Normal Labour and Delivery, and Puerperium

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Normal Labour

- **Learning objectives**: At the end of this course the student will able to:
  - Define Labour and delivery,
  - Define Normal Labour,
  - Describe the difference between true and false labor
  - Describe cardinal movements in the mechanism of labor,
  - Describe the stages of labor,
  - Describe physiology change of during labour,
  - Management normal labor with modified partograph and WHO partograph.

INTRODUCTION

- **Labor** is a continuous process in which progressive regular uterine contractions result in the expulsion of the products of conception from the uterus through the birth canal after progressive effacement and dilatation of the cervix and descent of the fetus.
- **Delivery**: Is the mode of expulsion of the fetus, placenta and membrane.

Cont.…

- **Labor can be**:-
  - **Preterm** if it starts before 37 completed weeks
  - **Term** if it starts between 37-42 weeks
  - **Post term** if it starts after 42 weeks
- **Labour can be**: spontaneous or induced.
- **Labour can be**: False labour, True labour.
- **Labour can be:** Normal, Abnormal labour.

….INTRODUCTION

- Normal labour characteristics
  - Spontaneous onset
  - Starts at term (37-42 complete weeks)
  - Vertex presentation with OA position
  - Spontaneous vertex delivery without active intervention
  - Completed within 18hrs by maternal effort without complication.

……Introduction

Prodromal signs

- Are signs that indicate the preparation for the imminence of labour
  - ➢Engagement
  - ➢Increased pressure on the pelvis
  - ➢Increased Mucoid discharge
    - ✓**if** Bloody Mucoid discharge =**Show**
  - ➢Increased frequency of painless uterine contraction =**Braxton-Hicks contraction**
  - ➢**Lightening** is a sensation of the fetus falling down in to the pelvis and emptiness in the upper abdomen
    - ✓Felt by most primigravida.
    - ✓in the last weeks of pregnancy denotes descent of the fetal head

Difference b/n true labour & false labour

False labor	True labor
Contraction occurs at irregular interval	Contraction occurs at regular intervals
With time contraction remains the same or decrease in intensity, frequency	With time contraction increases in intensity, frequency & duration
Contraction disappears with analgesics	Contraction persist despite analgesics
There is no cervical effacement & dilatation	There is progressive cervical dilatation & effacement.
There is no show	There is show
Occurs in the last trimester	Occurs when labour commences

Diagnosis and confirmation of labour

- **Suspect or anticipate labour if the woman has:**

-Intermittent abdominal pain after 28 weeks gestation;

-Pain often associated with blood-stained mucus discharge (show);

-Watery vaginal discharge or a sudden gush of water.

Cont.…

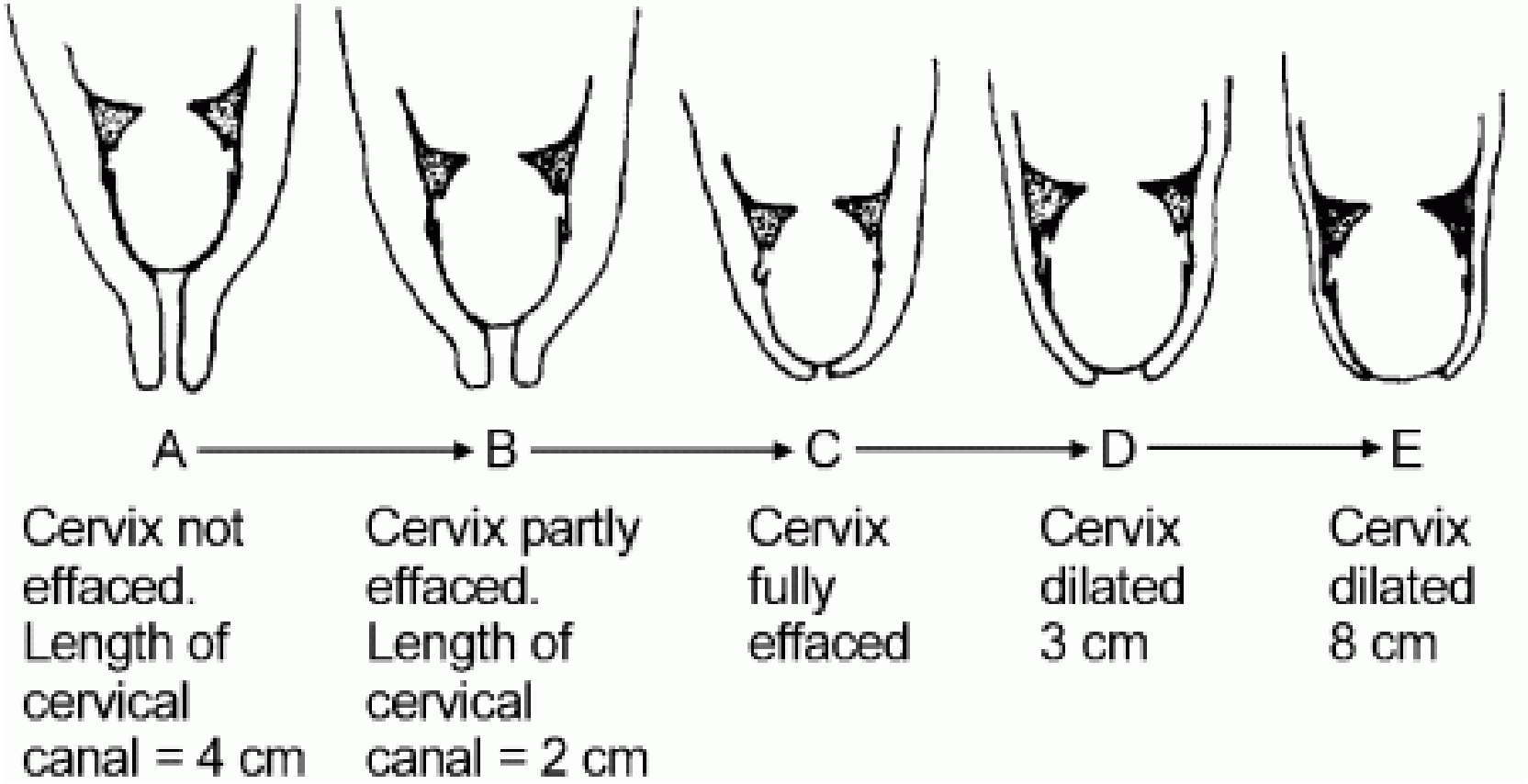
Confirm the onset of labour if there is:

-Pain full regular contractions of at least 2 contractions in 10minute

-Cervical effacement—the progressive shortening and thinning of the cervix during labour;

-Cervical dilatation—the increase in diameter of the cervical opening measured in centimeters.

Figure: Effacement and dilatation of the cervix



The mechanics of labor

- For a successful birth, a fetus has to
  - negotiate the birth canal and
  - propelled by the uterine contraction
- Successfully negotiation is dependent on the complex interaction of 3 variables :
  - A. Power
  - B. Passage
  - C. Passenger

A. Power

- Pelvic Bones and Pelvimetry
- Two forces
  - The force generated by the uterus
  - Voluntary action of the abdominal muscle
- Uterine activity is characterized by frequency, duration, and intensity

Characteristics of uterine contraction

Frequency: number of contraction per ten minute

Duration: the duration of each contraction from onset to decline

Intensity: refers to the strength of contraction

- Weak
- Moderate
- Strong

- Adequacy
  - taken as 3-5/10 minute each lasting 40-90 second (95%)

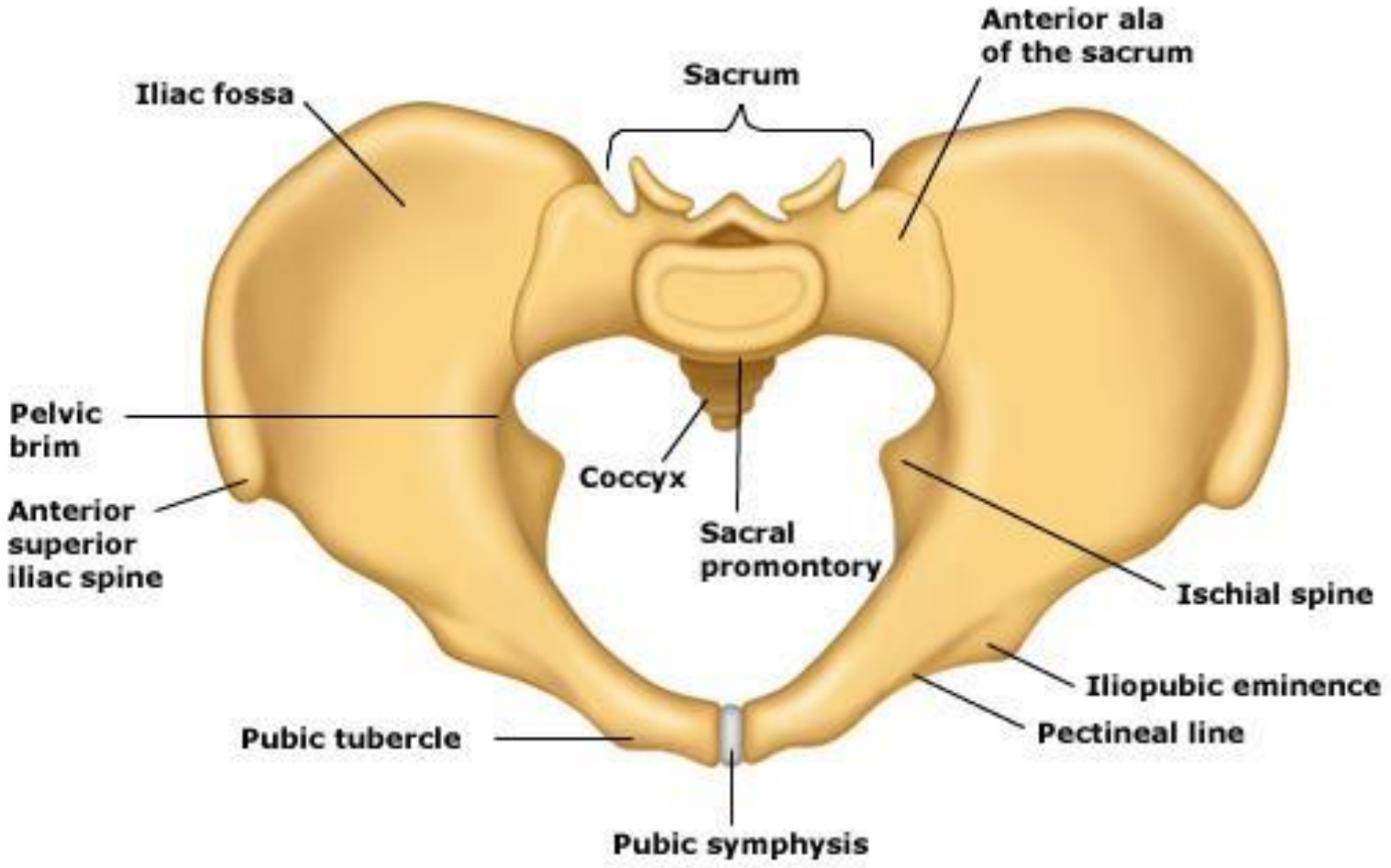
The Passage

- The passage includes the bony pelvis and the resistance provided by the soft tissues.
- Bony pelvis is composed of four bones: two innominate bones, sacrum and coccyx.
- Fused by four joints:
  - Two sacroiliac joints: capsule & synovial joint
  - Symphysis pubis: no capsule
  - Sacrococcygeal joint

False & True pelvis

- Pelvis is anatomically divided in to two:
  - False pelvis and true pelvis
- Demarcation between the two is by:
  - the sacral promontory,
  - anterior ala of sacrum,
  - arcuate line of ilium,
  - the pectineal line of pubis &
  - the pubic crest culminating in Symphysis pubis from posterior to anterior on both sides.

Female pelvis – Superior/Anterior view



The False pelvis

- False Pelvis
  - Formed by the iliac portions of the innominate bone and limited by the iliac crests
  - Little obstetric significance
  - Only supports the uterus during pregnancy
- True Pelvis
  - Forms the canal through which the fetus passes
  - Shallow anteriorly (4cm), and deep posteriorly (11.5 cm)
  - Divided into inlet, cavity and outlet.

