NORMAL LABOUR AND DELIVERY

Normal Labour and Delivery

Labour

Defn:- Is the process by which the fetus, placenta and membranes are expelled through the birth canal.

Normal Labour

Defn:- Labour with low risk throughout , spontaneous in onset with the fetus presenting by the vertex, culminating in the mother and infant in good condition following birth.

Normal labour:- Occurs at term

- Spontaneous in onset
- The fetus presents by the vertex
- It doesn't exceed 18 hours
- No complications arise

Stages of Labour

The first stage:- Is the stage of dilatation of the cervix.

- It begins with regular rhythmic uterine contractions and is complete when the cervix is fully dilated.

The second stage:- Is the stage of descent and delivery of the fetus.

- It begins when the cervix is fully dilated and is complete when the baby is completely born.

The third stage:- Is the stage of separation and expulsion of placenta and membranes and also involves the control of bleeding.

- It lasts from the birth of the baby until the placenta and membranes have been expelled.

The fourth stage:- The first one hour after expulsion of the placenta and membranes.

- It is the time of special observation.

Premonitory signs of labour

- During the last few weeks of pregnancy, prior to the onset of labour, certain changes take place which, when manifest, are useful to determine the approach of labour.

Lightening:- This is sinking of the uterus in to the pelvic cavity

2 – 3 weeks before the onset of labour.

- The fundus no longer crowds the lungs, breathing is easier, the heart and stomach can function more easily and the woman experiences a relief.

Frequency of micturation:- Congestion in the pelvis limits the capacity of the bladder, requiring it to be emptied more often.

- Laxity of the pelvic floor muscle may give rise to poor sphincter control and a degree of stress incontinence.

False pains:- These are erratic and irregular, causing the uterus to contract and relax but with no retraction, and also dilatation of the cervix.

Taking up of the cervix:- Slight taking up of the cervix occurs, because it is being drawn up and merged into the lower uterine segment.

Signs of labour

Differential diagnosis of true and false labour

True labour	**False labour**
Uterine contraction	
- Always present	- not always present
- Rarely exceed 60 seconds	- may last 3-4 minutes
- Accompanied by abdominal tightening, discomfort or pain.	- may or may not be painful
- Often accompanied by backache	- not accompanied by backache
The cervix	
- Shorten progressively	- doesn't shorten progressively
- The os dilating progressively	- no increase in dilatation
- The membranes feel tense during contraction	- membranes don't become tense
- Show is usually present	- no show

Causes of the onset of labour

- The exact cause of onset of labour remains uncertain but it would appear to be multifactorial in origin, being a combination of hormonal and mechanical factors.
- A complex interaction of maternal, fetal and placental factors is responsible for initiating labour.
- Many theories have been proposed to explain the onset of labour but none can stand alone as the complete explanation.

1. **Progesterone deprivation theory**

- During pregnancy, the proper balance between concentrations of oestrogen and progesterone allows pregnancy to continue.
- Progesterone, secreted first by the corpus luteum and then by the placenta, is essential in maintaining pregnancy.
- It has a sedative action on the smooth muscles of the uterus, so its withdrawal at the end of pregnancy may facilitate the onset of labour.

2. **Oxytocin theory**

- Maternal oestrogen reaches optimum levels in the last weeks of pregnancy, resulting in the formation of oxytocic receptors in uterine muscle cells and opposing the quiescent action of progesterone.
- This, coupled with the rise in prostaglandins provoked by changes in the decidua and membranes, results in uterine contractions.
- The presence of high levels of oxytocin in the fetal circulation during labour is thought that, it has its own contribution in initiating uterine contractions.

3. **Prostaglandin theory**

- Prostaglandin is synthesized by the uterine decidua, at term in response to the release of oestrogen by the fetoplacental unit.
- It is very effective in inducing uterine contractions at any stage of gestation.

4. **Fetal endocrine control theory**

- At the appropriate time of fetal maturity, it appears that the fetal adrenals secret corticosteroids that are felt to trigger the mechanisms leading to labour.
- Corticosteroids are released during periods of stress suggest one cause of premature labour when the fetus is compromised.

- Mechanism of action is that fetal steroids stimulate the release of precursors to prostaglandins, which in turn produces uterine contractions.
- The fetal adrenal cortex produce precursor for the synthesis of oestrogen that rapidly increases during the last week.

5. Uterine stretch theory

- The theory proposes that labour begins when the uterus is stretched to a certain point.
- This theory partially explains the early onset of labour in multiple gestations and cases of polyhydramnios, but does not help to explain what causes preterm labour.

6. Pressure theory

- This theory proposes that the descent of the presenting part stimulates pressure receptors in the lower uterine segment.
- This in turn causes increased secretion of oxytocin stimulates the myometrium to contract and start labour.

7. **Placental aging theory**

- This theory suggests that after 40 weeks of gestation, placental circulation decreases as a result of the degeneration of trophoblastic tissue.
- This alteration in placental vascularization then causes a disruption in the production of placental hormones or perhaps causes the secretion of a new hormone that causes labour to begin.

Average duration of labour

	1st stage	2nd stage	3rd stage
Primigravida	12 hours	1 hour	15 minutes
Multigravida	8 hours	30 minutes	15 minutes

Physiology of the first stage

1. **Contraction with retraction**

- Uterine muscle has a unique property, during labour the contraction does not pass off entirely but muscle fiber retain some of the shortening of contraction instead of becoming completely relaxed.
- This is termed retraction
- This makes the upper segment of the uterus to become thicker and shorter
- It pulls on the lower segment and cervix so that they become thinner, the cervix opens up, is taken up and finally disappears allowing a free passage for the fetus

2. Fundal dominance

– Uterine contractions start in fundal region (near cornua), spreading downwards, being stronger and persisting longer in the upper region.

3. Polarity

– The term used to describe the neuromuscular harmony that prevails between the 2 segments of the uterus during labour.

  – With each contraction they work in harmony:

  – Upper pole contracting strongly and retracting to expel the fetus.

