Pregnancy & Childbirth Management Guidelines

Level- 1
A Guide for Nurses, Midwives and Doctors
Second Edition

DEPARTMENT OF WOMAN & CHILD HEALTH
DIRECTORATE GENERAL OF PRIMARY HEALTH CARE
MINISTRY OF HEALTH
SULTANATE OF OMAN
2016
Pregnancy & Childbirth Management Guidelines

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Second Edition

2016
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PREFACE

The Sultanate of Oman under the wise leadership of His Majesty Sultan Qaboos Bin Said has accomplished great achievements within the health sector over a short period of time. These achievements have been widely recognized and acclaimed by various international organizations, including the World Health Organization (WHO), The United Nations Children’s Fund (UNICEF) and the United Nations Population Fund (UNFPA).

Oman has made significant achievements in reducing perinatal mortality from 15 per 1000 births in 2007 to 11.8 per 1000 births in 2014. In addition, infant mortality rate has dropped from 64 in 1980 to 7.9 per 1000 live births in the year 2014. Maternal mortality ratio, since initiation of its monitoring by Ministry of Health (MOH) in 1991, has also shown some drop from 27.37 in 1991 to 18.3 in 2014 per 100,000 live births. Antenatal care coverage reaches over 99% and 99% of mothers deliver under the supervision of skilled personnel (MOH, 2014).

Quality of maternal health care delivery is ensured by putting in place a standard client maternal health record and a parent healthcare-facility-based antenatal register, both providing information on the profile of each pregnant woman, her risks, problems, health care needs, plans and management carried out during antenatal(ANC), prenatal (PN) & postnatal (PNC) and their outcomes. Furthermore, health care provider’s knowledge and skills are kept updated by pre and in-service training on assessed job needs.

Development and update of this operative guideline by the Ministry of Health Oman (MOH) aim to keep health care providers knowledge updated with the evidence based practices thus, ensure the best possible standard of health care delivery, and through this effort, achieve a further reduction in maternal mortality, still birth and neonatal mortality.

The interventions described in this guideline are based on the latest available scientific evidence, as they are adapted from the World Health Organization (WHO) source named “Pregnancy, Childbirth, Postpartum and new born care, 2015” A guide for essential practice; in addition to above, some sections/topics have been incorporated from other evidence based resources consistent with the management of pregnancy and child birth. Policies and practices otherwise included are based on best practices and are as per the common consensus of an expert group in the country.

This update edition includes new evidence-base guidelines for management of medical problems with pregnancy which include GDM, Hypertension, thyroid diseases, varicella infection and vaginal discharge.

This updated “Pregnancy & childbirth guideline level 1” 2nd edition is designed for the use of doctors and nurses working at primary health care facilities (Health centres with or without deliveries and small hospital).
CONTENTS OF THE MANUAL

This manual is divided into six sections:

Section 1:
Outline of the standard antenatal care for low risk woman and contains the organization of ANC care, the contents of the antenatal visits and the tasks of the antenatal care

Sections 2:
Deal with the common symptoms and management of common medical problems such as Anaemia, Hypertension, Diabetes, Thyroid diseases, Urinary tract infection, vaginal discharge, HIV and Chicken pox. It also covers the common obstetric complications encountered in the antenatal period such as bleeding, pain abdomen, fever, loss or decreased fetal movements and premature rupture of membranes.

Section 3:
This section describes normal labour and childbirth, including use of the partogram and active management of the third stage of labour. This section aims to provide the health care worker with the information needed to differentiate between the normal process and a complication.

Section 4:
This section describes the routine post natal care. It also outlines post natal check-up for special conditions. Some of the postnatal complications are also discussed in this section.

Section 5:
This section outlines rapid initial assessment of pregnant woman and management of emergencies during pregnancy and childbirth. It also contains general principles of communicating with women and their families during and after the events.

Section 6:
This section describes some of the common procedures that may be necessary in some conditions. It also contains general principles of care, including infection prevention, fluid replacement and local anaesthesia.
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<tr>
<td>LBW</td>
<td>Low Birth Weight</td>
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<td>LSCS</td>
<td>Lower Segment Caesarean Section</td>
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<td>MMHG</td>
<td>Millimetres of Mercury</td>
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<td>Parent Health Centre</td>
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<td>RBS</td>
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<tr>
<td>RPHL</td>
<td>Regional Public Health Laboratory</td>
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<tr>
<td>RT-PCR</td>
<td>Real time polymerase chain reaction</td>
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<td>SCBU</td>
<td>Special Care Baby Unit</td>
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<td>SOP</td>
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<td>TSH</td>
<td>Thyroid Stimulating Hormone</td>
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<td>TT</td>
<td>Tetanus Toxoid</td>
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<td>UTI</td>
<td>Urinary Tract Infection</td>
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<td>VDRL</td>
<td>Venereal Disease Research Laboratory</td>
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<td>VZIG</td>
<td>Anti-Varicella Zoster Human Immunoglobulin</td>
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<td>VZV</td>
<td>Varicella Zoster Virus</td>
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<td>WB</td>
<td>Western Blot Test</td>
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<td>WCH</td>
<td>Woman and Child Health</td>
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<td>WHO</td>
<td>World Health Organization</td>
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DEFINITIONS OF DIFFERENT TYPES OF REFERRAL

Early appointment:
Appointment should be given within two weeks or as requested by the referring doctor.

Urgent appointment:
Appointment should be given within 48 hours in consultation with the concerned department.

Emergency referral:
Patient should be referred immediately with I.V. line has been inserted, via an ambulance and a medical attendance (nurse, midwife or a doctor). The doctor on-call in the referring hospital should be informed earlier by the phone.
POLICY GUIDELINES

• Pregnancy and childbirth management is an integral part of the Woman & Child Health (WCH) services and are provided in all governorates of the Sultanate.

• Standardized antenatal care (ANC), prenatal care (PN) and postnatal care (PNC) services with health education and counselling should be provided by the parent health centre team for all women where ever trained health care personnel are available.

• Total of 6 ANC & 2 PNC visits should be achieved by the end of a normal pregnancy & child birth.

• ANC & PNC should be readily and easily accessible to all women and should be sensitive to the needs of individual women and the local community.

• Registration of the woman (antenatal booking) should be carried out in the parent health centre as soon as a woman is diagnosed to be pregnant preferably less than 13 weeks of gestation.

• A comprehensive physical examination (cardiovascular, respiratory, abdominal & breast examination etc.) should be carefully performed to all pregnant women at first ANC visit for booking and throughout pregnancy by trained doctor.

• All pregnant women should be allowed to carry their own Maternal Health Record issued to them at the time of first booking.

• All pregnant women should receive appropriate information about the number and timing of antenatal visits and to be given an opportunity to discuss the schedule and the type of care with their health providers.

• All pregnant women should be referred at 22-24 weeks to the obstetrician for routine assessment and anomaly scan. Obstetrician should document on the recommendation section in the record if any specific future plans for the women during ANC, labour or PNC period were indicated.

• Referral should be made to the obstetrician for high risk cases as outlined in this guideline.

• Clear management instructions should be provided by the obstetricians if a high risk patient was referred back to the primary health care for routine ANC care.

• Delivery should only be conducted by trained health personal.

• All trained members of the WCH/EPI outreach teams should provide information and health education to the community.

• Maternal Health Record (HP-194)) and ANC Register should be used for ANC & PNC documentation.

• Child Health Record (HP-140) and EPI Register should be used for new born baby health status, immunization& follow up documentation.

• All health care providers in primary health care institutions should follow the guidelines set in this manual for provision of antenatal care, childbirth & postnatal care services.
SECTION 1: BASIC ANTENATAL CARE
**TASKS OF ANTENATAL CARE**

A schedule consisting of 6 antenatal visits is considered to be adequate for uncomplicated pregnancy. Refer to table 6 for the schedule of standardized ANC visits including the tasks that to be performed at each visit.

Each antenatal visit has a focused content. Longer time slots should be allocated to allow comprehensive assessment and discussion. This should be possible as the number of visits has been restricted to 6 visits in low risk cases.

At booking all women should receive appropriate information about the number and timing of antenatal visits and to be given an opportunity to discuss the schedule and the type of care with their health providers. The tasks of ANC care are the following:

**Record of Personal Information**

At the first visit all the personal information should be documented as per the Maternal Health Record.

**History Taking**

At the first visit the history as per the Maternal Health Record parameters which includes preconception care, current and previous, obstetrical & gynaecological risks, medical history, current danger signs & symptoms, birth spacing history and family medical history should be documented (See Maternal Health Record for details).

**Women should also be asked about (in the present pregnancy):**

- Exposure to radiation
- Drugs in 1st trimester
- Fever, rash in 1st trimester
- Current medication & Allergy

**Clinical Examination of Pregnant Women**

**Measurement of weight and body mass index (BMI)**

Maternal weight and height should be measured at the first antenatal appointment, and the woman’s Body Mass Index (BMI) to be calculated (weight [kg]/height [m]²).

If the BMI is < 19.8 or > 29 the nutritional status should be assessed.

**Measurement of blood pressure**

The blood pressure (BP) measurement should be recorded carefully at booking & at each visit.

Measure blood pressure in sitting position, if diastolic blood pressure is above 90 mmHg, (repeat after 1 hour rest), if diastolic blood pressure is still ≥90 mmHg, ask the woman if she has; severe headache, blurred vision, epigastric pain and check protein in urine. The case should be graded as high risk and to be followed more closely.
Systemic Examination

This includes examination for pallor, jaundice, lymph nodes, thyroid, cardiovascular system, chest, abdomen, oedema, skeletal system and dental problems.

Breast Examination

Breast should be examined for any skin, nipple changes or lumps.

Obstetric Examination

Specific Obstetric examinations recommended at each visit include:

• Estimation of fetal size at each antenatal appointment to detect small or large for gestational age fetus. Symphysis-fundal height should be measured at each antenatal appointment from 24 weeks of gestation. A discrepancy of ≤ 4 cm between the fundal height and the gestational age is acceptable. Patient should be referred for growth scan and an obstetric opinion, by urgent appointment, if discrepancy was noted in two occasions 4 weeks apart.

• Fetal heart sounds to be checked by Doppler fetal heart recorder (sonicaid) and fetal movements are assessed at all ANC visits.

• Fetal presentation should be assessed by abdominal palpation from 32-34 weeks onward, when presentation is likely to influence the plan of delivery.

Suspected Fetal Malpresentation should be confirmed by an ultrasound assessment
RISK GRADING

Risk grading should be done at every visit and to be updated in both the Maternal Health Record and the ANC Register.

If any of the listed conditions is present consider the woman at a high risk.

Current Obstetric & Gynaecological risks
1. Age < 15 years or > 40 years.
2. BMI > 35.
4. Pregnancy induced hypertension (PIH).
5. Diastolic blood pressure is ≥ 90 mm Hg at current booking.
6. Antepartum haemorrhage.
7. Pelvic Tumour.

Previous Obstetric & Gynaecological risks
1. Pre-eclampsia / eclampsia.
2. Caesarean Section.
3. Preterm labour.
4. Premature rupture of membranes.
5. Three or more consecutive abortions during 1st trimester.
7. Postpartum haemorrhage.
8. Thrombosis, Embolus.
11. Low birth weight (LBW) (<2500 gm).
12. Macrosomia (≥ 4000 gm).
13. Fetal or neonatal death.
15. Malformation or chromosomally abnormal child.
Medical history

1. Hypertension.
2. Diabetes mellitus.
3. Renal diseases.
4. Cardiac disease.
5. Sickle cell diseases.
6. Thalassemia major.
7. Chronic Hepatitis.
8. HIV.
10. Epilepsy.
12. Thyroid diseases.
13. Other diseases or conditions which need special attention.

Current Danger Signs & Symptoms:

1. Severe pallor
2. Persistent headache
3. Blurring of vision
4. Generalized oedema
5. Convulsion
6. Unilateral leg oedema
7. Calf tenderness
8. Difficult breathing
9. Vaginal bleeding/leaking
10. Persistent or severe abdominal pain
11. Unexplained persistent fever

Every effort should be done to trace high risk ANC defaulters including home visits as per the need and feasibility

ULTRASONOGRAPHY IN ANTENATAL CARE

If ultrasound is available at booking, ultrasonic assessments are recommended for all pregnant women to determine viability, gestational age in view of last menstrual period and to determine number of foetuses. This will improve consistency of gestational age assessments during pregnancy.

All women to be referred for anomaly scan at 22-24 weeks gestation.

Pregnant women should be referred to the secondary care for growth scan if clinically indicated.

Crown–rump length measurement is used to determine gestational age up to 14 weeks. Beyond 14 weeks, head circumference or bi-parietal diameter is the preferable measurement.
LABORATORY TESTS

There are certain tests to be conducted during each ANC visit as shown in the table below (√) marks the test to be done.

Table 1: Laboratory tests to be performed during ANC and PNC visits:

<table>
<thead>
<tr>
<th>Test</th>
<th>At booking</th>
<th>12-14 weeks</th>
<th>22-24 weeks</th>
<th>28-30 weeks</th>
<th>32-34 weeks</th>
<th>36-38 weeks</th>
<th>6 weeks PNC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood group &amp; Rh Factor</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Antibody screening (ABS)</td>
<td>√</td>
<td></td>
<td>√*</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sickling (if not known)</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Haemoglobin (gm/dl)</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td></td>
<td></td>
</tr>
<tr>
<td>VDRL **</td>
<td>√</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>TPHA (if VDRL + ve)</td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV antibody test**</td>
<td>√</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Urine test:</td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Microscopy (screening for Asymptomatic bacteriuria)</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glucose</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ketones</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Albumin</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Urine Culture &amp; sensitivity if indicated</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Blood Sugar Test (venous sample)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RBS/ FBS</td>
<td>√</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OGTT</td>
<td>√***</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>√***</td>
</tr>
</tbody>
</table>

* Antibody screening test to be repeated at 28 week if Rh factor negative.
** HIV antibody test & VDRL test if not done at booking should be done in the subsequent visit.
*** OGTT to be done when indicated (refer to Algorithm 1)
• **All pregnant women should be offered screening for HIV infection at their booking ANC visit:**
  - Counseling (pre-testing information) to the woman will be given before collecting the blood sample. Negative HIV result should be documented in the green card.

• **All pregnant women should be screened for syphilis infection at ANC booking:**
  - Screening for Syphilis should be offered because treatment of syphilis is beneficial to the mother and fetus.
  - If a pregnant woman is found to have a positive VDRL Confirm the diagnosis by performing TPHA and sexual partner should be screened for syphilis.

• **All pregnant women registered in ANC clinic must perform at booking visit RBS or FBS for screening of diabetes and then follow according to guideline see page 37.**
  - OGTT (oral glucose tolerance test): by using 75 g of anhydrous glucose or 82.5 g of glucose monohydrate.

• **All pregnant women should be tested at booking visit for blood group, Rh factor status and antibodies screening test(ABS):**
  - If the pregnant woman was Rh negative, partner should also be tested to determine whether the administration of anti-D prophylaxis is necessary.
  - ABS test should be repeated at 28-30 weeks if Rh factor negative.

• **All pregnant women must be offered at booking visit urine test for microscopy, glucose, ketones and albumin:**
  - Asymptomatic bacteriuria is common in pregnant women and there is evidence that treatment of such cases reduces the risk of pyelonephritis and leads to better outcomes of pregnancy.
  - Women should be offered routine screening for asymptomatic bacteriuria by midstream urine culture early in pregnancy.
  - If urine microscope showed more than 20 WBCs per high power field, urine for culture & sensitivity is to be done.
  - Mid-stream specimen of the urine should be sent for culture in cases of symptoms of urinary tract infection.
  - Urine examination requires a clean catch midstream specimen to minimize the possibility of contamination. Patients should be educated on how to collect the specimen.

**Note:** Urine for protein should be done whenever high blood pressure is detected (diastolic blood pressure ≥ 90 mmHg).
**Immunization**

All women should be fully immunized with tetanus toxoid (TT) 5 doses in order to prevent neonatal tetanus. Check women’s TT status and immunize as required. (See EPI SOP). Each woman should be followed up until she completes five doses of TT vaccination. Check women’s status of Rubella immunization, if not immunized or if immunization status is not known, immunize the woman after delivery and give advice not to conceive for the next 3 months in order to prevent congenital Rubella syndrome. See Annex 1: vaccine to be given with caution or to be avoided during pregnancy.

**Health Education**

Pregnant women should be offered proper information and support to enable them to make informed decisions regarding their care. Women’s choices should be recognized as an integral part in the decision-making process. They must be offered opportunities to attend antenatal educational sessions and be given written information about antenatal care.

At the first contact, pregnant women should be offered information about: the pregnancy-care services and options available, lifestyle considerations, including dietary information. Health education leaflets should be offered as they are designed to provide information on many aspects related to pregnancy. Booklet No.1 should be given at booking, No.2 at 12-14 weeks visit and No.3 at 28 weeks visit.

**Drug Prescription**

All drugs should be avoided or prescribed cautiously for clear and specific indications and the smallest effective therapeutic dose should be used.

Pregnant women (and those intending to become pregnant) should be informed that dietary supplementation with folic acid, before conception and up to 12 weeks of gestation, reduces the risk of having a baby with neural tube defects (anencephaly, spina bifida). The recommended dose is 500 micrograms per day.

Pregnant woman ≥ 12 weeks gestation (Hb ≥ 11gm/dL) should be given a standard dose of ferrous sulphate, and folic acid daily.

Pregnant woman less than 12 weeks gestation diagnosed with mild to moderate anaemia (Hb ≤ 11gm/dL) should be offered ferrous sulphate, and folic acid daily.

All women should be informed at the booking appointment about the importance for their own and their baby’s health of maintaining adequate vitamin D stores during pregnancy and whilst breastfeeding.

Pregnant women should be informed that vitamin A supplementation (intake greater than 700 micrograms) might be teratogenic and therefore it should be avoided.

Calcium supplementation during pregnancy (at doses of 1.5–2.0 g elemental calcium /day) is recommended for the prevention of pre-eclampsia in women at high risk of developing pre-eclampsia.
Low-dose acetylsalicylic acid (aspirin 75 mg) is recommended for the prevention of pre-eclampsia in women at high risk of developing the condition. The following table illustrates some drugs with their possible effect on the fetus:

**Table 2: Drugs contraindicated in pregnancy**

<table>
<thead>
<tr>
<th>Drug</th>
<th>Harmful effects /Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warfarin</td>
<td>Punctate chondrodysplasia&lt;br&gt;Avoid, especially in first trimester.&lt;br&gt;Do not stop Warfarin dose in a pregnant woman with valvular cardiac disease, discuss with cardiologist/ senior obstetrician.</td>
</tr>
<tr>
<td>Heparin</td>
<td>Overdoses may cause fetal haemorrhage.&lt;br&gt;Prolonged dosage of unfractionated heparin causes maternal osteoporosis.&lt;br&gt;Maternal benefit may outweigh risks.</td>
</tr>
<tr>
<td>Antiepileptic drugs</td>
<td>IUGR, Mild microcephaly, Cleft palate&lt;br&gt;Maternal benefit may outweigh risk.&lt;br&gt;Don’t stop, discuss with neurologist.</td>
</tr>
<tr>
<td>Amino-glycosides</td>
<td>Ototoxic, especially for fetus</td>
</tr>
<tr>
<td>Tetracycline</td>
<td>Deposited in teeth and bone</td>
</tr>
<tr>
<td>Chloramphenicol</td>
<td>In late pregnancy, may cause “gray-baby” syndrome</td>
</tr>
<tr>
<td>Prostaglandin Synthetase inhibitors</td>
<td>Avoid  e.g. NSAID</td>
</tr>
<tr>
<td>Synthetic oestrogen and progestogen</td>
<td>to be avoided unless indicated</td>
</tr>
<tr>
<td>Glucocorticoids</td>
<td>Cleft-lip/palate. If maternal use is essential, try to reduce the dose</td>
</tr>
</tbody>
</table>

For the detailed list of drugs to be avoided or used with caution in pregnancy refer to Oman National Formulary for Ministry of Health Institutions (ONF), Third Edition 2016
Plan of Delivery

The assessment for delivery should take place at every antenatal visit. The decision depends on the present and the past medical and obstetrical history.

The following tables illustrate the criteria for planning on the place of delivery:

**Table 3: Criteria for the delivery in primary care institution (only where delivery services are available)**

<table>
<thead>
<tr>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parity 1-7</td>
</tr>
<tr>
<td>Normal Weight (40-80 Kg) and height (≥ 152 cm)</td>
</tr>
<tr>
<td>Fundal height measurements corresponds to gestational age</td>
</tr>
<tr>
<td>No significant medical diseases</td>
</tr>
<tr>
<td>No major pregnancy complications (present or past)</td>
</tr>
<tr>
<td>No previous still birth or neonatal death</td>
</tr>
<tr>
<td>No previous low birth weight baby (&lt;2500 g)</td>
</tr>
<tr>
<td>No previous high birth weight (≥ 4000 g)</td>
</tr>
<tr>
<td>Adequate haemoglobin level (≥ 11g/dl)</td>
</tr>
</tbody>
</table>

**Table 4: Criteria for the delivery in secondary care**

<table>
<thead>
<tr>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &lt; 15 years or &gt; 40 years</td>
</tr>
<tr>
<td>Parity ≥ 8</td>
</tr>
<tr>
<td>Primigravida</td>
</tr>
<tr>
<td>Height less than 152 cm</td>
</tr>
<tr>
<td>Body weight &lt;40 kg OR BMI &gt; 30</td>
</tr>
<tr>
<td>Previous pregnancy problems</td>
</tr>
<tr>
<td>Previous still birth or neonatal death</td>
</tr>
<tr>
<td>Previous difficult delivery or prolonged labour (including 3rd stage complication)</td>
</tr>
<tr>
<td>Previous low birth weight baby (&lt;2500 g)</td>
</tr>
<tr>
<td>Previous high birth weight baby (≥ 4000 g)</td>
</tr>
<tr>
<td>History of infertility (primary or secondary) for ≥ 3 years</td>
</tr>
<tr>
<td>Previous surgery on reproductive tract (myomectomy, removal of septum, cone biopsy, caesarean section, cervical cerclage)</td>
</tr>
</tbody>
</table>
Table 4: Criteria for the delivery in secondary care (cont)

<table>
<thead>
<tr>
<th>Current Medical History</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes mellitus (uncomplicated)</td>
</tr>
<tr>
<td>Essential hypertension*</td>
</tr>
<tr>
<td>Renal diseases with or without Hypertension</td>
</tr>
<tr>
<td>Sexually transmitted diseases</td>
</tr>
<tr>
<td>Haemoglobinopathies (sickle cell disease, Thalassemia Major)*</td>
</tr>
<tr>
<td>Other significant medical diseases</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Current Obstetrical History</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antepartum haemorrhage</td>
</tr>
<tr>
<td>Pre-eclampsia</td>
</tr>
<tr>
<td>Polyhydromnios</td>
</tr>
<tr>
<td>IUGR (moderate)</td>
</tr>
<tr>
<td>Premature labour or rupture of membranes (34-37) weeks</td>
</tr>
<tr>
<td>Multiple pregnancy</td>
</tr>
<tr>
<td>Malpresentation</td>
</tr>
<tr>
<td>Cervical incompetence</td>
</tr>
<tr>
<td>Premature rupture of the membranes (28-33) weeks</td>
</tr>
<tr>
<td>Preterm labour (before 34 weeks)</td>
</tr>
<tr>
<td>Oligohydramnios</td>
</tr>
<tr>
<td>Anaemia (Hb &lt; 11 gm/dL)</td>
</tr>
<tr>
<td>Post maturity (≥ 42 weeks)</td>
</tr>
</tbody>
</table>

*Some cases might need to deliver in the tertiary care; cases should be evaluated according to the severity of the condition.
### Table 5: Criteria for the delivery in tertiary care

<table>
<thead>
<tr>
<th><strong>Current medical History</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes mellitus with severe complications</td>
</tr>
<tr>
<td>Heart disease (unless mild and well tolerated)</td>
</tr>
<tr>
<td>Renal disease with Hypertension, impaired renal function, or renal transplant</td>
</tr>
<tr>
<td>Positive cases of HIV and active Hepatitis B</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Current Obstetrical History</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Rhesus antibodies / atypical antibodies.</td>
</tr>
<tr>
<td>IUGR (severe)</td>
</tr>
</tbody>
</table>

