), fetal movements.

Investigations

- Perform point of care investigation based on contact
- An early ultrasound is vital to determine the following
 - Gestational age, consider the biggest fetus (Better CRL if done early in pregnancy or Head circumference if done in the second trimester)
 - To determine Chorionicity and Amnionicity
 - The number of placental masses
 - The presence of amniotic membranes and membrane thickness
 - The Lambda or T-sign
 - Discordant fetal sex (if after 14 weeks)
 - If difficult to determine chorionicity (even after seeking expert opinion), manage the pregnancy as monochorionic pregnancy until proven otherwise.
 - Congenital defects

Table 10 Multiple Pregnancies Classification and management

Ultrasound	Diagnosis	Management at primary health care level	Management at Secondary or tertiary health care level
<ul style="list-style-type: none"> Two placenta masses Thick amniotic membrane Lambda sign 	Dichorionic Diamniotic twin (DCDA)	<ul style="list-style-type: none"> Refer women with multiple pregnancies to secondary or tertiary health care level 	<ul style="list-style-type: none"> Inform the woman about possible complications of twin pregnancy including preterm births, pre-eclampsia. Make a follow up plan and increase the number of contacts as needed especially in the 3rd trimester Plan delivery between 37 and 38 weeks 6 days For further details refer to Hospital protocol for management of multiple pregnancy and individualized mode of delivery
<ul style="list-style-type: none"> One placenta mass Thin amniotic membrane T sign 	Monochorionic Diamniotic twin (MCDA)	<ul style="list-style-type: none"> Refer women with multiple pregnancies to secondary or tertiary health care level 	<ul style="list-style-type: none"> Inform the woman about possible complications of twin pregnancy including preterm births, pre-eclampsia, twin to twin transfusion etc. Make a follow up plan and increase the number of contacts as needed especially in the 3rd trimester Plan delivery between 36 and 37 weeks and 6 days For further details refer to Hospital protocol for management of multiple pregnancy and individualized mode of delivery
<ul style="list-style-type: none"> One placenta mass No amniotic membrane 	Monochorionic Monoamniotic twin (MCMA)	<ul style="list-style-type: none"> Refer women with multiple pregnancies to secondary or tertiary health care level 	<ul style="list-style-type: none"> Inform the woman about possible complications of twin pregnancy including preterm births, pre-eclampsia, cord entanglement etc. Make a follow up plan and increase the number of contacts as needed especially in the 3rd trimester Plan delivery between 33 weeks and 34 weeks Delivery has to be by caesarean section For further details refer to Hospital protocol for management of multiple pregnancy and individualized mode of delivery
For Comprehensive management of multiple pregnancies with more details refer to WHO 2017 MCPC guidelines			

10.6 Preterm rupture of membranes

- The term Pre-labour rupture of membranes (PROM) is defined as rupture of membranes before the onset of labour
- Preterm pre-labour rupture of membranes (PPROM) is when membranes ruptures before 37 weeks before onset of labour

Assess pregnant women to confirm the diagnosis by:

Taking a history: Ask

- To confirm the gestational age either by dates or by first trimester ultrasound/sonar
- Obtain relevant obstetric, gynaecological, medical, surgical, social and family history
- Ask about leakage of fluids: since when, consistency, quantity (used pads), still leaking or have stopped, colour of fluids, smell
- Ask about risk factors: Previous history of rupture of membranes, genital infections
- Fetal wellbeing: Fetal movements

Physical exam: Look, listen and feel

- Vital signs (BP, temperature, pulse rate, respiration rate)
- Abdominal exam: Uterine size compared with the Gestational age (usually smaller when too much fluid is lost), assess fetal heart beat using a Pinard or Doppler fetoscope, fetal movements, presence of contractions, uterine tenderness
- Vulva: Check if evidence of fluids, look on the underwear and pads if soaked do speculum exam: Do a sterile speculum exam to see if fluids are seen coming from the os or seen in the posterior vaginal fornix (positive pooling test). If no fluids seen, you may need to wait with the patient lying in supine position for around 15 minutes, ask the patient to cough or perform any Valsalva.

NB: Do not perform digital vaginal examination to avoid infections

Table 11: Classification and management of preterm rupture of membranes

Findings	Diagnosis	Management at primary health care level	Management at secondary or tertiary health care
<ul style="list-style-type: none"> Speculum exam confirms rupture of membranes Pregnancy is at term or above > 37 weeks 	Premature rupture of membranes (PROM)	<ul style="list-style-type: none"> Offer a clean pad Give stat dose antibiotics if PROM more than 12 hours Urgent referral to the secondary health care level or tertiary health care level 	<ul style="list-style-type: none"> If no contraindication for vaginal delivery: start immediate induction of labour if membranes are ruptured for 24 hours or more and no contractions yet Follow the Hospital protocol for induction of labour Do caesarean section if obstetric indication Give Ampicillin iv 2g, then 1g 6 hourly until delivery If allergic to penicillin (erythromycin 500mg QID)
<ul style="list-style-type: none"> Speculum exam confirms rupture of membranes Pregnancy is preterm or less than 37 weeks 	Preterm Premature Rupture of the Membranes (PPROM)	<ul style="list-style-type: none"> Offer a clean pad Give stat dose antibiotics if PROM more than 12 hours Urgent referral to the secondary health care level or tertiary health care level 	<p>GA > 34 Weeks</p> <ul style="list-style-type: none"> Induce immediately if any signs of infection If no signs of infection, individualize care. There is a risk of infection if pregnancy continues but if baby delivered at 34 weeks there must be a cot available on premature baby unit (SCBU). Expectant management can be considered up to 36 weeks if no signs of maternal or fetal infection. Keep woman in hospital and monitor for infection. Induce labour after 36 weeks. Do caesarean section only if other obstetric indication <p>GA < 34 Weeks</p> <ul style="list-style-type: none"> If no signs of infection, give a course of steroids for lung maturation: Dexamethasone IM 6mg 12 hourly for 48 hours or Betamethasone IM 12 mg every 24 hours for 48 hours Give Erythromycin 250 mg orally every 6 hours for 10 days Offer Magnesium sulphate for neuroprotection, 4g IV over 20 minutes then 1 g every hour till delivery if the woman has signs of imminent preterm delivery within the next 24 hours and the gestational age is below 32 weeks (Monitor for Magnesium toxicity) If no contractions and no signs of infection, with normal fetal status: aim to reach 34 weeks for planned induction Monitor for signs of infection or labour or any other complication (abruption, cord prolapse) and fetal status by fetal heart auscultation daily and twice weekly ultrasound (liquor volume +/- doppler) and be prepared to deliver if any complications
<ul style="list-style-type: none"> Fever > 38°C, Maternal tachycardia Fetal tachycardia Tender uterus Foul smelling vaginal discharges 	Rupture of membranes complicated by chorioamnionitis	<ul style="list-style-type: none"> Ampicillin iv 2g and Gentamycin 5mg /kg iv, Metronidazole 500mg iv stat. If no iv antibiotics give oral Amoxicillin 2g and Metronidazole 400mg oral. Urgent referral to the secondary health care level or tertiary health care level 	<ul style="list-style-type: none"> Ampicillin 2g iv, Gentamycin 5mg/kg iv, Metronidazole 500mg iv stat. Continue iv antibiotics for 48 hours as per local guidelines Magnesium sulphate for neuroprotection (doses as above) Add laboratory investigations (FBC, CRP) If chorioamnionitis confirmed there is no room for expectant management. Exclude any obstetric contraindication and induction of labour regardless of the gestational age.

10.7 Preterm labour

Preterm babies are prone to serious illness or death during the neonatal period. Without appropriate treatment, those who survive are at increased risk of lifelong disability and poor quality of life. Complications of prematurity are the single largest cause of neonatal death and the second leading cause of deaths among children under the age of 5 years. Global efforts to further reduce child mortality demand urgent action to address preterm birth.

Infant death and morbidity following preterm birth can be reduced through interventions provided to the mother before or during pregnancy, and to the preterm infant after birth. Interventions can be directed at all women for primary prevention and reduction of the risk of preterm birth (e.g. smoking cessation programmes) or used to minimize the risk in pregnant women with known risk factors (e.g. progestational agents, cervical cerclage). However, the most beneficial set of maternal interventions are those that could improve survival chances and health outcomes of preterm infants when preterm birth is inevitable. These interventions are provided to the mother shortly before or during the birth process with the aim of overcoming immediate and future health challenges of the preterm infant, such as lung immaturity, susceptibility to infection, and neurological complications. Essential and additional care of the preterm newborn to prevent or treat potential complications is also critical to newborn survival without disability.

Preterm birth is defined as birth before 37 weeks of gestation. Preterm birth is the single most important determinant of adverse infant outcomes, in terms of survival and quality of life. Globally it is the leading cause of perinatal and neonatal mortality and morbidity.

Preterm birth can be subcategorized based on weeks of gestational age into:

- extremely preterm (less than 28 weeks)
- very preterm (28–31 weeks plus six days)
- moderate to late preterm (32–36 weeks plus six days)

Assess pregnant women to confirm the diagnosis by: **History, physical exam and investigation as in chapter 9.6**

Table 12: Management of preterm labour

Findings	Diagnosis	Management at primary health care level	Management at secondary or tertiary health care
<ul style="list-style-type: none"> • Regular contractions • Cervical dilatation of at least 2 cm • No rupture of membranes 	<p>Preterm labour up to 34 weeks gestation</p>	<ul style="list-style-type: none"> • Confirm diagnosis of preterm labour • Urgent referral to the secondary health care level or tertiary health care level 	<ul style="list-style-type: none"> • Calculate appropriate gestation • If 24-34 weeks • Take urine for MSU • Advise on smoke cessation • Give a course of steroids for lung maturation: Dexamethasone IM 6mg 12 hourly for 48 hours or Betamethasone IM 12 mg every 24 hours for 48 hours. • Give a tocolytic drug (nifedipine) to provide a window for administration of antenatal corticosteroids and/or in-utero fetal transfer to an appropriate neonatal health care setting: <ul style="list-style-type: none"> ○ Give nifedipine 20 mg orally then 10 mg orally after 30 min if painful contractions persist. ○ Follow with 10 mg orally every 6 hours if there are painful contractions up to a maximum of 48 hours. Then allow labour to proceed or discharge the woman if she is not in labour. ○ Precautions: Insert a drip with Ringers Lactate to run for 200 ml before giving nifedipine orally followed by maintenance fluid. • Further administration of other tocolytic drugs should be discussed with consultant. • Offer Magnesium sulphate for neuroprotection, 4g IV over 20 minutes then 1 g every hour till delivery if the woman has signs imminent preterm delivery within the next 24 hours and the gestation age is below 32 weeks
<ul style="list-style-type: none"> • Regular contractions with cervical dilatation of at least 2 cm 	<p>Preterm labour between 34-37 weeks gestation</p>	<ul style="list-style-type: none"> • Urgent referral to the secondary health care level or tertiary health care level 	<ul style="list-style-type: none"> • Calculate appropriate gestation • If >34-37 weeks • Take urine for MSU • Advise on smoke cessation • Do speculum exam to rule out ROM • Do not tocolyse

10.8 Anaemia

Anaemia in pregnancy is a major contributor to poor maternal and newborn outcomes including increased risk of low-birth-weight, premature birth and perinatal mortality. For the mother, anaemia is associated with poor maternal well-being, increased susceptibility to infections, and increased risk of death from major obstetric complications. According to recent estimates, the prevalence of anaemia in pregnancy in sub-Saharan Africa is 50% as compared to the global average of about forty-two percent (41.8%). All pregnant women must receive iron and folate supplementation during pregnancy to prevent anaemia. For every 1 g/dl increase in haemoglobin level, the risk for maternal death has been shown to decrease by 20%.

Anaemia in pregnancy should be diagnosed if a woman's haemoglobin concentration is found to be less than 11.0 g/dl during the first and third trimester or lower than 10.5 g/dl during the second trimester.

- Moderate Anaemia: Hb \geq 7 g/dl and <11 g/dl
- Severe Anaemia: Hb <7 g/dl

Common causes of anaemia during pregnancy in Sub-Saharan Africa:

Poor Nutrition: During pregnancy women have increased need for iron and other blood-forming raw materials because of the expanded blood volume and the blood requirements of the fetus and placenta. In many areas of Africa, dietary intake of pregnant women is deficient in nutrients such as iron, folate, proteins and vitamins (C, B, etc.) that are essential for red blood cell production.

Infections: Diseases such as HIV/AIDS and TB, which are associated with poor absorption of these nutrients and further worsen the situation for infected pregnant women.

Helminthic infestation: There is high prevalence of worm infestations such as hookworm and schistosomiasis that cause blood loss.

Malaria: Excessive breakdown of normal red blood cells within the body due to malaria which is endemic in many African countries.

Genetic disorders: The breakdown of abnormal red blood cells in the body because of genetic disorders such as sickle-cell anaemia, Glucose – 6- phosphate dehydrogenase (G6PD) enzyme deficiency- a common disorder especially in West African Countries.

Preventing Anaemia in Pregnancy: WHO Recommended Strategies

Evidence-based strategies recommended in the Africa region to combat anaemia in pregnancy include:

- Supplementation of all pregnant women with intermittent iron and folic acid tablets
- Prevention of malaria in pregnancy through intermittent preventive treatment with SP and use of ITN
- Control of hookworm infestation by deworming all pregnant women in areas where hookworm prevalence is greater than 20%
- Counselling to improve intake of iron and folate tablets and vitamin-rich foods
- Optimal birth spacing

For comprehensive history taking, physical exam and investigation please refer to 9.2.1

Table 13 Classification and management of Anaemia

Haemoglobin level	Diagnosis	Management at primary health care level	Management at 2 secondary or tertiary health care level
> 11g/dl	No clinical anaemia	<ul style="list-style-type: none"> • Prescribe iron supplementation and folic acid at the following doses till birth of the baby <ul style="list-style-type: none"> ○ Iron containing 60 mg of elementary iron till delivery ○ Folic Acid 400ug (0.4mg) daily till delivery • Provide counselling about nutrition in pregnancy 	<ul style="list-style-type: none"> • Prescribe iron supplementation and folic acid at the following doses till birth of the baby <ul style="list-style-type: none"> ○ Iron containing 60 mg of elementary iron till delivery ○ Folic Acid 0.4mg daily till delivery • Provide counselling about nutrition in pregnancy
7-11g/dl	Moderate anaemia	<ul style="list-style-type: none"> • If the women is stable without any sign of decompensating: offer iron containing elementary iron of 120 mg until the Hb concentration rise to normal (Hb 11mg /dl or higher) then continue with the standard iron of 60mg daily to prevent the recurrence of anaemia • If the woman is from endemic areas of hookworms add a single dose of Albendazole 400mg oral once or oral Mebendazole 500 mg once • Provide counselling about compliance on iron medications and nutrition • If any signs of decompensating (shortness of breath, dizziness) refer urgently the client to the Hospital • Refer urgently to hospital 	<ul style="list-style-type: none"> • If the women is stable without any sign of decompensating: offer iron containing elementary iron of 120 mg until the Hb concentration rise to normal (Hb 11mg /dl or higher) then continue with the standard iron of 60 mg daily to prevent the recurrence of anaemia • Provide counselling about compliance on iron and nutrition • If signs of decompensating occur: perform further investigations and treat accordingly.
<ul style="list-style-type: none"> • <7g/dl and/or severe palmar and conjunctiva pallor OR • Pallor with respiratory distress; RR>30/minute or breathlessness at rest 	Severe anaemia	<ul style="list-style-type: none"> • Refer urgently to hospital 	<ul style="list-style-type: none"> • Investigate the cause of anaemia • Transfuse as necessary <ul style="list-style-type: none"> ○ Use packed red cells ○ Give furosemide 40 mg iv after each unit of packed red cells • Give ferrous sulphate or ferrous fumarate containing 120 mg of elementary iron by mouth and folic acid 400mcg by mouth once daily for six months during pregnancy and continue for three months post-partum • If the woman comes from a region where hookworm is endemic (prevalence of 20% or more) give one of the following <ul style="list-style-type: none"> ○ Albendazole 400 mg by mouth once ○ OR Mebendazole 500 mg by mouth once • If hookworm is highly endemic (prevalence of 50% or more) repeat the anthelmintic 12 weeks after the first dose

10.9 Reduced Fetal Movements

The antenatal care provides opportunities for health providers to inform women about the importance of fetal movements as a way for women to feel the wellbeing of their babies. Maternal perception of reduced fetal movements is associated with poor perinatal outcome including fetal death. Reduced fetal movement is defined as fewer than six distinct movements are felt within 2 hours or fewer than 10 distinct movements are felt within 12 hours (the Cardiff “count of ten” method)

To reduce perinatal mortality, ask about maternal perception of fetal movements and if reduced fetal movement is reported perform further assessment.

