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<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>ABS</td>
<td>Antibody Screening Test</td>
</tr>
<tr>
<td>ANC</td>
<td>Antenatal Care</td>
</tr>
<tr>
<td>APH</td>
<td>Antepartum Haemorrhage</td>
</tr>
<tr>
<td>BMI</td>
<td>Body Mass Index</td>
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<tr>
<td>BP</td>
<td>Blood Pressure</td>
</tr>
<tr>
<td>BS</td>
<td>Blood Sugar</td>
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<tr>
<td>c</td>
<td>Celsius</td>
</tr>
<tr>
<td>CBC</td>
<td>Complete Blood Count</td>
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<tr>
<td>cc</td>
<td>Cubic centimeter</td>
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<tr>
<td>cm</td>
<td>Centimetre</td>
</tr>
<tr>
<td>CPHL</td>
<td>Central Public Health Laboratory</td>
</tr>
<tr>
<td>DFCH</td>
<td>Department of Family and Community Health</td>
</tr>
<tr>
<td>dL</td>
<td>Decilitre</td>
</tr>
<tr>
<td>DM</td>
<td>Diabetes Mellitus</td>
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<tr>
<td>DNA</td>
<td>Deoxyribonucleic Acid</td>
</tr>
<tr>
<td>ELIZA</td>
<td>Enzyme Linked Immunosorbent Assay</td>
</tr>
<tr>
<td>EPI</td>
<td>Extended Programme of Immunization</td>
</tr>
<tr>
<td>FBS</td>
<td>Fasting Blood Sugar</td>
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<tr>
<td>FHS</td>
<td>Fetal Heart Sounds</td>
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<tr>
<td>GDM</td>
<td>Gestational Diabetes Mellitus</td>
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<td>gm</td>
<td>Gram</td>
</tr>
<tr>
<td>Hb</td>
<td>Haemoglobin</td>
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<tr>
<td>HIV</td>
<td>Human Immunodeficiency Virus</td>
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<tr>
<td>ICT</td>
<td>Indirect Coomb's test</td>
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<tr>
<td>IM</td>
<td>Intramuscular</td>
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<tr>
<td>IU</td>
<td>International Unit</td>
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<td>Abbreviation</td>
<td>Full Form</td>
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<td>--------------</td>
<td>-----------</td>
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<tr>
<td>IUI</td>
<td>Intra-uterine Insemination</td>
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<tr>
<td>IV</td>
<td>Intravenous</td>
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<tr>
<td>IVF</td>
<td>In Vitro Fertilization</td>
</tr>
<tr>
<td>Kg</td>
<td>Kilogram</td>
</tr>
<tr>
<td>L</td>
<td>Litre</td>
</tr>
<tr>
<td>LBW</td>
<td>Low Birth Weight</td>
</tr>
<tr>
<td>LSCS</td>
<td>Lower Segment Caesarean Section</td>
</tr>
<tr>
<td>Mcg</td>
<td>Microgram</td>
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<tr>
<td>MCH</td>
<td>Mother and Child Health</td>
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<tr>
<td>mg</td>
<td>Milligram</td>
</tr>
<tr>
<td>ml</td>
<td>Millilitre</td>
</tr>
<tr>
<td>mmHg</td>
<td>Millimeters of Mercury</td>
</tr>
<tr>
<td>mmol</td>
<td>Millimoles</td>
</tr>
<tr>
<td>NWCCP</td>
<td>National Women &amp; Child Care Plan</td>
</tr>
<tr>
<td>OGCT</td>
<td>Oral Glucose Challenge Test</td>
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<tr>
<td>OGTT</td>
<td>Oral Glucose Tolerance Test</td>
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<tr>
<td>PGBS</td>
<td>Post Glucose Blood Sugar</td>
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<tr>
<td>PHC</td>
<td>Parent Health Centre</td>
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<tr>
<td>PIH</td>
<td>Pregnancy Induced Hypertension</td>
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<td>PID</td>
<td>Pelvic Inflammatory Disease</td>
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<tr>
<td>PN</td>
<td>Perinatal</td>
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<tr>
<td>PNC</td>
<td>Post Natal Care</td>
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<td>PPH</td>
<td>Postpartum Haemorrhage</td>
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<tr>
<td>PROM</td>
<td>Prelabour Rupture of Membranes</td>
</tr>
<tr>
<td>RBS</td>
<td>Random Blood Sugar</td>
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<tr>
<td>RPHI</td>
<td>Regional Public Health Laboratory</td>
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<tr>
<td>Acronym</td>
<td>Full Form</td>
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<tr>
<td>SOP</td>
<td>Standard Operative Procedures</td>
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<tr>
<td>STD</td>
<td>Sexually Transmitted Diseases</td>
</tr>
<tr>
<td>TPHA</td>
<td>Treponema Pallidum Haemagglutination Assay</td>
</tr>
<tr>
<td>TT</td>
<td>Tetanus Toxoid</td>
</tr>
<tr>
<td>UTI</td>
<td>Urinary Tract Infection</td>
</tr>
<tr>
<td>VDRL</td>
<td>Venereal Disease Research Laboratory</td>
</tr>
<tr>
<td>WB</td>
<td>Western Blot Test</td>
</tr>
<tr>
<td>WBC</td>
<td>White Blood Cells</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
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</table>
PREFACE

Oman has made significant achievement in reducing the infant mortality rate that has dropped from 64 in 1980 to 9.6/1000 live births in the year 2009. Maternal mortality ratio, since its initiation of monitoring by Ministry of Health (MOH) in 1991, has also shown drop from 27.37 in 1991 to 13.4 per 100,000 live births (2009 MOH estimates).

Oman's current success story can be summarised as an outcome of 3 proven interventions: provision of antenatal service within easy access, strengthening the services and systems and, sustaining the standards of the health care delivery.

The National Women & Children Plan (NWCCP) was launched in 1987 with the aim of providing a National Antenatal Care (ANC), Peri-natal and Post-natal Care (PN & PNC) Services. Further, the service accessibility has been made easy by integrating them with primary health care.

Quality of health care delivery has been ensured by putting in place a standard client retained maternal health record and a parent health care facility based antenatal register, both providing information on the profile of each pregnant woman, her risks, problems, health care needs and, plans and management carried out during ANC, PN & PNC period, and their outcomes.

Further, health care provider's knowledge and skills are kept updated through provision of standard operative procedure manuals that give guidelines on the MoH policies and protocols and institutionalising pre and in-service training on the assessed job needs.

Development of these guidelines is another effort of Ministry of Health of Oman to keep providers knowledge updated with the best available evidences thus, ensuring the best possible standard of health care delivery. Hopefully, through this effort, a further reduction in the maternal mortality could be achieved, and some difference made in health indicators that have shown less discernable change over last half a decade, these are, stillbirth rate that has stalled at 8.9/1000 births, early neonatal mortality at 5.6 per 1000 live births and peri-natal mortality at 13.9 per 1000 births (2008 MOH data).

The Interventions incorporated in these guidelines are from the latest World Health Organization (WHO) guidelines on "Managing Complications in Pregnancy and Child Birth" A guide for doctors and midwives. In addition to above, some evidence based information has been taken from other internationally recognised resources, such as guidelines by The National Institute for Clinical Excellence (NICE) and the Royal College of Obstetricians and Gynaecology (RCOG).

As the provision of services is different at the different levels of health care systems, two separate standard operative guidelines have been developed Level 1 for primary care and Level 2 for secondary health care. This guideline (Level 1) is designed for the use of doctors and nurses working at primary care (Health centres with or without deliveries) and small hospital.
CONTENTS OF THE MANUAL

Section 1 outlines 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 deals with the common symptoms and management of common medical problems such as Anaemia, Hypertension, Diabetes, 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 is a description of 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 postnatal care. It also outlines postnatal check up for special conditions. Some of the postnatal complications are also discussed in this section.

Section 5 outlines clinical principles of managing complications in pregnancy and childbirth. It also contains general principles of care, including infection prevention, fluid replacement and local anaesthesia.

Section 6 describes some of the common procedures that may be necessary in some conditions. These procedures are not intended to be detailed how-to-do instructions but rather a summary of the main steps associated with each procedure.
DIFFERENT TYPES OF REFERRAL

- **Routine appointment**: routine appointment given by the secondary care.

- **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 by the phone.
SECTION 1: BASIC ANTE-NATAL CARE
I. ORGANIZATION OF ANTENATAL CARE:

Antenatal care is the care provided to pregnant women from the health care system and aims primarily for:

- Detection of the factors that might increase the perinatal risks.
- Intervention to improve the outcome.
- Education of all who provide and receive the care.
- Help in making pregnancy and birth a positive life experience.

Who provides the care?

- Standardized antenatal care should be offered by the parent health centre (PHC) team for all pregnant women. Total of 6 visits should be achieved by the end of a normal pregnancy.
- Antenatal booking should be carried out in the parent health centre as soon as a woman is diagnosed to be pregnant.
- All pregnant women should be referred at 22-24 weeks to the obstetrician for routine assessment.
- Referral should be made to the obstetrician for high risk cases as outlined in Table 7.

Continuity of care

- Continuity of care throughout the antenatal period should be ensured and preferably by the same team of whom the woman feels comfortable with (as in the case of health centres).
- A system of clear referral paths exists in the Ministry of Health, each health care provider should be aware of it so that pregnant women who require additional care are managed and treated by the appropriate specialist in or outside the health institution.
- 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.

Where should antenatal care take place?

The antenatal care should be readily and easily accessible to all women and should be sensitive to the needs of individual woman and the local community. The parent health institution of the family provides the ideal scenario for this.

Documentation of care / Maternal Health Record

Structured maternal records such as Maternal Health Record and ANC Register should be used for antenatal care. Both Maternal Health Record and ANC Register are being computerized on small scale projects and until it is nationalized both will have to continue. The standardized, national Maternal Health Record with an agreed set of parameters should facilitate health care providers to provide the recommended
All clients should be allowed to carry their own Maternal Health Record issued to them at the time of first booking.

Obstetrician should document over the recommendation section in the record if any specific future plans for the women during ANC or PNC period were indicated.

II. 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:

1. RECORD PERSONAL INFORMATION

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

2. HISTORY TAKING

At the first visit the history as per the Maternal Health Record parameters which includes 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

3. 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]). If the BMI is < 19.8 or > 29 the nutritional status should be assessed. Maternal weight need not to be repeated at all visits routinely unless indicated or if the initial weight (at booking) was < 40 kg or > 80 kg.

**Measurement of blood pressure**

Blood pressure (BP) is recorded carefully at booking. If the diastolic blood pressure is above 90 mm (confirmed by two readings, 4 hours apart), the case should be graded as high risk and to be followed more closely. The BP should be repeated at all visits.

**Systemic examination**

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

**Breast Examination:**

Both breasts should be inspected for any skin or nipple changes. Both breasts should be palpated for lumps.

**Obstetric examination**

The specific Obstetric examinations recommend 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 are checked by fetal stethoscope or by doppler fetal heart recorder (sonic aid) and fetal movements are assessed at all ANC visits.

- Fetal presentation should be assessed by abdominal palpation from 36 weeks onward, when presentation is likely to influence the plan of delivery.

**Routine assessment of presentation by abdominal palpation should not be offered before 36 weeks because it is not always accurate and might be uncomfortable. Suspected fetal malpresentation should be confirmed by an ultrasound assessment**
Risk grading should be done at every visit and to be updated in both the Maternal Health Record and the Antenatal 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. Gestational diabetes mellitus.
3. Pregnancy induced hypertension (PIH).
4. Diastolic blood pressure is " 90 mm Hg at current booking.
5. Antepartum haemorrhage.
6. Pelvic Tumour.
8. Intrauterine growth restriction (IUGR).

**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.
6. 2nd trimester abortion.
7. Postpartum haemorrhage.
8. Thrombosis, Embolus.
10. Surgery on Reproductive tract (Myomectomy, removal of septum, cone biopsy, cervical cerclage).
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
9. Psychiatric disorders
10. Epilepsy
11. Genetic disorders
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 made to trace high risk ANC defaulters including home visits as per the need and feasibility

5. ULTRASONOGRAPHY IN ANC

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 fetuses. This will improve consistency of gestational age assessments during pregnancy. When expertise is available, women can be offered an anomaly scan at 22-24 weeks gestation.

Pregnant women can always be referred to the secondary care for scan if clinically indicated.

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

<table>
<thead>
<tr>
<th>Test</th>
<th>At booking</th>
<th>12-14 wks</th>
<th>22-24 wks</th>
<th>28-30 wks</th>
<th>32-34 wks</th>
<th>36-38 wks</th>
<th>6 wks PNC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood group. Rh Factor</td>
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<td>Haemoglobin (gm/dl)</td>
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<td>VDRL</td>
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<td>TPHA (if VDRL + ve)</td>
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<td>HIV: √ Done</td>
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<td>Urine for:</td>
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<td>Blood Sugar Test:</td>
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<tr>
<td>OGTT (if needed): Fasting</td>
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<tr>
<td>Post Prandial</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Other Investigations:</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>ABS* (if RH – ve)</td>
<td>!</td>
<td></td>
<td></td>
<td>!</td>
<td></td>
<td>!</td>
<td></td>
</tr>
</tbody>
</table>

* Antibody screening test
Screening for syphilis should be offered to all pregnant women at booking visit because treatment of syphilis is beneficial to the mother and fetus. If pregnant women are found to have a positive VDRL:

- Confirm by performing TPHA.
- In all sero-positive cases the sexual partner should be screened for syphilis.