**Place of delivery of a fetus with abnormality (compatible with life) depends on the type of the abnormality.**

The delivery should be conducted in a place where SCBU facilities are available and the decision should be shared between the obstetrician and the paediatrician.
Table 6: Tasks of ANC visits

<table>
<thead>
<tr>
<th>When</th>
<th>Tasks (Always begin with Rapid Assessment and Management)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>First Visit</strong></td>
<td></td>
</tr>
<tr>
<td><strong>At Booking</strong></td>
<td>• History taking including: Ask the woman about her present pregnancy status, preconception history, medical &amp; obstetrical history, history of previous pregnancies, and check her for general danger signs</td>
</tr>
<tr>
<td>(preferably before 12</td>
<td>• Profiling</td>
</tr>
<tr>
<td>weeks)</td>
<td>• Explain to the mother all the services available will be provided during antenatal visits.</td>
</tr>
<tr>
<td></td>
<td>• Clinical examinations; breast, systemic, weight, height, BMI, BP and fundal height</td>
</tr>
<tr>
<td></td>
<td>• Laboratory tests: Urine tests (for albumin, ketones, glucose, microscopy), Hb, Blood group &amp; Rh factor, ABS, RBS, OGTT (if indicated) VDRL, HIV, sickling test &amp; urine culture if indicated</td>
</tr>
<tr>
<td></td>
<td>• Ultrasound for dating (if available)</td>
</tr>
<tr>
<td></td>
<td>• TT vaccination (if indicated)</td>
</tr>
<tr>
<td></td>
<td>• <strong>Risk grading</strong></td>
</tr>
<tr>
<td></td>
<td>• Supplementation of folic acid (5mg)</td>
</tr>
<tr>
<td></td>
<td>• Supplementation of calcium and Aspirin (if indicated)</td>
</tr>
<tr>
<td></td>
<td>• <strong>Counsel on:</strong> Danger signs, exposure to X-Rays &amp; teratogenic substance, clinic attendance, nutritional advice, information on pregnancy signs and symptoms</td>
</tr>
<tr>
<td></td>
<td>• Discuss the mode of delivery</td>
</tr>
<tr>
<td></td>
<td><strong>Second Visit</strong></td>
</tr>
<tr>
<td>13-15 weeks</td>
<td>• Clinical examinations: BP, systemic examination, fundal height &amp; fetal heart sounds</td>
</tr>
<tr>
<td></td>
<td>• Laboratory tests: no routine laboratory tests at this visit</td>
</tr>
<tr>
<td></td>
<td>• TT vaccination (if indicated)</td>
</tr>
<tr>
<td></td>
<td>• <strong>Risk grading</strong></td>
</tr>
<tr>
<td></td>
<td>• Supplementation of folic acid &amp; iron</td>
</tr>
<tr>
<td></td>
<td>• Supplementation of Calcium and Aspirin (if indicated)</td>
</tr>
<tr>
<td></td>
<td>• <strong>Counsel on:</strong> Danger signs, diet and supplementation</td>
</tr>
<tr>
<td></td>
<td>• Refer to obstetrician for anomaly scan at 22-24 wks</td>
</tr>
<tr>
<td></td>
<td>• Discuss the mode of delivery</td>
</tr>
<tr>
<td>When</td>
<td>Tasks (Always begin with Rapid assessment and management)</td>
</tr>
<tr>
<td>------------</td>
<td>---------------------------------------------------------</td>
</tr>
</tbody>
</table>
| **Third Visit**  
22-24 weeks  
Obstetrician visit | • Clinical examinations: BP, systemic examination, fundal height, fetal heart sounds & assess fetal movement  
• Perform anomaly scan  
• Laboratory tests: CBC & OGTT (if indicated)  
• **Risk grading**  
• Supplementation of folic acid & iron  
• Supplementation of Calcium and Aspirin (if indicated)  
• **Counsel on:** Danger signs, diet, exercise, compliance of iron and management of common symptoms  
• Discuss the mode of delivery. |
| **Fourth Visit**  
28-30 weeks | • Clinical examinations: BP, systemic examination, fundal height, fetal heart sounds and assess fetal movement  
• Laboratory tests: Hb, ABS test (if indicated), give anti-D (1250 -1500 IU) if Rh-negative  
• **Risk grading**  
• Supplementation of folic acid & iron  
• Supplementation of Calcium and Aspirin (if indicated)  
• **Counsel on:** Danger signs, preparation for lactation, fetal movement  
• Discuss the mode of delivery |
### Table 6: Tasks of ANC visits (Cont.)

<table>
<thead>
<tr>
<th>When</th>
<th>Tasks (Always begin with Rapid assessment and management)</th>
</tr>
</thead>
</table>
| **Fifth Visit** 32-34 weeks | • Clinical examinations: BP, systemic examination, fundal height, fetal heart sounds, assess fetal movement  
• Laboratory tests: no routine laboratory tests at this visit  
• Pelvic grip  
• **Risk grading**  
• Supplementation of folic acid & iron  
• **Counsel on**: Danger signs, Preparing for delivery including the mode and place for delivery, signs of onset of labour |

| **Sixth Visit** 36-38 weeks | • Clinical examinations: BP, systemic examination, fundal height, fetal heart sounds, assess fetal movement and presentation, fetal lie and engagement  
• Laboratory tests: Hb  
• **Risk grading**  
• Supplementation of folic acid & iron  
• **Counsel on**: signs of onset of labour, danger signs, fetal movements, the need to review by the obstetrician (if not delivered on the expected date), postnatal visit, caring of newborn baby, breast feeding and birth spacing methods  
• Make sure to give the woman appointment at 40 weeks at secondary care (if not delivered by then) to plan for delivery. |

**Note:** Follow-up after a missed appointment (defaulters) to be undertaken by the maternity service. Follow-up should be via a method of contact that is appropriate to the woman, may include: text message or telephone call.

Every effort should be done to **trace high risk ANC defaulters** including home visits as per the need and feasibility.
**Referral to Secondary/ Tertiary Care Level**

The routine ANC care is to be at the parent institution. All cases should be referred once to the secondary care at 22-24 weeks for assessment. In addition any woman with any conditions in Table 7 should be referred to secondary care. The table shows the time at which to refer the case.

**Table 7: Indications for referral to secondary care due to risk factors**

<table>
<thead>
<tr>
<th>Risk factors for referral at booking</th>
<th>Obstetric/Gynaecological history</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical history</td>
<td></td>
</tr>
<tr>
<td>Hypertension</td>
<td>Pre-eclampsia/ eclampsia</td>
</tr>
<tr>
<td>Diabetes Mellitus</td>
<td>3 or more consecutive 1st trimester abortions</td>
</tr>
<tr>
<td>Renal Disease</td>
<td>Thrombosis/ Embolus</td>
</tr>
<tr>
<td>Cardiac disease</td>
<td>RH isoimmunisation</td>
</tr>
<tr>
<td>Sickle Cell Disease</td>
<td>Malformation/ chromosomally abnormal child</td>
</tr>
<tr>
<td>Thalassemia Major</td>
<td>Previous fetal and neonatal death</td>
</tr>
<tr>
<td>Chronic Hepatitis</td>
<td>Surgery on reproductive tract</td>
</tr>
<tr>
<td>HIV</td>
<td>Pelvic tumour</td>
</tr>
<tr>
<td>Psychiatric Disorders</td>
<td>Previous preterm, low birth weight or macrosomia</td>
</tr>
<tr>
<td>Epilepsy</td>
<td>Previous second trimester abortion/cervical incompetence</td>
</tr>
<tr>
<td>Genetic Disorders</td>
<td>Previous PROM</td>
</tr>
<tr>
<td>Connective tissue disorder</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Risk factors for later referral</th>
<th>Time of referral</th>
</tr>
</thead>
<tbody>
<tr>
<td>Previous APH/PPH</td>
<td>At 24 weeks</td>
</tr>
<tr>
<td>Previous caesarean section</td>
<td>At 32 weeks</td>
</tr>
<tr>
<td>Intrauterine growth retardation</td>
<td>Whenever suspected/detected</td>
</tr>
<tr>
<td>Multiple pregnancy</td>
<td>Whenever suspected/ detected</td>
</tr>
<tr>
<td>Polyhydromnios /Oligohydromnios</td>
<td>Whenever suspected/ detected</td>
</tr>
</tbody>
</table>
Table 8: Indications for referral to secondary care due to other conditions:

<table>
<thead>
<tr>
<th>Other conditions needing referral (not classified as risk factors)</th>
<th>Time of referral</th>
</tr>
</thead>
<tbody>
<tr>
<td>History of Thyroid disorders</td>
<td>At booking</td>
</tr>
<tr>
<td>History of previous Hydatidiform Mole</td>
<td>At booking</td>
</tr>
<tr>
<td>Conception following Clomid (after 2 years of infertility) or IUI or IVF</td>
<td>At booking</td>
</tr>
<tr>
<td>Pregnancy following prolonged infertility (more than 3 years) with spontaneous conception</td>
<td>At booking</td>
</tr>
<tr>
<td>Previous obstructed labour</td>
<td>At 32 weeks</td>
</tr>
<tr>
<td>Placenta praevia</td>
<td>At 32 weeks</td>
</tr>
<tr>
<td>Fetal Malpresentation, unstable lie</td>
<td><strong>At 36 weeks by urgent appointment</strong></td>
</tr>
</tbody>
</table>

If any significant medical or obstetric problems are detected (other than those mentioned) the doctors should use their clinical judgment for referral to secondary care level.
SECTION 2: COMPLICATIONS DURING PREGNANCY
A- MEDICAL COMPLICATIONS IN PREGNANCY
1. ANAEMIA

- Anaemia in pregnancy is defined as haemoglobin concentration of less than 11g/dL. The most common cause of anaemia in pregnancy is iron deficiency anaemia.
- All pregnant women should be offered screening for anaemia early in pregnancy at booking; this allows enough time for treatment if anaemia is detected.
- Haemoglobin levels outside the normal range for pregnancy should be investigated and iron supplementation considered if indicated.
- Severe iron deficiency anaemia in pregnancy is associated with low birth weight, preterm birth, perinatal mortality and postpartum depression.
- Uncorrected anaemia increases morbidity especially if there is post-partum haemorrhage.

Routine supplementation

- All pregnant woman with normal Hb should receive from 13 wks of gestation standard dose of ferrous sulphate 150 mg daily and folic acid (400 mcg) once daily (given in the form of Fefol capsule) till the end of pregnancy.

Table 9: Classification & Management of Anaemia in Pregnancy

<table>
<thead>
<tr>
<th>Hb. level</th>
<th>Classify as</th>
<th>Management</th>
<th>When to refer to Secondary care</th>
</tr>
</thead>
<tbody>
<tr>
<td>10-10.9 g/dL</td>
<td>Mild Anaemia</td>
<td>• Fefol capsule (ferrous sulphate 150mg+Folic acid 400mcg) daily dose*</td>
<td>• Refer by routine appointment if the patient is fully complaint but not responding to the treatment to exclude other causes of anaemia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Monitor Hb level and compliance every 4 weeks</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Health education</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Refer to dietician</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 - 9.9 g/dL</td>
<td>Moderate Anaemia</td>
<td>• If gestational age &lt; 34 weeks: I tablet of ferrous sulphate 200 mg 3 times daily + I tablet of folic acid**</td>
<td>• If gestation age &lt; 34 weeks investigate for other causes of anaemia and treat accordingly. If not responsive after one month refer by routine appointment to secondary care. If gestation ≥34 weeks refer as urgent</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Monitor Hb level and compliance every 4 weeks</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Health education</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Refer to dietician</td>
<td></td>
</tr>
<tr>
<td>4 - 6.9 g/dL</td>
<td>Severe Anaemia</td>
<td>• Stabilize (if needed).</td>
<td>• Refer as an emergency at any stage of pregnancy</td>
</tr>
<tr>
<td>&lt; 4 g/dL</td>
<td>Very severe Anaemia</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Good compliance will result in rise of Hb by 2 g/dL in one month. Hence in all non-responsive anaemia checking for compliance is essential which is mainly due to forgetfulness or side effects like nausea, vomiting and constipation.

** Preferably the iron tablets should be taken one hour before meals with a source of vitamin C. In case of drug intolerance it can be taken with meals.

**Box 1: Strategies to improve tolerability of iron tablets:**

Interventions to reduce the side effects of oral iron and improve tolerability include the following:

- Reducing the dose (e.g. once daily) or increasing the interval (e.g. every other day).
- Making dietary modifications (e.g. taking iron with food or milk), although this may reduce absorption.
- Switching to a formulation with a lower amount of elemental iron.
- Switching from a tablet to a liquid, for which it is easier to titrate the dose.

Once a tolerated dose is found, the patient can sometimes increase the dose slowly as tolerated.

**Dietary advice**

Explain the following to the woman:

- To take diet rich in iron & folate such as liver, kidney, heart, lean meat, egg yolk, shellfish, dried beans, legumes, dried fruits, green leafy vegetables, whole cereals and jaggery.
- To take Vitamin C containing foods such as papaya, lemon, orange, mango etc.
- Do not overcook green leafy vegetables.
- Do not consume milk, tea or coffee with food or within two hours of taking iron tablets
- Do not take antacids with meals or within two hours of taking iron tablets

**Postpartum care:**

- All women attending the postnatal clinic should be tested for Hb level at 6 weeks PN.
- All women with low Hb in the postpartum period should be offered iron supplementation for 3-6 months.

Each pregnant woman with Hb level at booking visit less than 11g/dL should offered ferrous sulphate and folic acid
2. HYPERTENSION IN PREGNANCY

• Hypertensive disorders during pregnancy carry risks for the woman and are one of the leading causes of maternal morbidity and mortality. Also carry a risk for the baby in terms of perinatal mortality, stillbirths and preterm birth rate.

• There are four major hypertensive disorders that occur in pregnant women:
  1. Chronic hypertension,
  2. Gestational hypertension
  3. Preeclampsia superimposed on chronic hypertension
  4. Preeclampsia- eclampsia

• Early detection and management in women with high risk factor is critical to the management of pregnancy-induced hypertension and the prevention of convulsions. These women should be followed up regularly and given clear instructions on when to return to their health care provider. Education of immediate family members is equally important, so that not only understand the significance of signs of pregnancy-induced hypertension progression but also help to increase social support during hospitalization and when changes in work activities are needed.

• Chronic hypertension in pregnancy is associated with higher rates of preterm birth, placental abruption, intrauterine growth restriction, preeclampsia, and fetal death.

• Women with chronic hypertension are at risk of worsening hypertension and end-organ damage, and 25% of women with hypertension develop superimposed preeclampsia during pregnancy.

Screening for hypertension should be done for all pregnant women in each ANC visits

Preconception Care of Women in Reproductive Age with Hypertension Include:

• Counselling about the risks of hypertension during pregnancy and that their medication regimen may need to be changed before conception.

• Hypertension should be controlled prior to conception.

• Advise women who have had pre-eclampsia to achieve a BMI within the healthy range before their next pregnancy (18.5–24.9 kg/m²).

• Early registration and monitoring after pregnancy confirmation.

• Women who have long-standing or poorly controlled hypertension should be evaluated for end-organ effects (e.g., ventricular hypertrophy, retinopathy, renal insufficiency).

• Folic acid should be prescribed for all women at preconception care 3 months before pregnancy and continue on it till the end of pregnancy.
Table 10: Risk Factors for Preeclampsia at ANC Booking Assessment:

<table>
<thead>
<tr>
<th>Moderate risk factors include:</th>
<th>High risk factors include:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• First pregnancy</td>
<td>• Hypertensive disease in a previous pregnancy</td>
</tr>
<tr>
<td>• Age 40 years or older</td>
<td>• Chronic kidney disease</td>
</tr>
<tr>
<td>• Pregnancy interval of more than 10 years</td>
<td>• Autoimmune disease, such as systemic lupus erythematosus or antiphospholipid syndrome</td>
</tr>
<tr>
<td>• Body mass index (BMI) ≥ 30 kg/m2 at first visit</td>
<td>• Type 1 or type 2 diabetes</td>
</tr>
<tr>
<td>• Family history of pre-eclampsia</td>
<td>• Chronic hypertension</td>
</tr>
<tr>
<td>• Multiple pregnancy</td>
<td></td>
</tr>
</tbody>
</table>

Aspirin 75 mg (or nearest dose) per day is recommended for pregnant women with at least two moderate risk factors or at least one high risk factor for preeclampsia to take as early as pregnancy is confirmed (preferably 12 weeks) and consider for continuation until 34 weeks of gestation.

Calcium supplementation during pregnancy (1.5-2 g/day) is recommended for prevention of preeclampsia in women with low calcium intake, especially for those at high risk of developing preeclampsia.

Management of Hypertension:

The following tables show diagnosis, classification and management of hypertension during pregnancy:
Table 11: Classification and Management of Hypertension in pregnancy:

<table>
<thead>
<tr>
<th>Assessment (Signs &amp; Symptoms)</th>
<th>Classification</th>
<th>Management &amp; Advise</th>
<th>When to Refer to secondary care</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Known hypertensive before pregnancy OR • Systolic BP ≥140 mmHg and / or Diastolic BP≥90 mmHg that is present before the 20th week of pregnancy OR • Persists high BP longer than 12 weeks postpartum</td>
<td>Chronic Hypertension in Pregnancy</td>
<td><strong>Classification</strong></td>
<td><strong>Management &amp; Advise</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Assess the risk for preeclampsia (see Table 10)</strong></td>
<td>• Do baseline investigations (if not done for the last 3 months): RFT, uric acid, LFT, TFT, urine albumin creatinine ratio and ECG</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Chronic HTN on medication:</strong></td>
<td><strong>Chronic HTN on medication:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Discuss the case with obstetrician by phone</td>
<td>• Discuss the case with obstetrician by phone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Change to safe drugs in pregnancy i.e. Stop ACE inhibitors and ARBs within 2 days and offer alternatives (see table 15)</td>
<td>• Change to safe drugs in pregnancy i.e. Stop ACE inhibitors and ARBs within 2 days and offer alternatives (see table 15)</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Chronic HTN not in treatment or diagnosed at booking:</strong></td>
<td><strong>Chronic HTN not in treatment or diagnosed at booking:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Discuss the case with obstetrician by phone</td>
<td>• Discuss the case with obstetrician by phone</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Initiate antihypertensive therapy if persistent diastolic BP of 95 to 99 mmHg, systolic BP ≥150 mmHg, or signs of hypertensive target-organ damage.</td>
<td>• Initiate antihypertensive therapy if persistent diastolic BP of 95 to 99 mmHg, systolic BP ≥150 mmHg, or signs of hypertensive target-organ damage.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>Aim:</strong> BP &lt; 150/100 mmHg (Don’t lower BP to less than 130 /80 mmHg)</td>
<td>• <strong>Aim:</strong> BP &lt; 150/100 mmHg (Don’t lower BP to less than 130 /80 mmHg)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pregnant women at increased risk of preeclampsia: prescribe 75 mg of Aspirin daily from 12 week till 34 wks</td>
<td>• Pregnant women at increased risk of preeclampsia: prescribe 75 mg of Aspirin daily from 12 week till 34 wks</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>Instruct woman</strong> to report any symptoms suggestive of preeclampsia, Decreased fetal movement Vaginal bleeding and signs of preterm labour</td>
<td>• <strong>Instruct woman</strong> to report any symptoms suggestive of preeclampsia, Decreased fetal movement Vaginal bleeding and signs of preterm labour</td>
</tr>
</tbody>
</table>
When to Refer to secondary care

<table>
<thead>
<tr>
<th>Assessment (Signs &amp; Symptoms)</th>
<th>Classification</th>
<th>Management &amp; Advise</th>
<th>When to Refer to secondary care</th>
</tr>
</thead>
</table>
| • Elevated blood pressure first detected at 20 weeks of gestation in the absence of proteinuria or new signs of end organ dysfunction | Gestational hypertension | Mild HTN:  
• Discuss the case with obstetrician by phone  
• Do not start treatment  
• Test for proteinuria & Check BP twice weekly. | Mild - Moderate HTN:  
Refer as urgent.  
Follow up in secondary / tertiary obstetric care |
| • BP readings should be documented on at least two occasions at least four hours apart.  
• No proteinuria | Classified into:  
**Mild HTN:** BP (140/90 – 149/99 mmHg)  
**Moderate HTN**  
BP 150-159/100 –109 mmHg  
**Severe HTN:** BP ≥ 160/110 mmHg | **Moderate HTN:**  
• Discuss the case with obstetrician by phone  
• Treat with first line oral Labetalol to keep BP below 150/100 mmHg. Alternatives include: Methyldopa and Nifedipine SR.  
**Severe HTN:**  
• Discuss the case with obstetrician by phone  
• Give Hydralazine 5mg IV slowly over 3-4 minutes, if IV not possible gives IM. OR  
• Give oral Labetalol or alternatives, stabilize and refer to hospital | **Severe HTN:**  
Escort as EMERGENCY to hospital. |

Table 11: Classification and Management of Hypertension in pregnancy (Cont.):
### Table 11: Classification and Management of Hypertension in pregnancy (Cont.)