Undertake a comprehensive history

- Ask at each ANC contact about maternal perception of fetal movements, the first-time fetal movements were perceived, pattern and any change
- Obtain relevant obstetric, gynaecological, medical, surgical, social and family history
- Ask about associated complications: Presence of any medical condition: Chronic Hypertension, Diabetes, Pre-eclampsia, other medical diseases
- Lifestyle: Smoking, alcohol, substance abuse

Physical exam: Look, listen and feel

- Vital signs BP, Pulse, Respiration rate and general appearance
- Focus on abdominal exam: Uterine size and compare it to gestational age, listen to fetal heart beat (if Doppler: fetal heart beat should be heard from 12 weeks, with Pinard fetal heart beat is heard from 18-20 weeks gestational age), assess the fetal movements and repeat in 2 hours if abnormal
- If ultrasound is available; perform obstetric U/S to assess fetal wellbeing: movements, tonicity, amniotic fluid and breathing.

Investigations

- Check fetal heart sound using Pinard or Doppler fetoscope if available at Health centre
- Perform Obstetric ultrasound to confirm viability and fetal wellbeing and or CTG

Table 14: Classification and management in case of reduced fetal movements

Fetal movements status and exam findings	Diagnosis	Management at primary health care level	Management at secondary or tertiary health care
<ul style="list-style-type: none"> More than 10 fetal movements in 2 hours and normal fetal heart rate 	<p>Fetus is well</p>	<ul style="list-style-type: none"> Reassure the mother Continue ANC as planned 	<ul style="list-style-type: none"> Reassure the mother Continue ANC as planned
<ul style="list-style-type: none"> Reduced fetal movements and still the same after two hours but normal fetal heart beat 	<p>Possible Fetal compromise</p>	<ul style="list-style-type: none"> Refer to Hospital for further assessment 	<ul style="list-style-type: none"> Perform Obstetric ultrasound for fetal wellbeing (Movements, tonicity, breathing and amniotic fluid) and/or CTG Conduct other relevant investigations of any complication associated Consider expectant or planning of delivery depending on full assessment findings
<ul style="list-style-type: none"> Absence of fetal movements by the mother and no fetal movement palpated by the health providers and Pinard or Doppler or ultrasound reveals absence of fetal heart beat 	<p>Intrauterine fetal demise</p>	<ul style="list-style-type: none"> Inform the mother sensitively about the finding and possible diagnosis If no ultrasound available to confirm refer the mother at the Hospital 	<ul style="list-style-type: none"> Perform ultrasound to confirm the likely diagnosis Offer sufficient amount of time for counselling Consider induction of labor if the mother is psychologically ready

10.10 Malaria

Malaria is an infectious disease caused by the Plasmodium parasite and transmitted via mosquito bites. Female mosquitoes of the genus *Anopheles* are infected when they take their blood meals from an infected human. They then transmit the parasite when they bite an uninfected human. Once in the human body, the parasites multiply in the liver and then infect red blood cells.

According to available data from NIP, 2018, 97% of malaria cases are due to infection with *Plasmodium falciparum*, while the remaining 3% are attributable to *Plasmodium vivax*. Uncomplicated malaria is defined as symptomatic malaria without signs of severity or evidence of vital organ dysfunction. However, if the patient does not receive prompt and effective treatment, uncomplicated malaria can rapidly advance to severe and complicated malaria, which could lead to death. Severe malaria is defined as the detection of *P. falciparum* in the peripheral blood of a patient with signs of severity and/or evidence of vital organ dysfunction. Severe and complicated malaria is a medical emergency. Delay in diagnosis and treatment leads to rapid deterioration and death.

Undertake a comprehensive history: Ask

- Obstetric history: Gravidity, parity, term deliveries, preterm, stillbirth, miscarriage and living children
- Ask questions related to common symptoms of malaria
 - Fever, flu like illness, sweating, headache, shivering or rigors, abdominal pain
 - Vomiting and diarrhoea, muscle pain, cough, anaemia, joint pains, general malaise, loss of appetite
- Place of residence (high prevalence of malaria)
- History of travel to malaria endemic areas and when travelled
- History of previous treatment

Physical exam: Look, listen and feel

- Vital signs: Temperature, pulse, respiration rate, BP, weight
The rest of general exam: jaundice, palm/plantar pallor, prostration (extreme weakness), impaired consciousness, coma, respiratory distress, deep breathing, multiple convulsions (more than 2 in 24 h)

Investigations

- At primary care level (clinic and health centers)
 - RDT at Primary care level
 - Hb with haemoglobinometer
- At secondary level (District, intermediate and referral hospitals)
 - Urea and creatinine
 - Arterial blood gases
 - Blood glucose
 - Microscopy (Parasite count)

Table 15: Classification and management of Malaria in pregnancy

Lab test results	Diagnosis	Management at primary health care level (clinic and health centres)	Management at 2ndary or tertiary health care District, intermediate and referral hospitals)
<p>Women from endemic regions Asymptomatic, Negative RDT or Microscopy</p> <ul style="list-style-type: none"> RDT or Microscopy is positive No added minor digestives symptoms and signs (nausea and vomiting) 	<p>Normal but at risk</p>	<ul style="list-style-type: none"> Offer insecticide treated net (ITN) or Long-lasting insecticide treated net In 2nd & 3rd Trimester: Artemether 20mg with lumefantrine 120 mg. Give 4 tablets first dose then 2nd dose after 8 hours then 12 hourly for 6 doses total In 1st Trimester: Refer to Hospital 	<ul style="list-style-type: none"> Offer insecticide treated net (ITN) or Long-lasting insecticide treated net In 2nd and 3rd Trimester: Artemether 20mg with lumefantrine 120 mg. Give 4 tablets the first dose followed by the second dose after 8 hours then 12 hourly for 6 doses total In 1st Trimester: Give Quinine tab 300 mg, 600mg x3 per day over 7 days
<ul style="list-style-type: none"> Positive microscopy or RDT associated with nausea and vomiting 	<p>Simple (Uncomplicated) malaria with minor digestive disorders</p>	<ul style="list-style-type: none"> IV line Urgently refer to Hospital 	<ul style="list-style-type: none"> Take IV line and start IV fluids 1st Trimester: Give loading dose of IV quinine 20mg /kg as an infusion over 4 hours followed by 10 mg /kg every 8 hours as infusion over 4 hours until the patient is stable to take oral quinine to complete 7 days treatment course The iv fluids can be in the form of 200ml 5% DW or 0.9 saline. Use rehydration or Ringer's Lactate as maintenance iv fluids Once nausea and vomiting has stopped continue with quinine oral 600mg three times a day to complete 7 days Quinine can cause hypoglycemia, monitor blood glucose depending on patient condition. 2nd and 3rd trimesters: Artesunate intravenous infusion (IVI), followed by a full oral course of artemether-lumefantrine (AL)
<p>Positive malaria tests associated with many or one of the following</p> <ul style="list-style-type: none"> Altered consciousness, coma, very high temperature >40 above, excessive drowsiness, prostration, multiple convulsions, severe pallor, low blood pressure, presence of jaundice, passing of dark urine (cola urine), difficult breathing, passing little or no urine 	<p>Severe (complicated) Malaria</p>	<p>These patients have to managed at tertiary level</p> <ul style="list-style-type: none"> They may require ICU Basic life support (ABC) 	<ul style="list-style-type: none"> At the tertiary level 1st trimester: Severe falciparum malaria should be treated with iv quinine: Give loading dose of IV quinine 20mg /kg as an infusion over 4 hours followed by 10 mg /kg every 8 hours as infusion over 4hours until the patient is stable Patient on IV quinine should be checked for hypoglycemia every 4 hours 2nd and 3rd trimester: Artesunate intravenous infusion (IVI) Fluids management should be re-assessed frequently. Input and output should be charted hourly for early detection of fluid overload Indication for ICU admission include: <ul style="list-style-type: none"> Inability to maintain airway Respiratory failure Renal failure requiring dialysis Dialysis may be needed based on common criteria for dialysis

10.11 Urinary Tract Infection

Urinary tract infection in pregnancy is divided into two categories: asymptomatic bacteria and symptomatic UTI.

Asymptomatic bacteriuria is defined as the presence in urine of more than 100,000 colony forming units/ml bacteria without any symptoms in the mother. If untreated, ASB is associated with increased risk of preterm birth and symptomatic UTI. Women in pregnancy can also present with symptomatic UTI which is divided into two groups; Cystitis and Pyelonephritis.

In order to minimize the risk of preterm birth and low birth weight which might be associated with untreated ASB, perform midstream urine culture or midstream gram staining if culture not possible or dipstick if both gram staining and culture cannot be done. A positive test has to be accompanied with a 7 day course of antibiotics as detailed below.

Educate women about the symptoms of UTI in case of symptomatic urinary tract infections and advise them to consult as soon as they have symptoms. Remind them that testing will be done at each ANC even when no symptoms are present as ASB has no typical presentation.

Undertake a comprehensive history: Ask

- Women may be completely asymptomatic if ASB
- Ask questions related to cystitis: dysuria, urgency, nocturia, haematuria, suprapubic discomfort
- Questions related to pyelonephritis: flank pain, renal angle pain, pyrexia, nausea and vomiting and might include symptoms of cystitis.

Physical exam: Look, listen and feel

- Vital signs: Temperature, BP, Respiration rate, Pulse rate
- Costal lumbar tenderness

Investigations

- Collect mid-stream sample of urine (MSU) for MSC
- Gram stain if no culture can be considered (MSU)
- Dipsticks where gram stain and culture cannot be done.

Table 16: Classification and management of UTI in pregnancy

Laboratory and clinical presentation	Diagnosis	Management at primary health care level	Management at secondary or tertiary health care level
<ul style="list-style-type: none"> >100,000 bacteria/mL with less than 20 white cells 	<p>Asymptomatic Bacteriuria (ASB)</p>	<ul style="list-style-type: none"> Amoxicillin 500mg oral 8 hourly for 7 days or Nitrofurantoin oral 100 mg twice daily for 7 days 	<ul style="list-style-type: none"> Amoxicillin 500mg oral 8 hourly for 7 days Nitrofurantoin oral 100 mg twice daily for 7 days
<ul style="list-style-type: none"> Moderate symptoms including, dysuria, urgency, nocturia, hematuria, suprapubic discomfort plus Culture: 100,000 bacteria/mL with less than 20 white cells and 2 or more organisms 	<p>Acute cystitis</p>	<ul style="list-style-type: none"> Amoxicillin + 500 oral 8 hourly for 7 days Nitrofurantoin oral 100 mg twice for five days Refer to the secondary or tertiary health care if symptoms persist despite treatment (risk of resistance) 	<ul style="list-style-type: none"> Amoxicillin + 500 oral 8 hourly for 7 days Nitrofurantoin oral 100 mg twice for five days If culture and sensitivity done offer medication based on antibiograms
<ul style="list-style-type: none"> Severe symptoms, including systemic symptoms like flank pain, renal angle pain, pyrexia, nausea and vomiting plus Culture > 100,000 bacteria / mL of a single uropathogen 	<p>Pyelonephritis</p>	<ul style="list-style-type: none"> Refer to Hospital for possible IV medication 	<ul style="list-style-type: none"> IV line with IV infusion 100-150ml/h Start antibiotics empirically while waiting for results of culture and sensitivity if done Empirically offer Ampicillin 2g IV three times a day for 48 hours and Gentamycin IV 5mg /kg per day In 48 hours switch to oral antibiotic for a total of 14 days if the patient is afebrile for 24 hours, no nausea and vomiting Oral antibiotics include Amoxicillin oral 1g 8 hourly to complete 14 days. Anti-pyretic medications as needed: Paracetamol oral 500-1000 grams three times a day If culture and sensitivity done offer medication based on antibiograms

10.12 Syphilis

Syphilis is a sexually transmitted infection (STI) caused by *Treponema pallidum* bacteria that results in substantial morbidity and mortality. It is transmitted through sexual contact with infectious lesions of the mucous membranes or abraded skin, via blood transfusion, or trans-placentally from a pregnant woman to her fetus. Syphilis is an infection that is completely preventable and treatable. In 2012, an estimated 5.6 million new cases of syphilis occurred among 15- to 49-year-olds worldwide. There are an estimated 18 million prevalent cases of syphilis. Signs and symptoms of syphilis infection differ over time and occurs in stages:

Primary Syphilis: early stage disease occurs 10-90 days after contact with an infected individual. It is characterized by presence of painless ulcers known as chancre in the genital, anal or perianal regions and painless swollen groin lymph nodes. (Note: Syphilitic chancre must be distinguished from other ulcer causing STIs such as herpes, chancroid and donovanosis). The ulcers usually heal within 4-8 weeks, with or without therapy.

Secondary syphilis: This usually presents as skin eruptions within 2-10 weeks after the primary chancre and is most obvious 3-4 months after infection. The skin eruptions may be subtle and 25% of patients may be unaware of skin changes. Patchy hair loss and 'condylomata lata' (a highly infectious skin condition characterized by wart-like lesions on the genitals) may also be observed. There may also be mild constitutional symptoms such as malaise, fever, headache, sore throat, weight loss, anorexia, nausea, aching pains in the bones, fatigue and neck stiffness. A small number of patients with secondary Syphilis may develop acute syphilitic meningitis and present with severe headache, neck stiffness, facial numbness or weakness, and deafness.

Tertiary Syphilis: after a long latent asymptomatic period lasting from a few years to as many as 25 years the destructive lesions of tertiary syphilis show up. At this stage the disease is detected only by serologic tests. Tertiary (late) syphilis is slowly progressive and can affect any organ in the body. The disease is generally not thought to be infectious at this stage. Manifestations include the following: impaired balance, paraesthesia, incontinence, and impotence, focal neurologic findings, including sensorineural hearing and vision loss, dementia, chest pain, back pain, stridor, or other symptoms related to aorta damage.

An estimated 1 million pregnant women are infected globally with syphilis each year and most of these women are in Africa. Mother-to-child transmission of syphilis can lead to devastating effects on the fetus. This usually occurs if maternal infection is not detected and treated sufficiently early in pregnancy. 2/3 of infected pregnant women will have adverse outcomes of pregnancy such as stillbirths, neonatal deaths, preterm or low birth-weight infants and infants with clinical infection (Congenital Syphilis).

In 2016, an estimated 370 000 adverse pregnancy outcomes worldwide were attributed to syphilis, including 212 000 early fetal deaths/stillbirths and neonatal deaths, 44 000 preterm/low-birth-weight babies and 102 000 infected infants. Babies born with congenital syphilis have bone damage, severe anaemia, enlarged liver and spleen, jaundice, nerve problems causing blindness or deafness, meningitis, or skin rashes. In women with HIV co infection the placental inflammation resulting from syphilis infection also increases the risk for transmission of HIV to the baby. The adverse effects of syphilis on pregnancy can be prevented and minimized if the infected pregnant mother receives adequate treatment during

early pregnancy – ideally before the second trimester. A baby with congenital syphilis can be easily cured with treatment.

Undertake a comprehensive history

- ANC history
- Sexual history: Engagement in high risk sexual behaviours-sexual contact with infectious syphilis case, commercial sex workers, multiple partners, new sexual partner in last 3 months, transactional sex
- Previous diagnosis of syphilis: previous history of syphilis either for the woman or her partner
- History of previous treatment
- Symptoms of syphilis: Vulva lesions (single or multiple)
- History of adverse pregnancy outcomes e.g. miscarriage or stillbirth, congenital syphilis in the newborn baby

Physical exam: Look, listen and feel

- Vital signs
- Abdominal exam: uterine size compared to the gestational age, use Pinard or Doppler Fetoscope to listen to the fetus, feel fetal movements
- Genital exam: inspect for typical syphilis lesions (chancres which are only visible in some cases of primary syphilis), their absence does not exclude syphilis.

Investigations

- Rapid test for syphilis if available
- At the Hospital, use serologic tests: Venereal Disease Research Laboratory (VDRL) and Rapid Plasma Reagin (RPR)

Table 17: Classification and management of Syphilis

Test results	Diagnosis	Management at primary health care level (clinic and health centres)	Management at Secondary or tertiary health care level (District, intermediate and referral hospitals)
Positive rapid test for syphilis or VDRL/RPR	Possible syphilis	<ul style="list-style-type: none"> • Facilitate contact tracing and treatment • Infectious syphilis: <ul style="list-style-type: none"> • Benzathine penicillin 1.8g (2.4 million units) IM once as 1st line treatment OR • Procaine penicillin 1.2 million units intramuscularly once daily for 10 days as a 2nd line treatment If the woman is allergic to Penicillin, use with caution <ul style="list-style-type: none"> • Ceftriaxone IM 1g daily for 10 days OR • Azithromycin 500mg orally daily for 10 days OR • Erythromycin 500mg four times a day for 14 days Late latent or unknown duration Syphilis <ul style="list-style-type: none"> • Benzathine penicillin G 2.4 million units weekly for 3 consecutive weeks as first line treatment • Procaine penicillin 1.2 million units IM once daily for 20 days When allergy to penicillin or not available use <ul style="list-style-type: none"> • Ceftriaxone 1g IM d daily for 100 days • Treat the partner 	<ul style="list-style-type: none"> • Infectious syphilis: <ul style="list-style-type: none"> • Benzathine penicillin 1.8g (2.4 million units) IM once as 1st line treatment OR • Procaine penicillin 1.2 million units intramuscularly once daily for 10 days as a 2nd line treatment If the woman is allergic to Penicillin, use with caution <ul style="list-style-type: none"> • Ceftriaxone IM 1g daily for 10 days OR • Azithromycin 500mg orally daily for 10 days OR • Erythromycin 500mg four times a day for 14 days Late latent or unknown duration Syphilis <ul style="list-style-type: none"> • Benzathine penicillin G 2.4 million units weekly for 3 consecutive weeks as first line treatment • Procaine penicillin 1.2 million units IM once daily for 20 days When allergy to penicillin or not available use <ul style="list-style-type: none"> • Ceftriaxone 1g IM d daily for 100 days • Treat the partner <p>After delivery the baby has to be assessed for neonatal syphilis, and may need a follow up plan</p>

10.13 HIV in pregnancy

HIV prevalence among pregnant women remains high in Namibia, during pregnancy it is important to ensure that all pregnant women obtain counselling about HIV in pregnancy, get tested and those who are HIV positive are put on ARVs, PMTCT includes four strategies:

1. Primary prevention of HIV infection
2. Prevention of unintended pregnancy in HIV infected women
3. Prevention of HIV transmission from HIV infected women to their infants
4. Provision of comprehensive care to mothers living with HIV, their children, and families

During ANC, women have to be assessed to ensure PMTCT.