All registered women in ANC clinics will be subjected to testing for HIV:

- Verbal consent will be taken before collecting the blood sample, which will be following provision of pre-testing information to the woman.

All women registering with ANC clinic must perform RBS or FBS if fasting. OGCT/OGTT will follow according to the results. See Algorithm 1.

- OGTT (oral glucose tolerance test): by using 75 gm of anhydrous glucose or 82.5 of glucose monohydrate.
- OGCT (oral glucose challenge test): by using 50 gm of anhydrous glucose or 55 of glucose monohydrate.

**Women should be tested for blood group and Rh status at booking.**

- 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 is done in all cases of Rh-ve cases at booking, 28-30 weeks visit and then repeated at 36-38 weeks visit to look for a raising titre.

**All pregnant women must be offered urine test for microscopy, glucose, ketones and albumin in the booking visit.** Asymptomatic bacteruria is common in pregnant women and there is evidence that treatment of such cases will lead to better outcomes of pregnancy.

- If Urine microscope showed more than 20 WBCs per high power field, urine culture is to be done.
- Urine for protein should be done whenever high blood pressure is detected (diastolic blood pressure “90 mmhg).
- 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 mid stream specimen to minimize the possibility of contamination. Patients should be educated on how to collect the spacemen.
7. IMMUNIZATION

All women should be fully immunized with tetanus toxoid - 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 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.

8. 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.

9. DRUG PRESCRIPTION

All pregnant woman (Hb "11gm/dL) should be given a standard dose of ferrous sulphate, and folic acid daily if ≥ 12 weeks and folic acid only if < 12 weeks pregnant. All for indications and the smallest effective therapeutic dose should be used. The following table illustrates some drugs with their possible effect on the fetus:
<table>
<thead>
<tr>
<th>Drug</th>
<th>Harmful effects /Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warfarin</td>
<td>Punctate chondroplasia</td>
</tr>
<tr>
<td></td>
<td>Avoid, especially in first trimester.</td>
</tr>
<tr>
<td></td>
<td>To discuss with cardiologist/ senior obstetrician before discontinuing it in patients with valvular cardiac disease.</td>
</tr>
<tr>
<td>Heparin</td>
<td>Overdoses may cause fetal haemorrhage. Prolonged dosage of unfractionated heparin causes maternal osteoporosis.</td>
</tr>
<tr>
<td></td>
<td>Maternal benefit may outweigh risks.</td>
</tr>
<tr>
<td>Phenytoin</td>
<td>IUGR, Mild microcephaly, Cleft palate</td>
</tr>
<tr>
<td></td>
<td>Maternal benefit may outweigh risk.</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>Metronidazole</td>
<td>Advisable to avoid in first trimester.</td>
</tr>
<tr>
<td>Antimalarials</td>
<td>Avoid unless blood smear is positive</td>
</tr>
<tr>
<td>Prostaglandin Synthetase inhibitors</td>
<td>Avoid, especially in first trimester</td>
</tr>
<tr>
<td>Synthetic oestrogen's and progestogens</td>
<td>to be avoided</td>
</tr>
<tr>
<td>Glucocorticoids</td>
<td>Cleft-lip/palate. If maternal use is essential, try to reduce the dose.</td>
</tr>
</tbody>
</table>
10. 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 institute (only where delivery services are available)**

<table>
<thead>
<tr>
<th>Parity 1-7</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal weight (40-80 kg) and height ($152 cm)</td>
</tr>
<tr>
<td>Fundal height measurements corresponds to the 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 baby ($4000 g)</td>
</tr>
<tr>
<td>Adequate haemoglobin ($11 gm/dL)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>History</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age &lt; 15 years or &gt; 40 years</td>
</tr>
<tr>
<td>Parity 8 upward</td>
</tr>
<tr>
<td>Primigravida</td>
</tr>
<tr>
<td>Height less than 152 cm</td>
</tr>
<tr>
<td>Body weight &lt;40 kg OR &gt; 80 kg</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 third stage complications)</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 &quot; 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>
### Current Medical History

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

### Current Obstetrical History

<table>
<thead>
<tr>
<th>Condition</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antepartum haemorrhage</td>
<td></td>
</tr>
<tr>
<td>Pre-eclampsia</td>
<td></td>
</tr>
<tr>
<td>Polyhydramnios</td>
<td></td>
</tr>
<tr>
<td>IUGR (moderate)</td>
<td></td>
</tr>
<tr>
<td>Premature prelabour rupture of membranes (before 37 weeks)</td>
<td></td>
</tr>
<tr>
<td>Multiple pregnancy</td>
<td></td>
</tr>
<tr>
<td>Malpresentation</td>
<td></td>
</tr>
<tr>
<td>Cervical incompetence</td>
<td></td>
</tr>
<tr>
<td>Prelabour rupture of membranes (&quot;37 weeks)</td>
<td></td>
</tr>
<tr>
<td>Preterm labour (before 34 weeks)</td>
<td></td>
</tr>
<tr>
<td>Oligohydramnios</td>
<td></td>
</tr>
<tr>
<td>Anaemia (Hb &lt; 11 gm/dL)</td>
<td></td>
</tr>
<tr>
<td>Postmaturity (&quot;42 weeks)</td>
<td></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.
### Criteria for the delivery in tertiary care

#### Current Medical History
- Diabetes mellitus with severe complications
- Heart disease (unless mild and well tolerated)
- Renal disease with Hypertension, impaired renal function, or renal transplant
- Positive cases of HIV and Hepatitis B

#### Current Obstetrical History
- Rhesus antibodies
- IUGR (severe)

---

**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.
| At booking | • Profiling  
• A leaflet explaining to the mother all the services provided during this visit including: medical & obstetrical history, laboratory tests, clinical examination, risk grading, ultrasound for dating and health education will be provided.  
• History taking  
• Clinical examinations; breast, systemic, weight, height, BMI, BP and fundal height.  
• Laboratory tests: Urine tests (for albumin, ketones, glucose, microscopy), Hb, Blood group & Rh, , RBS ,OGTT(if indicated), OGCT (if booking at 22-24 wks), VDRL, HIV , ABS test (if Rh-ve), sickling test (if not known).  
• Ultrasound for dating (if available)  
• TT vaccination (if indicated)  
• Risk grading  
• Supplementation of folic acid  
• Counsel on: Danger signs, exposure to X-Rays & teratogenic substance, clinic attendance, nutritional advice, information on pregnancy signs and symptoms |
| 12-14 weeks | • Clinical examinations: BP, fundal height  
• TT vaccination (if indicated)  
• Risk grading  
• Supplementation of folic acid & iron  
• Counsel on: Danger signs, diet and supplementation |
| 22-24 weeks Obstetric visit | • Clinical examinations: BP, fundal height, fetal heart sounds assess fetal movement  
• Laboratory tests: OGCT, OGTT (if indicated)  
• Risk grading  
• Supplementation of folic acid & iron  
• Counsel on: Danger signs, diet, exercise, compliance of iron and managing common symptoms. |
| 28-30 weeks | • Clinical examinations: BP, fundal height, fetal heart sounds assess fetal movement  
• Laboratory tests: Hb, ABS test (if indicated)  
• Risk grading  
• Supplementation of folic acid & iron  
• Counsel on: Danger signs, preparation for lactation, fetal movement. |
<table>
<thead>
<tr>
<th>Weeks</th>
<th>Tasks</th>
</tr>
</thead>
<tbody>
<tr>
<td>36-38 weeks</td>
<td>- Assessment of ANC visits (Cont)</td>
</tr>
<tr>
<td></td>
<td>- Clinical examinations: BP, fundal height, fetal heart sounds, abdominal palpation</td>
</tr>
<tr>
<td></td>
<td>- Laboratory examinations: routine laboratory tests at this visit.</td>
</tr>
<tr>
<td>36-38 weeks</td>
<td>- Supplementation of folic acid &amp; iron.</td>
</tr>
<tr>
<td></td>
<td>- Counsel on: Danger signs, preparing for delivery including place of delivery, signs of onset of labour.</td>
</tr>
<tr>
<td></td>
<td>- Obstetrician if not delivered on the expected date, postnatal visit.</td>
</tr>
<tr>
<td></td>
<td>- Appointment at 40 weeks in the secondary care to be given (if not delivered on the expected date).</td>
</tr>
<tr>
<td>36-38 weeks</td>
<td>- Laboratory examinations: routine laboratory tests at this visit.</td>
</tr>
<tr>
<td></td>
<td>- Assessment of ANC visits (Cont)</td>
</tr>
<tr>
<td></td>
<td>- Clinical examinations: BP, fundal height, fetal heart sounds, abdominal palpation</td>
</tr>
<tr>
<td></td>
<td>- Laboratory examinations: routine laboratory tests at this visit.</td>
</tr>
<tr>
<td>40 weeks</td>
<td>- Supplementations: Danger signs, preparing for delivery including place of delivery.</td>
</tr>
<tr>
<td></td>
<td>- Obstetrician if not delivered on the expected date, postnatal visit.</td>
</tr>
<tr>
<td></td>
<td>- Appointment at 40 weeks in the secondary care to be given (if not delivered on the expected date).</td>
</tr>
<tr>
<td>40 weeks</td>
<td>- Laboratory examinations: routine laboratory tests at this visit.</td>
</tr>
<tr>
<td></td>
<td>- Assessment of ANC visits (Cont)</td>
</tr>
<tr>
<td></td>
<td>- Clinical examinations: BP, fundal height, fetal heart sounds, abdominal palpation</td>
</tr>
<tr>
<td></td>
<td>- Laboratory examinations: routine laboratory tests at this visit.</td>
</tr>
<tr>
<td>40 weeks</td>
<td>- Supplementations: Danger signs, preparing for delivery including place of delivery.</td>
</tr>
<tr>
<td></td>
<td>- Obstetrician if not delivered on the expected date, postnatal visit.</td>
</tr>
<tr>
<td></td>
<td>- Appointment at 40 weeks in the secondary care to be given (if not delivered on the expected date).</td>
</tr>
<tr>
<td></td>
<td>- In the secondary care (if not yet delivered) to plan for the delivery.</td>
</tr>
</tbody>
</table>
REFERRAL TO SECONDARY 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 to 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

<table>
<thead>
<tr>
<th>Medical history</th>
<th>Obstetric/Gynaecological history</th>
</tr>
</thead>
<tbody>
<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 isoimmunization</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></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 PROM</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/</td>
<td>Whenever suspected/ detected</td>
</tr>
<tr>
<td>Oligohydromnios</td>
<td></td>
</tr>
</tbody>
</table>
### Other conditions needing referral (not classified as risk factors)

<table>
<thead>
<tr>
<th>Condition</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>At 36 weeks by <strong>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.
Anaemia in pregnancy is defined as haemoglobin concentration of less than 11g/dL.

Routine supplementation

Each pregnant woman with normal Hb should receive from second trimester (second visit, 12-14 weeks) standard dose of ferrous sulphate 200mg daily and folic acid (5mg) once daily (given in the form of Fefol capsule).

Management

Anaemia is classified according to the level of Hb. Classification and management is shown in the table below:

**Table 8: Management of anaemia in pregnancy**

<table>
<thead>
<tr>
<th>Assess 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>- Give daily dose of 1 capsule of Fefol.</td>
<td>- Refer by <strong>routine appointment</strong> if the patient is fully compliant 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>7 - 9.9 g/dL</td>
<td>Moderate Anaemia</td>
<td>- If gestational age &lt; 34 weeks: 1 tablet of ferrous sulphate 3 times/day (tid) + 1 tablet of folic acid.</td>
<td>- if gestational age &lt; 34 weeks and the patient is fully compliant but not responding to the treatment: refer by <strong>routine appointment</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Monitor Hb level and compliance every 4 weeks.</td>
<td>- If gestational age &lt;34 weeks: refer by <strong>urgent appointment</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Health education</td>
<td></td>
</tr>
<tr>
<td>4 - 6.9 g/dL</td>
<td>Sever Anaemia</td>
<td>- First aid management only(if needed)</td>
<td>- Refer as an <strong>emergency</strong> 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.

In patients with mild intolerance and moderate anaemia: reduce the dose and gradually step up. If intolerance persists, change to Fefol one per day with meals.