-The lower segment contracting slightly and dilating (therefore if disorganised – progress is inhibited)

4. Formation of upper and lower uterine segments

- By the end of pregnancy the uterus has divided into two segments which are anatomically distinct
- The upper uterine segment is mainly concerned with contraction and is thick and muscular
- The lower uterine segment is prepared for distension and dilatation and is thinner
- It has developed from the isthmus

5. Development of the retraction ring

- A ridge forms between the upper and lower uterine segments which is known as the retraction ring
- This physiological retraction ring is always present but not visible.
- The term Bandl's ring is used for an exaggerated degree of the phenomenon which becomes visible above the symphysis in obstructed labour
- This is a sign that the uterus is about to rupture

6. Taking up of the cervix

- Effacement refers to the inclusion of the cervical canal into the lower uterine segment
- Effacement may occur late in pregnancy or may not take place until labour begins
- In the primigravida cervix will not dilate until effacement is complete, where as in the multigravida effacement and dilatation may occur simultaneously

7. Dilatation of the cervix

- This is the opening up of the cervix and occurs as a result of uterine action and the counter-pressure applied by the bag of membranes and the presenting part
- The lower uterine segment and the cervix are pulled up by the retracting uterus, and a well-flexed fetal head closely applied to the cervix favours efficient dilatation
- Pressure applied evenly to the cervix causes the uterine fundus to respond by contraction

8. Formation of the bag of water

- As the lower uterine segment stretches, the chorion becomes detached from it and the increased intrauterine pressure causes this loosened part of the sac of fluid to bulge downwards into the dilating internal os

- The well-flexed head fits snugly into the cervix and cuts off the fluid in front of the head from that which surrounds the body
- The former is known as the forewater and the later the hindwater
- The effect of separation of the forewater is to prevent the pressure applied to the hindwater during uterine contractions from being applied to the forewater and keeps the membranes intact during the first stage

9. Rupture of the membranes

- The physiological moment for the membranes to rupture is at the end of the first stage of labour when the cervix becomes fully dilated and no longer supports the bag of forewater

- If for any reason there is ill fitting presenting part, the forewater is not cut off effectively and the membranes rupture early and sometimes they rupture days before labour begins and in some cases no reason is apparent

10. Show

- As a result of the dilatation of the cervix, the operculum, which formed the cervical plug during pregnancy is lost
- The woman will see a blood stained mucoid discharge a few hours before or with in a few hours after labour starts
- The blood comes from ruptured capillaries in the parietal decidua where the chorion has become detached and from the dilating cervix

Recognition of the first stage of labour

Recognition by the mother

- It is the woman who usually diagnoses the onset of labour
- Education during the prenatal period is important to enable them to recognize the beginning

Show:- It is quite common to lose a jelly-like discharge in late pregnancy but when a pink jelly-like loss is noted, labour is likely to be imminent or under way

Contractions:- Braxton Hicks contractions are more noticeable in late pregnancy and they are painless, irregular and often last more than 1 minute

- True labour contractions exhibit a pattern of rhythm and regularity, usually increasing in length, strength and frequency as time goes on.

- When the woman first feels contractions she may only be aware of backache but if she places a hand on her abdomen she may perceive simultaneous hardening of the uterus.

Rupture of the membranes:- The woman will have little difficulty in recognizing a sudden gush of fluid as rupture of the membranes and she should be instructed to inform the nurse immediately if this happens.

Confirmation by nurse…

- The nurse should confirm whether the woman is in true labour or not .
- This could be through
    - Hx
    - Physical exam-
        - General condition
        - Abdominal exam
        - Vaginal exam

History taking:-

- If the woman is in early labour, full history should be taken, and her antenatal card should be carefully examined if she had a follow up.

- What are components of history for labouring mothers?

Biographic data

Present labour history (cc)

- Onset of labour – date and time
- If membranes ruptured – date and time
- Frequency and strength of the contractions
- Gravida/Para
- LNMP--- EDD/GA
- ANC follow up
- Any complaint during current pregnancy

Past history

- Parity
- Characters of previous labours and deliveries
- Weights of previous babies
- Condition of previous babies
- Maternal diseases such as pre-eclampsia, diabetes or heart disease
- Rhesus iso-immunization

General examination

- Vital signs – temperature, pulse, blood pressure
- Check for signs of anaemia and jaundice
- Check for oedema and swelling

Abdominal examination

- Inspection
- Palpation
  - Estimation of fundal height (Size of the uterus)
  - Presentation, Lie,
  - Engagement /descent
- Auscultation – the rate and rhythm of fetal heart beat
- Uterine contraction – check the length, strength and frequency

Vaginal examination

- A vaginal examination should always be preceded by an abdominal examination and the woman’s bladder must be empty
- Should be performed under sterile technique.
- Consent should be obtained

Indications

- To make a positive diagnosis of labour
- To make a positive identification of presentation
- To determine whether the head is engaged in case of doubt
- To ascertain whether the forewater has ruptured or to rupture it artificially
- To exclude cord prolapse after rupture of the forewater, especially if there is an ill-fitting presenting part
- To assess progress or delay in labour
- To confirm full dilatation of the cervix
- In multiple pregnancy to confirm the lie and presentation of the second twin and in order to puncture the second amniotic sac.

- **Findings:** by vaginal examination

–**Presenting part**

- **Presentation**

- **Level of presenting part (station)**

- Caput

-Moulding

–**Pelvis**

- Cavity, sacral promontory

- ischial spine(blunt/ prominent)

-- Lateral pelvic side walls- parallel or convergent

- **Membranes**

-intact ▭ bulging or flat

-ruptured ▭ color of liquor

–**cervix**

-Consistency-Ripe, edematous, thick/thin, Firm or soft

- Dilatation ▭ Estimated in cm

-Effacement ▭ long or short- taken up

-Applied to the presenting part- loose or well applied

– **Vagina**

–Lax or tight, warm or hot, moist or dry

Management of the first stage of labour

- The successful out come of the whole labour depend on the careful management of the first stage of labour

A. Admission

- It is important to decide whether the mother is in early or advanced labour by:-
  - taking a quick history of the labour
  - checking her general condition
  - palpating the abdomen
  - doing vaginal examination

B. Nursing care

1. Keep up the mother's courage and morale

- Every mother facing labour is afraid, so we must make her feel that we will help her, that we will be with her.
- Encourage her, and explain to her what is happening.
- Instruct her as necessary.

2. Prevention of infection

- Follow aseptic procedures throughout labour.
- Reduce vaginal examination to the minimum.