Physiological changes during pregnancy & labor in the passage

- Increase in width & mobility of symphysis
- Relaxation & mobility of sacro-iliac joint
- Increase in antero-posterior diameter of inlet during labor- rotatory movement of sacroiliac joint
- In dorsolithotomy position, the antero-posterior diameter of outlet by 1.5-2 cm

The Passenger (the fetus)

Several fetal variables influence the course of labor

and delivery including

1. **Fetal size**: Estimated clinically, by ultrasound or the mother
   - Fetal macrosomia: 4500 gm (ACOG)
2. **Fetal lie**: relation of longitudinal axis of the fetus with the mother
   - It could be longitudinal, transverse or oblique
   - Longitudinal lie favors vaginal delivery in singletons

Fetus- cont’d

3. **Presentation**: Vertex, face, brow, breech, compound, funic, etc

- This is because of presenting diameters and compressibility during labor

4. **Attitude**: position of head with regard to fetal spine

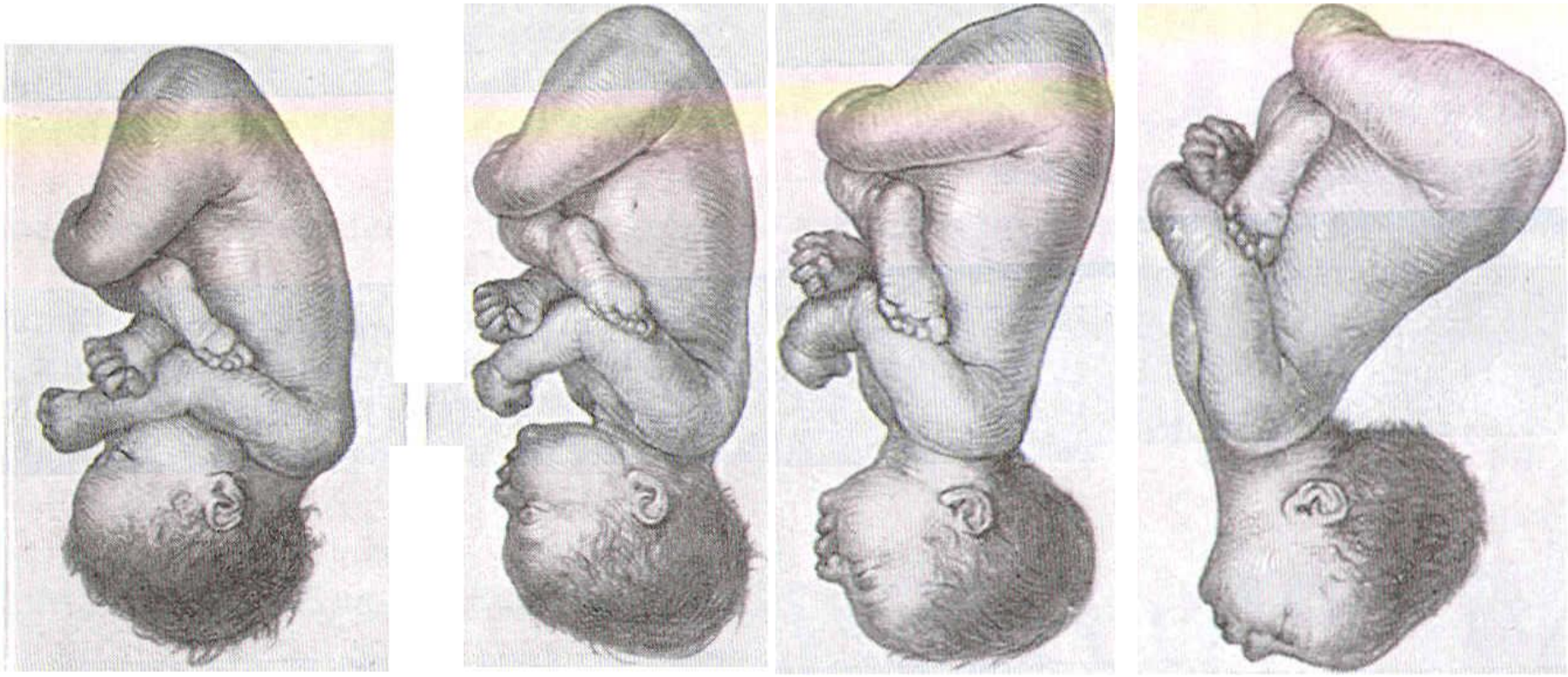
- Well flexed head has a presenting diameter of 9.5 cm(suboccipitobregmatic diameter)

Cont…

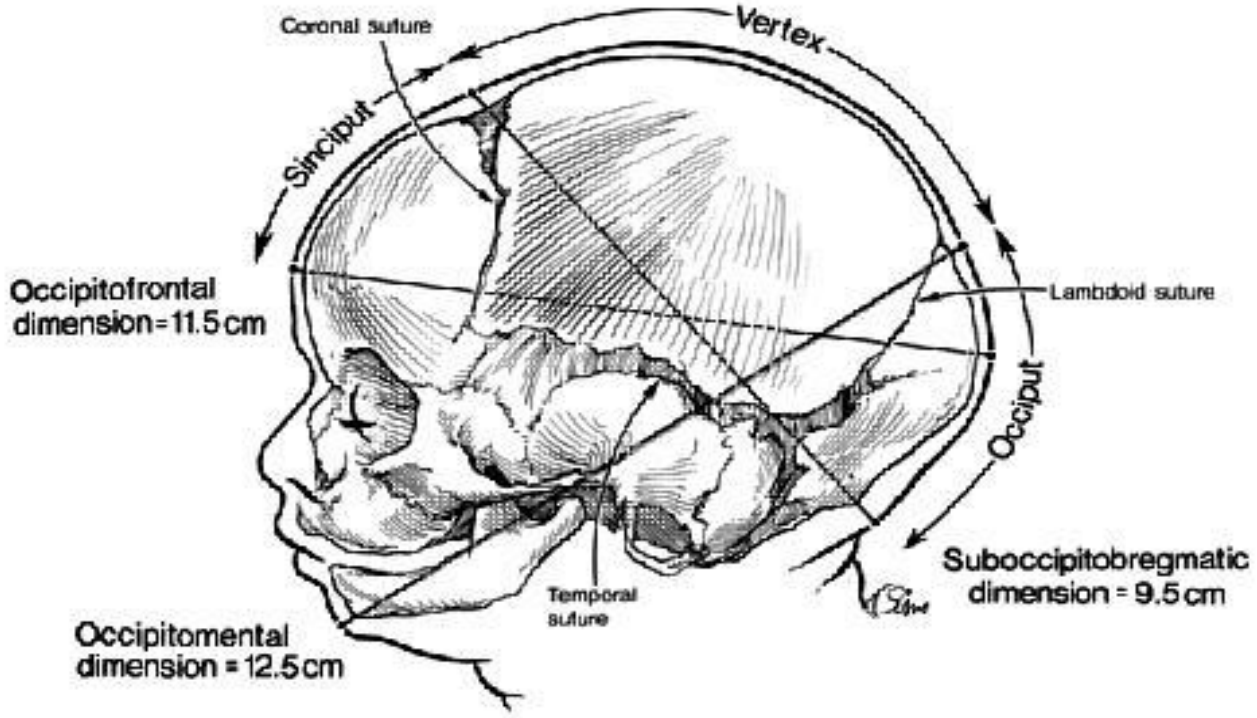
5. Position: Depending on the reference point or denominator

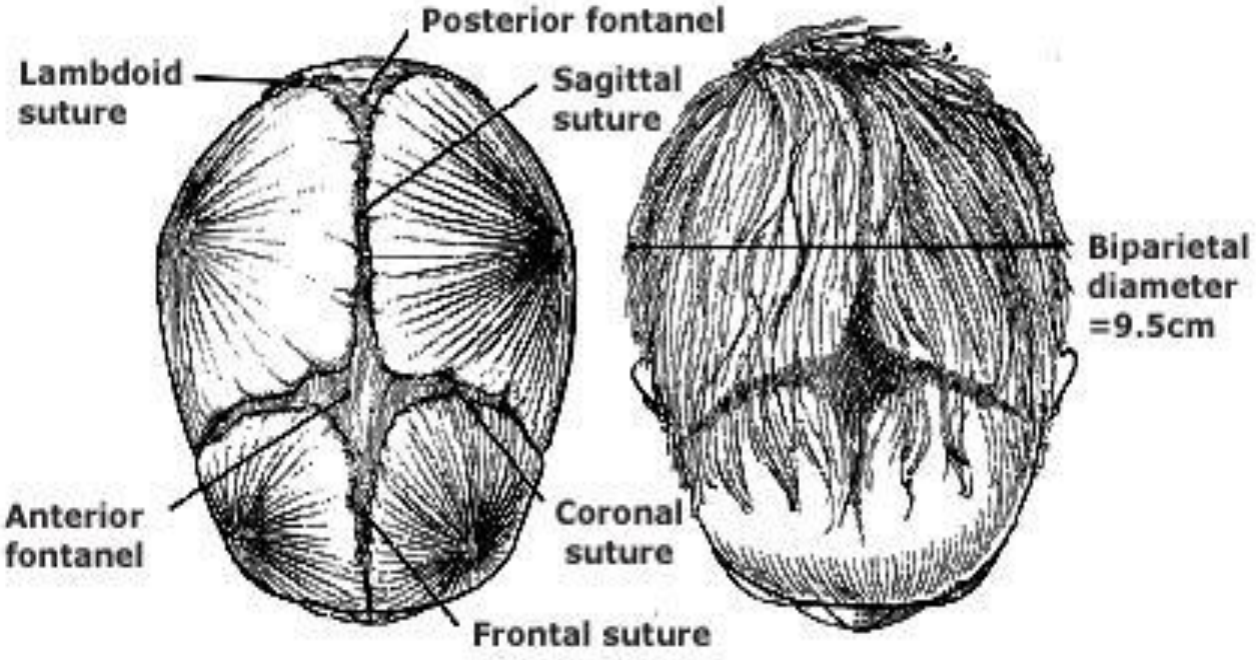
6. **Delivery axis of fetal head for delivery**: **Mento-vertical**, and is achieved with maximal flexion in vertex, mento-anterior in face, flexion point with vacuum delivery, occipito-mental forceps application (about 1 finger breadth in front of the posterior fontanel).

Antero-posterior orientations



Some fetal skull diameters




Posterior fontanel
Lambdoid suture
Sagittal suture
Biparietal diameter =9.5cm
Anterior fontanel
Coronal suture
Frontal suture

Cont'd

6. **Station**: Measure of descent of bony presenting parts of fetus through the birth canal

7. Number of fetuses

8. Congenital malformations of fetus

Abnormalities of the above variables may affect both the course and likelihood of vaginal delivery.

Mechanisms of labor

- The mechanisms of labor, also known as the **cardinal movements**, are described in relation to a vertex presentation, as is the case in 95% of all pregnancies.
- Refers to the changes in position of fetal head during its passage through the birth canal.
- Although labor and delivery occurs in a **continuous fashion**, the cardinal movements are described as 7 discrete sequences.

