

Obstetrics Manual for Merrysilver Clinics

Participant's Manual
2008



Uttar Pradesh Social Franchising Project

A project supported by USAID & SIFPSA. Implemented by HLPFPT



Preface

HLFPPT is an organization committed to work with various partners pioneering innovations for bettering health outcomes for the poor. Merrygold Health Network is one of such innovations in the field of Social Franchising.

Merrygold Health Network, aims towards achieving an objective of improving Maternal and Child Health through increased access to low cost – high quality healthcare services, for rural and urban working poor in Uttar Pradesh. In U.P. Social Franchising Project (supported by USAID and SIFPSA), HLPPT as an implementing agency, will be establishing 70 fully franchised Merrygold Hospitals at district level, 700 partially franchised Merrysilver Clinics at block level and will be working with more than 10,000 Tarang partners (ASHAs, Chemists, Fare price shop owners, Tarang health committee members, Opinion leaders, Anganwadi workers, Depot holders) and AYUSH practitioners at the village level by 2010. Two model hospitals are already established in Kanpur and Agra focusing on maternal and child health care.

In our endeavour to make this a successful model, it was felt that training of doctors, nurses and other team members will be a key component to improve the quality of service delivery and equip the staff with appropriate knowledge and skills.

This training manual on “*Obstetrics Manual for Merrysilver Clinics - 2008*” has been designed for the doctors of Level 2 and can be used as a reference guide. The inputs and feedbacks of review committee members from SIFPSA and ITAP, has been added in this manual.

Great care has been taken to make this manual as comprehensive, relevant and unambiguous and relevant as possible and hope this would serve as a ready reckoner and enabling tool in skilling the Merrysilver Network.

HLFPPT

Acknowledgement

In order to build the capacity of Merrysilver doctors at block level; I present this manual on “*Obstetrics Manual for Merrysilver Clinics - 2008*”. The purpose of this manual is to update the knowledge and skill of doctors on diagnosis, management and treatment guidelines at Merrysilver Clinics. This manual is the result of sincere intent, aspirations and hard work of all those who are an integral part of the network.

I am grateful to Mr. G. Manoj, (CEO, HLPPT) who has shown faith in my entire team to undertake the task of preparing this manual.

My sincere thanks to Mr. Rajeev Kapoor I.A.S. (Executive Director - SIFPSA & Mission Director - NRHM), Mr. S. Krishnaswamy (General Manager Private Sector - SIFPSA), Dr. M. K. Sinha (General Manager Public Sector – SIFPSA), Ms. Savita Chauhan (Dy. General Manager Private Sector - SIFPSA), Dr. Lovleen Johari (Senior Reproductive Health Advisor, USAID) and Ms. Shuvi Sharma (Manager - Social Marketing & Franchising, ITAP) for their support and encouragement for developing this manual.

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The manual has been pre tested by UPSF training team at both the L0 hospitals at Kanpur and Agra. Efforts made by Mr. Shashi Sharma, Mr. I.B. Srivastava, Mr. N.K.Pandey from HLPPT, in identifying Merrysilver members and organizing trainings was commendable.

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Abbreviations

AIDS	Acquired Immuno Deficiency Syndrome
ANC	Ante Natal Care
ANM	Auxiliary Nurse Midwife
APH	Ante Partum Hemorrhage
ASHA	Accredited Social Health Worker
AWW	Angan Wadi Worker
BP	Blood Pressure
CPD	Cephalo - pelvic Disproportion
CS	Cesarean Section
CVS	Cerebro-Vascular Accidents
EDD	Expected Date of Delivery
FHR	Foetal Heart Rate
FHS	Foetal Heart Sound
HIV	Human Immunodeficiency Virus
HLFPPT	Hindustan Latex Family Planning Promotion Trust
IFA	Iron and Folic Acid
IUD	Intra Uterine Death
LAM	Lactational Amenorrhoea Method
LMP	Last Menstrual period
MTP	Medical Termination of Pregnancy
PHC	Primary Health Center
PIH	Pregnancy Induced Hypertension
PPH	Post Partum Hemorrhage
PPNDT	Preconception Pre-Natal Diagnostic Techniques
P/V	Per vaginum
RR	Respiratory rate
PROM	Premature Rupture of Membranes
TT	Tetanus Toxoid

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About the Manual

This manual has been designed for the doctors of Merrysilver clinics / hospital practicing at block levels of Merrygold health Network in Uttar Pradesh. It provides insight on various protocols and update their technical knowledge on Obstetrics. It can be used as a reference guide for diagnosis, management, treatment and referrals for complications.

The manual has been divided into four modules and further into units. The modules are –

Module 1 Antenatal History, Examination, Laboratory tests, Interventions and Counseling

Module 2 Complications during pregnancy

Module 3 Care and management of Labour and Complications

Module 4. Management of third stage of labour.

MODULE 1

Antenatal Care

Unit 1.1	Antenatal History
Unit 1.2	Examination
Unit 1.3	Laboratory Investigation
Unit 1.4	Interventions
Unit 1.5	Counselling

About this Module

This module is written to update knowledge of Merry silver doctors. It comprises of five units. These units contain learning objectives, concepts and explain in detail the clinical guidelines to be followed at Merrysilver clinics.

Unit 1.1 Antenatal History

Learning Objectives

- Tell the patient about importance of early registration.
- Take detailed obstetric history including information about previous pregnancies and any other complications

1.1.1 Introduction

Pregnancy is not a disease but every pregnancy is at risk. Ensure that Antenatal care (ANC) is used as an opportunity to detect and treat any complication during pregnancy. Effective ANC can provide healthy mother and healthy baby as outcome. However, one must realize that even with the most effective screening tools available, one can not predict which woman will develop complications related to pregnancy.

- | |
|---|
| <ul style="list-style-type: none">• Recognize that “Every pregnancy is at risk”.• Ensure that ANC is used as an opportunity to detect and treat existing problems.• Make sure that services are available to manage obstetric emergencies when they occur.• Prepare pregnant women and their families for the eventuality of an emergency. |
|---|

1.1.2 Objectives of Antenatal Care

- To diagnose pregnancy (first visit only, if required)
- To identify any complications during previous pregnancies that may have a bearing on the present one
- To identify any medical or obstetric condition(s) that may complicate the present pregnancy.

1.1.3 Early registration/ First visit

The first visit or registration of a pregnant woman for ANC should take place as soon as the pregnancy is suspected. Ideally, first visit should take place in the first three months of pregnancy (first trimester). However, even if a woman comes late, she should be

registered and given care according to the gestational age and her needs. Various community based functionaries like Auxilliary Nurses and Midwives (ANM), Accredited Social Health Activists (ASHA), Anganwadi workers (AWW), Members of Mahila Mandals and Self-help groups should be encouraged to identify pregnant women in the community and motivate them for ante-natal care and subsequent institutional delivery.

Importance of Early Registration

- Assessment of health status of mother to assess base line information on blood pressure, weight etc.
- Help the woman to recall her LMP.
- Screen the complications early and manage them locally or refer them to the appropriate institution for further management (L0/L1).
- Give first dose of Inj. Tetanus Toxoid (Inj. TT) as soon as pregnancy is identified.
- Be alert to the possibility of a female foeticide [Refer Ministry of Health & F.W, Govt. of India guidelines for the Medical Termination of Pregnancy and outcome of a Preconception Pre Natal Diagnosis test (PPNDT)]
- Provide plenty of time to counsel the woman and her family.
- To start Iron and Folic acid tablets at least for 100 days starting from 14-16 weeks of pregnancy.

1.1.4 Institutional requirements

- Instruments like stethoscope, sphygmomanometer, weighing scale, and inch-tape and preferably facility for haemoglobin estimation, urine routine examination should be available.
- Cordial and friendly behaviour.
- Listen to woman's problems with attention, offer advice where ever possible or **refer to the next level i.e. L0/L1 hospital.**
- Maintain privacy during conducting abdominal palpation.
- Record all details in the antenatal card and the antenatal register.

1.1.5 History taking

- Ask for date of 1st day of the last menstrual period (LMP)
- Calculate the **Expected Date of Delivery (EDD) = LMP + 9months and 7 days.**
- Calculate Gestational age in weeks:
Say, Examination date is 12/07/2007
LMP is 05/05/2007; EDD is 12/02/2007
Gestational age will be:
26 days of May 2007
30 days of June 2007
12 days of July 2007
Total 68 days i.e. 9 weeks 5 days.

Note: LMP refers to the first day of the woman's last menstrual period. Please ensure that the woman is not referring to the date of her first missed period. This mistake will give a wrong gestational age and EDD by 4 weeks.

- If woman is unable to remember the exact date, encourage her to remember some major event/festival, etc. which she might link with her LMP. A calendar of Indian system of months, dates and local festival might be helpful. If the exact date of LMP is not known and it is late in the pregnancy, ask for the date when the foetal movements were felt first. This is known as "Quickening" and is felt around 20 weeks of gestation. Also assess the fundal height to estimate the gestational age. Calculate the EDD based on these, and make a special note in the records of such cases.
- If the woman has undergone a test to confirm her pregnancy, ask her the approximate date when it was done, and also after how many days of amenorrhoea. This will also help estimating her LMP.
- Ask for regularity of the menstrual cycle and the duration of the menstrual cycle. The calculation of gestational age given above is based on the assumption that the menstrual cycle was regular and it was a 28-30 days' cycle.

1.1.6 Antenatal Card

Antenatal card should be duly filled in for every woman registered, and handed over to the pregnant woman with the instruction that she should bring the card for all her subsequent visits/check-ups. She should also carry it along at the time of delivery.

1.1.7 Number and timing of visits

Ensure that every woman makes at least 3 Antenatal visits apart from registration. In cases of pregnancy without complications, these visits should be sufficient. Ideally, the registration should be done as soon as the pregnancy is suspected and second visit should be scheduled between 4th and 6th month (around 26 weeks). The third visit should be planned in the 8th month (32 weeks) and the fourth visit in the 9th month (36 weeks).

1.1.8 Common complaints during pregnancy

- Nausea and Vomiting
- Heartburn
- Constipation
- Increased frequency of urination

1.1.9 Danger signs

- Fever

- Palpitations, easy fatigability and breathlessness at rest
- Generalized swelling of the body, puffiness of the face
- Passing smaller amounts of urine
- Vaginal discharge
- Vaginal bleeding
- Leaking of watery fluid per vagina (P/V)
- Decreased or absent foetal movements

Ask for -

- The total number of earlier pregnancies and deliveries
- Abortion(s)
- Premature birth(s), twins or multiple pregnancies
- Stillbirths(s) or neonatal loss
- Hypertensive disorder of pregnancies(if not know, ask for a history of convulsion in previous pregnancies)
- Prolonged labour
- Obstructed labour
- Malpresentation, such as breech delivery
- Ante partum hemorrhage
- Postpartum hemorrhage
- Assisted delivery (forceps or vacuum extraction)
- Delivery by caesarean section
- Birth weight of previous baby
- Any surgery on the reproductive tract (e.g. uterine surgery, cone biopsy, uterine perforation during an MTP, etc.)
- Iso-immunization (Rh-ve) in the previous pregnancy (ask her for the history of any costly injection given to her within 72 hours of her previous delivery)
- History of drug intake or allergies or if she is taking any drug that might be harmful to the foetus.
- Any treatment taken or drugs taken for infertility. If yes, then these women have a higher chance of having twins and other multiple pregnancies.
- History of intake of habit-forming or harmful substances
- If she takes tobacco (chewing or smoking) and/or alcohol. If yes, she needs to be counseled to discontinue them during pregnancy, as they harm the developing foetus. Even after the delivery, the woman should be advised to continue to abstain from taking alcohol and tobacco because it may cause other complications such as addiction and/or cancer.

Refer the women to the near L0/L1 if her obstetric history reveals any of the following:

- **previous stillbirth or neonatal loss**
- **history of three or more spontaneous consecutive abortions**
- **birth weight of the previous baby <2500gm**
- **birth weight of the previous baby >4500gm**

- **hospital admission for hypertension or pre-eclampsia/eclampsia in previous pregnancy**
- **pervious surgery on the reproductive tract/operative delivery**
- **iso-immunization (Rh-ve) in the previous pregnancy**

1.1.10 History for systemic illness (es)

- Hypertension
- Diabetes
- Breathlessness on exertion, palpitation
- Chronic cough, blood in the sputum, prolonged fever (tuberculosis)
- Renal disease
- Convulsions (epilepsy)
- Attacks of Breathlessness or Dama (Asthma)
- Rashes
- Jaundice

1.1.11 Family history of systemic illness

- If the woman does not have any of the above-mentioned systemic illnesses, ask for a family history of hypertension, diabetes and tuberculosis. If present, such a history predisposes the woman to developing the same, during pregnancy (e.g. hypertensive disorders of pregnancy, gestational diabetes, etc.). As pregnancy is a physiologically stressful period, it can unmask the underlying tendency to develop these disorders.

In addition ask for family history of:

- Thalassaemia or whether anybody in her family has received blood transfusions.
- Delivery of twins and/or the delivery of an infant with congenital malformation, as the presence of such a history in the family increase the chances of the woman giving birth to a child with the same defect.

Unit 1.2 Examination

Learning Objectives:

- Know about various examinations done during pregnancy.
- Measure client's weight accurately using the equipment correctly
- Will be able to understand the basis of weight gain in pregnancy
- Will be able to understand the normal pattern of Blood Pressure during pregnancy
- Develop skills in monitoring progress and foetal growth, and checking foetal lie and presentation.

1.2.1 Physical Examination

The activities will remain same for all visits, but readings of the first visit are to be taken as baseline and compared with the later readings.

Weight

- Normally, a woman should gain 09 to 11 kg during her pregnancy. After the first trimester, a pregnant woman gains around 2 kg every month or 0.5 kg per week. To calculate the expected weight gain since her previous visit, multiply the number of weeks elapsed since the previous visit by 0.5 kg. This should be compared with the actual weight gained.
- If the weight gain is only 05 to 06 kg during her pregnancy, probably the diet is not enough, with less than the required amount of calories. Inadequate dietary intake can be suspected if the woman has gained less than 2 kg per month. She needs to be put on food supplementation. You should do the counseling for Diet and Rest. A low weight gain usually points towards intrauterine growth retardation (IUGR) and results in a low birth-weight baby.
- Excessive weight gain (more than 3 kg in a month) should arouse the suspicion of pre-eclampsia/twins (multiple pregnancies). Take the woman's BP, and test her urine to check if she has proteinuria. **Refer the woman to L0/L1.**

The following points should be kept in mind while measuring weight:

- The weighing machine should be checked for "Zero error" before measuring weight.
- The woman should be wearing light clothing.
- She should stand erect on the weighing machine, so that her weight is evenly distributed on the platform.
- The weight must be measured to the nearest 100 gm.

Blood Pressure:

- Measure BP of pregnant women AT EVERY VISIT. This is important to rule out hypertensive disorders of pregnancy. If BP is high (more than 140/90 mmHg; or diastolic more than 90 mmHg), check the BP again after 1 hour. If it is still high, check woman's urine for presence of albumin, as the combination of a high BP

and proteinuria is sufficient to categorize the woman as having pre-eclampsia.

Refer her to L0/L1.

- If diastolic BP of woman is above 110 mmHg, it is a danger sign pointing towards imminent eclampsia. Such a woman must be referred to **L0/L1/FRU IMMEDIATELY.**
- A woman with pregnancy-induced hypertension (PIH) /pre-eclampsia requires hospitalization at **L0/L1.**

Pallor:

- Look for pallor at the lower conjunctiva, palms and nails, oral mucosa and tongue of the woman for anaemia.

Respiratory Rate (RR):

- Important if the woman complains of breathlessness. If RR is >30/min and anaemia is present, the woman may be having severe anaemia and need **to be referred to L0/L1.**
- In case of RR>30/min associated with other associated medical problems, she **may be referred to L0/L1.**

Oedema:

- Presence of pedal oedema with breathlessness may be due to anaemia. Presence of generalized oedema or puffiness of the face might be pre-eclampsia.

1.2.2 Abdominal Examination

Abdominal examination is done to monitor the progress of pregnancy and foetal growth and to check the foetal lie and presentation.

Fundal Height:

This indicates the progress of pregnancy and foetal growth. The uterus becomes an abdominal organ after 12 weeks of gestation. The gestational age (in weeks) can be estimated from the fundal height (in cm) after 24 weeks of gestation.

If there is any disparity between the fundal height and gestational age as calculated from LMP, the woman **should be referred to L0/L1.** If there is a difference of 3 cm or more, or if there is no growth compared to the previous check-up, these are considered significant signs, and the woman requires further investigations.

If the height of the uterus is more than that indicated by the period of amenorrhoea, the possible reasons could be:

- Wrong date of LMP
- Full bladder
- Multiple pregnancies
- Polyhydramnios
- Hydatidiform mole

- Pregnancy with a pelvic tumour

If the height of the uterus is less than that indicated by the period of amenorrhoea, the possible reasons could be:

- wrong date of LMP
- IUGR (Intra-uterine growth Retardation,
- Missed abortion
- Intrauterine death (IUD)

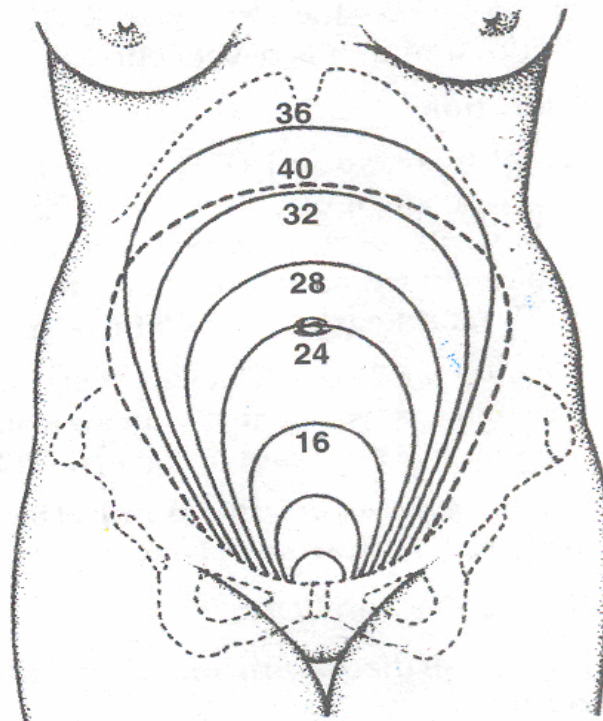
Measuring the Fundal Height-

- Ask woman to empty her bladder completely immediately before proceeding with the abdominal examination. This is important as even a half full bladder might result in an increase in the fundal height.
- Ask the woman to lie on her back with the upper part of her body supported with pillows or a rolled bed sheet. Never make a pregnant woman lie flat on her back for a prolonged period as the heavy uterus may compress the main blood vessels returning to the heart and cause fainting (supine hypotension syndrome). Ask her to partially flex her hips and knees.
- Stand on the right side of the woman to examine her in a systematic manner.
- Attention of the woman may be diverted by conversation.
- Examiner's hands must be warm and should be placed on the abdomen till the uterus is relaxed before beginning palpation. Poking the abdomen with the fingertips should be avoided at all costs.
- To measure fundal height, place the ulnar (medial) border of the hand on the woman's abdomen, parallel to the symphysis pubis. Start from the xiphisternum (the lower end of the sternum) and gradually proceed downwards towards the symphysis pubis, lifting your hand between each step down, till you finally feel a bulge/resistance, which is the uterine fundus.
- Mark the level of the fundus. Using a measuring tape (a tailor's tape made of non-stretchable material), measure the distance (in cm) from the upper border of the symphysis pubis to the top of the fundus. After 24 weeks of gestation, the fundal height (in cm) corresponds to the gestational age in weeks (within 1-2 cm deviation). Remember, at the time of measuring the fundal height in cm, the legs of the woman should be straight and not flexed.
- The supine position in late pregnancy and labour has also been shown to be associated with higher fundal height readings; therefore, this can give rise to false readings and an inaccurate estimate of the gestational age. It is therefore recommended that the woman lies down in a semi-recumbent position when measuring the fundal height.
- When same operator is measuring the fundal height at each visit, this technique has been shown to have good predictive value, especially for identifying major intrauterine growth retardation and multiple pregnancies.
- Normal fundal height varies at different weeks of pregnancy. To estimate the gestational age through the fundal height, the abdomen is divided into parts by imaginary lines. The most important one is the one passing through the umbilicus. Then divide the lower abdomen (below the umbilicus) into 3 parts with 2 equidistant lines between the symphysis pubis and the umbilicus. Similarly,

divide the upper abdomen into three parts, again with two imaginary equidistant lines, between the umbilicus and the xiphisternum.

- Note the fundal height and judge as given below:
 - At 12th week: just palpable above the symphysis pubis
 - At 16th week: lower one-third of the distance between symphysis pubis and umbilicus
 - At 20th week: two-thirds of the distance between symphysis pubis and umbilicus
 - At 24th week: at the level of the umbilicus
 - At 28th week: lower one-third of the distance between umbilicus and xiphisternum
 - At 32nd week: two-thirds of the distance between the umbilicus and xiphisternum
 - At 36th week: at the level of the xiphisternum
 - At 40th week: sinks back to the level of the 32nd week, but the flanks are full, unlike that in the 32nd week.

Fig 1: Fundal height at different weeks



Foetal lie and Presentation

Palpate for the foetal lie and assess whether it is longitudinal, transverse or oblique. Remember, even if a mal-presentation is diagnosed before 36 weeks, no active management or intervention is recommended at that point of time. Physician should be able to recognize a transverse lie. Missing it can be disastrous because there is no mechanism by which a woman with a transverse lie can deliver normally/vaginally. This woman needs a caesarean section, and hence should be **referred to L0/L1**, having the facility for a caesarean section. Failure to do a timely caesarean section in this woman can lead to obstructed labour, rupture of the uterus and death of the woman. The foetal presentation should also be checked, especially in the case of a longitudinal lie, to see whether the presenting part is the vertex (normal) or any other part of the cephalic end (face, brow), or a breech.