3. **Empty bladder**

- A full bladder will prevent the head from descending.
- It also interferes with uterine action
- Stale urine lying in the bladder gives rise to infection

4. **Diet**

- sips of water may be given to prevent acidosis and if it occurs, intravenous drip can be put up.

5. **General care**

- Keep the bed as clean and dry as possible.
- Always explain the mother about the thing what you are going to do for her.

- Keep her privacy.
- Show her how to relax between contractions
- In early labour encourage her to move about
- Lie the mother on her side

6. Relief of pain

- Every labour is painful
- Women are different and some have more fortitude than others and some have low pain-threshold and will feel pain more easily.

Pain can be relieved by:-

- Explaining the woman what is happening during this labour; encourage her, and instruct her how to relax between contractions.
- Sometimes it is helpful to rub up her back.

- Sedatives and analgesics – pethidin 50-100 mg IM is usually ordered by the doctor, if the woman is in severe pain.
- In early labour analgesics like paracetamole will be prescribed.

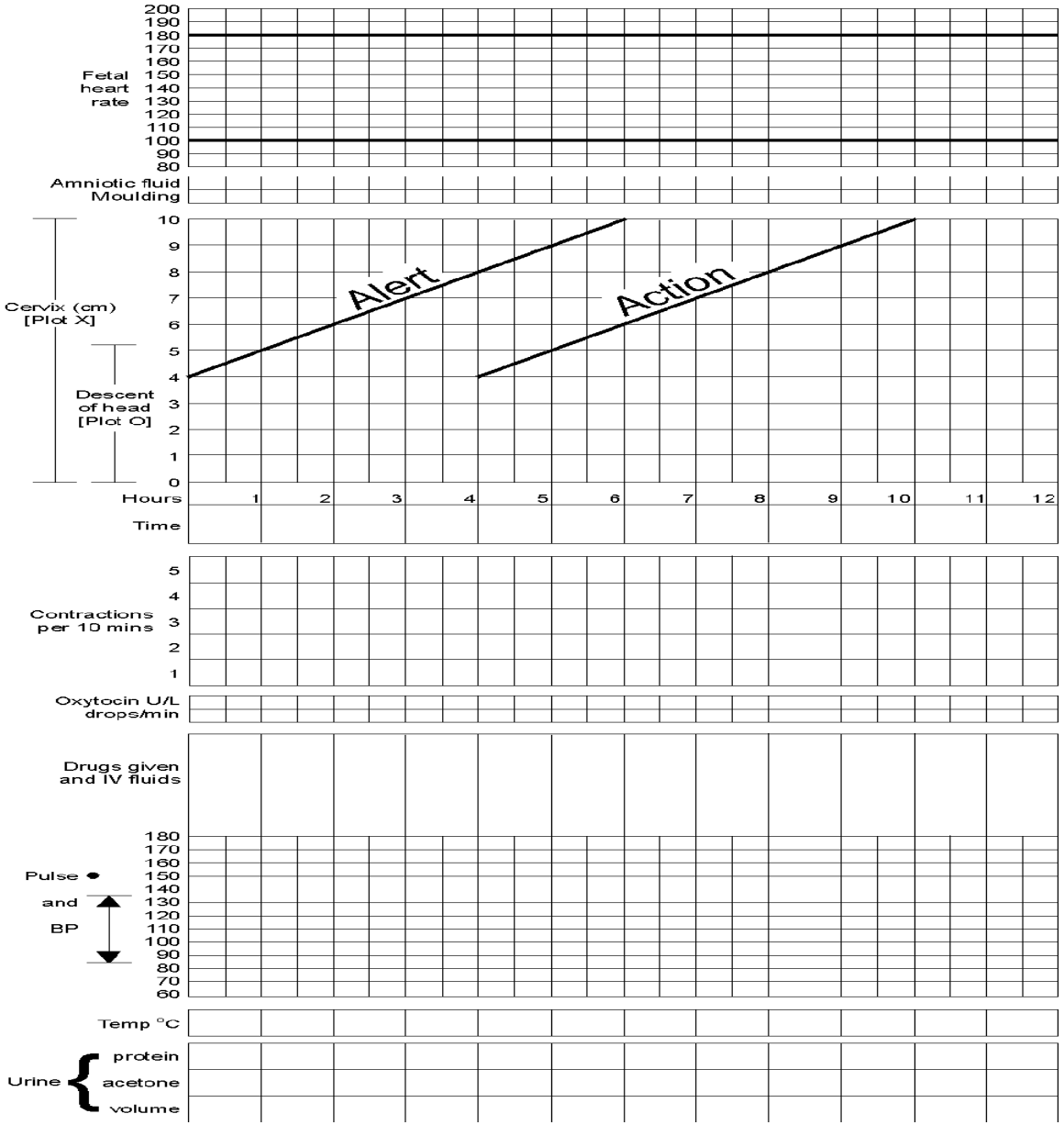
7. Accurate and charted observations

- Each event must be written down immediately after its occurrence.
- Accurate record provides the basis for management as labour progresses
- Never write up anything that is not true.

The Partograph

Name Gravida Para Hospital number

Date of admission Time of admission Ruptured membranes hours



Partograph

- Is a graphic representation of labour
- Is a record of all observations made on a woman in labour
- It is used for to prevent prolonged and obstructed labour.