- All pregnant women have to be offered counselling about HIV transmission of prevention of mother child transmission and voluntary testing
- All pregnant women have to be tested for HIV
- Partners have to be involved and tested

- Known HIV positive women and newly diagnosed have to be treated regardless of their CD4 counts.
- After excluding active TB, prophylaxis of TB should be offered to all known HIV positive women.
- For detailed management options: Refer to National guideline for antiretroviral treatment 2019.

10.14 Tuberculosis in pregnancy

TB is caused by Mycobacterium tuberculosis (M.TB); M.TB is transmitted from an infectious patient primarily through coughing and is inhaled by the contact (droplet transmission). The inhaled bacilli settle in the lung, and cause infection (primary infection). In most cases, the bacilli are contained by the body's immune system and remain dormant for the rest of the person's life without any further consequences. The majority of infected people with intact immunity (90-95%) will never develop TB disease. Individuals with compromised immune systems (HIV infection, diabetes, malnutrition, etc) are more likely to develop TB disease at any point in their life.

- TB accounts for up to 15% of maternal mortality in Southern Africa, and the relative risk of death is 3.2 times higher in TB-HIV coinfecting compared to HIV uninfected mothers. Namibia has high TB prevalence and it is inevitable that some pregnant women will present with TB. The risk of developing TB in pregnancy is 10 times higher in HIV infected woman than in HIV uninfected woman. After excluding active TB, prophylaxis of TB should be offered to all known HIV positive women as per the latest National TB guideline.

Due to the observed high prevalence of HIV and TB among ANC attendees, during ANC contacts explain to the pregnant woman the burden of TB and adverse maternal and neonatal outcomes if not identified and treated. Perform TB screening systematically on contact one, three and six and at each contact for HIV positive women.

Undertake a comprehensive history: Ask

- Take routine ANC history
- Ask questions for TB screening:
 - Symptoms of TB: Cough (productive vs non-productive and duration - >2 weeks), fever, night sweat, weight loss, hemoptysis, loss of appetite, enlargement of lymph nodes
 - Previous history of TB. If yes, did you complete treatment and when completed?
 - Known to be having tuberculosis, if yes,
 - Is the patient on TB medications? If yes, ask about the type of TB medicines
- Recent contact with a TB patient, or family members
- Ask about HIV status

Physical exam: Look, listen and feel

- If the patient is suspected TB, use N95 particulate filter mask to protect yourself from being contaminated and surgical mask for the patient.
- If the woman has signs and symptoms suspicious for active TB, move her to an isolated area and take investigations (immediate referral if the facility has no capacity to test for TB).
- Vital signs, weight, look for enlargement of lymph nodes, auscultation, and chest examination

Investigations

- Obtain sputum x1 GeneXpert (early morning preferably)
- Chest X ray with abdominal shielding

Table 18: Classification and management of pregnant women with TB

Test results	Diagnosis	Management at primary health care level (clinic and health centres)	Management at 2ndary or tertiary health care level (District, intermediate and referral hospitals)
<ul style="list-style-type: none"> GeneXpert positive with or without a chest X ray in favor of TB 	<p>Pulmonary TB</p>	<ul style="list-style-type: none"> Provide TB treatment according to national TB guidelines Counselling about adherence to medication for at least 6 months Counselling about lifestyle change: Stop smoking if smoker Test for HIV if not tested Advise TB screening to family members For further details about the dosages of medications refer to the National Guideline for management of tuberculosis, Fourth edition 2019 	<ul style="list-style-type: none"> Treatment use a 4 standard regimen Isoniazid, rifampicin, ethambutol ad pyrazinamide Counselling about medications for at least 6 months The above drugs are excreted in breast milk however breastfeeding should be encouraged after delivery The amount of medication in the breast milk does not provide enough TB treatment or prophylaxis to the breastfed infant Breastfed babies who are not on TB treatment should be given 5mg of pyridoxine daily on the days that their mother receives her isoniazid therapy. For further details about the dosages of medications refer to the National Guideline for management of tuberculosis, Fourth edition 2019
<ul style="list-style-type: none"> Women on anti TB drugs Women receiving injectable anti-TB drugs GeneXpert result shows rifampicin resistance or drug resistance TB 	<p>Multidrug resistant TB (MDR-TB)</p>	<ul style="list-style-type: none"> Counselling about adherence to medication for at least 6 months Counselling about lifestyle change: Stop smoking if smoker Test for HIV if not testes Advise TB screening to family members Refer to centre offering MDR TB care 	<ul style="list-style-type: none"> Offer extensive counselling Refer to Centre offering MDR-TB services For details about the management of MDR-TB refer to the National Guideline for management of tuberculosis, Fourth edition 2019

10.15 Hepatitis B

Hepatitis B infection is caused by the hepatitis B virus (HBV), an enveloped DNA virus that infects the liver, causing hepatocellular necrosis and inflammation. HBV infection can be either acute or chronic, and the associated illness ranges in severity from asymptomatic to symptomatic, progressive disease. Chronic hepatitis B (CHB) – defined as persistence of hepatitis B surface antigen (HBsAg) for six months or more – is a major public health problem. Worldwide, there are an estimated 240 million chronically infected persons, particularly in low- and middle-income countries (LMICs). The major complications of CHB are cirrhosis and hepatocellular carcinoma (HCC). Between 20% and 30% of those who become chronically infected will develop these complications, and an estimated 650 000 people will die annually due to CHB.

Persistent detection of Hepatitis B surface antigen (HbsAg) for more than 6 months is a confirmation of Chronic Hepatitis B. The mode of transmission is horizontally through blood products or sexual contacts, Pregnant women can transmit the virus vertically to their babies.

During ANC:

- Screen all pregnant women for hepatitis B virus regardless of their previous testing or vaccination.
- Counselling should be done for all Hepatitis B positive women and about vaccination of their newborn within 24 hours of life followed by three subsequent doses. If HB vaccination is indicated in pregnancy, vaccination is safe and effective.

Undertake a comprehensive history to:

- Determine the gestational age by dates and /or first trimester ultrasound
- Take the routine obstetric history,
- Enquire whether the woman has a history of positive HBsAg testing
- Ask whether there is history of liver diseases,
- History of other STIs: HIV, Syphilis etc.

Physical exam: Look, listen and feel

- Perform routine ANC physical exam by contact

Investigations

- HBsAg
- HIV test
- Liver function tests (ALT, AST)
- HBV viral load

Table 19: Classification and management of pregnant women with HBV

Test results	Diagnosis	Management at primary health care level	Management at secondary or tertiary health care level
HBsAg positive	HBV infection	<ul style="list-style-type: none"> • Counsel the woman that the newborn will be vaccinated immediately after delivery within 24 hours and receive subsequent three vaccine at 2, 4 and 6 months of life • Refer the woman to the Hospital for further testing 	<ul style="list-style-type: none"> • Offer further testing <ul style="list-style-type: none"> • LFTs (ALT, AST) • HBeAg • Anti HBe, • HBV viral load • Women with a high viral load in the third trimester (> 200,000 iu/ml) should be given antiretroviral treatment (tenofovir) to reduce the viral load and risk of transmission to the baby. • Infants born to mother HBsAg positive <ul style="list-style-type: none"> • Offer a dose of monovalent hepatitis B vaccine on the day of birth preferably within 24 hours of birth not later than 7 days • Hepatitis B immunoglobulin (HB IG) 100 iu, preferably within 12 hours and not later than 48 hours. • For further details about Hepatitis B and pregnancy, refer to Guidelines for Prevention, care and treatment of person with chronic hepatitis B infection (WHO 2015)

10.16 Hepatitis E

Hepatitis E is a liver disease caused by the hepatitis E virus (HEV). The virus has at least 4 different types: genotypes 1, 2, 3 and 4. Genotypes 1 and 2 have been found only in humans. Genotypes 3 and 4 circulate in several animals (including pigs, wild boars, and deer) without causing any disease, and occasionally infect humans. The virus is shed in the stools of infected persons and enters the human body through the intestine. It is transmitted mainly through contaminated drinking water. Usually the infection is self-limiting and resolves within 2–6 weeks. Occasionally a serious disease, known as fulminant hepatitis (acute liver failure) develops, and a proportion of people with this disease can die. Confirmed cases of Hepatitis E are on the increase in Namibia since 2017. Pregnant women are disproportionately impacted. Over 1500 laboratory confirmed cases have been reported and 56 hepatitis E related deaths, of which, 41% are maternal deaths. Hepatitis E infection during pregnancy and in the third trimester is associated with more severe infection and might lead to fulminant hepatic failure and maternal death. The virus has a 50% rate of vertical transmission.

Undertake a comprehensive history to:

- Determine the gestational age by dates and /or first trimester ultrasound
- Take the routine obstetric history,
- Hygiene situation – water, sanitation and hand washing practices at home and as an individual, etc.
- Ask about the signs and symptoms of acute infection including yellowish colouration of the eyes, dark urine and pale stools.
- Any history of outbreak of acute jaundice syndrome in the community or recently visited regions
- History of flue like illness associated with loss of appetite and /or fatigue and /or nausea and vomiting and / or low-grade fever.

Physical exam: Look, listen and feel

- Vital signs may show low grade fever (38 to 39^o C),
- General exam may be consistent with jaundice
- Do the rest of abdominal exam

Investigations

- IgM anti-HEV in serum or plasma using:
 - Laboratory –based Enzyme Immuno- Essay (EIA) or
 - Rapid Diagnostic Tests (RDTs)
- Detection of HEV RNA in serum /plasma or stool by RT-PCR

Table 20: Classification and management of pregnant women with HEV

Test results	Diagnosis	Management at primary health care level	Management at 2ndary or tertiary health care level
<p>Acute onset of illness with:</p> <ul style="list-style-type: none"> • Evidence of jaundice (yellow colouration of the eyes and skin) or dark urine or stools • Preceded for a few days by an acute “flu like illness” with at least one of the following: low grade fever (between 38 to 39° C), loss of appetite, fatigue, nausea and vomiting. 	<p>Suspected HEV</p>	<ul style="list-style-type: none"> • Perform diagnostic tests for any suspected case • If investigations can’t be done at this level refer to Hospital for further investigations • If diagnostic tests confirm the diagnosis: refer to hospital. 	<ul style="list-style-type: none"> • Perform diagnostic tests for any suspected case • If confirmed, see WHO algorithm for diagnosis, triage and management of hepatitis E virus (HEV) infection outbreak
<ul style="list-style-type: none"> • Detection of anti HEV IgM using either Laboratory based EIA or RDT • Or alternate detection of HEV RNA in serum /plasma or Stool by RT-Polymerase Chain Reaction (RT-PCR) 	<p>Confirmed HEV</p>	<ul style="list-style-type: none"> • Emergency referral to Hospital 	<ul style="list-style-type: none"> • See WHO algorithm for diagnosis, triage and management of hepatitis E virus (HEV) infection outbreak.

11. MONITORING AND EVALUATION OF ANTENATAL CARE

11.1 Core ANC Indicators

Table 21: Core ANC Indicators

Indicator definitions	Numerator	Denominator	Frequency	Data Source
Core indicators				
Percentage of pregnant women with at least 1 ANC contact.	Number of pregnant women who attended ANC	Estimated number of pregnant women	Monthly	ANC register DHIS2
Pregnant women who began ANC during the 1 st trimester of gestational age	Number of pregnant women who attend ANC in 1 st trimester	Total number of women who attended ANC	Monthly	DHIS2
Percentage of pregnant teenage girls attending ANC	Number of pregnant teenage girls attending ANC	Total number of women attended ANC	Monthly	ANC register
Percentage of pregnant women with documented TB screening	Number of pregnant women screened for TB	Number of pregnant women attending ANC	Monthly	ANC register, DHIS2
Percentage of pregnant women with at least 1 documented ultrasound during ANC	Number of pregnant women who have had at least one ultrasound	Estimated number of pregnant women	Monthly	ANC register, Ultrasound register, DHIS2
Percentage of clients who have had an ultrasound done at 24 weeks and less	Number of pregnant women who have had an ultrasound before 24 weeks GA	Number of women attending ANC	Monthly	Monthly report, ANC register, Ultrasound register, DHIS2
Number of facilities with functional ultrasound service by level	Number of facilities with functioning ultrasound	Number of facilities offering ANC	Quarterly	Ultrasound register, Equipment inventory report
Percentage of clients with documented blood pressure done in the 3 rd trimester	Number of pregnant women attending ANC with BP records	Number of women attending ANC	Monthly	Monthly reports, ANC register, DHIS2
Percentage of clients who have had their weight measured	Number of pregnant women who have had their weight measured	Number of pregnant women attending ANC	Monthly	Monthly reports HMIS, ANC registrar, DHIS2
Percentage of clients with documented urine dipstick/urinalysis	Number of pregnant women with documented urine dipstick/urinalysis	Number of pregnant women attending ANC	Monthly	Monthly reports HMIS, ANC registrar, DHIS2
Other important indicators				
Proportion of women who complete all the 8 contacts or more	Number of pregnant women who have had 8 or more ANC contacts	Estimated number of pregnant women	Monthly	ANC register, DHIS2 HMIS
Percentage of women who received iron and folic acid (IFA) supplements	Number of pregnant women who received iron and folic acid supplements	Number of pregnant women attending ANC	Monthly	ANC register, DHIS2, HMIS Monthly

Indicator definitions	Numerator	Denominator	Frequency	Data Source
Percentage of tetanus diphtheria (Td) coverage (1st dose) among pregnant women	Number of pregnant women who received 1 st dose of tetanus diphtheria	Number of pregnant women	Monthly	ANC register HMIS, DHIS2 Monthly report
Percentage of pregnant women who received two doses of Td	Number of pregnant women who have received two doses of Td vaccine	Number of women attending ANC	Monthly	ANC register, DHIS2 HMIS, Monthly report
Proportion of pregnant women who received HIV counselling before being tested	Number of pregnant women attending ANC who received HIV counselling	Number of pregnant women who attended ANC	Monthly	ANC register, HIV counselling testing register, Monthly reports, DHIS2,
Proportion of pregnant women who get tested for HIV	Number of pregnant women attending ANC services who received HIV testing	Number of pregnant women who attended ANC	Monthly	ANC register, HIV counselling testing register, Monthly report, DHIS2
Proportion of HIV positive women who received anti-retroviral therapy	Number of pregnant HIV positive women who received ART	Number of HIV positive pregnant women attending ANC	Monthly	ANC register, ART register, Monthly report, DHIS2
Proportion of pregnant women who were tested for Syphilis	Number of pregnant women who attend ANC and had been tested for Syphilis	Number of pregnant women attending ANC	Monthly	ANC register, Monthly report, DHIS2
Proportion of pregnant women treated for syphilis	Number of pregnant women who received treatment for syphilis	Number of pregnant women tested positive for syphilis	Monthly	ANC register, HMIS DHIS2 Monthly report
Proportion of positive Syphilis pregnant women whose partners receive treatment	Number of pregnant women attending ANC who tested positive for Syphilis and their partners receive treatment	Number of pregnant women who tested positive for syphilis	Monthly	ANC register Monthly report, DHIS2
Proportion of pregnant women who get tested for Hepatitis B	Number of pregnant women who get tested for Hepatitis B	Number of pregnant women attending ANC	Monthly	ANC register, Monthly report, DHIS2
Proportion of HBsAg positive women whose newborns get vaccinated within 24 hours	Number of HBsAg positive pregnant women whose newborns get vaccinated within 24 hours	Number of HBsAg positive pregnant women	Monthly	ANC register, HMIS, Monthly report
Maternal mortality ratio per 100,000 livebirths	Number of maternal deaths	100,000 livebirths	Monthly	HMIS, Monthly report
Rate of stillbirth	Number of stillbirths	1000 births (live and stillbirths)	Monthly	HMIS, Hospital register
Perinatal mortality	Number of dead fetuses or neonates from 28 weeks GA up to 1 week after birth	1000 total births	Monthly	HMIS, Hospital register

11.2 Data management

Data management includes the collection, reporting, analysis and use of data. To ensure successful implementation of the new ANC guidelines, facilities have to invest in collecting quality data. Data collection has to be an integral part of daily activities of health service providers. With the help of data managers at health facilities, data obtained have to be reported through DHIS as soon as possible to minimize human errors linked to delays. The existing ANC indicators at the facility and National level have to be adjusted to include the current new ANC guideline targeted indicators in the Health Sector M&E framework. Continuous data quality assessment is encouraged within the administrative health hierarchy consisting of primary, secondary and tertiary health care levels and the MOHSS.