<table>
<thead>
<tr>
<th>Assessment (Signs &amp; Symptoms)</th>
<th>Classification</th>
<th>Management &amp; Advise</th>
<th>When to Refer to secondary care</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Systolic BP ≥ 140 mmHg or Diastolic BP ≥ 90 mmHg (after 20 weeks of gestation) on two occasions at least four hour apart in previously normotensive patient</td>
<td>preeclampsia and preeclampsia superimposed on chronic hypertension</td>
<td>If BP 150/100 to 159/109 mmHg: Give stat oral Labetalol 200 mg and escort as emergency to secondary / tertiary hospital</td>
<td>• Refer as emergency after stabilizing the case</td>
</tr>
<tr>
<td></td>
<td></td>
<td>If BP ≥ 160/110 mmHg or there is symptoms or signs of severe preeclampsia:</td>
<td>If BP ≥ 160/110 mmHg or there is symptoms or signs of severe preeclampsia:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Give Hydralazine 5mg IV slowly over 3-4 minutes, if IV not possible gives IM.</td>
<td>• Give Hydralazine 5mg IV slowly over 3-4 minutes, if IV not possible gives IM.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Give magnesium sulphate loading dose (Prepare 8 ml of 50% magnesium sulphate solution + 12 ml of normal saline). To be given slowly IV over 15-20 minutes.</td>
<td>• Give magnesium sulphate loading dose (Prepare 8 ml of 50% magnesium sulphate solution + 12 ml of normal saline). To be given slowly IV over 15-20 minutes.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Escort the patient to secondary / tertiary hospital</td>
<td>• Escort the patient to secondary / tertiary hospital</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• If patient developed respiratory arrest give calcium gluconate (Antidote for MgSO4) 1 g (10 ml of 10% solution) IV slowly until respiration begins.</td>
<td>• If patient developed respiratory arrest give calcium gluconate (Antidote for MgSO4) 1 g (10 ml of 10% solution) IV slowly until respiration begins.</td>
</tr>
<tr>
<td>• Diastolic pressure ≥ 90 mmHg (after 20 weeks of gestation)</td>
<td>Eclampsia</td>
<td>• Maintain airway</td>
<td>Escort as an emergency after resuscitation (If not in labour)</td>
</tr>
<tr>
<td>• Proteinuria</td>
<td></td>
<td>• Manage convulsions (see below)</td>
<td></td>
</tr>
<tr>
<td>• Convulsion</td>
<td></td>
<td>• If in labour, expedite delivery if possible</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Do Not give ergometrine after delivery</td>
<td></td>
</tr>
</tbody>
</table>

#### Table 1: Classification and Management of Hypertension in pregnancy

<table>
<thead>
<tr>
<th>BP</th>
<th>Classification</th>
<th>Management &amp; Advise</th>
<th>When to Refer to secondary care</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 140 mmHg</td>
<td>Preeclampsia</td>
<td>Give Hydralazine 5mg IV slowly over 3-4 minutes, if IV not possible gives IM.</td>
<td>Refer as an emergency after stabilizing the case</td>
</tr>
<tr>
<td>≥ 160 mmHg</td>
<td>Severe preeclampsia</td>
<td>Give magnesium sulphate loading dose (Prepare 8 ml of 50% magnesium sulphate solution + 12 ml of normal saline). To be given slowly IV over 15-20 minutes.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Escort the patient to secondary / tertiary hospital</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>If patient developed respiratory arrest give calcium gluconate (Antidote for MgSO4) 1 g (10 ml of 10% solution) IV slowly until respiration begins.</td>
<td></td>
</tr>
</tbody>
</table>

#### Table 2: Classification and Management of Hypertension in pregnancy

<table>
<thead>
<tr>
<th>BP</th>
<th>Classification</th>
<th>Management &amp; Advise</th>
<th>When to Refer to secondary care</th>
</tr>
</thead>
<tbody>
<tr>
<td>≥ 140 mmHg</td>
<td>Preeclampsia</td>
<td>Give Hydralazine 5mg IV slowly over 3-4 minutes, if IV not possible gives IM.</td>
<td>Refer as an emergency after stabilizing the case</td>
</tr>
<tr>
<td>≥ 160 mmHg</td>
<td>Severe preeclampsia</td>
<td>Give magnesium sulphate loading dose (Prepare 8 ml of 50% magnesium sulphate solution + 12 ml of normal saline). To be given slowly IV over 15-20 minutes.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Escort the patient to secondary / tertiary hospital</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>If patient developed respiratory arrest give calcium gluconate (Antidote for MgSO4) 1 g (10 ml of 10% solution) IV slowly until respiration begins.</td>
<td></td>
</tr>
</tbody>
</table>
**Box 2:** The presence of one or more of the following indicates a diagnosis of “pre-eclampsia with severe features”:

<table>
<thead>
<tr>
<th>New onset cerebral or visual disturbance, such as:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Photopsia, scotomata, cortical blindness, retinal vasospasm, severe headache (“the worst headache I’ve ever had”) or headache that persists and progresses despite analgesic therapy and altered mental status.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Hepatic abnormality:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Severe persistent right upper quadrant or epigastric pain unresponsive to medication and not accounted for by an alternative diagnosis or serum transaminase concentration ≥ twice normal, or both.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Severe blood pressure elevation:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Systolic blood pressure ≥ 160 mmHg or diastolic blood pressure ≥110 mmHg on two occasions at least four hours apart while the patient is on bed rest (unless the patient is on antihypertensive therapy).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Thrombocytopenia:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• &lt;100,000 platelets/microliter.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Renal abnormality:</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Progressive renal insufficiency (serum creatinine &gt;1.1 mg/dL or doubling of serum creatinine concentration in the absence of other renal disease).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pulmonary oedema.</th>
</tr>
</thead>
</table>

**Remember:**

- Mild pre-eclampsia often has no symptoms.
- Oedema of the feet and lower extremities is not considered a reliable sign of pre-eclampsia.
- Patient counseling and education about signs of preeclampsia and eclampsia.
Table 12: Safe antihypertensive medication in pregnancy

<table>
<thead>
<tr>
<th>Drug</th>
<th>Starting dose</th>
<th>Usual effective dose</th>
<th>Max dose</th>
<th>Remarks</th>
</tr>
</thead>
</table>
| Labetalol   | 100 mg tab twice daily | 200 to 800 mg in two or three divided doses. | 2400 mg  | • First line of treatment  
• Labetalol should be used in cautious in women with history of asthma & heart failure |
| Methyldopa  | 250 mg tabs two to three times a day | 1000 mg in 2-3 divided doses | 3000 mg  | • Contraindicated in depression                                        |
| Nifedipine SR | 20 mg BID | 30 to 90 mg OD | 120 mg  | • can be added as a second line treatment                               |
| Hydralazine IV | 5mg IV slowly over 3-4 minutes, if IV not possible give IM | Only for emergency | 20 mg  | • Only for severe hypertension; BP ≥ 160/110 mmHg                        |

Management of Convulsion

- Gather equipment (airway, suction, mask and bag, oxygen) and give oxygen at 4-6 L per minute.
- Protect the woman from injury but do not actively restrain her.
- Start an IV line and infuse IV fluids (maintenance dose: 80 ml/hr or 1ml/kg/hr) after the convulsion.
- Give anticonvulsive drug: 4 g of 20 % magnesium sulphate loading dose. To be given slowly IV over 10-15 minutes.
- If unable to give IV, give 10 g of magnesium sulphate IM divided into 2 doses; give 5 g (10 ml of 50% solution) IM deep in upper outer quadrant of each buttock with 1 ml of 2% lignocaine in the same syringe.

Note: in case of respiratory arrest (caused by magnesium sulphate):
- Assist ventilation with face mask and bag
- Give calcium gluconate 1 g (10 ml of 10% solution) IV slowly until calcium gluconate begins to antagonize the effects of magnesium sulphate and respiration begins.
- Give diazepam if convulsions occur in early pregnancy or magnesium sulphate is not available. Loading dose 10 mg IV slowly over 2 minutes. If convulsions recur, repeat 10 mg.
- Position the woman on her left side to reduce risk of aspiration of secretions, vomit and blood.
- Give antihypertensive medications Hydralazine 5 mg IV, slowly over 3-4 minutes, if diastolic BP ≥ 100 mmHg. If IV not possible give IM, if diastolic blood pressure remains > 90 mmHg, repeat the dose at 30 minute intervals until diastolic BP is around 90 mmHg. Do not give more than 20 mg in total.
Aspirate the mouth and throat as necessary.
Monitor vital signs (pulse, blood pressure, and respiration), reflexes and fetal heart rate hourly.
Escort the patient as an emergency case to a secondary /tertiary care hospital.

To Prepare 4 g of 20 % magnesium sulphate take 8 ml of 50% magnesium sulphate solution (4 mEq / ml) + 12 ml of normal saline

Postnatal Care of Women with Hypertension
Postpartum hypertension may be:
  1. New onset hypertension.
  2. Persistence of antepartum or intrapartum hypertension.

Diagnosis: blood pressure readings should be documented on at least two occasions at least four hours apart.

Assessment of Woman with Postpartum Hypertension
Medication review: Medications that may cause high blood pressure in the immediate postpartum period include:
   - Administration of a large volume of saline solution to women who have had a caesarean delivery
   - Neuraxial anaesthesia for labour
   - Non-steroidal anti-inflammatory agents for post-delivery analgesia
   - Ergot derivatives for postpartum haemorrhage

Note: If a woman has high blood pressures in the postpartum period avoid use of non-steroidal anti-inflammatory agents as analgesia.

I. Management of Woman with Newly Onset Postpartum Hypertension
   - Women with new onset postpartum hypertension should be evaluated by history and physical examination.
   - Antihypertensive agents may be required temporarily postpartum.
   - Oral medications similar to those used in the non-pregnant population can be prescribed, with modifications if the woman is breastfeeding
   - Do not start methyldopa postpartum because of the risk of postnatal depression.
   - Follow same management plan as for gestational hypertension.

New onset postpartum hypertension may be due to onset of preeclampsia or HELLP syndrome after delivery
II. Management of Woman with Chronic Hypertension

**Aim:** to keep blood Pressure lower than 140/90 mmHg.

- Continue on antihypertensive drugs, either antihypertensive drugs used during pregnancy should be continued or before pregnancy regimen resumed after delivery (if safe while breastfeeding), with dosage adjustments i.e. if a woman has taken methyldopa to treat chronic hypertension during pregnancy, stop within 2 days of birth and restart the antihypertensive treatment the woman was taking before pregnancy (Follow the National Hypertension Guidelines)
- Review long-term antihypertensive treatment at 2 weeks postnatal visit.
- Measure blood pressure as clinically indicated if antihypertensive treatment is changed after birth.
- Give appointment at hypertension clinic at 6 weeks postnatal.
- Provide birth spacing counseling and preconception care.

III. Management of Woman Who Have Had Gestational Hypertension

If the woman was not on antihypertensive drugs during pregnancy:
- Start antihypertensive treatment if BP is higher than 149/99 mmHg.
- Refer to secondary hospital with obstetric clinic for further management.
- A clear care plan from secondary or tertiary hospital should be written for follow up of all women who have had gestational hypertension if advised to be followed at primary health care.

If the woman was on antihypertensive drugs during pregnancy:
- It is reasonable to stop the antihypertensive agent after three weeks
- Consider reducing antihypertensive treatment if blood pressure < 140/90 mmHg.
- Reduce antihypertensive treatment if blood pressure < 130/80 mmHg.
- Monitor blood pressure to assess whether further treatment is indicated.
- Offer her medical review at 2 and 6 weeks postnatal visits.
- Refer women who still need antihypertensive treatment at the 6 weeks postnatal visit hypertension clinic.
- Provide birth spacing counseling and preconception care.

IV. Management of Women Who Have Had Preeclampsia – Eclampsia

- Postnatal follow up should be at secondary / tertiary care and if referred to primary care a clear action plan must be written.
- Women should be advised to seek medical attention if they develop severe headaches or if blood pressure increases to severe levels.

**Note:** Preeclampsia-related hypertension usually resolves spontaneously within a few weeks and is almost always gone by 12 weeks postpartum. However, some cases may take as long as six months to resolve. Hypertension that persists beyond this period should be evaluated and treated as in any non-pregnant woman.
3. DIABETES IN PREGNANCY

The ongoing epidemic of obesity and diabetes has led to more type-2 diabetes in women of childbearing age, resulting in an increase in the number of pregnant women with undiagnosed type II diabetes. Also women with obesity when they become pregnant they have even higher risk of developing gestational diabetes mellitus (GDM).

Pregnancy is characterised by insulin resistance and hyperinsulinaemia. The resistance results from placental secretion of hormone which are diabetogenic, as well as due to the increased maternal adipose deposition, decreased exercise, and increased caloric intake.

Gestational diabetes occurs when the pancreatic function is not sufficient enough to overcome the insulin resistance created by the hormones secreted during pregnancy.

Types of Diabetes in Pregnancy

1. Pre-gestational Diabetes
   - Type I Diabetes
   - Type II Diabetes

2. Diabetes detected in Pregnancy
   - Overt Diabetes
   - Gestational Diabetes

Significance of Diabetes in Pregnancy

Uncontrolled diabetes in pregnancy can increase the risk of the following adverse effects:

- Increased risk of miscarriage
- Increased risk of congenital anomalies
- Pre-eclampsia
- Hydramnios
- Fetal macrosomia and increased rate of Caesarean Section.
- Intra Uterine Growth Retardation (IUGR)
- Fetal organomegaly (hepatomegaly, cardiomegaly)
- Birth trauma
- Perinatal mortality
- Neonatal respiratory problems
- Metabolic complications (hypoglycaemia, hyperbilirubinemia, hypocalcaemia)
- Development of obesity and diabetes during childhood

- Pregestational /Overt diabetes:- Leads to more of congenital anomalies
- GDM: - Leads to more of macrosomia and premature delivery
- The risk of complications in Overt Diabetic women is twice as much as in GDM
Preconception Care

Pre-gestational diabetes includes women known to have diabetes before conception. Preconception counselling has to be provided to all women with diabetes who are considering pregnancy. Such women should have plans implemented 3 months before withdrawing contraceptive measures or trying to conceive, in order to achieve a safe and successful pregnancy outcome the following to be done:

A. Glycaemia Control

Women with diabetes planning pregnancy should strive to achieve blood glucose and haemoglobin A1C (HbA1C) levels as close to normal as possible while avoiding hypoglycaemia. Overweight and obese women, need to lose weight before pregnancy.

B. Adjust of Medical Therapy

- In women on insulin therapy, the basal bolus regimen is the most appropriate option to facilitate target achievement and to allow flexible dosing adjustment during pregnancy.
- The insulin dose may need to be increased as the pregnancy advances.
- All oral hypoglycaemic medications except Metformin should be stopped and replaced with insulin.

C. Folic acid supplementation

Folic acid 5 mg OD need to be supplemented 3 months before withdrawing contraception and continued until breast feeding.

D. Retinal assessment

A baseline assessment of diabetic retinopathy is recommended to assess for any treatable condition which can be stabilized preconception. Women with established retinopathy should have retinal assessment once in every trimester because of the risk of progression during pregnancy.

E. Renal assessment

Renal function can be assessed by measuring their urine to albumin ratio, serum creatinine and estimated GFR before conception and periodically during pregnancy. Any significant changes can be assessed by a nephrologist and stabilized before conception. Refer to the nephrologist if the serum Creatinine ≥120umol/l, or eGFR < 90ml/min/1.73m2.

F. Control of Hypertension

It is also important to control the hypertension before conception to avoid any deterioration post conception. ACE inhibitors, ARBs and other potentially teratogenic anti-hypertensive medications should be changed with safe drugs such as Labetalol and Methyldopa.

G. Statin therapy

A potentially teratogenic drug such as statin has to be stopped well before conception.

H. Thyroid function:

A measurement of TSH before conception is advised.
Others:
Add low dose of Aspirin 75-81 mg OD from 12 weeks of gestation till 34 weeks of gestation.

Box 3: Check list for Management of Women with Pre-existing Diabetes

1. Attain a preconception HbA1C of <7.0%
2. Assess and manage any diabetic complication
3. Consider basal bolus insulin therapy, in patients on premixed insulin
4. Good blood pressure control on safe anti-hypertensive medications
5. Supplement Folic Acid 5 mg OD: 3 months pre-conception
6. Discontinue potential teratogenic medications: e.g.: ACE-inhibitors/ARB, Statin therapy, etc.

Gestational Diabetes Mellitus

GDM is defined as the condition associated with degrees of maternal hyperglycaemia less severe than those found in overt diabetes but associated with an increased risk of adverse pregnancy outcomes.

Risk Factors for Developing GDM
- BMI ≥ 30.
- Past history of GDM.
- First-degree relative with diabetes.
- Women who delivered a baby weighing ≥ 4 kg.
- Women diagnosed previously with GDM.
- History of previous unexplained still birth or neonatal death.
- Women with polycystic ovary syndrome.
- HbA1C ≥5.7%, Impaired Glucose Tolerance (IGT), or Impaired Fasting Glucose (IFG) in the past.
- Other clinical conditions associated with insulin resistance (e.g., Obesity ≥30Kg/m2, acanthosis nigricans).

Screening and Diagnostic Testing
All women registering in ANC clinic should be screened for Gestational Diabetes at booking visit irrespective of the trimester as shown in the following Algorithm:
Algorithm 1: Screening Steps for Gestational Diabetes

ALL PREGNANT WOMEN AT REGISTRATION → RBS/FBS

IF FBS < 5.1 mmol/l OR RBS < 7.0 mmol/l → Low Risk for GDM

IF FBS ≥ 5.1 mmol/l OR 2hrsPG ≥ 8.5 mmol/l → Do OGTT at 22-24 weeks of Gestation

IF FBS 7.0 - 11.0 mmol/L → High Risk for GDM → Do OGTT

IF FBS 5.1 - 6.9 mmol/L → Do OGTT

IF FBS ≥7.0 mmol/L → If > 12 weeks of gestation

IF ≤ 12 weeks of gestation

Do OGTT

GDM

Repeat OGTT at 22-24 weeks of Gestation

GDM

Refer to Dietician and follow the blood Glucose profile by Family physician (FAMCO). If FAMCO doctor not available refer to an obstetrician.

Target capillary blood glucose values:
- Pre prandial: ≤ 5.3 mmol/L
- 2 hrs post prandial: ≤ 6.7 mmol/L

If two blood glucose values are abnormal

Initiate Oral Hypoglycaemic Medication (Metformin)

If uncontrolled

Refer to an Obstetrician and Dialectologist or to a combined clinic if available

Overt diabetes

Diagnostic criteria for positive OGTT for the diagnosis of GDM
- FBS ≥ 5.1 mmol/l OR
- 2 hrs post ≥ 8.5 mmol/l

1 If FBS ≥ 7 &or 2hr Post OGTT ≥ 11.1 and if woman is in first trimester, diagnose overt diabetes.

2 Confirm the diagnosis by doing Glycosylated Hb.
Antenatal assessment and care of GDM and overt diabetes

- Ultrasound examination should be performed in early pregnancy to confirm gestational age and fetal viability.
- Anomaly ultrasound scans to be arranged at 22-24 weeks of gestation.
- Growth scan at 28, 32, 36 weeks.
- Monthly visits till 28 weeks and once in 2 weeks till 36 weeks.
- Follow up of weight gain during pregnancy.

Table 13: Total weight gain and rate of weight gain during pregnancy

<table>
<thead>
<tr>
<th>Pre pregnancy BMI (Kg/m2)</th>
<th>Total Weight gain (in Kg)</th>
<th>Rate of weight gain in second and third trimester (in Kg/Week)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight (&lt; 18.5)</td>
<td>12.5-18</td>
<td>0.51 (0.44-0.58)</td>
</tr>
<tr>
<td>Normal weight (18.5-24.9)</td>
<td>11.5-16</td>
<td>0.42 (0.35-0.50)</td>
</tr>
<tr>
<td>Overweight (25-29.9)</td>
<td>7-11.5</td>
<td>0.28 (0.23-0.33)</td>
</tr>
<tr>
<td>Obese (≥30)</td>
<td>5-9</td>
<td>0.22 (0.17-0.27)</td>
</tr>
</tbody>
</table>

Calculations assume a 0.5 to 2 Kg weight gain in the first trimester.

Management of pregnant women with GDM and Overt Diabetes

Antenatal Management

Rationale for treatment: identifying women with GDM is important because appropriate therapy can decrease foetal and maternal morbidity, particularly macrosomia.

Management of lifestyle

A. Nutritional Therapy

All patients with GDM should receive nutritional counselling by a dietician upon diagnosis and be placed on an appropriate diet.

Calorie allotment

Calorie allotment is based on ideal body weight and is calculated based on the current weight of the pregnant woman. The suggested caloric intake is approximately:

- 30 kcal per kg current weight per day in pregnant women (BMI 22 - 25).
- 24 kcal per kg current weight per day in overweight pregnant women (BMI 26 - 29).
- 12 to 15 kcal per kg current weight per day for obese pregnant women (BMI >30).
- 40 kcal per kg current weight per day in pregnant women who are (BMI <22).

B. Exercise

Encourage a program of mild to moderate exercise (For e.g. Walking) as part of the treatment plan for women with GDM when there are no medical or obstetrical contraindications to this level of physical activity.
C. Glucose Monitoring

Multiple daily self-measurement of blood glucose is important for the recognition of women who should begin an anti-hyperglycaemic agent and for dose adjustment in patient receiving medical therapy.

Table 14: minimum recommendation for daily self-measurement of blood glucose GDM*

<table>
<thead>
<tr>
<th></th>
<th>FBG</th>
<th>Post BF</th>
<th>Pre Lunch</th>
<th>Post Lunch</th>
<th>Pre Dinner</th>
<th>Post Dinner</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monday</td>
<td>✔️</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Tuesday</td>
<td></td>
<td>✔️</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Wednesday</td>
<td></td>
<td></td>
<td>✔️</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Thursday</td>
<td></td>
<td></td>
<td></td>
<td>✔️</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Friday</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✔️</td>
<td></td>
</tr>
<tr>
<td>Saturday</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>✔️</td>
</tr>
<tr>
<td>Sunday</td>
<td></td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

* Schedule can be modified on a case to case basis.

Women on insulin

They should monitor blood glucose 3-4 times a day (Fasting and Post-Meals)

Glycemic targets

- Pre-meal ≤5.3 mmol/L (95 mg/dL)
- 2 hours Post meal ≤ 6.7 mmol/L (120 mg/dL)

Medical Therapy

A. Oral hypoglycaemic agents

- Women with diabetes may be advised to use Metformin as an adjunct or alternative to insulin throughout the pregnancy.
- Can be initiated on a dose of 500mg twice daily and increased up to 2.5 gm/day.
- Dose escalation is done over a period of 1-2 weeks both to reduce gastrointestinal side effects and to permit identification of the minimum dose required for adequate glycemic control.

B. Injectable: Insulin (NPH, Regular Insulin, Aspart, Lispro- all fall in Category B of US-FDA)

- Approximately 15% of women with GDM are placed on insulin therapy because target glucose levels are exceeded despite dietary therapy.
- If fasting blood glucose concentration is high, intermediate-acting insulin, such as NPH insulin, can be given before bedtime.
- If postprandial blood glucose concentrations are high, short acting regular insulin or
insulin Aspart / Lispro can be given before meals at a calculated dose (Dosage given below).

- If both pre-prandial and postprandial blood glucose concentrations are high, then a four injection per day regimen can be initiated.

- A total dose of:
  - 0.7 unit/kg up to week 12,
  - 0.8 unit/kg for weeks 13 to 26,
  - 0.9 unit/kg for weeks 26 to 36,
  - 1 unit/kg for weeks 36 to term.

- In severely obese woman, the initial doses of insulin may need to be increased to 1.5 to 2.0 units/kg to be able overcome the combined insulin resistance of pregnancy and obesity.

**Intrapartum Management**

- Maternal hyperglycaemia should be avoided during labour to reduce the risk of foetal acidosis and neonatal hypoglycaemia.

- Maternal blood glucose levels should be kept between 4.0 -7.0 mmol/L.

- Women should receive adequate glucose during labour in order to meet the high energy requirements. A routine IV Dextrose + IV insulin protocols may be helpful

**Postpartum Follow Up**

- Encourage women to breastfeed post-delivery.

- Women with pregestational type II diabetes can resume or continue Metformin/ Glibenclamide during breast-feeding.

- Screen for postpartum thyroiditis in Type1 DM .Check TSH at 6-8 weeks postpartum

- In women with GDM, fasting blood glucose done 24 hours (ideally 72 hours) post delivery and post withdrawal of all anti hyperglycaemic agents can diagnose persistent hyperglycaemia. In women with normal fasting, 24 -72 hrs post delivery OGTT to be done 6-12 weeks postpartum during the routine postnatal visit.

**Contraception**

- Any type of contraception is acceptable.

- Low-dose oestrogen-progestin oral contraceptives may be used in women with a history of GDM as long as there are no medical contraindications.

**Future Risks**

- They are at high risk for recurrent GDM, impaired glucose tolerance, and overt diabetes over the subsequent five years.

- Recurrence: One-third to two-thirds of women with GDM will have GDM in a subsequent pregnancy.
Follow-Up and Prevention of Type II Diabetes Mellitus

• All women with previous GDM should undergo an oral glucose tolerance test ideally 6 to 12 weeks after delivery, using a two-hour 75 gram oral glucose tolerance test:

• **An abnormal fasting blood glucose level** is diagnostic of overt diabetes if fasting blood sugar ≥7 mmol/L (126 mg/dl) and/or 2 hour post glucose level is ≥11.1 mmol/L (200 mg/dl), impaired glucose tolerance if fasting blood sugar is 5.5-6.9 mmol/L (100-125 mg/dl):
  
  a. **Women who classified as having impaired glucose tolerance** should be counseled about their subsequent risk for developing overt diabetes and referred for management options. They should have a yearly assessment of their glycemic status.

  b. **Women who classified as having overt diabetes mellitus** should receive appropriate education and treatment. They should also be given advice regarding contraception and the planning of future pregnancy.

• **Women with normal glucose tolerance** should be counseled regarding their risk of developing GDM in subsequent pregnancies and type-2 diabetes in the future. Reassessment of glycemic status should be undertaken at a minimum of every three years

• Women who did not undergo screening for GDM, but diabetes is suspected postpartum because of infant outcome, postpartum screening for diabetes may be considered.
4. THYROID DISEASES IN PREGNANCY

Thyroid disease is a common endocrine disorder affecting women of reproductive age.

Preconception Care

Women with hypothyroidism should be counseled about:
- The importance of achieving euthyroidism before conception.
- The importance of immediate monitoring at the onset of pregnancy.
- To notify their physician immediately, after a missed menstrual cycle or positive home pregnancy test, to adjust their doses, by increasing their medication by two additional doses per week.

Women with hyperthyroidism should be counseled about:
- Discussion of available treatment, (long term anti thyroid medication, radioactive iodine ablation, and subtotal thyroidectomy) and potential adverse effects, as well as the impact on future pregnancies.
- A significant increase in congenital malformations has been reported when hyperthyroidism is not controlled in the first trimester of pregnancy.