Recordings

4 hourly – Temperature, blood pressure, abdominal examination, vaginal examination

- Urine is tested if prolonged labour or pre-eclampsia

½ hourly – Uterine contraction – length, strength and frequency

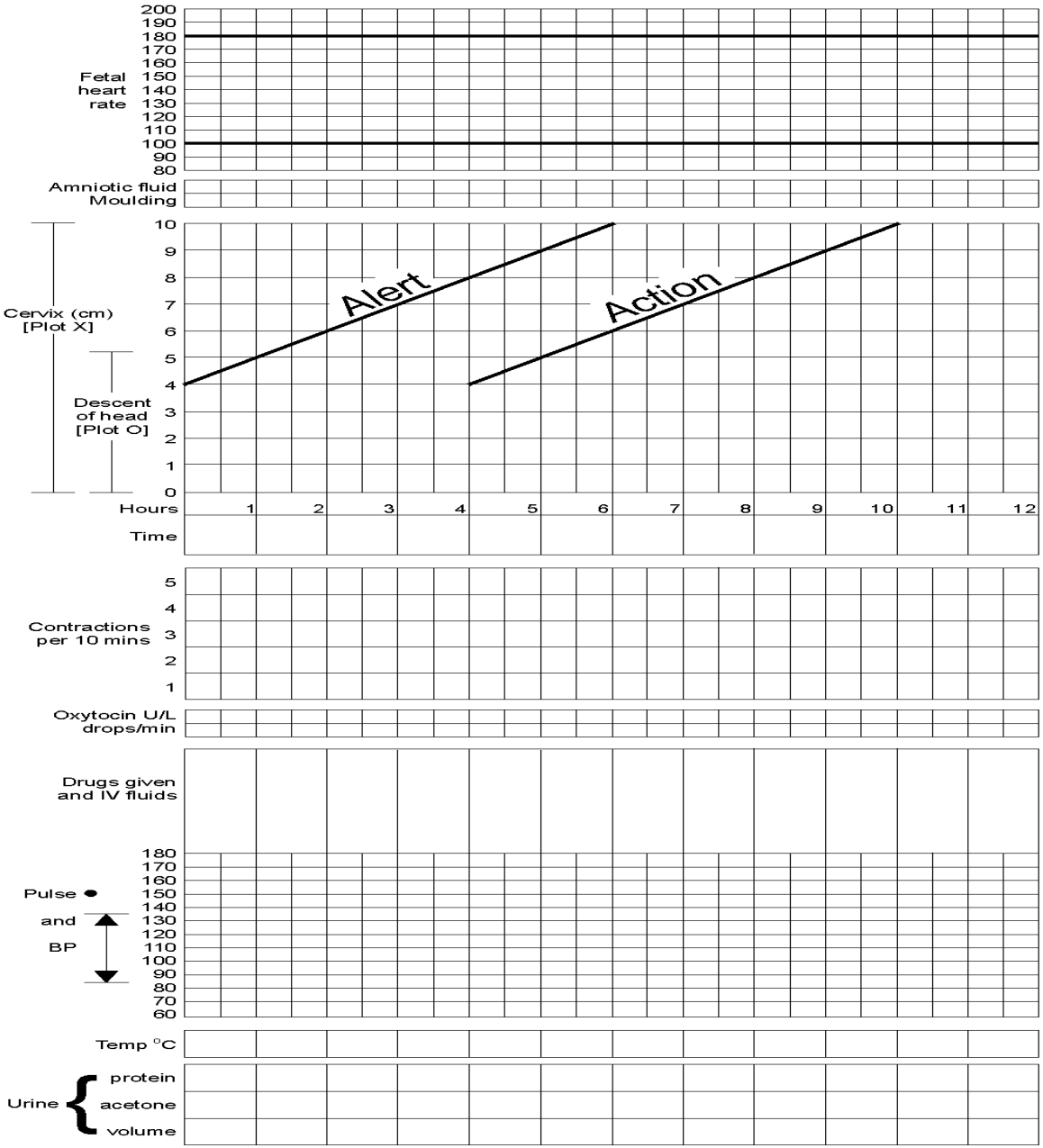
- Pulse and fetal heart beat checked every 15 minutes but charted every ½ an hour.

Components of the partograph

- Fetal condition – fetal heart beat
  - liquor and membranes
  - molding
- Maternal condition – temperature
  - pulse
  - blood pressure
- Cervical condition – dilatation in cm
- Descent – level of the presenting part
- Contraction in 10 minutes – length, strength and frequency
- Oxytocin – drops per minute
- Drugs and IV fluids – fluid balance (input and output)
- Urine analysis – volume, albumin, ketone

Name Gravida Para Hospital number

Date of admission Time of admission Ruptured membranes hours



Recording the findings during 1st stage of labour using partograph

The first stage of labour is divided into latent and active phase

1. **The latent phase:-** is the period of effacement which begins with the onset of labour and ends when cervix is 3 cm dilated.

- In primigravida this phase lasts from 6-8 hours.
- Although regular assessment of maternal and fetal well-being and a record of all findings should be made, these are not plotted on the partograph until labour enters active phase.

2. **The active phase:-** is the phase of acceleration and is much more rapid.

- It begins when the cervix is 4 cm dilated and is completed at full dilatation. i.e. 10 cm.
- The progress in this phase is at a rate of 1 cm per hour and often quicker in multipara mother.

How to record the partograph

1. **Fetal condition:-** fetal heart beat, membranes and liquor and moulding of the fetal bones give information about fetal condition during labour.

Fetal heart rate:- listening and recording the fetal heart rate is a safe reliable way of monitoring how the fetus is doing.

- The FHR is recorded every half hour in the 1st stage of labour, but more frequently at the end of the 1st stage and in the 2nd stage.
- Each square for a fetal heart on the partograph represent 30 minutes.

Membranes and liquor:- the state of liquor can assist in assessing the fetal condition.

- The observations on the membranes and amniotic fluid are made at each vaginal examination.
- If the membranes are intact record as the letter **'I'**
- If the membranes are ruptured:-
    - liquor is clear record as the letter **'C'**
    - liquor is blood stained record as the letter **'B'**
    - liquor is meconiem stained record as the letter **'M'**
- Listen to the fetal heart rate every 5 minutes if:-
    - liquor contains thick green or black meconiem
    - liquor absent at the time of rupture of membranes.

Moulding:- is an important indicator of the pressure exerted on the head by the pelvis in labour.

To record moulding use the following key:-

0:- bones are separated and the sutures can be felt easily

+:- bones are just touching each other

++:- bones are overlapping but can be separated easily with pressure from the fingers

+++:- bones are overlapping and can not be separated easily

- In ++ and +++ the woman should be referred to a higher level of care.

2. **Cervical dilatation:-** this is the most important observation to monitor the progress of labour.

- It is assessed at every vaginal examination and marked with a cross **(X)**

- Plotting begins on the partograph at 4 cm

Alert line:- it started at 4 cm of cervical dilatation to the point of expected full dilatation of the rate of 1 cm per hour.

Action line:- the action line is parallel and 4 hours to the right of alert line.