**Dietary advice**

Explain the following to the woman:

- To take diet rich in iron & folate such as liver, kidney, heart, lean meat, egg yolk, shell fish, 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 over cook 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

- Take iron tablet with meals (to reduce drug intolerance) and preferably with a glass of orange juice regularly.
Hypertension in pregnancy is classified according to certain criteria shown in the table below:

Table 9: Management of hypertension in pregnancy

<table>
<thead>
<tr>
<th>Assess (signs and symptoms)</th>
<th>Classify as</th>
<th>Management</th>
<th>When to refer to secondary care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diastolic blood pressure &quot;90 mmhg during first 20 wks gestation</td>
<td><strong>Chronic hypertension</strong></td>
<td>Refer whenever detected with routine appointment</td>
<td></td>
</tr>
<tr>
<td>- Two readings of diastolic blood pressure 90-110 mm Hg 4 hours apart after 20 weeks gestation. - No proteinuria</td>
<td><strong>Pregnancy induced hypertension</strong></td>
<td>Adequate rest - Check BP twice weekly.</td>
<td>Refer for urgent appointment</td>
</tr>
<tr>
<td>- Diastolic pressure &quot;90 mmhg (after 20 weeks of gestation) - Proteinuria - No convulsion</td>
<td><strong>Pre-eclampsia</strong></td>
<td>If diastolic B/P is &gt;100 mmhg: Give labetalol 200 mg oral <strong>OR</strong> hydralazine 5 mg IV over 10 minutes + Aldomat 500 oral and refer as emergency</td>
<td>If diastolic B/P is 90-100 mm Hg, refer by urgent appointment</td>
</tr>
<tr>
<td>- Diastolic pressure &quot;90 mmhg (after 20 weeks of gestation) - Proteinuria - Convulsion</td>
<td><strong>Eclampsia</strong></td>
<td>Maintain airway - Manage - If in labour, expedite delivery if possible</td>
<td>If not in labour refer as an emergency after resuscitation</td>
</tr>
</tbody>
</table>

Remember:
- Mild pre-eclampsia often has no symptoms.
- Increasing proteinuria is a sign of worsening pre-eclampsia.
- Oedema of the feet and lower extremities is not considered a reliable sign of pre-eclampsia.
Prevention of pregnancy-induced hypertension

- 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 they 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.

- Restricting calories, fluids and salt intake does NOT prevent pregnancy-induced hypertension and may even be harmful to the fetus.

**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 drugs (start a loading dose of magnesium sulphate by preparing 4 g of 50% magnesium sulphate solution given slowly IV over 10-15 minutes.

**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 sulfate and respiration begins.

- If magnesium sulphate is not available, loading dose of diazepam can be given (start a loading dose of diazepam 10 mg IV slowly over 2 minutes. if convulsion recur, repeat the loading dose).

- Position the woman on her left side to reduce risk of aspiration of secretions, vomit and blood.

- Aspirate the mouth and throat as necessary.

- Monitor vital signs (pulse, blood pressure, and respiration), reflexes and fetal heart rate hourly.

- Refer as an emergency case to a secondary care institute.
3. Gestational Diabetes in Pregnancy

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

Algorithm 1: Screening steps for Gestational Diabetes

**ALL PREGNANT WOMEN**

- **RBS/FBS at Booking**
  - If RBS $\geq 7$ or FBS $> 5.5$
    - Do OGTT at booking
  - If RBS $< 7$, FBS $\leq 5.5$
    - Do OGCT at 22-24 wks

If RBS $\geq 7$ or FBS $> 5.5$

If PGBS $\geq 7.8$:
- Classify as D.M if $\leq 22$ wks, Gestational Diabetes if $> 22$ wks
  - Diet advice
  - Refer to the secondary care by early appointment

If the PGBS $< 7.8$

- Gestational Diabetes unlikely

- **OGTT at 22-24 weeks**
  - If 2 hrs BS $< 7.8$
    - Normal
  - If 1 hr BS $\geq 7.8$
    - Do OGTT

If 1 hr BS $< 7.8$

If PGBS $< 7.8$

- Gestational Diabetes unlikely

**Remember:**
- When performing OGTT, if fasting blood sugar is $\geq 7$ mmol/L, proceed with the 2 hours test without giving the glucose.
- In patients with chronic diabetes mellitus, advice antidiabetic medications should be stopped as soon as patient is diagnosed to be the secondary care patient and referred to the secondary care by urgent appointment to start on insulin therapy.
Evidence based studies show that proper management of UTI during pregnancy will lead to better pregnancy outcomes. The following table shows the detection and management of UTI during pregnancy:

### Table 10: Detection 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>
</table>
| **Typical:**              | Cystitis           | - Do urine test (microscopy and culture if indicated by the microscopy).  
                           |                    | - Encourage adequate rest.  
                           |                    | - Encourage to increase fluid intake by mouth.  
                           |                    | - Use paracetamol to decrease temperature  
                           |                    | - Start Antibiotics.  
                           |                    | - Repeat urine culture after 1 wk of the last dose of the antibiotics (if the initial test was positive).  
|                           |                    |            | If the infection reoccurs for two or more times despite adequate treatment, refer by early appointment. |
| **Other (atypical):**     |                    |            |                                 |
|                           |                    |            |                                 |
|                           |                    |            |                                 |
| **Typical:**              | Acute Pyelonephritis | - Do urine microscopy. Give paracetamol 1 gm. | Refer as emergency whenever detected |
|                           |                    |            |                                 |
|                           |                    |            |                                 |
Cystitis can be treated with Amoxicillin 500 mg orally three times per day for 5-7 days (to be continued for 10 days if culture was positive).

- 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.

5. **Asymptomatic Bacteriuria:**

- Usually diagnosed accidentally during the routine urine testing at the booking visit as patient is asymptomatic.

- Should be treated as per the culture results, or with Amoxicillin 500 mg orally three times per day for 10 days.

- Urine culture to be repeated 1 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 fetus.

Diagnosis

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

Algorithm 2: Management of vaginal discharge during pregnancy

All pregnant patients complaining of vaginal discharge or vulval itching / burning

- **History**: duration, frequency, h/o similar problem with husband, abdominal pain, dyspareunia, dysuria and past h/o PROM and/or preterm labour.
- **Examination**:
  - (by speculum): inspect for: abnormal discharge (colour, odour), valvovaginal erythema.
  - palpate for lower abdominal pain

History & examination suggestive of **candidiasis**: thick, cheesy white discharge that adheres to the wall, no odour, vulvar and vaginal erythema

- Treat as candidiasis
- Follow up within 2 weeks

History of abnormal vaginal discharge*

- History of abnormal vaginal discharge*
- History of lower abdominal pain

History of abnormal vaginal discharge*

- No lower abdominal pain

Refer to the secondary care as emergency for management (possibility of chorioamnionitis, endometritis)

- Perform vaginal swab**
- Refer to the secondary care with urgent/early (within 1 wk) appointment

* Abnormal vaginal discharge:
- Thin, off-white discharge, unpleasant fishy odour, increasing after sexual intercourse, normal appearance on examination (Bacterial Vaginosis);

- Others (Gonococal, Chlamydia).

** Patient should be advised to check swab result and carry it with her to the appointment in the secondary (if possible).

### General Management

Patient suffering from vaginal discharge is unlikely to mention her complaint because of shyness and aversion to vaginal examination, or because of the lack of privacy in the clinic. Therefore, the doctor or the nurse should not forget to ask if there is a discharge ḋee wasakh min taht?

In patients with vaginal discharge, a speculum examination should be performed. It is very important to avoid hurting the patient during this examination. This could be achieved by the following measures:

- Patient’s thighs must be widely abducted. This calls for careful draping of the legs with covering sheet to help the patient to relax.

- The Cusco speculum should be of the correct size and should be lubricated by smearing the blades thinly with a lubricant gel. It should be inserted deeply.

- The blades should only be separated when the speculum has been inserted to its full depth to avoid stretching the sensitive vaginal introitus.

### Specific management

Management of specific cases of vaginitis is illustrated in the following table:

<table>
<thead>
<tr>
<th>Disease</th>
<th>Treatment</th>
<th>Remarks/When to refer to secondary care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Candidiasis</td>
<td><strong>Drug option</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Miconazole or clotrimazole vaginal suppositories 200 mg inserted in the</td>
<td>By early appointment if:</td>
</tr>
<tr>
<td></td>
<td>vagina for 3 days <strong>or</strong></td>
<td>- No response to the treatment.</td>
</tr>
<tr>
<td></td>
<td>- Clotrimazole 500 mg inserted in the vagina as a single dose.</td>
<td>- Recurrent treated candidiasis (more than 2 times).</td>
</tr>
<tr>
<td></td>
<td><strong>Alternative</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Nystatin suppositories. Each contain 100,000 unit every night for 7-14</td>
<td></td>
</tr>
<tr>
<td></td>
<td>nights</td>
<td></td>
</tr>
</tbody>
</table>
Remember:

Vaginal swab is not mandatory if history and examination are typical for candidiasis. However, if recurrent despite adequate treatment, vaginal swab should be done to confirm the diagnosis or to diagnose other possible organisms.

- Pregnant women with recurrent vaginal Candida infection (more than 2 times) should be screened for diabetes. Counselling for hygiene should also be performed.

- In cases of recurrent vaginal Candida infection, the following should be excluded: antibiotic use, the use of antiseptic/antibiotic vaginal preparations or vaginal douching

- Routinely, treating the partner is not required but the partner should be treated in cases of recurrent vaginal Candida infection in the women.
All women registering with ANC clinic should be screened for HIV as shown in the following Algorithm:

Algorithm 3: HIV testing in pregnancy

**WOMAN at ANC clinic**

### AT ANC CLINIC
- Verbal consent;
- 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
- Inconclusive Result
- Positive ELISA test

**REFER TO CENTRAL PUBLIC HEALTH LABORATORY (CPhL) AT DARSEIT**

In case samples cannot be dispatched on the same day, keep it in the refrigerator at temp. 4-8°C. Transfer the sample within 24 hours. While transporting to RPHL ensure that appropriate temperature is maintained (4-8°C).
Algorithm 3: HIV testing in pregnancy (Cont)

CENTRAL PUBLIC HEALTH LABORATORY

Repeat test on the same sample sent from RPHL

Negative ELISA test: Report on Negative Result

Inconclusive Result: Re-bleed after 3 months

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

If ELISA test & WB still inconclusive: RT-PCR

Report to DFCH and HIV/AIDS Control Section & PHC facility
Algorithm 3: HIV screening in pregnancy (Cont)

Send report to DFCH and HIV/AIDS Control Section and PHC facility

HIV/AIDS CONTROL SECTION
Inform HIV focal physician

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

HIV/INDEX CASES

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

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.

AT PHC
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 record on the women and action taken; send to DFCH 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.

- HIV testing should be done during the labour/post-partum for women who have not been subjected to the test during the antenatal period (unbooked).
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 (usually 5 days from the time the rash appear).

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.

Risks associated with infection by varicella virus in pregnancy:

A) Maternal risks:
- Pneumonia: associated with high mortality rate.
- Hepatitis
- Encephalitis

B) Fetal risks:
- 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.
- Varicella Infection of the Newborn: more likely if maternal infection occurs 1-4 weeks before delivery.

The risk of spontaneous abortion does not increase if chickenpox occurs in the first trimester

Problem:
Pregnant women presenting with history of contact with chickenpox infected person.

Management:
- Assess women's history of chickenpox in the past.
- In all cases refer the women to the secondary care as emergency for administration of immunoglobulin.

*Fetal Varicella Syndrome characterized by one or more of: skin scarring in a dermatomal distribution, eye defects (microphthalmia, chorioretinitis, cataracts), hypoplasia of the limbs, neurological abnormalities (microcephaly, cortical atrophy, mental retardation and dysfunction of bowel & bladder sphincter).
Pregnancy with RhD Negative Blood Group

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

Management

- Coomb's test should be performed at the following intervals:
  - At first visit (booking).
  - At 28-30 weeks visit.
  - At 36-38 weeks visit.
- If Coomb's test showed to be positive, patient should be referred to the secondary care with urgent appointment for ICT titration.

Prophylaxis for women who are RhD negative:

Routine antenatal anti-D prophylaxis is indicated for all pregnant women who are RhD negative and who are not known to be sensitised to RhD antigen

Antenatal Prophylaxis

- 2 doses of 500 iu Anti D immunoglobulin is given at 28 weeks and (34-36) weeks of gestation to women who are non-sensitised.
- RhD negative women who have received routine antenatal prophylaxis should receive additional Anti D immunoglobulin when they are undergoing any potential sensitising procedures like ECV, amniocentesis or has antepartum haemorrhage.

Prophylaxis following abortion:

- **Spontaneous miscarriage**
  - Complete or incomplete after 12 weeks of gestation;
  - Incomplete abortion before 12 weeks where there is dilatation and curettage.

  **Note:** Spontaneous complete Abortion before 12 weeks when there is no instrumentation, need not receive anti D immunoglobulin.

- **Threatened abortion**
  - All non-sensitised RhD negative women with threatened abortion after 12 weeks of gestation;
D negative women with threatened abortion before 12 weeks of gestation where the bleeding is heavy or repeated or where abdominal pain and gestation is approaching 12

weeks of gestation.

**Note:** prophylaxis is not required if bleeding stops and fetus is viable.

- If bleeding continues intermittently after 12 weeks of gestation, anti D immunoglobulin should be given at 6 weeks intervals.

**Dosage:** 250 iu (50 mcg) before 20 weeks & 500 iu (100 mcg) after that.

**Postnatal Prophylaxis**

- At least 500 iu (100 mcg) should be given within 72 hours following delivery of an RhD positive infant.

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

10. **ABO Incompatibility:**

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

The woman usually has a history of either:

- Blood transfusion.
- Unexplained still birth.
- Unexplained neonatal death.
- Baby with severe jaundice in neonatal period.

**Management:**

- These 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.
  - At 36-38 weeks visit.
  - If Coomb’s test showed to be positive, patient should be referred to the secondary care with **urgent appointment** for ICT titration.
1. Vaginal Bleeding In Early Pregnancy:

**Problem:** Vaginal bleeding occurs during the first 22 weeks of pregnancy.

**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, see page 111. 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.