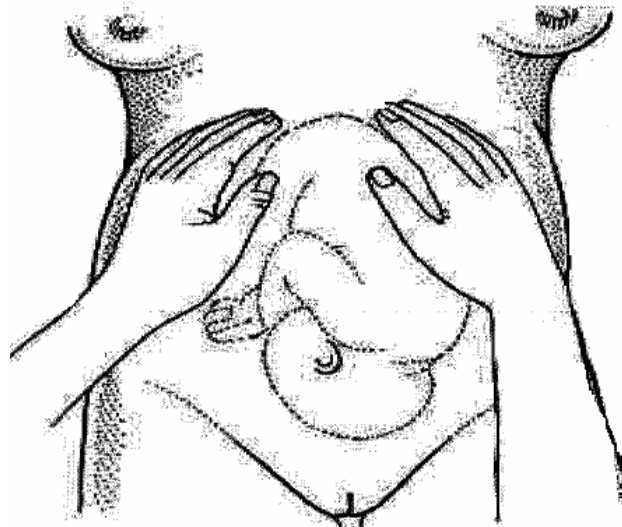
Determining the Foetal Lie and Presentation

- The pelvic grips (4 in number) are performed to determine the lie and the presenting part of the foetus.
- Ask the woman to lie down on her back. Ask her to partly flex her legs at the knees and hips and keep them slightly apart.

Grip 1: Fundal palpation / Fundal grip

- Fundal palpation helps to determine the lie and presentation of the foetus.
- Palpate uterine fundus gently by laying both hands on the sides of fundus to determine which pole of the foetus (the breech or the head) is occupying the uterine fundus. The head feels like a hard globular mass which is ballotable (moves between the fingertips of the two hands), whereas the breech is of a softer consistency and has an indefinite outline.
- In the case of a transverse lie, the fundal grip will be empty.

Fig 2: Fundal Grip

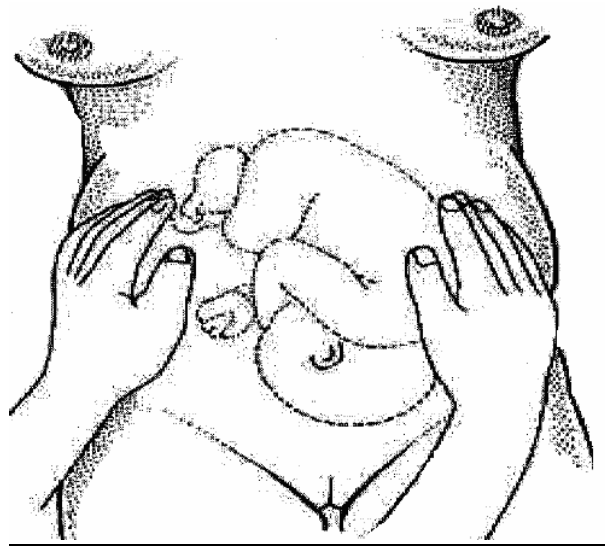


- The pelvic grips (4 in number) are performed to determine the lie and the presenting part of the foetus.

Grip 2: Lateral palpation / lateral grip

- This palpation is used to locate the back of the foetus to determine the position.
- Place the hands on either side of the uterus at the level of umbilicus and apply gentle pressure. The back of foetus is felt like a continuous hard, flat surface on one side of midline and limbs are felt as irregular small knobs on the other side.
- In the case of a transverse lie, foetal back is felt transversely, i.e. stretching across both sides of the midline.

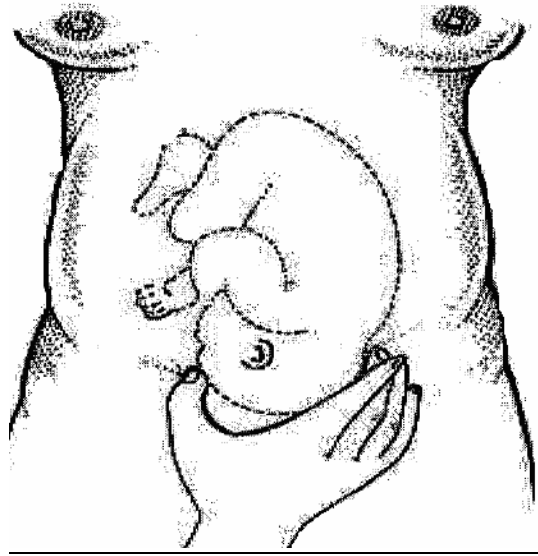
Fig 3: Lateral Grip



Grip 3: The first pelvic grip / superficial pelvic grip

- The third maneuver must be performed gently, or it will cause pain to the woman. Spread right hand widely over symphysis pubis, with ulnar border of hand touching the symphysis pubis. Try to approximate finger and thumb, putting gentle but deep pressure over the lower part of uterus. The presenting part can be felt between fingers and thumb. Determine whether it is the head or the breech (in the case of a longitudinal lie).
- Mobility of presenting part can also be determined by gripping the presenting part and trying to move it. If it can be moved, it indicates that presenting part is free and not "engaged". Foetal head is said to be engaged if the widest diameter of foetal head has passed through brim of the pelvis, and only one pole of the head or only two finger-breadths are felt above the pelvic brim.
- In the case of a transverse lie, the third grip will be empty.

Fig 4: Superficial Pelvic Grip



Grip 4: The second pelvic grip/deep pelvic grip

- To perform this grip, examiner must face the foot end of the mother. Keep both palms on the sides of the uterus, with fingers held close together, pointing downwards and inwards, and examiner should palpate to recognize the presenting part.
- If the presenting part is head (felt like a firm, round mass, which is ballotable, unless engaged), this maneuver, in experienced hands, will also be able to tell you whether it is in a state of flexion.
- If the woman cannot relax her muscles, tell her to flex her legs slightly and to breathe deeply. Palpate in between the deep breath

Fig 5: Deep Pelvic Grip

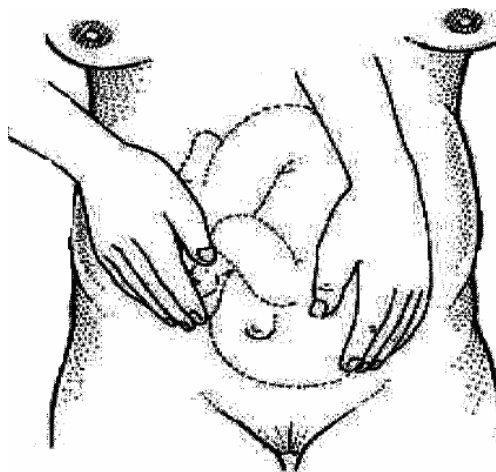


Fig 6: All the Grips at a glance

Fundal Grip

Lateral Grip

Superficial Pelvic Grip

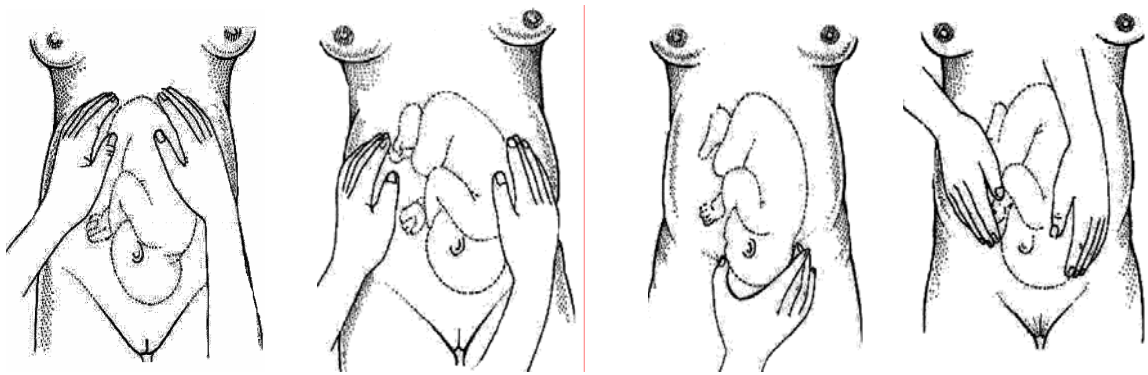
Deep Pelvic Grip

Fig.1

Fig.2

Fig.3

Fig.4



1.2.3 Foetal heart sound (FHS) and Rate

Auscultation of the Foetal Heart Sound (FHS)-

- Use a foetoscope or the bell of stethoscope to auscultate for the FHS. Remember, FHS is best heard on the side where spine/back of the foetus is. For a normal vertex presentation, FHS is best heard midway between the line joining umbilicus and anterior superior iliac spine, on the side where the back is.
- In a breech presentation, FHS is usually heard above the umbilicus.
- Count the foetal heart rate for one full minute.
- If foetal heart rate (FHR) is between 120 and 160 beats per minute, it is normal. Both foetal bradycardia (FHR less than 120 per minute) and foetal tachycardia (FHR more than 160 per minute) indicate foetal distress.

Note:

- A normal foetal heart rate may slow during a contraction but usually recovers to normal as soon as the uterus relaxes.
- A very slow FHS in the absence of contractions or persisting after contractions is suggestive of Foetal Distress.
- A rapid FHR may be a response to maternal fever, drugs causing rapid maternal heart rate (e.g. terbutaline), hypertension or amnionitis. In the absence of rapid maternal heart rate, a rapid FHR should be considered a sign of Foetal Distress. Remember that the FHR is not heard before 24 weeks of pregnancy; hence checking for the FHR should start only from the second visit.

All foetal distress cases should be referred to L0 / L1

1.2.4 Multiple Pregnancy

This must be suspected if the following are present on examination:

- An unexpectedly large uterus for the estimated gestational age
- Multiple foetal parts are felt on abdominal palpation

If a multiple pregnancy is suspected, **refer the woman to the next level i.e. L0/L1** for confirmation, and advice place of delivery accordingly.

1.2.5 Breast examination

Observe the size and shape of the nipples for the presence of inverted or flat nipples. Try and pull out the nipples to see if they can be pulled out easily. Flat nipples that can be pulled out do not interfere with breastfeeding. Truly inverted nipples might create a problem in carrying out successful breastfeeding. If present, the woman must be advised to pull on the nipples and roll them between the thumb and the index finger.

Crusting and soreness of the nipples must be looked for. If present, woman must be advised regarding breast hygiene. If the nipples do not heal, **refer the woman to the L0/L1 Hospital**. Breasts need to be palpated for any lumps or tenderness. If present, **refer the woman to the L0 / L1 hospital**.

<p>It is not advisable to give a pregnant woman any medication during the first trimester, unless absolutely essential. Even then, it must be ensured that the drugs given are proven to be safe when taken during pregnancy, and do not have effects on the foetus which cause disability (teratogenic). Further information has been provided in subsequent pages.</p>
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Unit 1.3 Laboratory Investigations

Learning Objectives:

- Participants will be able to understand the importance of various laboratory investigations done during pregnancy.
- Know about various test conducted at various levels of Merrygold health network.

The following laboratory investigations should be available at Merrysilver clinics:

1.3.1 Haemoglobin (Hb) Estimation

Estimation of the level of haemoglobin is essential for the following:

- To detect the presence of anaemia and, if present, to what degree;
- For further management, prevention and/or treatment of anaemia. If anaemia is severe, the woman may need referral for taking injectable iron preparations or undergo a blood transfusion.
- For diagnosing postpartum haemorrhage (PPH) in an anaemic woman, in whom a smaller amount of blood loss is taken as PPH. Estimate the Hb levels of pregnant women at the initial antenatal visit and again at around 28 weeks (2nd visit).
 - The initial Hb level will serve as a baseline to compare with the later results at 28 weeks. An Hb level below 11g/dl at any time in pregnancy is considered to be anaemia; an Hb level of 7 to 11 g/dl as moderate anaemia, and less than 7 g/dl as severe anaemia.
 - If the woman is found to be anaemic, start her on the therapeutic dose of IFA. Estimate the Hb level again after 1 month. If there is no rise in the Hb level, refer the woman to a higher facility with a good laboratory infrastructure and trained personnel (L0/L1) to find out the cause of anaemia.

1.3.2 Blood group & Rh factor

Encourage the woman to get her blood tested for blood group and Rh factor. In case of haemorrhage, precious time will be saved and, if required, blood transfusion can be started much earlier and a life can be saved. It is also an essential pre-requisite in case the woman wishes to go for an MTP.

1.3.3 Urine testing for Albumin

Urine testing for albumin (protein) is essential for diagnosis of pre-eclampsia and eclampsia.

1.3.4 Urine testing for Sugar

This test is used to diagnose gestational diabetes.

If a woman's urine is positive for sugar, she should be referred to the L0/L1 hospital.

Unit 1.4 Interventions

Learning Objectives:

- Know about guidelines on various interventions during pregnancy

1.4.1 Iron & folic acid (IFA) supplementation

- Inform the pregnant woman about need for increased requirements of iron during pregnancy and the dangers of anaemia to pregnant women.
- All pregnant women need to be given one tablet of IFA (100 mg elemental iron and 0.5 mg folic acid) every day for at least 100 days, starting after first trimester at 14 to 16 weeks of gestation. This is the dose of IFA given to prevent anaemia (prophylactic dose).
- If a woman is anaemic (Hb <11 g/dl) or she has pallor, give her two IFA tablets per day for three months. This means a woman with anaemia in pregnancy needs to take at least 200 tablets of IFA. This is the dose of IFA needed to correct anaemia (therapeutic dose).
- Women with severe anaemia (Hb <7 g/dl) or those who have breathlessness and tachycardia due to anaemia, should be started on the therapeutic dose of IFA and also referred to the next level (L0/L1) for further management.
- Many women do not take IFA regularly due to some common side-effects. The necessity of taking IFA and the dangers associated with anaemia should be explained to the mother.
- Educate her:
 - Though tablets should be taken preferably early in the morning on an empty stomach, she may take the tablets with meals or at night. This will help avoid nausea.
 - She should not worry if she passes black stools. This is normal while taking IFA tablets.
 - If she has constipation, she should drink more water.
 - These side-effects are not serious.
 - She should avoid taking tablets with tea or coffee as they reduce the absorption of iron.
 - Tablets containing IFA may make her feel less tired than before. However, despite feeling better, she should not stop taking the tablets.
 - Note:
 - If recurrent vomiting after Iron supplementation: Change Sulfate to Fumarate and then to Gluconate
 - If repeated non-compliance and intolerance ascertained, then parental Iron supplementation may be considered at L0/L1 Hospital
 - She should return to the doctor if she has problems taking IFA tablets. Refer such women to the specialist at L0/L1 for further management.

1.4.2 Injection Tetanus Toxoid (Inj. TT) administration

Administration of two doses of Inj. TT to a pregnant woman is an important step in the prevention of neonatal tetanus (tetanus of the newborn). First dose of TT should be given just after first trimester, or as soon as the woman registers for ANC, whichever is later. The second dose is to be given one month after the first dose, but at least one month before the EDD. [Please refer to the Govt. of India's National Immunization Schedule for the same.]

- Inj. TT is to be given as 0.5 ml per dose, deep IM in the upper arm.

- Inform the woman that there may be slight swelling, pain and/or redness at the injection site for a day or two.

1.4.3 Malaria in Pregnancy

In cases of malaria in pregnancy-

- Encourage bed rest.
- Ensure adequate hydration.
- Keep shock in mind while evaluating.
- Advice microscopic testing of thick and thin blood film.
- Accordingly, start anti-malarial drugs.

The anti-malarial drugs when given in therapeutic dose have got no effect on uterine contraction unless the uterus is irritable. Folic acid 10mg. should be given daily to prevent megaloblastic anaemia. Chloroquine is considered safe in all three trimester of pregnancy.

Prophylaxis:

- Tab. Chloroquine (Lariago) 2 tablets a week is quite effective until 6 weeks postpartum.

Therapeutic:

- Treatment of choice is Tab. Chloroquine (Lariago) 4 tablets (600mg) to start, followed by 2 tablets after 6 hours, thereafter 1 tablet twice daily for 2 days, for Chloroquine sensitive P. Vivax and P. Falciparum malaria.
- Before considering second line of drugs for treatment failure with chloroquine, please exclude poor patient compliance and a new infection of P. Falciparum. If diagnostic testing is not available, manage as a mixed infection. Treatment choices are-
 - a) Sulfadoxine / Pyrimethamin three tablets by mouth as a single dose.

Note: Sulfadoxine / Pyrimethamin should not be used if the woman is allergic to sulfonamides

- b) Quinine salt 10 mg/kg body weight by mouth three times daily for seven days.

Unit 1.5 Counseling

Learning Objectives:

- Understand the need of birth preparedness
- Know about various components of birth preparedness
- Understand various symptoms, signs, probable diagnosis and action required during complications

1.5.1 Birth preparedness and complication readiness

Four out of ten pregnant or postpartum women experience some complication related to their pregnancy; for about 15% of these women, the complication will be potentially life-threatening and will require immediate emergency obstetric care. Since most of these complications cannot be predicted, every pregnancy necessitates preparation for a possible emergency.

ALL PREGNANT WOMEN MUST BE ENCOURAGED TO OPT FOR AN INSTITUTIONAL DELIVERY.

Explain to the woman why delivery at a health facility is recommended. Tell her that any complication may develop during delivery; complications are not always predictable; they can cost the life of the mother and/or the baby. Also a health facility has staff, equipment, supplies and drugs available to provide the best care, if needed. It even has a referral system should the need to refer arise.

1.5.2 Identify support people

These people are needed to help the woman care for her children and/or household, arrange for transportation, and/or accompany the woman to the health facility in an emergency. Seek help from either the close relatives of the woman or community-based health functionaries such as the AWW and the TBA.

1.5.3 Finances

The woman and her family should be given an estimate of expected expenses for delivery and related aspects (such as transport, etc.). They should also be advised to keep some emergency fund, or have a source for emergency funding, should a complication arise and more money is required than initially anticipated. Health personal should also be aware of the existing schemes that provide funds for maternal health, and any other schemes that may be launched from time to time. Help women and their families access these schemes and receive allocated funds to pay for the delivery.

1.5.4 Preparedness for blood donation

Haemorrhage, both antepartum and postpartum, is an important cause of maternal mortality. Blood transfusion can be life-saving in such cases. As blood cannot be "bought" one needs voluntary donors to replace the blood before it is issued for transfusion. Such donors (2-3 in number) must be ready, should the need arise.

1.5.5 Special categories of women

Special categories of women have been identified who should be given priority for additional nutrition during pregnancy. They include the following:

- Women with a reduction in the dietary intake below habitual levels during pregnancy
- Women who have an increased level of physical activity above the usual levels during pregnancy
- Women with a combination of both the above-mentioned factors
- Adolescent girls who become pregnant
- Women who become pregnant during lactation
- Women who become pregnant within two years of the previous delivery.

Woman's food intake should be especially rich in proteins, iron, vitamin A and other essential micronutrients. *The other members of the family*, especially those who take decisions regarding the type of food brought home and/or given to the pregnant woman, such as her husband and mother-in-law, should also be taken into confidence and counseled regarding the recommended diet for the pregnant woman. Ask for their assistance to help ensure that the woman eats enough and avoids hard physical work.

1.5.6 Dietary recommendations

The woman should be advised to eat more than her normal diet throughout her pregnancy. Remember, a pregnant woman needs about **300 extra kcal per day** compared to her usual diet. She should be told that she needs these extra calories for:

- Maintenance of her health as a mother
- The needs of the growing foetus
- Successful lactation.

Some of the recommended dietary items are cereals, milk and milk products such as curd; green leafy vegetables and other vegetables, pulses, eggs and meat, including fish and poultry (if the woman is a non-vegetarian), nuts (especially groundnuts), jaggery, fruits, etc. Give examples of the types of food, suggest preparations and how much to eat.

- Tell her about the locally available foods **rich** in iron such as groundnuts and jaggery. Tell the woman to avoid taking tobacco, tea, coffee or milk, especially within one hour of a meal, as they have been shown to interfere with the absorption of iron. Also advise her to take foods rich in proteins and vitamin C (e.g. Lemon, Amla, Guava, Oranges, etc.) as both help in the absorption of iron.
- The diet should be rich in **fiber** so that she does not have constipation.
- The diet should be advised keeping in mind the socioeconomic conditions, food habits and taste of the individual.
- **Food taboos** must be looked into while counseling the woman regarding her dietary intake. If there are taboos about nutritionally important foods, the woman should be advised against these taboos. In certain communities, food taboos exist for sex selection of the foetus. These, especially omission of certain foodstuffs from the diet, should be strongly discouraged.
- If a woman has PIH, she should be encouraged to eat a normal diet with no restrictions on fluid, calorie and/or salt intake; such restrictions do not prevent PIH from converting into pre-eclampsia, and may be harmful to the foetus.
- The woman should be advised to refrain from taking alcohol or smoking during pregnancy.
- The woman should be advised NOT to take any medication unless prescribed by a qualified health practitioner.

1.5.7 Sleep

- The woman should be advised to **sleep** for 8 hours at night and **rest** for another 2 hours during the day. She should be advised to refrain from doing heavy work, such as construction work and full-time farm labour work, as it can adversely affect birth weight of the baby. Other members of household should be taken into confidence and advised to help the woman in carrying out her routine household chores.
- All pregnant women should be told to avoid the supine position, especially in late pregnancy, as it affects both the maternal and the foetal physiology. During pregnancy, pressure exerted by the uterus on the main pelvic veins results in a reduced quantity of circulating blood reaching the right side of the heart. This causes reduced oxygenation to the brain and can therefore lead to a fainting attack, a condition referred to as **supine hypotension syndrome**. It can also result in abnormal FHR patterns, and may also cause a reduction in the placental blood flow. If supine position is necessary, a small pillow under the lower back at the level of pelvis is recommended.

1.5.8 Sex during Pregnancy

- It is safe to have sex throughout the pregnancy, as long as the pregnancy is "normal".
- Sex should be avoided during pregnancy if there is a risk of abortion (h/o previous recurrent spontaneous abortions), or a risk of a preterm delivery (h/o previous preterm labour).
- Some women experience a decreased desire for sex during pregnancy. The husband should be informed that this is normal and the woman's consent should be sought before engaging in sex. This is extremely important as forced and unsafe sex can have adverse consequences on the health of the mother and foetus, resulting in an abortion or preterm labour.
- Some couples find engaging in sex uncomfortable during pregnancy. Comfort of the woman should be ensured by her husband during sex.

1.5.9 Signs of labour

Advise the woman to come to Merry Silver clinic or contact the Merry Silver doctor, if she has any one of the following signs which indicate labour:

- A bloody, sticky discharge Pervaginum
- Painful abdominal contractions every 20 minutes or less
- The bag of waters has broken, and she has clear fluid coming out Pervaginum ("leaking").