- If the progress is satisfactory recording of cervical dilatation will remain on or to the left of the alert line.

3. **Descent of the head:-** descent assessed by abdominal palpation, refers to the part of the head (divided into 5 parts) palpable above the symphysis pubis.

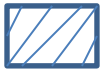
- The descent is plotted as a circle **(0)** at every vaginal examination

4. **Uterine contraction:-** is recorded every 30 minutes on partograph below the time line and at the left side is written contraction per 10 minutes.

- The squares in this section of the partograph are numbered from 1-5, and each square represents one contraction.

The key to record contractions


mild contraction 0-20 seconds


moderate contraction 20-40 seconds


strong contraction 40-60 seconds

- If two contractions felt in 10 minutes two squares will be shaded.

5. **Oxytocin:-** if oxytocin is given write amount of IU given per litter of fluid and write the drops of the fluid per minute next to the oxytocin column.

6. **Drugs and IV fluids:-** if drugs are given and IV fluids are administered during the labour, write the type and amount given on the separate column below the oxytocin column.
7. **Maternal condition:-** all observations for the mother's condition are written at the bottom of the partograph.

- Temperature and blood pressure are recorded 4 hourly
- Pulse is taken every 15 minutes but recorded ½ hourly

8. **Urine analysis:-** ask the mother to pass urine every 2 hours and look at the urine for amount and concentration and record it on the volume part.

- Each specimen should be sent for protein and ketone.

Abnormal progress in labour

Moving to the right of the alert line:- in active phase of labour, plotting of cervical dilatation will normally remain on or to the left of the alert line.

- When dilatation crosses the right of the alert line, this is a warning that labour may be prolonged.
- When the dilatation moves to the right of the alert line a full assessment of the mother, fetus and progress in labour must be made.
- Sometimes rehydration, emptying the bladder and encourage the woman to be more active and move around or adopt an upright position will speed up the progress of labour.
- When labour is not progressing normally the midwife arrange for the woman to be referred to a higher level of care where intervention such as a C/S is available.

Conditions to transfer the mother to hospital

- Prolonged labour
- Fetal distress
- Maternal distress, if the mother is very anxious or dehydrated
- Prolapse of cord or cord presentation
- Any haemorrhage other than ‘show’
- Failure of the presenting part to descend after 6 to 8 hours of good uterine contractions.
- Abnormal uterine action
- Any time when in doubt

Recording and plotting on the partograph

Example:- 1. W/o Abebech is admitted in labour ward at 8 am. On abdominal examination the contractions are 2 in 10 minutes, each lasting 20 seconds. The head is 4/5 above the brim and the fetal heart rate is 130/minutes. On vaginal examination the cervix is 4 cm dilated, membranes are intact, and no moulding felt. Her blood pressure is 110/70mmHg; her pulse 78/minute; temperature 37^{o}c. She passed 100ml of urine; protein and acetone are negative.

2. An abdominal and vaginal examination is carried out on W/o Abebech at 12 am. Fetal heart rate is 140/m, membranes ruptured, liquor clear and no moulding. Cervix is dilated 8 cm, and descent of the head is 2/5 above the brim. Uterine contractions 3 in 10 minutes, each lasting 50 seconds. Blood pressure 110/70mmHg, pulse 80/minutes and temperature 37^{o}c

Normal Labour and Delivery cont…

3. About 2 hours later the contractions become much stronger, 4 in 10 minutes, each lasting 60 seconds, descent 0/5 and FHB 130/minutes, the mother wants to push, gaping of the vulva and bulging of the perineum. The midwife performed vaginal examination to assess the condition and she realized that no cervix is palpable, clear amniotic fluid, and moulding +1. The pulse is 80/minutes.

- THE SECOND STAGE OF LABOUR

The second stage of labour

Defn:- It is the stage of descent and delivery of the baby.

- It begins when the cervix is fully dilated and ends with the baby's birth.

Physiological changes

Uterine action

- Contractions become stronger and longer but may be less frequent, allowing both mother and fetus a recovery period.
- The membranes often rupture spontaneously.
- Descent and flexion of the fetal head.
- The contractions become expulsive and the woman experiences the need to push.

Soft tissue displacement

As the hard fetal head descends, the soft tissues of the pelvis become displaced.

- Anteriorly, the bladder is pushed upwards into the abdomen.
- Posteriorly, the rectum becomes flattened into the sacral curve.
- Laterally, the levator ani muscles dilate, thin out and are displaced and the perineal body is flattened, stretched and thinned.

Signs of second stage

1. **Expulsive uterine contractions:-** The woman feels a strong desire to push but this condition can occur if the fetus is in an occipitoposterior position, the rectum is full or the woman is highly parous.

2. **Rupture of the forewater:-** This may occur at any time during labour.
3. **Dilatation and gaping of the anus and vulva:-** Deep engagement of the presenting part and premature maternal effort may produce this sign during the latter part of the first stage.
4. **Trickling of blood or show:-** Bleeding due to partial separation of the placenta or ruptured vasa praevea may cause this.
5. **Appearance of the presenting part:-** Large caput, because of excessive moulding can protrude through the cervix prior to full dilatation.

- Breech presentation may also be visible when the cervix is only 7- 8 cm.

Mechanism of the second stage

Mechanism:- Is the series of movements of the fetus in its passage through the birth canal.

Principles common to all mechanisms are:-

- Descent takes place throughout.
- Whichever part leads and first meets the resistance of the pelvic floor will rotate forwards until it comes under the symphysis pubis.
- Whatever emerges from the pelvis will pivot around the pubic bone.

During the mechanism of normal labour the fetus turns slightly to take advantage of the widest available space in each plane of the pelvis.

- The widest diameter of the pelvic brim is transverse; at the out let the greatest space lies in the anteroposterior diameter.

Mechanism of normal labour in vertex presentation

Lie:- Longitudinal

Presentation:- Vertex

Position:- Right or left occipitoanterior

Attitude:- Flexion

Denominator:- Occiput

Presenting part:- Posterior part of the anterior parietal bone.

Main movements

Descent:- Descent of the fetal head into the pelvis often begins before the onset of labour.

- Throughout the first stage of labour the force of contraction and retraction aid descent.
- Following rupture of the forewater and full dilatation of the cervix, maternal effort speeds progress.