Cont…

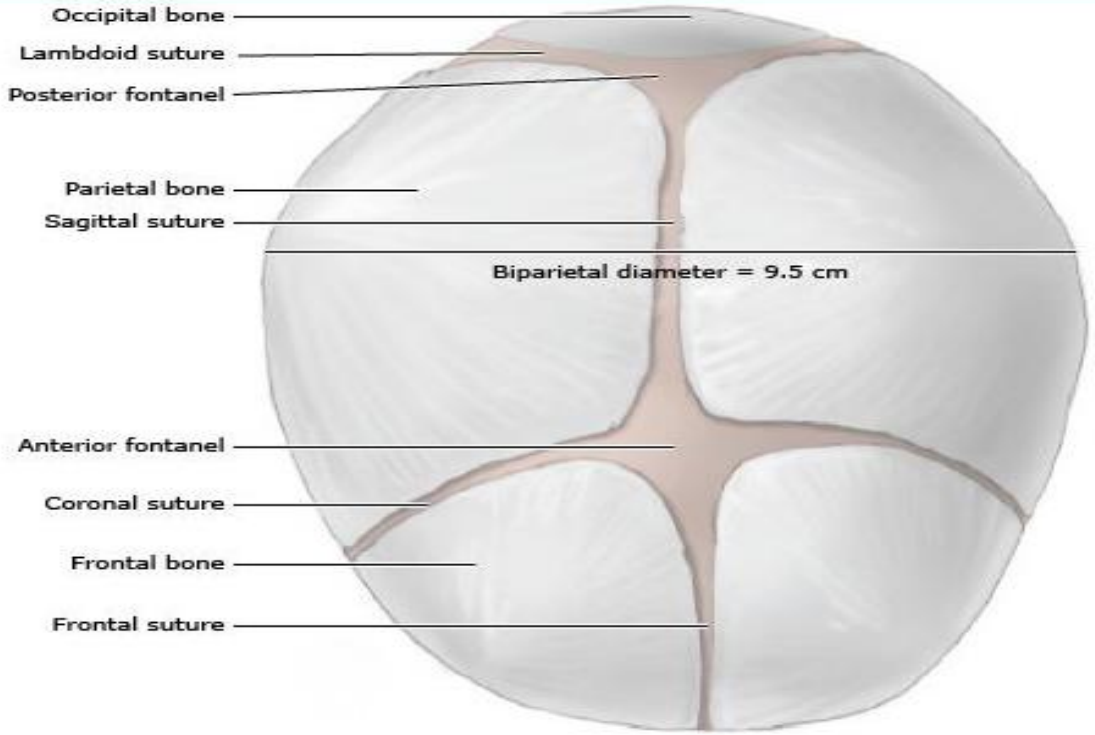
The seven discrete cardinal movements of the fetus occur over the course of labor and delivery:

1. Engagement,
2. Descent,
3. Flexion,
4. Internal rotation,
5. Extension,
6. External rotation or restitution, and
7. Expulsion.

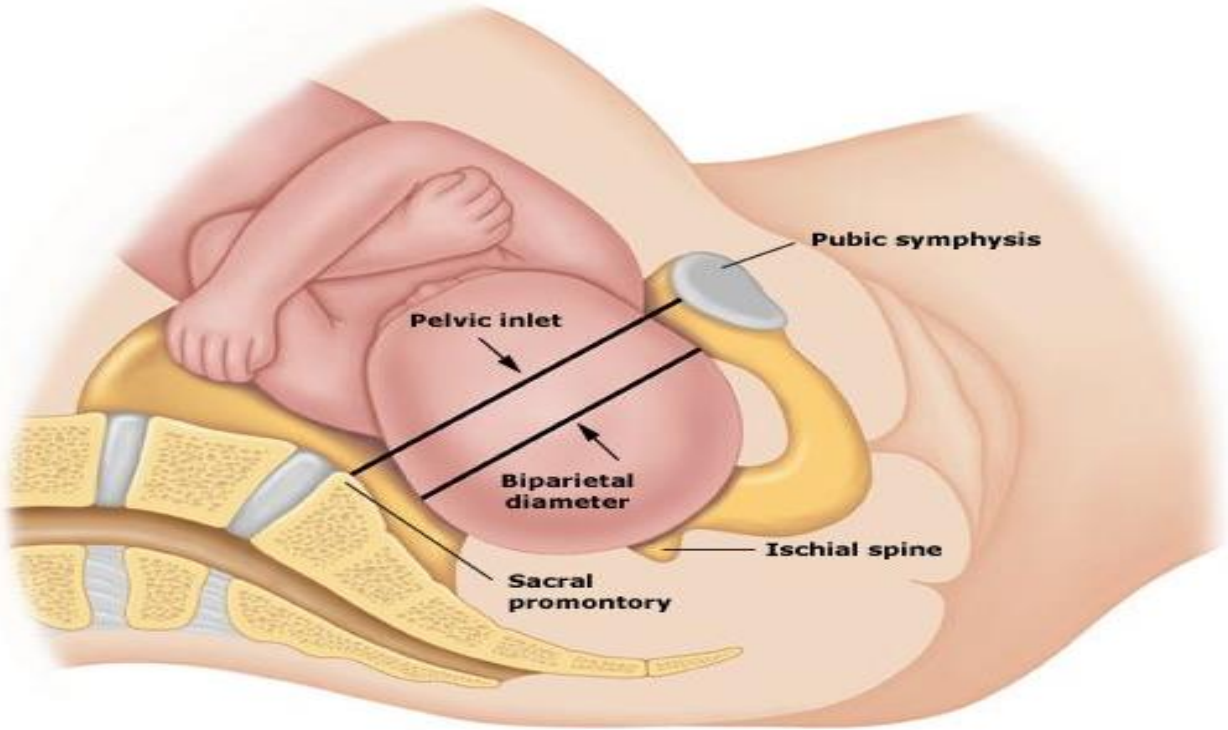
Engagement

- The passage of widest diameter of presenting part to a level below the plane of pelvic inlet.
- On the pelvic examination, the presenting part is at 0 station, or at the level of the maternal ischial spines.
- For occiput presentation the largest diameter is the biparietal diameter (BPD).
- In nulliparous: occurs in the last weeks of pregnancy and is experienced as lightening by the mother.
- In multiparous this usually occurs at the onset of labor.

Fetal head at term showing fontanels, sutures, and biparietal diameter



Engagement of the fetal head



Descent

- The progressive downward passage of presenting part through the birth canal
  - ➢ This occurs intermittently with contractions.
  - ➢ Greatest descent occurs in deceleration phase (late active stage) & second stage
- Fetal head descends through the birth canal
- Defined relative to the ischial spines
- 0 station = top of head at the spines (fully engaged)
- +2 station = 2 cm past (below) the ischial spines

Assessment of descent

Abdominal palpation:-

- in terms of fifths of fetal head palpable above the symphysis pubis

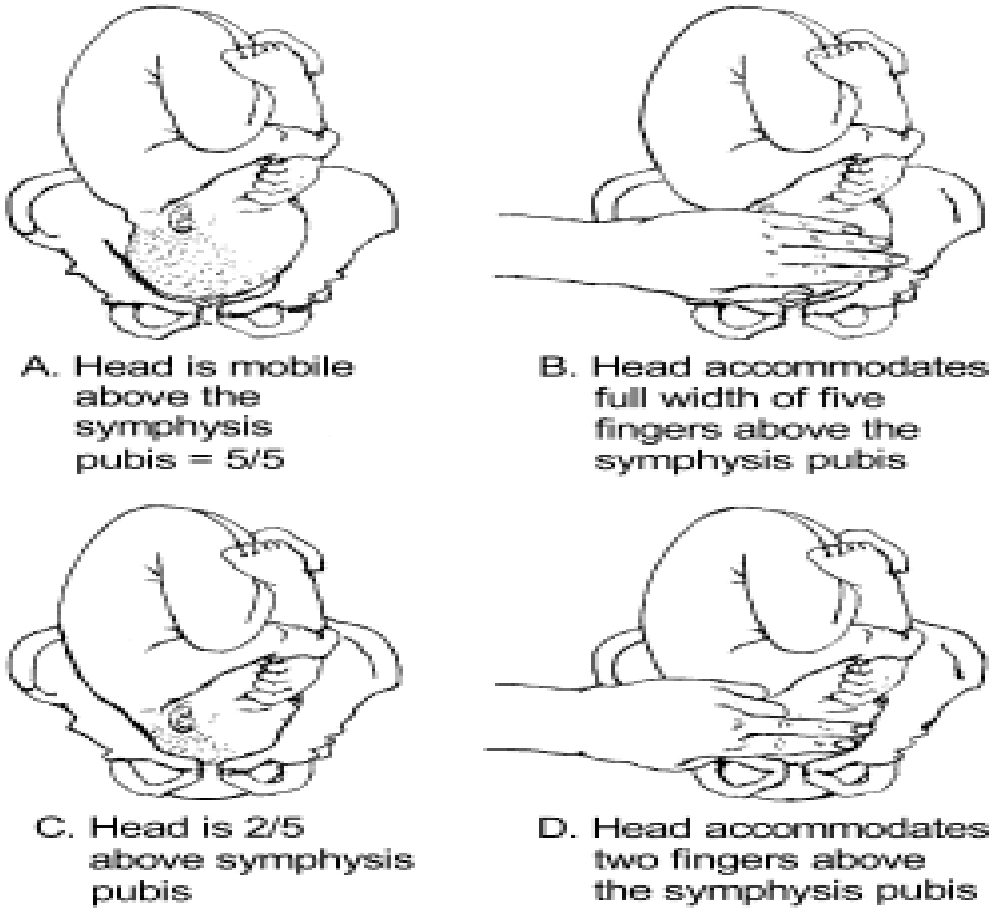
- A head that is entirely above the symphysis pubis is five-fifths (5/5) palpable;

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

Vaginal examination:-

- In relation to the level of the fetal presenting part to the ischial spines of the maternal pelvis.

Figure: Abdominal palpation for descent of the fetal head



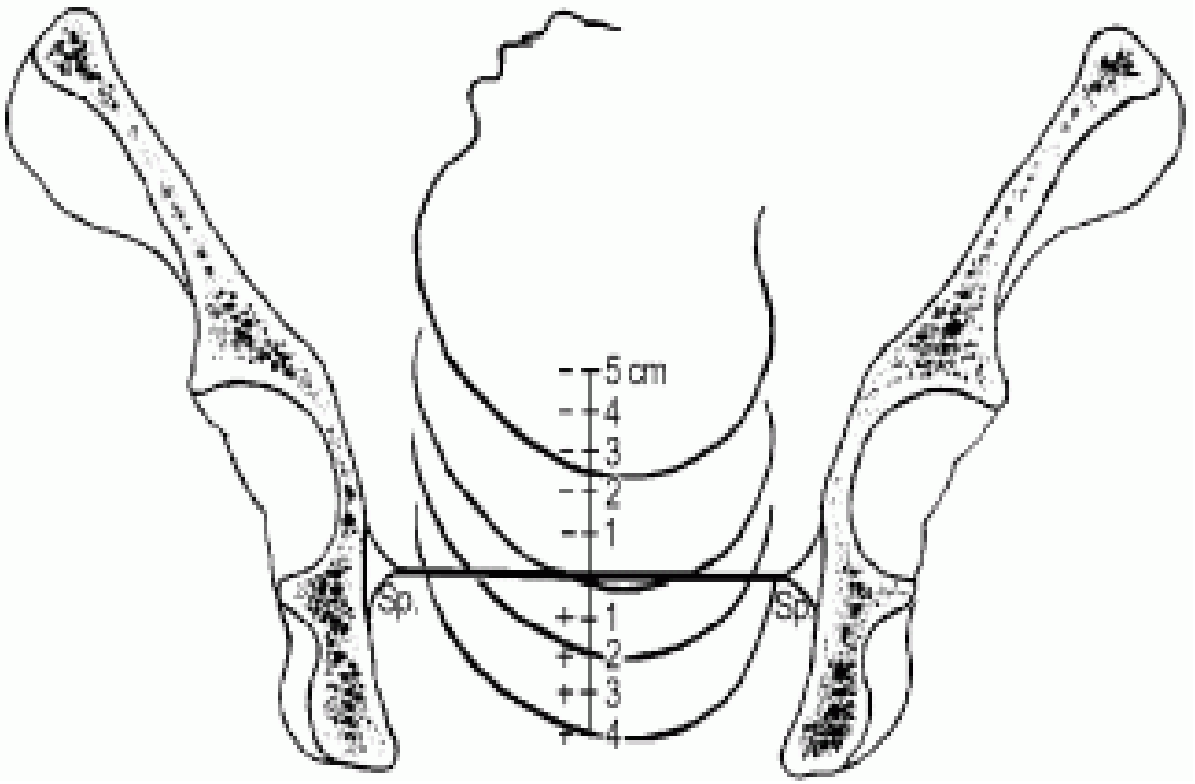
A. Head is mobile above the symphysis pubis = 5/5