- Start an IV infusion and infuse IV fluids.

**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 refer urgently

**Note:** The patient should be stabilized before transfer.
Table 12: Differential diagnosis of vaginal bleeding in early pregnancy

<table>
<thead>
<tr>
<th>Presenting Symptom</th>
<th>Typical Symptoms and Signs</th>
<th>Sometimes Present</th>
<th>Probable Diagnosis &amp; Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Light bleeding</td>
<td>Uterus softer than normal</td>
<td>Closed cervix</td>
<td>Ectopic abortion Refer as emergency</td>
</tr>
<tr>
<td>Normal</td>
<td>Uterus slightly larger</td>
<td>Closed cervix</td>
<td>Ectopic abortion Refer as emergency</td>
</tr>
<tr>
<td>Light bleeding</td>
<td>Uterus softer than</td>
<td>Closed cervix</td>
<td>Ectopic abortion Refer as emergency</td>
</tr>
<tr>
<td>Normal</td>
<td>Uterus smaller than dates</td>
<td>Open cervix</td>
<td>Ectopic abortion Refer as emergency</td>
</tr>
<tr>
<td>Heavy bleeding</td>
<td>Uterus softer than</td>
<td>Open cervix</td>
<td>Ectopic abortion Refer as emergency</td>
</tr>
<tr>
<td>Normal</td>
<td>Uterus softer than</td>
<td>Partial cervix</td>
<td>Ectopic abortion Refer as emergency</td>
</tr>
<tr>
<td>Light bleeding</td>
<td>Uterus smaller than dates</td>
<td>Partial cervix</td>
<td>Ectopic abortion Refer as emergency</td>
</tr>
<tr>
<td>Normal</td>
<td>Uterus normal</td>
<td>Full cervix</td>
<td>Ectopic abortion Refer as emergency</td>
</tr>
<tr>
<td>Light bleeding</td>
<td>Uterus softer than</td>
<td>Full cervix</td>
<td>Ectopic abortion Refer as emergency</td>
</tr>
<tr>
<td>Normal</td>
<td>Uterus smaller than dates</td>
<td>No cervix</td>
<td>Ectopic abortion Refer as emergency</td>
</tr>
<tr>
<td>Light bleeding</td>
<td>Uterus softer than</td>
<td>No cervix</td>
<td>Molar pregnancy Refer as emergency</td>
</tr>
</tbody>
</table>

a Light bleeding: takes five minutes or longer for a clean pad or cloth to be soaked
b Heavy bleeding: takes less than five minutes for a clean pad or cloth to be soaked
Vaginal bleeding after 22 weeks of pregnancy.

Vaginal bleeding in labour before delivery.

Table 13: 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</td>
<td>Antepartum haemorrhage</td>
<td>Determine cause using Table 14</td>
</tr>
</tbody>
</table>

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).
- If shock is suspected, immediately begin treatment, see page111. 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 (No. 14-16) 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.
Table 14: Differential diagnosis of vaginal bleeding in later pregnancy (antepartum haemorrhage)

<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>• Bleeding after 22 weeks gestation</td>
<td>• Shock</td>
<td>Abruptio placenta, refer as emergency</td>
</tr>
<tr>
<td>• Intermittent or constant abdominal pain</td>
<td>• Tense/tender uterus</td>
<td></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>• Bleeding (intra-abdominal and/or vaginal)</td>
<td>• Shock</td>
<td>Ruptured uterus, refer as emergency</td>
</tr>
<tr>
<td>• Severe abdominal pain (may decrease after rupture)</td>
<td>• Rapid maternal pulse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Abdominal distension/ free fluid</td>
<td></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>• Bleeding after 22 weeks gestation</td>
<td>• Shock</td>
<td>Placenta praevia, refer as emergency</td>
</tr>
<tr>
<td></td>
<td>• Bleeding may be precipitated by intercourse</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Relaxed uterus</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Fetal presentation (not in pelvis/ lower uterine pole feels empty)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Normal fetal condition</td>
<td></td>
</tr>
</tbody>
</table>
A woman has fever (temperature 38°C or more) during pregnancy or labour.

**General Management**

- Encourage adequate rest.
- Encourage increased fluid intake by mouth.
- 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.

**Table 15: 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, Increased frequency and urgency of urination</td>
<td>Retropubic/ suprapubic pain/ tenderness</td>
<td>Cystitis Manage as in Table 10 Treat as below*</td>
</tr>
<tr>
<td>Dysuria, Spiking fever/chills, Increased frequency and urgency of urination, Abdominal pain</td>
<td>Retropubic/suprapubic pain/ tenderness, Loin pain/tenderness, Tenderness in rib cage, Anorexia, Nausea/vomiting</td>
<td>Acute pyelonephritis Refer as emergency</td>
</tr>
<tr>
<td>Foul-smelling vaginal discharge in first 22 weeks, Fever, Tender uterus</td>
<td>Lower abdominal pain, Rebound tenderness, Prolonged bleeding, Purulent cervical discharge</td>
<td>Septic abortion Refer as emergency</td>
</tr>
<tr>
<td>Fever/chills, Foul-smelling watery discharge, Abdominal pain</td>
<td>History of loss of fluid after Rapid weeks, Heart rate rapid, Light vaginal bleeding</td>
<td>Chorioamnionitis Refer as emergency</td>
</tr>
</tbody>
</table>
Diagnosis of fever during pregnancy and labour (Cont)

<table>
<thead>
<tr>
<th>Presenting Symptom and Other Symptoms and Signs Typically</th>
<th>Sometimes Present</th>
<th>Probable Diagnosis &amp; Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Fever</td>
<td>• Signs of consolidation</td>
<td>Pneumonia</td>
</tr>
<tr>
<td>• Difficulty in breathing</td>
<td>• Congested throat</td>
<td>Refer as emergency to the physician</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).
- If shock is suspected, immediately begin treatment, see page 111. Even if signs of shock are not present, keep shock in mind as you evaluate the woman 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.
Table 16: Diagnosis of abdominal pain in early pregnancy

<table>
<thead>
<tr>
<th>Symptoms and Signs Typically Present</th>
<th>Other Symptoms and Signs Sometimes Present</th>
<th>Probable Diagnosis &amp; Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abdominal pain</td>
<td>Palpable, tender discrete mass in lower abdomen</td>
<td>Ovarian cyst Refer as emergency</td>
</tr>
<tr>
<td>Adnexal mass on vaginal examination</td>
<td>Light vaginal bleeding</td>
<td></td>
</tr>
<tr>
<td>Lower abdominal pain</td>
<td>Abdominal distension</td>
<td>Appendicitis Refer as emergency</td>
</tr>
<tr>
<td>Low-grade fever</td>
<td>Anorexia</td>
<td></td>
</tr>
<tr>
<td>Rebound tenderness</td>
<td>Nausea/vomiting</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Paralytic ileus</td>
<td></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>Dysuria</td>
<td>Retropubic/ suprapubic pain/ tenderness</td>
<td>Cystitis Manage as in Table 10,</td>
</tr>
<tr>
<td>Increased frequency and urgency of urination</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Abdominal pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dysuria</td>
<td>Retropubic/ suprapubic pain/ tenderness</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></td>
<td>Nausea/vomiting</td>
<td></td>
</tr>
<tr>
<td>Low-grade fever/chills</td>
<td>Rebound tenderness</td>
<td>Peritonitis Refer as emergency</td>
</tr>
<tr>
<td>Lower abdominal pain</td>
<td>Abdominal distension</td>
<td></td>
</tr>
<tr>
<td>Absent bowel sounds</td>
<td>Anorexia</td>
<td></td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>Nausea/vomiting</td>
<td></td>
</tr>
<tr>
<td>Light bleeding</td>
<td>Shock</td>
<td></td>
</tr>
<tr>
<td>Closed cervix</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uterus slightly larger than normal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Uterus softer than normal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fainting</td>
<td>Tender adnexal mass</td>
<td>Ectopic pregnancy Refer as emergency</td>
</tr>
<tr>
<td>Amenorrhea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cervical motion tenderness</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a Light bleeding: takes longer than five minutes for a clean pad or cloth to be soaked.
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, see page 111. Even if signs of shock are not present, keep shock in mind as you evaluate the woman because her status may worsen rapidly. If shock develops, it is important to begin treatment immediately.

- Perform speculum and vaginal examination.

**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 17: Diagnosis of abdominal pain in later pregnancy and 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 &amp; Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palpable contractions</td>
<td>Cervical dilatation and effacement</td>
<td>Possible preterm labour</td>
</tr>
<tr>
<td>Blood-stained mucus discharge (show) or watery discharge before 37 weeks</td>
<td>Light-vaginal bleeding</td>
<td>Refer as emergency</td>
</tr>
<tr>
<td>Palpable contractions</td>
<td>Cervical dilatation and effacement</td>
<td>Possible term labour</td>
</tr>
<tr>
<td>Blood-stained mucus discharge (show) or watery discharge at or after 37 weeks</td>
<td>Light vaginal bleeding</td>
<td>Manage as in labour if facilities available or refer as emergency to the nearest delivering institute</td>
</tr>
</tbody>
</table>
### Table 17: Diagnosis of abdominal pain in later pregnancy and after child birth (Cont)

<table>
<thead>
<tr>
<th>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&lt;br&gt;• Bleeding after 22 weeks gestation (fetus may be retained in the uterus)</td>
<td>• Shock&lt;br&gt;• Tense/tender uterus&lt;br&gt;• Decreased/absent fetal movements&lt;br&gt;• Fetal distress or absent fetal heart sounds</td>
<td>Abruptio placenta&lt;br&gt;Refer as emergency</td>
</tr>
<tr>
<td>• Severe abdominal pain (may decrease after rupture)&lt;br&gt;• Bleeding (intra-abdominal and/or vaginal)</td>
<td>• Shock&lt;br&gt;• Abdominal distension/free fluid&lt;br&gt;• Abnormal uterine contour&lt;br&gt;• Tender abdomen&lt;br&gt;• Easily palpable fetal parts&lt;br&gt;• Absent fetal movements and fetal heart sounds&lt;br&gt;• Rapid maternal pulse</td>
<td>Ruptured uterus&lt;br&gt;Refer as emergency</td>
</tr>
<tr>
<td>• Foul-smelling watery vaginal discharge after 22 weeks gestation&lt;br&gt;• Fever/chills</td>
<td>• History of loss of fluid&lt;br&gt;• Tender uterus&lt;br&gt;• Rapid fetal heart rate&lt;br&gt;• Light vaginal bleeding</td>
<td>Chorioamnionitis&lt;br&gt;Refer as emergency</td>
</tr>
<tr>
<td>• Dysuria&lt;br&gt;• Increased frequency and urgency of urination</td>
<td>• Retropubic/suprapubic pain/tenderness</td>
<td>Cystitis&lt;br&gt;Treat as in Table 10</td>
</tr>
<tr>
<td>• Dysuria&lt;br&gt;• Abdominal pain&lt;br&gt;• Spiking fever/chills&lt;br&gt;• Increased frequency and urgency of urination</td>
<td>• Retropubic/suprapubic pain/tenderness&lt;br&gt;• Loin pain/tenderness&lt;br&gt;• Tenderness in rib cage&lt;br&gt;• Anorexia&lt;br&gt;• Nausea/vomiting</td>
<td>Acute pyelonephritis&lt;br&gt;Refer as emergency</td>
</tr>
</tbody>
</table>
### Table 17: Diagnosis of abdominal pain in later pregnancy and after childbirth (Cont)

<table>
<thead>
<tr>
<th>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, Anorexia, Nausea/vomiting, Paralytic ileus, Increased white blood cells, No mass in lower abdomen, Site of pain higher than expected</td>
<td>Appendicitis, Twisted pedunculated fibroids, Red generation of fibroids, Refer as emergency</td>
</tr>
<tr>
<td>Low-grade fever</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rebound tenderness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower abdominal pain</td>
<td>Light vaginal bleeding, Shock</td>
<td>Endometritis, Refer as emergency</td>
</tr>
<tr>
<td>Fever/chills</td>
<td></td>
<td></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>Lower abdominal pain and distension</td>
<td>Poor response to antibiotics, Swelling in adnexa or pouch of Douglas</td>
<td>Pelvic abscess, Refer as emergency</td>
</tr>
<tr>
<td>Persistent spiking fever/chills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower abdominal pain and distension</td>
<td>Rebound tenderness, Abdominal distension, Anorexia, Nausea/vomiting, Shock</td>
<td>Peritonitis, Refer as emergency</td>
</tr>
<tr>
<td>Lower abdominal pain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low-grade fever/chills</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Absent bowel sounds</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Lower abdominal pain and distension</td>
<td>Abdominal distension</td>
<td>Peritonitis, Refer as emergency</td>
</tr>
<tr>
<td>Lower abdominal pain</td>
<td>Wild cat, Absent bowel sounds</td>
<td>Ovarian cyst, Refer as emergency</td>
</tr>
<tr>
<td>Adnexal mass on vaginal examination</td>
<td>Palpable, tender discrete mass in lower abdomen, Light vaginal bleeding</td>
<td></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

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

Diagnosis:
- By ultrasound:
  # Intrauterine sac ( < 20 mm mean diameter) with no obvious yolk sac or fetus, OR
  # Absence of fetal heart activity in a pregnancy with a crown-rump length of < 6 mm.