Flexion:- This increases throughout labour

- Pressure exerted down the fetal axis will be more forcibly transmitted to the occiput than the sinciput.
- The effect is to increase flexion and results smaller presenting diameter.
- At the onset of labour the suboccipitofrontal diameter, 10 cm, is presenting; with greater flexion of the suboccipitobregmatic diameter, 9.5 cm presents.
- The occiput becomes the leading part.

Internal rotation of the head:- During a contraction the leading part is driven downwards onto the pelvic floor.

- The resistance of this muscular diaphragm brings about rotation.
- In a well-flexed vertex presentation the occiput leads and meets the pelvic floor first and rotates anteriorly through one-eight of the circle.

Crowning:- The occiput slips beneath the sub-pubic arch and the head no longer recedes between contractions and the widest transverse diameter (biparietal) is born.

Extension of the head:- Once crowning has occurred the fetal head can extend, pivoting on the suboccipital region around the pubic bone.

- This releases the sinciput, face and chin which sweep the perineum and are born by a movement of extension.
- The suboccipitofrontal diameter, 10 cm distends the vaginal outlet.

Restitution:- The twist in the neck of the fetus which resulted from internal rotation is now corrected by a slight untwisting movement.

- The occiput moves one-eighth of a circle towards the side from which it started.

Internal rotation of the shoulders:- The shoulders undergo a similar rotation to that of the head to lie the widest anteroposterior diameter of the pelvic out let.

- The anterior shoulder is the first to reach the levator ani muscle and therefore rotates anteriorly to lie under the symphysis pubis
- This movement can be clearly seen as the head turns at the same time.

External rotation of the head:- It occurs in the same direction as restitution and the occiput of the fetal head now lies laterally.

Lateral flexion of the body:- The shoulders are born sequentially, usually the anterior shoulder first.

- The anterior shoulder slips beneath the sub-pubic arch and the posterior shoulder passes over the perineum.

Delivery of the baby:- The remainder of the body is born by lateral flexion as the spine bends sideways through the curved birth canal.

Management of the second stage of labour

- Once the onset of the second stage has been confirmed the woman should not be left with out a midwife in attendance.
- Two phases in progress may be recognized in second stage of labour:-

Latent phase:- A phase during which descent and rotation occurs

- It begins at full cervical dilatation although the presenting part may not yet have reached the pelvic out let.

Active phase:- A phase of descent and urge to push.

- Once the fetal head is visible the woman will probably experience a compulsive urge to push.

Observation during the second stage of labour

- **Uterine contraction:-** The length, strength and frequency of contractions should be assessed continuously.
- **Descent of the presenting part:-** The progress of descent is observed by noting the descent of the fetal head as it advances during contractions and recedes after wards.
- **Fetal condition:-** The liquor amnii is observed for signs of meconiem staining.
- Changes from normal fetal heart rate patterns should be noted.
- **Maternal condition:-** Maternal pulse rate is usually recorded quarter hourly and blood pressure hourly.

Preparation for delivery

- The room in which the delivery is to take place should be warm with a spotlight available so that the perineum can be easily observed.

- A clean area should be prepared to receive the baby and waterproof covers provided to protect the bed and floor.

Have these things ready:-

- Sterile delivery pack which includes:-
    - Two cord clamps
    - Scissors and tissue forceps
    - Needle holder
    - Cord tie
    - Sterile towels
    - Swabs, and sterile gauze
- Surgical gloves, delivery gown
- Lidocan, syringes and catgut in case of episiotomy
- Oxytocic agent and syringe prepared in readiness for active 3rd stage management.

- Warm cloth should be prepared for the baby.
- Neonatal resuscitation equipment – oxygen and suction machine should be ready.
- Antiseptic solution e.g. savalon
- Cotton wool and pads and sterile tampon in case of episiotomy.
- Vitamin K and TTC eye ointment.
- Identification tag.

Position the mother

- Position the woman lying flat on her back with legs drawn up???

Conduct delivery

- When the head bulges the perineum, if it is tight, then perform an episiotomy to prevent laceration or in preterm and breech delivery to prevent cerebral damage.

- Once the head is crowned, place one hand over it to control and prevent it coming out quickly.
- The other hand is on a pad or gauze over the rectum to keep away the stool.
- When the head is born keep left hand on it and wipe the eyes with the right hand, with dry cotton.
- Look for the cord around the neck, if it is there and is tight, clamp and cut in between.
- Wait for the rotation of the shoulders, then with two hands clasped over the parietals, deliver the head down wards until the anterior shoulder escapes under the symphysis and then up ward to deliver the posterior shoulder.
- Slide one hand over the body and lift him out.

- Clear the airways, clamp the cord in two places and cut in between.
- Dry the baby thoroughly and drape it with dry cloth.
- In case of distress, clear the air way and give oxygen and resuscitate the baby properly.
- Label the baby, apply ointment, and give vitamin K 0.1 mg.
- Weigh the baby and continue with the third stage of labour.

THE THIRD STAGE OF LABOUR

The third stage of labour

Defn:- It is the stage of separation and expulsion of the placenta and membranes.

- It begins immediately after the baby is born and lasts until the placenta and membranes has been completely delivered and including control of bleeding.
- It is the shortest but most dangerous stage, and usually lasts between 5 and 15 minutes, but any period up to 30 min may be considered to be within normal limits.
- If the placenta is remained undelivered after 30 min of time the term retained placenta is used.

Cont'd

Physiology of third stage of labour

Four things will happen in the third stage of labour

1. **Separation of the placenta:-** The uterus continues to contract and retract during and after the birth of the baby, this causes the uterus to become smaller, but the placenta remains the same size, the placenta therefore is pushed of the uterine wall.
2. **Descent of the placenta:-** When the placenta has completely separated, the contracting uterus pushes it down into the lower uterine segment and in the vagina.

- The weight of the placenta itself pulls the chorine off the uterine wall, as it passes down slowly

3. **Expulsion of the placenta:-** there are two types of placental expulsion.

A. **Schultze method:-** Usually the placenta is separated centrally, so that a retroplacental clot is formed.

- This may further aid separation by exerting pressure at mid point of placental attachment, there is no visible blood loss.
- The blood enclosed in a membrane bag as the placenta descends, and expelled with fetal surface first.
- It is so called a clean method.