Advise the woman to visit L0 or L1 hospital immediately if she has any of the following conditions:

- Any bleeding Pervaginum during pregnancy, and heavy (>500 ml) vaginal bleeding during and following delivery
- Severe headache with blurred vision
- Convulsions or loss of consciousness
- Labour lasting for more than 12 hours
- Failure of delivery of the placenta within 30 minutes of delivery
- Preterm labour (onset of labour before 34 weeks of gestation)
- Cases with leaking P/V (PROM)
- Continuous severe abdominal pain
- All cases of medical illnesses associated with pregnancy, such as diabetes mellitus, heart disease, asthma, etc. at the onset of labour pains

1.5.10 Breast feeding and Lactational Amenorrhoea Method (LAM) of Contraception-

Breast Feeding:

Pregnancy is the ideal time to counsel the mother regarding the benefits of breastfeeding her baby. Though breastfeeding is almost universal in India, a few points need to be emphasized to the would-be-mother.

- Counsel the mother that breastfeeding should ideally be initiated within half an hour of a normal delivery (or within two hours of a caesarean section, or as soon as the mother regains consciousness, in case she undergoes a caesarean section).
- It is common practice in India to delay initiation. Colostrum (the first milk) is thrown away, and pre-lacteal feeds are given instead. All these have obvious disadvantages. One, the pre-lacteal feed may not be hygienic and can cause an intestinal infection in the baby. Second, the baby is deprived of colostrum, which is very rich in protective antibodies.
- Most importantly, the sucking and rooting reflexes in the child, which are essential for the baby to successfully start breastfeeding, are the strongest immediately after delivery, making the process of initiation much easier for the mother and the baby. These reflexes gradually become weaker over the span of a few hours, thus making breastfeeding difficult later on.

Exclusive Breast feeding for 6 months - Emphasize to the mother that only breast milk and nothing but breast milk should be given to the baby for the first 6 months, not even water. Assure the mother that breast milk contains enough water to quench the baby's thirst (even in the peak of summer) and satisfy its hunger for the first 6 months. Take special care in the case of a female child to ensure that she is adequately breastfed and not discriminated against because of her sex.

Demand feeding - This refers to the practice of breastfeeding the child whenever he/she "demands" it, as can be made out by the child crying. The practice of feeding the child by the clock should be actively discouraged. After a few days of birth, most children will develop their own "hunger cycle" and will feed every 2-4 hours. Remember that each child is different as far as the feeding requirements and timings are concerned.

Practice of giving night feeds should be actively encouraged. Often, there is a misconception that breastfeeding the baby at night disturbs the mother's sleep, thus denying her of adequate rest. Inform the woman and her husband that this is not so. Night feeds help the baby to sleep more soundly.

Lactational Amenorrhoea Method (LAM) of Contraception - A temporary family planning method based on the natural effect of breast feeding on fertility, effectively prevents pregnancy at least for 6 months and may even be longer if a woman keeps breastfeeding often, day and night. The only conditions that limit use of LAM are conditions that make breast feeding difficult or that rule out breastfeeding.

LAM requires 3 (three) conditions and all must be met:

- The baby is less than 6 months old,
- Mother's menstrual period has not returned after last child birth,
- The baby is fully or near fully breastfed and fed often day and night i.e. at least 8-10 times a day, at least once in 4 hours, and at least once at night (night feeding regularly not more than 6 hours apart), and at least 85% of her baby's feeding should be from breast milk.

Caution: Woman must switch to another method of contraception as soon as any of the 3 LAM conditions is not fulfilled or followed.

MODULE 2

Complications during Pregnancy, Labour/Delivery and During Postpartum period

Unit 2.1	Introduction
Unit 2.2	Vaginal bleeding
Unit 2.3	Anaemia in Pregnancy
Unit 2.4	Convulsions
Unit 2.5	Hypertensive disorders in pregnancy
Unit 2.6	Preterm or pre-labour rupture of membranes (PROM)
Unit 2.7	Loss of foetal movements
Unit 2.8	Other problems during pregnancy

About this Module

This module updates Merry Silver doctors on complications during pregnancy, labour and during post partum care. It comprises of eight units. These units contains learning objectives, explain in details the clinical guidelines on diagnosis, management and referrals for complications.

Unit 2.1 Introduction

Maternal mortality occurs due to various pregnancy-related complications, childbirth or later during the puerperium due to haemorrhage, hypertensive disorders of pregnancy, abortion, obstructed labour or puerperal sepsis. For reducing maternal mortality and morbidity, skilled attendance at every birth and provision of emergency obstetric care are essential. The Merrysilver facilities are expected to start functioning round-the-clock and will provide basic emergency obstetric care services, including facilities for parenteral administration of antibiotics, anticonvulsant drugs, manual removal of the placenta, removal of the retained products of conception and assisted vaginal delivery. Each chapter in this module deals with a different complication. The guidelines in these chapters will help medical officers of the Merrysilver facility to manage common obstetric complications. It is essential for you to know your limitations, especially with reference to knowledge and skills, and also with reference to the infrastructure and equipment available at your facility. These guidelines specifically point to those situations when referrals are required. However, ensure that the woman's condition is stable before you transport her. Also make sure that she is given a proper referral slip. A good professional is expected to inform L0/L1 specialist about referral on phone and take advice whenever necessary during the procedure.

KEY MESSAGES

- Educate the woman, her family and the community regarding the danger signals during Pregnancy.
- Organize and ensure local arrangements for transporting the woman to a higher health facility should the need arise.
- Always refer the woman to the appropriate health facility with her detailed case record.
- Encourage and prepare the family members for blood donation should the need arise.
- Do not carry out a vaginal examination in women who have bleeding after 24 weeks of Pregnancy.
- Injecting oxytocin can help reduce bleeding in cases of atonic postpartum haemorrhage.
- Unless proved otherwise, assume that all cases of convulsions during pregnancy, labour and the postpartum period are due to eclampsia. The drug of choice for controlling eclamptic fits is injection magnesium sulphate.

Unit 2.2 Vaginal bleeding

Learning Objectives:

- Understand the probable causes of vaginal bleeding
- Learn diagnosis and management of vaginal bleeding during early pregnancy.
- Understand the probable criteria, signs and symptoms of Ante Partum Hemorrhage
- Learn diagnosis and management of Ante- Partum Hemorrhage.

2.2.1 Vaginal bleeding during early pregnancy

- This refers to vaginal bleeding before 20 weeks of pregnancy.
- The probable causes could be a threatened or spontaneous abortion, an ectopic pregnancy, or a hydatidiform mole. In some cases, it may be very early pregnancy, and the woman might not even be aware that she is pregnant.
- If the woman is bleeding profusely, i.e. she is soaking a pad or cloth in less than 5 minutes, or she is in shock, establish an intravenous line immediately, and start giving intravenous fluids rapidly.
- Prepare to transport the woman to nearest hospital having requisite expertise and facility.
- If the woman is sure of her pregnancy status, a vaginal examination may be carried out. In case of an incomplete spontaneous abortion, the cervical opening will be found to be open. If so, gently remove the retained products of conception from the uterine cavity with a finger. Ensure asepsis while carrying out a vaginal examination and evacuation.
- In case of light vaginal bleeding in early pregnancy (it might be a case of threatened abortion) or heavy bleeding which has decreased or stopped for the moment (it might be a case of complete abortion), observe the woman for 4 to 6 hours. Advise her complete bed rest. If the bleeding decreases or stops, reassure the woman and advise her to go home after you have checked her vital signs.
- After an abortion, the woman must also be advised on when to return for follow-up. She should visit you if she has –
 - Increased bleeding
 - Continued bleeding for two days
 - Foul-smelling vaginal discharge
 - Abdominal pain
 - Fever, feels unwell
 - Weakness, dizziness or fainting.

Table 1: Symptoms & Signs of ruptured and unruptured Ectopic Pregnancy

Unruptured Ectopic Pregnancy	Ruptured Ectopic Pregnancy
- Symptoms of early pregnancy (irregular spotting or bleeding, nausea, swelling of breasts, bluish discolouration of vagina and cervix, softening of cervix, slight uterine enlargement, increased urinary frequency)	- Collapse and weakness - Fast, weak pulse (110/min. or more) - Hypotension - Hypovolaemia - Acute abdominal and pelvic pain - Abdominal distension* - Rebound tenderness - Pallor

*Distended abdomen with shifting dullness may indicate free blood

Molar Pregnancy

If the diagnosis of molar pregnancy is certain, refer the woman to L0/L1 hospital for further necessary treatment.

2.2.2 Vaginal bleeding during Late Pregnancy

- Vaginal bleeding any time after 20 weeks of pregnancy is classified as Ante Partum Hemorrhage. The most serious causes are placenta praevia, abruptio placenta or a Rupture Uterus. Any bleeding (light or heavy) at this time of pregnancy is dangerous.
- Remember; **DO NOT do a vaginal examination in such cases.**
- **Refer these women to L0/L1 hospital, where facilities for carrying out a blood transfusion exist.**
- Insert an IV line and start IV fluids before referral.
- If the woman is bleeding heavily (soaking 1 cloth or pad in less than 5 minutes), or if she is in shock, give IV fluids rapidly.

2.2.3 Management of Ante-partum haemorrhage

Table 2: Assessment and Management of Antepartum Haemorrhage

<ul style="list-style-type: none"> - The bleeding is painless - The uterus is relaxed - The Foetal Heart Sound (FHS) is heard 	<ul style="list-style-type: none"> - Bleeding per vagina (P/V) with abdominal pain which is initially localized and then generalized - The uterus is tense and tender - Foetal parts are not easily felt - FHS is usually not heard but may be present 	<ul style="list-style-type: none"> - Shock - Tender abdomen - Uterine contour not felt - Superficial foetal parts - FHS not heard - Small, contracted uterus may be felt on one side of the lower abdomen
<p style="text-align: center;"><u>Placenta Praevia</u></p> <ul style="list-style-type: none"> - Arrange for blood donors - Start IV fluids - Check for shock - <u>Refer to L0/L1 hospital</u> 	<p style="text-align: center;"><u>Abruptio placenta</u></p> <ul style="list-style-type: none"> - Arrange for blood donors - Start IV fluids - Check for shock - <u>Refer to L0/L1 hospital</u> 	<p style="text-align: center;"><u>Rupture uterus</u></p> <ul style="list-style-type: none"> - Arrange for blood donors - Start IV fluids - Start Antibiotics - Check for shock - <u>Refer to L0/L1 hospital</u>

Do not conduct a vaginal examination

Unit 2.3 Anaemia in Pregnancy

Learning Objectives

- Understand and diagnose different forms of Anemia in pregnancy
- Learn the Management of Anemia in pregnant women

2.3.1 Definition

Anaemia in pregnancy is defined as an Hb level of <11 g/dl during pregnancy (and in the immediate postpartum period). A pregnant woman with an Hb level of <7 g/dl is said to have severe anaemia.

2.3.2 Diagnosis

Examine and investigate the woman for the following:

- Conjunctival pallor
- Severe palmar pallor
- Pallor of the tongue, palate and oral mucosa
- RR (count for 1 minute)
- Level of Hb

Table 3: Diagnosis of Anaemia and its severity

Symptoms and signs	Probable diagnosis
Haemoglobin >11 g/dl No pallor	No clinical Anaemia
Haemoglobin 7-11 g/dl OR Palmar or conjunctival pallor	Moderate Anaemia
Haemoglobin <7 g/dl AND/OR Severe palmar and conjunctival pallor or any pallor with any of the following: * >30 breaths/minute * Easy fatiguability * Breathlessness at rest	Severe anaemia

2.3.3 Management

a) No Anaemia (Hb >11 gm%)

- All woman must be given IFA tablet (with 100 mg elemental iron and 0.5 mg folic acid) once daily for 100 days (3 months) starting after the first trimester, as prophylactic dose. Counsel the woman on the need for compliance with treatment.

b) Moderate Anaemia (Hb 7-11 gm%)

- Give double the prophylactic dose of IFA, i.e. 1 tablet twice daily for 100 days (3 months).
- Counsel the woman on the need for compliance with treatment.

- Give appropriate anti-malarial drugs in accordance with the NAMP guidelines, especially if you are in a malaria-endemic zone.
- Give the woman an anti-helminthic for de-worming (Mebendazole 500 mg stat, or Albendazole 400 mg stat), especially if you are in a hookworm-endemic area. Do NOT give Albendazole in the first trimester; but it is safe for use from the second trimester onwards.
- Reassess the woman. If the Hb level increases, continue treatment.
- **However, if anaemia persists, refer the woman to specialist at L0/L1 hospital for typing the anaemia, finding out the cause, and advice for further management.**
- If a woman with moderate anaemia comes to you in labour, conduct the delivery at your centre, **but keep the following points in mind:**
 - Do not discharge her before 24 hours.
 - Check the Hb level after 3 days.
 - Give double the dose of iron (1 tablet of 100 mg twice a day) for 6 months postpartum.
- **Reassess the woman at the next postnatal visit (after 6 weeks). If there is no improvement, refer her to L0/L1 hospital.**

c) **Severe anaemia (Hb <7 gm%)**

- Revise the birth plan to conduct the delivery in a facility with blood transfusion services.
- Give treatment similar to that mentioned above
- Refer the woman to L0/L1 hospital for further investigations and treatment. This woman might also need a blood transfusion.
- If a woman with severe anaemia comes to you in the early first stage of labour, or postpartum, refer her urgently to L0/L1 hospital.

If such a woman comes in the late first stage or second stage of labour:

- Deliver the woman at the centre.
- Monitor the vital signs intensively during the delivery.
- Try to minimize blood loss during delivery.
- Refer her urgently to L0/L1 hospital after delivery. Ensure that the woman is stable before you refer her.
- Follow up the woman in two weeks to check the clinical progress, test results and compliance with treatment of double dose of iron (1 tablet twice a day) for 6 months post partum.

<p>In case of moderate to severe anaemia, Give 200 tablets of IFA during Ante-natal period.</p>
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If Hb% between 5 to 6.9 gm%

In Early pregnancy:

- Admit patient and investigate extensively to exclude serious causes like malaria, bone marrow abnormalities, Thalassaemia, chronic bleeding disorders, marrow abnormalities, leukaemia, etc.
- If Iron (Fe) deficiency confirmed and gestation age is :
 - Below 32 weeks - give oral iron 100 mg elemental iron with up to 2 mg folic acid till 12 weeks post partum.
 - Between 32 to 36 weeks - parenteral iron should be given **TRANSFER TO L0/L1**

iii. Over 36 weeks - whole blood transfusion **TRANSFER TO L0/L1**
If Hb% less than 5 gm%

*Packed cell transfusion with frusemide IV administered 30 min after initiating transfusion.
TRANSFER TO L0/L1

*If Congestive Cardiac Failure (CCF) - Packed cell transfusion. Urgent involvement of a physician, which means that the physician should be brought in and he should provide necessary treatment **TRANSFER TO L0/L1**

Indications of Blood Transfusion for Anemia in Pregnancy (At L0/L1)

If Pregnancy less than 36 weeks:

- a Haemoglobin 5.0 g/dl or below, even without clinical signs of cardiac failure or hypoxia
- b Haemoglobin between 5 and 7.0 g/dl and in the presence of the following conditions:
 - Established or incipient cardiac failure or clinical evidence of hypoxia
 - Pneumonia or any other serious bacterial infection
 - Malaria
 - Pre-existing heart disease, not causally related to the anaemia.

If Pregnancy 36 weeks or more:

- a Haemoglobin 6.0 g/dl or below with or without any other signs and symptoms
- b Haemoglobin between 6.0 g/dl and 8.0 g/dl and in the presence of the following conditions:
 - Established or incipient cardiac failure or clinical evidence of hypoxia
 - Pneumonia or any other serious bacterial infection
 - Malaria
 - Pre-existing heart disease, not causally related to the anaemia

For Elective CS with anaemia in cases with H/O APH, PPH and Previous CS, if:

- a Hb gm % 8.0 to 10.0 gms%: then keep serum ready for 'cross' matching (Blood Group must be known)
- b Hb% < 8.0 gm%: then 2 units of Blood 'cross' matched and made available.

Unit 2.4 Convulsions

Learning Objectives

- Know the reasons of convulsions
- Learn the Management of convulsions
- Convulsions that occur during pregnancy delivery or in the postpartum period should be assumed to be due to eclampsia, unless proved otherwise.

If the woman is convulsing, offer supportive care as the first step in the management. This includes the following:

- Do not leave the woman alone.
- Protect the woman from fall or injury.
- Ensure a clear airway and breathing.
- If the woman is unconscious, keep her on her back with her arms at the side; tilt her head backwards and lift her chin to open the airway.
- Remove from her mouth any obstruction or foreign body, if visible.
- After the convulsion is over, help her turn to a left lateral position. Keep the woman in this position throughout transportation.
- Keep a mouth gag between the upper and lower jaw to prevent tongue bite. (Do not attempt this during a convulsion.) The mouth gag should be available in the institution.
- Measure the BP and temperature of the woman. Maintain a record of these.
- Give the first dose of Inj. magnesium sulphate.
- Give 10 ml of Inj. magnesium sulphate deep IM in each buttock (a total of 20 ml of magnesium sulphate). It is important to ensure that this is given deep because otherwise it can lead to the formation of an abscess at the injection site. **Inform the woman that she may feel warm during the injection.**
- After receiving the magnesium sulphate the woman may have flushing, feel thirsty, have a headache, nausea or may even vomit.
- Do NOT repeat the dose of magnesium sulphate.
- Start an IV infusion, and give IV fluids slowly at the rate of 30 drops/minute
- Immediately arrange to **refer the woman to L0/L1 hospital**. Remember it is important to refer the woman to a health facility where resources and manpower for early termination of pregnancy are available as, in these cases; this intervention may be required to save the life of the woman.
- Ensure that the woman reaches the referral centre within 2 hours of receiving the first dose of magnesium sulphate.
- The management of a woman who has convulsions in the first stage of labour is similar to the management of such a case during pregnancy. Give the woman the first dose of Inj. Magnesium sulphate and **refer her to L0/L1 hospital**, where the process of delivery can be hastened.
- In case convulsions occur during labour and delivery is imminent, you may not have the time to transport the woman to a higher centre. Then try and deliver the baby in a domiciliary setting, after giving her the first dose of Inj. magnesium sulphate as detailed above. **Refer the woman to an L0/L1 hospital after delivery.**

Unit 2.5 Hypertensive disorders in pregnancy

Learning Objectives:

- Know the definition of hypertensive disorders in pregnancy.
- Equipped with the required knowledge to arrive at the precise diagnosis of hypertensive disorders in pregnancy.
- Learn the Management of patients coming with hypertensive disorders in pregnancy.

2.5.1 Definitions

Hypertension is defined as

- BP of 140/90 mm Hg or more
- Increase in the systolic pressure by 30 mm Hg or more (if the "usual level", i.e. BP taken before 16 weeks of gestation, is known).
- Increase in the diastolic pressure of 15 mmHg or more (if the "usual level" is known). An increase in the diastolic pressure is more significant because, unlike the systolic pressure, it is not affected by posture or excitement. It should be taken on at least two occasions, about 6 hours apart.

Hypertensive disorders in pregnancy includes -

- Pregnancy induced hypertension (hypertension with no proteinuria)
- Pre-eclampsia (hypertension with proteinuria)
- Eclampsia (pre-eclampsia with superadded convulsions)
- Chronic hypertension (hypertension antedating pregnancy and persisting postpartum)
- Chronic hypertension with superadded pre-eclampsia or eclampsia

2.5.2 Terms in hypertensive disorders

Pre-eclampsia Pre-eclampsia is a condition specific to pregnancy, arising after the 20th week of gestation, characterized by hypertension and proteinuria. Oedema may also be present.

Proteinuria is defined as a protein concentration of 0.3 g/L or more in at least two random urine samples collected 6 or more hours apart. A woman developing pre-eclampsia rarely has proteinuria before there is a rise in her BP. When proteinuria is present with a normal BP, it usually does not indicate pre-eclampsia but could indicate urinary tract infection (UTI), kidney disease or contamination of the sample, and is also found after prolonged standing.

Oedema, especially pedal oedema, is commonly seen in normal pregnancy and is, therefore, not a reliable sign of pre-eclampsia except when oedema of the hands and/or face starts suddenly. Sometimes oedema is not obvious on examination but manifests itself only by excessive weight gain (this is called occult oedema or hidden oedema). An excessive weight gain of 1 kg or more in a week (or 3 kg in a month) is indicative of pre-eclampsia (the normal weight gain is about 0.5 kg per week, or 2 kg in a month).

Oedema in a case of pre-eclampsia may occur at the following sites:

- The front of the legs (pre-tibial)/dorsum of the foot and over the ankles
- Hands/fingers

- Face, eyelids
- Abdominal wall
- Sacral area
- Vulva

2.5.3 Eclampsia

- Eclampsia is a condition peculiar to pregnant or recently delivered women. It is characterized by convulsions/fits followed by more or less prolonged coma. The woman usually has hypertension and proteinuria. The convulsions may occur in the antepartum, intrapartum or the postpartum period.
- Pre-eclampsia and eclampsia are part of the same spectrum of disorders with eclampsia being the severe form of the disease. Pre-eclampsia almost always precedes eclampsia. Not all cases follow an orderly progression from mild to severe disease; some women may develop severe pre-eclampsia or eclampsia suddenly.
- Sometimes convulsions seem to occur at apparently normal BP levels (although this is rare); in such cases, one should consider what is normal for each person. In some women, the "usual/normal" BP is low, in the order of 100/60 mm Hg, and in these individuals eclampsia could occur at a BP of 120/80 mmHg, which is usually considered normal, but represents hypertension in these women. Thus, it is re-emphasized that **it is the rise in BP (above the "usual" values) that counts more than the absolute value**

Fulminating Pre-eclampsia is severe pre-eclampsia that occurs suddenly. The woman can rapidly develop eclampsia. This is an obstetric emergency and management should start immediately.