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

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:
advice her to take food and observe for movements for the next 1 hour.

- 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

Problem

Rupture of membranes with vaginal loss of amniotic fluid before labour has began. It can occur either when the fetus is immature (before 37 weeks): Premature prelabour rupture of membranes (PPROM) or when it is mature (term): (PROM).

Diagnosis:

a. Maternal history:

  * Gestational age
  * Time of rupture of membranes
  * Presence of meconium stained liquor
  * Symptoms of infection:
    * Fever
      * Maternal tachycardia
    * Foul vaginal discharge

b. 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 sodium chloride and protein
  * Examination for lanugo hair

Note: Nitrazine test is the most practical and of help, but false positive rate is 17% due to contamination with urine, blood or semen.
Abdominal examination: determine fetal lie, presentation, heart rate and presence of contraction.

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 advice her to observe by applying a clean pad.

- Instruct the women to report immediately if signs of leaking liquor reoccur.
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 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 18: 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 dilataation despite good contractions)</td>
<td>Secondary care</td>
</tr>
<tr>
<td>Prelabour rupture of membranes</td>
<td>Secondary care</td>
</tr>
<tr>
<td>Uncontrolled premature labour (before 37 weeks)</td>
<td>Secondary care</td>
</tr>
</tbody>
</table>
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 institute);
- Clean the vulval 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 each 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;
- Encourage her companion to massage her back or hold her hand and sponge her face between contractions;
- Encourage breathing techniques;
- Encourage warm bath or shower;
- Analgesics should be given to all women who are distressed with pain in labour (see below for the type of analgesia).

**ANALGESIC DRUGS DURING LABOUR**

- If the woman is distressed by pain, allow her to walk around or assume any comfortable position. Encourage her companion to massage her back or sponge her face between contractions. Encourage the use of breathing techniques and allow the woman to take a warm bath or shower if she chooses. For most women, this is enough to cope with the pain of labour. If necessary, give:
  - Pethidine 1 mg/kg body weight (but not more than 100 mg) IM every four hours as needed or give morphine 0.1 mg/kg body weight IM;
  - Promethazine 25 mg IM or IV if vomiting occurs.

**Note:** Barbiturates and sedatives should not be used to relieve anxiety in labour.

**Danger**

- If **pethidine is given to the mother**, the baby may suffer from respiratory depression. Naloxone is the antidote.

  - If there are **signs of respiratory depression** in the newborn, begin resuscitation immediately.
    - After vital signs have been established, give naloxone 0.1 mg/kg body weight IV to the newborn;
    - If the **infant has adequate peripheral circulation after successful resuscitation**, naloxone can be given IM. Repeated doses may be required to prevent recurrent respiratory depression (only to be given as per advice from the neonatologist).

  - If there are **no signs of respiratory depression** in the newborn, but **pethidine was given within four hours of delivery**, observe the baby expectantly for signs of respiratory depression and treat as above if they occur.
DIAGNOSIS AND CONFIRMATION OF LABOUR

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

C-60
- Watery vaginal discharge or a sudden gush of water. Normal labour and childbirth
- Cervical effacement; i.e. the progressive shortening and thinning of the cervix
- Confirm the labour if there is:
  - Cervical effacement; i.e. the progressive shortening and thinning of the cervix
  - Cervical dilatation; the increase in diameter of the cervical opening measured in centimetres (Fig C-3 A–E).

FIGURE C-3 Effacement and dilatation of the cervix

Figure 1: Effacement and dilatation of the cervix

DIAGNOSIS OF STAGE AND PHASE OF LABOUR

TABLE C-8 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>False labour/</td>
<td>Not in labour</td>
</tr>
<tr>
<td>Cervix dilated less than 4 cm</td>
<td>First</td>
<td>Latent</td>
</tr>
<tr>
<td>Cervix dilated 4–9 cm</td>
<td>First</td>
<td>Active</td>
</tr>
<tr>
<td>Rate of dilatation typically 1 cm per hour or more</td>
<td>First</td>
<td>Early (non-expulsive)</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></td>
</tr>
<tr>
<td>Fetal descent continuous</td>
<td></td>
<td></td>
</tr>
<tr>
<td>No urge to push</td>
<td>62</td>
<td></td>
</tr>
</tbody>
</table>

FIGURE C-3 Effacement and dilatation of the cervix

Figure 1: Effacement and dilatation of the cervix


Length of cervical canal = 4 cm. Length of cervical canal = 2 cm.
Table 19: 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>False labour/ Not in labour</td>
<td></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 1 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>• Presenting part of fetus reaches pelvic floor</td>
<td>Second</td>
<td>Late (expulsive)</td>
</tr>
<tr>
<td>• Woman has the urge to push</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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

**Descent**

**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.
Vaginal Examination

- Vaginal examination is useful to assess descent by relating the descent level of the fetal presenting part to the ischial spines of the maternal pelvis (Fig C-5, page C-62).

**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 examination.

**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

DETERMINE THE PRESENTING PART

- The most common presenting part is the vertex of the fetal head. If the head is not the vertex, the position of the head is noted.
PRESENTATION AND POSITION

DETERMINE THE PRESENTING PART

- The most common presenting part is the vertex of the fetal head. If the vertex is not the presenting part, the vertex is the presenting part and use landmarks fetal skull to determine the position of the fetal head related to the maternal pelvis (Fig C-6).

FIGURE C-6

- If the vertex is the presenting part, manage as a malpresentation (Table S-73).

FIGURE C-6 landmarks fetal skull

DETERMINE THE POSITION OF THE FETAL HEAD

- The fetal head normally engages in the maternal pelvis in an occiput transverse position, with the fetal occiput transverse in the maternal pelvis (Fig C-7).

FIGURE C-7

- With descent, the fetal head rotates so that the fetal occiput is anterior in the maternal pelvis (occiput anterior positions, Fig C-8). Failure of an occiput transverse position to rotate to an occiput anterior position should be managed as an occiput posterior position (page S-75).

FIGURE C-8
With descent, the fetal head rotates so that the fetal occiput is anterior in the maternal pelvis (occiput anterior positions). Failure of the fetal head to rotate to an occiput posterior position should be managed as an occiput posterior position (page S-75).

**FIGURE C-8**

![Left occiput anterior and Right occiput anterior](image)

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

**FIGURE C-9**

Well-flexed vertex

ASSESSMENT OF PROGRESS OF LABOUR

Once diagnosed, progress of labour is assessed by:

- measuring changes in cervical effacement and dilatation (Fig C-3 A page C-60) during the latent phase;
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 20: 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.
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:

- 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.

  - The 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.
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;
- Rate of cervical dilatation slower than 1 cm per hour during the active phase of labour (cervical dilatation to the right of alert line);
- Cervix poorly applied to the presenting part.

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 are 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 malpresentations 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:

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

NORMAL CHILDBIRTH

General methods of supportive care during labour are most useful in helping the woman tolerate labour pains

- 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 (See page 108) 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:

- immediate oxytocin;
- controlled cord traction; and
- 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 the other hand just above the woman’s pubic bone and stabilize the uterus by applying counter traction 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;
6. 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;

7. Slowly pull to complete the delivery;

8. 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;

9. 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;

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

11. 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 women 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.
Delivery with malpresentation should not be carried out in primary health care.

**BREECH DELIVERY** labour every should should be taken to secondary delivery. Delivery can be conducted if woman is advanced. Review indications. Ensure all conditions for safe vaginal breech delivery are met.

- Review general care principles (page C-17) and start an IV infusion (page C-21).
- Review general care principles and start an IV infusion. Provide emotional support and encouragement. If necessary, use a

**COMPLETE OR FRANK BREECH** presentation

**FIGURE P-13** Breech presentation

**DELIVERY**

**BUTTOCKS**

Once the buttocks entered the vagina cervix the fully dilated, woman she can woman she with can the contractions. the contractions.

If the perineum is tight, episiotomy (See episiotomy (page P-71).

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.
1. BREACH PRESENTATION:

- Provide emotional support.
- Pudendal block (page P-3).

**Figure 9: Breech**

**A. Complete (flexed) breech**

**B. Frank (extended) breech**

**OF THE OF THE AND LEGS**

- Once the have the vagina the and is fully cervix is tell the bear down with
- If the is very tight, very an perform an page 108).page 121
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.

**Do not pull the baby while the legs are being delivered**

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.

**FIGURE P-14**

![Image of baby delivery](image)

**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, disengage spontaneously buttocks one towards assistant mother's abdomen to enable the second arm to deliver spontaneously.
- If the arm does not spontaneously deliver, place on the buttocks towards elbow and mother's abdomen to enable second arm to deliver spontaneously.

**ARMS ARE STRETCHED ABOVE THE HEAD OR FOLDED AROUND THE NECK**

Use the Lovset's manoeuvre (Figure P-15):

- Hold the baby by the hips and turn half a circle, keeping the back
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 in the elbow and hand down over the baby's 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.

If the baby's body cannot be turned to deliver the arm that is anterior first, deliver the shoulder that is posterior (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 P-17, page P-41) 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 one 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.
- Raise the baby, still astride the arm, until the mouth and nose are free.

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

GURE P-17 The Mauriceau Smellie Veit manoeuvre

Figure 13: The Mauriceau Smellie Veit manoeuvre
Problem

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

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

Be prepared for shoulder dystocia at all deliveries, especially if a large baby is anticipated.

Have several persons available to help.

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

Shoulder dystocia cannot be predicted

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

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

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.

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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.

Make an adequate episiotomy to reduce soft tissue obstruction and to allow manipulation.

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Wearing sterile gloves:

Wearing sterile gloves:

Apply firm, continuous traction downwards on the fetal head to move the shoulder that is anterior under the symphysis pubis.

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Note: Avoid excessive traction on the fetal head as this may result in brachial plexus injury.

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Note: Do not apply fundal pressure. This will further impact the shoulder and can result in uterine rupture.
If all of the above measures fail to deliver the shoulder, other options include:

- Fracture the clavicle, 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.

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

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**

**Basic care**: To ensure basic care of all new born.

**Bonding**: To assist bonding between mother and babies by rooming in and minimizing separation unless medically indicated.

**Breastfeeding**: To initiate breastfeeding within half to 1 hour of delivery and establishing it by supporting & counselling the mother.

**Birth spacing**: To counsel mothers about options for birth spacing in post natal period.

**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 25-28°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.
• 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 12-18 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.
Hold her baby during breastfeeding. She should:

- 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 breastfeeding](image)

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.

Post natal visits to clinic

- The mother should visit the health centre at 2 weeks and then at 6 weeks postnatal. The subsequent investigations to be performed at these visits: haemoglobin level (at 6 weeks only), blood pressure, pulse, temperature, urine microscopy (at 6 weeks only). 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.
- Iron should be given to all mothers for 3-6 months.
Vaginal Bleeding after Childbirth (Post Partum haemorrhage)

Post partum haemorrhage is defined as blood loss sufficient to cause haemodynamic 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).

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

Prevention

- Active management of 3rd stage of labour.
- Prophylactic Oxytocin.
- Early Cord Clamping.
- 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 21: 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. • Uterus soft and not contracted</td>
<td>Shock • Complete placenta • Uterus contracted</td>
<td>Atonic uterus See Medical Management Tears of cervix, vagina or perineum If grade 1 suture (See page 112) Grade 2, 3 and 4 refer as emergency</td>
</tr>
</tbody>
</table>

93 83
### Table 21: Diagnosis of Vaginal Bleeding 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</th>
</tr>
</thead>
<tbody>
<tr>
<td>Placenta not delivered within 30 minutes after delivery</td>
<td>Immediate PPH&lt;sub&gt;a&lt;/sub&gt;</td>
<td>Retained placenta, 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</td>
<td>Immediate PPH&lt;sup&gt;*&lt;/sup&gt;</td>
<td>Retained placental fragments Refer as emergency</td>
</tr>
<tr>
<td>membranes with vessels</td>
<td>Uterus contracted</td>
<td></td>
</tr>
<tr>
<td>Uterine fundus not felt on abdominal palpation</td>
<td>Shock</td>
<td>Inverted uterus</td>
</tr>
<tr>
<td>Slight or intense pain</td>
<td>Inverted uterus apparent at vulva</td>
<td>Refer as emergency</td>
</tr>
<tr>
<td></td>
<td>Immediate PPH&lt;sup&gt;**&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Immediate PPH&lt;sub&gt;a&lt;/sub&gt;</td>
<td>Shock</td>
<td>Ruptured uterus Refer as emergency</td>
</tr>
<tr>
<td>(bleeding is intra-abdominal and/or vaginal)</td>
<td>Tender abdomen</td>
<td></td>
</tr>
<tr>
<td>Severe abdominal pain (may decrease after rupture)</td>
<td>Rapid maternal pulse</td>
<td></td>
</tr>
</tbody>
</table>

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

<sup>**</sup>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 as rapidly as needed while awaiting blood.

### Specific Management:
- Catheterize urinary bladder;
- Rub the uterus +/− bimanual compression;

- Start the medical management:
  - Give syntometrin (oxytocin 5 iu/ergometrine 0.5 mg) IM injection;
  - If still bleeding, start oxytocin drip (40 iu in 0.9% NS IV) in 500 ml of normal saline;

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 (See page 112). If bleeding continues transfer the patient to the secondary care 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 refer 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. If bleeding continues refer as emergency.
• Woman has fever (temperature 38°C or more) occurring more than 24 hours after delivery.