B. **Mathew Duncan method:-** The placenta may begin to detach asymmetrically at one side of its lateral border.

- The blood escapes and the placenta descends, slipping side ways and expelled with maternal surface first.
- It is also called dirty method.

4. **Control of bleeding:-** Bleeding is controlled by two forces.

A. The action of the “living ligatures” that is the oblique muscle fibers of the uterus which run in and out between the blood vessels, and when the uterus is contracted they clamp or tie off the blood vessels very securely and the bleeding stops.

B. The pregnant mother has extra clotting power in her blood at this time, and the clotting mechanism is very powerful.

Oxytocic (Uterotonic) drugs

- In addition to the action of the “living ligatures” and the increased clotting power at this time, there are oxytocic drugs that stimulate the uterus to contract, these includes:-

1. **Syntometrin:-** Is a combination of syntocinon and ergometrine.

- 1 ml ampoule contains 5 units of syntocinon and 0.5 mg ergometrine.
- It is administered by IM injection

Time of action:- Syntocinon acts within 2 minutes and the ergometrine within 6-7 minutes.

- Their combination action results in a rapid uterine action enhanced by a stronger, more sustained contraction lasting several hours.
- It’s side effect includes elevation of blood pressure, nausea and vomiting.

2. **Syntocinon:-** Is a synthetic form of the natural oxytocin.

- It is safe to use in a wider context.
- It is administered if the mother is hypertensive and to reduce vomiting associated with administration of ergometrine.
- Effective oxytocic choice for routine prophylactic management of third stage.

Time of action:- Is 2 minutes, and can be administered 5-10 IU both as an IV and IM injection.

3. **Ergometrine:-** 0.5 mg IM acts with in 6-7 minutes and 0.25 mg IV acts with in 45 seconds.

- It has long effect lasting several hours.
- No more than 2 doses of ergometrine 0.5 mg should be given as it can cause head ache, nausea vomiting and hypertension.

- It is contraindicated in heart disease and hypertensive disorder
- It is usually given after the placenta is delivered.

4. **Prostaglandins:-** It is more often associated with the treatment of postpartum hemorrhage than with prophylaxis.
5. **Misoprostol:-** It is a prostaglandin E_1 analogue

- Suitable for oral administration (simple routes of delivery)
- Rapidly absorbed
- Not prone to problems of temperature control (no need of refrigeration)
- Suitable uterotonic agent for use in prophylactic management of the third stage.
- Long shelf life.
- Relatively few side effects (nausea, vomiting, chills, fever, diarrhea)

- It is given for both treatment and prevention of PPH
- It is particularly useful for developing countries
- Misoprostol 600 µg orally is given after the delivery of the baby and after checking that there is no other fetus in the uterus.
- Onset of action of oral rout of misoprostol is 8 minutes and duration of action is 2 hours.

Management of third stage of labour

- Now a days a recommended third stage management is Active Management of Third Stage of Labour (AMTSL) in order to reduce maternal mortality which is caused by PPH.
- A series of procedures, conducted during the 3rd stage of labour are collectively called active management.
- It consists of interventions designed to speed up the delivery of the placenta by enhancing uterine contractions and prevents PPH by avoiding uterine atony.

The components of AMTSL are:-

1. Giving uterotonic drug with in one minute of delivery of the baby.
2. Applying controlled cord traction while applying simultaneous counter pressure to the uterus just above the pubic bone.
3. Immediately massage the funds of the uterus until the uterus is contracted.

1. Giving uterotonic drug

- Palpate the abdomen and rule out the presence of an additional baby(s)
- Give oxytocin 10 IU IM within 1 minute of delivery of the baby.
- Oxytocin is preferable because its effect is fast (after 2 minutes of injection), has minimal side effects and can be used in all women.

- If oxytocin is not available, give ergometrine 0.2 mg IM.
- Do not give ergometrine to woman with pre-eclampsia, eclampsia, high blood pressure or cardiac disease, because it increases the risk of convulsion and cerebrovascular accidents.

3. Appling 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.

- Keep slight tension on the cord and wait a strong contraction (2-3 minutes)
- Do not wait for a gush of blood or/and the signs of placental separation before applying traction.
- With strong contraction, very gently pull down ward on the cord to deliver the placenta with one hand while applying counter traction to the uterus with the other hand.
- As the placenta is delivered, hold it with two hands and gently turn it until the membranes are twisted and slowly pull to complete the delivery.
- Examine the placenta and membranes carefully to be sure that it is complete and none of the cotyledons are missing and membranes are torn and retained.
- Look for extra hole and the number of blood vessels.

4. **Uterine massage**

- Immediately massage the fundus of the uterus until the uterus is contracted.
- Massage the uterus every 15 minutes for the first 2 hours.
- Ensure that the uterus doesn’t become relaxed after you stop massaging.

Episiotomy

Defn:- Is a cut into the perineum to widen the vulval outlet during birth.

Indications

- To prevent serious tears when the perineum is tight.
- To prevent intracranial damage in pre-term and breech delivery.
- To hasten delivery in fetal distress or maternal distress when the head is on the perineum, and woman is ready to deliver.
- To make more room in forceps or vacuum delivery.

An episiotomy involves incision of the forchette, the superficial muscles, the skin of perineum and posterior wall of the vagina.

- It is performed after crowning took place and the presenting part stretched the perineum to prevent pain and minimize bleeding.

Types of incision

- There are four types of episiotomy but the first two are the main directions of incisions.

1. **Mediolateral:-** This is the most common and largely used by midwives.
   - It begins at the midpoint of the forchette and is directed at a 45 degree angle to the midline towards a point mid-way between the ischeal tuberosity and the anus.
   - This line avoids the danger of damage to both the anal sphincter and Bartholin's gland but it is the more difficult to repair.
2. **Median:-** This is a midline incision which follows the natural line of insertion of the perineal muscles.

- It is associated with reduced blood loss but a higher incidence of damage to the anal sphincter.
- It is the easier to repair and results in less pain and dyspareunia.

3. **Lateral:-** It is done laterally but not common because of risk of damaging the Bartholin's glands.
4. **J-shaped:-** It is performed like the letter 'J' first medially and then to the lateral side.