Imminent eclampsia means that an eclamptic fit is likely to occur very soon. Symptoms of imminent eclampsia are:

- Severe headache
- Drowsiness
- Mental confusion
- Visual disturbances (e.g. blurred vision, flashes of light, double vision)
- Epigastric pain
- Nausea, vomiting
- Decreased urinary output

Table 4: Differential diagnosis of hypertensive disorders of pregnancy

Symptoms and signs	Probable diagnosis
<ul style="list-style-type: none"> • BP 140/90 mm Hg or more before the first 20 weeks of gestation 	Chronic hypertension
<ul style="list-style-type: none"> • BP 140/90 mm Hg or more before 20 weeks of gestation plus Proteinuria 	Chronic hypertension with superimposed pre-eclampsia
<ul style="list-style-type: none"> • Two readings of BP 140/90 mm Hg or more, taken at least 6 hours apart, after 20 weeks of gestation • No proteinuria 	Pregnancy-induced hypertension
<ul style="list-style-type: none"> • Two readings of BP >140/90 mm Hg but <160/110 mmHg, taken 6 hours apart, after 20 weeks of gestation • Proteinuria up to 2+ 	Mild pre-eclampsia
<ul style="list-style-type: none"> • BP 160/110 mm Hg or more, taken after 20 weeks of gestation • Proteinuria 3+ or more 	Severe pre-eclampsia
<ul style="list-style-type: none"> • Severe pre-eclampsia PLUS any two of the following: <ul style="list-style-type: none"> • Headache (increasing frequency, unrelieved by regular analgesics) • Clouding of vision • Pain in the upper abdomen (epigastric pain or pain in the right upper quadrant) • Oliguria (passing less than 400 ml urine in 24 hours) • Hyperreflexia (exaggerated knee jerk) • Pulmonary oedema 	Imminent eclampsia
<ul style="list-style-type: none"> • Convulsions BP 140/90 mmHg or more after 20 weeks of gestation; rarely only 110/90 mmHg • Proteinuria 2+ or more 	Eclampsia

Management

At each prenatal visit, check the woman's BP, test the urine for the presence of protein; examine her for generalized body oedema; and note her weight. Encourage every pregnant woman to come for the first ANC visit as early as possible in their pregnancy so that a baseline value for their BP can be obtained. If there is a rise in the BP, monitor the woman's BP weekly.

A) Mild pre-eclampsia

Gestation less than 37 weeks:

Allow the woman to stay at home and advise her to rest as much as possible. Ask her to return to the Merry silver clinic every week or ask the ANM / Female Health Assistant to ensure a weekly domiciliary visit for giving the following care to the woman.

At each visit:

- Check the BP
 - Test the urine for the presence of protein
 - Weigh the patient
 - Check for generalized body oedema
 - Exclude symptoms of severe pre-eclampsia
 - Monitor foetal growth, ask the woman about foetal movements
 - Check the FHR.
- Book the woman for delivery at the appropriate Centre.

Gestation more than 37 weeks:

In case there are signs of foetal compromise, assess the cervix and expedite delivery.

- Admit the woman to a hospital for observation and management.

In the hospital:

- Let the woman rest in a quiet room
- Check the BP 4-hourly (2-hourly if the woman is severely affected)
- Test the urine for the presence of protein twice daily
- Monitor the FHR twice daily
- Weigh the woman twice weekly, if possible
- Give antihypertensive drugs only if the diastolic pressure is 110 mm Hg or more.

B) Eclampsia (or severe pre-eclampsia)

Eclamptic fits can begin before, during or after delivery. The management is the same in each case but if the patient has not delivered, carry out the delivery as soon as possible.

The management of eclampsia involves six major steps:

- (a) Making sure that the woman can breathe
- (b) Controlling the fits
- (c) Controlling the BP
- (d) Controlling the fluid balance
- (e) Delivering the baby
- (f) Giving care after delivery

(a) Making sure that the woman can breathe:

This is achieved in four steps:

1. Place the woman on her left side (in the semi-prone position) so that mucus or saliva can drain out.
2. Clean the mouth and nostrils by applying gentle suction and remove the secretions.
3. Give oxygen (if available) and continue for five minutes after each fit, or longer if cyanosis persists.
4. Prevent injury to the tongue (tongue bite), by placing padded tongue blades or pads between her teeth, which are secured to prevent aspiration. (Do NOT attempt this during a convulsion.)

(b) Controlling the fits:

There are two widely accepted drugs for controlling fits: Magnesium sulphate or Diazepam. Remember, Diazepam is not the drug of first choice for managing eclamptic fits. It should be used only when Magnesium sulphate is not available.

Magnesium sulphate-

Administration of the drug: For the loading dose, give Inj. Magnesium sulphate 4 g (20 ml of 20% solution), slow IV, at the rate of 1 ml every minute. **Magnesium sulphate should not be given as a bolus.** (The woman may feel warm during the injection.)

Thereafter, also administer Inj. Magnesium sulphate IM. Initially, 5 g should be injected into each gluteus muscle (10 ml of 50% solution, in each buttock), deep IM, with 1 ml of 2% Lignocaine in the same syringe. In the absence of the doctor or trained staff, Inj. Magnesium sulphate may be given through the IM route only.

If convulsions recur: After 15 minutes, give an additional 2 g of Magnesium sulphate (10 ml of 20% solution) IV over 20 minutes. If the convulsions still continue, give Diazepam.

If referral is delayed for long, or the woman is in the late stage of labour, continue treatment as below:

Give 5 g of 50% Magnesium sulphate solution IM with 1 ml of 2% Lignocaine every 4 hours alternately in each buttock. **Catheterize her and refer her to L0/L1 hospital immediately.**

Before giving the next dose of Magnesium sulphate, ensure that:

- * The urine output is at least 100 ml per 4 hours;
 - * Knee jerk reflexes are present;
 - * The RR is at least 16 breaths/minute
- Postpone the next dose if the above criteria are not met.

Advantage: Magnesium sulphate has been shown to be more effective than Diazepam or Phenytoin in preventing the recurrence of fits.

Disadvantage: Magnesium sulphate can cause respiratory depression in the mother and foetus. This is why a rapid IV infusion should be avoided.

Precautions:

- Do NOT give 50% Magnesium sulphate solution IV without diluting it to 20%.
- Do NOT give a rapid IV infusion of Magnesium sulphate as it can cause respiratory failure or death.
- If respiratory depression occurs (RR <16 breaths/minute) after giving Magnesium sulphate, discontinue the drug. Give the antidote; Calcium Gluconate 1 g IV (10 ml of 10% solution) over a period of 10 minutes.

Diazepam

Diazepam is not the drug of first choice for a case of eclampsia. As per the Cochrane Review, Magnesium sulphate appears to be substantially more effective than Diazepam for the treatment of eclampsia. It should be used only when Magnesium sulphate is not available.

Administration of the drug:

Loading dose: Give 10 mg of Diazepam IV slowly over a period of 2 minutes. If convulsions recur, repeat the dose.

Maintenance dose: Give Diazepam 40 mg in 500 ml of IV fluids (Ringer lactate [R/L] or normal saline) titrated over 6-8 hours to keep the woman sedated but arousable. Do not give more than 100 mg in 24 hours.

Diazepam may also be given by the rectal route in case IV access is not possible.

Advantage: Diazepam may be more readily available than Magnesium sulphate.

Disadvantage: Diazepam can cross the placenta and cause problems in the foetus such as maintaining the body temperature and breathing difficulties while feeding.

Precautions:

- Diazepam can cause respiratory depression. Therefore, if the RR becomes <16 breaths/minute, stop the maintenance dose; give assisted ventilation using a bag and mask, if required.
- Never give Diazepam as an IV bolus as it can cause cardiac arrest.
- If there is maternal respiratory depression due to the use of Diazepam, it may compromise the foetus too.

Hence, if delivery is imminent, one should be prepared for neonatal resuscitation.

An excessive dose of Diazepam also increases the chances of hyperbilirubinaemia in the neonate.

(c) Controlling the blood pressure:

Antihypertensive therapy: During pregnancy, the BP can be influenced by many factors including the time of day, physical activity, position and anxiety. High BP alone has little effect on the outcome of pregnancy, but a rise in the BP is associated with other complications of which the most common is pre-eclampsia. Keeping in view the many factors that can influence BP, it is not surprising that there is often uncertainty about whether a specific abnormal reading is potentially harmful for the woman. If the diastolic BP is 110 mmHg or more, antihypertensive are highly recommended

There is no good evidence that any one antihypertensive is better than another for reducing the BP. However, Diazoxide is best avoided.

- **Nifedipine**

Nifedipine is the drug of choice for controlling the BP.

Dose and administration: The dose of Nifedipine is 5 mg orally. To avoid sudden hypotension, it is recommended that a 5 mg capsule of Nifedipine be punctured and initially only half the contents of the capsule, i.e. 2.5 mg of Nifedipine be given orally or sublingually to the woman. After 5 minutes, monitor the BP. If it is not dangerously low, give the remaining 2.5 mg, again, orally or sublingually. If the BP is still not brought under control, another 5 mg of the drug can be repeated similarly.

Refer the woman immediately to L0/L1 hospital.

Disadvantage: Nifedipine may cause a sudden and massive fall in BP. Hence, it should be used with caution, and the dose delivered slowly.

Precaution: Nifedipine, when used in conjunction with Magnesium sulphate, can cause a dangerous fall in BP. Hence, when Nifedipine and Magnesium sulphate are used together, the BP should be monitored carefully.

If Nifedipine not available, then Hydralazine may be used

- **Hydralazine**

Give Hydralazine 5 mg, slow IV. Take 3-4 minutes to give the injection. Monitor the BP carefully during this time. **Refer the woman immediately to L0/L1 hospital.**

If the diastolic BP remains >90 mmHg during transportation, you can repeat the dose at 30-minute intervals, until the diastolic BP is around 90 mmHg. Do not give more than 20 mg in total.

Advantage: Hydralazine will reduce the BP quickly even when the hypertension is severe. It does not cause semi-consciousness and its associated problems.

Disadvantages: In the mother, Hydralazine may cause:

- Tachycardia
- Nausea and vomiting
- Headache
- Muscle tremors.

There may also be foetal distress; a sudden fall in the BP might reduce the amount of blood flowing through the uterus and placenta

(d) Controlling the fluid balance:

Insert an indwelling urinary catheter with an open drainage system to measure the urinary output. Record the urine output every 4 hours. Suspect kidney failure if the urine output is less than 100 ml per 4 hours. Record the fluid intake. Give all the necessary fluids slow IV. The patient should receive sodium lactate or 5% dextrose at the rate of 60 ml (maximum) per hour unless there is an unusual fluid loss from vomiting, diarrhoea, or excessive blood loss at delivery.

Maintenance of proper fluid balance is essential to prevent water intoxication, dehydration, hyponatraemia, or pulmonary oedema.

Diuretics should not be used. As such, diuretics are contraindicated in pregnancy, and in these conditions, the uroplacental perfusion is already reduced, e.g. in pre-eclampsia, IUGR.

(e) Delivering the baby:

Medical Officer of the Merrysilver facility should decide on the method of delivery depending on whether or not the woman has gone into labour, and the stage and progress of labour. In severe pre-eclampsia, delivery should occur within 24 hours of the onset of symptoms; in eclampsia, delivery should occur within 12 hours of the onset of convulsions.

If a vaginal delivery is not anticipated, or the cervix appears unfavourable, or there are signs of foetal distress, refer **to L0/L1 hospital at the earliest.**

Before labour, or in the latent phase of labour-

It is always better to refer all cases of hypertensive disorders of pregnancy to specialists at L0/L1 hospital, after initial management, such as controlling the BP, controlling convulsions (if present), starting IV fluids, etc. This is done to avoid the development of other complications which cannot be managed at the Merrysilver level.

Active phase of the first stage of labour, or second stage of labour-

A woman in the late first stage of labour can be delivered better if referred to L0/L1 hospital, having availability of an Obstetrician. If immediate referral is difficult due to any reason (such as a long distance or transportation problems), and you anticipate that the woman might not be able to reach the next higher hospital in time for her delivery, carry out a vaginal delivery at the Merrysilver. However, if there is an anticipated or actual delay in the progress of labour and delivery, **refer the woman to L0/L1 hospital immediately**. While managing the labour and delivery at the PHC, ensure that:

- The labour is progressing quickly and
- There are no contraindications to a vaginal delivery (such as CPD).

Difficult deliveries must be avoided at the Merrysilver facility.

All patients with eclampsia in the second stage of labour should be delivered at the Merrysilver and then, after giving routine immediate postpartum care, the woman should be **referred to L0/L1 hospital for further management**.

Hence, the **thumb rule** for deciding upon the management option is:

If a woman with a hypertensive disorder of pregnancy presents to you in the early first stage of labour, refer her to L0/L1 hospital. However, if she is in the late first stage or second stage of labour, conduct the delivery and then refer the woman to L0/L1 Hospital for further management.

(f) Giving care after delivery:

It is important to realize that fits can occur for the first time after delivery, especially during the immediate postpartum period. Fits, if they have occurred before delivery, can also recur after delivery. Therefore, the patient must be carefully observed during the immediate postpartum period.

Points to be noted in providing care during the postpartum period:

- Refer the woman to L0/L1 hospital one hour after delivery, after ruling out immediate PPH, and ensure that the woman's condition is stable.
- If the patient has fits after delivery, continue to observe and manage her for 48 hours after the last fit (if she has not been referred due to some problems).
- Nurse the patient in the labour ward or other area of intensive care (if present) where she can be closely observed.
- Continue treatment as required (and as mentioned before).
- Monitor the BP every hour. Continue giving anti-hypertensives as and when required, until the diastolic BP drops below 110 mmHg.
- Monitor the urinary output carefully. A woman in such a condition tends to retain fluid. This is because the kidneys are slow to excrete the extra circulating fluid after delivery. This may lead to a rise in the BP.

Be careful not to give too much fluid intravenously during this period.

- If, after 48 hours, there are no fits, the urinary output is good and the diastolic BP is below 100 mmHg, the patient can be discharged.
- Advise the woman to have her BP checked every 4 hours for a few days. Intimate the condition of the woman and this advice to the ANM in charge.

If regular BP checks are not feasible at home, do not discharge the woman for at least 72 hours after delivery.

- Arrange for follow up 7-10 days after delivery.

Problems and complications

Continued fits: REFER SUCH CASES TO L0/L1 hospital WITHOUT ANY DELAY.

Following eclampsia, the BP may:

- Return to normal within a few days of delivery (within 2-3 days or 48-72 hours)
- Return to normal after a few weeks
- remain high permanently.

You will have to decide on the method of management. Usually during the first week postpartum, further doses of drugs are given, e.g. Hydralazine is given if the diastolic BP rises above 110 mmHg. If the BP is still very high 48 hours after delivery, a standard antihypertensive regimen should be started. The patient must then be reassessed by you, or a physician, who will decide whether long-term management is necessary.

Unit 2.6 Premature or pre-labour rupture of Membranes (PROM)

Learning Objectives:

- Know about Pre Mature Rupture Of Membranes
- Understand the probable signs and symptoms with probable diagnosis of Pre Mature Rupture Of Membranes
- Learn the management of Pre Mature Rupture Of Membranes

2.6.1 Definition

Premature or pre-labour rupture of membranes (PROM) is rupture of the membranes (bag of waters) any time after 22 weeks of gestation but before the onset of labour.

2.6.2 Diagnosis

The diagnosis of PROM may not be difficult when the membranes have ruptured recently. In such cases, a profuse watery discharge with the typical odour of the amniotic fluid may be seen at the introitus on inspection. But when the leakage is gradual, diagnosis may be difficult

The following signs and symptoms may be seen in PROM.

- A speculum examination done under aseptic conditions may reveal a pool of amniotic fluid lying in the vagina, or amniotic fluid coming out of the cervix, particularly when the woman is made to cough.
- A sterile pad placed over the vulva and examined after an hour may show the pad soaked with amniotic fluid.
- If the facilities are available, the following tests may also be carried out.

Nitrazine test: Normal vaginal secretions are acidic and the amniotic fluid is alkaline. Touching a nitrazine paper to the pool of fluid collected on a speculum from the vagina will change it from yellow to blue if the fluid is alkaline, indicating rupture of the membranes.

Ferning test: Amniotic fluid, when dried, crystallizes and leaves a fern-leaf pattern. Spread some fluid pooled in the vagina on a glass slide and let it dry. Examine under a microscope for ferning.

A digital examination (P/V) in no way helps to establish the diagnosis of PROM. Instead it may add to the complication by way of introducing infection. If a woman complains of bleeding after 20 weeks of gestation, **DO NOT do a digital vaginal examination.**

2.6.3 Differential diagnosis of vaginal discharge during pregnancy

Table 5 : Differential diagnosis of vaginal discharge during pregnancy

Symptoms and signs typically present	Symptoms and signs sometimes present	Probable diagnosis
Watery vaginal discharge	<ul style="list-style-type: none"> • Sudden gush or intermittent leaking of fluid • Fluid seen at the introitus • No contractions within 1 hour 	PROM
<ul style="list-style-type: none"> • Foul-smelling watery vaginal discharge after 22 weeks of gestation • Fever/chills • Abdominal pain 	<ul style="list-style-type: none"> • History of loss of fluid • Tender uterus • Rapid foetal heart rate 	Amnionitis
<ul style="list-style-type: none"> • Foul-smelling vaginal discharge • No history of loss of fluid 	<ul style="list-style-type: none"> • Itching • Frothy/Curdy discharge • Abdominal pain • Dysuria 	Vaginitis/Cervicitis
Bloody vaginal discharge	<ul style="list-style-type: none"> • Abdominal pain • Loss of foetal movements • Heavy, prolonged vaginal bleeding 	Antepartum haemorrhage
Blood-stained mucus or watery vaginal discharge	<ul style="list-style-type: none"> • Cervical dilatation and effacement and Contractions 	Possible labour (May be term or preterm)

2.6.4 Management

- If there is vaginal bleeding with intermittent or constant abdominal pain, suspect Abruption placenta
- If there are signs of infection (fever, foul-smelling vaginal discharge) give a combination of the triple antibiotics (Ampicillin, Metronidazole and Gentamicin) for amnionitis and refer the **woman to an L0/L1 hospital for further management.**
- If there are no signs of infection and the pregnancy is less than 37 weeks (when the foetal lungs are more likely to be immature)
 - The woman may be managed conservatively under strict supervision and strict monitoring for signs of development of chorioamnionitis. At the earliest sign of chorioamnionitis, the pregnancy needs to be terminated.
 - **Termination is recommended in L0/L1 hospital**, where facilities are available to manage complications and provide care to a premature newborn.
 - Hence, it is best to refer these women to L0/L1 hospital after administering the following

- First dose of the triple antibiotics to reduce morbidity caused by maternal and neonatal infection and to delay delivery, i.e. 1 g Ampicillin and 400 mg Metronidazole orally along with Inj. Gentamicin 80 mg IM.

- Also give steroids to improve foetal lung maturity, i.e. either Inj. Betamethasone 12 mg IM, OR Inj. Dexamethasone 6 mg IM, and then refer the woman.

- If there are palpable contractions and a blood-stained mucus discharge, suspect preterm labour and manage accordingly

Do NOT use corticosteroids in the presence of frank infection

Unit 2.7 Loss of Foetal Movements

Learning Objectives:

- Understand the probable signs and symptoms with probable diagnosis of loss of foetal movement
- Learn the management of loss of foetal movement

2.7.1 Definition

If a pregnant woman is not able to feel movement of the foetus after 22 weeks of gestation or during labour, it is called loss of foetal movements.

2.7.2 General management

- Reassure the woman and provide emotional support
- Check the foetal heart rate. If the woman has had sedatives, wait for the effect of the drugs to wear off and then check again;
- If the foetal heart sound can not be heard, ask some one else to listen. May use Doppler stethoscope.

2.7.3 Differential diagnosis of loss of foetal movements

Table 6: Differential diagnosis of loss of foetal movements

Symptoms and signs typically present	Symptoms and signs sometimes present	Probable Diagnosis
<ul style="list-style-type: none"> • Decreased/absent foetal movements • Intermittent or constant abdominal pain • Bleeding after 22 weeks gestation (may be retained in the uterus) 	<ul style="list-style-type: none"> • Shock • Tense/tender Uterus • Foetal distress or absent foetal heart sounds 	Abruptio Placentae
<ul style="list-style-type: none"> • Absent foetal movements and foetal heart sounds • Bleeding (intra abdominal and/or vaginal) • Severe abdominal pain (may decrease after rupture) 	<ul style="list-style-type: none"> • Shock • Abdominal distension/free fluid • Abnormal uterine contour • Tender abdomen • Easily palpable foetal parts • Rapid maternal pulse 	Rupture Uterus
<ul style="list-style-type: none"> • Decreased/absent foetal movements • Abnormal foetal heart rate (<100bpm or >180bpm) 	<ul style="list-style-type: none"> • Thick meconium stained fluid 	Foetal Distress
<ul style="list-style-type: none"> • Absent foetal movements and foetal heart sounds 	<ul style="list-style-type: none"> • Symptoms of pregnancy cease • Symphysis-fundal height decreases • Uterine growth decreases 	Foetal Death

2.7.4 Intra-uterine Foetal Death

Intra-uterine foetal death may be due to foetal growth restriction, foetal infection, cord accident or congenital anomalies. Where syphilis is prevalent, a large number of foetal deaths occur due to this disease.

Confirmation of Diagnosis

- If **Ultrasound is available**, confirm foetal death. Signs include absent foetal heart activity, abnormal foetal head shape, reduced or absent amniotic fluid and doubled-up foetus.
- If **X-ray is available**, confirm foetal death after 5 days. Signs include overlapping of skull bones, hyper flexed spinal column, gas bubbles in heart and great vessels and oedema of the scalp.
- Explain the problem to the woman and her family and discuss the options of expectant or active management.

Management

- **If expectant management is planned:**
 - Await spontaneous onset of labour during the next 4 weeks.
 - Reassure the woman that in 90% of cases the foetus is spontaneously expelled during the waiting period with no complications
 - Refer to L0/L1 hospital in case of any complaint for taking active management under specialist care.
- **If active management is planned:**
 - Refer to L0/L1 hospital in case of any complaint for taking active management under specialist care.

Unit 2.8 Other Problems during Pregnancy

Learning Objectives:

- Understand various other health problems during pregnancy
- Understand the probable signs and symptoms with probable diagnosis
- Learn the management of these other problems during pregnancy

2.8.1 Urinary Tract Infection

A urinary tract infection (UTI) in a pregnant/postpartum woman may be in the form of an upper UTI (acute pyelonephritis), or a lower UTI (cystitis). This woman needs treatment with antibiotics.