B. Head accommodates full width of five fingers above the symphysis pubis

C. Head is 2/5 above symphysis pubis

D. Head accommodates two fingers above the symphysis pubis

Fgure:- Assessing descent of the fetal head by vaginal examination; 0 station is at the level of the ischial spine

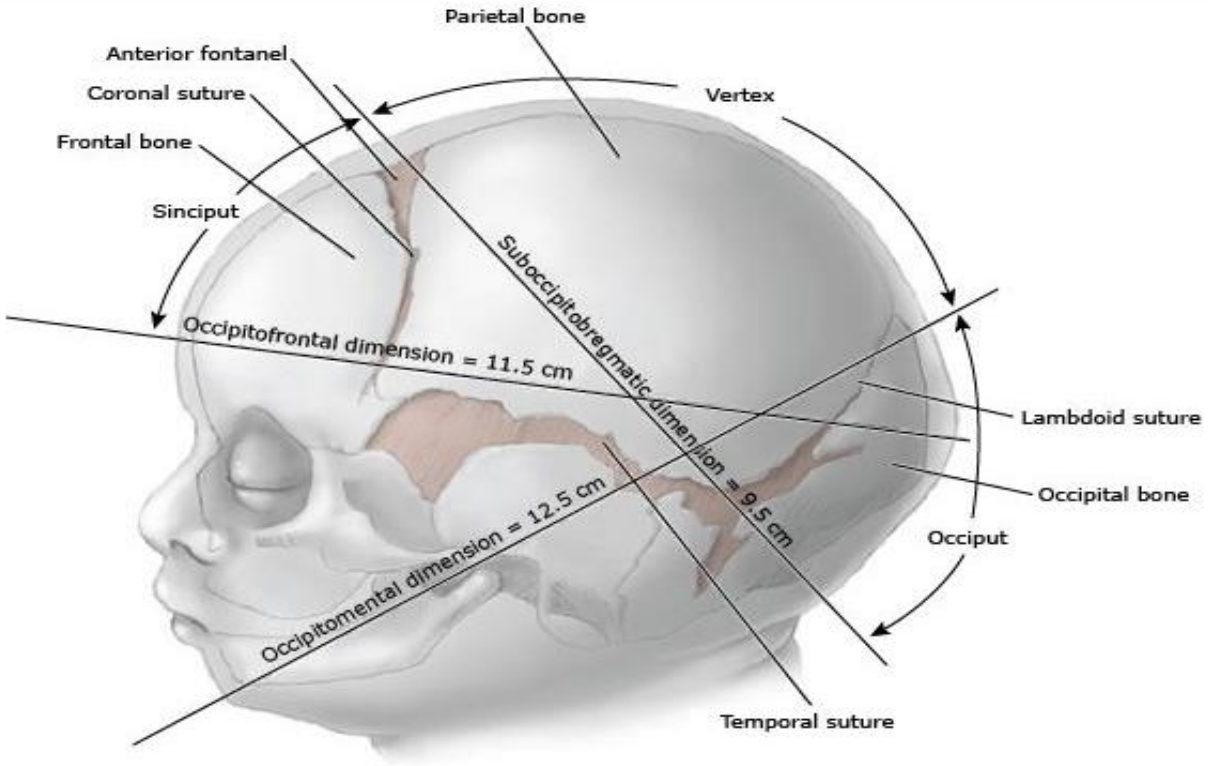


Note: When there is a significant degree of caput or moulding, assessment by abdominal palpation using fifths of head palpable is more useful than assessment by vaginal exam.

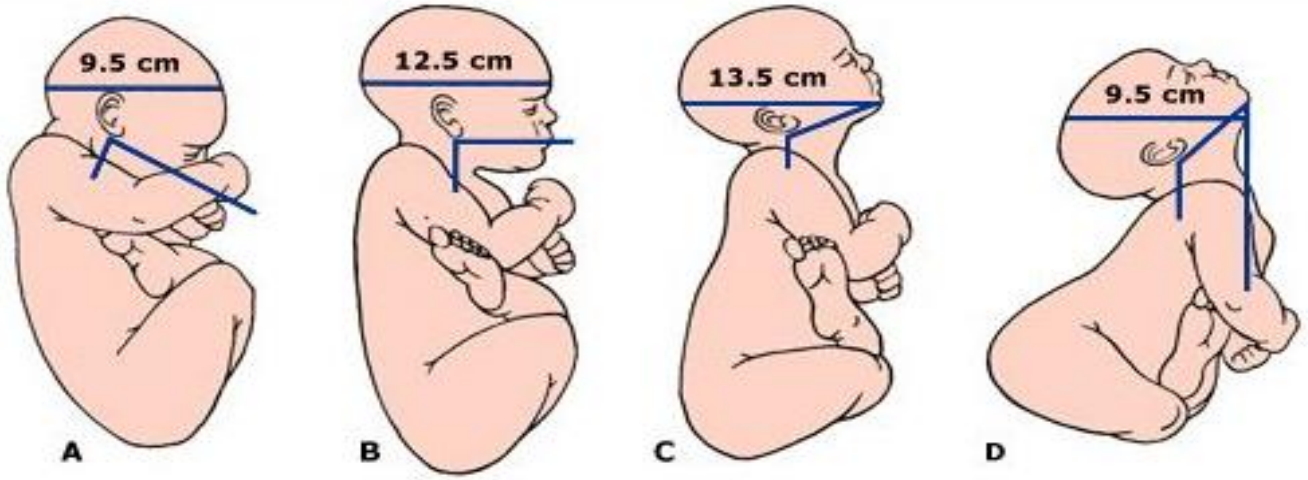
Flexion

- Occurs passively
- Helps to present the smallest presenting diameter (i.e. from occipitofrontal (11.0 cm) to suboccipitobregmatic (9.5 cm) for optimal passage through the pelvis).
- ensures presentation of smaller diameter of the fetus to birth canal.
- It is important for both engagement and descent.

Diameters of the fetal head at term



Presentation, breech, cranial diameters



Importance of cranial flexion is emphasized by noting the increased diameters presented to the birth canal with progressive deflection. A) Flexed head. B) Military position. C, D) Progressive deflection.

Internal rotation

- A Passive movement due to shape of pelvis and pelvic musculature.
- Occurs at the pelvic floor at the ischial spines.
- The sagittal suture rotates 45^0 in left or right occipital anterior position) or 90^0 in left or right occipito-transverse positions so that the sagittal suture lies in the antero-posterior diameter.
- This helps the head to pass the ischial spines.

Extension

- Occurs once fetus descended to a level of interoitus due to force of uterine contraction versus muscles of the pelvic floor.
- **The result is delivery of the head**
- The lower border of the symphysis acts as the fulcrum for the occiput
- The fetal face sweeps the perineum to be delivered.

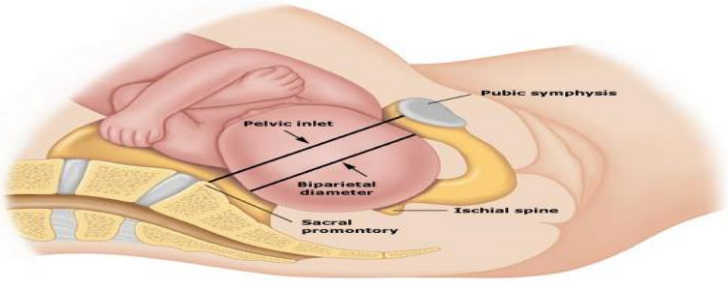
External rotation

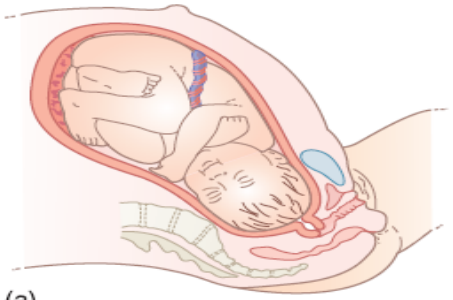
- Also called as **restitution**
- After the fetal head deflexes (extends), it rotates to the correct anatomic position in relation to the fetal torso; left or right rotation depends on the orientation of the fetus.
- This is again a passive movement resulting from a release of the forces exerted on the fetal head by the maternal bony pelvis and its musculature and mediated by the basal tone of the fetal musculature.

Expulsion

- Expulsion refers to delivery of the body of the fetus.
- After delivery of the head and external rotation, further descent brings the anterior shoulder to the level of the symphysis pubis.
- The anterior shoulder rotates under the symphysis pubis, after which the rest of the body usually delivers without difficulty.

Summary

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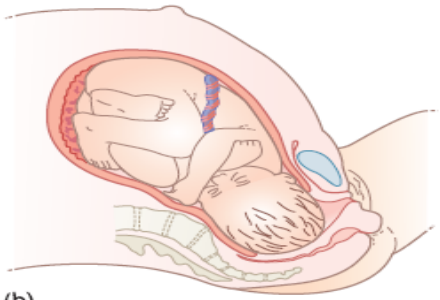
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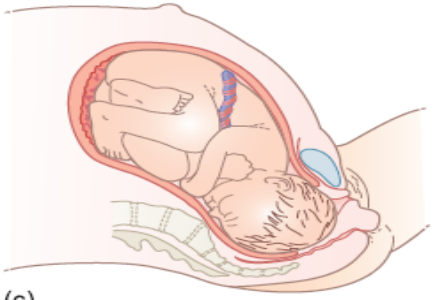
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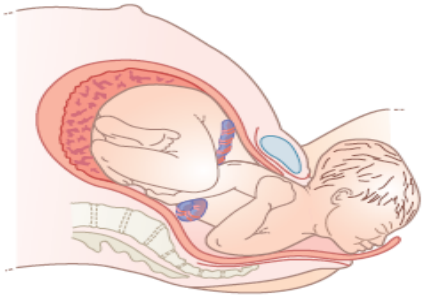
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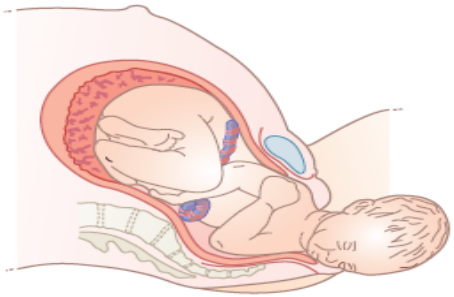
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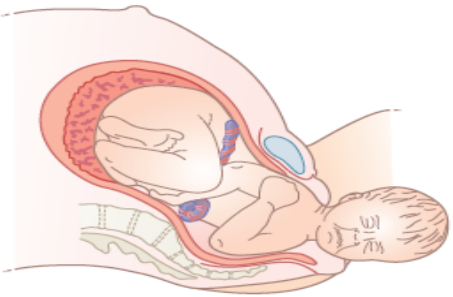

(f)

Fig. 12.4 The mechanisms of normal labour involve: (a) descent of the presenting part; (b) flexion of the head; (c) internal rotation; (d) distension of the perineum and extension of the fetal head; (e) delivery of the head; (f) delivery of the shoulders.

Stages of labour

For the sake of management, obstetricians have divided labor into four arbitrary stages that delineate millstones in a continuous process.

1. **First stage**: onset of labor till full cervical dilatation
2. **Second stage**: full cervical dilatation of cervix to delivery of fetus
3. **Third stage**: from delivery of fetus till delivery of placenta
4. **Fourth stage**: the first two hours after delivery of the placenta

First stage of labour

- From the onset of regular uterine contractions to full cervical dilatation. progress assessed by rate of cervical dilatation, but there is some extent of descent.
- It is further subdivided in to two phases:-
  - **A)the latent phase:**
  - **B)the active phase**:

A) **Latent phase**:

- From the onset of labor to 3 cm of Cervical dilatation(cervical dilatation <4cm)
- Progress is assessed by Cx dilatation & effacement.
- Relatively slow dilatation of the cervix
- Average duration 8hr/6hr

B) **Active phase**

- From 4cm till full cervical dilatation means.
- More rapid increase in cervix dilatation.
- Strong and frequent uterine contraction .
- Rate of dilatation is at least 1cm/hr (average for primi and multi) .
- Rate of cervical dilatation for primi is 1.2 cm/hr.
- Rate of cervical dilatation for multi is 1.5 cm/hr.
- Head descends more deeply and flexes rotate.