Thyroid Disease Screening

It is recommended to screen women at high risk, including:

a. Current thyroid therapy.

b. Family history of autoimmune thyroid disease.

c. Goiter.

d. Women with history of:
   - Infertility
   - Morbid obesity
   - Recurrent miscarriage
   - Type 1 diabetes mellitus
   - Autoimmune disorder
   - High-dose neck radiation
   - Therapy for hyperthyroidism
   - Postpartum thyroid dysfunction
   - Symptoms suggestive of thyroid dysfunction
   - Previous delivery of infant with thyroid disease

The optimal method to screen is to do Thyroid Stimulating Hormone (TSH). If Thyroid Stimulating Hormone (TSH) is abnormal refer the patient with urgent referral to obstetrician.

If Thyroid Stimulating Hormone (TSH) is abnormal refer the patient with urgent referral to endocrinologist / obstetrician
Hypothyroidism in Pregnancy

Types of hypothyroidism in pregnancy:

a. Known hypothyroidism.
b. Overt hypothyroidism.
c. Subclinical hypothyroidism.

Risk of Hypothyroidism in Pregnancy:

• Premature birth.
• Low birth weight.
• Miscarriage.
• Placental abruption.
• Hypertensive disorders.
• Low IQ neonate.

Diagnosis and Management of Hypothyroidism

Algorithm: Diagnosis and Management of Hypothyroidism:

Note: Appropriate management results in improved outcomes, demonstrating the importance of proper diagnosis and treatment.

Hypothyroidism Follow-up:

• In women known case of hypothyroidism, Levothyroxine is titrated to achieve a goal of serum thyroid-stimulating hormone (TSH) level less than 2.5 mIU /L.
• Serum TSH should be measured every 4 to 6 weeks until 20 weeks gestation and until the patient is on stable medication dose, it should be measured again at 24 to 28 weeks and 32 to 34 weeks gestation.

Adjustment of Levothyroxine Dosage Based on Thyroid-Stimulating Hormone Level (to be done at secondary care level):

<table>
<thead>
<tr>
<th>Thyroid Stimulating Hormone level (mIU/L)</th>
<th>Levothyroxine dosage increase (Mcg / DAY)</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 - &lt; 10</td>
<td>25 - 50</td>
</tr>
<tr>
<td>10 - 20</td>
<td>50 - 75</td>
</tr>
<tr>
<td>&gt; 20</td>
<td>75 - 100</td>
</tr>
</tbody>
</table>

Postpartum care of Hypothyroidism:

• Women with hypothyroidism should be referred to physician with an early appointment for further management and follow up.

• Levothyroxine should be decreased to the pre-pregnancy dosage over a four-week period, and further adjustment should be guided by TSH levels four to six weeks after delivery then after 3 and 6 months.

Hyperthyroidism with Pregnancy

Hyperthyroidism is less common than hypothyroidism. Types of hyperthyroidism in pregnancy:

A. Known hyperthyroidism.
B. Overt hyperthyroidism.
C. HCG induced hyperthyroidism

Overt hyperthyroidism is defined as elevated FT4 and low TSH levels, whereas subclinical hyperthyroidism is defined as asymptomatic low TSH and normal FT4 levels.

Clinical symptoms of hyperthyroidism include

Tachycardia, nervousness, tremor, sweating, heat intolerance, proximal muscle weakness, frequent bowel movements, decreased exercise tolerance, and hypertension.
Management & Follow-up of Hyperthyroidism in Pregnancy

• Refer pregnant woman with hyperthyroidism as urgent to secondary care institution.
• Follow up throughout pregnancy should be done at secondary/ tertiary care.

Post-partum care of women with hyperthyroidism

Refer woman to continue follow up with endocrinologist.

Postpartum Thyroiditis

• Postpartum thyroiditis is defined as an abnormal TSH level within the first 12 months postpartum.
• It is the most common form of postpartum thyroid dysfunction and may present as hyper- or hypothyroidism.
• Refer urgently to physician whenever detected.
• Propranolol is the recommended treatment for symptomatic hyperthyroidism.
• Levothyroxine is indicated for the hypothyroidism in women who are symptomatic, breastfeeding, or who wish to become pregnant.
5. URINARY TRACT INFECTIONS (UTI)

Evidence based studies show that proper management of UTI during pregnancy will lead to better pregnancy outcomes. UTI during pregnancy is classified into 2 groups: symptomatic & asymptomatic UTI. The following table shows the detection and management of UTI during pregnancy:

**Table 15: Detection, Classification and management of UTI in pregnancy**

<table>
<thead>
<tr>
<th>Assess (signs &amp; symptoms)</th>
<th>Probable diagnosis</th>
<th>Management</th>
<th>When to refer to secondary care</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Typical:</strong></td>
<td>Cystitis</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Dysuria</td>
<td></td>
<td>• Do urine test (microscopy and culture if indicated by the microscopy)</td>
<td></td>
</tr>
<tr>
<td>• Increased frequency and urgency of urination</td>
<td></td>
<td>• Give Paracetamol</td>
<td></td>
</tr>
<tr>
<td>• Abdominal pain</td>
<td></td>
<td>• Start antibiotics (see <strong>below box</strong>)</td>
<td></td>
</tr>
<tr>
<td><strong>Other (atypical):</strong></td>
<td></td>
<td>• Encourage to increase fluid intake by mouth</td>
<td>If the infection reoccurs for two or more times despite adequate treatment, refer by <strong>early appointment</strong></td>
</tr>
<tr>
<td>• Retropubic / suprapubic pain</td>
<td></td>
<td>• Repeat urine culture after 1 week from the last dose of the antibiotics (if the initial test was positive)</td>
<td></td>
</tr>
<tr>
<td>• Abdominal pain</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

| **Typical:**               | Acute Pyelonephritis |            |                                 |
| Dypsiria                   |                      | • Do urine test (microscopy and culture) |                                 |
| • Spiking fever / Chills   |                      | • Give Paracetamol | |
| • Increased frequency and urgency of urination | | • Hydration of the patient | |
| • Abdominal pain           |                      | • Refer for further management | Refer as **emergency** whenever suspected |
| **Other (atypical):**      |                      |            |                                 |
| • Retropubic / suprapubic pain | | | |
| • Loin pain / tenderness   |                      | | |
| • Tenderness in rib cage   |                      | | |
| • Anorexia                 |                      | | |
| • Nausea/vomiting          |                      | | |
### Box 4: Antibiotics to be used in management of cystitis:

<table>
<thead>
<tr>
<th>Antibiotics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amoxicillin 500 mg orally three times per day for 5-7 days (to be continued for 10 days if culture was positive)</td>
</tr>
</tbody>
</table>

**Alternative:**
- Cephalexin 500 mg orally twice per day for 7-14 days
  - OR
- Amoxicillin Clavulanate 375 mg and amoxicillin 250mg three times per day for 5 days
  - OR
- Nitrofurantoin 100 mg bid 5-7 days. (If **G6PD normal**)

If treatment fails, check urine for culture and sensitivity if available, and treat with an appropriate antibiotic for the organism.

Untreated UTI can lead to: IUGR, preterm labour, intrauterine fetal death and anaemia.

### Asymptomatic Bacteriuria
- Usually diagnosed accidentally during the routine urine testing at the booking visit as patient is asymptomatic.
- It is defined as true bacteriuria (≥100,000 colony forming units (cfu)/mL) in the absence of specific symptoms of acute urinary tract infection.
- Because leukocyte esterase and nitrite tests have low sensitivity for identifying bacteriuria in women who are pregnant, these patients should be screened with urine cultures.
- Women with asymptomatic bacteriuria during pregnancy are more likely to deliver premature or low-birth-weight infants and have a 20- to 30-fold increased risk of developing pyelonephritis during pregnancy compared with women without bacteriuria.

### Management
1. Antibiotics depending on the bacterial sensitivity, commence antibiotics: for E.Coli
   - Cephalexin 500 mg orally three times per day for 7 to 14 days.
     - OR
   - Amoxicillin Clavulanate 375 mg and amoxicillin 250mg orally three times per day for 5 days
     - OR
   - Nitrofurantoin 100mg bid 5-7 days. (Caution in patients with G6PD deficiency).
2. Urine culture to be repeated one week after the last dose of the antibiotics.
6. VAGINAL DISCHARGE DURING PREGNANCY

Vaginal infections in pregnancy are common and important because they can cause spontaneous abortion, pre-term labour and chorioamnionitis. Several infections such as gonorrhoea, chlamydia, group B streptococci, HIV and herpes virus can be transmitted during labour directly to the foetus.

Diagnosis:
For the diagnosis of vaginal discharge during pregnancy, the following chart can be used:

**Algorithm 2: Diagnosis of Vaginal Discharge during Pregnancy**

1. **All pregnant patients complaining of vaginal discharge or vulvar itching / burning**
2. **History:** duration, frequency, abdominal pain, dyspareunia, dysuria and past h/o PROM and/or preterm labour.
3. **Examination:**
   - Inspect (by speculum) for: abnormal discharge (colour, odour), valvovaginal erythema.
   - Take High Vaginal Swap for C/S
   - Palpate for lower abdominal tenderness

4. **With Abdominal pain**
   - Abnormal vaginal discharge with vulvar and vaginal oedema & erythematous cervix
   - Possibility of Chorioamnionitis
   - Refer as emergency to hospital for management

5. **Without Abdominal Pain & no abdominal tenderness on palpation**
   - Thick, cheesy white discharge that adherent to the vaginal wall, no odour, with vulvar and vaginal erythema
   - Candidiasis
   - Give treatment (see Table 16)
   - If symptoms persistent
   - Refer to secondary care

   - Copious, malodorous, yellow – green discharge with or without pruritus, dysuria, vulvar oedema
   - Trichomoniasis

   - Thin off-white discharge, unpleasant “fishy odour”
   - Bacterial Vaginosis
### Table 16: Specific management of vaginal discharge during pregnancy

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Treatment</th>
<th>Remarks / When to refer to secondary care</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Candidiasis</strong></td>
<td><strong>Drug option</strong></td>
<td>• Vaginal swab should be done if recurrent (more than 2 times in spite of treatment).</td>
</tr>
<tr>
<td></td>
<td>• Clotrimazole 500 mg vaginal suppositories inserted in the vagina as a single dose (preferred)</td>
<td>• If no response to the treatment. Refer by <strong>Early appointment</strong>.</td>
</tr>
<tr>
<td></td>
<td>• Clotrimazole or Miconazole vaginal cream one full applicator inserted in the vagina daily for 7 days</td>
<td></td>
</tr>
<tr>
<td><strong>Alternative:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Nystatin suppositories, each contain 100,000 unit every night for 7-14 nights</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• If have vulvovaginitis: give antifungal with steroid skin cream (low to mid potency topical corticosteroids preparations are preferred).</td>
<td></td>
</tr>
<tr>
<td><strong>Bacterial Vaginosis</strong></td>
<td><strong>Drug option</strong></td>
<td>• Routine treatment of sex partners is not recommended</td>
</tr>
<tr>
<td></td>
<td>• Metronidazole 500 mg orally twice a day for 7 days OR</td>
<td>• Follow-up visits are unnecessary if symptoms resolve</td>
</tr>
<tr>
<td></td>
<td>• Metronidazole 250 mg orally three times a day for 7 days OR</td>
<td>• Use condom during the treatment</td>
</tr>
<tr>
<td></td>
<td>• Clindamycin cream 2% one full applicator (5 g) intra-vaginally at bed time for 7 days</td>
<td>• Refer by <strong>Early appointment</strong> for persistent symptoms</td>
</tr>
<tr>
<td><strong>Trichomonas vaginalis</strong></td>
<td><strong>Drug option</strong></td>
<td>• Counsel, use Condom</td>
</tr>
<tr>
<td></td>
<td>• Metronidazole 2 g in a single dose at any stage of pregnancy OR</td>
<td>• All symptomatic pregnant women should be treated at any pregnancy stage</td>
</tr>
<tr>
<td></td>
<td>• Metronidazole 500 mg orally twice a day for 7 days OR</td>
<td>• Sex partners should be treated</td>
</tr>
<tr>
<td></td>
<td>• Metronidazole 250 mg orally three times a day for 7 days</td>
<td>• Rescreening at 3 months following initial infection can be considered.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Refer by <strong>routine referral</strong> if symptoms persistent</td>
</tr>
</tbody>
</table>
7. HIV IN PREGNANCY

All women registering with ANC clinic should be screened for HIV as shown in the following Algorithm:

Algorithm 3: HIV Testing in Pregnancy:

Pregnant Woman at ANC clinic

- Verbal consent (following a counselling session)
- Collect 5 cc of blood sample in Serum Separating Tube (SST) Tube (Red cap with gel)
- If PHC facility has laboratory, centrifuge the blood and separate the serum. Put in the plain tube before dispatching
- PHC facility with no laboratory send the whole blood;
- Send the blood/serum to the Regional Public Health Laboratory (RPHL)

AT REGIONAL PUBLIC HEALTH LABORATORY (RPHL)
ELISA test

If ELISA test - negative, no further test is required
Report to PHC institution

Inconclusive Result

Positive ELISA test

SEND TO CENTRAL PUBLIC HEALTH LABORATORY (CPhL) At DARSEIT

In case samples can’t be dispatched on the same day, keep it in the refrigerator at temp. 4-8\(^0\) C. Transfer the sample within 24 hours. While transporting to RPHL ensure that appropriate temperature is maintained (4 - 8\(^0\) C).
Algorithm 3: HIV Testing in Pregnancy (cont.)

CENTRAL PUBLIC HEALTH LABORATORY (CPHL)

Repeat test on the same sample sent from RPHL

Negative ELISA test: Report on Negative Result

Inconclusive Result: Re-bleed after 3 months

If ELISA test & WB still inconclusive: RT-PCR

Positive ELISA test

Positive Western Blot (WB) Test: Confirm HIV infection Urgently; request for re-bleed sample to confirm patient’s identity

Report to the Department Of Woman and Child health (DWCH) and HIV/AIDS Control Section & PHC facility
Algorithm 3: HIV Testing in Pregnancy (cont.)

Reporting on results of HIV positive case by CPHL:
Send report to DWCH and HIV/AIDS Control Section and PHC facility

Dept. of Woman and Child Health:
- Data entry on the reported HIV +ve cases;
- Compile and prepare the final report;
- Follow up and monitoring of cases through MCH counsellor.

HIV/AIDS CONTROL SECTION
Inform HIV focal physician

HIV focal physician:
- Fill the (PR 83) notification form;
- Follow up with HIV counsellor;
- Team up with Obstetrician to manage the index case;
- Inform HIV counsellor;
- Screen contacts and manage as per the need.

HIV counsellors (HIV/AIDS):
- Trace & counsel the contacts (husband and children < 15 years) and arrange for their testing;
- Liaise with MCH counsellors.

AT PHC facility:
HIV focal doctor:
- Break the news, counsel;
- Arrange referral to HIV focal physician at secondary health care level;
- Maintain records of HIV +ve results.

MCH counsellors:
- Counsel the HIV positive women;
- Keep the records of the women and action taken; send to DWCH as and when requested;
- Do follow up of the case;
- Liaise with HIV counsellors (HIV/AIDS) for case follow up.
Remember:

- If HIV testing was not performed at the booking visit, for any reason, it should be done in the subsequent visit.

- Counselling is one vital service to be provided following HIV screening. It will be offered at different points of contact and by a trained health provider using standard proper counselling materials.

- Delivery should be arranged in a facility that matches mother’s needs, i.e. secondary/tertiary.

- Rapid HIV testing should be done during the labour/post-partum for women who have not been subjected to the test during the antenatal period (un-booked).

- HIV positive results should be treated with sensitivity and only trained counsellor should inform the patient about the results.

- Woman and child health head section should keep the record of the HIV positive women and send it to DWCH. Follow up and monitoring of cases through MCH counsellor.

For further details refer to following MOH Guidelines:


8. SYPHILIS IN PREGNANCY

All women registering within ANC clinic should be screened for syphilis at the booking ANC visit.

Syphilis may be transmitted transplacentally at any stage of pregnancy and may result in spontaneous abortion, perinatal death, serious neonatal infection or low birth weight, hydrops and congenital syphilis.

Treatment of syphilis is beneficial to the mother and fetus.

If a pregnant woman is found to have a positive VDRL:

- Confirm the diagnosis by performing TPHA test.
- Counselling should be given to the patient about:
  - The availability of the treatment of the disease.
  - A significant increase in congenital malformations & complications to the mother & fetus has been reported when syphilis not treated.
- Educate the woman about STI prevention and how to prevent re-infection during pregnancy by promoting condom use.
- Refer the woman to secondary care level by urgent referral appointment for management and follow up throughout her pregnancy.
- Husband should be referred to dermatologist to be treated for syphilis.
- Delivery should be arranged in a facility that matches mother’s needs, i.e. secondary / tertiary hospitals.

Remember:

- If VDRL test was not performed at the booking visit, for any reason, it should be done in the subsequent visit.
- Treating doctor should Fill the notification form (PR 14) and send it to the communicable disease focal point & copy to WCH head section for follow up.
- Continue follow up in postpartum period as per STI guidelines.
9. CHICKEN POX (VARICELLA) IN PREGNANCY

Chicken pox (varicella) is caused by a highly contagious DNA herpes virus, which is transmitted by respiratory droplets and by direct personal contact with vesicle fluid. The incubation period is 1-3 weeks and the disease is infectious 48 hours before the rash appears till the vesicles crusts over.

Pregnant women who have no history or uncertain history of previous infection must be advised to avoid contact with chickenpox patients and shingles during pregnancy and to immediately inform health care workers of potential exposure.

Preconception care

• Advise women with no past history of immunity to chickenpox (no past history of chickenpox infection or vaccination): To take varicella vaccine (live attenuated virus), two doses, given 4 to 8 weeks. Immunity from the vaccine may persist for up to 20 years. If she received varicella vaccine, she should avoid pregnancy for 3 months and to avoid contact with other susceptible pregnant women.

• Advised woman to avoid contact with chickenpox patients and shingles during pregnancy and to immediately inform health care workers of potential exposure.

• Counsel women that a previous history of chickenpox infection is 97–99% predictive of the presence of serum varicella antibodies.

Risks Associated with Varicella Virus Infection in Pregnancy

A) Maternal risks:
1. Pneumonia
2. Hepatitis
3. Encephalitis (This condition is associated with high mortality rate)

B) Fetal risks:
1. Fetal Varicella Syndrome (very rare): If the mother developed the disease or acquired the infection before 20 weeks (up to 28 weeks in some cases) of pregnancy. Fetal Varicella Syndrome characterized by one or more of: Skin scarring in a dermatomal distribution, eye defects (microphthalmia, chorioretinitis, and cataracts), hypoplasia of the limbs, neurological abnormalities (microcephaly, cortical atrophy, mental retardation and dysfunction of bowel & bladder sphincter).

2. Varicella Infection of the Newborn: More likely if maternal infection occurs in the last 4 weeks of a woman’s pregnancy.

The risk of spontaneous abortion does not increase if chickenpox occurs in the first trimester
Management of Chicken Pox with Pregnancy

For the diagnosis and management of chicken pox during pregnancy, the following chart can be used.

Algorithm 4: Diagnosis and Management of Varicella in Pregnancy

<table>
<thead>
<tr>
<th>Maternal Exposure to Varicella</th>
</tr>
</thead>
<tbody>
<tr>
<td>No history of natural infection with significant exposure*</td>
</tr>
<tr>
<td>Obtain Varicella – Zoster IgG serology</td>
</tr>
<tr>
<td>Positive (immune)</td>
</tr>
<tr>
<td>Reassure the woman</td>
</tr>
<tr>
<td>Negative (not immune)</td>
</tr>
<tr>
<td>Refer to hospital for prophylaxis anti varicella zoster immunoglobulin**</td>
</tr>
<tr>
<td>She develop chicken pox</td>
</tr>
<tr>
<td>Severe disease</td>
</tr>
<tr>
<td>Refer to secondary care hospital as emergency</td>
</tr>
<tr>
<td>Refer the woman for detailed ultrasound and appropriate follow up</td>
</tr>
<tr>
<td>Mild disease (skin lesions mainly)</td>
</tr>
<tr>
<td>Refer to secondary care for prescription of oral acyclovir within 24 hours of onset of rash</td>
</tr>
<tr>
<td>No infection develop</td>
</tr>
<tr>
<td>Reassure the woman</td>
</tr>
</tbody>
</table>

* History:
  a. **Evaluate susceptibility:** A self-reported past history of varicella among pregnant women is a powerful predictor of antibodies to varicella infection.
  b. **Defining exposure:** Significant exposure to Varicella infection is defined as household contact, face to face contact with an index case, or sharing the same hospital room with a contagious patient.

** Anti varicella zoster human immunoglobulin:** 1gm by deep intramuscular injection, second dose required if further exposure occurs after 3 weeks.
Problem 1:

Pregnant woman present with history of contact with chicken pox patient

a. Careful history must be taken to confirm the significance of the contact and the susceptibility of the patient.

b. If the woman had previous immunity against chicken pox reassure the woman.

c. If the woman with uncertain or no previous history of chickenpox and she had a significant exposure, blood sample should be taken and send for serology (IgG) to determine VZV immunity or non-immunity:
  - If IgG positive i.e. immune to VZV, reassure the pregnant woman that neither she nor her baby is at risk.
  - If IgG negative i.e. not immune to VZV, the pregnant woman should be referred to obstetrician to be offered immunoglobulin (VZIG) as soon as possible. (Less than 10 days since the contact).

d. Advise the woman that she is potentially infectious from 8-28 days after contact.

e. Advise not immune woman for postpartum varicella immunization.

Problem 2:

Pregnant woman who develops the rash of chicken pox

a. Symptomatic treatment and hygiene should be advised.

b. Oral Antivirus (Acyclovir):
  - If the woman presents < 24 hours of the appearance of the rash and she is ≥ 20 weeks of gestations, prescribe acyclovir.
  - If the woman presents < 24 hours of the appearance of the rash and she is < 20 weeks of gestation, consider acyclovir (Acyclovir is not licensed for use in pregnancy and the risks and benefits of its use should be discussed with the woman).

c. Ultrasound:

   Women who develop chickenpox less than 28 weeks of gestation should be referred to obstetrician, at 16–20 weeks or 5 weeks after infection, for discussion and detailed ultrasound examination.

d. Advise woman to avoid contact with potentially susceptible individuals (neonate & other pregnant woman).
Problem 3:

Postpartum woman who develops the rash of chickenpox

If birth occurs within the 7 days period following the onset of the maternal rash, or if the mother develops the chickenpox rash within the 7 days period after birth:

a. Refer as emergency to neonatologist / pediatrician as the neonate should be given VZIG.
b. Women with chickenpox should breastfeed if they wish and well enough to do so.

Remember:

• Post-exposure prophylaxis is targeted to susceptible hosts who do not have a history of infection or serologic evidence of prior exposure.

• Post-exposure prophylaxis is not needed among women who were immunized with varicella vaccine in the past.

• Patients need careful follow-up for signs of infection despite passive immunization

• Those who are infected despite post-exposure prophylaxis should be treated for varicella infection.

• Varicella vaccine is contraindicated during pregnancy.

• Women who are vaccinated postpartum can be reassured that it is safe to breastfeed.

Varicella vaccine is contraindicated during pregnancy
10. PREGNANCY WITH RH NEGATIVE BLOOD GROUP

If a pregnant woman is Rh negative, husband should be tested for Rh typing and results should be documented in the Maternal Health Record. If the husband is Rh negative, no further management is required. If husband is Rh positive, a regular screening for Rh antibodies by performing coomb’s test is required.

**Management**

- Indirect Coomb’s test should be performed at the following intervals:
  - At first visit (booking).
  - At 28-30 weeks visit.
- If Coomb’s test showed to be positive, patient should be referred to the secondary / tertiary care with urgent appointment for Indirect Coomb’s Test (ICT) titration.