Signs and symptoms of UTI

- Fever, may be high grade, i.e. $>38^{\circ}\text{C}$; may be accompanied with chills and rigors
- Burning on urination
- Increased frequency and urgency of urination
- Abdominal pain
- Flank tenderness

Table 7: Diagnosis of fever and dysuria during pregnancy and labour

Symptoms and signs typically present	Symptoms and signs sometimes present	Probable diagnosis
<ul style="list-style-type: none">• Dysuria• Increased frequency and urgency of urination	<ul style="list-style-type: none">• Retropubic/Suprapubic pain during or after urination• Abdominal pain	Cystitis
<ul style="list-style-type: none">• Dysuria• Spiking fever/chills• Increased frequency and urgency of urination• Abdominal pain	<ul style="list-style-type: none">• Retropubic/Suprapubic pain• Loin pain/tenderness• Tenderness in the rib cage• Anorexia• Nausea/vomiting	Acute pyelonephritis

Investigations

Dipstick, microscopy and urine culture tests if available at the centre, can be used to determine if UTI is present, but it will not differentiate between cystitis and acute pyelonephritis OR to be referred to a higher centre for investigation and advice for further treatment.

- Urine culture and sensitivity tests should be done, if available, to identify the organism and know its antibiotic sensitivity.

NOTE: Urine examination requires a clean-catch mid-stream sample to minimize the possibility of contamination.

Treatment:

General management

- Encourage bed rest.
- Encourage increased fluid intake by mouth.
- Use a fan or tepid sponge to help decrease the body temperature.

Assume that a urinary tract infection involves all levels of the urinary tract, from the renal calyces to the urethral meatus.

Cystitis

- Treat with antibiotics
 - * Cap. Amoxicillin, 500 mg orally, 3 times a day for 3 days; OR
 - * Tab. Co-trimoxazole (160/800 mg) 1 tablet orally, 2 times a day for 3 days.
- If the woman responds, continue the antibiotics for 10-14 days.
- If there is no response, i.e. the treatment fails, refer the woman to an FRU for urine culture and sensitivity, and further management.
- If the infection recurs two or more times:
 - * **Refer to L0/L1 hospital for urine culture and sensitivity tests;**
 - * For prophylaxis against further infections, give antibiotics orally once daily at bedtime for the remainder of the pregnancy and two weeks postpartum. Give:
 - Co-trimoxazole 1 tablet (160/800 mg) OR
 - Amoxicillin 250 mg

NOTE: Prophylaxis is indicated only after recurrent infections, and NOT after just a single episode.

Acute pyelonephritis:

Acute pyelonephritis is an infection of the upper urinary tract, mainly of the renal pelvis, which may also involve the renal parenchyma.

- If shock is present or suspected, initiate immediate treatment
- Start an IV infusion and infuse IV fluids at the rate of 150 ml per hour.
- Start the woman on antibiotics and refer her to an FRU for further management. Give:
 - * Ampicillin 2 g IV
 - * PLUS Gentamicin 80 mg IM
- Give Paracetamol, 500 mg orally as needed to control the pain and lower the body temperature.

Retention of urine:

During the late first trimester, dysuria may present due to pressure of the retroverted gravid uterus on the bladder, though usually this does not present with any symptoms. After 12 weeks of gestation, spontaneous correction of the retroversion occurs and the uterus rises above the pelvic brim and becomes palpable per abdomen. Occasionally, the uterus remains retroverted even after 12 weeks of gestation and retention of urine occurs due to stretching of the urethra.

Diagnosis

- On abdominal examination, a cystic swelling is palpable in the lower abdomen arising from the pelvis. The swelling may be large enough to reach above the umbilicus.
- On vaginal examination
 - The cervix is high up behind the symphysis pubis and directed downward and forward.
 - The uterus is retroverted, more than 12 weeks in size and is felt below the cervix.
 - There is a cystic mass in the anterior fornix.

Management

- Under all aseptic precautions, insert a self-retaining Foley catheter. Drain the urine continuously for 48 hours.
- These measures allow the uterus to rise above the pelvic brim.
- Once the uterus is palpable P/A, remove the catheter and ensure that the woman can pass urine on her own.

MODULE 3

Care and Management of labour and complications

- Unit 3.1 Normal Labour and use of Partograph
- Unit 3.2 Prolonged/Obstructed Labour
- Unit 3.3 Foetal Distress/Abnormal Foetal Heart Rate
- Unit 3.4 Cord Prolapse

About this Module

This module will increase their understanding on various stages of labour and equip them in using Partograph. It comprises of four units. This unit contains learning objectives, and also provides guidelines on initial new born care and postpartum services to be provided at Merry Silver clinics.

Unit 3.1 Normal labour and use of Partograph

Learning Objectives:

- Understand various stages of labour
- Develop skills on use of Partograph
- Understand the management of labour at various stages

In the previous chapter dealing with Antenatal care you have learnt the signs of labour. It has also been stated there under what circumstances, the woman need to be referred to the next higher level so that specialist care is available to the complication of pregnancy.

It is expected that at Merrysilver clinic, normal delivery by skilled birth attendant is available provided that arrangements (labour room with necessary equipments) have been made as per specification. In view of the above, we shall discuss normal delivery.

3.1.1 Diagnosis of labour

The pregnant woman presenting with intermittent contractions after 22 weeks of gestation, contractions associated with blood-stained discharge or watery vaginal discharge should raise a suspicion of the onset of labour. Normal vaginal discharge should not be confused with show. The onset of labour can be confirmed by the following:

- * A bloody, sticky discharge Pervaginum
- * Painful abdominal contractions every 20 minutes or less
- * The bag of waters has broken, and she has clear fluid coming out P/V (leaking).

- **Cervical effacement:** This refers to the progressive shortening and thinning of the cervix during labour.
- **Cervical dilatation:** This refers to an increase in the diameter of the cervical opening. It is measured in centimeters
- **The First stage of labour** starts with the onset of labour pains to the full dilatation of the cervix. This stage takes about 12 hours in Primigravidas and half that time for subsequent deliveries.
- **The second stage** starts from the full dilatation of the cervix to the delivery of the baby. This stage takes about 2 hours for Primigravidas and only about half an hour for subsequent deliveries.

- **The third stage** starts from after the delivery of the baby and ends with the delivery of the placenta. This stage takes about 15 minutes to half an hour, irrespective of whether it is a Primigravida or Multigravida.
- **The fourth stage of labour** is the first one hour after delivery of the placenta. This is a critical period as PPH, which is a fatal complication, can occur during this stage.

3.1.2 Stages of labour

A) The First stage of labour

You should be able to differentiate true labour pains from false pains.

True labour pains have the following features:

- The woman complains of intermittent abdominal pain which can start any time after 22 weeks of gestation.
- The pain is often associated with a blood-stained mucus discharge known as show.
- The woman might have a watery vaginal discharge or a sudden gush of water.
- On vaginal examination, you will find:
 - Assessing the changes in cervical effacement and dilatation (by conducting a P/V examination)
 - Assessing the progress in foetal descent (by conducting an abdominal and/or a Pervaginal examination)

Abdominal examination to assess the descent of the presenting part

- Abdominal palpation should be conducted to assess the descent of the presenting part. If the head is above the symphysis pubis it is fully palpable and mobile. If the head is entirely below the symphysis pubis it is not palpable abdominally.

A fully dilated cervix has a cervical opening that is 10 cm in diameter, which means that the cervix is no longer felt on vaginal examination.

KEY MESSAGESS

Motivate the woman and her family to have a clean and safe delivery at an institution.

Promote and ensure skilled attendance at every birth.

Let the woman choose the position she desires and feels comfortable in during labour and Delivery.

Maintain a Partograph, which will help you in recognizing the need for action at the appropriate time and thus ensure timely referral.

Ensure active management of the third stage of labour, which will help in the prevention of postpartum haemorrhage

Vaginal examination to assess the stage and progress of labour

Always examine the abdomen before examining the vagina.

- Do NOT shave the perineal area.
- Prepare clean gloves, swabs and pads.

- Wash your hands with soap and water before and after each examination. *Carry out the vaginal examination under strict aseptic conditions.*

Always inform the woman and take her verbal consent before carrying out a vaginal examination.

Perform a vaginal examination gently. Do not start a vaginal examination during a contraction.

- REMEMBER; do not carry out a vaginal examination if the woman is bleeding at the time of labour or at any time after 5 months (20 weeks) of pregnancy. Manage this as a case of "Vaginal bleeding in late pregnancy"
- Clean the vulva and perineal area with a mild antiseptic solution. Use a cotton swab soaked in antiseptic solution to clean the vulva. Wipe the vulva in the anterior to posterior direction. Use a swab only once.
- Place the woman in the supine position with her legs flexed and apart.
- Separate the labia with the thumb and forefinger of the left hand and clean the area once again. Use two fingers of the right hand (index and middle fingers) and insert them gently into the vaginal orifice without hurting the woman.
- During a vaginal examination, **determine the following:**
 - Cervical effacement
 - Cervical dilatation in cm
 - The presenting part. Try and judge if it is hard, round and smooth (the head?). If not, try and identify the presenting part. In case the vertex is not the presenting part, manage the case as a malpresentation. Such cases need to be referred to a specialist in L0/L1 facility.
 - The position or the station of the presenting part.
 - Feel for the membranes. Are they intact?
 - If the membranes have ruptured, check whether the colour of the amniotic fluid is clear or meconium-stained.
 - Feel for the umbilical cord. If it is felt, it is a case of cord prolapse. If the cord pulsations are felt, refer the woman to L0/L1 immediately, for delivery under care of a specialist. Explain to the woman and her family that a caesarean section may be required. In case where transfer of the patient is not possible, take permission from the woman and manage as described under the management of " cord Prolapse

The **stage of labour** can be decided as follows:

- If the cervix is dilated 1-3 cm and the contractions are weak and less than 2 in 10 minutes, this is the first stage of labour; but the woman is not in active labour yet.
- If the cervix is dilated >3 cm, but not fully, the woman is still in the first stage of labour. However, she is now in active labour.
- Full cervical dilatation (10 cm; the cervix is no longer felt on vaginal examination), a bulging thin perineum, a gaping vagina and anus, and the head visible through the introitus, even in between contractions indicate the second stage of labour, and that delivery is imminent.

Table 8: Diagnosis of Labour

No	Symptoms & Signs	Stage	Phase
1.	Short contractions, mild <20/second	First	Late
2.	Contractions longer 20-40 seconds, strong and cervix dilated	First	Active
3.	Contractions lasts >40 seconds	First	Late
4.	Cervix fully dilated & foetal descent continues	Second	Early
5.	Cervix fully dilated, presentation part reaches pelvic floor	Second	Late

• Remember, vaginal examinations are rarely required more frequently than once **every 4 hours**.

- Oxytocic drugs such as Inj. Oxytocin IM should not be given before delivery of the baby. The use of oxytocic drugs is associated with an increased incidence of rupture of the uterus and consequent severe APH.

Supportive care to the woman during labour

- Explain all the procedures, seek permission for examination and carrying out the procedures, and discuss the findings with the woman.
- Keep the woman informed about the progress of labour.
- Praise the woman, encourage her and reassure her that things are going well.
- Ensure and respect the privacy of the woman during examinations and discussions.
- Encourage the woman to bathe or wash herself and her genitals at the onset of labour.
- Always wash your hands with soap and water before examining the woman
- Ensure cleanliness of the birthing area.
- **Enema** should NOT be routinely given during labour. Enema should be given only when needed, e.g. when the woman complains of constipation on admission or at the onset of labour, or if the woman wishes to have an enema.
- Encourage the woman to empty her bladder frequently. Remind her every 2 hours or so.
- The presence of a second person or a **birth companion** of the woman's choice in addition to an SBA is beneficial. Birth companions provide comfort, emotional support, reassurance, encouragement and praise. On a practical level too, the presence of a second person is valuable, in that if at any point during the labour additional assistance is required, or in an emergency, this second person can be useful, even if it is only to seek help. But one must ensure cleanliness and concentrate on preventing infection.
- Women should be allowed to **remain mobile** during labour, especially the first stage, as this helps in having a shorter and less painful labour.
- The woman should be free to choose any **position** she desires and feels comfortable in during labour and delivery. She may choose from the left lateral, squatting, kneeling, or even standing (supported by the birth companion) positions. Remember, given a choice, the woman will often change positions as no position is comfortable for very long.
- To relieve the woman of pain and discomfort, a change in position and mobility is helpful. Encourage the birth companion to massage the woman's back if she finds this helpful, to hold the woman's hand and sponge the woman's face between contractions.
- Other **non-pharmacological methods of relieving** pain during labour include:
 - Calm and gentle voice of the birth attendant

- ❑ Offering the woman encouragement, reassurance and praise
 - ❑ Relaxation techniques performed by the woman such as deep breathing exercises and massage
 - ❑ Placing a cool cloth on the woman's forehead
 - ❑ Assisting the woman in voiding urine and in changing her position.
- Women who are not at risk of requiring general anaesthesia can have light, easily digested, low-fat **food during labour**, if they wish. The advantages of having food far outweigh any risks related to a full stomach and the use of general anaesthesia. This is because labour requires large amounts of energy. In women who have not eaten for some time, or who are undernourished, the effects of labour can quickly lead to physiological exhaustion, dehydration and ketosis (maternal acidosis), which can lead to foetal distress. Therefore, encourage the woman to eat and drink as she wishes throughout labour.

Management of first stage of labour

Not in active labour:

The cervix is dilated 0-3 cm and contractions are weak, less than 2 in 10 minutes.

- **Monitor** the following every hour:
 - ❑ Frequency (once in how many minutes), intensity (how strong), and duration (for how many seconds does it last) of contractions.
 - ❑ FHR (The normal FHR is between 120 and 160 beats/minute.
 - ❑ The presence of any sign that denotes an emergency (such as difficulty in breathing, shock, vaginal bleeding, convulsions or unconsciousness)
- **Monitor** the following every 4 hours:
 - ❑ Cervical dilatation (in cm)
 - ❑ Temperature
 - ❑ Pulse
 - ❑ BP
- Record the time of rupture of the membranes and the colour of the amniotic fluid.
- Never leave the woman alone.
- If after 8 hours, the contractions are stronger and more frequent, but there is no progress in cervical dilatation with or without rupture of the membranes, this is a case of **non-progress of labour**. **Refer the woman immediately to specialist at L0/L1 hospital.**
- On the other hand, if after 8 hours, there is no increase in the intensity/frequency/duration of contractions, and the membranes have not ruptured and there is no progress in cervical dilatation, ask the woman to relax. Advise her to send for you again when the pain/discomfort increases, and/or there is vaginal bleeding, and/or the membranes rupture.
- If case, where membrane already ruptured on admission, but even after 8 hours there is no increase in the frequency/intensity of contractions, **refer the woman to L0/L1 hospital (prolonged latent phase) for induction of labour.**

In active labour:

The cervix is dilated 3 cm or more:

- **Monitor** the following every 30 minutes:
 - ❑ Frequency, intensity and duration of the contractions
 - ❑ FHR

- ❑ Presence of any emergency sign
- Monitor the following every 4 hours:
 - ❑ Cervical dilatation (in cm)
 - ❑ Temperature
 - ❑ Pulse
 - ❑ BP
- Again, do not leave the woman alone.
- Start maintaining a Partograph once the woman is in active labour.

Simplified Partograph

The partograph is a graphic recording of the progress of labour and salient features of the mother and foetus. It is a tool to assess the progress of labour and recognize the need for action and referral at the appropriate time.

The instructions for filling the partograph are given below.

- The FHR should be counted and recorded every half-an-hour. Count the FHR for one full minute. The rate should preferably be counted immediately following a uterine contraction. An FHR of >160 beats/minute or <120 beats/minute indicates foetal distress. Manage as given under "Foetal distress" (Each of the small boxes in the vertical column of a partograph represents half-hour intervals).
- Simultaneously record the condition of the membranes and colour of the amniotic fluid as visible at the vulva every 30 minutes as:
 - * Intact membranes (mark 'I')
 - * Clear liquor (mark 'C')
 - * Meconium stained (mark 'M')
 - * No liquor (mark 'A').

Labour:

- Start plotting on the labour graph only after the woman is in active labour. The woman is said to be in active labour when the cervical dilatation is more than 3 cm and at least 2 good contractions (i.e. each lasting for more than 20 seconds) occur in 10 minutes.
- Start recording the cervical dilatation (in cm) when the woman first reports in labour and then every four hours.
- The initial recording is placed to the left of the **alert line** (cervical dilatation must be 3 cm and above, i.e. the woman must be in active labour before you start plotting the graph). Normally the line should continue to remain to the left of the alert line. Write the time accordingly in the row for time.
- If the alert line is crossed (the graph moves to the right of the alert line), it indicates prolonged labour, and you should be alert that labour is not progressing as it should. Note the time when the alert line is crossed. Start preparing for referral to an FRU.
- Crossing of the **action line** (the graph moves to the right of the action line) indicates the need for intervention and referral. There is a difference of 4 hours between the alert and the action line. By the time the action line is crossed, the woman should ideally have reached the FRU for receiving appropriate and timely intervention.
- Record the number of good contractions (lasting more than 20 seconds) in 10 minutes every half-an-hour and accordingly, blacken the boxes on the Partograph.

Maternal condition:

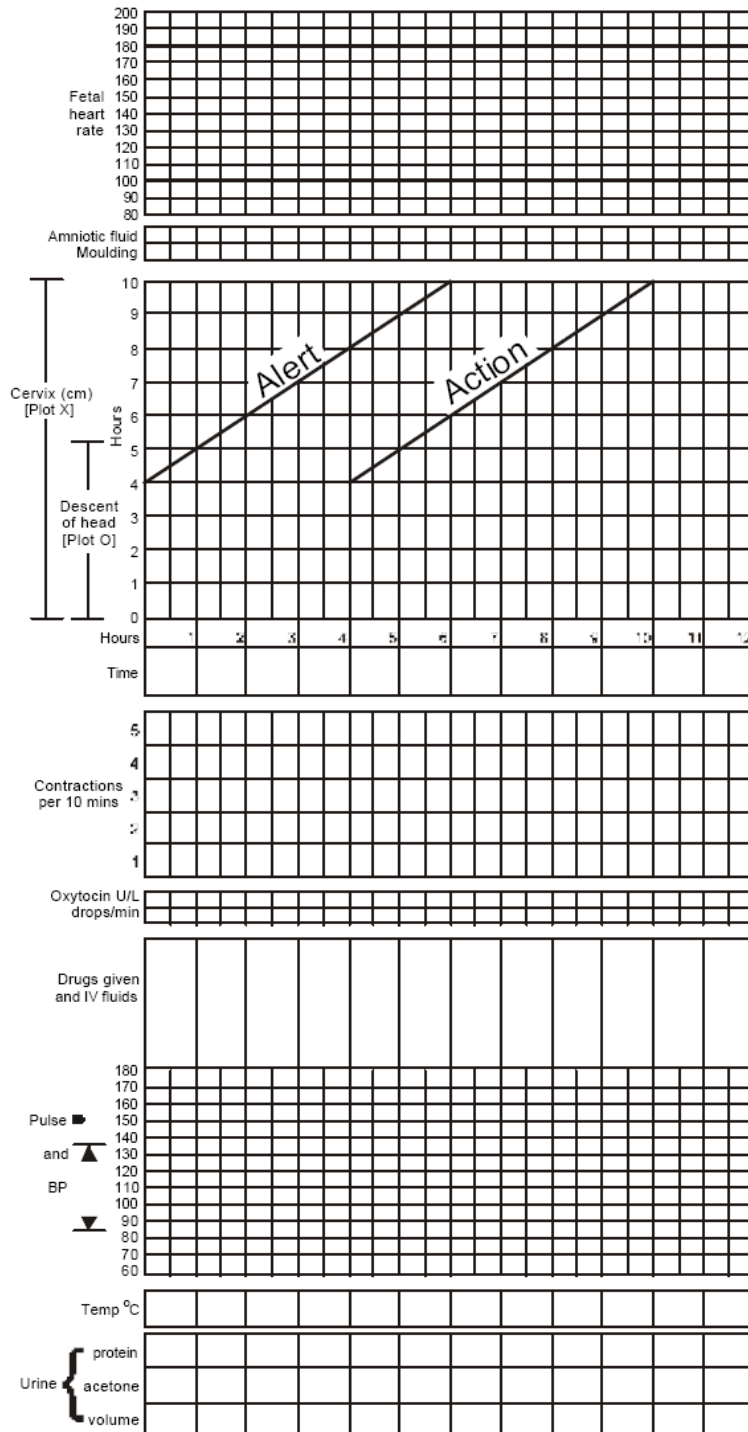
Record the maternal pulse and BP every half-an-hour and plot them on the graph. Record both the systolic and the diastolic BP using a vertical arrow, with the upper end of the arrow representing the systolic BP and the lower end indicating the diastolic BP. Use crosses to mark the pulse.

Intervention:

Mention here any drug that you have administered during labour, including the dose and route of administration, and when. Also include the food items and liquids consumed by the woman during that period.