- It is not a common type.

Method of infiltration

- Lidocan 0.5% 10 ml or 1% 5 ml should be ready.
- The perineum is cleansed with antiseptic solution.
- Two fingers are inserted to the vagina along the line of the proposed incision in order to protect the fetal head.

- Insert the needle 4-5 cm and then pull back the piston to make sure the needle is out of a blood vessel, then inject continuously as the needle is slowly withdrawn and repeat in other two directions at the episiotomy site.
- Wait 3-4 minute until the lidocan takes effect.

Method of incision

- Insert two fingers into the vagina and the open blades are positioned.
- A straight-bladed, blunt-ended pair scissors is usually used.
- The blades should be sharp to insure clean incision.
- The incision is best made during a contraction when the tissues are stretched.
- A single deliberate cut 4-5 cm long is made at the correct angle.

Repair of episiotomy

- Insert vaginal pack (tampon).

Episiotomy is sutured in three layers

1. The vaginal wall is sutured starting the apex down wards with a continuous suture.
2. The perineal muscle is repaired with deep interrupted sutures.

- Good approximation of tissue is important.

3. The perineal skin is closed with 3-4 interrupted sutures.

- The sutured areas should be inspected in order to confirm homeostasis before the vaginal pack is removed.
- Further vulval lacerations should be repaired.
- A vaginal examination is made to ensure that the introitus has not been narrowed.

- Up on completion a rectal examination is made in order to ensure that no sutures have penetrated the rectal mucosa.
- Remove the vaginal pack
- The area is cleansed and a sterile sanitary pad positioned over the vulva and perineum.
- Comfort the mother and advise her about sitz bath.

Normal puerperium

Puerperium

Defn:- Puerperium is the period immediately after the end of labour until the reproductive organs return to their pre gravidic state.

- It is a period of approximately 6 weeks which commence following completion of the third stage of labour.

Physiologic changes during puerperium

1. The reproductive organs return to their pregravidic state.
2. Other physiological changes occurred during pregnancy are reversed.
3. The mother recovers from the physical and emotional stress of pregnancy and delivery.
4. Lactation is established.
5. The mother assumes responsibility for the care and nurture of her baby and the family adjusts to the new baby.

Normal puerperium cont…

Physiology of puerperium

Involution: The returning of uterus to its non pregnant state and size.

Normal puerperium cont…

Lochia:- A discharge from the uterus during the puerperium.

- Has an alkaline reaction in which organisms can flourish more rapidly than the normal acidic secretions of the vagina.
- The odour of normal lochia is heavy but not offensive.
- The amount can vary in individual woman.

Type of lochia

1. **Red lochia (lochia rubra):-** Are usually red in colour, consisting of blood from the placental site, debris arising from the decidua and chorine and are shed during the first 3-4 days of the puerperium.
2. **Serous lochia (lochia serosa):-** Are pink in colour and discharged during the next 5-9 days.

- The lochia now have less blood and more serum and contain leucocytes from the placental site.

Normal puerperium cont…

3. **White lochia (lochia alba):-** Are paler, creamy-brown in colour, and contain leucocytes, cervical mucus and debris from healing tissues Which lasts 9-12 days.

- Persistent red lochia suggests retained products, and severe hemorrhage (puerperal hemorrhage) may occur.
- Persistent red and offensive lochia suggests intrauterine infection.

Management of normal puerperium

Immediate care

A. The uterus should remain contracted, hard as pumpkin.
B. Blood loss should not be excessive.
C. Pulse should not be over 90/minute
D. If the uterus is soft and bulky, express clots, and give ergometrine.

Normal puerperium cont…

E. Bladder should be emptied, and temperature and blood pressure should be checked regularly.

Daily care

- Antisepsis is important during the first week, and room, linen, skin should be clean.
- Temperature and pulse should be normal.

1. **Fundal height:-** This reduces every day by 1 or 2 cm (1 finger).

- At the completion of labour the fundus is about 12 cm above the symphysis, but 24 hours later it will have risen to the umbilicus, one week later the uterus is 7 cm above the symphysis, and at about 12 days it is not felt at all.

2. **Lochia:-** Should be observed daily

Amount:- Excessive suggests retained products

- Scanty amount suggests poor drainage.

Normal puerperium cont...

Colour:- Persistent red lochia shows danger of hemorrhage.

Odour:- Offensive lochia, with pyrexia and subinvolution suggests infection.

Consistency:- There may be pieces of membrane.

3. **Bladder:-** Large amounts of urine are secreted during the first few days.
4. **Bowels:-** Tend to be sluggish, she should be encouraged to eat fruit.
5. **Diet:-** Nourishing food, with iron and roughage.
6. **Rest and sleep:-** Woman may be kept awake by some discomfort, which should be relieved, sedation may be necessary, especially if mother has raised blood pressure.
7. **Hygiene:-** Bath and vulval hygiene daily

Normal puerperium cont…

8. **Advice:-** On discharge should be given about all the above points.

- Advice on family planning, postnatal visit, immunization, care of cord, breast feeding, and care of episiotomy.

Normal puerperium cont...

Postnatal care

Post natal examination

Vital signs:- Pulse, blood pressure, temperature should be checked.

Systematic physical examination

Hair:- For its cleanliness

General appearance:- Face – is it puffy or edematous

Eyes:- For signs of anemia or jaundice

Lips:- Are they dry

Mouth:- Tongue, teeth – are they moist, clean

Ears:- Any discharge, pain

Nose:- Bleeding, blockage

Neck:- Any swelling

Breasts:- For engorgement, amount of milk production, nipples.

Normal puerperium cont…

Abdomen:- For any tenderness, distension, full bladder

- If caesarean section:- ensure healing of wound

Vulva:- If episiotomy – ensure the healing, advice sitz bath

- Lochia – amount, colour and consistency, odour.
- Oedema, varicose veins.

- Lower extremities for varicose veins, venous thrombosis, oedema.
- All findings should be recorded accordingly.

Normal puerperium cont…

Child care

- Advice on exclusive breast feeding and proper child care
- Growth monitoring
- Immunization
- Advice on avoiding harmful customs
- Check for cord healing
- Advice on hygienic care of the baby and on prevention of infection.