11.3 Operational research

A range of strategies and innovations will be required to ensure successful implementation of the new 8 contacts antenatal care. Original operation researchers will be key to assess the effectiveness of different implementation measures in strengthening the quality of ANC including Clients experience of Care. The 2016 WHO guideline clearly specifies important knowledge gaps which should be considered while implementing the current ANC guideline as research topics. Policy makers and health providers are encouraged to ensure that research is not only done into the knowledge gaps but also to measure the impact of current new ANC guideline in reducing maternal and neonatal morbidity and mortality.

11.4 Sentinel surveillance

A sentinel surveillance system is used when high-quality data are needed about a particular disease that cannot be obtained through a passive system. At the beginning of implementation of this New ANC, criteria have been set to identify pilot health facilities. Those health facilities will offer guidance on opportunities and challenges to overcome scaling up the implementation of the new guidelines in the whole country. Those sites may continue to be used as sources of selected data even after the full implementation of the guideline in the whole country.

Some of the following criteria are key in the selection of Pilot Health facilities

- The willingness to be part of the new ANC guideline implementation
- The health facility has to be offering ANC services to a large population of women
- Have or willing to dedicate ANC health service providers to take care of women in ANC and collect all the needed ANC data
- Women can access easily ultrasound/sonar and other laboratory tests needed during different contacts

11.5 Supportive supervision and mentorship

Supportive supervision and mentorship will be key to ensure the full implementation of the new ANC guideline and quality of the services offered to pregnant women in Namibia.

Continuous supervision will assure the quality of care in all aspects of ANC in Namibia but among others

- Quality of ultrasound/sonar offered to pregnant women: To ensure that all have access and obtain at least one ultrasound before 24 weeks gestational, the tasks of performing ANC ultrasound might be shifted to other cadres including nurse midwives. This will require training, retention and supervision
- Counselling and education have to be standardized and not limited at facility level; CBHAs will have to be trained on offering the right message at the right time and this will require adequate supervision to ensure the same message is offered.
- Supervision has also to be maintained once lay health care providers are allowed to perform some tests like, rapid tests for HIV, malaria etc.
- Monitoring and quality improvement projects will be key and will require adequate supervision by designated staffs

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Appendix 1: Equipment, Supplies for ANC Unit

<p>Supplies for the Waiting area</p> <ul style="list-style-type: none"> • Should be covered, ventilated area with adequate seating • Desk & chairs for attendant/ receptionist, client, and her companion • Toilets with paper towels/toilet papers • Baby care area • Supply of clean water • Wall clock that can be seen easily • Wastebasket with covers for normal waste 	<p>Educational Materials for the waiting area</p> <ul style="list-style-type: none"> • Brochures, pamphlets or other educational materials for clients (IEC materials) • Wall posters with educational messages in appropriate language/context • TV/Audio with educational videos
<p>Examination room</p> <ul style="list-style-type: none"> • Examination space providing visual and auditory privacy • Writing desk, chairs for provider, client, and her companion • Examination bed • Bed step • Weighing scale for adults • Height board • MUAC tape • Examination table, covered • Blood pressure: sphygmomanometer (different sizes) • Adult Stethoscope • Body thermometer • Fetal stethoscope (Pinard and/or Handheld Doppler) • Gestational age calendar or calculator • Measuring tape • Light source (mobile lamp) • Clean water supply and soap • Hand wash/disinfectant • Soap dispensers • Gloves (sterile and non-sterile exam gloves) • Speculum and KY gel • Linen savers • Hand paper towels 	<p>Supplies for the examination room</p> <ul style="list-style-type: none"> • Cotton swabs/gauzes • Obstetric ultrasound machine, transducer, gel • Clients register, logbooks, other records • Brochures, pamphlets, or other educational materials for clients • Wall posters with educational messages in appropriate language/context • Wall clock that can be seen easily • Current calendar • Waste bin • Container for sharps disposal • Disposable bags (colour coded bags) <p>Emergency trolley in a designated area</p>

<p>Emergency Trolley Equipment</p> <ul style="list-style-type: none"> • Checklist of the equipment of the emergency trolley with expiry date as appropriate • Ambubags with masks (adult and neonates) • Face masks and nasal cannula • Oral Airways (different sizes) • Delivery pack • Suturing materials • Blood pressure apparatus, adult size • Stethoscope • Adult IV administration sets • IV solutions: Normal saline, Ringer's lactate, Glucose • Large bore cannula (14 and 16 gauge) • Sterile syringes and needles in varying sizes • Gloves • Urinary catheter/collection bag • Supplies for drawing blood: tourniquet, syringes and needles, tubes, labels • Urine dipsticks 	<p>Emergency Trolley medication</p> <ul style="list-style-type: none"> • Nifedipine tablets • Magnesium Sulphate (50% concentration) • Calcium Gluconate • Betamethasone/dexamethasone Injectables • Oxytocin (stored in the fridge) • Ephedrine injectable • Furosemide injectable • Hydrocortisone injectable • Naloxone injectable • Prednisolone injectable • Promethazine tablets • Misoprostol tablets • Diazepam injectable • Hydralazine injectable • Ampicillin injectable • Gentamicin injectable • Metronidazole injectable • Lignocaine 2% injectable • Sterile water for dilution
<p>Infection Prevention Supplies</p> <ul style="list-style-type: none"> • Instrument sterilizer • Alcohol solution/Betadine solution/ Hibitane in water • Chlorine for making 0.5% chlorine solution • Basket for instruments • Disinfectants (hand and instruments) • Brooms, mops • Puncture-proof container for sharps disposal 	<ul style="list-style-type: none"> • Paper towels • Soap at all sinks • Gloves (sterile and exam gloves) • Utility or heavy-duty gloves for cleaning • Waste bin with disposable colour coded plastic bags • Incinerator for hazardous waste • Aprons • Face mask • N95 respirator • Goggles
<p>Laboratory Supplies</p> <ul style="list-style-type: none"> • Equipment to test for: • Full blood count • Haemoglobin/Hematocrit • Blood group/Rh • Syphilis (Rapid kit if available) • HIV (Rapid) • HbsAg (rapid kit if available) • Malaria (Rapid kit if available) • Blood glucose • Urine protein • Urine bacteria 	<ul style="list-style-type: none"> • Supplies for blood draw: <ul style="list-style-type: none"> • Tourniquets • Syringes and needles • Labels • Tubes • Specimen bottle • Gloves • Vacutainer • Speculums • Swab sticks
<p>Clinic Records and documents</p> <ul style="list-style-type: none"> • Antenatal care card (Health passport) • ANC register • Family planning register • Mother and baby follow up register for PNC 	<ul style="list-style-type: none"> • Child health passport • Referral forms • ARV register • Patient care booklet for ART • Maternity record
<p>Other Equipment</p> <ul style="list-style-type: none"> • Long-lasting insecticide-treated bed nets 	

Appendix 2: Common conditions to be managed at Primary Health Care level

Condition	Pre-requisites
Majority of women with no medical or pregnancy related complications	
Age 37-41	<i>Ultrasound for dating and detail scan if available</i>
Asthma - good control	<i>*Not on prednisone treatment</i>
First degree (immediate) family history of diabetes	<i>Screen for GDM at 24 and 28 weeks</i>
Glycosuria	<i>*Do random glucose every time there is glucosuria: refer for OGTT if Random HGT is >8 *Screen for GDM (done at 24 and 28weeks) if 2+ Glucosuria (one occasion) or 1+ on two or more occasions</i>
HIV positive and otherwise healthy	<i>Compliant on treatment</i>
1 previous miscarriage before 12 weeks	
RPR titres or rapid syphilis test positive	<i>Ensure adequate treatment (3 doses of penicillin)</i>
Previous Caesarean section (up to 36 weeks)	<i>Refer to Secondary level at contact 6 for delivery plan</i>
Previous ectopic pregnancy	<i>*Confirmed intra-uterine pregnancy this pregnancy</i>
Previous instrumental delivery	<i>Forceps or ventouse</i>
Rh negative without antibodies	<i>Repeat antibodies at 26, 32 and 38 weeks</i>
Smoking	
Alcohol misuse	
Trace protein on diagnostic urine sticks	<i>Collect MSU and send for ASB If hypertension then refer to upper level</i>
Tuberculosis	<i>*HIV negative and no wasting</i>
Varicose veins	

Common conditions to be managed at District Hospitals

Condition	Pre-requisites
Abnormal lie at 34 weeks	Follow up for confirmation and version at 36 weeks
Age 15 years or less	Refer to social worker
Anaemia Hb <11g/dl, but >7g/dl	
Antepartum haemorrhage	Exclude Causes-see Chapter 9
Asthma on prednisone or with poor control	Achieve control OR refer appropriately
Decreased fetal movements	Refer to chapter 9 for management
Diabetes in previous pregnancy	If blood glucose normal in this pregnancy (screen again with OGTT between 24 and 28 weeks)
Epilepsy	Good control
Parity 5 or more	Have delivered 5 or more term infants before
Hypertension without proteinuria and with good control	On one drug only. If 1+ proteinuria and NO clinical signs of pre-eclampsia, quantify to exclude significant proteinuria
One previous abruption of the placenta	Umbilical Doppler at 24 weeks, IOL at 38 weeks
Polyhydramnios	Once fetal abnormalities and DM have been excluded
Poor SF growth	With normal umbilical artery Doppler: <95th centile
One previous Caesarean section	From 36 weeks onwards with delivery plan
Previous postpartum haemorrhage	Consider delivery in Hospital
Proteinuria 1+ (persistent on repeat visit 2 days later)	If blood pressure normal; collect MSU for ASB
Pyelonephritis in current pregnancy	
Previous pre-eclampsia/eclampsia	If onset was <34 weeks
Rheumatic fever previously, with no significant defects	

Common conditions to be managed at Intermediate and National Hospital

Condition	Pre-requisites
All poorly controlled diabetic	<i>Can also be managed at District level</i>
Anaemia (Hb < 8g/dl) (can also be managed at District Hospital)	<i>Can be managed at District level</i>
Anti-thrombotic therapy (warfarin, heparin etc.)	
Auto-immune diseases	<i>Initial workup at District level</i>
BMI (Body Mass Index) ≥ 40	<i>Screen for GDM between 24-28 weeks of gestation</i>
Cervical incompetence	<i>Initial workup and access for cervical cerclage</i>
Cardiac and Heart valve disease	<i>Initial basic work up Including cardiomyopathy</i>
Hypertension in pregnancy	<i>Requiring more than one drug to control</i>
Pre-eclampsia: Hypertension with significant proteinuria [2+ proteinuria, two occasions, 4 hours apart or 0.3g/24hours]	
Placenta praevia, proven on sonar	<i>Diagnosed on ultrasound (may need admission after 28 weeks)</i>
Previous pre-eclampsia/eclampsia (if onset was <34 weeks)	
Previous intra-uterine death or neonatal death (that occurred >24 weeks GA)	<i>Do not refer if IUD was due to syphilis</i>
Previous myomectomy	
Previous mid-trimester miscarriage (14-26 weeks)	
Previous preterm delivery (before 34 weeks)	
Rh negative with antibodies	<i>Refer for specialist care</i>
Two or more previous abruptio placentae	<i>Refer immediately, client might need admission at 28 weeks</i>
Polyhydramnios (to rule out fetal anomalies)	
Poor SF growth (with Doppler >95th centile)	<i>With abnormal Dopplers</i>
Multiple pregnancies	<i>All monochorionic pregnancies, Triplets or more, Twins with complications Uncomplicated DCDA can be managed at District level</i>

Appendix 3: Quick Check

A person responsible for initial reception of women of childbearing age seeking care should:

- assess the general condition of the care seeker(s) immediately on arrival
- periodically repeat this procedure if the line is long.

If a woman is very sick, talk to her companion.

ASK, CHECK RECORD	LOOK, LISTEN, FEEL	SIGNS	CLASSIFY	TREAT
<ul style="list-style-type: none"> • Why did you come? • What is the concern? 	Is the woman being wheeled or carried in or: <ul style="list-style-type: none"> • bleeding vaginally • convulsing • looks very ill • unconscious • in severe pain • in labour • delivery is imminent 	<ul style="list-style-type: none"> • If the woman is or has: <ul style="list-style-type: none"> • unconscious (does not answer) • convulsing • bleeding • severe abdominal pain or looks very ill • headache and visual disturbance • severe difficulty breathing • fever • severe vomiting. • Imminent delivery or • Labour 	EMERGENCY FOR WOMAN	<ul style="list-style-type: none"> • Transfer woman to a treatment room for Rapid assessment and management (Appendix 4) • Call for help. • Reassure the woman that she will be taken care of immediately. • Ask her companion to stay.
		<ul style="list-style-type: none"> • Imminent delivery or • Labour 	LABOUR	<ul style="list-style-type: none"> • Transfer the woman to the labour ward. • Call for immediate assessment.
		<ul style="list-style-type: none"> • Pregnant woman, or after delivery, with no danger signs 	ROUTINE CARE	<ul style="list-style-type: none"> • Keep the woman in the waiting room for routine care.

Appendix 4: Rapid Assessment and Management (RAM)

Use this chart for rapid assessment and management (RAM) of all women of childbearing age, and for women in labour, on first arrival and periodically throughout labour, delivery and the postpartum period. Assess for all emergency and priority signs and give appropriate treatments, then refer the woman to hospital.

EMERGENCY SIGNS	MEASURE	TREATMENT
AIRWAY AND BREATHING		
<ul style="list-style-type: none"> • Difficulty breathing or • Central cyanosis 		<ul style="list-style-type: none"> • Manage airway and breathing • Refer woman urgently to hospital
CIRCULATION (SHOCK)		
<ul style="list-style-type: none"> • Cold moist skin or • Weak and fast pulse 	<ul style="list-style-type: none"> • Measure blood pressure • Count pulse 	<p>If systolic BP < 90 mmHg or pulse >110 per minute:</p> <ul style="list-style-type: none"> • Position the woman on her left side with legs higher than chest. • Insert an IV line • Give fluids rapidly • Keep her warm (cover her). • Refer her urgently to hospital • If birth is imminent (bulging, thin perineum during contractions, visible fetal head), transfer woman to an emergency labour room and proceed with delivery
PREGNANCY STATUS		
EARLY PREGNANCY (not aware of pregnancy, or not pregnant (uterus NOT above umbilicus)		
	VAGINAL BLEEDING	
	HEAVY BLEEDING	
	<ul style="list-style-type: none"> • Pad or cloth soaked in < 5 minutes. 	<ul style="list-style-type: none"> • Insert an IV line • Give fluids rapidly • Give 0.2 mg ergometrine IM • Repeat 0.2 mg ergometrine IM/IV if bleeding continues. • Consider misoprostol if ongoing bleeding • If suspect possible complicated abortion, give appropriate IV/IM antibiotics
	<ul style="list-style-type: none"> • LIGHT BLEEDING 	<ul style="list-style-type: none"> • Examine woman • If pregnancy not likely, refer to other clinical guidelines.
LATE PREGNANCY (uterus above umbilicus)		
	<ul style="list-style-type: none"> • ANY BLEEDING IS DANGEROUS 	<p>DO NOT do vaginal examination, but</p> <ul style="list-style-type: none"> • Insert an IV line • Give fluids rapidly if heavy bleeding or shock • Refer woman urgently to hospital
DURING LABOUR before delivery of baby		
	<ul style="list-style-type: none"> • Bleeding more than 100 ml since labour began 	<p>DO NOT do vaginal examination, but:</p> <ul style="list-style-type: none"> • Insert an IV line • Give fluids rapidly if heavy bleeding or shock • Refer woman urgently to hospital
EMERGENCY	MEASURE	TREATMENT

<p>CONVULSIONS OR UNCONSCIOUS</p> <ul style="list-style-type: none"> • Convulsing (now or recently), or • Unconscious • If unconscious, ask relative • “has there been a recent convulsion?” 	<ul style="list-style-type: none"> • Measure blood pressure • Measure temperature • Assess pregnancy status 	<ul style="list-style-type: none"> • Call for help • Protect woman from fall and injury. • Manage airway • After convulsion ends, help woman onto her left side. • Measure BP and temperature • Insert an IV line and give fluids slowly (30 drops/min) • Give magnesium sulphate (see Appendix 14) • If early pregnancy, give diazepam IV or rectally • If diastolic BP >110 mm of Hg, give antihypertensive • If temperature >38°C, or history of fever, also give treatment for dangerous fever (below) • Refer woman urgently to hospital
<p>SEVERE ABDOMINAL PAIN</p> <ul style="list-style-type: none"> • Severe abdominal pain (not normal labour) 	<ul style="list-style-type: none"> • Measure blood pressure • Measure temperature 	<ul style="list-style-type: none"> • Insert an IV line and give fluids • If temperature more than 38°C, give first dose of appropriate IM/IV antibiotics • Refer woman urgently to hospital if systolic BP <90 mm Hg
<p>DANGEROUS FEVER</p> <p>Fever (temperature more than 38°C) and any of:</p> <ul style="list-style-type: none"> • Fast breathing • Stiff neck • Lethargy • Very weak/not able to stand 	<ul style="list-style-type: none"> • Measure temperature 	<ul style="list-style-type: none"> • Insert an IV line • Give fluids slowly • Give first dose of appropriate IM/IV antibiotics • Give artesunate IM (if not available, give artemether or quinine IM) and glucose • Refer woman urgently to hospital
<p>PRIORITY SIGNS</p>		<p>MEASURE</p>
<p>LABOUR</p> <ul style="list-style-type: none"> • Labour pains or • Ruptured membranes 		<p>TREATMENT</p>
<p>OTHER DANGER SIGNS OR SYMPTOMS. If any of:</p> <ul style="list-style-type: none"> • Severe pallor • Epigastric or abdominal pain • Severe headache • Blurred vision • Fever (temperature more than 38°C) • Breathing difficulty 		<ul style="list-style-type: none"> • Manage as for Childbirth • If pregnant (and not in labour), provide antenatal care • If recently given birth, provide postpartum care • If recent abortion, provide post-abortion care • If early pregnancy, or not aware of pregnancy, check for ectopic pregnancy

Appendix 5: Mapped interventions for the 8 scheduled ANC contacts.