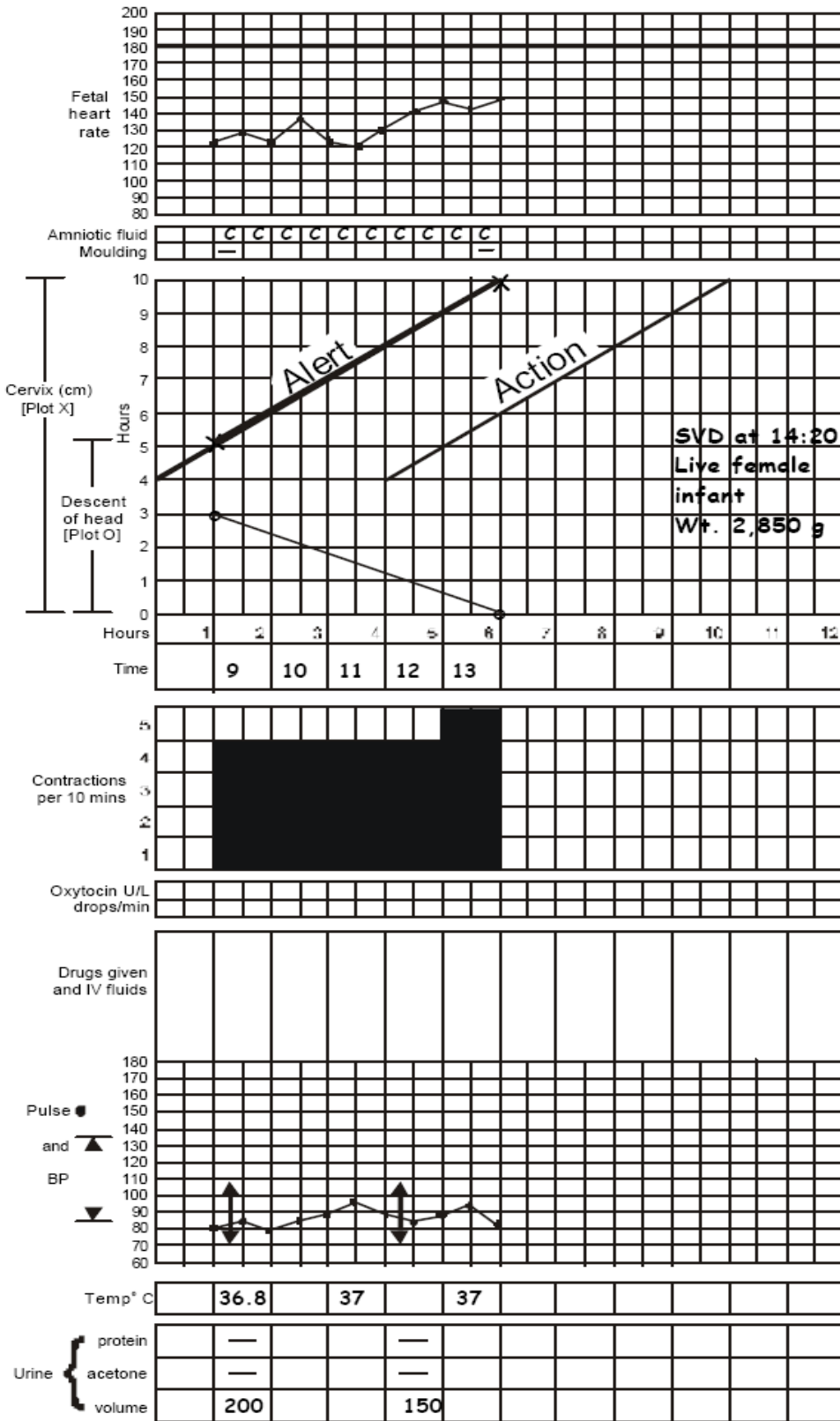
Fig 7: WHO Partograph

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



Name **Mrs. S** Gravida **3** Para **2+0** Hospital number **78**

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



B) Management of second stage of labour

If the cervix is fully dilated or the perineum is thin and bulging with the anus gaping and the head of the baby visible at the vaginal introitus, it is the second stage of labour.

- **Monitor** the following every 5 minutes:
 - Frequency, duration and intensity of contractions
 - FHR
 - Perineal thinning and bulging
 - Visible descent of the foetal head during contractions
 - Presence of any signs indicating an emergency (Pl. see “*Management of first stage of labour*”)
- The upright **positions** such as standing, sitting, squatting and being on all fours makes pushing easier. Therefore, if the woman finds it difficult to push, or there is slow descent of the presenting part, you should change the position of the woman.
- The woman should be allowed to push down when she has contractions if she has the urge to do so during the second stage of labour.
- **Bearing down** efforts are required after the cervix is fully dilated, and even more so when the head is distending the perineum. Occasionally, the woman feels the urge to push before the cervix is fully dilated. This should be discouraged as it can result in oedema of the cervix which may delay the progress of labour.
- To prevent pushing at the end of the first stage of labour (before the cervix is fully dilated), teach the woman to pant, i.e. to breathe with an open mouth, take in two short breaths followed by a long breath out.
- Asking the woman to hold her breath and bear down in the second stage of labour should NOT be done. **Holding the breath** is potentially harmful. It may reduce the quantity of blood reaching the uterus and placenta. It may also reduce the supply of oxygen to the foetus.
- Giving the woman oxytocics to shorten the second stage of labour is NOT advisable.
- Avoid ironing the perineum (or using the "Sweep and stretch" technique) to hasten delivery.

Episiotomy

It is a surgically planned incision on the perineum and the posterior vaginal wall during the second stage of labor

Indications:

1. **Anticipating perineal tear**-face to pubes or face delivery, big baby, narrow pubic arch
2. **Inelastic perineum**-elderly primigravida, old perineal scar of episiotomy/perineorrhaphy
3. **Manipulative delivery**-forceps or breech delivery
4. **To cut short the second stage**-severe pre-eclampsia or eclampsia, post cesarean cases, post maturity, etc.
5. **Fetal interest**-fetal distress, premature baby, breech delivery

There is no evidence that routine episiotomy decreases perineal damage, future vaginal prolapse or urinary incontinence. Remember, whenever an episiotomy is required, a right para-median episiotomy is preferred.

Timing of Episiotomy-Bulging thinned perineum during contraction just prior to crowning is the ideal time

Care of Episiotomy-

1. The wound is to be dressed each time following urination and defecation to keep the area clean and dry. The dressing is done by swabbing with cotton swabs soaked in antiseptic solution followed by application of antiseptic powder or ointment. During the dressing the attendant should wear a mask.
2. To relieve pain in the area, magnesium sulphate compresses or application of infrared heat may be used. Analgesic drug may be given as & when required.
3. Patient is allowed to move out of bed after 24 hours. Prior to that, she is allowed to roll over on to her side or even to sit but only with thighs apposed
4. Since catgut is used, which is absorbable no need to remove the stitches

Complications of Episiotomy-

Immediate-

1. Extension of the incision
2. Vulval haematoma
3. Infection-Clinical features are-
 - Throbbing pain on the perineum
 - Rise in temperature
 - Wound area looks moist, red and swollen
 - Offensive discharge comes out through the wound margins

Treatment-

- i. Facilitate drainage of pus by cutting one or two stitches
- ii. Local dressing with antiseptic powder or ointment
- iii. magnesium sulphate compresses or application of infrared heat to reduce oedema and pain
- iv. systemic antibiotic

4. Wound dehiscence-.After subsidence of infection and when healthy granulation tissue appears, secondary resuturing is to be done **Refer to L0/L1**

Remote-

1. Dyspareunia
2. Chances of perineal lacerations in subsequent labor
3. Scar endometriosis(rare)

Delivery of the head

Ensure a controlled delivery of the head by taking the following precautions:

- Encourage the woman to push only during pains (a contraction).
- Keep one hand gently on the head as it advances with the contractions.
- Support the perineum with the other hand during delivery and cover the anus with a pad held in position by the side of the hand.
- Leave the perineum visible (between the thumb and the index finger).
- Ask the mother to breathe steadily and to not push during delivery of the head.
- Encourage rapid breathing with the mouth open.
- Do NOT apply fundal pressure to hasten delivery of the head.

Umbilical cord around the neck

Feel gently around the baby's neck for the presence of the umbilical **cord around** the neck. If the cord is present around the neck:

- And if it is loose, deliver the baby through the loop of the cord, or slip the cord over the baby's head.
- If the cord is tight, clamp it and cut the cord, and then unwind it from around the neck.

Delivery of the shoulders and the rest of the baby

- Wait for spontaneous rotation and delivery of the shoulders. This usually happens within 1-2 minutes.
- Perineal tears can be prevented by delivering one shoulder at a time. If there is difficulty in delivering the shoulder, suspect shoulder dystocia. Ask the woman to take a position with extreme flexion at the knees and hips with the knees wide apart. The shoulder may be released from behind the symphysis pubis and may deliver. **If not, then refer the woman immediately to specialist at LO/L1 hospital.**

Fortunately, shoulder dystocia is rare in India.

- Apply gentle pressure downwards to deliver the anterior shoulder.
- Then lift the baby up, towards the mother's abdomen, to deliver the lower (posterior) shoulder.
- The rest of the baby's body smoothly follows out.
- Place the baby on the mother's abdomen or in the baby tray.

Time of delivery

Note the time of delivery (there should be a wall clock in the labour room so that both the SBA and the woman can see easily).

Cutting the cord

- Tie and cut the cord after 2-3 minutes of delivery, during which time the cord will normally stop pulsating. This will result in an increased amount of blood being transfused into the foetal circulation, and thus help in avoiding neonatal anaemia.
- Put ties tightly around the cord at 2 cm and 5 cm from the baby's abdomen.
- Cut between the ties with a sterile blade.
- Look for oozing of blood from the stump. If there is oozing, place a second tie between the baby's skin and the first tie.

Immediate Newborn care

- Give immediate newborn care.
- If the baby does not cry in 30 seconds, take steps to resuscitate the baby.
- Ensure warmth to the baby to prevent hypothermia.
- Rule out the presence of another baby by palpating the abdomen and trying to feel for foetal parts.
- It is recommended that the umbilical cord stump be left dry, and only routine daily care be given with clean safe water. Do not apply any substance to the stump.
- Note the Apgar score of the baby at 1 minute and at 5 minutes after delivery.
- **Care of the newborn:** The newborn needs to be taken care of. The elements of essential newborn care are being provided in separate *module for "Essential Newborn care and basic newborn resuscitation"*.

Elements of essential newborn care:

Maintain the body temperature and prevent hypothermia.

Maintain the airway and breathing

Breastfeed the newborn

Take care of the cord

Take care of the eyes

- Leave the baby on the mother's chest for skin-to-skin contact.
- Cover the baby to prevent loss of body heat. If the room is cool, use additional blankets to cover the mother and the baby.
- Encourage the mother to initiate breastfeeding.

Unit 3.2 Prolonged / Obstructed labour

Learning Objectives:

- Define Prolonged/ obstructed labour.
- List the complications following obstructed labour.
- List the various exams done to for obstructed labour.
- Learn the management of obstructed labour

3.2.1 Definition

Prolonged labour- Prolonged labour is active labour with regular uterine contractions but without adequate cervical dilatation and/or descent of the presenting part, lasting for more than 12 hours.

Prolonged labour can be due to:

- Incoordinate uterine contractions: These are contractions that are weak or not effective enough to result in cervical dilatation and/or foetal descent. There is no mechanical obstruction in these cases.

If not managed properly, these cases may ultimately develop uterine fatigue. An ascending infection may also occur, especially if the membranes have ruptured. There is a danger of foetal death in these cases.

- Foeto-pelvic disproportion: This means that it is difficult or impossible for the foetus to pass safely through the pelvis. As the cephalic end is the most common presenting part, this condition is also known as Cephalo-pelvic disproportion (CPD). This condition, if not managed in time, will lead to obstructed labour.

CPD occurs when the foetal head is large compared with the pelvis. CPD may be due to a small pelvis with a normal-sized head, or a normal pelvis with a large foetus, or a combination of a large baby and small pelvis. CPD cannot be diagnosed before the 37th week because before then the head has not reached its birth size.

Obstructed labour- Obstructed labour means that, in spite of strong uterine contractions, the foetus cannot descend because of mechanical factors. Obstruction may occur at the inlet, within the cavity or outlet of the pelvis.

Though CPD is the commonest cause of obstructed labour, other factors such as malpresentation (transverse lie, brow presentation, mentoposterior presentation) and rarely large tumours in the pelvis may cause mechanical obstruction leading to obstructed labour.

Complications resulting from obstructed labour can be avoided if a woman in obstructed labour is identified early, and appropriate action is taken. In such cases, a caesarean section is often required for delivery.

3.2.2 Diagnosis of Prolonged/Obstructed labour

A partograph, as described earlier is a tool to assess the progress of labour. When, despite good uterine contractions for 8 hours, the woman is still in the latent phase of labour, or when the partograph crosses the "Alert line" it is an indication that the labour is not progressing normally and that the woman needs referral to L0/L1 hospital for management by a specialist.

Complications following obstructed labour

A) Maternal Complications

Premature rupture of membrane- This is due to the extra force on that portion of the membranes in contact with the internal os. This can subsequently lead to an ascending infection and foetal and/or maternal death.

Slow dilatation or oedema of the cervix- This is due to inadequate pressure of the foetal presenting part on the cervix causing no or slow dilatation. It may also lead to an oedematous cervix, further preventing descent of the head.

Maternal fatigue Due to prolonged labour, the mother may be dehydrated and may go into keto-acidosis.

Uterine rupture This occurs when there is rupture of the membranes and the amniotic fluid has drained away. The uterus is tonically retracted over the foetus and does not relax at all. In these cases the foetal parts cannot be palpated clearly. Alternatively, the foetus is forced into the lower uterine segment and, with continuing uterine contractions; the lower segment becomes thin and is likely to rupture.

Rupture of the uterus following obstructed labour is more common in multiparous women and in those with a uterine scar due to a previous caesarean section.

Rupture of the uterus results in haemorrhage (usually internal) and shock. It is usually fatal if not managed immediately.

Puerperal sepsis

The chances of infection are increased due to premature rupture of the membranes and the increased frequency of vaginal examinations that health personnel undertake in these circumstances.

Fistulae

These occur due to excessive pressure on the tissues of the bladder, vagina and rectum, which are trapped between the obstructed foetal head and the pelvic bones. Due to decreased oxygenation, the tissues undergo necrosis, forming various types of fistulae such as vesico-vaginal (between the bladder and vagina), vesico-cervical (between the bladder and the cervix), or recto-vaginal (between the rectum and vagina). These fistulae allow leakage of urine or faeces from the vagina, and represent the extreme morbid conditions that may occur following an unmanaged or poorly managed obstructed labour.

Maternal death-

The mother may die either due to uterine rupture and the resultant haemorrhage and shock, or death may result from the DIC triggered by decay of the dead foetus.

B) Foetal complications

Caput succedaneum- This is a boggy swelling on the foetal scalp formed due to pressure of the maternal pelvic bones on the foetal skull. It usually subsides on its own after a few days.

Excessive moulding of the foetal skull- This may cause a change in the shape of the baby's head.

Birth asphyxia and its complications- This is a dangerous complication. The foetus is deprived of the necessary oxygenation while the mother is in labour. This can lead to foetal death/stillbirth. If the baby survives, it may have complications resulting from birth asphyxia, such as cerebral palsy and/or mental retardation.

Foetal death- This may occur due to prolonged, excessive pressure on the placenta and umbilical cord, leading to decreased oxygenation and death of the foetus.

3.2.3 Clinical picture

History-

The following points must be asked to any woman who comes to the PHC with suspected obstructed/prolonged labour.

- **Age-** A teenage mother has greater chances of going into obstructed labour as her pelvic bones and the shape of her pelvis has not developed enough physically to allow the foetus to deliver normally.
- **Parity-** Though there is no difference in the incidence of obstructed labour between a primipara or a multipara, the risk of uterine rupture as a complication of obstructed labour is much higher in a multiparous woman.
- **Previous operative delivery-** The indication for the previous operative delivery (if present) will give an insight into the probability of a foetopelvic disproportion during the present delivery. Also, the presence of a previous uterine scar following a caesarean section puts the woman at greater risk of having a uterine rupture following obstructed labour.
- **Previous stillbirth-** The cause of the stillbirth, such as birth asphyxia, will tell you whether the woman is at risk of suffering from the same complication again in the present pregnancy.
- **Duration of labour so far-** This is important to decide whether you can still wait or need to refer the woman urgently to an FRU for operative intervention. A partograph at this stage will also help to decide whether the woman has crossed the alert/action line.
- **Previous history of babies with developmental anomalies-** A previous history of developmental anomalies increases the chances of the present baby having one also. Developmental anomalies are one of the main causes of obstructed labour, and are therefore often associated with it.
- **Progress of labour-** The woman may complain of excessive abdominal pain, or give a history that initially the labour had proceeded normally followed by sudden stoppage of the pains and contractions. Such a history points towards the stage of uterine inertia, which usually occurs following a prolonged labour.
- **Rupture of the membrane and its timing-** Obstructed labour predisposes to premature rupture of the membranes which, in turn, results in an increased frequency of puerperal sepsis during the postpartum period. If the membranes have ruptured, ask for or note the colour of the amniotic fluid to assess the presence of foetal distress.

- **Inj. Oxytocin-** Ask the woman and/or her family if she has received Inj. Oxytocin before coming to the PHC. If she has, what was the total dose received? Giving Inj. Oxytocin in such cases increases uterine contractions and the chances of uterine rupture.

Examination

General examination-

In cases of obstructed labour, the following signs are present:

- Physical and mental exhaustion
- Dehydration and keto-acidosis (ketonuria, dry mouth, tachycardia)
- Fever (in cases of sepsis)
- Shock (as evidenced by tachycardia, low BP, cold extremities, pale complexion, history of oliguria or anuria). The cause of shock may be a ruptured uterus or sepsis.

Abdominal examination-

In cases of obstructed labour, abdominal examination may reveal the following:

- The foetal head (or the presenting part) can be felt above the pelvic brim because it is unable to descend.
- The woman may have frequent and strong uterine contractions. But if she has been in labour for a long time, the contractions may have stopped because of uterine exhaustion/inertia or because of rupture of the uterus.
- The uterus may have gone into tonic contraction and is tightly moulded around the foetus.

Bandl's ring may be seen

- Bandl's ring is the name given to the area between the upper and lower uterine segments when it becomes visible and/or palpable during labour. During normal pregnancy and labour, this area is called a retraction ring. It should not normally be seen or felt on abdominal examination.
- Bandl's ring is a late sign of obstructed labour. It can be seen as a depression across the abdomen at about the level of the umbilicus. Above this is the retracted upper uterine segment. Below the Bandl's ring is the distended lower uterine segment. This is dangerously thin and can rupture if not managed in time. A distended lower uterine segment is not the only cause of a bloated lower abdomen. The lower abdomen can be further distended by a full bladder and gas in the intestines.
- The shape of the uterus looks like a peanut shell.
- Palpation will confirm the signs noted on observation.
- Foetal condition: Try and listen for the FHS. An FHR of <120 beats/minute or >160 beats/minute is indicative of foetal distress.

Vaginal examination-

Look for the following danger signs related to obstruction:

- Discharge from the vagina
 - Foul-smelling meconium may be seen draining from the vagina. It indicates foetal distress with possible infection.
 - The amniotic fluid may have already drained away. This is dangerous with regard to survival of the foetus.
 - Oedema of the vulva may be seen, especially if the woman has been bearing down for a long time;
 - The vagina may be hot and dry because of dehydration;

- ❑ Oedema of the cervix may be present; this further prevents descent of the head;
- ❑ Incomplete dilatation of the cervix (in mid-cavity obstruction; though the cervix may be fully dilated in the case of outlet obstruction);
- ❑ A large caput succedaneum, or any other abnormal presentation, can be felt;
- ❑ The cause of the obstruction may be felt, e.g. a severely moulded head stuck in the pelvis, shoulder presentation, any other abnormal presentation, prolapsed arm, or a compound presentation such as head with hand, cord, etc.

Urine examination

Test the woman's urine for the presence of ketone bodies using a ketostix, if available (ketonuria is present in ketoacidosis and dehydration). Treat with IV fluids (R/L) if ketosis is present.

3.2.4 Symptoms and signs suggestive of ruptured uterus

Symptoms-

- * Shock may be present
- * There is severe abdominal pain
- * Vaginal bleeding may or may not be present

Signs on abdominal examination-

- * Abdominal tenderness is present
- * The foetal parts felt superficially
- * The uterine contour is not felt
- * The FHS is not heard

Signs on vaginal examination-

- * The presenting foetal part is either very high up, or may not be felt at all.

3.2.5 Management of obstructed labour

Rehydrate the patient-

It is essential to maintain a normal plasma volume and prevent or treat dehydration and ketosis.

- (a) Start an IV line. Use a large needle (no. 18) or cannula
- (b) Infuse with R/L or normal saline.
- (c) Run the fluid at a moderate rate of approximately 25-30 drops/minute.

Give Antibiotics-

To prevent puerperal sepsis, which may occur due to frequent vaginal examinations and premature rupture of membranes, the following antibiotics need to be administered to the woman:

- * Inj. Ampicillin 1 g IV, after sensitivity testing
- * Inj. Gentamicin 80 mg IV
- * Inj. Metronidazole 400 mg, preferably IV (if available), otherwise orally.

Refer the patient-

Refer the woman immediately to L0/L1 Hospital as operative intervention is usually required to relieve the obstruction and deliver the baby.

Unit 3.3 Foetal Distress/Abnormal Foetal Heart Rate

Foetal distress or abnormal foetal heart rate is a manifestation of foetal hypoxia. If prolonged, it can lead to serious foetal damage including foetal death.

Learning Objectives:

- Learn and implement the diagnosis and management of fetal distress

3.3.1 Problem

- Abnormal foetal heart rate (<100/min or >160/min)
- Thick, meconium-stained amniotic fluid

3.3.2 Abnormal Foetal Heart Rate

- A normal FHR is between 120 and 160 beats / minute.
- A slow FHR, i.e. <120 beats/minute (foetal bradycardia), in the absence of contractions, or if present persistently, is indicative of foetal distress.
- A normal FHR may slow down during a contraction, but usually recovers to normal as soon as the uterus relaxes. On the contrary, if there is a slowing down of the FHR during a contraction, which persists for a length of time thereafter (late deceleration pattern), it indicates foetal distress.
- A rapid FHR, i.e. >160 beats/minute (foetal tachycardia), may be a response to maternal tachycardia, which may be, in turn, a response to maternal fever, drugs such as terbutaline, etc. hypertension or amnionitis. In the absence of maternal tachycardia, a rapid FHR should be taken as a sign of foetal distress

3.3.3 Meconium staining of the amniotic fluid

- Meconium staining of the amniotic fluid is seen frequently as the foetus matures, and therefore by itself does not indicate foetal distress. A slight degree of meconium staining without heart rate abnormalities is a warning sign of the need for vigilance.
- Thick meconium staining along with FHR abnormalities suggests foetal distress.
- Thick meconium suggests the passage of meconium in a decreased volume of amniotic fluid, and may indicate the need for an expedited delivery and management of the neonatal upper airway at birth to prevent meconium aspiration.
- In a breech presentation, meconium is passed during labour due to compression of the foetal abdomen. This is not a sign of foetal distress unless it occurs in early labour.

3.3.4 Management of foetal distress

General Management

This is aimed at improving the placental perfusion and foetal oxygenation.

- Prop up the woman or place her on her left side (left lateral position) to relieve aorto-caval compression by improving the cardiac output and placental perfusion.
- Stop Oxytocin if it is being administered.
- Give oxygen 4-6 L through a mask or cannula.
- Rapidly infuse about 1 L of R/L to expand the intravascular volume provided there are no contraindications for such an infusion.