**Prophylaxis for Women Who are Rh Negative**

**Antenatal Prophylaxis**

- All Rh negative pregnant women who have not been previously sensitised should be offered routine antenatal prophylaxis with anti-D immunoglobulin (RAADP) either with a single dose regimen at around 28 weeks (250 -300 mcg = 1250-1500 IU), or two-dose regimen (100 mcg =500 IU given at 28 and 34 weeks).
- Rh negative women who have received routine antenatal prophylaxis should receive additional anti-D Ig when they are undergoing any potential sensitising procedures like ECV, amniocentesis or has antepartum haemorrhage within 72 hours of the event. If, exceptionally, this deadline has not been met some protection may be offered if anti-D immunoglobulin is given up to 10 days after the sensitizing event.
- Before giving anti D immunoglobulin prophylaxis at 28 week, it is important to send a sample for blood group antibody screen. Then if antibody screen is negative no need to repeat anti body screen (coomb’s test ) again before second dose or after delivery as it will show positive because of anti-D immunoglobulin which was given
- Anti D immunoglobulin prophylaxis ( single dose regimen or two-dose regimen) , should be given even if anti-D immunoglobulin is given due to sensitizing event , as for example if anti D is given for amniocentesis it will cover that event only but it will not replace the prophylaxis dose .

**Routine antenatal anti-D immunoglobulin Prophylaxis is indicated for all pregnant women who are Rh negative and who are not known to be sensitized to Rh D antigen.**

**Anti D immunoglobulin Prophylaxis following sensitizing events should always be administered as soon as possible.**
Prophylaxis Following Abortion

a. Spontaneous miscarriage
- Complete or incomplete after 12 weeks of gestation, need prophylaxis
- Incomplete abortion before 12 weeks of gestation where there is D&C, need prophylaxis
- Complete Abortion before 12 weeks when there is no instrumentation, doesn’t need to receive anti D.

b. Threatened abortion
- All non-sensitised Rh negative women with threatened abortion after 12 weeks of gestation need prophylaxis.
- All non-sensitised Rh negative women with threatened abortion before 12 weeks of gestation where the bleeding is heavy or repeated or where there is associated abdominal pain and gestation is approaching 12 weeks of gestation, need prophylaxis.
- Prophylaxis is not required if bleeding stops and fetus is viable.

Dosage: one dose of 1250-1500 IU Anti-D intramuscular injection with no need for repeated dose until 28 weeks of gestation if pregnancy continues.

Postnatal Prophylaxis:
At least 1250-1500 IU of Anti-D immunoglobulin should be given within 72 hours following delivery of an Rh positive infant.

Note: Blood sampling for grouping and Rh status of the infant should be performed immediately after birth.
11. ABO INCOMPATIBILITY

ABO incompatibility usually arises when the woman blood group is O and develops either anti A, or anti B antibodies.

The women usually have a history of either:
- Blood transfusion.
- Unexplained still birth.
- Unexplained neonatal death.
- Baby with severe jaundice in neonatal period.

Management

• All pregnant women should be screened for antibodies by doing the indirect Coomb’s test (ICT) at the following intervals:
  - At first visit (booking).
  - At 28-30 weeks visit.
• If coomb’s test showed to be positive, patient should be referred to the secondary care with urgent appointment for ICT titration.
B- OBSTETRIC COMPLICATIONS
1. VAGINAL BLEEDING IN EARLY PREGNANCY

Problem

Vaginal bleeding occurs during the first 22 weeks of pregnancy.

Ask about:

- bleeding when start, how much blood lost, still bleeding or stopped, is the bleeding increasing or decreasing, history a recent abortion, history of fainting and history of abdominal pain.

General Management

- Perform a rapid evaluation of the general condition of the woman, including vital signs (pulse, blood pressure, respiration, temperature).
- If shock is suspected, immediately begin treatment (page 125). Even if signs of shock are not present, keep shock in mind as you evaluate the woman further because her status may worsen rapidly. If shock develops, it is important to begin treatment immediately.
- If the woman is in shock, consider ruptured ectopic pregnancy.
- Inserts 2 large I.V lines (No.14-16) and start infuse IV fluids.

Differential Diagnosis

- Consider ectopic pregnancy in any woman with anaemia, pelvic inflammatory disease (PID), threatened abortion or unusual complaints of abdominal pain.
- Consider abortion in any woman of reproductive age that has a missed period (delayed menstrual bleeding with more than one month having passed since her last menstrual period) and has one or more of the following:
  - Bleeding
  - Cramping
  - Partial expulsion of products of conception
  - Dilated cervix or
  - Smaller uterus than expected
- Use the following table to make a diagnosis and if any of the conditions listed is suspected and refer as indicated to secondary / tertiary hospital.

Remember:

- The patient should be stabilized before transfer.
- Perform Rapid Evaluation of general condition of the patient.
- Keep shock in mind even if signs of shock not present.
- Refer all cases of vaginal bleeding in early pregnancy as an indicated to hospital.
<table>
<thead>
<tr>
<th>Assessment (Signs &amp; Symptoms)</th>
<th>Probable Diagnosis</th>
<th>Management &amp; Advise</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Light * bleeding</td>
<td>Threatened abortion</td>
<td>• Refer with urgent appointment to secondary care</td>
</tr>
<tr>
<td>• Closed cervix</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Uterus corresponds to dates</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Two or more of the following signs:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• abdominal pain</td>
<td>Ectopic pregnancy</td>
<td>• Insert an IV line and give fluids</td>
</tr>
<tr>
<td>• fainting</td>
<td></td>
<td>• Refer as emergency to hospital</td>
</tr>
<tr>
<td>• pale</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Very weak</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• History of heavy bleeding** but:</td>
<td>Complete abortion</td>
<td>• If no fever or severe bleeding refer with urgent appointment to secondary care</td>
</tr>
<tr>
<td>- now decreasing, or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- no bleeding at present</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Closed cervix</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Uterus smaller than dates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Light cramping/lower abdominal pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• History of expulsion of products of conception</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Heavy ** bleeding</td>
<td>Inevitable abortion</td>
<td>• Insert an IV line and give fluids</td>
</tr>
<tr>
<td>• Dilated cervix</td>
<td></td>
<td>• Refer to hospital as emergency</td>
</tr>
<tr>
<td>• Uterus corresponds to dates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Cramping/lower abdominal pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• No expulsion of products of Conception</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Heavy** bleeding</td>
<td>Incomplete abortion</td>
<td>• Insert an IV line and give fluids</td>
</tr>
<tr>
<td>• Dilated cervix</td>
<td></td>
<td>• Refer to hospital as emergency</td>
</tr>
<tr>
<td>• Uterus smaller than dates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• lower abdominal pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Partial expulsion of products of conception</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Molar pregnancy</td>
<td></td>
<td>• Insert IV line</td>
</tr>
<tr>
<td>• Heavy** bleeding</td>
<td></td>
<td>• Give IV fluids rapidly</td>
</tr>
<tr>
<td>• Dilated cervix</td>
<td>Molar pregnancy</td>
<td>• Refer to hospital as emergency</td>
</tr>
<tr>
<td>• Uterus larger than dates</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Partial expulsion of products of conception which resemble grapes</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Cramping /lower abdominal pain</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Light bleeding: takes five minutes or longer for a clean pad or cloth to be soaked

**Heavy bleeding: takes less than five minutes for a clean pad or cloth to be soaked
2. VAGINAL BLEEDING IN LATER PREGNANCY AND LABOUR

Problems

• Vaginal bleeding after 22 weeks of pregnancy.
• Vaginal bleeding in labour before delivery.

Table 18: Types of bleeding

<table>
<thead>
<tr>
<th>Type of Bleeding</th>
<th>Probable Diagnosis</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood-stained mucus (show)</td>
<td>Onset of labour</td>
<td>Proceed with management of normal labour and Childbirth</td>
</tr>
<tr>
<td>Any other bleeding after 22 weeks of gestation</td>
<td>Antepartum haemorrhage</td>
<td>Determine cause using</td>
</tr>
<tr>
<td></td>
<td>• Abruptio Placenta</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Placenta Previa</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ruptured uterus</td>
<td></td>
</tr>
<tr>
<td>Bleeding during labour</td>
<td>bleeding more than 100 ml since labour began</td>
<td>Stabilized &amp; refer as emergency to hospital</td>
</tr>
<tr>
<td></td>
<td>• Abruptio Placenta</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Placenta Previa</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ruptured uterus</td>
<td></td>
</tr>
</tbody>
</table>

General Management of Vaginal Bleeding

• Call for help. Urgently mobilize all available personnel.
• Perform a rapid evaluation of the general condition of the woman, including vital signs (pulse, blood pressure, respiration, temperature).
• If shock is suspected, immediately begin treatment see page125. Even if signs of shock are not present, keep shock in mind as you evaluate the woman further because her status may worsen rapidly. If shock develops, it is important to begin treatment immediately.
• Insert two large IV lines and infuse IV fluids.
• Do not do a vaginal examination at this stage.
• Check Maternal Health Record for previous ultrasound results.
• Use the following table to make a diagnosis and if any of the conditions listed is suspected refer as emergency.
## Diagnosis & Management of Vaginal Bleeding

Use the following table for diagnosis and management.

### Table 19: Differential diagnosis of vaginal bleeding in later pregnancy (antepartum haemorrhage):

<table>
<thead>
<tr>
<th>Presenting Symptom and Other Symptoms and Signs Typically present</th>
<th>Symptoms and Signs Sometimes Present</th>
<th>Probable Diagnosis &amp; Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Bleeding after 22 weeks gestation</td>
<td>• Shock</td>
<td>Abruptio placenta,</td>
</tr>
<tr>
<td>• Intermittent or constant abdominal pain</td>
<td>• Tense/tender uterus</td>
<td>• Do not do vaginal examination</td>
</tr>
<tr>
<td></td>
<td>• Decreased/ absent fetal movements.</td>
<td>• Insert IV line</td>
</tr>
<tr>
<td></td>
<td>• Fetal distress or absent</td>
<td>• Give IV fluids rapidly</td>
</tr>
<tr>
<td></td>
<td>fetal heart sounds</td>
<td>• Refer to hospital as</td>
</tr>
<tr>
<td></td>
<td></td>
<td>emergency</td>
</tr>
<tr>
<td>• Bleeding (intra-abdominal and/or vaginal)</td>
<td>• Shock</td>
<td>Ruptured uterus,</td>
</tr>
<tr>
<td>• Severe abdominal pain (may decrease after rupture)</td>
<td>• Rapid maternal pulse</td>
<td>• Do not do vaginal examination</td>
</tr>
<tr>
<td></td>
<td>• Abdominal distension/ free fluid</td>
<td>• Insert IV line</td>
</tr>
<tr>
<td></td>
<td>• Abnormal uterine contour</td>
<td>• Give IV fluids rapidly</td>
</tr>
<tr>
<td></td>
<td>• Tender abdomen</td>
<td>• Refer to hospital as</td>
</tr>
<tr>
<td></td>
<td>• Easily palpable fetal parts</td>
<td>emergency</td>
</tr>
<tr>
<td></td>
<td>• Absent fetal movements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>and fetal heart sounds</td>
<td></td>
</tr>
<tr>
<td>• Bleeding after 22 weeks gestation</td>
<td>• Shock</td>
<td>Placenta praevia</td>
</tr>
<tr>
<td></td>
<td>• Bleeding may be precipitated by</td>
<td>• Do not do vaginal examination</td>
</tr>
<tr>
<td></td>
<td>intercourse</td>
<td>• Insert IV line</td>
</tr>
<tr>
<td></td>
<td>• Relaxed uterus</td>
<td>• Give IV fluids rapidly</td>
</tr>
<tr>
<td></td>
<td>• Fetal presentation (not in pelvis/</td>
<td>• Refer to hospital as</td>
</tr>
<tr>
<td></td>
<td>lower uterine pole feels empty)</td>
<td>emergency</td>
</tr>
<tr>
<td></td>
<td>• Normal fetal condition</td>
<td></td>
</tr>
</tbody>
</table>
3. FEVER DURING PREGNANCY AND LABOUR

Problem
A woman has fever (temperature 38°C or more) during pregnancy or labour.

General Management

- Encourage adequate rest.
- Encourage to increase fluid intake by mouth or start IV fluids if indicated.
- Paracetamol 1 gm can be given 4-6 hourly.
- Use tepid sponge to help decrease temperature.

Diagnosis & Management

Use the following table for diagnosis and management of fever during pregnancy.

**Table 20: Diagnosis of fever during pregnancy and labour:**

<table>
<thead>
<tr>
<th>Presenting Symptom and Other Symptoms and Signs Typically</th>
<th>Symptoms and Signs Sometimes Present</th>
<th>Probable Diagnosis &amp; Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Dysuria</td>
<td>• Retro pubic/suprapubic pain/ tenderness</td>
<td>Acute pyelonephritis</td>
</tr>
<tr>
<td>• Spiking fever/chill</td>
<td>• Loin pain/tenderness</td>
<td>Refer as emergency to secondary care</td>
</tr>
<tr>
<td>• Increased frequency and urgency of urination</td>
<td>• Tenderness in rib cage</td>
<td></td>
</tr>
<tr>
<td>• Abdominal pain</td>
<td>• Anorexia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Nausea/vomiting</td>
<td></td>
</tr>
<tr>
<td>• Foul-smelling vaginal discharge in first 22 weeks</td>
<td>• Lower abdominal pain</td>
<td>Septic abortion</td>
</tr>
<tr>
<td>• Fever</td>
<td>• Prolonged bleeding</td>
<td>Refer as emergency to secondary care</td>
</tr>
<tr>
<td>• Tender uterus</td>
<td>• Purulent cervical discharge</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Rebound tenderness</td>
<td></td>
</tr>
<tr>
<td>• Fever/chills</td>
<td>• History of loss of fluid</td>
<td>Chorioamnionitis</td>
</tr>
<tr>
<td>• Foul-smelling watery discharge after 22 weeks</td>
<td>• Light vaginal bleeding</td>
<td>Refer as emergency to secondary care</td>
</tr>
<tr>
<td>• Abdominal pain</td>
<td>• Tender uterus</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Rapid fetal heart rate</td>
<td></td>
</tr>
<tr>
<td>• Fever</td>
<td>• Signs of consolidation</td>
<td>Pneumonia / H1N1 viral infection</td>
</tr>
<tr>
<td>• Difficulty in breathing</td>
<td>• Congested throat</td>
<td>Refer as emergency to secondary care</td>
</tr>
<tr>
<td>• Cough with expectoration</td>
<td>• Rapid breathing</td>
<td></td>
</tr>
<tr>
<td>• Chest pain</td>
<td>• Rhonchi/ rales</td>
<td></td>
</tr>
</tbody>
</table>
4. ABDOMINAL PAIN IN EARLY PREGNANCY

Problem

• The woman is experiencing abdominal pain in the first 22 weeks of pregnancy.
• Abdominal pain may be the first presentation in serious complications such as abortion or ectopic pregnancy.

General Management

• Perform a rapid evaluation of the general condition of the woman, including vital signs (pulse, blood pressure, respiration, temperature).
• Stabilize the patient condition.
• Ask about surgical and obstetric symptoms related to abdominal pain, i.e. fever, vomiting, vaginal discharge and vaginal bleeding.
• Check signs of surgical, medical or pregnancy related conditions.
• If shock is suspected, immediately begin treatment (page 124). Even if signs of shock are not present, keep shock in mind as you evaluate the woman further because her status may worsen rapidly.
• If shock develops, it is important to begin treatment immediately.

Note: Appendicitis should be suspected in any woman having abdominal pain.

Appendicitis can be confused with other more common problems in pregnancy which causes abdominal pain (e.g. ectopic pregnancy, abruptio placenta, twisted ovarian cysts, and pyelonephritis).

Diagnosis & Management

Use the following table for diagnosis and management of woman experiencing abdominal pain in the first 22 weeks of pregnancy
Table 21: Diagnosis of abdominal pain in early pregnancy

<table>
<thead>
<tr>
<th>Presenting Symptom and Other Symptoms and Signs Typically Present</th>
<th>Symptoms and Signs Sometimes Present</th>
<th>Probable Diagnosis &amp; Management / referral to Secondary care</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Abdominal pain • Adnexal mass on vaginal examination</td>
<td>• Palpable, tender discrete mass in lower abdomen • Light* vaginal bleeding</td>
<td>Ovarian cyst Refer as emergency</td>
</tr>
<tr>
<td>• Lower abdominal pain • Low-grade fever • Rebound tenderness</td>
<td>• Abdominal distension • Anorexia • Nausea/vomiting • Increased white blood cells • No mass in lower abdomen • Site of pain higher than expected</td>
<td>Appendicitis Refer as emergency</td>
</tr>
<tr>
<td>• Dysuria • Increased frequency and urgency of urination • Abdominal pain</td>
<td>• Retro pubic/ suprapubic pain/tenderness</td>
<td>Cystitis Manage as in Table 15</td>
</tr>
<tr>
<td>• Dysuria • Spiking fever/chills • Increased frequency and urgency of urination • Abdominal pain</td>
<td>• Retro pubic/suprapubic pain/tenderness • Loin pain/tenderness • Tenderness in rib cage • Anorexia • Nausea/vomiting</td>
<td>Acute pyelonephritis Refer as emergency</td>
</tr>
<tr>
<td>• Low-grade fever/chills • Lower abdominal pain • Absent bowel sounds</td>
<td>• Rebound tenderness • Abdominal distension • Anorexia • Nausea/vomiting • Shock</td>
<td>Peritonitis Refer as emergency</td>
</tr>
<tr>
<td>• Abdominal pain • Light bleeding • Closed cervix • Uterus slightly larger than normal • Uterus softer than normal</td>
<td>• Fainting • Pale • Very weak • Tender adnexal mass • Amenorrhhea • Cervical motion tenderness</td>
<td>Ectopic pregnancy Refer as emergency</td>
</tr>
</tbody>
</table>

* Light bleeding: takes longer than five minutes for a clean pad or cloth to be soaked.
5. ABDOMINAL PAIN IN LATER PREGNANCY AND AFTER CHILDBIRTH

Problems

- The woman is experiencing abdominal pain after 22 weeks of pregnancy.
- The woman is experiencing abdominal pain during the first six weeks after childbirth.

General Management

- Perform a rapid evaluation of the general condition of the woman, including vital signs (pulse, blood pressure, respiration, temperature).
- If shock is suspected, immediately begin treatment (page 124). Even if signs of shock are not present, keep shock in mind as you evaluate the woman further because her status may worsen rapidly. If shock develops, it is important to begin treatment immediately.
- Perform speculum and vaginal. If there is no vaginal bleeding.

Note: Appendicitis should be suspected in any woman having abdominal pain. Appendicitis can be confused with other more common problems in pregnancy which causes abdominal pain.

If appendicitis occurs in late pregnancy, the infection may be walled off by the gravid uterus. The size of the uterus rapidly decreases after delivery, allowing the infection to spill into the peritoneal cavity. In these cases, appendicitis presents as generalized peritonitis.

Use the following table for diagnosis and management.

<table>
<thead>
<tr>
<th>Presenting Symptom and Other Symptoms and Signs Typically Present</th>
<th>Symptoms and Signs Sometimes Present</th>
<th>Probable Diagnosis &amp; Management</th>
</tr>
</thead>
</table>
| • Palpable contractions  
• Blood-stained mucus discharge (show) or watery discharge before 37 weeks | • Cervical dilatation and effacement  
• Light* vaginal bleeding | Possible preterm labour  
Refer as emergency to hospital |
| • Palpable contractions  
• Blood-stained mucus discharge (show) or watery discharge at or after 37 weeks | • Cervical dilatation and effacement  
• Light vaginal bleeding | Possible term labour  
Conduct labour if facilities available in the health institution or refer as emergency to the nearest delivering institution |
Table 22: Diagnosis of abdominal pain in later pregnancy and after child birth (Cont)

<table>
<thead>
<tr>
<th>Presenting Symptom and Other Symptoms and Signs Typically Present</th>
<th>Symptoms and Signs Sometimes Present</th>
<th>Probable Diagnosis &amp; Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Intermittent or constant abdominal pain</td>
<td>• Shock</td>
<td>Abruptio placenta</td>
</tr>
<tr>
<td>• Bleeding after 22 weeks gestation (fetus may be retained in the uterus)</td>
<td>• Tense/tender uterus</td>
<td>Refer as emergency to hospital</td>
</tr>
<tr>
<td></td>
<td>• Decreased/absent fetal movements</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Fetal distress or absent fetal heart sounds</td>
<td></td>
</tr>
<tr>
<td>• Severe abdominal pain (may decrease after rupture)</td>
<td>• Shock</td>
<td>Ruptured uterus</td>
</tr>
<tr>
<td>• Bleeding (intra-abdominal and/or vaginal)</td>
<td>• Abdominal distension/ free fluid</td>
<td>Refer as emergency to hospital</td>
</tr>
<tr>
<td></td>
<td>• Abnormal uterine contour</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Tender abdomen</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Easily palpable fetal parts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Absent fetal movements and fetal heart sounds</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Rapid maternal pulse</td>
<td></td>
</tr>
<tr>
<td>• Foul-smelling watery vaginal discharge after 22 weeks gestation</td>
<td>• History of loss of fluid</td>
<td>Chorioamnionitis</td>
</tr>
<tr>
<td>• Fever/chills</td>
<td>• Tender uterus</td>
<td>Refer as emergency to hospital</td>
</tr>
<tr>
<td></td>
<td>• Rapid fetal heart rate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Light vaginal bleeding</td>
<td></td>
</tr>
<tr>
<td>• Dysuria</td>
<td>• Retro pubic / suprapubic pain/ tenderness</td>
<td>Cystitis</td>
</tr>
<tr>
<td>• Increased frequency and urgency of urination</td>
<td></td>
<td>Treat as in Table 15</td>
</tr>
<tr>
<td>• Dysuria</td>
<td>• Retro pubic/suprapubic pain/ tenderness</td>
<td>Acute pyelonephritis</td>
</tr>
<tr>
<td>• Abdominal pain</td>
<td>• Loin pain/tenderness</td>
<td>Refer as emergency to hospital</td>
</tr>
<tr>
<td>• Spiking fever/chills</td>
<td>• Tenderness in rib cage</td>
<td></td>
</tr>
<tr>
<td>• Increased frequency and urgency of urination</td>
<td>• Anorexia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Nausea/vomiting</td>
<td></td>
</tr>
</tbody>
</table>
### Table 22: Diagnosis of abdominal pain in later pregnancy and after child birth (Cont)

<table>
<thead>
<tr>
<th>Presenting Symptom and Other Symptoms and Signs Typically Present</th>
<th>Symptoms and Signs Sometimes Present</th>
<th>Probable Diagnosis &amp; Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Lower abdominal pain</td>
<td>• Abdominal distension</td>
<td>• Appendicitis</td>
</tr>
<tr>
<td>• Low-grade fever</td>
<td>• Anorexia</td>
<td>• Twisted pedunculated fibroids</td>
</tr>
<tr>
<td>• Rebound tenderness</td>
<td>• Nausea/vomiting</td>
<td>• Red generation of fibroids</td>
</tr>
<tr>
<td></td>
<td>• Paralytic ileus</td>
<td>Refer as emergency to hospital</td>
</tr>
<tr>
<td></td>
<td>• Increased white blood cells</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• No mass in lower abdomen</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Site of pain higher than expected</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Lower abdominal pain</td>
<td>• Light vaginal bleeding</td>
<td>Endometritis</td>
</tr>
<tr>
<td>• Fever/chills</td>
<td>• Shock</td>
<td>Refer as emergency to hospital</td>
</tr>
<tr>
<td>• Purulent, foul-smelling lochia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Tender uterus</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Lower abdominal pain and distension</td>
<td>• Poor response to antibiotics</td>
<td>Pelvic abscess</td>
</tr>
<tr>
<td>• Persistent spiking fever/chills</td>
<td>• Swelling in adnexa or pouch of Douglas</td>
<td>Refer as emergency to hospital</td>
</tr>
<tr>
<td>• Tender uterus</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Lower abdominal pain</td>
<td>• Rebound tenderness</td>
<td>Peritonitis</td>
</tr>
<tr>
<td>• Low-grade fever/chills</td>
<td>• Abdominal distension</td>
<td>Refer as emergency to hospital</td>
</tr>
<tr>
<td>• Absent bowel sounds</td>
<td>• Anorexia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Nausea/vomiting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Shock</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Abdominal pain</td>
<td>• Palpable, tender discrete mass in lower abdomen</td>
<td>Ovarian cyst **</td>
</tr>
<tr>
<td>• Adnexal mass on vaginal examination</td>
<td>• Light * vaginal bleeding</td>
<td>Refer as emergency to hospital</td>
</tr>
</tbody>
</table>

* Light bleeding: takes five minutes or longer for a clean pad or cloth to be soaked
** Ovarian cysts may be asymptomatic and are sometimes first detected on physical examination.
6. MISSED ABORTION

Absent fetal heart activity and/or cessation of pregnancy related symptoms before 24 weeks of pregnancy.