Interventions	Eight scheduled ANC contact							
	1	2	3	4	5	6	7	8
	<12w	20w	26w	30w	34w	36w	38w	40w
Quick check	X	X	X	X	X	X	X	X
Maternal Assessment								
BP, Pulse, Weight and MUAC	X	X	X	X	X	X	X	X
BMI	X							
History taking	X	X	X	X	X	X	X	X
Estimated date of delivery calculated	X	X	X	X	X	X	X	X
Physical examination	X							
TB, GBV and IPV screening	X	X	X	X	X	X	X	X
Fetal Assessment								
SFH measurement/Abdominal palpation	X	X	X	X	X	X	X	X
Lie and presentation						X	X	X
Ask about Fetal movement	X	X	X	X	X	X	X	X
Fetal Heart rate auscultation		X	X	X	X	X	X	X
Investigations								
Blood group and Rhesus factor	X							
Haemoglobin	X		X			X		
HIV pre and post-test counselling*	X					X		
Syphilis	X				X			
Hepatitis B	X							
Haemoglucotest	X							
Urine dipsticks for Proteinuria\Glucosuria	X	X	X	X	X	X	X	X
Midstream Urine for ASB	X		X		X			
Dating Ultrasound	X	X						
STI Screening	X	X	X	X	X	X	X	X

Preventative measures, treat and manage								
Give TT- as appropriate	X							
Give iron/folic acid	X	X	X	X	X	X	X	X
Treat any identified disease	X	X	X	X	X	X	X	X
Offer PrEP and Condoms	X	X	X	X	X	X	X	X
Information Education and Counselling								
Educate on ANC schedule, interventions and adherence.	X	X	X	X	X	X	X	X
Address any observed common physiological disorder and discomforts of pregnancy	X	X	X	X	X	X	X	X
Develop or review birth and emergency plan	X	X	X	X	X	X	X	X
Educate about Danger signs	X	X	X	X	X	X	X	X
Discuss partner/support person involving in ANC as desired by client	X	X	X	X	X	X	X	X
Counsel on nutrition and healthy eating	X	X	X	X	X	X	X	X
Advise on hygiene and self-care	X	X	X	X	X	X	X	X
Provide information on breast feeding				X	X	X	X	X
Counsel on Postpartum Family Planning				X	X	X	X	X
Discuss mode of delivery						X	X	X
Review EDD and give follow up at 41 weeks at an appropriate level of care if not delivered								X

*HIV test for those not tested at first contact and retest those who were negative more than 12 weeks.

Appendix 6: Birth Preparedness and Complication Readiness planning (BPACR)

Why is preparing a birth and emergency plan important?

Birth preparedness and complication readiness (BPACR) is a globally accepted safe motherhood program strategy that encourages pregnant women, their families, and communities to effectively plan for births and deal with emergencies, if they occur. Its purpose is to increase the use of skilled care at birth and timely use of facility care for obstetric and newborn complications. Childbirth is unpredictable and having a birth plan can reduce confusion at the time of labour, help ensure that needed resources are available and increase the likelihood that the woman and her baby will receive appropriate and timely care. Factors identified as affecting pregnant women's birth preparedness and complication readiness include place of residence, access to health facility, educational status, husband's occupation, wealth quintiles, knowledge of key danger signs, attitude and ANC visits. Planning for and addressing challenges relating to these factors is therefore very important.

When is the plan developed?

With the recognition that all pregnant women remain at risk of complications, it is important for the woman and her family to plan for the birth to ensure that the pregnant woman delivers in good conditions and have all the necessary resources in case of complications to access timely emergency care. From her very first antenatal contact the care provider must help the woman and her support persons prepare for the birth and any complications that may arise. The plan must be individualized to reflect the pregnant woman's situation and resources. The plan must be reviewed at all subsequent contacts and any new changes reflected.

Who should be involved?

Preferably, the woman's family, her husband /partner, or other decision makers in her life should be involved in this process, if the woman agrees. The process involves ongoing discussions at to help them decide on where to give birth, organize the resources they need for the birth and decide what they will do in case of an emergency.

Explaining why it is important to include family members / support person in the plan

It is important to include the husband and other family members for the following reasons:

- Giving birth in a facility may involve money, so this decision should be made along with the husband and any others involved.
- If everyone agrees on the plan beforehand, when labour starts there will be no problem in making the decision to go to the health facility and how to get there.
- In some societies the husband must give permission for the woman to leave the house. If he agrees beforehand, she will be able to go even if he is not home at the time.
- Leaving home means that there needs to be someone to look after the house and other children; this may involve other family members.

Explaining reasons for the plan

Birth in a health facility is highly recommended because:

- Any complication can develop during the birth; complications are not always predictable. 15% of women will develop a complication which without appropriate care, may result in death or disability for the mother or baby.
- It is safest to give birth in a health facility. If complications arise during labour and delivery e.g. bleeding or fits, the attendant will have the skills, equipment and medications needed to treat the problem and help ensure a safe birth.
- To ensure birth with a skilled attendant, the woman and family must plan several elements in advance. This also applies in case of any emergency whereby the woman and family must also have an emergency plan.

Preparing a Birth and Emergency Preparedness Plan

This is done as part of routine antenatal counselling. In helping a woman and her family to develop their

individualized birth and emergency plan, the care provider first asks the client and her family/support persons questions to comprehend their unique circumstances and listens to their answers. He/she then gives advice and information relevant to their concerns and situation. Finally, she checks their understanding and asks what the family will do. Once he /she and the client/ family agree on the plan, the ANC care provider assists them in documenting the details of the plan and reviews the plan at all subsequent contacts.

The care provider must be knowledgeable on local beliefs and practices surrounding birth and must consider these when helping the client and her family develop their plan. He/she must ask which of the cultural practices the client would like to include in their plan e.g. use of a traditional birthing position. If on the other hand clients have included harmful practices, the provider must discuss alternative solutions for these. Remember that women will feel more comfortable giving birth in a health facility that shows awareness of the local beliefs and practices. Discussing these in advance enables the woman to know what to expect.

The planning process helps families to think ahead on what is needed for a safe birth; and helps them decide how to overcome any difficulty they may have. Remember, the work of the health care provider is not to provide the woman and her family with the solutions, but to explore possible options with her. Once the options have been identified, ask the woman or family to consider the benefits and problems associated with each option until they can arrive at a decision that best suits their situation. You can then together plan on how to achieve the solutions.

Birth Preparedness

Key components and considerations

1. Choose and prepare for birth at a health facility

Ask: (if the woman has other children)

Where did she give birth in the last pregnancies?

Where does she plan to give birth to this baby?

Advice/Message: It is safest to deliver in a health facility. Many problems can be prevented and any that do arise can be treated promptly with the required skill and medications.

Based on the woman's health and other considerations, the health worker can suggest which type of health facility would be best for the client.

2. Identify transport to get to the health facility

Ask: How will she get there? Will she have to pay for transport to get there?

Advice/ Message: It is important to identify how the pregnant woman will get to the health facility because labour can start at any time during the day or night, and it may be difficult to find transport at the last moment.

3. Save money for transport and other expenses at the health facility

Ask: Does she know much it will cost to deliver at the facility?

How will she pay for this?

Can she start saving for these costs now?

Advice/ message: It is important to save small amounts of money throughout pregnancy in order to have enough money to cover the costs of transport and other expenses for birth at the health facility.

4. Gather supplies and other items needed for health facility delivery

Ask: What supplies does she plan to obtain for the birth?

Advice/ Message. You will need to bring the following:

- Antenatal care card
- Clean clothes for her and the baby to wear
- Sanitary pads
- Food and water for her and the support person

As these supplies can be expensive, families may need to collect them bit by bit. It is important to keep the items clean and together so that they are ready and can be easily found when needed.

5. Know when to go to the health facility

Ask: When should she go to the health facility?

Advice/ Message: It is important to go to the facility early in labour so that there is enough time to arrive there before the baby comes. Advise woman to go to the health facility or contact the skilled attendant as soon as she can when any of the following signs of labour are noted:

- a bloody sticky discharge from the vagina (“show”)
- regular painful contractions every 20 minutes or less
- waters have broken/draining liquor

6. Identify a support person (s) in Labour

Ask: Who will go with her and support her during labour and delivery?

Advice/ message: It is important to identify the person who will accompany the pregnant woman to the health facility and who will stay on with her at the facility as her support person in labour. She must contact this person as soon as symptoms and signs of labour start. Include this person in discussions of the birth plan so that he / she knows the transportation plans and the importance of going to the chosen facility early.

7. Who else will take decisions when labour or complications start?

Ask: If labour starts or a complication arises at home who else must make the decision for her to be taken to the facility.

If she experiences a medical emergency during labour and delivery at the facility and is unable to make decisions for herself who else should be called upon to make decisions on her behalf?

Advice/ message: It is important to go to the facility early in labour or whenever complications arise so that there is enough time to arrive there before the baby and also receive timely care. Identify the person who must also make the decision for the woman to go to the health facility or receive care, especially if it is somebody other than the support persons. Include this person in discussions of the birth plan he or she should know the danger signs and their importance.

8. Identify who will care for the household while the pregnant woman and other family members are at the facility

Ask: Who will help care for her house and other children while she is at the health facility?

Advice/ message: It is important that arrangements are made beforehand for someone to take care of the household, including caring for older children, other family members, animals, etc.

9. Specific labour and delivery care choices at health facility

Ask: Does she has any specific choices regarding the care provided for her and her baby during labour and delivery such as birthing positions, use of pain medications, how placenta should be dealt with etc.

Advice/Message: There are some care options for women during labour and delivery. These include for example deciding on positions for delivery and use of pain medications.

It is helpful for clients to make these choices early and to let care providers at the facility know about them so that the necessary preparations to support these choices can be made.

Complication Readiness

Key Components and Considerations

Discuss potential obstetric emergencies with the woman and her family and teach them how to recognize danger signs during pregnancy and to go quickly to a health facility for help if they occur.

Ask: What danger signs if experienced during pregnancy or labour indicate that should immediately seek care

Advice/Message: Advise the woman to go to the hospital or health centre immediately, day or night,

WITHOUT DELAY, if any of the following emergency signs in figure 8.2 below are experienced.

- vaginal bleeding
- convulsions
- severe headache with blurred vision
- fever and too weak to get out bed
- severe abdominal pain
- fast or difficulty breathing
- fever
- abdominal pain
- feels ill
- swelling of fingers, face, legs
- Leakage of fluid from vagina for more than one day without signs of labour
- Not feeling the baby move for more than one day

Discuss with the woman and her family / support person the following questions?

- Where will the woman go if an emergency occurs? (e.g. profuse bleeding)
- Is there anyone who can transport the woman to the nearest health facility should such sudden complications arise and how much will it cost for transportation?
- How fast can she get there?
- Can she start saving money to use for an emergency?
- Who will go with her for support?
- Who will care for her home and children while she is away?

Advise/ Message; Review their answers to understand their situation and adapt your advice. Give information relevant for them and check their understanding.

Also advise the woman and her family to ask for help from the community, during emergencies if needed remind them that emergencies can arise more than once during the same pregnancy and therefore savings must be adequate.

Remind her to always bring her Antenatal care passport to the health facility even for an emergency visit. Finally discuss options and agree on what the family will do in response to all above listed questions in emergency situations.

Below is a sample of a Birth and Emergency plan

Use a pencil to place a ✓ in the appropriate box. If the woman's circumstances change during subsequent antenatal visits, revise the plan by erasing the previous ✓ and placing it in the box that reflects the change in plan.

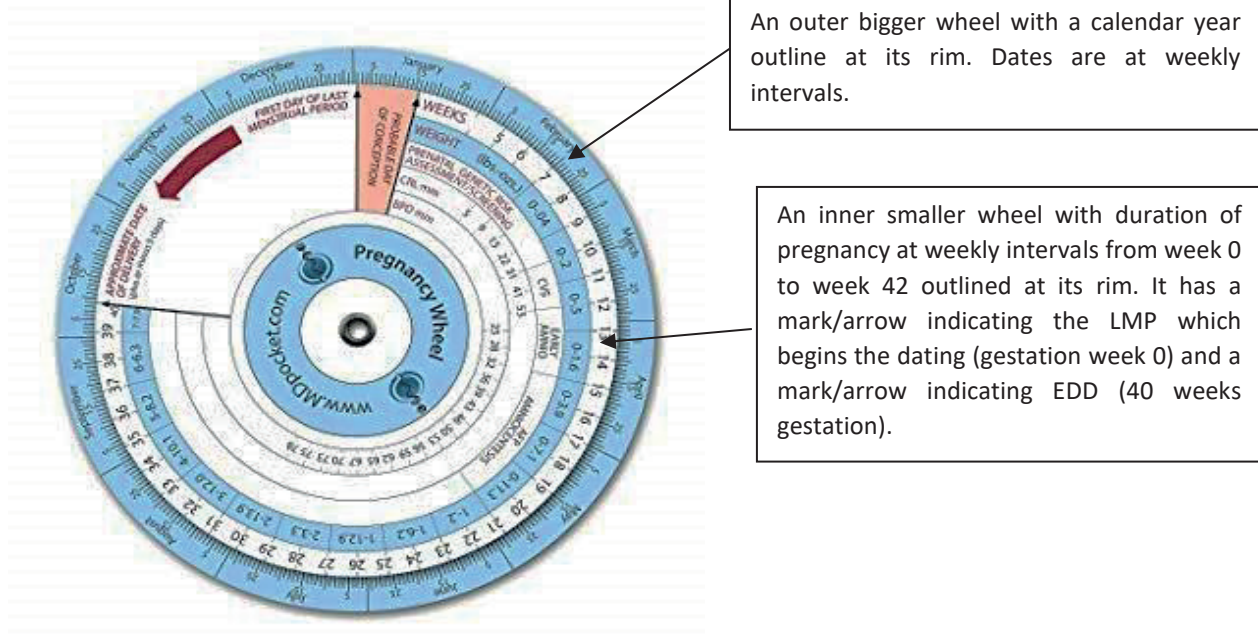
Name of Client:		Number:
Address:		Contact Phone Number:
Age:	Parity:	Expected Date of delivery:
Plan Component	Decision	Details and Comments
Planned place of birth:	<input type="checkbox"/> Hospital <input type="checkbox"/> Health Centre	
Mode of transport to health facility, if needed:	<input type="checkbox"/> Public transport <input type="checkbox"/> Private transport	
Money is available for transport, and other cost if needed?	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Support person during labour and birth:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Person(s) to look after your home and care for your family while in hospital:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
All Supplies for facility birth have been obtained and ready: (list provided)	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Advice provided about signs of labour and when to go to the nearest health facility for birth:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Specific labour and delivery care options have been decided	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Advice provided about when to go to nearest health facility for birth:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Advice provided about danger signs:	<input type="checkbox"/> Yes <input type="checkbox"/> No	
Advice provided about how to prepare for an emergency in pregnancy	<input type="checkbox"/> Yes <input type="checkbox"/> No	

Appendix 7: Calculating the Gestational Age and Expected Date of Delivery

A good method for calculating the estimated date of childbirth (EDD) and gestational age of a pregnancy is to use a gestational age calculator such as a pregnancy wheel. All women should have one ultrasound scan before 24 weeks of gestation to determine the gestation and expected date of delivery. If you do not have access to a gestational wheel, you should use the calendar method and formula below.