**General Management**

• 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 22: Diagnosis of fever 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 Sometimes Present</th>
</tr>
</thead>
<tbody>
<tr>
<td>Breast pain and tenderness</td>
<td>Hard enlarged breasts</td>
<td>Breast engorgement</td>
</tr>
<tr>
<td>Breast pain and tenderness</td>
<td>Both breasts affected</td>
<td></td>
</tr>
<tr>
<td>Reddened, wedge-shaped area on breast</td>
<td>Inflammation preceded by engorgement</td>
<td>Mastitis</td>
</tr>
<tr>
<td>Firm, very tender breast</td>
<td>Usually only one breast affected</td>
<td></td>
</tr>
<tr>
<td>Overlying erythema</td>
<td>Fluctuant swelling in breast</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Breast abscess</td>
</tr>
<tr>
<td>Refer as emergency to the surgeon for drainage and antibiotics.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### Table 22: Diagnosis of fever after childbirth (Cont)

<table>
<thead>
<tr>
<th>Symptoms and Signs Typically Present</th>
<th>Other Symptoms and Signs Sometimes Present</th>
<th>Probable Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dysuria</td>
<td>Retropubic/suprapubic pain</td>
<td>Cystitis</td>
</tr>
<tr>
<td>Increased frequency and urgency of urination</td>
<td>Abdominal pain</td>
<td>Treat as on Table 10,</td>
</tr>
<tr>
<td>Spiking fever/chills</td>
<td>Retropubic/suprapubic pain</td>
<td>Acute pyelonephritis,</td>
</tr>
<tr>
<td>Increased frequency and urgency of urination</td>
<td>Loin pain/tenderness</td>
<td>Refer as emergency</td>
</tr>
<tr>
<td>Abdominal pain</td>
<td>Tenderness in rib cage</td>
<td></td>
</tr>
<tr>
<td>Spiking fever despite antibiotics</td>
<td>Calf muscle tenderness</td>
<td>Deep vein thrombosis</td>
</tr>
<tr>
<td>Fever/chills</td>
<td>Light vaginal bleeding</td>
<td>Endometritis</td>
</tr>
<tr>
<td>Lower abdominal pain</td>
<td>Shock</td>
<td>Refer as emergency</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>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</td>
</tr>
<tr>
<td>Tender uterus</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low-grade fever/chills</td>
<td>Rebound tenderness</td>
<td>Peritonitis</td>
</tr>
<tr>
<td>Lower abdominal pain</td>
<td>Abdominal distension</td>
<td>Refer as emergency</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>Fever</td>
<td>Clinical signs of consolidation</td>
<td>Pneumonia</td>
</tr>
<tr>
<td>Difficulty in breathing</td>
<td>Congested throat</td>
<td>Refer as emergency</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>

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

**BREASTFEEDING**

- 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:
    - Apply warm compresses to the breasts just before breastfeeding, or encourage the woman to take a warm shower;
    - Massage the woman's neck and back;
    - 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:
    - Support breasts with a binder or brassiere;
    - Apply cold compress to the breasts between feedings to reduce swelling and pain;
    - Give paracetamol 1gm by mouth as needed;
    - Advice the patient to report back if no response within 24 hours.

**NOT BREAST FEEDING**

- If the woman is not breastfeeding:
  - Support breasts with a binder or brassiere;
  - Apply cold compress to the breasts to reduce swelling and pain;
  - Avoid massaging or applying heat to the breasts;
  - Avoid stimulating the nipples;
  - Give paracetamol 1gm by mouth as needed;
  - Give Bromocriptine 2.5 mg two times per day (bid) for 5 days.
Follow up in three days to ensure response.

**BREAST INFECTION**

**MASTITIS**

- Treat with antibiotics
  - Cloxacillin 500 mg by mouth four times per day for 10 days;
  - OR erythromycin 250 mg by mouth three times per day for 10 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.
1. RAPID INITIAL ASSESSMENT

When rapidly assess her condition to determine her degree of illness.

Table 23: Rapid initial assessment & management considerations

<table>
<thead>
<tr>
<th>Assess</th>
<th>Danger Signs</th>
<th>Consider</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Airway and breathing</strong></td>
<td>Look for:</td>
<td>• Severe anaemia</td>
</tr>
<tr>
<td></td>
<td>• Cyanosis;</td>
<td>• Heart failure</td>
</tr>
<tr>
<td></td>
<td>• Respiratory distress.</td>
<td>• Pneumonia</td>
</tr>
<tr>
<td></td>
<td><strong>Examine:</strong></td>
<td>• Asthma</td>
</tr>
<tr>
<td></td>
<td>• Skin: pallor;</td>
<td>• Pulmonary embolism</td>
</tr>
<tr>
<td></td>
<td>• Lungs: wheezing or crepitations.</td>
<td></td>
</tr>
<tr>
<td><strong>Circulation (Signs of shock)</strong></td>
<td><strong>Examine:</strong></td>
<td><strong>Shock</strong> (See page 111)</td>
</tr>
<tr>
<td></td>
<td>• Skin: cool and clammy;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Pulse: fast (110 or more) and weak;</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Blood pressure: low (systolic less than 90 mm Hg).</td>
<td></td>
</tr>
<tr>
<td><strong>Vaginal bleeding</strong></td>
<td><strong>Ask if:</strong></td>
<td>• Abortion</td>
</tr>
<tr>
<td>(early or late pregnancy or after childbirth)</td>
<td>• Pregnant, length of gestation;</td>
<td>• Ectopic pregnancy</td>
</tr>
<tr>
<td></td>
<td>• Recently given birth;</td>
<td>• Molar pregnancy</td>
</tr>
<tr>
<td></td>
<td>• Placenta delivered.</td>
<td>See <strong>Vaginal bleeding in early pregnancy</strong>, Table 12</td>
</tr>
<tr>
<td></td>
<td><strong>Examine:</strong></td>
<td>• Abruptio placenta</td>
</tr>
<tr>
<td></td>
<td>• Vulva: amount of bleeding, placenta retained, obvious tears;</td>
<td>• Ruptured uterus</td>
</tr>
<tr>
<td></td>
<td>• Uterus: atony;</td>
<td>• Placenta previa</td>
</tr>
<tr>
<td></td>
<td>• Bladder: full.</td>
<td>See <strong>Vaginal bleeding in later pregnancy</strong>, Table 14</td>
</tr>
<tr>
<td></td>
<td><strong>Do not do a vaginal examination at this stage</strong></td>
<td>• Atonic uterus</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Tears of cervix and vagina</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Retained placenta</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Inverted uterus Table</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See <strong>Vaginal bleeding after childbirth</strong>, Table 21</td>
</tr>
</tbody>
</table>
# Rapid initial assessment & management considerations (Cont)

<table>
<thead>
<tr>
<th>Danger Signs</th>
<th>Consider</th>
</tr>
</thead>
</table>
| **Unconscious or: convulsing** | • eclampsia  
• malaria  
• epilepsy  
• tetanus  
See **Management of Convulsions** |
| **Ask if** | • pregnant, length of gestation  
**Examine:**  
• blood pressure: high (diastolic 90mm Hg or more);  
• Temperature: 38°C or more. |
| **High grade fever** | • Urinary tract infection  
See Table 10, page 26  
• endometritis  
• pelvic abscess  
• peritonitis  
• breast infection  
See **Fever after child birth.**  
Table 22  
• complications of abortion  
See **Vaginal bleeding in early pregnancy,** Table 12  
• Pneumonia |
| **Ask if:** | • weak, lethargic;  
• frequent, painful urination.  
**Examine:**  
• temperature: 38°C or more;  
• unconscious;  
• neck: stiffness;  
• lungs: shallow breathing, consolidation;  
• abdomen: severe tenderness;  
• vulva: purulent discharge;  
• breasts: tender. |
| **Abdominal pain** | • 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 16 and Table 17 |
| **Ask if:** | • Pregnant, length of gestation  
**Examine:**  
• blood pressure: low (systolic less than 90 mm Hg)  
• pulse: fast (110 or more)  
• temperature: 38°C or more  
• uterus: state of pregnancy |
The woman also needs prompt attention if she has any of the following signs:

- blood-stained mucus discharge or vaginal bleeding (show) with palpable contractions;
- ruptured membranes;
- pallor;
- weakness;
- fainting;
- severe headaches;
- blurred vision;
- vomiting;
- fever;
- respiratory distress.
- Abnormal movements (fits/convulsions).

IMPLEMENTING A RAPID INITIAL ASSESSMENT SCHEME

Rapid initiation of treatment requires immediate recognition of the specific problem and quick action. This can be done by:

- Training all staff - including clerks, guards, door-keepers or switchboard operators - to react in an agreed upon fashion (sound the alarm, call for help) when a woman arrives at the facility with an obstetric emergency or pregnancy complication or when the facility is notified that a woman is being referred;
- Conducting clinical or emergency drills with staff to ensure their readiness at all levels;
- Ensuring that access is not blocked (keys are available) and equipment is in working order (daily checks) and staff are properly trained to use it;
- Having norms and protocols (and knowing how to use them) to recognize a genuine emergency and knowing how to react immediately.
Pregnancy is typically a time of joy and anticipation. It can also be a time of anxiety and concern. Talking effectively with a woman and her family can help build the woman's trust and confidence in her health care providers.

Women who develop complications may have difficulty talking to the provider and explaining their problem. It is the responsibility of the entire health care team to speak with the woman respectfully and put her at ease. Focusing on the woman means that the health care provider and staff:

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

It is understandable to disagree with a woman's risky behaviour or a decision which has resulted in a delay in seeking care. It is not acceptable, however, to show disrespect for a woman or disregard for a medical condition that is a result of her behaviour. Provide corrective counselling after the complication has been dealt with, not before or during management of the problem.

RIGHTS OF WOMEN

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

- Every woman receiving care has a right to information about her health.
- Every woman has the right to discuss her concerns in an environment in which she feels confident.
- A woman should know in advance the type of procedure that is going to be performed.
- A woman (or her family, if necessary) should give informed consent before the provider performs any procedure.
- Procedures should be conducted in an environment (e.g. labour ward) in which the woman's right to privacy is respected.
- A woman should be made to feel as comfortable as possible when receiving services.
- The woman has a right to express her views about the service she receives.

When a provider talks to a woman about her pregnancy or a complication, s/he should use basic communication techniques. These techniques help the provider establish an honest, caring and trusting relationship with the woman. If a woman trusts the provider and feels that s/he has the best interests of the woman at heart, she will be more likely to return to the facility for delivery or come early if there is a complication.

COMMUNICATION TECHNIQUES

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
COMMUNICATION TECHNIQUES

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 surrounding 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 and modesty by closing the door or drawing curtains around the examination table.
- Let the woman know that she is being listened to and understood.
- Use supportive nonverbal communication such as nodding and smiling.
- Answer the woman’s questions directly in a 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 (feelings of ‘it can’t be true’);
- Guilt regarding possible responsibility;

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Anger (frequently directed towards health care staff but often masking anger that parents direct at themselves for “failure”);

- Bargaining (particularly if the patient hovers for a while between life and death);
- Depression and loss of self-esteem, which may be long-lasting;
- Isolation (feelings of being different or separate from others), which may be reinforced by care givers who may avoid people who experience loss;
- 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 in such situations.

EMOTIONAL AND PSYCHOLOGICAL SUPPORT

AT THE TIME OF THE EVENT

- Greet the women and introduce yourself.
- Listen who are distressed. to discuss their hurt and sorrow.
- Do not change the subject and move on to easier or less painful topics of conversation. Show empathy.
- Tell the woman/family as much as you can about what is happening. Understanding the situation and its management can reduce their anxiety and prepare them for what happens next.
- Be honest. Do not hesitate to admit what you do not know. Maintaining trust matters more than appearing knowledgeable.
- If language is a barrier to communication, find a translator.
- Do not pass the problem on to nursing staff or junior doctors.
- Ensure that the woman has a companion of her choice and, where possible, the same care giver throughout labour and delivery. Supportive companionship can enable a woman to face fear and pain, while reducing loneliness and distress.
- Where possible, encourage companions to take an active role in care. Position the companion at the top of the bed to allow the companion to focus on caring for the woman’s emotional needs.
- Both during and after the event, provide as much privacy as possible for the woman and her family.

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. Many women/families blame themselves for what has happened.
- Listen and express understanding and acceptance of the woman’s feelings. Nonverbal communication may speak louder than words: a squeeze of the hand or a look of concern can say an enormous amount.
- 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.

PSYCHOLOGICAL MORBIDITY

Postpartum emotional distress is fairly common after pregnancy and ranges from mild postpartum blues (affecting about 80% of women), to postpartum depression or psychosis. Postpartum psychosis can pose a threat to the life of the mother or baby.

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 obsessional thinking, fear of harming the baby or self, suicidal thoughts and depersonalization.

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.

Once established, postpartum depression requires psychological counselling and practical assistance. In general:

- 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.
• If depression is severe, consider referral to the psychiatrist.

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 infanticidal 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. In general:

• Provide psychological support and practical help (with the baby as well as with home care).

• Listen to the woman and provide support and encouragement. This is important for avoiding tragic outcomes.

• Lessen stress.