Specific Management

- If a maternal cause for FHR abnormality is identified (maternal fever, drugs) initiate appropriate management.
- If a maternal cause is not identified, and the FHR remains abnormal throughout at least three contractions, perform a vaginal examination to check for any explanatory signs of distress, and manage accordingly.
 - If there is vaginal bleeding with intermittent or constant abdominal pain, suspect Abruptio Placenta and manage accordingly
 - If there are signs of infection (fever, foul-smelling vaginal discharge) suspect amnionitis and start the woman on antibiotics (Ampicillin, Gentamicin and Metronidazole).
 - If the cord is prolapsed below the presenting part, or in the vagina, manage appropriately
- If FHR abnormalities persist or there are additional signs of distress (thick, meconium-stained fluid), plan for delivery.
 - If the cervix is fully dilated and the foetal head is low down, expedite delivery by ventouse vacuum extraction
 - If the cervix is not fully dilated or delivery is not imminent (the foetal head is high), refer the woman to L0/L1 hospital as a caesarean section may be required to save the baby.

Unit 3.4 Prolapsed Cord

Learning objectives:

- Have the understanding of the clinical features and management of cord prolapse

3.4.1 Definition

A prolapsed cord is a condition, in which the umbilical cord lies in the birth canal below the foetal presenting part, with the foetal membranes ruptured. The same condition, but with the membranes intact, is known as a cord presentation. The cord may be visible at the introitus or lying outside it.

The immediate complication of cord prolapse is cord compression which can lead to foetal distress, and which can further lead to foetal death if immediate intervention is not carried out.

Cord prolapse is usually a result of improper fit of the presenting part over the pelvic brim, which is often due to foeto-pelvic disproportion or foetal malpresentation.

3.4.2. Management

General Management

Give the woman oxygen through a mask to improve foetal oxygenation.

Specific Management

Pulsating Cord: It means that the foetus is alive and has a reasonable chance of surviving after delivery.

- Diagnose the stage of labour by an immediate vaginal examination

If the woman is in the first stage of labour

- The cord compression can be relieved or lessened by dislodging the presenting part from the pelvis and keeping it like that till the baby is delivered by caesarean section.
- One of the ways is to insert a hand into the vagina after wearing high-level disinfected or sterile gloves and push the presenting part up to decrease the pressure on the cord. Replace the cord back into the vagina
- After doing this, place the other hand on the abdomen on the suprapubic region to keep the presenting part out of the pelvis.
- Once the presenting part is held firmly above the pelvic brim, remove the other hand from the vagina. Keep the hand on the abdomen until caesarean section.
- Another way to relieve the pressure is by introducing a Foley's self-retaining catheter and distending the bladder with 500 ml of normal saline. Clamp the catheter. Release the clamp only when one is ready to extract the baby by a uterine incision during caesarean section.
- In the second method, the distended bladder will also have a tocolytic (uterine relaxant) effect, thus decreasing the cord compression further.
- Give Salbutamol 0.5 mg IV slowly over 2 minutes to reduce uterine contractions.
- Refer the woman immediately to L0/L1 hospital after following preliminary measures for a caesarean section.

- Do NOT try to replace the cord above the presenting part as this may cause constriction of the umbilical vessels resulting in more foetal distress. At best, the cord may be replaced in the vagina while the woman is transported to L0/L1.

If the woman is in the second stage of labour

- Expedite the delivery with an episiotomy and ventouse vacuum extraction or outlet forceps application
- Be prepared to resuscitate the newborn

Non Pulsating Cord: The foetus is dead. Deliver in a manner that is safest for the woman. Allow labour to progress normally if there are no contraindications for a vaginal delivery.

MODULE 4

Management of Third Stage of Labour

- Unit 4.1 Expulsion of the placenta and management of the third stage
- Unit 4.2 Vaginal bleeding after childbirth
- Unit 4.3 Puerperal sepsis
- Unit 4.4 Neonatal Resuscitation and Neonatal Care
- Unit 4.5 General post-partum care

About this Module

This module is designed to develop skill of Merry Silver doctors in management of third stage of labour. It comprises of five units. These units contain learning objectives, and also provide guidelines on initial new born care and postpartum services to be provided at Merrysilver clinics.

Unit 4.1 Expulsion of the Placenta and Management of Third Stage

Learning Objectives:

- Implement the different modalities for active management of the third stage of labour in mother

Active delivery of the placenta helps prevent postpartum haemorrhage. Management of the third stage of labour includes:

- Immediate oxytocin
- Controlled cord traction and
- Uterine massage.

4.1.1 Oxytocin

- Within 1 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. **Make sure there is no additional baby(s) before giving these medications.**
- Although Inj. Oxytocin (in a dose of 10 U IM) is the drug of choice for preventing PPH, Misoprostol can be used for the same purpose. Three tablets of 200 mcg each of Misoprostol (a total dose of 600 mcg) should be given immediately after delivery of the baby. It should be given either sublingually or orally.

Do not give Ergometrine to women with Pre-Eclampsia, Eclampsia or High Blood Pressure because it increases the risk of Convulsions and Cerebro-Vascular Accidents (CVA).

4.1.2 Controlled cord traction

- Clamp the cord close to the perineum using sponge forceps. Hold the clamped cord and the end of forceps with one hand.
- 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 prevent inversion of the uterus.
- Keep slight tension on the cord and await a strong uterine contraction (2–3 minutes).

- When the **uterus becomes rounded or the cord lengthens**, very gently pull downward on the cord to deliver the placenta. Do not wait for a gush of blood before applying traction on the cord. Continue to apply counter traction to the uterus with the other hand.
- If the **placenta does not descend** during 30–40 seconds of controlled cord traction (i.e. there are no signs of placental separation), do not continue to pull on the cord:
 - Gently hold the cord and wait until the uterus is well contracted again. If necessary, use a sponge forceps to clamp the cord closer to the perineum as it lengthens;
 - With the next contraction, repeat controlled cord traction with counter traction.
 - **Never apply cord traction (pull) without applying counter traction (push) above the pubic bone with the other end**
 - 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.
- Slowly pull to complete the delivery.
- If the **membranes tear**, gently examine the upper vagina and cervix wearing high-level disinfected gloves and use a sponge forceps to remove any pieces of membrane that are present.
- Look carefully at 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.
- If **uterine inversion occurs**, reposition the uterus.
- If the **cord is pulled off**, manual removal of the placenta may be necessary.

4.1.3 Uterine massage

- Immediately massage the fundus of the uterus through the woman's abdomen until the uterus is contracted.
- Repeat uterine massage every 15 minutes for the first 2 hours.
- Ensure that the uterus does not become relaxed (soft) after you stop uterine massage.

4.1.4 Retained placenta and placental fragments

- The placenta is said to be retained if it is not delivered within one hour of delivery of the baby.
- Bleeding may or may not occur in cases with a retained placenta. A partially separated placenta, or retained placental fragments are the conditions that cause continuous vaginal bleeding leading to PPH.
- It is an obstetric emergency if vaginal bleeding after delivery continues despite administration of Inj. oxytocin (10 U IM, followed by 10 U in 500 ml of Ringer lactate infusion) and uterine massage. In certain cases the placenta is delivered incompletely, and there are retained placental fragments in the uterine cavity and vaginal bleeding continues.
- **Refer this woman immediately to L0/L1 hospital for manual removal of the placenta (or placental fragments). Do NOT attempt to undertake this procedure without proper skill and facility.**

- Before referral, insert an IV line. If the woman is bleeding, give fluids rapidly. If she is not bleeding, give fluids slowly.
- Occasionally, the placenta may be partially separated, and a part of it may be felt in the vagina, coming out through the cervical os (opening). In such cases, assist in removing the placenta by gently inserting a gloved hand inside the vagina, and slowly pulling out the placenta.

4.1.5 Examination for vaginal and cervical tears

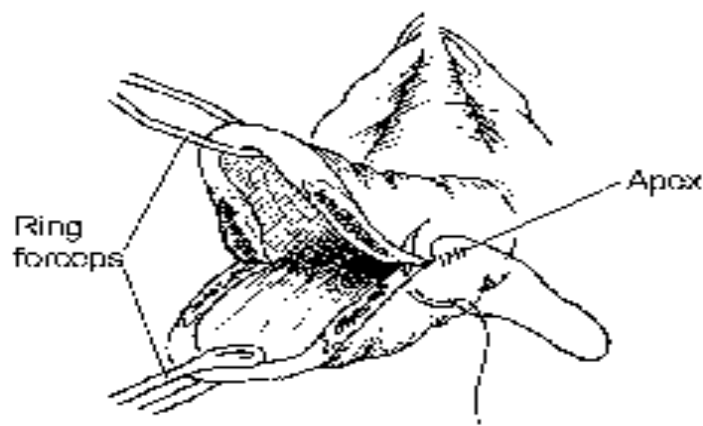
Examine the woman carefully and repair any tears to the cervix or vagina or repair episiotomy very carefully.

Repair of Cervical Tears-

- Review general care principles and apply antiseptic solution to the vagina and cervix.
- Provide emotional support and encouragement. Anaesthesia is not required for most cervical tears. For tears that are high and extensive, give Pethidine and Diazepam IV slowly (do not mix in the same syringe)
- Ask an assistant to massage the uterus and provide fundal pressure to help push the cervix into view.
- Use vaginal retractors as necessary to expose the cervix.
- Gently grasp the cervix with ring or sponge forceps. Apply the forceps on both sides of the tear and gently pull in various directions to see the entire cervix. There may be several tears.
- Close the cervical tears with continuous 0 chromic catgut (or polyglycolic) suture starting at the apex (upper edge of tear), which is often the source of bleeding.
- If a **long section of the rim of the cervix is tattered**, under-run it with continuous 0 chromic catgut (or polyglycolic) suture.
- If the **apex is difficult to reach and ligate**, grasp it with artery or ring forceps. Leave the forceps in place for 4 hours. Do not persist in attempts to ligate the bleeding points as such attempts may increase the bleeding. Then:
 - After 4 hours, open the forceps partially but do not remove;
 - After another 4 hours, remove the forceps completely.

Note: A laparotomy may be required to repair a cervical tear that has extended deep beyond the vaginal vault. Refer to L0/L1 Hospital for further needful.

Fig 8:



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 transection of the anal sphincter.
- Fourth degree tears involve the rectal mucosa.

Note: 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 and Second Degree Tears:

Most first degree tears close spontaneously without sutures.

- Review general care principles.
- Provide emotional support and encouragement. Use local infiltration with lignocaine. If necessary, use a pudendal block.
- Ask an assistant to massage the uterus and provide fundal pressure.
- Carefully examine the vagina, perineum and cervix.
- If the **tear is long and deep through the perineum**, inspect to be sure there is no third or fourth degree tear:
 - Place a gloved finger in the anus;
 - Gently lift the finger and identify the sphincter;
 - Feel for the tone or tightness of the sphincter.
- Change to clean sterile gloves.

If the sphincter is injured, refer to L0/L1 Hospital for needful.

Note: 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.

If the **sphincter is not injured**, proceed with the repair.

- Apply antiseptic solution to the area around the tear.
- 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 muscle 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 convulsion and death if IV injection of lignocaine occurs.**

- At the conclusion of the set of injections, wait 2 minutes and then pinch the area with forceps. If the **woman feels the pinch**, wait 2 more minutes and then retest.
- **Anaesthetize early to provide sufficient time for effect.**
- Repair the vaginal mucosa using a continuous 2-0 suture:

- Start the repair about 1 cm above the apex (top) of the vaginal tear. Continue the suture to the level of the vaginal opening;
- At the opening of the vagina, bring together the cut edges of the vaginal opening;
- Bring the needle under the vaginal opening and out through the perineal tear and tie.
- Repair the perineal muscles using interrupted 2-0 suture. If the **tear is deep**, place a second layer of the same stitch to close the space.
- Repair the skin using interrupted (or subcuticular) 2-0 sutures starting at the vaginal opening.
- If the **tear was deep**, perform a rectal examination. Make sure no stitches are in the rectum.

Note- Recent tear should be repaired immediately following the delivery of the placenta. This reduces the chances of infection and minimizes the blood loss. In cases of delay beyond 24 hrs, the repair is to be withheld. Antiseptic dressing is prescribed and the wound is allowed to heal by granulation tissue or repaired after the infection is controlled. The complete tear, however, should be repaired after 3 months if delayed beyond 24 hours.

After Care-

The after care of the repaired perineal injuries is similar to that following episiotomy.

Unit 4.2 Vaginal bleeding after childbirth

Learning Objectives:

- Learn the prevention, differential diagnosis and management of post partum hemorrhage

4.2.1 Post Partum Haemorrhage

Post Partum Haemorrhage (PPH) is defined as the loss of 500 ml or more of blood during and after delivery of the baby. As this is difficult to measure, for the sake of convenience, if the woman is bleeding for more than 10 minutes after delivery, label her as a case of PPH and take the necessary action as described below. PPH may be defined as –

- **Immediate** – Vaginal bleeding within first 24 hours
- **Delayed** – Vaginal bleeding after 24 hours of child birth

A) Immediate PPH

It may occur due to a number of causes such as an atonic uterus, tears in the vagina, cervix or perineum, retained placenta or placental fragments, inverted or ruptured uterus, etc. It is important to be able to at least differentiate between conditions that can be partially managed at the Merry Silver clinic level, and those which require referral to L0/L1 hospital. A general management for PPH must be followed before referring the woman to a higher centre.

The general steps to be taken for the management of PPH, before referring the woman are as follows:

- Make a rapid evaluation of the general condition of the woman, especially the pulse, BP, respiration and temperature.
- Try and ascertain the cause of PPH with the help of flowchart given above.
- Give the woman Inj. oxytocin 10 U IM stat.
- Massage the uterus to expel blood and blood clots. Blood clots trapped in the uterus will inhibit effective contractions.
- Establish an IV line and start an IV infusion. Infuse Ringer lactate or normal saline.
- Add 10 U of oxytocin to every bottle (500 ml) of IV fluid that is infused.
- If the woman is bleeding heavily, i.e. soaking 1 pad or cloth in less than 5 minutes, or if there is constant trickling of blood, or if the amount of bleeding after the baby is born exceeds 250 ml, or if the woman is in shock, give fluids rapidly, i.e. @ 60 drops/minute.
- If an IV line cannot be arranged, ensure that the woman has enough fluids to drink; but if the woman is unconscious, DO NOT give her anything to eat or drink.
- Raise and support the woman's legs so that her head is lower than her body. This will help increase the venous return to her heart.
- Keep the woman warm and covered with a blanket. If the woman is in shock, she will feel cold even if the weather is warm.
- Monitor the pulse and BP every 15 minutes.
- Encourage the woman to pass urine to empty the bladder as this facilitates uterine contraction.

- **Rapidly arrange for transport, and refer the woman to L0/L1 hospital, where blood transfusion facilities are available. Also give advance information to the hospital by telephone etc.**
- During transportation continue IV fluids at a slower rate (30 drops/minute).
- Prepare donors (2 to 3) for donating blood in case blood transfusion is required. The donors should accompany the woman during referral.

Remember, the interval from onset to death in a case of PPH can be as little as two hours, unless appropriate life-saving steps are immediately taken.

B) Delayed/secondary PPH (After 24 hours of delivery)

Delayed PPH refers to postpartum bleeding which occurs >24 hours after delivery. It could be either

- Bleeding lasting for >24 hours after delivery, or
- Bleeding occurring >24 hours after delivery
- It could be due to an infection in the uterus or due to retained clots or placental fragments.
- An infection can be suspected by the presence of fever and/or foul-smelling vaginal discharge.
- Give Inj. oxytocin 10 U IM.
- Start an IV infusion. Inject 10 U of oxytocin into each 500 ml (1 bottle) of IV fluids.
- Look for signs of pallor and other signs related to severe anaemia. Also try and estimate the Hb level of the woman. **If severe anaemia is present, refer the woman to L0/L1 hospital, as she might need a blood transfusion.**
- **For all those cases, in which the bleeding does not stop after oxytocin, refer to L0/L1 hospital without delay.**

Unit 4.3 Puerperal sepsis

Learning Objectives:

- Learn and implement the diagnosis and management of Puerperal sepsis

4.3.1 Symptoms and Signs of Puerperal sepsis

- Fever (temperature $>38^{\circ}\text{C}$)
- Lower abdominal pain
- Abnormal and foul-smelling lochia
- Burning micturition

If the general condition of the woman is poor, i.e. if the body temperature of the woman is $>38^{\circ}\text{C}$ and any of the following conditions is present:

- Weakness
- Abdominal tenderness
- Foul-smelling lochia
- Profuse lochia
- Severe lower abdominal pain
- H/o heavy vaginal bleeding
- Burning micturition, with or without flank pain

Then,

- Start IV fluids
- Give the first dose of antibiotics (i.e. Ampicillin 1 g orally, Metronidazole 400 mg orally, and Gentamicin 80 mg IM stat).
- **Refer the woman urgently to L0/L1 hospital.**

If the general condition of the woman is fair, give the first dose of the required oral antibiotic, and refer her to L0/L1 hospital.

Unit 4.4 Neonatal Resuscitation and Neonatal Care

Learning Objectives

- To understand about the immediate newborn care and neonatal resuscitation in newborns.

4.4.1 Immediate Newborn Care

The order in which we carry out immediate care of baby is important. The carry out actions are given below:

Table 9: Immediate Newborn Care – Carry out actions

Call out /note the time of birth	
Deliver the baby onto a warm, clean and dry towel or cloth on a warm dry surface.	<i>A baby should be delivered onto its mother's abdomen, If this is not possible or not acceptable, then on to a clean, warm, safe place close to the mother.</i>
Immediately dry the baby with a warm clean towel or cloth. Wipe eyes.	<i>Thoroughly dry the baby to prevent it getting cold. Wipe away any blood or meconium. Do not wipe off the white greasy substance covering the baby's body (vernix). This helps to protect the baby's skin and gets reabsorbed very quickly.</i>
Assess the baby's breathing while drying.	
Clamp and cut the umbilical cord	
Examine the baby quickly for malformations/birth injury	<i>If there is a major malformation/severe birth injury refer the baby to a newborn unit. Also ensure warmth during examination</i>
Leave the baby between the mother's breasts to start skin-to-skin care	<i>If not possible, place the baby under a radiant warmer</i>
Place an identity label on the baby	<i>At wrist / ankle</i>
Cover the baby's head with a cloth. Cover the mother and baby with a warm cloth.	<i>Cover the mother and baby with a blanket if the room is less than 25⁰C and use room heater</i>
Encourage the initiation of breastfeeding	The baby's need to breathe normally

The following babies need help with their breathing

- Babies who are not breathing / gasping
- Babies who do not have good muscle tone
- Breathing more than 60 per minute
- Persistent Central Cyanosis

If a baby is not breathing well after birth **CALL FOR HELP!**

4.4.2 Neonatal resuscitation

- Approximately 10% of newborn require some assistance to begin breathing at birth; about 1% need extensive resuscitative measures to survive.
- **An increased risk of breathing problems may occur in babies who are:**
 - **Preterm,**
 - **Born after long traumatic labours,**
 - **Born to mothers who received sedation during the late stages of labour.**
- It is essential for health professionals who attend the mother at birth to be skilled at resuscitation and know how to recognize babies at risk.

You must:

- **Anticipate**
- **Be prepared**
- **Know what to do**
- **In what order**
- Be able to work quickly
- Basic resuscitation must begin within one minute of life if a baby has breathing difficulties.

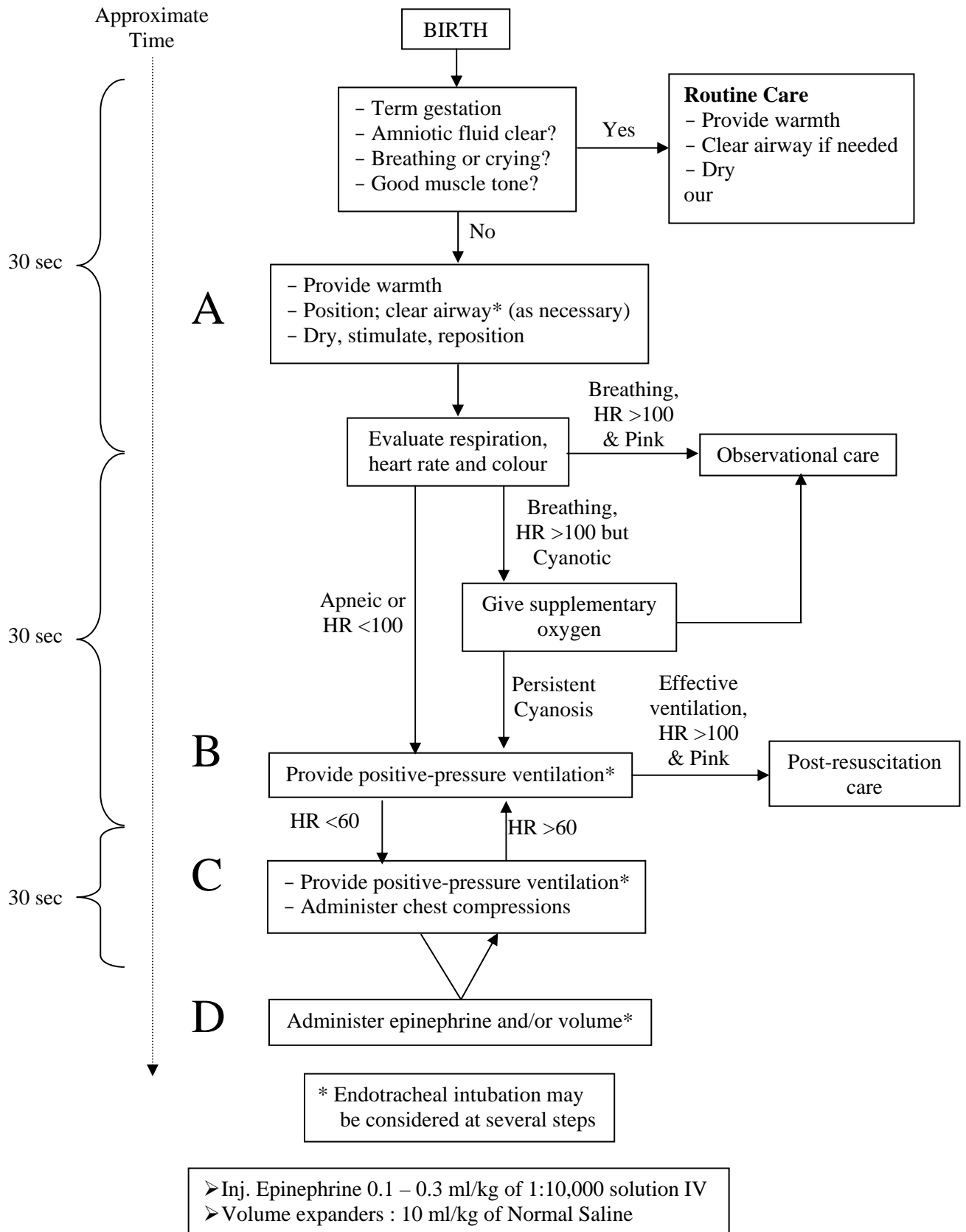
Who needs resuscitation?