Diagnosis

By ultrasound (Trans-vaginal ultrasound):

- Intrauterine sac (>20 mm mean diameter) with no obvious yolk sac or foetus, OR
- Absence of fetal heart activity in a pregnancy with crown-rump length of > 6 mm

Note: A repeat ultrasound examination at interval of 1 to 2 weeks is necessary to confirm the diagnosis.

If the gestational sac is smaller than expected for gestational age, the possibility of incorrect dates should be considered, especially in the absence of clinical features of threatened abortion. A repeat scan should be arranged after a period of at least 7 days and to be performed by an experienced person.

General management:

Refer to the secondary care by urgent appointment to decide on the mode of management.
7. DECREASED FETAL MOVEMENTS

Problem
Fetal movements are less than 10 movements per 12 hours.

Diagnosis

a. History:
• Check when last had food or fluids,
• Check maternal activity
• Check for any significant risk factors

b. Examination:
• Check fetal heart rate

Management:
• If < 28 weeks, or gave history of not taking food:
  - Advise her to take food and observe for movements for the next 1 hour.
  - Check for fetal heart sounds.
  - If normal movements and normal FHS: reassure the women and provide kick chart.
  - If no movements and/or abnormal FHS: refer to the secondary care as emergency.
• If ≥ 28 weeks and/or risk factors: Refer to the secondary care as emergency.
8. PRELABOUR RUPTURE OF MEMBRANES (PROM)

Problem
Rupture of membranes with vaginal loss of amniotic fluid before labour has begun. It can occur either when the fetus is immature (preterm or before 37 weeks) or when it is mature (term).

Diagnosis:
Maternal history:
• Gestational age
• Time of rupture of membranes
• Presence of meconium stained liquor
• Symptoms of infection:
  - Fever
  - Maternal tachycardia
  - Yellowish vaginal discharge

Examination:
• Sterile speculum examination:
  - Presence of pool of fluid in the vagina
  - Nitrazine test: amniotic fluid will turn paper blue
  - Microscopic examination of vaginal fluid show ferning due to the presence of sodium chloride under estrogen effect
  - Examination for lanugo hair
• Abdominal examination: determine fetal lie, presentation, heart rate and presence of contraction.

Note: Nitrazine test is the most practical and of help, but false positive rate is 17% due to contamination with urine, blood or semen.

Digital examination should be avoided where PROM is suspected
Management:

- If history and speculum examination shows evidence of leakage, refer to the secondary care as **emergency**.
- If Nitrazine test is positive, refer to the secondary care as emergency.
- If history, examination and Nitrazine test are not suggestive of rupture of membranes, reassure the patient and advise her to observe by applying a clean pad.
- Instruct the women to report immediately if signs of leaking liquor reoccur.
SECTION 3: NORMAL LABOUR
NORMAL LABOUR

- Greet the woman and make her comfortable.
- Perform a rapid evaluation of the general condition of the woman including vital signs (pulse, blood pressure, respiration, temperature).
- Perform a rapid evaluation of the maternal health record.
- Assess fetal condition:
  - Listen to the fetal heart rate immediately after a contraction:
  - Count the fetal heart rate for a full minute (after contraction) at least once every 15 minutes during the active phase and every five minutes during the second stage;
  - If there are fetal heart rate abnormalities (less than 110 or more than 160 beats per minute), suspect fetal distress.
  - If the membranes have ruptured, note the colour of the draining amniotic fluid.
  - Presence of thick meconium indicates the need for close monitoring and possible intervention for management of fetal distress.
  - Absence of fluid draining after rupture of the membranes is an indication of reduced volume of amniotic fluid, which may be associated with fetal distress.

Table 23: Conditions during labour requiring immediate referral

<table>
<thead>
<tr>
<th>Condition</th>
<th>Transfer to</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primigravida</td>
<td>Secondary care</td>
</tr>
<tr>
<td>Fetal Malpresentation</td>
<td>Secondary care</td>
</tr>
<tr>
<td>Fetal distress (abnormal fetal heart rate, thick meconium, blood stained liquor)</td>
<td>Secondary care</td>
</tr>
<tr>
<td>Ruptured membranes more than 24 hours</td>
<td>Secondary care</td>
</tr>
<tr>
<td>Prolonged labour (poor dilatation despite good contractions)</td>
<td>Secondary care</td>
</tr>
<tr>
<td>Prelabour rupture of membranes (before 22 weeks)</td>
<td>Secondary care</td>
</tr>
<tr>
<td>Uncontrolled premature labour (before 37 weeks)</td>
<td>Secondary care</td>
</tr>
</tbody>
</table>
SUPPORTIVE CARE DURING LABOUR AND CHILDBIRTH

• Encourage the woman to have personal support from a person of her choice throughout labour and birth (if permissible in the institution):
  - Arrange seating for the companion next to the woman;
  - Encourage the companion to give adequate support to the woman during labour and childbirth (rub her back, wipe her brow with a wet cloth, assist her to move about);
• Ensure good communication and support by staff:
  - Explain all procedures, seek permission and discuss findings with the woman;
  - Provide a supportive, encouraging atmosphere for birth that is respectful of the woman’s wishes;
  - Ensure privacy and confidentiality.
• Maintain cleanliness of the woman and her environment:
  - Encourage the woman to wash herself or bath or shower at the onset of labour (if possible in the providing institution);
  - Clean the vulva and perineal areas before each examination;
  - Wash your hands with soap before and after each examination;
  - Ensure cleanliness of labouring and birthing area(s);
  - Clean up all spills immediately.
• Ensure mobility:
  - Encourage the woman to move about freely
• Encourage the woman to empty her bladder regularly.

Note: Do not routinely give an enema to women in labour.

• Encourage the woman to eat light meals, nutritious liquid drinks are important, even in late labour.
• Teach breathing techniques for labour and delivery.
• Encourage the woman to breathe out more slowly than usual and relax with expiration.
• Help the woman in labour who is anxious, fearful or in pain:
  - Give her praise, encouragement and reassurance;
  - Give her information on the process and progress of her labour;
  - Listen to the woman and be sensitive to her feelings.
• If the woman is distressed by pain:
  - Encourage mobility, as comfortable for her.
  - Suggest change of position.
  - Encourage companion to:
    o Massage the woman’s back if she finds this helpful.
    o Hold the woman’s hand and sponge her face between contractions.
  - Encourage her to use the breathing technique.
  - Encourage warm bath or shower, if available.

**Note:** Analgesics drugs during labour to be avoided

• Barbiturates and sedatives should not be used to relieve anxiety in labour.

**If pain is constant (persisting between contractions) and very severe or sudden in onset refer the woman as emergency to the hospital**
DIAGNOSIS AND CONFIRMATION OF LABOUR

• Suspect or anticipate labour if the woman has:
  - Intermittent abdominal pain after 22 weeks gestation;
  - Pain often associated with blood-stained mucus discharge (show);
  - Watery vaginal discharge or a sudden gush of water.

• Confirm the onset of labour if there is:
  - Cervical effacement; i.e. the progressive shortening and thinning of the cervix during labour; and
  - Cervical dilatation; i.e. the increase in diameter of the cervical opening measured in centimetres.

Figure 1: Effacement and dilatation of the cervix
### Diagnosis of Stage and Phase of Labour

**Table 24: Diagnosis of stage and phase of labour**

<table>
<thead>
<tr>
<th>Symptoms and Signs</th>
<th>Stage</th>
<th>Phase</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Cervix not dilated</td>
<td></td>
<td>False labour/ Not in labour</td>
</tr>
<tr>
<td>• Cervix dilated less than 3 cm</td>
<td>First</td>
<td>Latent</td>
</tr>
<tr>
<td>• Cervix dilated 3-9 cm</td>
<td>First</td>
<td>Active</td>
</tr>
<tr>
<td>• Rate of dilatation typically one cm per hour or more</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Fetal descent begins</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Cervix fully dilated (10 cm)</td>
<td>Second</td>
<td>Early (non-expulsive)</td>
</tr>
<tr>
<td>• Fetal descent continues</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• No urge to push</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Cervix fully dilated (10 cm)</td>
<td>Second</td>
<td>Late (expulsive)</td>
</tr>
<tr>
<td>• Presenting part of fetus reaches pelvic floor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Woman has the urge to push</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Third stage of labour begins with delivery of the baby and ends with the expulsion of the placenta.

### Descent Assessment

**Abdominal Palpation**

By abdominal palpation, assess descent in terms of fifths of fetal head palpable above the symphysis pubis:

- A head that is entirely above the symphysis pubis is five-fifths (5/5) palpable
- A head that is entirely below the symphysis pubis is zero-fifths (0/5) palpable.

**Figure 2: Abdominal palpation for descent of the fetal head**

- A. Head is mobile above the symphysis pubis = 5/5
- B. Head accommodates full width of five fingers above the symphysis pubis
- C. Head is 2/5 above symphysis pubis
- D. Head accommodates two fingers above the symphysis pubis
Vaginal Examination

Vaginal examination is used to assess descent by relating the level of the fetal presenting part to the Ischial spines of the maternal pelvis.

Note: When there is a significant degree of caput or moulding, assessment by abdominal palpation using fifths of head palpable is more useful than assessment by vaginal exam.

Figure 3: Assessing descent of the fetal head by vaginal examination; 0 station is at the level of the Ischial spine (SP)

Presentation and Position Assessment

Determine the presenting part:

- The most common presenting part is the vertex of the fetal head. If the vertex is not the presenting part, manage as a malpresentation.
- If the vertex is the presenting part, use landmarks on the fetal skull to determine the position of the fetal head in relation to the maternal pelvis.

Figure 4: Landmarks of the fetal skull

Determine the Position of the Fetal Head

The fetal head normally engages in the maternal pelvis in an occipital transverse position, with the fetal occiput transverse in the maternal pelvis.
With descent, the fetal head rotates so that the fetal occiput is anterior in the maternal pelvis (occiput anterior positions). Failure of an occiput transverse position to rotate to an occiput anterior position should be managed as an occiput posterior position.

An additional feature of a normal presentation is a well-flexed vertex with the occiput lower in the vagina than the sinciput.
Assessment of Progress of Labour

Once diagnosed, progress of labour is assessed by:

- Measuring changes in cervical effacement and dilatation during the latent phase;
- Measuring the rate of cervical dilatation and fetal descent during the active phase;
- Assessing further fetal descent during the second stage.

Progress of the first stage of labour should be plotted on a partogram once the woman enters the active phase of labour. A sample partogram is shown in Figure 8.

Table 25: Duration of each stage of labour

<table>
<thead>
<tr>
<th>Stage of Labour</th>
<th>Primigravida</th>
<th>Multipara</th>
</tr>
</thead>
<tbody>
<tr>
<td>First stage</td>
<td>6- 18 hours</td>
<td>2- 10 hours</td>
</tr>
<tr>
<td>Second stage</td>
<td>30 minutes to 3 hours</td>
<td>5- 30 minutes</td>
</tr>
<tr>
<td>Third stage</td>
<td>0- 30 minutes</td>
<td>0- 30 minutes</td>
</tr>
</tbody>
</table>

Vaginal Examinations

Vaginal examinations should be carried out at least once every four hours during the first stage of labour and after rupture of the membranes. Plot the findings on a partogram.

- At each vaginal examination, record the following:
  - colour of amniotic fluid;
  - cervical dilatation and effacement;
  - Descent (can also be assessed abdominally).

- If the cervix is not dilated on first examination it may not be possible to diagnose labour.
  - If contractions persist, re-examine the woman after four hours for cervical changes.
    At this stage, if there is effacement and dilatation, the woman is in labour; if there is no change, the diagnosis is false labour.

- In the second stage of labour, perform vaginal examinations once every hour.

USING THE PARTOGRAM

Fill all the required information in the front page of the Composite Obstetric Record

Plotting the Partogram:

- The partogram is designed to record all important information about the woman and fetus during labour. It is a tool for making decisions.
- The progress of labour is recorded as a simple graph with the time on the horizontal axis and the various important features of labour on the vertical axis.
- All observations such as BP, fetal heart, uterine contractions are charted by plotting the value of that observation, on the vertical axis, against the appropriate time, on the
horizontal axis. In this way trends are easily recognized.

- The findings of every vaginal examination (cervix dilatation and descent) are plotted on the partogram.
- The midwife or doctor can see at a glance the condition of the mother and fetus, and the progress of labour.
- The partogram provides valuable guidance in the management of labour.
- The partogram is started when the cervix is 3 cm dilated.

**Every 30 minutes:**
- Count the fetal heart.
- Time the uterine contractions.
- Take the maternal pulse.

**Every two hours:**
- Take the maternal blood pressure.

**Every four hours:**
- Take maternal temperature.
- Test the urine.
- Perform a vaginal examination.

**Use of Partogram in Active Management of Labour**

- Alert line: As soon as the cervix is found to be 3 cm or more dilated on vaginal examination, an Alert line is drawn in red obliquely upward, along the expected rate of dilatation of 1 cm per hour.
- The Alert line indicates the expected rate of dilatation during the active phase of labour.
- If on subsequent vaginal examination the cervical dilatation is to the right of the Alert line the doctor should be informed as it gives an indication that labour is not progressing as it should be.
- Action line: Is drawn parallel to the alert line, 2 hours to the right. This shows when some action should be taken.
- If, on any vaginal assessment, the cervical dilatation is delayed 2 hours or more to the right of the Alert line i.e. on the Action line or beyond, some action should be taken to ensure that labour progresses safely.
Figure 8: Sample partogram for normal labour
Progress of First Stage of Labour

- Findings suggestive of **satisfactory progress** in the first stage of labour are:
  - Regular contractions of progressively increasing frequency and duration;
  - Rate of cervical dilatation at least 1 cm per hour during the active phase of labour (cervical dilatation on or to the left of alert line);
  - Cervix well applied to the presenting part.

- Findings suggestive of **unsatisfactory progress** in the first stage of labour are:
  - Irregular and infrequent contractions after the latent phase
  
  **OR**
  - Rate of cervical dilatation slower than 1 cm per hour during the active phase of labour (cervical dilatation to the right of alert line);
  
  **OR**
  - Cervix poorly applied to the presenting part.

**Note:** Unsatisfactory progress in labour can lead to prolonged labour.

Progress of Second Stage of Labour

- Findings suggestive of **satisfactory progress** in the second stage of labour are:
  - Steady descent of fetus through birth canal;
  - Onset of expulsive (pushing) phase.

- Findings suggestive of **unsatisfactory progress** in second stage of labour are:
  - Lack of descent of fetus through birth canal;
  - Failure of expulsion during the late (expulsive) phase.

Progress of Fetal Condition

- If there is fetal heart rate abnormalities (less than 110 or more than 160 beats per minute), suspect fetal distress and refer the patient to the secondary care as emergency.

- Positions or presentations in labour other than occiput anterior with a well-flexed vertex are considered malpositions or malpresentation and refer the patient to the secondary care as emergency.

- If unsatisfactory progress of labour or prolonged labour is suspected, refer patient to the secondary care as emergency.
Progress of Maternal Condition

Evaluate the woman for signs of distress:

- **If the woman's pulse is increasing**, she may be dehydrated or in pain. Ensure adequate hydration via oral or IV routes.
- **If the woman's blood pressure decreases**, suspect haemorrhage.
- **If ketones is present in the woman’s urine**, suspect poor nutrition and give oral nutritious drinks and IV fluids.

NORMAL CHILDBIRTH

- **Once the cervix is fully dilated and the woman is in the expulsive phase of the second stage (when she feels the urge to push)**, encourage the woman to push.

**Note:** Episiotomy is no longer recommended as a routine procedure. There is no evidence that routine episiotomy decreases perineal damage, future vaginal prolapse or urinary incontinence.

**Episiotomy (Page 132) should be considered in the case of:**
- Complicated vaginal delivery (breech, shoulder dystocia, forceps, vacuum extraction)
- Scarring from female genital cutting or poorly healed third or fourth degree tears
- Fetal distress

**Delivery of the Head:**

- Ask the woman to pant or give only small pushes with contractions as the baby’s head delivers.
- To control birth of the head, place the fingers of one hand against the baby’s head to keep it flexed (bent).
- Continue to gently support the perineum as the baby’s head delivers.
- Once the baby's head delivers, ask the woman not to push.
- Feel around the baby’s neck for the umbilical cord:
  - If the cord is around the neck but is loose, slip it over the baby’s head;
  - If the cord is tight around the neck, doubly clamp and cut it before unwinding it from around the neck.
**Completion of Delivery:**

- Allow the baby’s head to turn spontaneously.
- After the head turns, place a hand on each side of the baby’s head. Tell the woman to push gently with the next contraction.
- Reduce tears by delivering one shoulder at a time.

**Note:** If there is difficulty delivering the shoulders, suspect shoulder dystocia.

- Lift the baby’s head anteriorly to deliver the shoulder that is posterior.
- Support the rest of the baby’s body with one hand as it slides out.
- Place the baby on the mother’s abdomen. Thoroughly dry the baby, wipe the eyes and assess the baby’s breathing:

**Note:** Most babies begin crying or breathing spontaneously within 30 seconds of birth:

- If the baby is crying or breathing (chest rising at least 30 times per minute) leave the baby with the mother;
- If baby does not start breathing within 30 seconds, call for help and take steps to resuscitate the baby.

**Anticipate the need for resuscitation and have a plan to get assistance for every baby**

- Clamp and cut the umbilical cord immediately after delivery of the baby.
- Ensure that the baby is kept warm and in skin-to-skin contact on the mother’s chest. Wrap the baby in a soft, dry cloth, cover with a blanket and ensure the head is covered to prevent heat loss.
- If the **mother is not well**, ask an assistant to care for the baby.
- Palpate the abdomen to rule out the presence of an additional baby(s) and proceed with active management of the third stage.
Active Management of the Third Stage:

Active management of the third stage (active delivery of the placenta) helps to prevent postpartum haemorrhage. Active management of the third stage of labour includes:

A. Immediate oxytocin;

B. Controlled cord traction; and

C. Uterine massage.

Oxytocin

- Within one minute of delivery of the baby, palpate the abdomen to rule out the presence of an additional baby(s) and give oxytocin 10 units IM.

- Oxytocin is preferred because it is effective 2 to 3 minutes after injection, has minimal side effects and can be used in all women. If oxytocin is not available, give ergometrine 0.2 mg IM.

Do not give ergometrine to women with pre-eclampsia, eclampsia, high blood pressure and cardiac conditions because it increases the risk of convulsions and cerebrovascular accidents

Controlled Cord Traction:

1. Clamp the cord close to the perineum using sponge forceps within one minute of delivery. Hold the clamped cord and the end of forceps with one hand;

2. Wait for signs of placenta separation: gush of blood and lengthening of the cord;

3. Place side of the other hand (usually left) above symphysis pubis with palm facing towards the mother’s umbilicus. This applies counter traction to the uterus during controlled cord traction. This helps to prevent inversion of the uterus;

4. Keep slight tension on the cord and await a strong uterine contraction (two to three minutes);

5. When the uterus becomes rounded or the cord lengthens, very gently pull downward on the cord to deliver the placenta. Continue to apply counter traction to the uterus with the other hand;

6. If the placenta does not descend during 30 to 40 seconds of controlled cord traction (i.e. there are no signs of placental separation), do not continue to pull on the cord:

    - Gently hold the cord and wait until the uterus is well contracted again. If necessary, use a sponge forceps to clamp the cord closer to the perineum as it lengthens;

    - With the next contraction, repeat controlled cord traction with counter traction;
Never apply cord traction (pull) without applying counter traction (push) above the pubic bone with the other hand

7. As the placenta delivers, the thin membranes can tear off. Hold the placenta in two hands and gently turn it until the membranes are twisted;

8. Slowly pull to complete the delivery;

9. If the membranes tear, gently examine the upper vagina and cervix and use a sponge forceps to remove any pieces of membrane that are present;

10. Inspect the placenta to be sure none of it is missing. If a portion of the maternal surface is missing or there are torn membranes with vessels, suspect retained placental fragments, transfer the patient to the secondary care as emergency.

11. If uterine inversion occurs, transfer the patient to the secondary care as emergency;

12. If the cord is pulled off, transfer the patient to the secondary care as emergency.

**Uterine Massage:**

- Immediately massage the fundus of the uterus through the woman’s abdomen until the uterus is contracted;
- Perform uterine palpation and inspect for excessive vaginal bleeding every 15 minutes for the first two hours;
- Ensure that the woman has passed urine before shifting to the ward or discharge.

**Examination for Vaginal Tears:**

- Examine the woman carefully and only repair 1st and 2nd degree vaginal tears, lacerations and episiotomy;
- If 2nd degree vaginal tear was difficult to repair, refer to the secondary care as emergency;
- Refer the patient to the secondary care for the repair of 3rd degree vaginal tears and cervical tears as an emergency.

**Fourth Stage Assessment:**

- Assess estimated blood loss at delivery;
- Measure vital signs;
- Assess uterine tone; uterus should be firm, central and located at the umbilicus. If uterus is deviated from central position, soft and/or distended, check the bladder, if palpable, encourage the mother to pass urine or insert a urinary catheter.
MANAGEMENT OF WOMEN PRESENTING WITH ACTIVE LABOUR AND DIAGNOSED WITH MALPRESENTATION:

Delivery with malpresentation should not be carried out in a primary health care. If women presented in labour every effort should be taken to transfer patient to the secondary care. Delivery can only be conducted if woman is an advanced stage of labour and there is no time to transfer.

Breach Presentation:
- Review general care principles and start an IV infusion. Provide emotional support and encouragement.
- Perform needed manoeuvres gently and without undue force.

Complete or Frank Breech

Figure 9: Breech presentation

Delivery of the Buttocks and Legs
- Once the buttocks have entered the vagina and the cervix is fully dilated, tell the woman she can bear down with the contractions.
- If the perineum is very tight, perform an episiotomy (page 132).
- Let the buttocks deliver until the lower back and then the shoulder blades are seen.
- Gently hold the buttocks in one hand, but do not pull.
- If the legs do not deliver spontaneously, deliver one leg at a time:
  - Push behind the knee to bend the leg;
  - Grasp the ankle and deliver the foot and leg;
  - Repeat for the other leg.
- Hold the baby by the hips, as shown in (figure 10). Do not hold the baby by the flanks or abdomen as this may cause kidney or liver damage.

Do not pull the baby while the legs are being delivered
Figure 10: Hold the baby at the hips, but do not pull

Delivery of the Arms

Arms are Felt on Chest

- Allow the arms to disengage spontaneously one by one. Only assist if necessary.
- After spontaneous delivery of the first arm, lift the buttocks towards the mother’s abdomen to enable the second arm to deliver spontaneously.
- If the arm does not spontaneously deliver, place one or two fingers in the elbow and bend the arm, bringing the hand down over the baby’s face.

Arms are Stretched above the Head or Folded around the Neck

Use Lovset’s manoeuvre (Figure 11)

- Hold the baby by the hips and turn half a circle, keeping the back uppermost and applying downward traction at the same time, so that the arm that was posterior becomes anterior and can be delivered under the pubic arch.
- Assist delivery of the arm by placing one or two fingers on the upper part of the arm. Draw the arm down over the chest as the elbow is flexed, with the hand sweeping over the face.
- To deliver the second arm, turn the baby back half a circle, keeping the back uppermost and applying downward traction, and deliver the second arm in the same way under the pubic arch.
Baby’s Body Cannot be Turned

If the baby's body cannot be turned to deliver the arm that is anterior first, deliver the shoulder that is posterior see (Figure 12):

• Hold and lift the baby up by the ankles.
• Move the baby’s chest towards the woman’s inner leg. The shoulder that is posterior should deliver.
• Deliver the arm and hand.
• Lay the baby back down by the ankles. The shoulder that is anterior should now deliver.
• Deliver the arm and hand.