• Avoid dealing with emotional issues when the mother is unstable.

3. EMERGENCIES

Emergencies can happen suddenly, as with a convulsion, or they can develop as a result of a complication that is not properly managed or monitored.

PREVENTING EMERGENCIES

Most emergencies can be prevented by:

• careful planning;

• following clinical guidelines;

• close monitoring of the woman.

RESPONDING TO AN EMERGENCY

Responding to an emergency promptly and effectively requires that members of the clinical team know their roles and how the team should function to respond most effectively to emergencies. Team members should also know:

• clinical situations and their diagnoses and treatments;

• drugs and their use, administration and side effects;

• emergency equipment and how it functions.
INITIAL MANAGEMENT

In managing an emergency:

- Stay calm. Think logically and focus on the needs of the woman.
- Do not leave the woman unattended.
- Take charge. Avoid confusion by having one person in charge.
- Call for help. Have one person go for help and have another person gather emergency equipment and supplies (e.g. oxygen cylinder, emergency kit).
- If the woman is unconscious, assess the airway, breathing and circulation.
- If shock is suspected, immediately begin treatment. Even if signs of shock are not present, keep shock in mind as you evaluate the woman. Further worrisome status may develop rapidly. If it is important to begin treatment immediately.
- Position the woman lying down on her left side with her feet elevated. Loosen tight clothing.
- 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 and assess symptoms and signs.

4. 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);
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 (especially of inner eyelid, palms or around mouth);
- Sweating 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

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
Aim to replace two to three times the estimated fluid loss from bleeding.

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 cannulae.

5. 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;
- Handwashing 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 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.
- 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 (nonoperative) 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;
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.

6. REPLACEMENT FLUIDS: SIMPLE SUBSTITUTES FOR TRANSFUSION

Only normal saline (sodium chloride 0.9%) or balanced salt solutions that have a similar concentration of to plasma are effective replacement fluids. These should be available in all hospitals where IV replacement fluids are used.

Replacement fluids are used to replace abnormal losses of blood, plasma or other extracellular fluids by increasing the volume of the vascular compartment. They are used principally in:

- Management of women with established hypovolaemia (e.g. haemorrhagic shock);
- Maintenance of normovolaemia in women with on-going fluid losses (e.g. surgical blood loss).

INTRAVENOUS REPLACEMENT THERAPY

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.

CRYSTALLOID FLUIDS

- Crystalloid replacement fluids:
  - Contain a similar concentration of sodium to plasma;
  - Cannot enter cells because the cell membrane is impermeable to sodium;
  - Pass from the vascular compartment to the extracellular space (normally only a quarter of the volume of crystalloid infused remains in the vascular compartment) compartment.

  To restore circulating blood volume (intravascular volume), infuse crystalloids in a volume at least three times the volume lost.

COLLOID FLUIDS

- Colloid solutions are composed of a suspension of particles that are larger than crystalloids. Colloids tend to remain in the blood where they mimic plasma proteins to maintain or raise the colloid osmotic pressure of blood.

  Colloids are usually given in a volume equal to the blood volume lost. In many conditions where the capillary permeability is increased (e.g. trauma, sepsis),
SAFETY

Before giving any IV infusion:

- Check that the seal of the infusion bottle or bag is not broken;
- Check the expiry date;
- Check that the solution is clear and free from visible particles.

MAINTENANCE FLUID THERAPY

Maintenance fluids are crystalloid solutions, such as dextrose or dextrose in normal saline, used to replace normal physiological losses through skin, lungs, faeces and urine. If it is anticipated that the woman will receive IV fluids for 48 hours or more, infuse a balanced electrolyte solution (e.g. potassium chloride 1.5 g in 1 L IV fluids) with dextrose. The volume of maintenance fluids required by a woman will vary, particularly if the woman has fever or with high ambient temperature or humidity, when losses will increase.

7. 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 (See Box 1). For most obstetric procedures, the preparation is diluted to 0.5%, which gives the maximum effect with the least toxicity.
Box 1: 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 dilute solutions in adequate amounts;
- 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.
Episiotomy should not be performed routinely.

- Review for indications.

<table>
<thead>
<tr>
<th>Episiotomy should be considered in the case of:</th>
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<tbody>
<tr>
<td>• Complicated vaginal delivery (breech, shoulder dystocia, forceps, vacuum extraction)</td>
</tr>
<tr>
<td>• Scarring from female genital cutting or poorly healed previous third or fourth degree tears</td>
</tr>
<tr>
<td>• Fetal distress</td>
</tr>
</tbody>
</table>

- Apply antiseptic solution to the perineal area
- Provide emotional support and encouragement. Use local infiltration with lignocaine (See Box 1).
- 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**
Performing an episiotomy will cause bleeding. It should not, therefore, be done too early.

- Wearing high-level disinfected or sterile gloves, place two fingers between the baby’s head and perineum.
- Use scissors to cut 3–4 cm medially, then laterally (Fig. P-39, page 122). Use the baby’s edges and em-up the as they are of the 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 P-39: Infiltration of perineal tissue with local anaesthesia.
REPAIR OF EPISIOTOMY

It is important that absorbable sutures be used for closure. Polyglycolic sutures are preferred over chromic catgut for their superior strength, non-allergenic properties and slower absorption. Chromic catgut is less desirable in the repair of third or fourth degree tears.

- Close the perineal muscle using interrupted 2-0 sutures;
- Protect the vulva while inserting two fingers to hold head while suturing.

Start the repair about 1 cm above the 2-0 (top) of P-41 A, page 74):

- Start the repair about 1 cm above the 2-0 suture (Fig. P-40 A, page 73): Close the vaginal mucosa using continuous 2-0 suture (Fig. P-40 A, page 73):
  - At the opening, bring together cut edges of vaginal opening; Continue the suture to the level 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.

- Apply antiseptic solution to the area around the episiotomy
  - Apply antiseptic solution to the area around the episiotomy (page C-22).
- Consider giving another dose of lignocaine.
  - If the episiotomy is extended through the anal sphincter or rectal wall, close the vaginal mucosa using continuous 2-0 suture:
- Apply antiseptic solution to the area around the episiotomy (page C-22).

- Close the perineal muscle using interrupted 2-0 sutures;
**COMPLICATIONS**

- If a haematoma occurs, open and drain. If there are no signs of infection and bleeding has stopped, reclose the episiotomy.
- 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 (page C-35):
    - ampicillin 500 mg by mouth four times per day for five days;
    - ampicillin 500 mg by mouth four times per day for five days;
    - PLUS metronidazole 400 mg by mouth three times per day for five days.
  - If the infection is deep, involves muscles and is causing necrosis refer the patient to secondary care or prepare for emergency surgery (debridement + fasciitis), give a combination of antibiotics until necrotic tissue has been removed and the woman is fever-free for 48 hours (page C-35):
2. 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 degree perineal tears should be transferred to hospital after stabilizing
<table>
<thead>
<tr>
<th>Drugs (Trimester of risk)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Antihistamines</strong></td>
<td>No evidence of teratogenicity; some packs of antihistamines sold to the public carry warning to avoid in pregnancy. Manufacturer of astemizole advises toxicity at high doses in animal studies.</td>
</tr>
<tr>
<td><strong>Antimalarials</strong></td>
<td>(1,3) Benefit of prophylaxis and treatment in Malaria outweighs risk;</td>
</tr>
<tr>
<td></td>
<td>Extrapyramidal effects in neonate occasionally reported</td>
</tr>
<tr>
<td><strong>Antipsychotics</strong></td>
<td>(3)</td>
</tr>
<tr>
<td></td>
<td>Depress neonatal respiration. Benzodiazepines cause neonatal drowsiness, hypotonia, and withdrawal symp-toms. Avoid large doses and regular use; short-acting benzodiazepines preferable to long acting.</td>
</tr>
<tr>
<td><strong>Anxiolytics and Hypnotics</strong></td>
<td>(3)</td>
</tr>
<tr>
<td></td>
<td>Azathioprine (1) Spontaneous abortion may be more common</td>
</tr>
<tr>
<td></td>
<td>Barbiturates (3) Withdrawal effects in neonate;</td>
</tr>
<tr>
<td></td>
<td>Beta-blockers (3) May cause intra-uterine growth retardation, neonatal hypogla-caemia and bradycardia; risk greater in severe hypertension.</td>
</tr>
<tr>
<td></td>
<td>Bisphosphonates</td>
</tr>
<tr>
<td></td>
<td>Calcium-channel Blockers (1,3) May inhibit labour and manufacturers advise that diltiazem and some dihydro-pyridines are teratogenic in animals</td>
</tr>
<tr>
<td></td>
<td>Carbamazepine (1) May be small risk of teratogenesis including increased risk of neural tube defects (screening advised);</td>
</tr>
<tr>
<td></td>
<td>Carbinoxolone (3) Avoid; causes sodium retention with oedema</td>
</tr>
</tbody>
</table>

**ACE Inhibitors**
(2,3) Avoid; may adversely affect fetal and neonatal blood pressure control and renal function; also possible, skull defects and oligohydramnios; toxicity in animal studies.

**Alcohol**
(1,2) Regular daily drinking is teratogenic ('fetal alcohol syndrome') and cause growth retardation; occasional single drinks probably safe to avoid in pregnancy. Withdrawal syndrome may occur in babies of alcoholic mothers. Aminoglutaric acid Avoid toxicity in animal studies and may affect fetal sexual development.

**Aminoglycosides**
(2,3) Auditory or vestibular nerve damage; risk greatest with streptomycin; probably very small with gentamicin and tobramycin.

**Amlodarone**
(2,3) Possible risk of neonatal goitre; use only if no alternative.

**Anabolic Steroids**
(1,2,3) Masculinization of female fetus.

**Anaesthetics, General**
(3) Depress neonatal respiration. Aspirin (3) Impaired platelet function and risk of haemorrhage; delayed onset and increased duration of labour with increased blood loss; avoid analgesic doses if possible in last week; low doses probably not harmful; with high doses, closure of fetal ductus arteriosus in utero and possible persistent pulmonary hypertension of newborn; kernicterus in jaundiced neonates.

**Anaesthetics, Local**
(3) With large doses, neonatal respiratory depression, hypotonia, and bradycardia after paracervical or epidural block.

**Androgens**
(1,2,3) Masculinisation of female fetus.

**Anticoagulants**
(1,2,3) Heparin Osteoporosis has been reported after prolonged use.

**Oral Anticoagulants**
(1,2,3) Congenital malformations; fetal and neonatal haemorrhage.

**Antidepressants**
Fluoxetine, Fluvoxamine, No evidence of harm but manufacturers advise avoid unless compelling reasons.

**MAOIs, Paroxetine, Sertraline**
(1,2,3) Tricyclic (and related) (3) Tachycardia, irritability, muscle spasms, and convulsions in neonate reported occasionally.

**Antiepileptics**
Benefits of treatment outweighs risk to fetus; risk of teratogenicity greater if more than one drug used.
Induction in Pregnancy (continued)