Using the Pregnancy Wheel

The pregnancy wheel is made up of two wheels:



To determine EDD, position the mark for LMP on the inner wheel to correspond to the given LMP date on the outer wheel calendar. Locate the EDD date on the outer wheel by looking for the date that corresponds to the EDD marker on the inner wheel

Using a formula to calculate the EDD using the calendar method

The date of the **first day** of the last menstrual period (LMP) **plus** seven days **minus** 3 months = EDD. **For example: 9 May + 7 days – 3 months = 16 February**

Determining the gestational age and EDD

After the calculation of EDD using any of the above method an ultrasound scan is performed to determine the gestational age and EDD. Use ultrasound performed before 24 weeks of gestation to support or confirm gestation age calculated using LMP, using the following options:

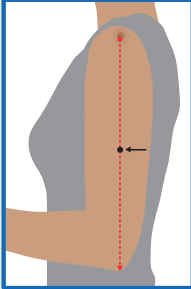
- If the LMP was certain and menstruation is regular, compare the LMP estimate to the ultrasound estimate.
- **ultrasound performed between 6- and 13-weeks pregnancy:** if the two dates differ by 7 days or less, use the LMP estimate; if the dates differ by more than 7 days, use the ultrasound estimate.
- **ultrasound performed between 13- and 24-weeks pregnancy:** if the two dates differ by 14 days or less, use the LMP estimate; if the dates differ by more than 14 days, use the ultrasound estimate.
- if the ultrasound was performed between 6 and 24 weeks pregnancy and the LMP was not certain or menstruation irregular, use the ultrasound estimate.
- if the LMP was certain and menstruation regular and no ultrasound was performed between 6- and 24-weeks pregnancy (or none with a heartbeat), use the LMP estimate.
- If LMP was not certain and no ultrasound was performed between 6 and 24 weeks of gestation use SFH estimates.

Appendix 8: Body Mass Index Chart

WEIGHT		90	100	110	120	130	140	150	160	170	180	190	200	210	220	230	240	250	260	270	280	290	
lbs		41	45	50	54	59	64	68	73	77	82	86	91	95	100	104	109	113	118	122	127	132	
kgs		41	45	50	54	59	64	68	73	77	82	86	91	95	100	104	109	113	118	122	127	132	
HEIGHT		Underweight			Healthy			Overweight			Obese			Extremely Obese									
ft/in	cm																						
4'8"	142.2	20	22	25	27	29	31	34	36	38	40	43	45	47	49	52	54	56	58	61	63	65	
4'9"	144.7	19	22	24	26	28	30	32	35	37	39	41	43	45	48	50	52	54	56	58	61	63	
4'10"	147.3	19	21	23	25	27	29	31	33	36	38	40	42	44	46	48	50	52	54	56	59	61	
4'11"	149.8	18	20	22	24	26	28	30	32	34	36	38	40	42	44	46	48	51	53	55	57	59	
4'12"	152.4	18	20	21	23	25	27	29	31	33	35	37	39	41	43	45	47	49	51	53	55	57	
5'1"	154.9	17	19	21	23	25	26	28	30	32	34	36	38	40	42	43	45	47	49	51	53	55	
5'2"	157.4	16	18	20	22	24	26	27	29	31	33	35	37	38	40	42	44	46	48	49	51	53	
5'3"	160.0	16	18	19	21	23	25	27	28	30	32	34	35	37	39	41	43	44	46	48	50	51	
5'4"	162.5	15	17	19	21	22	24	26	27	29	31	33	34	36	38	39	41	43	45	46	48	50	
5'5"	165.1	15	17	18	20	22	23	25	27	28	30	32	33	35	37	38	40	42	43	45	47	48	
5'6"	167.6	15	16	18	19	21	23	24	26	27	29	31	32	34	36	37	39	40	42	44	45	47	
5'7"	170.1	14	16	17	19	20	22	24	25	27	28	30	31	33	34	36	38	39	41	42	44	45	
5'8"	172.7	14	15	17	18	20	21	23	24	26	27	29	30	32	33	35	37	38	40	41	43	44	
5'9"	175.2	13	15	16	18	19	21	22	24	25	27	28	30	31	33	34	35	37	38	40	41	43	
5'10"	177.8	13	14	16	17	19	20	22	23	24	26	27	29	30	32	33	34	36	37	39	40	42	
5'11"	180.3	13	14	15	17	18	20	21	22	24	25	27	28	29	31	32	33	35	36	38	39	40	
5'12"	182.8	12	14	15	16	18	19	20	22	23	24	26	27	28	30	31	33	34	35	37	38	39	
6'1"	185.4	12	13	15	16	17	18	20	21	22	24	25	26	28	29	30	32	33	34	36	37	38	
6'2"	187.9	12	13	14	15	17	18	19	21	22	23	24	26	27	28	30	31	32	33	35	36	37	
6'3"	190.5	11	13	14	15	16	18	19	20	21	23	24	25	26	28	29	30	31	33	34	35	36	
6'4"	193.0	11	12	13	15	16	17	18	20	21	22	23	24	26	27	28	29	30	32	31	34	35	
6'5"	195.5	11	12	13	14	15	17	18	19	20	21	23	24	25	26	27	28	30	31	32	33	34	
6'6"	198.1	10	12	13	14	15	16	17	18	20	21	22	23	24	25	27	28	29	30	31	32	34	
6'7"	200.6	10	11	12	14	15	16	17	18	19	20	21	23	24	25	26	27	28	29	30	32	33	
6'8"	203.2	10	11	12	13	14	15	16	18	19	20	21	22	23	24	25	26	27	29	30	31	32	
6'9"	205.7	10	11	12	13	14	15	16	17	18	19	20	21	23	24	25	26	27	28	29	30	31	
6'10"	208.2	9	10	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	
6'11"	210.8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	25	26	27	28	29	30	

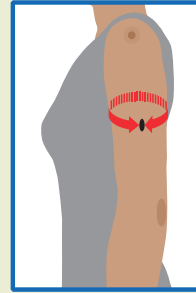
Appendix 9: Estimating BMI category from Mid Upper Arm Circumference (MUAC)

Estimating BMI category from mid upper arm circumference (MUAC)



The subject's left arm should be bent at the elbow at a 90 degree angle, with the upper arm held parallel to the side of the body. Measure the distance between the bony protrusion on the shoulder (acromion) and the point of the elbow (olecranon process). Mark the mid-point.

Ask the subject to let arm hang loose and measure around the upper arm at the mid-point, making sure that the tape measure is snug but not tight.



If MUAC is < 23.5 cm, BMI is likely to be < 20 kg/m².

If MUAC is > 32.0 cm, BMI is likely to be > 30 kg/m².

The use of MUAC provides a general indication of BMI and is not designed to generate an actual score for use with 'MUST'. For further information on use of MUAC please refer to *The 'MUST' Explanatory Booklet*.

(Source: Malnutrition Universal Screening Tool Nutritional Screen)

Appendix 10: Obstetric Assessment of the Abdomen for Fetal Growth and Wellbeing

This guide describes the steps and tasks that a care provider should employ to examine the abdomen of a pregnant woman at an antenatal contact. It is specifically to assess fetal growth and wellbeing and identify any obstetric risks conditions. The guide includes steps for:

- A. Assessing fetal growth by measuring fundal height
- B. Determining fetal lie and presentation

A. Assessing fetal growth by measuring fundal height

The two techniques recommended for assessing uterine size and fetal growth are:

- Measuring Symphysis-Fundal height with a measuring tape (for gestations greater than 22 weeks)
- Assessment fundal height by palpation using abdominal landmarks

1. Measuring Symphysis-Fundal height (for gestations of more 22 weeks or more) using tape measure.

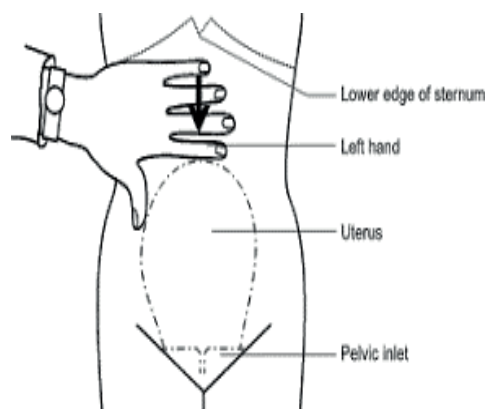


STEPS To check the fundal height with a tape measure:

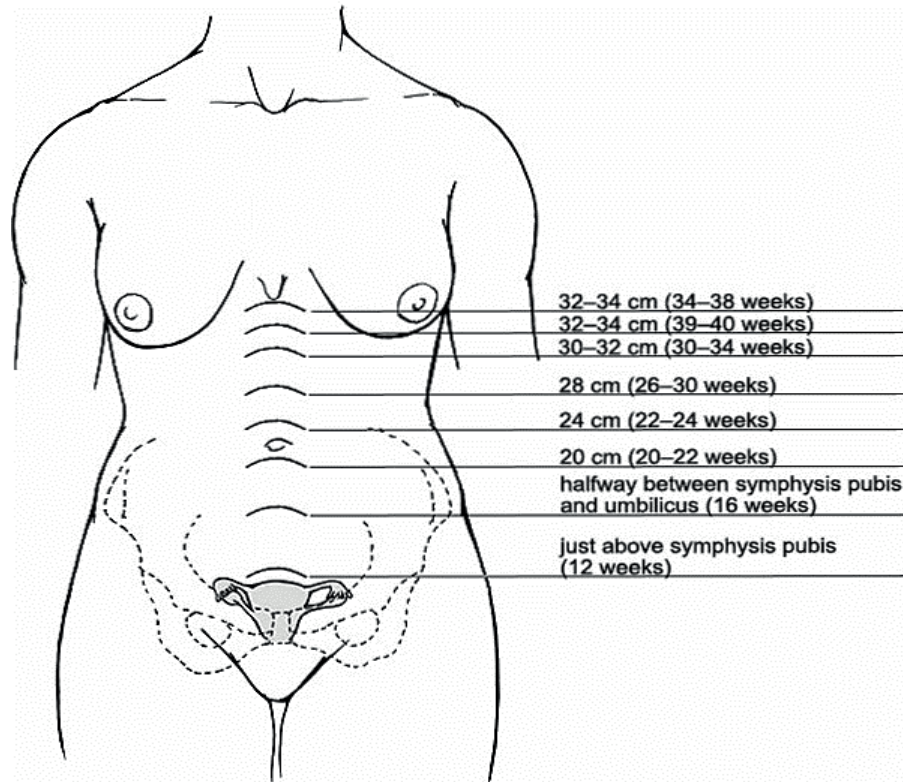
1. Place the zero line of the tape measure on the upper edge of the symphysis pubis.
2. Stretch the tape measure across the contour of the abdomen to the top of the fundus (located by palpation) using the abdominal midline as the line of measurement.
3. Compare the reading on the tape measure to the gestational age by dates (if known) to determine if fetal growth is satisfactory.
4. Alternatively, place the zero line of the tape measure at the top of the fundus and stretch it to the upper edge of the symphysis pubis.

2. STEPS for estimating fundal height in weeks through palpation

1. Gently palpate the abdomen above the symphysis pubis.
2. Estimate the weeks of gestation by determining the distance between the top of the fundus and the symphysis pubis or umbilicus, as shown in the diagram below:
3. Compare the estimate gestational size in weeks to the gestational age by dates (if known) to determine if fetal growth is satisfactory.



Estimating Fundal height in gestational weeks



NOTE: When comparing actual fundal height measurements with gestational age by dates, there may be variations based on what is considered to be “normal” fundal height for a given population

B: DETERMINING FETAL LIE AND PRESENTATION

- Check for fetal parts and movement (between 20 weeks and term).
- Check fetal lie and presentation (especially at/after 36 weeks), as follows:

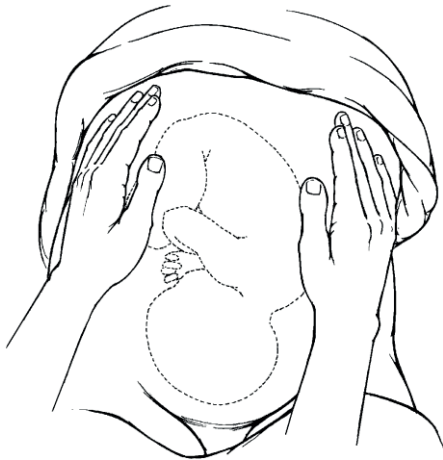
Steps for determining fetal lie and presentation

Step 1: Fundal Palpation (see Figure below)



- Stand at the woman's side, facing her head.
- Make sure your hands are clean and warm.
- Using the flat part (pads), not the tips, of your fingers, place both hands on the sides of the fundus at the top of the abdomen.
- Determine which part of the fetus is at the top of the fundus. To do this, gently but firmly use the flat part (pads) of fingers to assess the consistency and mobility of the fetal part:
 - The buttocks will be softer and more irregularly shaped than the head and cannot be moved independently of the body.
 - A head will be harder than the buttocks and can be moved back and forth between both hands.

Step 2: Lateral Palpation (see Figure below)



- Move your hands smoothly down the sides of the uterus to feel for the fetal back: it will feel firm and smooth in contrast to the small parts, which will feel knobby and easily moveable.
- Keep your dominant hand steady against the side of the uterus, while using the palms of your non-dominant hand to apply gentle but deep pressure to explore the opposite side of the uterus.
- Repeat the manoeuvre, palpating with the dominant hand and steadying with the non-dominant hand.

Step 3: Pelvic Palpation (Supra-Pubic) (see Figure below)



- Turn and face the woman's feet (her knees should already be bent slightly to relax the abdominal muscles).
- Place your hands on the sides of the uterus with the palms of your hands below the level of the umbilicus and your fingers pointing towards the symphysis pubis. Grasp the fetal part snugly between the hands (the thumbs will be at the approximate level of the umbilicus).
- If the fetal part is palpable at or above the symphysis pubis, feel it for shape, size, consistency, and mobility. If the head is presenting, a hard mass with a distinctive round surface will be felt. If the breech is presenting, a larger, softer mass will be felt. Observe the woman's face for signs of pain/tenderness during palpation.

Appendix 11: Variety of foods available in Namibia

CATEGORY OF FOOD	AVAILABLE FOOD NAMIBIA
Foods providing energy	<p>Cereals: maize, wheat, rice, sorghum, millet (mahangu), mealie-pap, bread, macaroni and breakfast cereals</p> <p>Tubers and roots: Irish potatoes, sweet potatoes, yams and cassava</p>
Foods providing protein (Body building component)	<p>Animal source: meat, chicken, eggs, milk and milk products,</p> <p>Plants source: beans, nuts and seeds</p>
Vitamins and minerals (protective component)	<p>Fruits: guavas, apples, pears, oranges, mangoes, paw paws, watermelons, bananas, sweet melon, lemons, limes, baobab fruit, amarula fruit, eembe (bird plum), "omaguni", "oondunga", ooshe, butternut, Inaras, and fresh or dried eenyandi.</p> <p>Vegetables: green leafy vegetables such as spinach, pumpkin leaves, ombidi (wild cabbage), carrots, pumpkin, "iihenda" and squash.</p>
Micronutrients and minerals	<p>Calcium: Dairy or milk products: milk, cheese, yoghurt/sour milk/omaere, fish (with the bones), dark green leafy vegetables, and baobab fruit, figs and orange.</p> <p>Iron: Liver, organ meat e.g. tripe, "matangala", poultry, Mopani worms, fish, dried beans, green vegetables, figs, Cereals e.g. sorghum (consider preparation skills such as fry) and Eggs.</p> <p>Magnesium: Cocoa, chocolate, nuts, soybeans, dried beans, peas, dark green vegetables, whole grain cereals e.g. Mahangu porridge.</p> <p>Vitamin A: All yellow e.g. carrots, pumpkin, sweet potatoes. Deep orange fleshy e.g. peaches, mangoes. Dark green fruit and vegetables e.g. spinach, mutete, omboga, milk, liver, eggs, and fish oil</p> <p>Folic acid: Liver, dried beans, dark green leafy vegetables, whole grains, nuts, citrus fruits, poultry, pork and Shellfish</p> <p>Zinc: Seeds e.g. Pumpkin seeds and sunflower seeds (roasted), nuts, whole grain, green leafy vegetables, eggs, liver and seafood.</p>