Events in first stage of labor

- **Main events are**:
  - Dilatation and effacement of cervix
  - Full formation of lower uterine segment
- **Factors responsible for dilatation:**
  - Uterine contraction & retraction
  - Bag of waters
  - Fetal axis pressure in the proper direction
  - Pressure by the presenting part.

2. Second stage of labour

- It extends from full cervical dilatation(Cx=10cm) to delivery of the fetus.
- It is characterized by more frequent and strong contractions.
- In addition to uterine contractions, maternal voluntary effects play major role.
- Descent is more during this stage.

Cont…..

- It has two phase

A. Early (non-expulsive)

- ➢ Cervix fully dilated (10 cm)
- ➢ Fetal descent continues
- ➢ No urge to push

B. Late (expulsive)

- ✓ Cervix fully dilated (10 cm)
- ✓ Presenting part of fetus reaches pelvic floor
- ✓ Woman has the urge to push

Events in second stage

- Concerned with descent and delivery of fetus
- Delivery effected by two factors:
  - Downward thrust by uterine contraction &
  - Voluntary contraction of abdominal muscles

3. Third stage of labour

- It ranges from the delivery of the fetus to the delivery of the placenta and membranes.
- Its duration is equal in multiparas and primiparas.
  - In 95%, it lasts with in 5 minute and 15 minute
- Placental separation takes place through the spongy layer of the deciduas basalis as a result of uterine contraction & retraction

Cont…..

- Retraction decreases the size of the uterus →placenta buckles inward →tear of the intervillous vessels →retroplacental hemorrhage →further separation of the placenta.

Events in third stage

- Phase of placental separation and expulsion
- **Mechanism of separation**: Because of retraction there would be marked decrement in surface area.
- Two types of placental separation

1. **Central separation (Schultz):** Retro placental clot
2. **Marginal separation (Mathews-Duncan):** separation starts at the margin

Means duration of primigravida and Multigravida

Stage of labor	Primigravida	Multigravida	Factors
Latent first stage	8 hr.	4-6hr	Parity, FPD. Uxcon, position, presentation, ablity Cx to dilate.
Active first stage	6-8 hr.	4-6 hr.	Parity, FPD. Uxcon, position, presentation, ablelity Cx to dilate.
Second stage	2 hr.	1 hr.	Parity, contraction, maternal effort, FPD, Soft tissue
Third stage	30 min	30 min	Speed of placenta separation
Rate of cervical dilatation **Rate of Descent**	1.2cm/hr. 1cm/hr.	1.5 cm/hr. 2cm/hr.	

Fourth stage of labor

- It extends from the delivery of the placenta and membranes to two hours postpartum.
- After the delivery of the placenta, the woman can have torrential Vaginal bleeding due to failure of uterine contractions to close off the torn blood vessels where the placenta detached from the uterine wall.
- Therefore, care providers should be vigilant to detect revealed or concealed postpartum hemorrhage and manage it accordingly.

Management of Normal Labor

Major objectives

- Prevention /minimize infection which could be intrinsic or extrinsic
- Prevent dehydration and ketosis
- Prevent or minimize trauma to the fetus and the mother
- Provide pain relief
- Avoid asphyxia to the newborn
- Prevent postpartum hemorrhage

Woman-friendly care in labour and delivery

1) It provides a service acceptable to the woman:

- Respects her beliefs, traditions and culture
- Considers the emotional, psychological, and social well-being of the woman
- Provides relevant and feasible advice.

2) It empowers the woman, and whoever she wants to be with her during the labour, so that they can become active participants in her care.

- Teach them how to care for her and keep them all informed about what is happening.

Cont…….

3. It considers and respects the rights of the woman:

- Her right to
  - ✓Information about her health and that of her baby, the process of labour, and what to expect with progresses
  - ✓To give or withhold her permission/consent for all examinations and procedures.

4. It requires all healthcare staff to use good interpersonal skills and communicate clearly in language the woman can understand

Management of latent first stage of labour

- Monitor feto –maternal condition and progress of labour by using partograph.
- Monitor FHB(FHR) every1hour.
- Monitor contraction every 1hour
- Monitor vital sign (every 4hour).
- PPE every 4hour.
- Ambulation OK with intact membranes
- If in bed, lie on one side or the other…not flat on her back (avoid supine position).
- Labour support (Provide sips of (juice) water, pain management).

Management of active first stage of labour:

- Monitor feto-maternal condition by WHO partograph.

THE PARTOGRAPH

- A tool to assess and monitor the progress of labour
- A record of all observation made on a women in labour
- Has three parts that assess different parameters
  - ✓progress of Labour
  - ✓Fetal Condition
  - ✓Maternal condition

….Partograph

- Begin in the active phase when the cervix is 4cm dilated

Observations to be recorded on the parthograph

- **Personal information –** name, gravida, Para, *registration/hospital* number, date and time of admission, time of rupture membrane.
- **Fetal heart rate :** FHB every 30 minutes (FHR is counted for one minute after the end of contraction, never during contraction)

Note: normal FHB during labour is100-180BPM.

….Partograph

- **Membrane & amniotic fluid (liquor):** observed and recorded at each vaginal examination as follows; membrane rupture and clear(C), blood stained (B), meconium stained (M) or the membrane is intact (I).
  - **Assess status of liquor for meconium**
    - Grade 1 good volume of liquor, lightly stained
    - Grade 2 reasonable fluid with heavy suspension
    - Grade 3 thick meconium

….Partograph

- **Moulding of fetal skull** :Degree of moulding record as follows;
  - Bone are separated and the sutures can be felt easily (o)
  - Bones are just touch each other (+)
  - Bones are overlapping but can be separate easily with pressure from your finger (++)
  - Bones are overlapping but cannot separate easily with pressure from your finger (+++)

……partograph

- **Monitoring the progress of labor by assessing**
  - **Cervical dilatation:** Assessed at every vaginal examination and marked with a cross (X). Begin plotting on the partograph at 4 cm.
  - **Alert line:** A line starts at 4 cm of cervical dilatation to the point of expected full dilatation at the rate of 1 cm per hour.
  - **Action line:** Parallel and 4 hours to the right of the alert line.

…..partograph

- **Descent assessed by abdominal palpation:** Refers to the part of the head (divided into 5 parts) palpable above the symphysis pubis; recorded as a circle (O) at every vaginal examination. At 0/5, the sinciput (S) is at the level of the symphysis pubis.
- **Hours:** Refers to the time elapsed since onset of active phase of labour (observed or extrapolated).
- **Time:** Record actual time**.**
- **Oxytocin, Drug & IV fluid:** Oxytocin, drug and intravenous fluid – recorded in the space provided.

…..partograph

- **Contractions:** Chart every half hour; palpate the number of contractions in 10 minutes and their duration in seconds.   
  - ➢Less than 20 seconds:
  - ➢Between 20 and 40 seconds:
  - ➢More than 40 seconds:

minutes when used in hospitals.

- **Pulse:** Record every 30 minutes and mark with a dot (●)

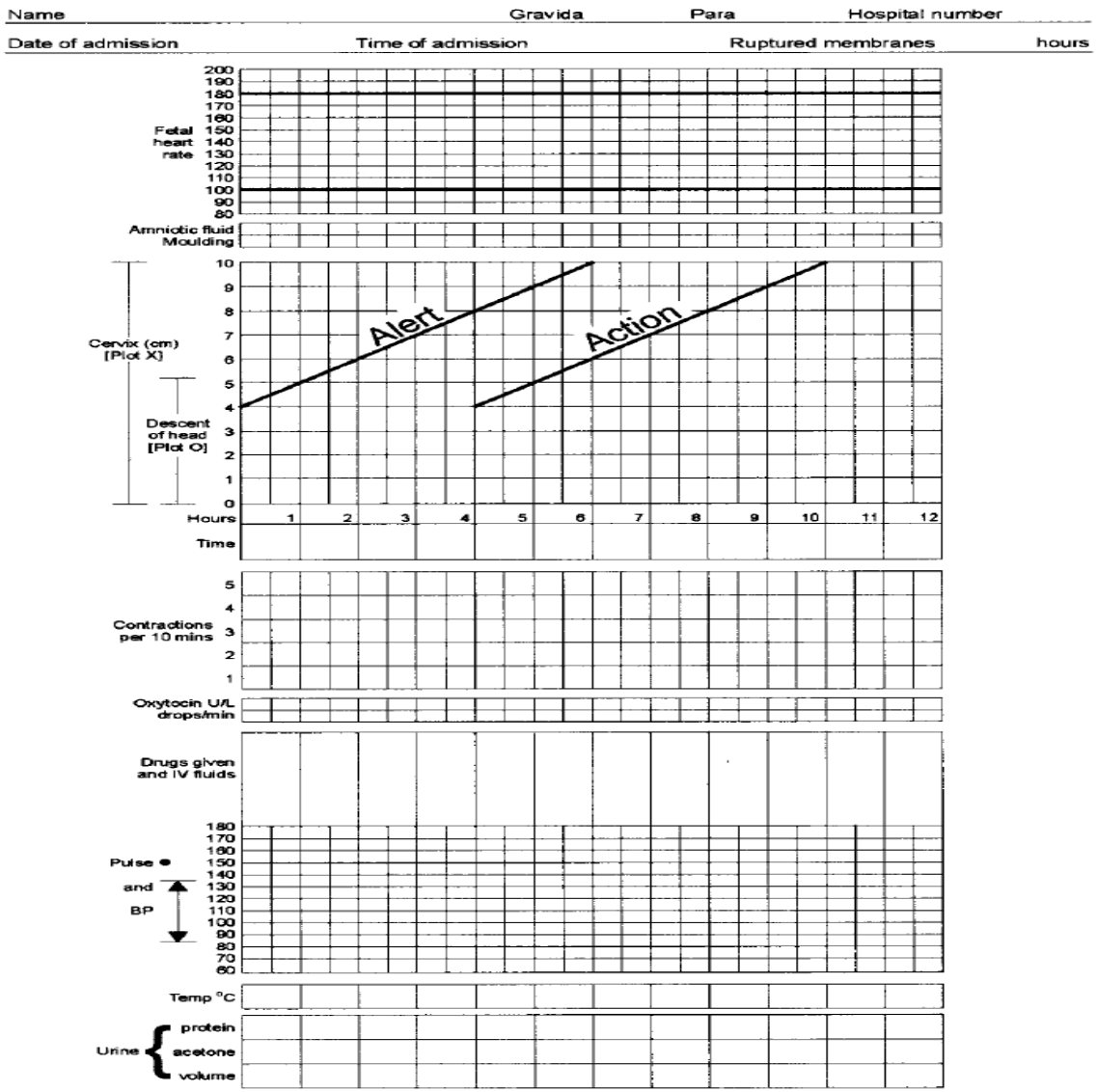
…..partograph

- **Blood pressure:** Record every 4 hours and mark with arrows.
- **Temperature:** Record every 2 hours**.**
- **Protein, acetone and volume:** Record every time urine is passed.

Cont.…

Monitoring progress of Labour and physical status of mother and fetus.

FIGURE C-10 The modified WHO Partograph



Note: **Vaginal examination is made:-**

- ✓Every 4hours to assess cervical dilatation, station, degree of caput and molding and status and color of liquor, position.
- ✓Vaginal examination has to be done at any time
  - ➢after spontaneous rupture of membrane
  - ➢ if there is unexplained fetal distress (abnormal FHR)
  - ➢if second stage is suspected
  - ➢before giving analgesia

N.B: If the membrane have ruptured and a woman has no contraction, do not perform digital vaginal examination

Advantage of partograph

- To prevent PPH
- To prevent puerperal infection or sepsis
- To reduce rate of C/S, Instrumental delivery
- To prevent perinatal hypoxia and asphxia
- Gives comprehensive view of all major events
- Allows early detection & management of abnormalities
- Simplifies hand over to other health professionals
- Saves time and is more efficient
- Simple (only symbols and letters are used and skill in its use quickly attained).
- It helps in research & teaching.

Physiology of first stage of labour

- **Contraction with retraction**

Contraction - is a temporary shortening of the muscle fiber

Retraction - is a relaxation of the muscle fiber results expulsion of the fetus

-In labour contraction occurs with retraction this makes the upper segment of the uterus to become thicker & shorter & it pulls on the lower segment & cervix so that this becomes thinner.