Figure 12: Delivery of the shoulder that is posterior
Delivery of the Head

Deliver the head by the Mauriceau Smellie Veit manoeuvre (Figure 13) as follows:

- Lay the baby face down with the length of its body over your left hand and forearm.
- Place the first and second fingers of this hand on the baby’s cheekbones beside the nose.
- Use the other hand to grasp the baby’s shoulders with the middle finger pushing on the occiput.
- Apply gentle traction downward and backwards direction until delivery of fetal chin followed by upward guidance of face and forehead over perineum.

Note: Ask an assistant to push above the mother’s pubic bone as the head delivers. This helps to keep the baby’s head flexed.

- Raise the baby, still astride the arm, until the mouth and nose are free.

Figure 13: The Mauriceau Smellie Veit Manoeuvre
Shoulder Dystocia

Problem
The fetal head has been delivered but the shoulders are stuck and cannot be delivered.

General Management
• Be prepared for shoulder dystocia at all deliveries, especially if a large baby is anticipated.
• Have several persons available to help.

Shoulder dystocia cannot be predicted

Diagnosis
• The fetal head is delivered but remains tightly applied to the vulva.
• The chin retracts and depresses the perineum.
• Traction on the head fails to deliver the shoulder, which is caught behind the symphysis pubis.

Management
• Make an adequate episiotomy to reduce soft tissue obstruction and to allow space for manipulation.
• With the woman on her back, ask her to flex both thighs, bringing her knees as far up as possible towards her chest (Figure 14). Ask two assistants to push her flexed knees firmly up onto her chest.

Figure 14: Assistant pushing flexed knees firmly towards chest

• Wearing sterile gloves; apply firm, continuous traction downwards on the fetal head to move the shoulder that is anterior under the symphysis pubis;
Note: Avoid excessive traction on the fetal head as this may result in brachial plexus injury;
- Have an assistant simultaneously apply suprapubic pressure downwards to assist delivery of the shoulder;

Note: Do not apply fundal pressure. This will further impact the shoulder and can result in uterine rupture.

• If the shoulder still is not delivered:
  - Insert a hand into the vagina;
  - Apply pressure to the shoulder that is anterior in the direction of the baby’s sternum to rotate the shoulder and decrease the diameter of the shoulders;
  - If needed, apply pressure to the shoulder that is posterior in the direction of the sternum.

• If the shoulder still is not delivered despite the above measures:
  - Insert a hand into the vagina;
  - Grasp the humerus of the arm that is posterior and, keeping the arm flexed at the elbow, sweep the arm across the chest. This will provide room for the shoulder that is anterior to move under the symphysis pubis (Figure 15)

Figure 15: Grasping the humerus of the arm that is posterior and sweeping the arm across the chest
• If all of the above measures fail to deliver the shoulder, other options include:
  - Fracture the clavicle to decrease the width of the shoulders and free the shoulder that is anterior;
  - Apply traction with a hook in the axilla to extract the arm that is posterior.
SECTION 4: ROUTINE POST NATAL CARE AND COMPLICATIONS
ROUTINE POST NATAL CARE

It is the care given to the women and her baby for the first six weeks after delivery.

Aims of post-natal care:

• To promote the physical, mental & emotional health of the mothers and their babies.
• To reduce the mortality and morbidity of mothers and their babies.

Tasks of postnatal care

1. Basic care: To ensure basic care of all new born.
2. Bonding: To assist bonding between mother and babies by rooming in and minimizing separation unless medically indicated.
3. Breastfeeding: To initiate breastfeeding within half to 1 hour of delivery and establishing it by supporting & counseling the mother.
4. Birth spacing: To counsel mothers about options for birth spacing in post natal period.
5. Education: To provide information on baby care including hygiene & child safety.

Basic care of newborns:

Ensuring Warmth

At birth

• Warm delivery room: Temperature should be 25-28º C, no draught.
• Dry baby: immediately after birth, place the baby on a warm, clean and dry surface. Dry the whole body and hair thoroughly, with a dry cloth.
• Assess the newborn for the Apgar score.
• Skin-to-skin contact: Leave the baby on the mother’s chest (after cord cut) after birth. Cover the baby with a soft dry cloth.
• If the mother cannot keep the baby skin-to-skin because of complications, wrap the baby in a clean, warm cloth and place in a cot. Cover with a blanket. Use a radiant warmer if room not warm or baby is pre-term.

Subsequently

• Explain to the mother that keeping baby warm is important for the baby to remain healthy.
• Dress the baby or wrap in soft dry clean cloth. Cover the head with a cap for the first few days.
• Ensure the baby is dressed or wrapped and covered with a blanket.
• If the mother and baby must be separated, ensure that baby is dressed or wrapped and covered with a blanket.
• Assess warmth every 4 hours by touching the baby’s feet: if feet are cold use skin-to-skin contact, add extra blanket and reassess.
• Keep the room warm for the mother and baby. If the room is not warm enough, always cover the baby with a blanket and/or use skin-to-skin contact.
At home
• Explain to the mother that babies need one more layer of clothes than older children or adults.
• Keep the room or part of the room warm, especially in cold climate.
• During the day, dress or wrap the baby.
• At night, let the baby sleep with the mother or within easy reach to facilitate breastfeeding.

Hygiene:
Eye care
• It is normal for a newborn baby to have some crusting or a little discharge
• Wash the baby eyes with clean water

Do not put any antibiotics unless advised by physician

Cord care
• Wash hands before and after cord care.
• Do not put anything on the stump.
• Fold nappy (diaper) below stump.
• Keep cord stump loosely covered with clean clothes.
• If stump is soiled, wash it with clean water and soap. Dry it thoroughly with clean cloth.
• If umbilicus is red or draining pus or blood, examine the baby and refer to the paediatrician.
• Explain to the mother that she should seek care if the umbilicus is red or draining pus or blood.

Remember:
• Do not bandage the stump or abdomen.
• Do not apply any substances or medicine to stump.
• Do not touch the stump unnecessarily.

Bath
At Birth:
• Only remove blood or meconium.
• Do not remove vernix.
• Do not bathe the baby before 6 hours.

Later and at home:
• Wash the face, neck, underarms daily.
• Wash the buttocks when soiled. Dry thoroughly.
• Bath when necessary.
• Ensure the room is warm, no draught.
• Use warm water for bathing
• Thoroughly dry the baby, dress and cover after bath.
Immunization

- Give all the required immunizations according to the national immunization schedule.
- Give Vitamin A 200,000 IU to mother within 15 days after delivery, preferably before discharge.
- Give Rubella Vaccine to mother if indicated.
- Advise when to return for next immunization.

Ensure Nutrition through Breast Feeding

- Ask the mother to help the baby attach when the baby seems to be ready. Signs of readiness to suckle include opening the mouth, rooting or searching, looking around, and moving.
- If the mother is ill and unable to breastfeed, help her to express breast milk and feed the baby by cup.
- Explain to the mother how to hold her baby during breastfeeding. She should:
  - Hold the baby in skin-to-skin contact, if possible;
  - Hold the baby’s head and body straight so that the baby faces her breast, with the baby’s nose near her nipple;
  - Support the baby’s whole body, not just the neck and shoulders.
  - Explain to the mother how to encourage her baby to attach. She should:
    - Touch the baby’s lips with her nipple;
    - Wait until the baby’s mouth is opening wide;
    - Move the baby quickly onto her breast, so that the baby’s lower lip is well below the nipple.

Figure 16: Initiating breast feeding

- Assess attachment on the breast and suckling. Help the mother if she wishes. Especially if she is a first time or very young mother. Signs of correct attachment:
  - Baby’s chin touches the breast;
  - Baby’s mouth is wide open with the lower lip curled out;
  - More of the areola is visible above than below the mouth;
  - Baby suckles with slow, deep sucks and pauses sometimes.
Neonatal screening:
- Blood should be collected for routine screening from umbilical cord at birth or by heel puncture subsequently.
- Hearing test to be performed before discharge.

Documentation

Maternal Health Record: The details of labour should be entered in the Maternal Health Record.

Child Health Record: Every child must be issued a Child Health Record and all entries should be completed before discharge from the maternity ward. The child health checks done at birth should be done in the first 24 hours and be entered in the Child Health Record.

Postnatal visits to clinic
- The mother should visit the health centre at 2 weeks and then at 6 weeks postnatal.
- Check blood pressure, pulse and temperature.
- The investigations to be performed at 6 week visit:
  - HB level
  - urine microscopy
  - TFT (if indicted )
  - OGTT (if indicated )
- Women should be examined by the doctor for: uterus, perineum, vagina/lochia, LSCS wound (if went under caesarean section) and breast & nipples.
- Further counselling on breast feeding and lactation should be given at this stage.
- Counselling on the appropriate methods of birth spacing should be re-emphasized on.
- Screen all women for postpartum depression.
- All women with low haemoglobin in the postpartum period should be offered iron supplementation for 3-6 months.
POSTNATAL COMPLICATIONS
1. VAGINAL BLEEDING AFTER CHILDBIRTH (POST PARTUM HAEMORRHAGE)

Postpartum haemorrhage is defined as blood loss sufficient to cause hemodynamic instability.

Problems
- Increased vaginal bleeding within the first 24 hours after childbirth (immediate PPH).
- Increased vaginal bleeding after the first 24 hours after childbirth till 6 weeks postpartum (delayed PPH). Usually caused by endometriosis.

Continuous slow bleeding or sudden bleeding is an emergency; intervene early and aggressively

Prevention
- Active management of 3rd stage.
- Prophylactic Oxytocin.
- Controlled Cord traction.
- Inspection of placenta and lower genital tract.

Active management of the third stage should be practised on all women in labour because it reduces the incidence of PPH due to uterine atony

Diagnosis

Table 26: Diagnosis of vaginal bleeding after childbirth

<table>
<thead>
<tr>
<th>Presenting Symptom and Other Symptoms and Signs Typically Present</th>
<th>Symptoms and Signs Sometimes Present</th>
<th>Probable Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Immediate PPH</td>
<td>• Shock</td>
<td>Atonic uterus</td>
</tr>
<tr>
<td>• Uterus soft and not contracted</td>
<td></td>
<td>See Medical Management (Page 111)</td>
</tr>
<tr>
<td></td>
<td>• Complete placenta</td>
<td>Tears of cervix, vagina or perineum</td>
</tr>
<tr>
<td></td>
<td>• Uterus contracted</td>
<td>If grade 1 suture (page 142)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Grade 2, 3 and 4 refer as emergency</td>
</tr>
<tr>
<td>Presenting Symptom and Other Symptoms and Signs Typically Present</td>
<td>Symptoms and Signs Sometimes Present</td>
<td>Probable Diagnosis &amp; Management</td>
</tr>
<tr>
<td>---------------------------------------------------------------</td>
<td>-------------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>• Placenta not delivered within 30 minutes after delivery</td>
<td>• Immediate PPH*</td>
<td>Retained placenta, Stabilize &amp; refer as emergency</td>
</tr>
<tr>
<td>• No tears in the genital tract</td>
<td>• Uterus contracted</td>
<td></td>
</tr>
<tr>
<td>• Portion of maternal surface of placenta missing or torn membranes with vessels</td>
<td>• Immediate PPH*</td>
<td>Retained placental fragments Stabilize &amp; refer as emergency</td>
</tr>
<tr>
<td>• Uterus contracted</td>
<td>• Uterus contracted</td>
<td></td>
</tr>
<tr>
<td>• Uterine fundus not felt on abdominal palpation</td>
<td>• Shock</td>
<td>Inverted uterus Stabilize &amp; refer as emergency</td>
</tr>
<tr>
<td>• Slight or intense pain</td>
<td>• Inverted uterus apparent at vulva</td>
<td></td>
</tr>
<tr>
<td>• Severe abdominal pain (may decrease after rupture)</td>
<td>• Immediate PPH**</td>
<td>Ruptured uterus Stabilize &amp; refer as emergency</td>
</tr>
<tr>
<td>• Immediate PPH* (bleeding is intra-abdominal and/or vaginal)</td>
<td>• Shock</td>
<td></td>
</tr>
<tr>
<td>• Severe abdominal pain (may decrease after rupture)</td>
<td>• Tender abdomen</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Rapid maternal pulse</td>
<td></td>
</tr>
</tbody>
</table>

* Bleeding may be light if a clot blocks the cervix or if the woman is lying on her back.

** There may be no bleeding with complete inversion.

**General Management:**

• Call for help. Urgently mobilize all available personnel.

• Perform a rapid evaluation of the general condition of the woman, including vital signs (pulse, blood pressure, respiration, temperature).

• Check airway and give 100% oxygen by mask/bag.

• Insert 2 IV lines (14 G), take blood for CBC, clotting, cross match 4 units and start IV fluids.

• Give warmed crystalloid & colloid IV fluids as rapidly as needed while awaiting blood.

**Specific Management:**

• Catheterize urinary bladder;

• Rub the uterus +/- bimanual compression;
Medical management:
- Give syntometrin (oxytocin 5 IU/ ergometrine 0.5 mg) IM injection;
- If still bleeding, start oxytocin drip 40 IU in 500 ml of 0.9% normal saline;

• Check pulse and BP every 15 minutes and treat shock as on (page 125)
• Refer the patient as EMERGENCY to hospital.

Tears of Cervix, Vagina or Perineum
Postpartum bleeding with a contracted uterus is usually due to a cervical or vaginal tear.

• Examine the woman carefully and repair 1st degree tears of vagina and perineum (page 139). If bleeding continues transfer the patient to the secondary as emergency.
• Patients with 2nd, 3rd and 4th degree vaginal tears and cervical tears should be stabilized and then referred to the secondary care as emergency.

Retained Placenta

There may be no bleeding with retained placenta

• Apply controlled cord traction to remove the placenta.
• Note: Avoid forceful cord traction and fundal pressure, as they may cause uterine inversion.
• If the placenta is not expelled, start the medical management (if not already started).
• Ensure that the bladder is empty. Catheterize the bladder, if necessary. If the placenta is undelivered after 30 minutes of oxytocin stimulation and controlled cord traction transfer as EMERGENCY.
• Note: Very adherent tissue may be placenta accreta. Efforts to extract a placenta that does not separate easily may result in heavy bleeding or uterine perforation, which usually requires hysterectomy. Transfer the patient as EMERGENCY to hospital.
2. FEVER AFTER CHILDBIRTH

Problem

Woman has fever (temperature 38°C or more) occurring more than 24 hours after delivery.

General Management

Needs to be taken seriously and to be investigated and referred to secondary care if needed.

- Encourage bed rest.
- Ensure adequate hydration by mouth or IV.
- Use a fan or tepid sponge to help decrease temperature.
- Paracetamol 1 gm every 4-6 hours or as needed.
- If shock is suspected, immediately begin management. Even if signs of shock are not present; keep shock in mind as you evaluate the woman further because her status may worsen rapidly. If shock develops, it is important to begin management immediately.

Use the following table for diagnosis and management.

**Table 27: Diagnosis of fever after childbirth**

<table>
<thead>
<tr>
<th>Presenting Symptom and Other Symptoms and Signs Typically Present</th>
<th>Symptoms and Signs Sometime Present</th>
<th>Probable Diagnosis/ management &amp; when to refer</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Breast pain and tenderness</td>
<td>• Hard enlarged breasts</td>
<td>Breast engorgement For management (see Page 116)</td>
</tr>
<tr>
<td></td>
<td>• Both breasts affected</td>
<td></td>
</tr>
<tr>
<td>• Breast pain and tenderness</td>
<td>• Inflammation preceded by engorgement</td>
<td>Mastitis Treat with antibiotics (see Page 116)</td>
</tr>
<tr>
<td>• Reddened, wedge-shaped area on breast</td>
<td>• Usually only one breast affected</td>
<td></td>
</tr>
<tr>
<td>• Firm, very tender breast</td>
<td>• Fluctuant swelling in breast</td>
<td>Breast abscess Refer as emergency to the surgeon for drainage and antibiotics.</td>
</tr>
<tr>
<td>• Overlying erythema</td>
<td>• Draining pus</td>
<td></td>
</tr>
</tbody>
</table>
### Table 27: Diagnosis of fever after childbirth (Cont.)

<table>
<thead>
<tr>
<th>Presenting Symptom and Other Symptoms and Signs Typically Present</th>
<th>Symptoms and Signs Sometimes Present</th>
<th>Probable Diagnosis/when to refer</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Dysuria</td>
<td>• Retro pubic/suprapubic pain</td>
<td>Acute pyelonephritis, Refer as emergency</td>
</tr>
<tr>
<td>• Spiking fever/chills</td>
<td>• Loin pain/tenderness</td>
<td></td>
</tr>
<tr>
<td>• Increased frequency and urgency of urination</td>
<td>• Tenderness in rib cage</td>
<td></td>
</tr>
<tr>
<td>• Abdominal pain</td>
<td>• Anorexia</td>
<td></td>
</tr>
<tr>
<td>• Nausea/vomiting</td>
<td>• Calf muscle tenderness</td>
<td>Deep vein thrombosis, Refer as emergency</td>
</tr>
<tr>
<td>- Spiking fever despite antibiotics</td>
<td>• Light * vaginal bleeding</td>
<td>Endometritis, Refer as emergency</td>
</tr>
<tr>
<td></td>
<td>• Shock</td>
<td></td>
</tr>
<tr>
<td>• Fever/chills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Lower abdominal pain</td>
<td>• Poor response to antibiotics</td>
<td>Pelvic abscess, Refer as emergency</td>
</tr>
<tr>
<td>• Purulent, foul-smelling lochia</td>
<td>• Swelling in adnexa or pouch of Douglas</td>
<td></td>
</tr>
<tr>
<td>• Tender uterus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Lower abdominal pain and distension</td>
<td>• Rebound tenderness</td>
<td>Peritonitis, Refer as emergency</td>
</tr>
<tr>
<td>• Persistent spiking fever/chills</td>
<td>• Abdominal distension</td>
<td></td>
</tr>
<tr>
<td>• Tender uterus</td>
<td>• Anorexia</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Nausea/vomiting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Shock</td>
<td></td>
</tr>
<tr>
<td>• Low-grade fever/chills</td>
<td>• Clinical signs of consolidation</td>
<td>Pneumonia, Refer as emergency</td>
</tr>
<tr>
<td>• Lower abdominal pain</td>
<td>Congested throat</td>
<td></td>
</tr>
<tr>
<td>• Absent bowel sounds</td>
<td>• Rapid breathing</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Rhonchi/ rales</td>
<td></td>
</tr>
<tr>
<td>• Fever</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Difficulty in breathing</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Cough with expectoration</td>
<td></td>
<td></td>
</tr>
<tr>
<td>• Chest pain</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Light bleeding: takes longer than 5 minutes for a clean pad or cloth to be soaked.
Breast Engorgement

Breast engorgement is an exaggeration of the lymphatic and venous engorgement that occurs before lactation. It is not the result of over distension of the breast with milk.

If the woman breastfeeding her baby:

• If the woman is breastfeeding and the baby is not able to suckle, encourage the woman to express milk by hand or with a pump to soften around the areola so the baby can latch on the breast.

• If the woman is breastfeeding and the baby is able to suckle:
  - Encourage the woman to breastfeed more frequently, using both breasts at each feeding.
  - Show the woman how to hold the baby and help it attach.
  - Relief measures before feeding may include:
    o Apply warm compresses to the breasts just before breastfeeding, or encourage the woman to take a warm shower.
    o Massage the woman’s neck and back.
    o Have the woman express some milk manually before breastfeeding and wet the nipple area to help the baby latch on properly and easily.
  - Relief measures after feeding may include:
    o Support breasts with a binder or brassiere.
    o Apply cold compress to the breasts between feedings to reduce swelling and pain.
    o Give Paracetamol 1gm by mouth as needed.
    o Advice the patient to report back if no response within 24 hours.

If the woman not breastfeeding:

• If the woman is not breastfeeding:
  - Support breasts with a binder or brassiere.
  - Apply cold compresses to the breasts to reduce swelling and pain.
  - Avoid massaging or applying heat to the breasts.
  - Avoid stimulating the nipples.
  - Give Tab Paracetamol 1gm as needed.
  - Give Tab Cabergoline 1mg as single dose
  - Give tab Bromocriptine 2.5 mg two times per day for 5 days.
  - Follow up in three days to ensure response.
Breast Infection

Mastitis

- Treat with antibiotics
  - Cap Cloxacillin 500 mg four times per day for 10-14 days.
  - OR
  - Tab Augmentin 375 mg + Cap amoxicillin 500mg two times per day for 10-14 days.
  - OR
  - Cap Cephalexin 500 mg four times per day for 10-14 days

- If beta-lactam allergy:
  - Tab Clarithromycin 500 mg PO BID for 10-14 days

- Encourage the woman to:
  - Continue breastfeeding;
  - Support breasts with a binder or brassiere;
  - Apply cold compresses to the breasts between feedings to reduce swelling and pain.

- Give Paracetamol 1gm by mouth as needed.

- Follow up in three days to ensure response.
3. PSYCHOLOGICAL MORBIDITY

A. Peripartum Depression:
- Peripartum depression affects up to one in seven women and is associated with significant maternal and neonatal morbidity if untreated.
- A history of depression is the strongest risk factor for developing peripartum depression.
- Screening is recommended for pregnant and postpartum women for depression.
- Women with peripartum depression should be evaluated for bipolar disorder, postpartum psychosis, and suicidal risk.
- Mild to moderate depression should be treated with psychotherapy or selective serotonin reuptake inhibitors, whereas moderate to severe depression should be referred to psychiatrist.

B. Postpartum Depression
- Postpartum depression affects up to 34% of women and typically occurs in the early postpartum weeks or months and may persist for a year or more.
- Depression is not necessarily one of the leading symptoms although it is usually evident. Other symptoms include exhaustion, irritability, weepiness, low energy and motivational levels, feelings of helplessness and hopelessness, loss of libido and appetite and sleep disturbances. Headache, asthma, backache, vaginal discharge and abdominal pain may be reported. Symptoms may include obsession thinking, fear of harming the baby or self, suicidal thoughts and depersonalization.
- Distinguishing Peripartum Depression from the Baby Blues

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Baby Blues</th>
<th>Peripartum Depression</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>Less than 10 days</td>
<td>More than 2 weeks</td>
</tr>
<tr>
<td>Onset</td>
<td>Within 2 to 3 days postpartum</td>
<td>Often within the first month; may occur up to the first year</td>
</tr>
<tr>
<td>Prevalence</td>
<td>80%</td>
<td>5% to 7%</td>
</tr>
<tr>
<td>Severity</td>
<td>Mild dysfunction</td>
<td>Moderate to severe dysfunction</td>
</tr>
<tr>
<td>Suicidal ideation</td>
<td>Not present</td>
<td>May be present</td>
</tr>
</tbody>
</table>

Management of postpartum depression:
- Counselling.
- Provide psychological support and practical help (with the baby and with home care).
- Listen to the woman and provide encouragement and support.
• Assure the woman that the experience is fairly common and that many other women experience the same thing.

• Assist the mother to rethink the image of motherhood and assist the couple to think through their respective roles as new parents. They may need to adjust their expectations and activities.

• Mild to moderate depression should be treated with psychotherapy or selective serotonin reuptake inhibitor. If no response after two weeks refer to psychiatrist.

• Moderate to severe depression should be referred to psychiatrist by urgent appointment.

• Fluvoxamine, paroxetine, and sertraline are preferred in breastfeeding women.

• If depression is severe refer to the psychiatrist as emergency. (Table 29) Criteria for Major Depressive Disorder

Prognosis:
The prognosis for postpartum depression is good with early diagnosis and treatment. More than two-thirds of women recover within a year. Providing a companion during labour may prevent postpartum depression.