Appendix 12: Management of Common Physiological Disorders of Pregnancy

Discomfort or Concern (period when it occurs)	Physiological or anatomic explanation	Management	Danger Signs: advise patient to report back without delay if:
Abdomen and Gastrointestinal System			
Abdominal or groin pain or cramps (2 nd and 3 rd trimester)	<ul style="list-style-type: none"> The enlarging uterus stretches its supporting ligaments. Uterus has “practice” contractions (Braxton-Hicks) 	<ul style="list-style-type: none"> ★ Encourage patient to rest on her side with thighs and legs flexed. Place pillow between legs and/or on side to support abdomen ★ Gentle massage of abdomen and lower back ★ Warm compress 	<ul style="list-style-type: none"> ☞ Pain is accompanied by bleeding, vomiting, watery discharge, fever, painful urination, loin pain or abdominal tenderness.
Appetite changes: Food cravings especially for nonfood substances e.g. Clay, stones, etc. (1 st trimester)	<ul style="list-style-type: none"> Cause is unclear This is a cause for concern if the woman is not eating a normal nutritious diet and has loss of appetite 	<ul style="list-style-type: none"> ★ Encourage to avoid eating of non-food substances ★ Check for Haemoglobin level 	<ul style="list-style-type: none"> ☞ May indicate iron deficiency anaemia. ☞ Experiencing fatigue and muscle weakness
Nausea and vomiting (1 st and 2 nd trimester)	<ul style="list-style-type: none"> Hormonal Changes of pregnancy Relaxation of smooth muscle of intestines Changes in food metabolism with slower emptying of stomach 	<ul style="list-style-type: none"> ★ Adjust diet ★ Eat smaller but more frequent meals ★ If symptoms are severe or causing marked discomfort: Ginger, chamomile, vitamin B6 and/or acupuncture are recommended for the relief of nausea in early pregnancy, based on a woman’s preferences and available options. 	<ul style="list-style-type: none"> ☞ If vomiting is associated with weakness, dizziness weight loss, dehydration, confusion, headache, Fever chills, epigastric or abdominal pain, blurred vision, urinary frequency or reduced urine or inability to keep any foods down.
Increased Salivation (mainly 1 st Trimester but can persist for longer period)	<ul style="list-style-type: none"> Cause unclear but is related to hormonal changes. Suspected to be due to change in carbohydrate metabolism during pregnancy 	<ul style="list-style-type: none"> ★ Advise on how to minimize social discomfort e.g. Use of covered private container with hygienic disposal contents. ★ Avoid foods that worsen salivation e.g. starchy foods 	

Discomfort or Concern (period when it occurs)	Physiological or anatomic explanation	Management	Danger Signs: advise patient to report back without delay if:
<p>Bowel Function changes: Slow Bowels /Constipation (Any trimester)</p>	<ul style="list-style-type: none"> Pregnancy hormones cause relaxation of bowel muscles leading to slowed passage of food through and slow digestion processes. Enlarging uterus displaces intestine/bowels upwards and further slows passage of food through them. Dietary intake may not contain adequate fibre. Insufficient fluid intake to replace the increased fluid losses because of the pregnancy 	<ul style="list-style-type: none"> ★ Advise on healthy diet with adequate intake of fruits and vegetables containing fibre ★ Advise to drink 2 to 3 litres of fluid each day. ★ Advise to avoid delaying defecation when urge occurs. ★ Avoid use of laxatives and enema unless prescribed. ★ Prescribe stool softeners if conservative measures above do not provide relief. ★ Wheat bran or other fibre supplements can be used to relieve constipation in pregnancy if the condition fails to respond to dietary modification, based on a woman's preferences and available options. 	<ul style="list-style-type: none"> ☞ Inability to pass stools accompanied by worsening abdominal pain or cramps and vomiting. ☞ Inability to burp or pass flatus or stools. ☞ Presence of fever ☞ Excessive abdominal distension not attributable to the pregnancy and associated with abdominal tenderness. ☞ Generalized feeling of un-wellness.
<p>Bloating or Gas discomfort (All trimesters)</p>	<ul style="list-style-type: none"> Pregnancy hormones cause relaxation of bowel muscle with slowed passage of food through bowels and digestion processes. This allows gas to build up and creates bloating, burping and of course flatulence. Gas during pregnancy can also increase later in pregnancy when the enlarging uterus places pressure on the abdominal cavity thus slowing digestion and allowing gas to build up. 	<ul style="list-style-type: none"> ★ Drink a lot of water ★ Limit intake of gas forming foods such as beans, peas, cabbage, etc. ★ Avoid very spicy and fried foods ★ Avoid carbonated drinks ★ Eat slowly and chew foods well before swallowing ★ Eat balanced diet containing fruits and vegetables and rich in fibre. ★ Eat smaller meals more frequently during the day ★ Do mild exercise like walking ★ Avoid smoking 	<ul style="list-style-type: none"> ☞ Inability to burp or pass flatus or stools. ☞ Presence of fever ☞ Obvious abdominal distension not attributable to the pregnancy with abdominal tenderness. ☞ Generalized feeling of un-wellness. ☞ Loss of appetite ☞ Weight loss ☞ Diarrhoea stools of more than three days duration with severe cramping

Discomfort or Concern (period when it occurs)	Physiological or anatomic explanation	Management	Danger Signs: advise patient to report back without delay if:
<p>Heartburn and indigestion (burning discomfort in lower mid chest and upper abdomen which is worse after meal and on lying down). (1st and 3rd trimesters)</p>	<ul style="list-style-type: none"> • Enlarging uterus displaces intestine /bowels upwards and further slow passage of food through them. • There is increased reflux of food acid containing from stomach into oesophagus because of these changes causing burning discomfort 	<ul style="list-style-type: none"> ★ Advice on diet and lifestyle to prevent and relieve heartburn in pregnancy ★ Eat balanced diet containing fruits and vegetables and rich in fibre. ★ Sit in upright position for at least one hour before lying down after meals ★ Avoid activities that require bending over such as sweeping soon after meals. ★ Rest with back and head raised up on 2-3 pillows if one must lie down soon after meals. ★ Antacids to women with troublesome symptoms that are not relieved by lifestyle modification. Prescribe if needed: e.g. Mg-trisilicate and Aluminium hydroxide 	<ul style="list-style-type: none"> ☞ There is severe or worsening upper abdominal pain which is relieved by eating only to recur 2-3 hours later (ulcer) ☞ Pain is persistent with and involving shoulder (perforated ulcer) ☞ Accompanied by blurred vision, face and hand swelling and severe headache (pre-eclampsia).
<p>Haemorrhoids: protruding swellings at anus which may be painful or bleed. (2nd and 3rd trimesters)</p>	<ul style="list-style-type: none"> • Effects of pregnancy hormones on smooth muscle in the bowel and on the blood vessels particularly in the pelvis and anal area with congestion in veins and slowed bowel movements. • Increased uterine size also presses on the large bowel causing congestion in the veins and constipation 	<ul style="list-style-type: none"> ★ Avoid constipation by eating foods rich in fibre such as whole grains, oranges, pineapples and watermelons ★ Empty bowel once the urge occurs and avoid delaying emptying. ★ Soak in warm soothing salt baths to relieve anal discomfort. ★ Avoid prolonged sitting or standing which further worsen congestion ★ Prescribe soothing anti-haemorrhoidal cream or anal pessaries. 	<ul style="list-style-type: none"> ☞ If bright red anal bleeding is observed. ☞ Worsening anal pain and swelling with discomfort when sitting.
<p>Bleeding or painful gums (2nd trimester)</p>	<ul style="list-style-type: none"> • Hormonal changes affecting blood flow in mouth which results in increased growth of small blood vessels in the gums, thickened gum tissues, oedematous and more fragile gum tissues 	<ul style="list-style-type: none"> ★ Advise to practice good dental hygiene. ★ Advise to use soft or medium toothbrush ★ Rinse gums with warm salty water when bleeding occurs. ★ Eat adequate amounts of fruits rich in vitamin C e.g. oranges, pineapple, mango 	<ul style="list-style-type: none"> ☞ Painful localized swelling of gum accompanied by toothache or carries. ☞ Profuse persistent bleeding

Discomfort or Concern (period when it occurs)	Physiological or anatomic explanation	Management	Danger Signs: advise patient to report back without delay if:
Musculoskeletal System Discomfort and Concerns			
Back and Lower limbs: Back ache (2 nd and 3 rd trimester)	<ul style="list-style-type: none"> Pregnancy hormones act to loosen joints and soften connective tissues including the ligaments between bone joints 	<ul style="list-style-type: none"> Educate on good body posture and mechanisms for sitting up, lying down lifting objects to avoid spraining muscles and ligaments. Advise on use of comfortable low heel shoes (avoid high heel shoes). Advise supportive well-fitting bra. Avoid lifting heavy objects e.g. carrying toddler infant in third trimester Rest often, lying on side on firm mattress /surface whilst keeping thigh and leg flexed/bent. Regular exercise throughout pregnancy is recommended to prevent low back and pelvic pain Based on a woman's preferences, physiotherapy- (back massage and warm compresses), use of support belts and acupuncture may be helpful Prescribe: Oral paracetamolif needed (avoid NSAIDS such as ibuprofen) Advise to return in three days if symptoms worsened or remain unchanged. 	<ul style="list-style-type: none"> Pain is severe and localized mainly on one side. Pain radiates into lower legs. Pain is associated with difficulty in standing, walking or sitting up Is associated with weakness, numbness or tingling in limbs.
Difficulty getting up and down, walking awkwardly or with waddling gait (2 nd and 3 rd trimester)	<ul style="list-style-type: none"> Hormonal effects leading to softening of connective tissues of joints and muscles Changes in posture due the enlarging and heavy uterus Fatigue 	<ul style="list-style-type: none"> Advise to consider the following techniques: <ul style="list-style-type: none"> When getting up from lying posture to roll on to one side first, then to push up putting feet down to a sitting position before standing. When sitting, to recline by propping pillow against lower back and to place pillow under knees or elevate legs. 	<ul style="list-style-type: none"> If she experiences numbness, muscular weakness with severe pain in back or lower limbs. If she is unable to get up or stand. If she has difficulty in voiding urine or moving bowels due to loss of urge or sensation.

Discomfort or Concern (period when it occurs)	Physiological or anatomic explanation	Management	Danger Signs: advise patient to report back without delay if:
		<ul style="list-style-type: none"> ★ Avoid lying flat on back. When lying down, to prop pillow slightly to elevate the head and to elevate feet slightly by placing a pillow under knees and legs. ★ She can also lie on her side with knees and hips flexed (bent), place pillow between knees and another on side under abdomen. ★ Wear supportive shoes with low or flat heels. ★ Avoid bending over at the hip to perform tasks such as farming, cooking or sweeping. ★ To pick items from floor reach item by squatting rather than bending at waist. ★ Encourage back strengthening exercises (e.g. angry cat exercise) and walking with correct posture. 	
Leg cramps: usually sudden and of short duration (2 nd and 3 rd trimester)	<ul style="list-style-type: none"> • Reduced circulation to leg • Pressure of baby's head on nerves and blood supply to the lower leg 	<ul style="list-style-type: none"> ★ Rest, straighten legs and flex foot upwards ★ When lying down change positions frequently. ★ Avoid prolonged standing, sitting, or crossing of legs ★ Magnesium, calcium or non-pharmacological treatment options can be used for the relief of leg cramps in pregnancy, based on a woman's preferences and available options. 	<p>If pain persists and is associated with:</p> <ul style="list-style-type: none"> ☞ Calf pain/tenderness or weakness of the leg, ☞ Localized redness and swelling in one leg or ☞ Prolonged tingling and numbness

Discomfort or Concern (period when it occurs)	Physiological or anatomic explanation	Management	Danger Signs: advise patient to report back without delay if:
<p>Feet / ankle swelling occurring at end of the day or after prolonged standing or sitting (2nd-3rd Trimesters)</p>	<ul style="list-style-type: none"> Hormonal changes cause salt retention and pooling / congestion of blood in lower legs. The growing uterus compresses veins coming from the legs. The pooling of blood in leg veins results in leakage of fluid out of the small blood vessels /capillaries into neighboring tissues. 	<p>Advise woman to:</p> <ul style="list-style-type: none"> ★ Avoid prolonged standing or sitting. ★ Take frequent rest breaks to walk or lie down. ★ To lift legs slightly when sitting. ★ When lying down, turn to left side with legs elevated slightly on pillow. ★ Avoid crossing legs when sitting and avoid wearing of tight bands around thighs or hips. ★ May use elastic hose if necessary. ★ Increase fluid intake daily (2 litres daily). 	<p>Feet swelling is accompanied by the following:</p> <ul style="list-style-type: none"> ☞ Localized redness and swelling in one leg. ☞ Swelling of face and hands. ☞ Severe headaches and blurred vision, epigastric pain (indicating Pre-eclampsia). ☞ Leg or calf pain particularly in one leg (deep vein thrombosis). ☞ Localized redness, darkened colouration and pain over vein or in one leg only (inflammation of vein/thrombophlebitis). ☞ Skin blistering with fever and chills. ☞ Infection (cellulitis).
<p>Varicose veins: swollen veins on legs or in genital area which may be painful. (2nd and 3rd Trimester)</p>	<ul style="list-style-type: none"> Hormonal changes cause salt retention and pooling / of blood in lower legs. The growing uterus obstructs venous return to the legs from the hip area. The pooling of blood in veins to the legs results in varicose veins. Familial tendency. 	<ul style="list-style-type: none"> ★ Elevate legs slightly when sitting or lying down. ★ Avoid prolonged standing and sitting or crossing of legs. ★ Take short exercise breaks. ★ Use supportive elastic hose or long socks. ★ Avoid wearing of tight clothing around waist or thighs. ★ Water immersion. 	<ul style="list-style-type: none"> ☞ Worsening pain especially over vein with localized swelling or redness or leg swelling. ☞ If she develops calf pain and tenderness. ☞ Very painful sudden swelling in vulva (ruptured varicose vein in vulva).

Discomfort or Concern (period when it occurs)	Physiological or anatomic explanation	Management	Danger Signs: advise patient to report back without delay if:
Genital and Urinary system Discomforts and concerns			
Frequent urination especially at night, occasional loss of urine with sneezing, coughing or sudden laughter. (1 st and 3 rd trimester)	<ul style="list-style-type: none"> Growing womb pressing on the bladder in early pregnancy. In late pregnancy head of baby pressing on bladder. During pregnancy total body fluid amount increases and the kidney also produces more urine. 	<ul style="list-style-type: none"> To avoid holding urine for prolonged period after the urge to void occurs. Lean forward when voiding to promote complete bladder emptying. Limit intake of urine producing stimulants such as caffeine (found in tea, coffee and cola nuts). 	<ul style="list-style-type: none"> If frequent urination is associated with pain or burning discomfort. There is change in urine colour or smell, loin pain, fever or chills (possible infection). Excessive thirst (possible diabetes).
Vaginal discharge (whitish non offensive copious discharge) (1 st -3 rd trimester)	<ul style="list-style-type: none"> Increased blood supply to genital tract occurs associated with hormonal effects on all blood vessels. Hormonal effects on genital tract tissues result in increased gland activities and production of secretions and mucous. 	<ul style="list-style-type: none"> Counsel on keeping good perineal and vulval hygiene. Wear comfortable loose cotton under wear. Avoid douching or inserting anything into vagina. Avoid tight nylon under wear Inspect vulva to check for characteristics of discharge. 	<p>If discharge is associated with:</p> <ul style="list-style-type: none"> Painful urination. Vulva soreness, itchiness or ulcers. Offensive smell. Frothy, greenish or creamish colour (indicating infection). Gush or persistent trickle of warm water-like fluid (liquor loss).
Changes in sexual feelings and libido	<ul style="list-style-type: none"> Hormonal effects on genital tract and brain psychology. Posture discomforts associated with enlarged abdomen. Cultural norms and beliefs relating to sex in pregnancy. Other reasons why sex might not be as pleasurable: include fear of hurting the baby, nausea, fatigue, awkwardness, etc. 	<ul style="list-style-type: none"> Explain that the hormonal fluctuations in pregnancy may influence desire for sex and the coital process as do the body changes as the pregnancy grows. Many women are too fatigued and nauseated to be interested during the 1st trimester. The 2nd trimester may bring a new sense of delight in sex. In the 3rd trimester sexual desire may wane as well. Encourage her to discuss how she feels about discussing sex with her partner and what he can do to help her to be more comfortable during sex to enable her to enjoy sex. 	<ul style="list-style-type: none"> If sex is painful or associated with bleeding. If change in sexual feelings is causing serious marital problems. If sexual abuse/assault occurs.