<table>
<thead>
<tr>
<th>Drugs (Trimester of risk)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Carbimazole (2,3)</td>
<td>Neonatal goitre and hypothyroidism. Has been associated with aplasia cutis of the neonate.</td>
</tr>
<tr>
<td>Chenodeoxycholic (1,2,3)</td>
<td>Theoretical risk of effects on fetal metabolism</td>
</tr>
<tr>
<td>Chloramphenicol (3)</td>
<td>Neonatal &quot;grey syndrome&quot;</td>
</tr>
<tr>
<td>Clofibrate (1,2,3)</td>
<td>Avoid— theoretical possibility of interference with embryonic growth and development due to anticholesterol effect.</td>
</tr>
<tr>
<td>Clonipramine</td>
<td>Possible effects on fetal development</td>
</tr>
<tr>
<td>Clozapine</td>
<td>Manufacturer advises avoid</td>
</tr>
<tr>
<td>Corticosteroids (2,3)</td>
<td>Benefit of treatment, eg. in asthma, outweighs risk; high doses (&gt;10 mg prednisolone daily) may produce fetal and neonatal adrenal suppression; corticosteroid cover required by mother during labour.</td>
</tr>
<tr>
<td>Co-trimoxazole (1,3)</td>
<td>Possible teratogenic risk (trimethoprim a folate antagonist). Neonatal haemolysis and methaemoglobinemia; fear of increased risk of kernicterus in neonates appears to be unfounded.</td>
</tr>
<tr>
<td>Cyclosporin (3)</td>
<td>May cause fetal growth retardation</td>
</tr>
<tr>
<td>Cytotoxic drugs (1)</td>
<td>Most are teratogenic</td>
</tr>
<tr>
<td>Danazol (1,2,3)</td>
<td>Has weak androgenic effects and virilisation of female fetus reported.</td>
</tr>
<tr>
<td>Dapsone (3)</td>
<td>Neonatal haemolysis and methaemoglobinemia; folate supplements should be given to mother</td>
</tr>
<tr>
<td>Desferrioxamine</td>
<td>Manufacturer advise toxicity in animal studies</td>
</tr>
<tr>
<td>Dimethoate (1,2,3)</td>
<td>Feminisation of male fetus (due to cyproterone)</td>
</tr>
<tr>
<td>Diazoxide (2,3)</td>
<td>Prolonged use may produce alopecia and impaired glucose tolerance in neonate; inhibits uterine activity during labour.</td>
</tr>
<tr>
<td>Diethylpropion</td>
<td>Avoid—congenital malformation reported to CSM.</td>
</tr>
<tr>
<td>Dysoxpyramide (3)</td>
<td>May induce labour</td>
</tr>
<tr>
<td>Distigmine</td>
<td>Manufacturer advises avoid (may stimulate uterine contractions)</td>
</tr>
<tr>
<td>Disulfiram (1)</td>
<td>High concentrations of acetaldehyde which occur in presence of alcohol may be teratogenic.</td>
</tr>
<tr>
<td>Diuretics (3)</td>
<td>Not used to treat hypertension in pregnancy; thiazides may cause neonatal thrombocytopenia.</td>
</tr>
<tr>
<td>Ethamsylate (1)</td>
<td>May be teratogenic</td>
</tr>
<tr>
<td>Ergotamine (1,2,3)</td>
<td>Oxytocic effect on uterus.</td>
</tr>
<tr>
<td>Ethosuximide (1)</td>
<td>May possibly be teratogenic</td>
</tr>
<tr>
<td>Etreotide (1,2,3)</td>
<td>Teratogenic; Effective contraception should be used for at least a month before treatment, during treatment and at least for two years after stopping.</td>
</tr>
<tr>
<td>Fenfluramine (1,3)</td>
<td>Possible teratogenic risk (pyrimethamine a folate antagonist). Neonatal haemolysis and methaemoglobinemia; fear of increased risk if kernicterus in neonates appears to be unfounded.</td>
</tr>
<tr>
<td>Fenofibrate (1,2,3)</td>
<td>Manufacturers advise toxicity in animal studies</td>
</tr>
<tr>
<td>Flecalide</td>
<td>Manufacturers advise toxicity in animal studies</td>
</tr>
<tr>
<td>Fluoxetine</td>
<td>Manufacturers advise toxicity in animal studies</td>
</tr>
<tr>
<td>Flucytosine (1)</td>
<td>Possible teratogenic risk</td>
</tr>
<tr>
<td>Gold Auranofin</td>
<td>Manufacturer advises teratogenicity in animal studies; effective contraception should be used during and for at least 6 months after treatment.</td>
</tr>
<tr>
<td>Anastrozole (1,2,3)</td>
<td>No good evidence of harm but avoid if possible</td>
</tr>
<tr>
<td>Griseofulvin</td>
<td>CRM advises avoid (fetotoxicity and teratogenicity in animals)</td>
</tr>
<tr>
<td>Growth Hormone</td>
<td>Avoid on theoretical grounds</td>
</tr>
<tr>
<td>Guanethidine (3)</td>
<td>Postural hypotension and reduced uteroplacental perfusion; should not be used to treat hypertension in pregnancy.</td>
</tr>
<tr>
<td>Halofantrine (1)</td>
<td>Manufacturers advise teratogenicity in animal studies.</td>
</tr>
<tr>
<td>Hydralazine (1)</td>
<td>Manufacturers advise teratogenicity in animal studies.</td>
</tr>
</tbody>
</table>
Hydroxychloroquine
Avoid for rheumatic disease
Idoxuridine
Manufacturers advise toxicity in animal studies
Interferons
Manufacturers recommend avoid unless compelling reasons; not for chronic active hepatitis during pregnancy.
Indine & Iodides
(2,3) Neonatal goitre and hypothyroidism
Radioactive iodine
(1,2,3) Permanent hypothyroidism—avoid
Isotsertimina
(1,2,3) Teratogenic; effective contraception must be used for at least 1 month before treatment, during treatment and for at least 1 month after stopping.
Itraconazole
Manufacturers advice teratogenicity in animal studies.
Ketoconazole
Manufacturer advises teratogenicity in animal studies; packs carry a warning to avoid in pregnancy.
Levadopa
Manufacturers advise toxicity in animal studies
Lindane
Manufacturer advises toxicity in animal studies
Lithium
(1,2,3) Dose requirements increased; congenital malformations neonatal goitre reported; lithium toxicity (hypotonia and cyanosis) in neonate if maternal therapy poorly controlled.
Mefitoleum
(1,3) Possible teratogenic risk (pyrimethamine a folic acid antagonist). Neonatal haemolytic and methemo-globinaemia (due to dapsone); folic supplements should be given to mother.
Meflazadine
Manufacturer advises toxicity in animal studies.
Mefranquin
(1) Manufacturer advises teratogenicity in animal studies; avoid for prophylaxis.
Mefrazonol
(1,2,3) Avoid—may reduce placental perfusion
Metformin
(1,2,3) Avoid
Metronidazole
Manufacturer advises avoidance of high-dose regimens
Metropone
Avoid (may impair biosynthesis of fetal-placental steroids).

<table>
<thead>
<tr>
<th>Drugs (Trimester of risk)</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mifepristone</td>
<td>Manufacturer advises that if treatment fails, essential that pregnancy be terminated by another method.</td>
</tr>
<tr>
<td>Misoprostol</td>
<td>(1,2,3) Avoid; increases uterine tone</td>
</tr>
<tr>
<td>Methyldopa</td>
<td>(3) Neonatal hiruritis reported</td>
</tr>
<tr>
<td>Neostigmine</td>
<td>(3) Neonatal myasthenia with large doses</td>
</tr>
<tr>
<td>Nitrofurantoin</td>
<td>(3) May produce neonatal haemolytic if used at term</td>
</tr>
<tr>
<td>Noradrenaline</td>
<td>(1,2,3) Avoid may reduce placental perfusion</td>
</tr>
<tr>
<td>NSAIDs</td>
<td>(3) With regular use closure of fetal ductus arteriosus in utero and possibly persistent pulmonary hypertension of the new born. Delayed onset and increased duration of labour.</td>
</tr>
<tr>
<td>Octreotide</td>
<td>(1,2,3) Avoid; possible effect on fetal growth</td>
</tr>
<tr>
<td>Omeprazole</td>
<td>Manufacturer advises toxicity in animal studies</td>
</tr>
<tr>
<td>Opioid Analgesics</td>
<td>(1,3) Avoid papaveretum (contains noscapine which may be teratogenic). Depress neonatal respiration; withdrawal effects in neonates of dependent mothers; gastric stasis and risk of inhalation pneumonia in mother during labour.</td>
</tr>
<tr>
<td>Penicillin</td>
<td>(1,2,3) Fetal abnormalities reported rarely; avoid if possible.</td>
</tr>
<tr>
<td>Phenobarbitone</td>
<td>(1,3) Congenital malformations. Neonatal bleeding tendency-prophylactic vitamin K1 should be given; see also Antiepileptics.</td>
</tr>
<tr>
<td>Phenyltoxins</td>
<td>(1,2) Congenital malformations. Folate supplements should be given to mother (reduced absorption). Neonatal bleeding tendency-prophylactic vitamin K1 should be given. Caution in interpreting plasma concentrations—bound may be reduced but free (i.e. effective) unchanged.</td>
</tr>
<tr>
<td>Piperazine</td>
<td>No clinical evidence of harm but packs sold to the general public carry a warning to avoid in pregnancy except on medical advice.</td>
</tr>
<tr>
<td>Podophyllin resins</td>
<td>(1,2,3) Avoid—neonatal death and teratogenesis have been reported.</td>
</tr>
<tr>
<td>Povidone—Iodine</td>
<td>(2,3) Sufficient iodine may be absorbed to affect the fetal thyroid.</td>
</tr>
<tr>
<td>Drugs (Trimester of Risk)</td>
<td>Comments</td>
</tr>
<tr>
<td>--------------------------</td>
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</tr>
<tr>
<td><strong>Prolonged</strong> (3)</td>
<td>Neonatal methaemoglobinemia; see also Anaesthetics, Local</td>
</tr>
<tr>
<td><strong>Primaquine</strong> (3)</td>
<td>Neonatal haemolysis and methaemoglobinemia; see also Antimalarials</td>
</tr>
<tr>
<td><strong>Promethazine</strong> (3)</td>
<td>Neonatal methaemoglobinemia; see also Anaesthetics, Local</td>
</tr>
<tr>
<td><strong>Progestogens</strong> (1)</td>
<td>High doses may possibly be teratogenic.</td>
</tr>
<tr>
<td><strong>Proguanil</strong></td>
<td>Folate supplements should be given to mother; see also Antimalarials.</td>
</tr>
<tr>
<td><strong>Propylthiouracil</strong> (2,3)</td>
<td>Neonatal goitre and hypothyroidism.</td>
</tr>
<tr>
<td><strong>Prothionamide</strong> (1)</td>
<td>May be teratogenic</td>
</tr>
<tr>
<td><strong>Pyridostigmine</strong> (3)</td>
<td>Neonatal myasthenia with large doses</td>
</tr>
<tr>
<td><strong>Pyrimethamine</strong> (1)</td>
<td>Possible teratogenic risk (folate antagonist); folate supplements should be given to mother; see also Antimalarials.</td>
</tr>
<tr>
<td><strong>Quinine</strong> (1)</td>
<td>High doses are teratogenic; but in malaria benefit of treatment outweighs risk.</td>
</tr>
<tr>
<td><strong>Quinolones</strong> (1,2,3)</td>
<td>Arthropathy in animal studies.</td>
</tr>
<tr>
<td><strong>Rifampicin</strong> (1,3)</td>
<td>Manufacturers advise very high doses teratogenic in animal studies. Risk of neonatal bleeding may be increased.</td>
</tr>
<tr>
<td><strong>Salbutamol</strong> (3)</td>
<td>Large parenteral doses given at term for asthma could delay onset of labour.</td>
</tr>
<tr>
<td><strong>Simvastatin</strong></td>
<td>Manufacturer advises toxicity in animal studies.</td>
</tr>
<tr>
<td><strong>Spironolactone</strong></td>
<td>Manufacturers advise toxicity in animal studies.</td>
</tr>
<tr>
<td><strong>Steroids</strong> (1)</td>
<td>High doses associated with vaginal carcinomas, urogenital abnormalities, and reduced fertility in female offspring.</td>
</tr>
<tr>
<td><strong>Steoptokinase</strong> (1,2,3)</td>
<td>Possibility of premature separation of placenta in first 18 weeks; theoretical possibility of fetal haemorrhage throughout pregnancy; avoid postpartum use-maternal haemorrhage.</td>
</tr>
<tr>
<td><strong>Sulphasalazine</strong> (3)</td>
<td>Theoretical risk of neonatal haemolysis; folic acid supplements should be given to mother.</td>
</tr>
<tr>
<td><strong>Sulphonamides</strong> (3)</td>
<td>Neonatal haemolysis and methaemoglobinemia; fear of increased risk of kernicterus in neonates appears to be unfounded.</td>
</tr>
<tr>
<td><strong>Sulphonylureas</strong> (3)</td>
<td>Neonatal hypoglycaemia; insulin is normally substituted in all diabetics; if oral drugs are used therapy should be stopped at least 2 days before delivery.</td>
</tr>
<tr>
<td><strong>Tamoxifen</strong> (1)</td>
<td>Possible effect on foetal development.</td>
</tr>
<tr>
<td><strong>Terbutaline</strong> (3)</td>
<td>Large parenteral doses given at term for asthma could delay onset of labour.</td>
</tr>
<tr>
<td><strong>Tetracyclines</strong> (2,3)</td>
<td>Dental discoloration; maternal hepatotoxicity with large parenteral doses.</td>
</tr>
<tr>
<td><strong>Theophylline</strong> (3)</td>
<td>Neonatal irritability and apnoeas have been reported.</td>
</tr>
<tr>
<td><strong>Thebendazole</strong> (1)</td>
<td>Neonatal irritability and apnoeas have been reported.</td>
</tr>
<tr>
<td><strong>Thiazides</strong> (3)</td>
<td>May cause neonatal thrombocytopenia; see also Diuretics.</td>
</tr>
<tr>
<td><strong>Tikimazole</strong> (1)</td>
<td>Tocainide Manufacturer advises toxicity in animal studies.</td>
</tr>
<tr>
<td><strong>Trichloroethylene</strong> (1,2,3)</td>
<td>Interferes with placental sex hormone production.</td>
</tr>
<tr>
<td><strong>Trimestaphan</strong> (3)</td>
<td>Avoid. Risk of paralytic ileus in newborn.</td>
</tr>
<tr>
<td><strong>Trimethoprim</strong> (1)</td>
<td>Possible teratogenic risk (folate antagonist).</td>
</tr>
<tr>
<td><strong>Urokinase</strong> (1,2,3)</td>
<td>Possibility of premature separation of placenta in first 18 weeks; theoretical possibility of fetal haemorrhage throughout pregnancy; avoid postpartum use-maternal haemorrhage.</td>
</tr>
<tr>
<td><strong>Valproate</strong> (1,3)</td>
<td>Increased risk of neural tube defects (screening advised); neonatal bleeding and hepatoxicity also reported.</td>
</tr>
<tr>
<td><strong>Vigabatrin</strong></td>
<td>Manufacturer advises toxicity in animal studies.</td>
</tr>
<tr>
<td><strong>Vitamin A</strong> (2)</td>
<td>Excessive doses may be teratogenic.</td>
</tr>
<tr>
<td><strong>Xamoterol</strong></td>
<td>Manufacturer advises toxicity in animal studies.</td>
</tr>
</tbody>
</table>