Table 29: Criteria for Major Depressive Disorder

| A. Five (or more) of the following symptoms have been present during the same 2-week period and represent a change from previous functioning; at least one of the symptoms is either (1) depressed mood or (2-) loss of interest or pleasure. |
| Note: Do not include symptoms that are clearly attributable to another medical condition. |
| 1. Depressed mood most of the day, nearly every day |
| 2. Markedly diminished interest or pleasure in all, or almost all, activities most of the day |
| 3. Significant weight loss when not dieting or weight gain |
| 4. Insomnia or hypersomnia nearly every day |
| 5. Psychomotor agitation or retardation nearly every day |
| 6. Fatigue or loss of energy nearly every day |
| 7. Feelings of worthlessness or excessive or inappropriate guilt |
| 8. Diminished ability to think or concentrate nearly every day |
| 9. Recurrent thoughts of death, recurrent suicidal ideation or a suicide attempt |

| B. The symptoms cause clinically significant distress or impairment in social, occupational, or other important areas of functioning |

| C. The episode is not attributable to the physiological effects of a substance or to another medical condition |

Note: Criteria A-C represent a major depressive episode
C. POSTPARTUM PSYCHOSIS

- Postpartum psychosis typically occurs around the time of delivery and affects less than 1% of women.
- The cause is unknown, although about half of the women experiencing psychosis also have a history of mental illness.
- Postpartum psychosis is characterized by abrupt onset of delusions or hallucinations, insomnia, a preoccupation with the baby, severe depression, anxiety, despair and suicidal or infanticide impulses.
- Care of the baby can sometimes continue as usual.
- Prognosis for recovery is excellent but about 50% of women will suffer a relapse with subsequent deliveries.

Management

- Provide psychological support and practical help (with the baby as well as with home care).
- Avoid dealing with emotional issues when the mother is unstable.
- Refer as emergency to psychiatric hospital.
1. **RAPID INITIAL ASSESSMENT**

Always begin a clinical visit with Rapid assessment and management (RAM) Check for emergency signs first if present, provide emergency treatment and refer

**Danger Signs:**

- Severe pallor
- Persistent headache
- Blurring of vision
- Generalized oedema
- Convulsions
- Unilateral leg oedema
- Calf tenderness
- Difficult breathing
- Vaginal bleeding or leaking
- Persistent or severe abdominal pain
- Unexplained persistent fever

**Table 30: Rapid initial Assessment & Management Considerations**

<table>
<thead>
<tr>
<th>Assess</th>
<th>Danger Signs</th>
<th>Consider</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Circulation</strong></td>
<td>• Cold and moist skin</td>
<td>Shock (Haemorrhagic or septic shock) see page 127</td>
</tr>
<tr>
<td>(Signs of shock)</td>
<td>• Weak rapid pulse (≥110)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Blood pressure: low (systolic &lt;90 mm Hg)</td>
<td></td>
</tr>
<tr>
<td><strong>Airway and breathing</strong></td>
<td>• Cyanosis</td>
<td>• Severe anaemia ,see Table 9</td>
</tr>
<tr>
<td></td>
<td>• Respiratory distress</td>
<td>• Heart failure</td>
</tr>
<tr>
<td></td>
<td>• pale</td>
<td>• Pneumonia</td>
</tr>
<tr>
<td></td>
<td>• Wheezing or crepitations</td>
<td>• Asthma</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Pulmonary embolism</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Stabilize the patient and refer as urgent / emergency according to patient condition</strong></td>
</tr>
<tr>
<td>Vaginal bleeding</td>
<td>If in early pregnancy or not aware about pregnancy</td>
<td>If in early pregnancy or not aware about pregnancy</td>
</tr>
<tr>
<td>-------------------</td>
<td>---------------------------------------------------</td>
<td>--------------------------------------------------</td>
</tr>
<tr>
<td>Asses pregnancy status</td>
<td>• Abortion</td>
<td></td>
</tr>
<tr>
<td>Asses amount of bleeding</td>
<td>• Ectopic pregnancy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Molar pregnancy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>See Vaginal bleeding in early pregnancy</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Table 17</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Late pregnancy and during labour</th>
<th>Examine:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Examine:</td>
<td>• Vulva: amount of bleeding</td>
</tr>
<tr>
<td></td>
<td>Do not do a vaginal examination at this stage</td>
</tr>
<tr>
<td></td>
<td>• Abruptio placenta</td>
</tr>
<tr>
<td></td>
<td>• Ruptured uterus</td>
</tr>
<tr>
<td></td>
<td>• Placenta Previa</td>
</tr>
<tr>
<td></td>
<td>See Vaginal bleeding in later pregnancy, (Table 19)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Postpartum</th>
<th>Ask if:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask if:</td>
<td>• Recently given birth, Placenta delivered or not.</td>
</tr>
<tr>
<td>Examine:</td>
<td>• Vulva: amount of bleeding, obvious tears</td>
</tr>
<tr>
<td></td>
<td>• Uterus: atony</td>
</tr>
<tr>
<td></td>
<td>• Bladder: full.</td>
</tr>
<tr>
<td></td>
<td>• Atonic uterus</td>
</tr>
<tr>
<td></td>
<td>• Tears of cervix and vagina</td>
</tr>
<tr>
<td></td>
<td>• Retained placenta</td>
</tr>
<tr>
<td></td>
<td>• Inverted uterus</td>
</tr>
<tr>
<td></td>
<td>See Vaginal bleeding after childbirth, (Table 26)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Unconscious or Convulsing</th>
<th>Ask if</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ask if</td>
<td>• pregnant, length of gestation</td>
</tr>
<tr>
<td></td>
<td>• Convulsing (now or recently)</td>
</tr>
<tr>
<td></td>
<td>• If unconscious, ask relative “has there been a recent convulsion?”</td>
</tr>
<tr>
<td>Examine:</td>
<td>• blood pressure:</td>
</tr>
<tr>
<td></td>
<td>• Temperature: 38° C or more.</td>
</tr>
<tr>
<td></td>
<td>• Eclampsia</td>
</tr>
<tr>
<td></td>
<td>• Malaria</td>
</tr>
<tr>
<td></td>
<td>• Epilepsy</td>
</tr>
<tr>
<td></td>
<td>• Tetanus</td>
</tr>
<tr>
<td></td>
<td>See Management of Convulsions (page 31)</td>
</tr>
</tbody>
</table>
### Table 30: Rapid Initial Assessment & Management Considerations (Cont.)

<table>
<thead>
<tr>
<th>Assess</th>
<th>Danger Signs</th>
<th>Consider / Management</th>
</tr>
</thead>
</table>
| **High grade fever** | • Very fast breathing  
• Lethargy  
• Very weak/not able to stand  
• Frequent, painful urination.  
• temperature: 38°C or more  
• neck stiffness  
• lungs: air entry  
• abdomen: severe tenderness  
• vulva: purulent discharge  
• Breast tenderness | • Urinary tract infection  
***See Table 15***  
• Endometritis  
• Pelvic abscess  
• Peritonitis  
• Mastitis  
• Meningitis  
• Malaria  
***See Fever after child birth. Table 27***  
• Complications of abortion  
***See Vaginal bleeding in early pregnancy, Table 17***  
• Pneumonia/ H1N1 |
| **Abdominal pain** | **Ask if**  
• Pregnant, length of gestation  
**Examine**  
• blood pressure  
• pulse  
• temperature: 38°C or more  
• abdominal examination | • Ovarian cyst  
• Appendicitis  
• Ectopic pregnancy  
• Possible term or preterm labour  
• Chorioamnionitis  
• Abruptio placenta  
• Ruptured uterus  
***See Abdominal pain in early, later pregnancy and after childbirth, (Table 21 and Table 22)*** |
2. MANAGEMENT OF EMERGENCIES

Preventing Emergencies

Most emergencies can be prevented by:

- Careful planning.
- Following clinical guidelines.
- Close monitoring of the woman.

Team members should know:

- Clinical situations and their diagnoses and treatments.
- Drugs and their use, administration and side effects.
- Emergency equipment and how it functions.

| The ability of a facility to deal with emergencies should be assessed and reinforced by frequent practice emergency drills |

Initial Management

- Stay calm, think logically.
- Do not leave the woman unattended.
- Talk to the woman and help her to stay calm. Ask what happened and what symptoms she is experiencing.
- Perform a quick examination including vital signs (blood pressure, pulse, respiration, temperature) and skin colour. Estimate the amount of blood lost if any and assess symptoms and signs.
- Make one person team leader.
- Call for help.
- If the woman is unconscious, assess the circulation, airway and breathing.
- If shock is suspected, immediately begin treatment (page 126). Even if signs of shock are not present, keep shock in mind.
- Position the woman on her left side with her feet elevated. Loosen tight clothing.
3. 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 at least one 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 placenta, ruptured uterus)
• Bleeding after childbirth (e.g. ruptured uterus, uterine atony, tears of genital tract, retained placenta or membranes)
• Infection (e.g. unsafe or septic abortion, Chorioamnionitis, 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 per minute or more)
• Low blood pressure (systolic less than 90 mm Hg).

Other symptoms and signs of shock include:

• Pallor
• 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).

Management of Shock

Immediate Management

• 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 organs.
• Keep the head low.
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 and cross-match 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;
    
    **Note:** 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; then give 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 |

- 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.
- Stabilize and escort to hospital.

Intravenous replacement fluids are first-line treatment for hypovolaemia. Initial treatment with these fluids may be life-saving and can provide some time to control bleeding and obtain blood for transfusion if it becomes necessary.
4. COMMUNICATING WITH WOMEN AND THEIR FAMILIES

Good communication skills are required for all health care providers to build women trust and confidence.

**All staff should:**

- Respect the woman’s dignity and right of privacy
- Be sensitive and responsive to the woman’s needs
- Be non-judgmental about the decisions that the woman and her family have made thus far regarding her care.

**Rights of women**

Providers should be aware of the rights of women when receiving maternity care services:

- Every woman has the right to get information about her health.
- Every woman has the right to discuss her concerns with her health care providers.
- A woman should be informed before any procedure. Consent should be taken.
- The woman has a right to express her views about the service she receives.

**Communication skills**

Speak in a calm, quiet manner and assure the woman that the conversation is confidential. Be sensitive to any cultural or religious considerations and respect her views. In addition:

- Encourage the woman and her family to speak honestly and completely about events during the complication.
- Listen to what the woman and her family have to say and encourage them to express their concerns; try not to interrupt.
- Respect the woman’s sense of privacy.
- Use supportive nonverbal communication such as nodding and smiling.
- Answer the woman’s questions directly in calm, reassuring manner.
- Explain what steps will be taken to manage the situation or complication.
- Ask the woman to repeat back to you the key points to assure her understanding.
- **If a woman must undergo a surgical procedure,** explain to her the nature of the procedure and its risks and help to reduce her anxiety. Women who are extremely anxious have a more difficult time during surgery and recovery.

**Emotional and Psychological Support**

Emergency situations are often very disturbing for all concerned and evoke a range of emotions that can have significant consequences.

**Emotional and Psychological Reactions:**

How each member of the family reacts to an emergency situation depends on the:

- Marital status of the woman and her relationship with her partner
- Social situation of the woman/couple and their cultural and religious practices, beliefs and expectations.
- Personalities of the people involved and the quality and nature of social, practical and emotional support.
- Nature, gravity and prognosis of the problem and the availability and quality of the health care services.
Common reactions to obstetric emergencies or death include:

- Denial.
- Guilt.
- Anger.
- Depression and loss of self-esteem
- Isolation.
- Disorientation.

General Principles of Communication and Support

While each emergency situation is unique, the following general principles offer guidance. Communication and genuine empathy are probably the most important keys to effective care.

Emotional and Psychological Support

At the time of the event

- Greet the women and introduce yourself.
- Listen attentively. The woman/family will need to discuss their hurt and sorrow.
- Show empathy.
- Tell the woman/family about what is happening.
- Be honest.
- If language is a barrier to communication, find a translator.
- Do not pass the problem on to nursing staff or junior doctors.
- Both during and after the event, provide as much privacy as possible for the woman and her family.
- Encourage family support.

After the Event

- Give practical assistance, information and emotional support.
- Respect traditional beliefs and customs and accommodate the family’s needs as far as possible.
- Provide counselling for the woman/family and allow for reflection on the event.
- Explain the problem to help reduce anxiety and guilt.
- Listen and express understanding and acceptance of the woman’s feelings. Nonverbal communication may speak louder than words.
- Repeat information several times and give written information, if possible. People experiencing an emergency will not remember much of what is said to them.
- Health care providers may feel anger, guilt, sorrow, pain and frustration in the face of obstetric emergencies that may lead them to avoid the woman/family. Showing emotion is not a weakness.
- Remember to care for staff who themselves may experience guilt, grief, confusion and other emotions.
SECTION 6: COMMON PROCEDURES
1. INFECTION PREVENTION

- Infection prevention has two primary objectives:
  - Prevent major infections when providing services;
  - Minimize the risk of transmitting serious diseases such as hepatitis B and HIV/AIDS to the woman and to service providers and staff, including cleaning and housekeeping personnel.

- The recommended infection prevention practices are based on the following principles:
  - Every person (patient or staff) must 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.

Hand Washing

- Vigorously rub together all surfaces of the hands lathered with plain or anti microbial soap. Wash for 15-30 seconds and rinse with a stream of running or poured water. Or rub your hands with an antiseptic solution.

- Wash hands:
  - Before and after examining each patient (or having any direct contact)
  - After exposure to blood or any body fluids (secretions or excretions), even if gloves were worn
  - After removing gloves because the gloves may have holes in them.

Gloves and Gowns

- Wear gloves:
  - When performing a procedure
  - When handling soiled instruments, gloves and other items
  - When disposing of contaminated waste items (cotton, gauze or dressings).

- A separate pair of gloves must be used for each woman to avoid cross contamination.

- A clean, but not necessarily sterile, gown should be worn during all delivery procedures:
  - If the gown has long sleeves, the gloves should be put over the gown sleeves to avoid contamination of the gloves;
  - Ensure that gloved hands are held above the level of the waist and do not come into contact with the gown.
Basic Principles for Procedures:

Before any simple (non operative) procedure, it is necessary to:

• Gather and prepare all supplies. Missing supplies can disrupt a procedure.

• Explain the procedure and the need for it to the woman and obtain consent.

• Provide adequate pain medication according to the extent of the procedure planned. Estimate the length of time for the procedure and provide pain medication accordingly.

• Place the patient in a position appropriate for the procedure being performed. The most common position used for obstetric procedures (e.g. manual vacuum aspiration) is the lithotomy position.

• Wash hands with soap and water and put on gloves appropriate for the procedure.

• If the vagina and cervix need to be prepared with an antiseptic for the procedure (e.g. manual vacuum aspiration):
  - Apply antiseptic solution (e.g. iodophors, chlorhexidine) three times to the vagina and cervix using a high-level disinfected or sterile ring forceps and a cotton or gauze swab.
  - Gently insert a sterile speculum or retractor(s) into the vagina;

• If the skin needs to be prepared with an antiseptic for the procedure:
  - Apply antiseptic solution (e.g. iodophors, chlorhexidine) three times to the area using a high-level disinfected or sterile ring forceps and a cotton or gauze swab. If the swab is held with a gloved hand, do not contaminate the glove by touching unprepared skin;
  - Begin at the centre of the area and work outward in a circular motion away from the area;
  - At the edge of the sterile field discard the swab.

• Never go back to the middle of the prepared area with the same swab. Keep your arms and elbows high and surgical dress away from the surgical field.
2. ANESTHESIA AND ANALGESIA

Local Anaesthesia

Local anaesthesia (lignocaine with or without adrenaline) is used to infiltrate tissue and block the sensory nerves.

- Because a woman with local anaesthesia remains awake and alert during the procedure, it is especially important to ensure:
  - Counselling to increase cooperation and minimize her fears
  - Good communication throughout the procedure as well as physical reassurance from the provider, if necessary
  - Time and patience, as local anaesthetics do not take effect immediately.
- Emergency drugs and equipment (suction, oxygen, resuscitation equipment) should be readily available and in usable condition, and all members of the operating team trained in their use.

Lignocaine

Lignocaine preparations are usually 2% or 1% and require dilution before use (Box 1). For most obstetric procedures, the preparation is diluted to 0.5%, which gives the maximum effect with the least toxicity.

Box 5: Preparation of lignocaine 0.5% solution

**Combine:**

- Lignocaine 2%, one part
- Normal saline or sterile distilled water, three parts (do not use glucose solution as it increases the risk of infection).

**OR**

- lignocaine 1%, one part
- Normal saline or sterile distilled water, one part.
**General Principles for Anaesthesia and Analgesia**

- The keys to pain management and comfort of the woman are:
  - Supportive attention from staff before, during and after a procedure (helps reduce anxiety and lessen pain);
  - A provider who is comfortable working with women who are awake and who is trained to use instruments gently;
  - The selection of an appropriate type and level of pain medication.

- Tips for performing procedures on women who are awake include:
  - Explain each step of the procedure before performing it.
  - Use lignocaine diluted solution in adequate amount.
  - Check the level of anaesthesia by pinching the area with forceps. If the woman feels the pinch, wait two minutes and then retest.
  - Wait a few seconds after performing each step or task for the woman to prepare for the next one.
  - Move slowly, without jerky or quick motions.
  - Handle tissue gently and avoid undue retraction, pulling or pressure.
  - Use instruments with confidence.
  - Avoid saying things like “this won’t hurt” when, in fact, it will hurt; or “I’m almost finished” when you are not.
  - Talk with the woman throughout the procedure.

- The need for supplemental analgesic or sedative medications (by mouth, IM or IV) will depend on:
  - The emotional state of the woman.
  - The procedure to be performed.
  - The anticipated length of the procedure.
  - The skill of the provider and the assistance of the staff.
3. EPISIOTOMY

Episiotomy should not be performed routinely.

• Review for indications.

Box 6: Episiotomy should be considered in the case of:

- complicated vaginal delivery (breech, shoulder dystocia, forceps, vacuum extraction)
- scarring from female genital cutting or poorly healed previous third or fourth degree tears
- Fetal distress

• Apply antiseptic solution to the perineal area
• Provide emotional support and encouragement. Use local infiltration with lignocaine
• Make sure there are no known allergies to lignocaine or related drugs.
• Infiltrate beneath the vaginal mucosa, beneath the skin of the perineum and deeply into the perineal using about 10 mL 0.5% lignocaine solution.

Note: Aspirate (pull back on the plunger) to be sure that no vessel has been penetrated. If blood is returned in the syringe with aspiration, remove the needle. Recheck the position carefully and try again. Never inject if blood is aspirated. The woman can suffer convulsions and death if IV injection of lignocaine occurs.

• At the conclusion of the set of injections, wait two minutes and then pinch the incision site with forceps. If the woman feels the pinch, wait two more minutes and then retest.

Anaesthetize early to provide sufficient time for effect
• Wait to perform episiotomy until:
  - The perineum is thinned out; and
  - 3-4 cm of the baby’s head is visible during a contraction.

Performing an episiotomy will cause bleeding. It should not, therefore, be done too early

• Wearing sterile gloves, place two fingers between the baby’s head and perineum.
• Use scissors to cut the perineum about 3-4 cm in the mediolateral direction.
• Control the baby’s head and shoulders as they deliver, ensuring that the shoulders have rotated to the midline to prevent an extension of the episiotomy.
• Carefully examine for extensions and other tears and repair (see below).
Figure 19: Making the incision while inserting two fingers to protect baby's head

Repair of Episiotomy

- Apply antiseptic solution to the area around the episiotomy
- Consider giving another dose of lignocaine.
- Close the vaginal mucosa using continuous 2-0 suture
  - Start the repair about 1 cm above the apex (top) of the episiotomy. Continue the suture to the level of the vaginal opening.
  - At the opening of the vagina, bring together the cut edges of the vaginal opening.
  - Bring the needle under the vaginal opening and out through the incision and tie.
- Close the perineal muscle using interrupted 2-0 sutures.
- Close the skin using interrupted (or subcuticular) 2-0 sutures.
- Perform rectal examination after repair of episiotomy to make sure sutures are not felt in the rectal mucosa.

It is important that absorbable sutures be used for closure. Polyglycolic sutures are preferred over chromic catgut for their tensile strength, non-allergenic properties and lower probability of infectious complications and episiotomy breakdown. Chromic catgut is an acceptable alternative, but is not ideal.
Figure 20: Repair of episiotomy

A. Vaginal mucosa  B. Muscle layer  C. Skin

Post episiotomy care:

- Advise the patient to come back if:
  - Leaking of urine or stool.
  - Hard painful lump on or near the wound.
  - Bright red blood coming from wound.
  - Pain getting worse or the wound appears open.

- Information for woman:
  - Keep the area clean and dry.
  - Change the sanitary pads every 2-4 hours.
  - Drink plenty of water and eat lots of fiber to prevent constipation.
  - Take analgesics for pain.
  - Use sitz bath for 20 minutes (warm water increase circulation and help healing, cold water relieves pain faster).
  - Do Kegel exercises (squeeze the muscle that you use to hold in urine, do this ten times per day, and increase the strength and period of contraction in the following days).
  - Avoid antiseptics

Complications

1. If a haematoma occurs, open and drain. If there are no signs of infection and bleeding has stopped, reclose the episiotomy.

2. If there are signs of infection, open and drain the wound. Remove infected sutures and debride the wound:
   - If the infection is mild, antibiotics are not required.
- If the infection is severe but does not involve deep tissues, give a combination of antibiotics:
  
  o Oral Cloxacillin 500 mg four times per day and oral Metronidazole 400 mg three times per day for five days.

  **OR**

  o Oral Augmentin 375mg with amoxicillin 250mg three times per day for five days.
  
  o Oral Cephalexin 500 mg two times per day for five days.

- If the infection is deep, involves muscles and is causing necrosis refer the patient to secondary care as emergency for intravenous antibiotics and surgical debridement.

3. If there is episiotomy dehiscence (gapping):

- Small defect may heal spontaneously.

- Some defects require surgical closure, needs referral back to the delivery hospital.

- **Early re-suturing** within the first two weeks of labour gives favourable results than conservative management.
4. REPAIR OF VAGINAL AND PERINEAL TEARS

There are four degrees of tears that can occur during delivery:

- First degree tears involve the vaginal mucosa and connective tissue.
- Second degree tears involve the vaginal mucosa, connective tissue and underlying muscles.
- Third degree tears involve complete transaction of the anal sphincter.
- Fourth degree tears involve the rectal mucosa.

It is important that absorbable sutures be used for closure. Polyglycolic sutures are preferred over chromic catgut for their tensile strength, non-allergenic properties and lower probability of infectious complications. Chromic catgut is an acceptable alternative, but is not ideal.

Repair of First Degree Tears

Most first degree tears close spontaneously without sutures.

- Provide emotional support and encouragement. Use local infiltration with Lignocaine.
- Ask an assistant to check the uterus and ensure that it is contracted.
- Carefully examine the vagina, perineum and cervix
- If the tear is long and deep through the perineum, inspect to be sure there is no second, third or fourth degree tear:
- If the underlying muscles are involved, refer the patient to the secondary care as emergency for repair.

Second, third and fourth perineal tears should be transferred to hospital after stabilizing
ANNEX :

VACCINE TO BE GIVEN WITH CATION OR TO BE AVOIDED DURING PREGNANCY
## VACCINE TO BE GIVEN WITH CaTION OR TO BE AVOIDED DURING PREGNANCY

<table>
<thead>
<tr>
<th>Vaccine</th>
<th>Before pregnancy</th>
<th>During pregnancy</th>
<th>After pregnancy</th>
<th>Type of vaccine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatitis B</td>
<td>Yes, if indicated</td>
<td>Yes, if indicated</td>
<td>Yes, if indicated</td>
<td>Inactivated</td>
</tr>
<tr>
<td>Seasonal Influenza</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td>Inactivated</td>
</tr>
<tr>
<td>MMR</td>
<td>Yes, if indicated, avoid conception for 3 months</td>
<td>No</td>
<td>Yes, if indicated, give immediately postpartum if susceptible to Rubella</td>
<td>Live attenuated</td>
</tr>
<tr>
<td>Meningococcal -polysaccharide - conjugate</td>
<td>Yes, If indicated</td>
<td>Yes, If indicated</td>
<td>Yes, If indicated</td>
<td>Inactivated</td>
</tr>
<tr>
<td>Varicella</td>
<td>Yes, if indicated, avoid conception for 3 months</td>
<td>No</td>
<td>Yes, if indicated, give immediately postpartum if susceptible to Varicella</td>
<td>Live attenuated</td>
</tr>
</tbody>
</table>


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