-Finally the cx open, taken up allowing free pass for the fetus.

Formation of lower segment

- There are two distinct segments, a thick upper segment & a thin lower segment.

Cont……

Development of the retraction ring

-The ring forms at the edge of the upper segment just where it meets the thin lower segment.

-It presents always, but not seen.

-In obstructed labour when the lower segment becomes very thin, it then becomes visible & can be seen rising in the abdomen. This is known as Bandl's ring.

Cont……

Taking up of the cx(effacment)

-The cx is shortened or effaced or taken up.

-In primi gravida this happens before dilatation

-In multigravide this usually happens together.

Dilatation of the cx

-This is the opening of the cx or neck of the ux

-It occurs as the lower segment & cx are pulled up by the retracting ux

Formation of the bag of water

-As the head descends into the pelvis, some of the liquor becomes separated; some is behind the head & is known as the **hind water**,

-The liquor in front is known as the **fore water**.

Cont……

Rupture of the membrane

-Occurs mostly after full dilatation but can occur at any stage in labour.

Show

-This is the blood stained mucoid discharge seen a few hrs before, or with in a few hrs after labour has started.

- -The blood comes from ruptured capillaries in the parietal deciduas& dilating cervix.

Management of second stage of labor

- Prepare the 5 (five) C mean :-
  - Clean delivery room
  - Clean Koch
  - Clean hand
  - Clean vulva (external genital)
  - Clean cutting and cord tie (sterile)
- Once the women is in the second stage of labor prepare delivery equipment

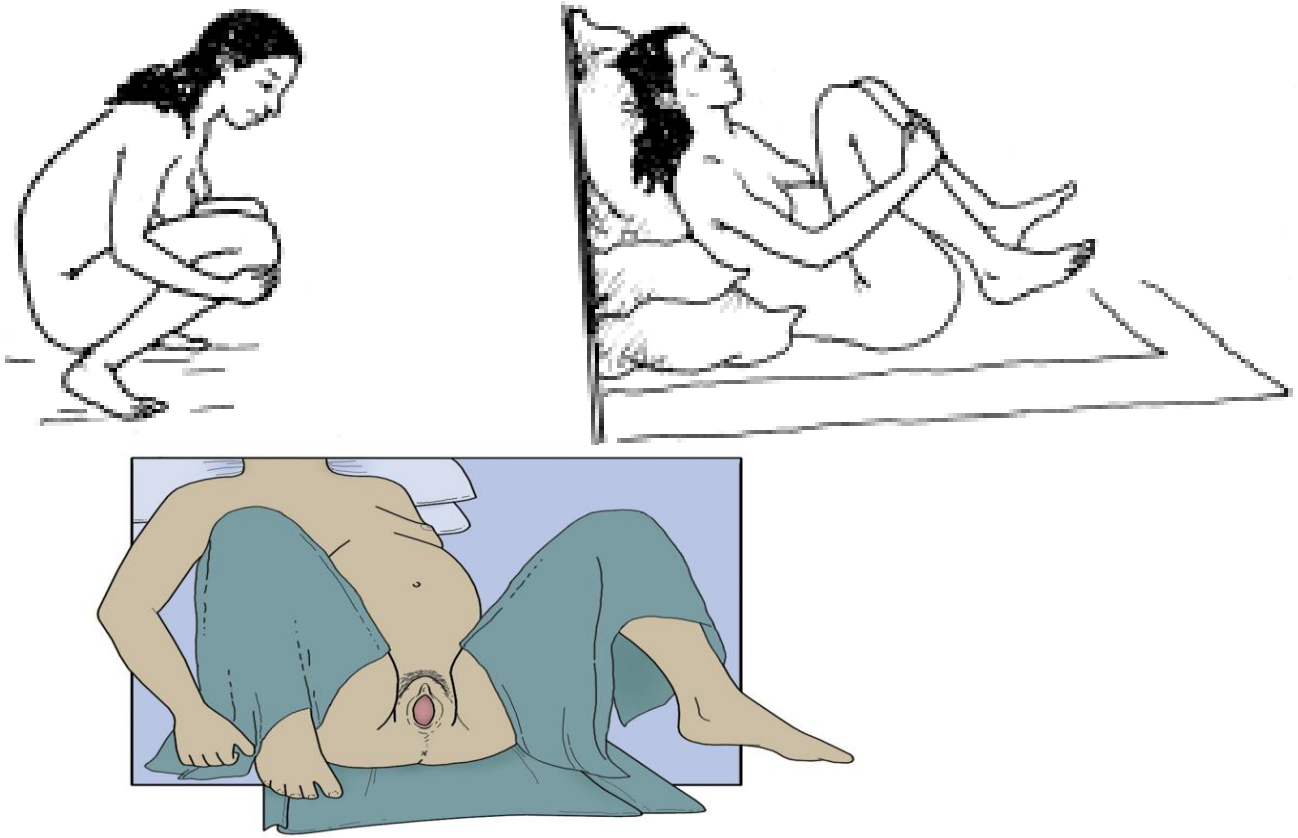
Cont…….

- Prepare delivery set includes:-
  - Two clamps
  - Two scissors(ARVI)
  - Needle holder (suturing)
  - Tissue holder – skin
  - Cord tie
  - 4 towel
  - Oxytocin & syringe with needle
  - Lidocaine (anesthesia) with needle & syringe
  - Suction machine (manual or electrical)
  - Heater
  - O2 apparatus
  - Tetracycline (eye ointment)
  - Vitamin K (clotting factor)
  - Drum, gauze, swap, antiseptic solution
  - Large kidney dish of bowel for placement of the placenta
  - PPE (personal protective equipment)

Cont…..

- Monitor feto –maternal condition by WHO partograph.
- Position: horizontal, sitting, kneeling, squatting until head is visible at vulva (usually in lateral recumbent or lithotomy position with the knees supported)
- Fetal heart rate is checked every 15minutes(low risk and 5 minute (high risk) looking for late decelerations which is common (strong contractions, premature separation, tightening of loops of cord)

Figure :- Positions that a woman may adopt during childbirth



Cont……

- **labor progress** is evaluated by degree of descent
- Monitor vital signs more frequently (B/P every 30minutes and PR,RR and T every1hour).
- avoid early **push**
- **bladder** should be empty
- Clean any feces that soil the perineum with sponges soaked with diluter soap solution

Delivery of the head

- Prepare for delivery when the head crows and perineum bulge.
- Deliver the fetus in controlled way.
- Deliver the head slowly (avoid rapid delivery.)
  - ➢ flex fetal head and protect the perineum
  - ➢then use modified Ritegen's maneuver (gentle upward pressure at the chin through the perineum just front of the coccyx) & extension is aided by pushing the perineum back behind the chine

Cont…..

- After delivery of the head cleaning of the nose and mouth is done
  - Suction any fluid from the mouth and nose by soft rubber suction bulb or catheter, **if there is Meconium Aspiration Syndrome, but routine suction is harmful practice.**
- Check for cord around the neck (disentangled it & slip it over the head or clamp at two site & cut if not reducible)

Delivery of the shoulder

- After external rotation, apply downward traction by holding to the sides of the head to deliver the anterior shoulder.
- As soon as the anterior shoulder slips under the symphysis apply upward traction to deliver the posterior shoulder and the rest of the body slips through.
- Delivered baby on to mother’s abdomen
- Clamp/tie the cord after 1-3minute(can prevent neonatal anemia by 50%) 2 finger from abdomen

Episiotomy

- Episiotomy is a cut into perineum to widen the vulva orifice during birth

Indication

- To prevent serious tear when the perineum is tight
- To prevent cerebral damage in pre-term or breech delivery
- To hasten delivery in fatal distress when the head is on perineum, and the woman is ready to deliver
- To make more rooms for forceps and vacuum delivery

Types of episiotomy

- Medio-lateral
- Median
- J-shaped
- **Lateral**
- **Note**: - Episiotomy is no longer recommended as a routine procedure. There is no evidence that routine episiotomy decreases perineal damage, future vaginal prolapse or urinary .

Cont.…

1-Medio- lateral

- Incision is begin in the center of the forchette and directed posterio-laterally
- Not more than 3 cm long and directed diagonally
- It is the most common type

Advantages

- Bartholin's glands are not affected
- Anal sphincter are not injured

Cont…

2- Median

- Incision begun in the center and directed posteriorly approximately 2.5 cm in the mid line of perinea muscles

Advantage

- Less bleeding
- More easily and successfully repaired
- Greater subsequent comfort for the woman

Cont….

3- J shaped

Disadvantage

- The suturing is difficult
- Shearing of the tissue occurs
- The repaired wound tends to be dressed

4-Lateral

Disadvantage

- Brartholin glands my be involved
- Bleeding is more profuse
- The woman experience subsequent discomfort

Cont….

Local anesthesia for episiotomy

- lignocaine /lidocain/ 0.5% of 10 ml is safe and efficient
- It takes effect rapidly within 3-4 minutes.

Timing the incision

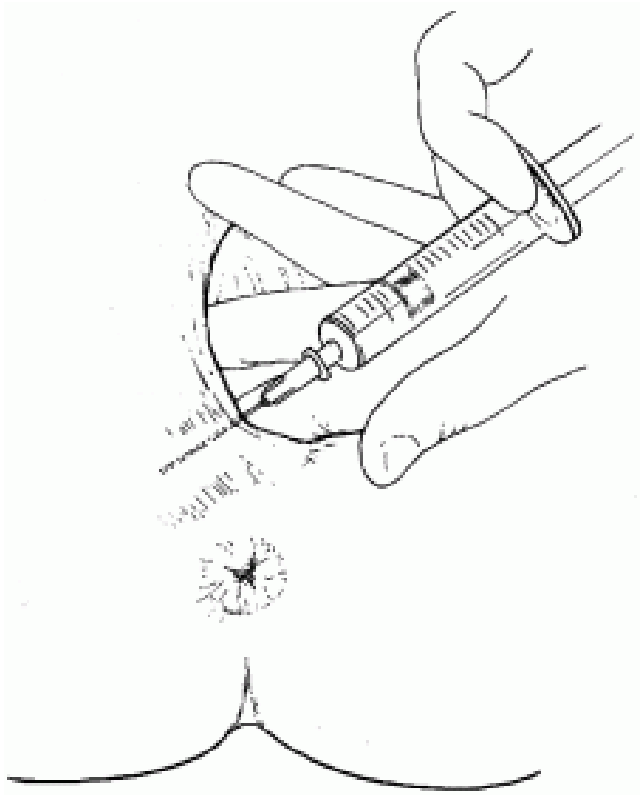
- The head should be well down on perineum
- In breech presentation the posterior buttock would be distending the perineum
- It should not be done neither too early nor too late