Discomfort or Concern (period when it occurs)	Physiological or anatomic explanation	Management	Danger Signs: advise patient to report back without delay if:
		★ Involve her partner and/or support persons.	
Skin and hair discomforts and concerns			
Skin and hair changes: Itchiness of skin (especially on abdomen)	<ul style="list-style-type: none"> Hormonal changes of pregnancy leading to increased blood flow to skin with changes in turgidity, skin elasticity and sweat gland activity. Increase in body hair growth in response to increase level of hormones. Enlarging uterus stretches skin of abdominal wall. 	<ul style="list-style-type: none"> ★ Reassure and encourage on maintenance of good general body hygiene. ★ If skin is dry, use topical emollients such as shea butter creams or other moisturizers. ★ Avoid bleaching creams. ★ If troublesome prescribe: topical antipruritic creams. ★ Use oral antihistamines only if needed and for short durations only. 	<ul style="list-style-type: none"> ☞ Itchiness is associated with generalized rashes e.g. macules, papules or pustules. ☞ Systemic symptoms such as cough, bodily aches, headaches and fevers. ☞ Yellowish discoloration of eyes (jaundice). ☞ Poor appetite with intolerance of fatty food (gall bladder disease).
Increased perspiration and heat discomfort	<ul style="list-style-type: none"> Hormonal changes of pregnancy leading to increased blood flow to the skin with increased skin sweat gland activity. Increased thyroid gland activity during pregnancy. 	<ul style="list-style-type: none"> ★ Encourage frequent cooling baths or cleaning with soaked towels. ★ Wear loose fitting clothing. ★ Rest in well ventilated areas. 	<ul style="list-style-type: none"> ☞ Rapid heartbeat, palpitations, nervousness, hand tremors and weight loss (hyperthyroidism). ☞ Sense of impending doom, tightness of chest, nervousness, dry mouth (severe anxiety).
Darkening of skin in the face, chest and nipple areas. (1 st to 3 rd trimesters)	<ul style="list-style-type: none"> Increased melanin pigment production in the affected areas due to some of the pregnancy hormones. 	<ul style="list-style-type: none"> ★ Avoid use of bleaching creams – this is a normal occurrence in pregnancy. ★ Reassure pregnant woman that the skin changes often revert when pregnancy ends. 	
Stretch marks: reddish or pale looking streaks on the breasts, abdominal wall and upper thighs. May be slightly itchy. (1 st to 3 rd trimesters)	<ul style="list-style-type: none"> Due to the loosening of skin collagen tissues because of pregnancy hormones. The fast-growing breasts and womb stretch the overlying skin. Familial tendency. 	<ul style="list-style-type: none"> ★ Encourage to wear well-fitting supportive bras. ★ Abdominal support where uterus is pendulous. ★ Apply creams containing soft emollients such as shea butter or moisturizing creams especially if itchy. ★ Avoid use of steroid containing bleaching creams. 	

Discomfort or Concern (period when it occurs)	Physiological or anatomic explanation	Management	Danger Signs: advise patient to report back without delay if:
Acne (especially in the face and upper chest)	<ul style="list-style-type: none"> The pregnancy hormones affect sweat glands and skin water content resulting in increased sebum, skin oils production and perspiration. Familial tendency. 	<ul style="list-style-type: none"> Keep skin clean by washing frequently or wiping with cool damp cloth. Avoid pinching or squeezing out the contents of the pimple. 	<ul style="list-style-type: none"> If acne is extensive with pustules (pus discharging) localized pain and swelling (indicating dermatitis).
Nervous system, Mental and Sleep Concerns and discomforts.			
Vivid dreams or nightmares	<ul style="list-style-type: none"> Due to effects of pregnancy hormones on brain. Anxiety over ability to cope with childbirth and childcare challenges. 	<ul style="list-style-type: none"> Encourage to discuss anxieties with care provider/partner and support persons. Avoid eating just before bedtime. Teach relaxing activities and exercises 	<ul style="list-style-type: none"> Inappropriate behaviour or incoherent speech which is accompanied by hallucinations (may indicate psychosis). Severe pervading and persistent low mood with tearfulness, lethargy and suicidal thoughts (indicating severe depression).
Moodiness / Mood swings (1 st trimester)	<ul style="list-style-type: none"> Effect of hormonal changes in pregnancy on the brain. Anxieties relating to pregnancy. Stress and Fatigue. 	<ul style="list-style-type: none"> Discuss ways she can positively manage her mood swings. Involve her partner and/or support persons. 	<ul style="list-style-type: none"> Mood swings predominated by severe low mood with feelings of worthlessness, suicidal or morbid thoughts (severe depression). Hallucinations or psychosis. Unusual hyperactivity or grandiose ideas indicating bipolar disorder.
Feelings of worry or anxiety: more common with first pregnancy and with teen pregnancies (often associated with domestic challenges).	<ul style="list-style-type: none"> Effect of pregnancy hormones on the brain. Anxiety over ability to cope with childbirth and childcare challenges. 	<ul style="list-style-type: none"> Counsel and encourage her to discuss what she is anxious about with you and her support persons or partners. Allow her to ask questions and answer all her questions honestly and accurately. Reassure her that she is capable, by pointing out her achievements. Counsel on birth preparedness and complication readiness and help her achieve readiness. 	<ul style="list-style-type: none"> Anxiety with accompanying low mood with feelings of worthlessness, suicidal or morbid thoughts (severe depression). Rapid heartbeat, palpitations, nervousness, hand tremors and weight loss (hyperthyroidism). Sense of impending doom, tightness of chest, nervousness, dry mouth (severe anxiety).

Discomfort or Concern (period when it occurs)	Physiological or anatomic explanation	Management	Danger Signs: advise patient to report back without delay if:
Sleepiness and fatigue (1 st , 3 rd trimesters)	<ul style="list-style-type: none"> If in early pregnancy, is due to effects of pregnancy hormones on body and brain. In third trimester often due to weight gain and fatigue associated with the large uterine size. 	<ul style="list-style-type: none"> ★ Encourage to rest frequently and avoid over exertion. ★ Avoid alcohol intake. ★ Ensure adequate intake of food calories particularly if nausea and vomiting are present in early pregnancy. 	<ul style="list-style-type: none"> ☞ Generalized feeling of being unwell, fever chills, headaches. ☞ Profound fatigue which interferes significantly with daily activities. ☞ Presence of symptoms of severe depression.
Inability to Sleep: insomnia.	<ul style="list-style-type: none"> In the third trimester, this is often due to discomfort associated with the large uterine size. 	<ul style="list-style-type: none"> ★ Avoid intake of caffeine and alcohol or food /drinks containing alcohol or stimulants. ★ Avoid use of benzodiazepines (sleeping pills). ★ Advise to rest in a quiet, well ventilated, low lit room even if not sleeping. ★ Change sleep positions often to minimize cramping and discomfort. ★ Use relaxation techniques before trying to sleep. ★ Massage of back and lower abdomen. 	<ul style="list-style-type: none"> ☞ Presence of symptoms of depression (excessive low mood, suicidal thoughts). ☞ Abnormal behaviour and speech with presence of hallucinations.
Numbness /tingling of fingers and toes (2 nd and 3 rd trimester).	<ul style="list-style-type: none"> Swelling and oedema in the tissues surrounding nerves to the limbs and leading to irritation of nerves. Direct compression by the head of the baby on the nerves as they pass through the pelvis in late pregnancy 	<ul style="list-style-type: none"> ★ Encourage to use good body mechanics when sitting lying or changing posture. ★ Ensure adequate Vitamin B intake. ★ Exercise /Massage affected limb. 	<ul style="list-style-type: none"> ☞ Worsening numbness and pain with weakness in hands/grip (carpal tunnel syndrome). ☞ Muscle weakness or muscle wasting with inability to stand, foot drop or maintain good hand grip. ☞ Numbness is associated with increase thirst, hunger and urination (diabetes).
Headaches (1 st to 3 rd trimester)	<ul style="list-style-type: none"> Hormonal changes of pregnancy cause an increase in head and brain blood circulation. Changes also occur in blood sugar levels and oxygen concentration which affect brain activities and function. 	<ul style="list-style-type: none"> ★ Encourage patient to eat balanced diet and to get adequate rest. ★ Massage neck and shoulder muscles. ★ If non-pharmacological measures do not provide relief prescribe paracetamol as needed. 	<ul style="list-style-type: none"> ☞ Associated with blurred vision, fits, nausea, vomiting and/or epigastric pain (severe pre-eclampsia, eclampsia). ☞ Associated with fever, chills, bodily aches (e.g. Malaria, enteric fever). ☞ Unilateral and severe pain.

Discomfort or Concern (period when it occurs)	Physiological or anatomic explanation	Management	Danger Signs: advise patient to report back without delay if:
	<ul style="list-style-type: none"> Anxiety and stress relating to pregnancy. 	<ul style="list-style-type: none"> Avoid: Aspirin, Ibuprofen, Narcotics, sedatives or hypnotics 	<ul style="list-style-type: none"> ☞ Associated with one sided weakness of limbs, numbness or tingling. ☞ Associated with stuffy nose, purulent nasal discharge (sinusitis). ☞ Earache (Otitis media). ☞ Toothache.
Breast and Nipple discomforts and concerns			
Tingling pain	Hormonal changes lead to breast changes in preparation for lactation.	<ul style="list-style-type: none"> ★ Wear well-fitting supportive bra recognizing that breast size will change progressively as pregnancy advances. ★ Keep nipples clean and dry. 	<ul style="list-style-type: none"> ☞ If lump, dimpling, or puckering or localized painful swelling or sore is noticed in a breast (mastitis or cancer). ☞ If nipple area is scaly with itchiness or ulceration (cancer). ☞ Breast skin becomes “orange peel” like. ☞ It there is bloody, brownish or pus like nipple discharge.
Nipple discharge	<ul style="list-style-type: none"> Both breasts increase uniformly in size with slight tingling discomfort. Clear or milk-like nipple discharge 		
Increase in breast size (1 st to 3 rd trimester)			
Cardiovascular and Respiratory system Discomforts and concerns			
Light-headedness, dizziness or fainting (1 st -3 rd trimester)	<ul style="list-style-type: none"> ★ Drop in blood pressure due to changes in posture. ★ Pooling of blood in lower leg vessels. ★ Other factors such as <ul style="list-style-type: none"> ○ Stress ○ Hunger ○ Fatigue ○ Hyperventilation 	<ul style="list-style-type: none"> ★ Get up more slowly from sitting or lying position. ★ When lying, lie on left side. ★ Eat smaller more frequent meals. ★ Avoid: <ul style="list-style-type: none"> ○ Prolonged standing in hot or stuffy places ○ Lying flat on back ○ Hyperventilation 	<ul style="list-style-type: none"> ☞ Excessive fatigue, sleepiness, pallor. ☞ Breathlessness and rapid heartbeat. ☞ Abdominal pain with shoulder pain (leaking or ruptured ectopic gestation).
Stuffy nose / Nose bleeding (2 nd -3 rd trimester)	<ul style="list-style-type: none"> • Hormonal changes cause increased blood flow to nasal tissues with congestion within small blood vessels. • Increased mucous production by nasal tissues. • Trauma through nose picking. 	<ul style="list-style-type: none"> ★ To stop nosebleed: <ul style="list-style-type: none"> ★ Sit up (do not lie down or tilt head); Gently pinch nostrils shut for 1-2 minutes then release. Repeat several times if necessary, until bleeding stops. ★ Avoid nose picking. 	<ul style="list-style-type: none"> ☞ If there is sinus pain with purulent offensive nasal discharge, headaches (acute sinusitis). ☞ Stuffiness associated with watery eyes and generalized discomfort (common cold). ☞ Nasal bleeding that will not stop.

Discomfort or Concern (period when it occurs)	Physiological or anatomic explanation	Management	Danger Signs: advise patient to report back without delay if:
		<ul style="list-style-type: none"> ★ For stuffiness use normal saline drops if necessary. ★ Antihistamines may be prescribed for short periods if topical nasal drops do not work. ★ Avoid decongestants 	
Palpitations or awareness of rapid heart beat (1 st trimester)	<ul style="list-style-type: none"> • Increased blood flow and volume in response to the hormonal changes in pregnancy. • Anxiety. 	<ul style="list-style-type: none"> ★ Reassure that this is a normal change of pregnancy. ★ Avoid intake of caffeine (found in tea, coffee and some carbonated drinks). 	<ul style="list-style-type: none"> ☞ Associated with recurrent fainting episodes or blackouts. ☞ Associated with chest pain, shortness of breath or easy fatigue. ☞ Associated with being unable to lie flat. ☞ Nervousness, sense of impending doom, tightness of chest, nervousness, dry mouth (severe anxiety).
Shortness of breath / Breathlessness 3rd Trimester	<ul style="list-style-type: none"> • Hormonal changes promote lower carbon dioxide levels and higher oxygen levels in blood. • Hyperventilation through increased breathing rates helps maintain a normal balance. • The enlarging uterus pushes diaphragm up - decreasing lung space and capacity causing shortness of breath. 	<ul style="list-style-type: none"> ★ Encourage to lie on her side and use good body mechanics. ★ Encourage to rest - propping head end up with pillows in late pregnancy. 	<ul style="list-style-type: none"> ☞ If associated with chest pain, productive cough or wheezing. ☞ Shortness of breath that worsens markedly with slight exertion, with chest pain, rapid heartbeat, pallor and swelling of lower limbs. ☞ Associated with being unable to lie flat. ☞ Occurs as recurrent acute attacks accompanied by rapid heartbeat and or with pink frothy sputum. ☞ History or presence of calf pain.

Appendix 13: Managing Shock

Shock is characterized by failure of the circulatory system to maintain adequate perfusion of the vital organs. Shock is a **life-threatening condition** that requires **immediate and intensive treatment**.

Suspect or anticipate shock if one or more of the following is present:

- bleeding in early pregnancy (e.g. abortion, ectopic or molar pregnancy);
- bleeding in late pregnancy or labour (e.g. placenta praevia, abruptio placentae, ruptured uterus);
- bleeding after childbirth (e.g. ruptured uterus, uterine atony, tears of the genital tract, retained placenta or placental fragments);
- infection (e.g. unsafe or septic abortion, amnionitis, endometritis, acute pyelonephritis);
- trauma (e.g. injury to uterus or bowel during abortion, ruptured uterus, tears of genital tract).

SYMPTOMS AND SIGNS

Diagnose shock if the following symptoms and signs are present:

- fast, weak pulse (110 beats per minute or more);
- low blood pressure (systolic less than 90 mmHg).

Other symptoms and signs of shock include:

- pallor (especially of inner eyelid, palms or around mouth);
- sweatiness or cold, clammy skin;
- rapid breathing (rate of 30 breaths per minute or more);
- anxiousness, confusion or unconsciousness;
- scanty urine output (less than 30 mL per hour)

IMMEDIATE MANAGEMENT

When managing the woman's problem, apply basic principles when providing care.

- CALL FOR HELP. Urgently mobilize all available personnel.
- Monitor vital signs (pulse, blood pressure, respiration, temperature).
- If the woman is unconscious, turn her onto her side to minimize the risk of aspiration if she vomits, and to ensure that an airway is open.
- Keep the woman warm but do not overheat her, as this will increase peripheral circulation and reduce blood supply to the vital centers.
- Elevate the legs to increase return of blood to the heart (if possible, raise the foot end of the bed).

SPECIFIC MANAGEMENT

- Start an IV infusion (two if possible) using a large-bore (16-gauge or largest available) cannula or needle.
- Collect blood for estimation of haemoglobin, immediate crossmatch and clotting test (just before infusion of fluids):
 - Rapidly infuse IV fluids (normal saline or Ringer's lactate) initially at the rate of 1 L in 15–20 minutes.

- Avoid using plasma substitutes (e.g. dextran). There is no evidence that plasma substitutes are superior to normal saline in the resuscitation of a shocked woman, and dextran can be harmful in large doses.
- Give at least 2 L of these fluids in the first hour. This is over and above fluid replacement for ongoing losses. Note: A more rapid rate of infusion is required in the management of shock resulting from bleeding. Aim to replace two to three times the estimated fluid loss. Do not give fluids by mouth to a woman in shock.
- If a peripheral vein cannot be cannulated, perform a venous cutdown.
- Continue to monitor vital signs (every 15 minutes) and blood loss.
- Catheterize the bladder and monitor fluid intake and urine output
- • Give oxygen at 6–8 L per minute by mask or nasal cannula.
- If available, apply a non-pneumatic anti-shock garment (NASG) as a temporizing measure until appropriate care is available.

DETERMINING AND MANAGING THE CAUSE OF SHOCK

Determine the cause of shock after the woman is stabilized. If heavy bleeding is suspected as the cause of shock:

- Take steps simultaneously to stop bleeding (e.g. uterotonic drugs, uterine massage, bimanual compression, uterine balloon tamponade, aortic compression, preparations for surgical intervention).
- Transfuse as soon as possible to replace blood loss.

Determine the cause of bleeding and manage accordingly:

- If bleeding occurs during first 22 weeks of pregnancy, suspect abortion or ectopic or molar pregnancy.
- If bleeding occurs after 22 weeks or during labour but before childbirth, suspect placenta praevia, abruptio placentae or ruptured uterus.
- If bleeding occurs after childbirth, suspect ruptured uterus, uterine atony, tears of genital tract, retained placenta or placental tissue.
- Reassess the woman's condition for signs of improvement.

If infection is suspected as the cause of shock:

- Collect appropriate samples (blood, urine, pus) for microbial culture, if facilities are available, before starting antibiotics. –
 - Give the woman a combination of antibiotics to cover aerobic and anaerobic infections and continue until she is fever-free for 48 hours.
 - Ampicillin 2 g IV every six hours.
 - PLUS gentamicin 5 mg/kg body weight IV every 24 hours.
 - Do not give antibiotics by mouth to a woman in shock.
 - Reassess the woman's condition for signs of improvement.
- If trauma is suspected as the cause of shock, prepare for surgical intervention.
- Reassess the woman's response to fluids within 30 minutes to determine if her condition is improving. Signs of improvement include: - stabilizing pulse (rate of 90 per minute or less).

Appendix 14: Flow Chart for Magnesium Sulphate administration in Preeclampsia