- Babies who are not breathing / gasping
- Babies who do not have good muscle tone
- Breathing more than 60 per minute
- Persistent Central Cyanosis

How to Resuscitate?

Figure below provides a flow of actions for performing the steps of resuscitation. The diagram begins with the birth of the baby. Each resuscitation step is shown in a block

Fig 9: Flow Diagram of Neonatal Resuscitation



4.4.3 Keeping a newborn warm after delivery

- Provide a warm, draught free room for delivery at 25-28°C
- Immediately after birth dry baby with a clean, warm, dry cloth
- Put the baby on the mother's abdomen or under a radiant warmer between the mother's breasts/radiant warmer. Cover the baby with a clean cloth.
- Cover the baby's head with a cloth.
- Put the naked baby between the mother's breasts to start skin-to-skin contact. Cover the mother and baby with a warm and dry cover
- **Encourage breast feeding as soon as possible after birth**

If mother and baby's separation is necessary, do the following.

- Wrap the baby in a clean dry warm cloth and place under a radiant warmer. If warmer is not available ensure warmth by wrapping the baby in a clean dry warm cloth and cover with a blanket.
- Delay the first bath to beyond 24 hr period.

4.4.4 Immediate Cord Care

- Clamp and cut cord with a sterile instrument.
- Tie the cord between 2 to 3 cm from the base and cut the remaining cord.
- Observe for oozing blood. If blood oozes, place a second tie between the skin and first tie.
- DO NOT apply any substance to stump.
- DO NOT bind or bandage stump.
- Leave stump uncovered.

4.4.5 Care of the eyes

- The eyes should be cleaned with sterile normal saline soaked swabs, using one swab for each eye.
- DO NOT APPLY any medication to eyes

4.4.6 Quick Examination for malformations/birth injury

Quick but thorough clinical screening is essential **to identify any life threatening congenital anomalies**. The infant should be examined for location and patency of all the orifices because anomalies are frequently encountered around the orifices.

4.4.7 Help the mother to initiate breastfeeding within 1 hour

- After birth, let the baby rest comfortably on the mother's chest in skin-to-skin contact.
- Do NOT give artificial teats or pre-lacteal feeds to the newborn; no water, sugar water or local foods.
- Tell the mother to help the baby to her breast when the baby seems to be ready, usually within the first hour. Signs of readiness to breastfeed are:
 - Baby looking around/moving
 - Mouth open
 - Searching
- Check position and attachment are correct at the first feed. Offer to help the mother at any time
- The baby's first feed of colostrum is very important because it helps to protect against diseases
- The baby can feed from its mother whether she is lying down or sitting; baby and mother must be comfortable
- There is NO NEED to ROUTINELY separate babies born by Caesarean Section or Instrumental delivery from mother

Annexure and References

Annexure 1

Classification Criteria Form

Name of patient		Clinical number	record						
Age									
Address		Telephone							

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

OBSTETRIC HISTORY	No	Yes
1. Number of current pregnancy	_____	
2. Previous stillbirth or neonatal loss?	<input type="checkbox"/>	<input type="checkbox"/>
3. History of 3 or more consecutive spontaneous abortions?	<input type="checkbox"/>	<input type="checkbox"/>
4. Birth weight of last baby < 2500g	<input type="checkbox"/>	<input type="checkbox"/>
5. Birth weight of last baby > 4500g?	<input type="checkbox"/>	<input type="checkbox"/>
6. Last pregnancy: hospital admission for hypertension or pre-eclampsia/ eclampsia?	<input type="checkbox"/>	<input type="checkbox"/>
7. Previous surgery on reproductive tract? (Myomectomy, removal of septum, cone biopsy, classical CS, cervical curettage)	<input type="checkbox"/>	<input type="checkbox"/>

CURRENT PREGNANCY		
8. Diagnosed or suspected multiple pregnancy?	<input type="checkbox"/>	<input type="checkbox"/>
9. Age less than 16 years?	<input type="checkbox"/>	<input type="checkbox"/>
10. Age more than 40 years?	<input type="checkbox"/>	<input type="checkbox"/>
11. Is immunization Rh (-) in current or in previous pregnancy?	<input type="checkbox"/>	<input type="checkbox"/>
11. Vaginal bleeding?	<input type="checkbox"/>	<input type="checkbox"/>
12. Pelvic mass?	<input type="checkbox"/>	<input type="checkbox"/>
	_____	_____

13. Diastolic blood pressure 90mm Hg or more at booking?

GENERAL MEDICAL

14. Insulin-dependant diabetes mellitus?

15. Renal disease?

16. Cardiac disease?

17. Known 'substance' abuse (including heavy alcohol drinking)?

18. Any other severe medical disease or condition?

Please specify "Yes" to any ONE of the above questions means that the woman is not eligible for the basic component of the new antenatal care model.

Is the woman eligible?

 NO YES

If NO, she is referred to

Date

Name

Signature

(Staff responsible for ANC)

Annexure - 2

New WHO antenatal care model basic component checklist

Note: Mark the activities out as appropriate (un-shaded boxes). (Use the closed gestational age at the time of visit)

Name of patient _____

Address and Telephone No. _____

Clinic Record No.: _____

FIRST VISIT for all women at first contact with clinics, regardless of gestational age. If first visit later than recommended, carry out all activities up to that time Date: / /	Visits			
	1 st < 12 weeks	2 nd	3 rd	4 th
Classifying form which indicates eligibility for the basic component of the programme				
Clinical examination				
Clinically severe anaemia? Hb test				
Ob. exam: gestational age estimation, uterine height				
Gyn. exam (can be postponed until second visit)				
Blood pressure taken				
Maternal weight/ height				
Rapid syphilis test performed, detection of symptomatic STI				
Urine test (multiple dipstick) performed				

Blood type and Rh requested				
Tetanus Toxoid given				
Fe/ Folic acid supplementation provided				
Recommendation for emergencies/ hotline for emergencies				
Complete antenatal card				

SECOND VISIT and SUBSEQUENT VISITS Gestational age – approx. # of weeks				
DATE: / / 26weeks 32weeks 38weeks				
Clinical examination for anaemia				
Ob. exam: gestation age estimation, uterine height, fetal heart rate				
Blood pressure taken				
Maternal weight (only women with low weight at first visit)				
Urine test for protein (only nulliparous women/ women with previous pre-eclampsia)				
Fe/ Folic acid supplementation given				
Recommendation for emergencies				
Complete antenatal card				
THIRD VISIT: add to second visit				
DATE: / /				

Haemoglobin test requested				
Tetanus Toxoid (Second dose)				
Instructions for delivery / plan for birth				
Recommendations for lactation/ contraception				
FOURTH VISIT: add to second and third visits				
DATE: / /				
Detection of breech presentation and referral for external cephalic version				
Complete ANC card, recommend that it be brought to hospital				

Staff responsible for antenatal care: Name _____

Signature _____

Annexure - 3

Drugs to be avoided during early pregnancy

Drugs that are known teratogens or can induce abortion

Drug	Effect
Alcohol	Foetal alcohol syndrome
Androgens	Virilization and multiple congenital defects
Antineoplastic agents	Multiple congenital defects
Carbimazole	Aplasia cutis
Corticosteroids (high dose)	Cleft palate
Diethylstilboesterol	Vaginal adenosis and adenocarcinoma in a female foetus
Ergotamine	Increased uterine tone
Misoprostol	Increased uterine tone
Fibrinolytic drugs	Separation of the placenta
Tetracyclines	Yellowish discoloration of the teeth; inhibition of bone growth
Valproate	Neural tube defects
Warfarin	Multiple congenital defects

Drugs that have an increased risk of producing abnormalities

Drug	Effect
Amiodarone	Goitre
Chloroquine	Deafness
Lithium	Goitre, cardiovascular defects
Phenytoin	Multiple congenital defects

Drugs to be avoided or used with care during late pregnancy

Drug	Risk to foetus/neonate
Aspirin	Kernicterus, haemorrhage
Aminoglycosides	Damage of the eighth nerve
Antithyroid drugs	Goitre and hypothyroidism
Benzodiazepines	Floppy baby syndrome
Chloramphenicol	Peripheral vascular collapse
Fibrinolytic drugs	Foetal/maternal haemorrhage
Misoprostol	May induce labour
Narcotic analgesics	Respiratory depression
Nitrofurantoin	Haemolysis
NSAIDs	Closure of ductus arteriosus, delayed prolonged labour
Oral anticoagulants	Foetal retroplacental haemorrhage, microcephaly
Sulphonylureas	Hypoglycaemia
Pethidine	Respiratory depression
Reserpine	Bradycardia, hypothermia, respiratory distress
Sulphonamides	Kernicterus
Tetracyclines	Yellowish discoloration of the teeth, inhibition of bone growth
Thiazide diuretics	Thrombocytopenia

Antibiotics/antibacterials those are safe for use in pregnancy:

- Amoxicillin (with or without clavulanic acid)
- Ampicillin
- Cloxacillin
- Phenoxymethyl penicillin
- Benzyl penicillin
- Benzathine penicillin
- Procaine penicillin
- Cephalexin
- Cefazolin

- Cefotaxime
- Ceftazidime
- Ceftriaxone
- Cefuroxime
- Rifampicin

Antibiotics/antibacterials that are contraindicated in pregnancy:

- Ciprofloxacin
- Doxycycline
- Erythromycin
- Gentamicin
- Streptomycin
- Metronidazole
- Tinidazole
- Nalidixic acid
- Sulphadiazine (during the third trimester)
- Chloramphenicol (during the third trimester)

Antibiotics/antibacterials whose safety profiles for use in pregnancy have not yet been established:

- Nystatin
- Co-trimoxazole
- Tetracycline
- Trimethoprim
- Chloramphenicol

Annexure - 4

Symptoms, signs, probable diagnosis and action required to be taken (At a glance)

Symptoms	Signs/investigations	Most probable diagnosis	Action(s) to be taken
Vomiting during the first trimester		May be physiological	Advise the woman to eat small frequent meals; avoid greasy food; eat lot of green vegetables and drink plenty of fluids. If vomiting is excessive in the morning, ask her to eat dry foods such as biscuits or toast after waking up in the morning.
Excessive vomiting, especially after the first trimester	The woman may be dehydrated	Hyperemesis gravidarum	Refer the woman to L0/L1.
Palpitations, easy Fatiguability, breathlessness at rest	Conjunctival and/or palmer pallor present Hb level <7 g/dl	Severe anaemia	Refer to L0/L1 for further management
Puffiness of the face, generalized body oedema	BP >140/90 mmHg. Proteinuria absent	Hypertensive disorder of pregnancy	Refer to specialist for hypertensive medication
	BP >140/90 mm Hg Proteinuria present	Pre-Eclampsia	Refer to L0/L1. Advise her on the danger signs of imminent eclampsia and eclampsia
Heartburn and nausea		Reflux	Advise the woman to avoid spicy and rich foods. Ask her to take cold milk during attacks. If severe, antacids may be prescribed.
Increased frequency of urination up to 10		May be physiological due to pressure of the	Reassure her that it will be relieved on its own.

12 weeks of pregnancy		gravid uterus on the urinary bladder	
Increased frequency of urination after 12 weeks, or persistent symptoms, or burning on urination	Tenderness may be present at the sides of the abdomen and back - Body temperature may be raised	Urinary tract infection (UTI)	Give the woman the first dose of Ampicillin (1 gm orally) and injection Gentamicin 80 mg IM stat). Refer the woman to the next level.
Constipation		Physiological	Advise the woman to take more fluids, leafy vegetables and a fibre-rich Diet. If not relieved, give her Isabgol, 2 tablespoonfuls to be taken at bedtime, with water or with milk. Do NOT prescribe strong laxatives as they may start uterine contractions
Bleeding P/V, before 20 weeks of gestation	Check the pulse and BP to assess for shock	Threatened abortion/ spontaneous abortion/ hydatidiform mole/ ectopic pregnancy	If woman is bleeding and the retained products of conception can be seen coming out from the vagina, remove them with your finger. Refer to the specialist
	- Ask for history of violence	Spontaneous abortion due to violence	Put her in touch with local support groups
Bleeding P/V, after 20 weeks of gestation	Check the pulse and BP to assess for shock	Ante partum haemorrhage (APH)	Do NOT carry out a vaginal examination under any circumstances. Refer to the next level /specialist
Fever	Blood peripheral smear is positive for malaria parasite.	Malaria	Manage according to the NAMP guidelines for malaria in pregnancy.

	Body temperature is raised	Site of infection somewhere, including possible sepsis	Refer to next level
Decreased or absent foetal movements (NOTE: foetal movements are felt only after about 4 months of gestation.	FHS heard, and within the normal range of 120-160/ minute	Baby is normal	Reassure the woman
	FHS heard, but the rate is <120/minute or >160/ minute	Foetal distress	Repeat FHS after 15 Minutes. If the FHS is still out of the normal range, refer.
	FHS not heard	? Intrauterine foetal death	Inform the woman and her family that the baby might not be well. Refer to the next level
Vaginal discharge, with or without abdominal pain		RTI / STI	Advise the woman regarding vaginal hygiene, i.e. cleaning the external genitalia with soap and Water.
Leaking of watery fluids P/V	Wet pads/cloths	Premature rupture of Membrane (PROM)	Look if the woman is in labour / Refer

Annexure - 5

Diagnosis of vaginal bleeding in early pregnancy

Presenting Symptoms & Signs typically present	Symptoms & Signs sometimes present	Probable Diagnosis
<ul style="list-style-type: none"> - Light bleeding* - Closed cervix - Uterus corresponds to dates 	<ul style="list-style-type: none"> - Cramping/lower abdominal pain - Uterus softer than normal 	Threatened Abortion
<ul style="list-style-type: none"> - Light bleeding - Abdominal pain - Closed cervix - Uterus slightly larger than normal - Uterus softer than normal 	<ul style="list-style-type: none"> - Fainting - Tender adnexal mass - Amenorrhoea - Cervical motion tenderness 	Ectopic pregnancy
<ul style="list-style-type: none"> - Light bleeding - Closed cervix - Uterus smaller than dates - Uterus softer than normal 	<ul style="list-style-type: none"> - Light cramping/ lower abdominal pain - History of expulsion of products of conception 	Complete Abortion
<ul style="list-style-type: none"> - Heavy Bleeding** - Dilated cervix -Uterus correspondence to dates 	<ul style="list-style-type: none"> - Cramping/ lower abdominal pain - Tender Uterus - No expulsion of products of conception 	Inevitable Abortion
<ul style="list-style-type: none"> - Heavy bleeding - Dilated cervix -Uterus smaller than dates 	<ul style="list-style-type: none"> - Cramping/ lower abdominal pain - Partial expulsion of products of conception 	Incomplete Abortion
<ul style="list-style-type: none"> - Heavy bleeding - Dilated cervix -Uterus larger than dates - Uterus softer than normal - Partial expulsion of products of conception which resembles grapes 	<ul style="list-style-type: none"> - Nausea/vomiting - Spontaneous abortion - Cramping/ lower abdominal pain - Ovarian cysts (easily ruptured) - Early onset of pre-eclampsia - No evidence of a foetus 	Molar Pregnancy

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

** Heavy bleeding: takes less than five minutes for a clean pad or cloth to be soaked.

Annexure - 6

Diagnosis of Ante-partum Haemorrhage

Criteria	Placenta Praevia	Abruptio Placenta	Uterine rupture
Nature of the bleeding	<ul style="list-style-type: none"> • Painless, causeless and recurrent • The bleeding is always revealed 	<ul style="list-style-type: none"> • Painful; pain is often localized to start with and later becomes generalized, attributed to pre-eclampsia or trauma and is continuous. • The bleeding is revealed, concealed, or usually mixed 	<ul style="list-style-type: none"> • The bleeding often occurs after the woman has been in labour for a long time. • The bleeding may be concealed or mixed
General condition and anaemia	Proportional to the amount of blood loss	Out of proportion to the visible blood loss in the concealed variety	Out of proportion to the visible blood loss
Features of pre-eclampsia	Not relevant	Present in one-third of cases	Not relevant
Height of the uterus	<ul style="list-style-type: none"> • Proportional to the gestational age 	<ul style="list-style-type: none"> • May be disproportionately enlarged in the concealed type 	Uterine contour not felt; occasionally, the uterus is felt separately on to one side
Feel of the uterus	Soft and relaxed	May be tense, tender and rigid	
Malpresentation	<ul style="list-style-type: none"> • Common; the head is high and floating 	<ul style="list-style-type: none"> • Unrelated; head may be engaged 	<ul style="list-style-type: none"> • Foetal parts felt superficially; Malpresentation may be there
Localization of placenta	Placenta is in the lower segment of the uterus	Placenta is in the upper segment	The placenta may be attached to the uterus or may be lying free in the peritoneal cavity
Vaginal examination	Placenta felt in the lower segment	The placenta is not felt in the lower segment	The presenting part is high up or not felt; the contracted uterus may be felt on one side

Presenting Symptoms & Signs typically present	Symptoms & Signs sometimes present	Probable Diagnosis
<ul style="list-style-type: none"> - Bleeding after 20 weeks of gestation (may be retained in the uterus) - Intermittent or constant abdominal pain 	<ul style="list-style-type: none"> - Shock - Tense/tender uterus - Decreased/ absent foetal movements - Foetal distress or absence of foetal heart sounds 	Abruptio Placenta
<ul style="list-style-type: none"> - Bleeding (intra-abdominal and /or vaginal) - Severe abdominal pain (may decrease after rupture) 	<ul style="list-style-type: none"> - Shock - Abdominal distension/free fluid - Abnormal uterine contour - Tender abdomen - Easily palpable foetal parts - Absent foetal movements and foetal heart sounds - Rapid maternal pulse 	Ruptured Uterus
<ul style="list-style-type: none"> - Bleeding after 20 weeks gestation 	<ul style="list-style-type: none"> - Shock - Bleeding may be precipitated by intercourse - Relaxed uterus - Tender abdomen - Foetal presentation not in pelvis/lower uterine pole feels empty - Normal foetal condition 	Placenta Praevia

Annexure - 7

Antihypertensive drugs for Pregnancy Induced Hypertension

If the **diastolic pressure is 110 mmHg or more**, give antihypertensive drugs. The goal is to keep the diastolic pressure between 90 mmHg and 100 mmHg to prevent cerebral haemorrhage. Hydralazine is the drug of choice.

- **Hydralazine**

- * Give Hydralazine 5 mg IV slowly (3–4 minutes) until the BP is lowered. If it is not possible to give the drug IV, give it IM.
- * If the diastolic pressure remains >90 mmHg, repeat the dose at 30-minute intervals until the diastolic BP is around 90 mmHg.
- * Do not give more than a total of 20 mg.

- **Nifedipine**

- * Give Nifedipine if **Hydralazine is not available**. Puncture a 5 mg capsule, squeeze out half the contents (2.5 mg) and give it orally or sublingually.
- * Monitor the BP after 5 minutes. If there is no precipitous fall in the BP, give the remaining 2.5 mg in a similar manner.
- * If the response is inadequate (diastolic pressure remains above 110 mmHg) after 10 minutes, give an additional 5 mg as above.
- * There is a concern regarding the possibility for an interaction with Magnesium sulphate that can lead to hypotension. Nifedipine should only be used as a second line of treatment.

Annexure – 8

List of Equipments, Furniture, Diagnostic Kits and Reagents

For examination room and antenatal care

- Examination Table
- Foot step
- Foam mattress for examination table
- Bed sheets for examination table
- McIntosh
- Pillows with covers
- Torch with battery dry cells
- Curtains
- Towels
- Stethoscope
- Fetoscope
- Blood Pressure Apparatus
- Thermometer
- Dustbin
- Height measuring tape
- Cheatle forceps
- Equipments and reagents for routine laboratory tests
- IUD insertion kit
- Nischay card test kit
- Computer with internet facility (optional)

For operational labour room

- Labour Table
- Delivery Kits for normal and assisted delivery
- Foam mattress
- Bed sheets
- McIntosh
- Pillows with covers
- Blankets
- Baby blankets
- Towels
- IV stands
- Electricity supply with back up facility (generator or inverter)
- Suction machine
- Facility for oxygen administration
- Equipment for assisted vacuum delivery
- Equipment for assisted forceps delivery
- Standard Surgical set (for minor procedures like episiotomy)

- Equipments for Newborn care and Neonatal resuscitation
 - Baby weighing scale
 - Area earmarked for newborn care
 - Baby warmer / Incubator
 - Table lamp with 200 watt bulb for new born care
 - Ambu bag
 - Laryngoscope and Endotracheal intubation tube
 - Mucus Extractor with suction tube and a foot operated suction machine
 - Feeding Tubes for baby
- Sponge holding forceps
- Volsellum
- Uterine forceps
- MVA syringe and canula of sizes 4-8 (2 sets)
- Kidney tray
- Bowls for antiseptic solutions for soaking cotton swabs
- Tray containing chlorine solution for keeping soiled instruments
- Tray containing chlorine solution for keeping surgical globes
- Shadow less lamp light

Emergency Drug Tray

- Inj. Oxytocin
- Inj. Diazepam
- Tab. Nifedipine
- Magnesium sulphate
- Inj. Lignocaine hydrochloride
- Inj. Methyl Ergometrine Maleate
- Sterilized cotton and gauze

For Ward

- Cots for patient
- Bedside table with locker
- Foam mattress
- Bed sheets
- McIntosh
- Pillows with covers
- Blankets
- Baby blankets
- Towels
- IV stands
- Baby cot
- Stool

For Minor Laboratory

- Haemoglobinometer with reagent
- PH test strips

- Uristix for urine analysis
- ABO and Rh antibodies
- Test tubes
- Pipettes
- Glass rods
- Glass slides
- Cover slips
- Differential blood cell counter

Others

- Stretcher on trolley
- Attached toilet facility
- Basin
- 24 hours running water
- Refrigerator
- Ice box
- Sterilization equipment

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