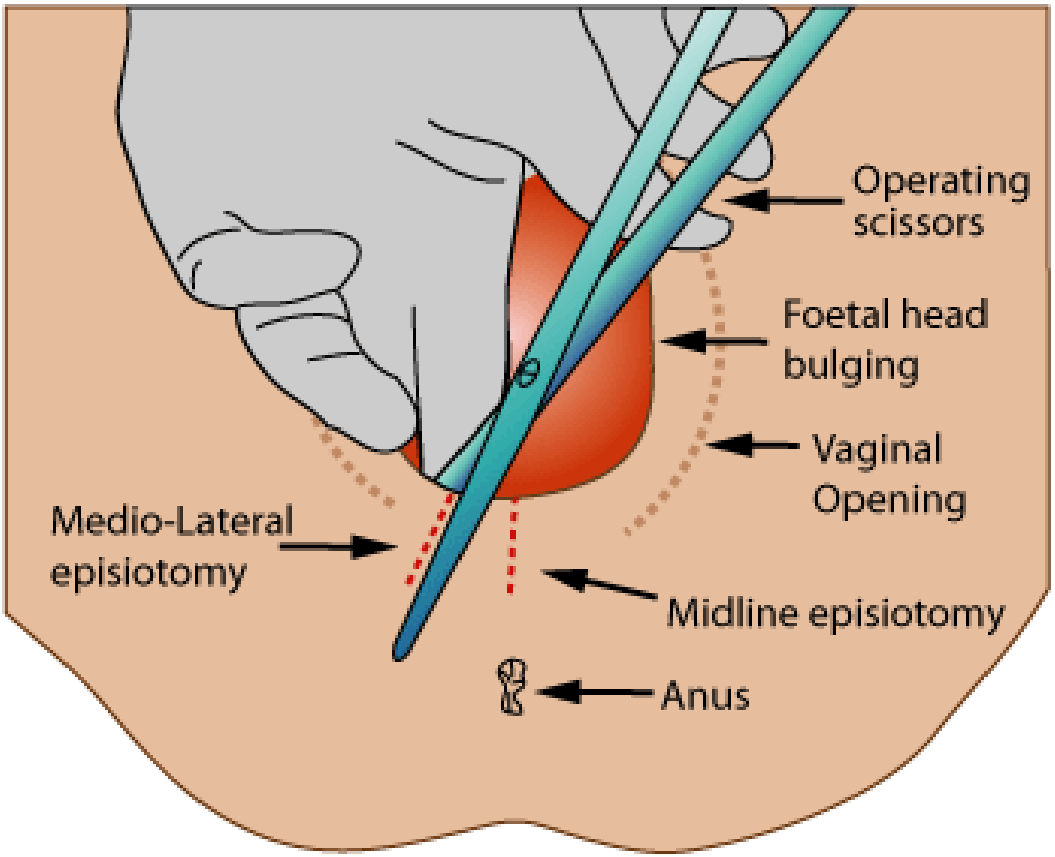
Cont……

Making the incision

- Position the mother in lithotomic position
- Avoid incision on previous episiotomy scar
- Not more than 3 cm from fourchete and 2.5 cm from anus
- Wait one or two minutes after injection of local anesthesia
- Insert two fingers between the perineum and the fetal scalp
- Do the incision during uterine contraction
- The cut should be adequate to remove any resistance to fetal head
- Straight blunt painted scissors commonly used
- Must be sharpened at frequent intervals

Fig: Infiltration of perineal tissue and making the incision

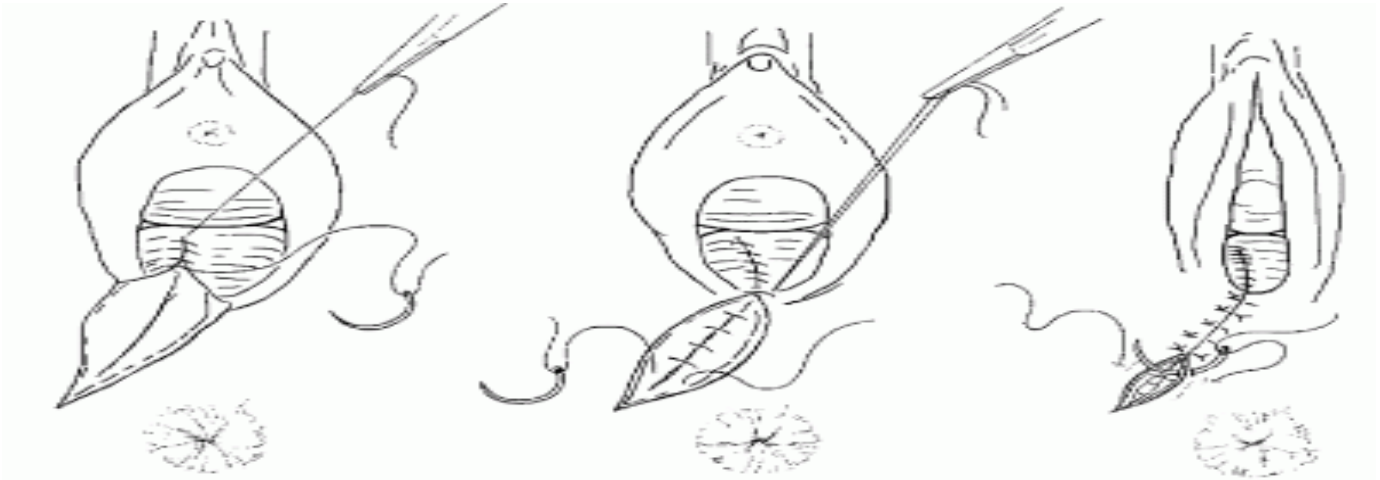




Layers to be repaired

1. Vaginal wall:-
   - Deep and superficial tissue
   - Vaginal mucosa(continuous)
2. Perinea muscles and fascia(interrupted)
3. Perinea skin and subcutaneous tissue(continuous)
4. The first stitch inserted at 1cm above from apex of the incision

- The most commonly used suturing material is 2/0 chromic cut gut.



Complication

- If a **haematoma occurs**, open and drain. If there are **no signs of infection** and **bleeding has stopped**, reclose the episiotomy.
- If there are **signs of infection**, open and drain the wound.
- Remove infected sutures and debride the wound
  - **Mild infection**, antibiotics are not required
  - **Severe infection**, give a combination of antibiotics:
    - ✓Ampicillin 500 mg PO QID for 5 days PLUS metronidazole 400 mg PO QID for 5 days.

Remember

- Do not suture too tightly
- The last stitch are important for they prevent scar
- Press firmly on suture line with a pad to see if bleeding has stopped
- Remove perinea pack or suture pack from vagina

  rub up fundus put clean pad on perineum
- Put gloved finger into the rectum -to make sure that

  no stitch has through the rectum
- Make the woman comfortable clean and dry

Cont……

After care of episiotomy:-

- Hot bath clean wound care
- if pus or foul smelling discharge develop report to health personnel higher above you
- Advise not to strain and avoid constipation

Pain management during labor

&

Second stage of labor

Etiology of pain during labor

1. physical pain in labor is caused by:

- Muscle cramps/ uterine contraction.
- Stretching of cervix and perineum .
- Medical tests and procedures (pelvic exams,IVs, catheterization, and so forth)
- Position of the baby and pressure of presenting part on tissue like bladder,urethra,back,lower colon

Etiology of pain during labor

2. Emotional Factors

Many negative emotions can increase perception of pain:

- Fear of pain
- Fear of the unknown
- Anxiety
- Self-doubt
- Lack of education
- Exhaustion
- Dehydration
- Hunger

Endorphin

- Natural pain killer produced from pituitary gland released during stressful events or in moment of grate pain it is responsible for euphoric feelings known as “runner’s high” and “adrenaline rush “.
- Its secretion triggered by consumption of certain food “chochlate,chili peppers” also triggered by massage therapy or acupuncture .

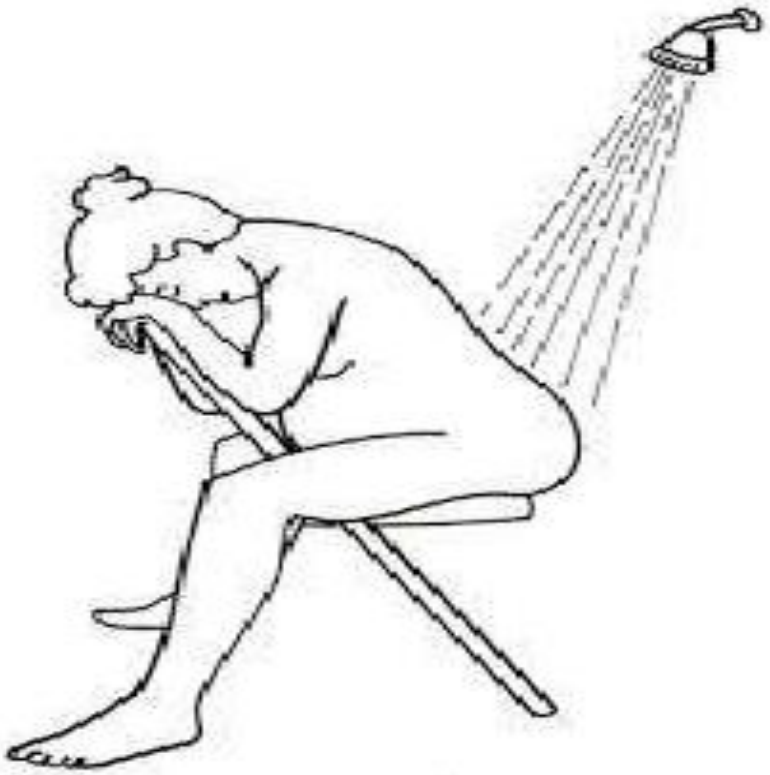
Nonpharmacologic strategies

1. Support from a Doula or coach

- Is a women who experienced in childbirth but without professional credentials, who guides and assist women in labor .
- Having a doula can increase women self-esteem as well as decrease rate of oxytocin augmentation ,epidural anesthesia and cesarean birth .
- Doula can be women husband,mother,father..etc

2. Water therapy(hydrotherapy)

- Standing under warm shower or soaking in tube of warm water
- The temperature of water should be between 35-37c .
- The findings of several studies have shown using hydrotherapy with rupture membrane have no increase in chorioamnionitis, post partum indometraitis, neonatal infection or antibiotic use
- No limit to the time women can stay in bath and often they are encouraged to stay in it as long as desired



3. Transcutaneous electrical nerve (TENS) stimulation

- Two paired of electrodes attached to women back T10-L1 .
- Low- intensity electrical stimulation is given continuously or applied by women herself as a contraction begin .
- Block afferent fibers and preventing pain to travel from uterus to spinal cord synapses, and facilitate release of endorphin

Cont….

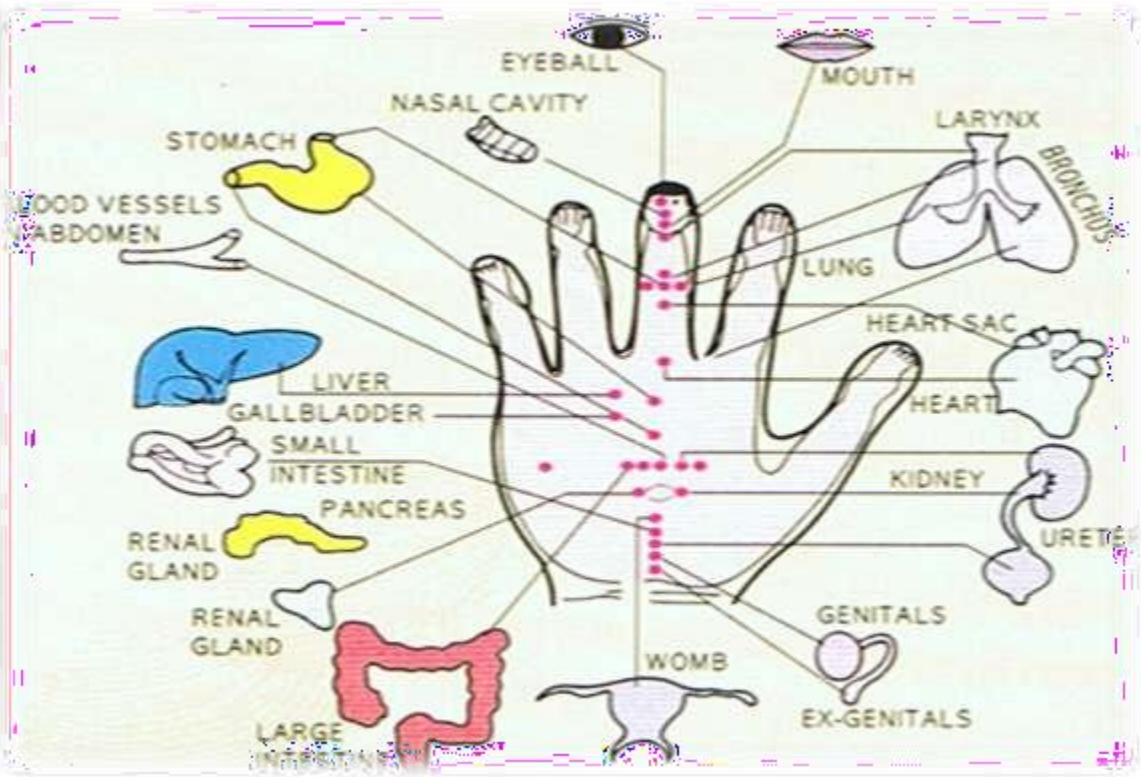
- Can be effective as epidural anesthesia
- Carries no risk to the mother and fetus
- Women can refuse to being “tied down “ to equipment

4. Acupuncture

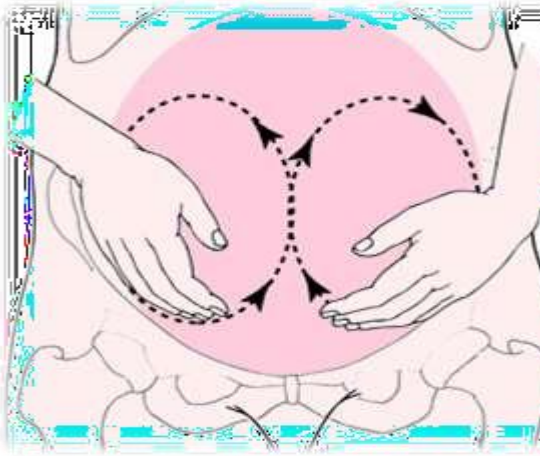
- Based on concept that illness result from an imbalance of energy, to correct the imbalance needles are inserted into the skin at specific body points, activation of these point lead to release of endorphins .
- Helpful in first stage of labor

5. Acupressure

Application of pressure or massage to heel of the hand, fist or pads of the thumb and fingers



6. Therapeutic touch and massage



- Based on concept that body contains energy field when increased lead to health and when decreased lead to illness
- Touch and massage work to relieve pain by increase level of endorphins
- Effleurage is a form of therapeutic touch of gentle abdominal massage

7.Application of Heat and Cold

Heat Application :

- Effective in relief back pain and raises the pain threshold.
- To increase blood flow and relieves muscle ischemia.
- Increases relaxation

Cold application:

- Applied to the back, chest, and face to increase comfort
- Slowing transmission of pain.

9. Aromatherapy

- Aromatherapy is a holistic healing treatment that uses natural plant extracts to promote health and well-being.
- Sometimes it's called essential oil therapy.
- Used based on the principle that the sense of smell plays a significant role in over all health
- Essential oil inhaled it's molecule transported via olfactory system to the brain and the brain respond to particular aroma with emotional responses
- Applied externally they absorbed to the skin and then carried throughout circulation .
- The oils may be massaged into the skin, in a bath or inhaled using a steam infusion or burner

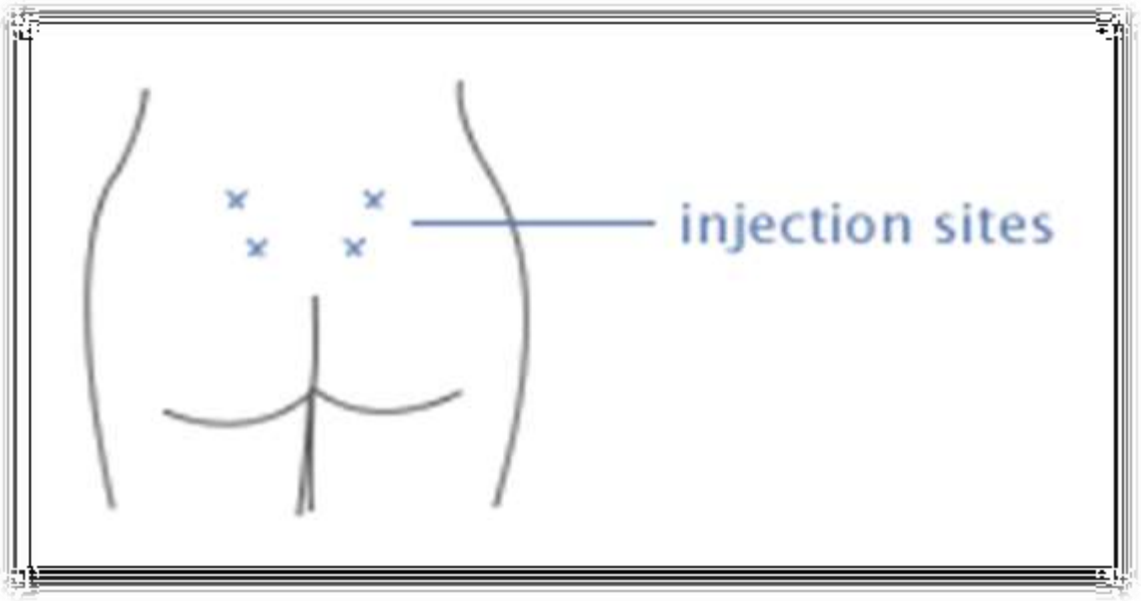
9. Hypnosis

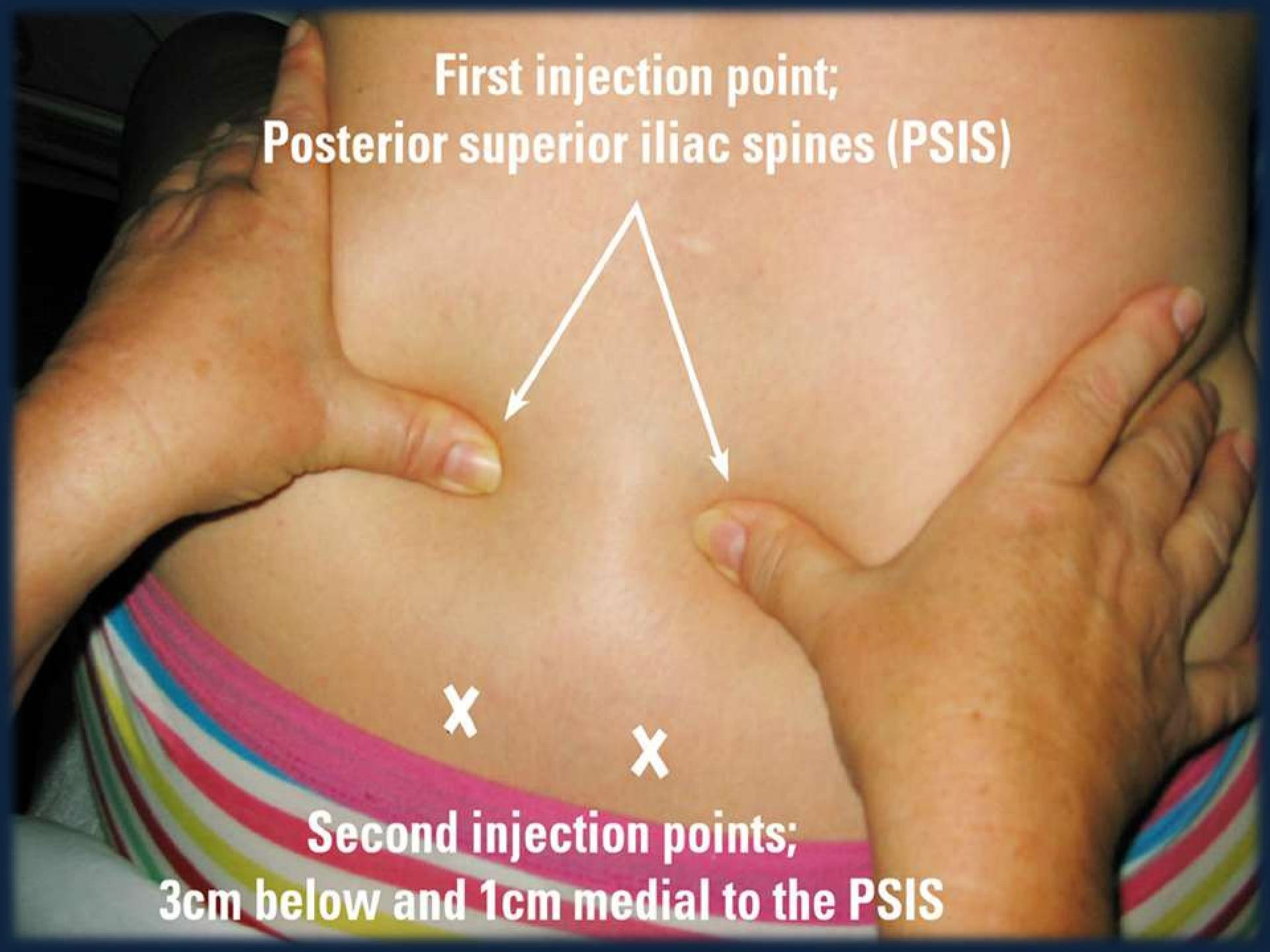
- Hypnosis is an altered state of conscious and awareness
- Focus of attention to reduce awareness of the external environment.
- For childbirth, hypnosis is often used to focus attention on feelings of comfort or numbness as well as to enhance women's feelings of relaxation and sense of safety.



10. Sterile water injections (SWI)

Sterile water injections (SWI) are an effective method for the relief of back pain in labour. The procedure involves a small amount of sterile water (0.1 ml to 0.2 ml) injected under the skin at four locations on the lower back (sacrum).




First injection point;
Posterior superior iliac spines (PSIS)
Second injection points;
3cm below and 1cm medial to the PSIS

Cont…..

- The injections cause a brief but intense stinging sensation, lasts for about 30 seconds and then wears off completely.
- To distract from the stinging sensation the injections are done during a contraction by two midwives.
- SWI provides effective pain relief for up to two hours.

http://www.matermothers.org.au/hospitals/mater-mothers-private-brisbane/labour-and-birth/switch/about-sterile-water-injections

Cont….

Benefits of SWI

- Often immediate effect
- No effect on mother's state of consciousness
- No effect on baby
- Does not limit mobility
- Does not adversely affect labour progress
- Is a simple procedure that can administered by midwife
- Can be repeated as needed

11. Biofeedback

- Use thinking and mental process (focus)to control body response, to change the response of the stress and pain
- Women who are interesting in using this method must attend several sessions during pregnancy to condition themselves to regulate their pain response
- If women response to pain during contraction with frowning and breath holding her partner use verbal feedback to help her to relax

12. Double Hip Squeeze

- The double hip squeeze changes the shape of the pelvis and releases tension on the sacroiliac joints.
- Place hands on each side below iliac crest and over gluteal muscle with fingers pointing toward midline.

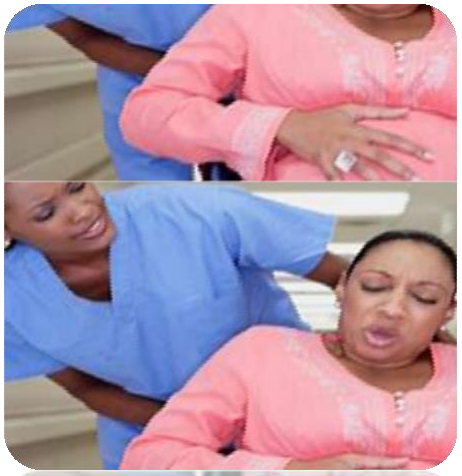


13. Nursing Presence

Nursing presence is defined as being with the client rather than performing tasks on the client and as complete physical, emotional, psychological, and spiritual engagement between nurse and client.

Nursing presence requires:

- High level of nursing skill
- Being open, honest, nonjudgmental with the client
- Listening carefully to her needs and concerns.



14. Partner care

Companionship or social support during labour has been shown to be one of the most beneficial practices in maternity care(Hodnett E,2007)

Evidence show that mothers who had received support during labour were

- less likely to have pharmacological pain relief and
- more likely report a good birth experience

15. Instructional/Informational Support

- Instruction and information on all aspects of labor and birth provide clients with an opportunity to be a part of the decision- making process, which fosters a positive birth experience.
- Verbal communication must be culturally sensitive

16. Advocacy labour support

- Advocacy includes protecting the client, attending to needs, and assisting in making choices related to health care; this requires the establishment of a therapeutic relationship.
- Being an advocate for the client, the nurse empowers the client to give birth with dignity.

Pharmacological strategies

1. Narcotic analgesic (opioid analgesic)

- Act by decrease sensation of pain .
- Used for their analgesic effect
- All drugs in this category cause CNS depression, respiratory depression .

Narcotic analgesic includes: pethidine (meperidin), fentanyl remifentanil, morphine, tramadol

NB: pethidine is the most commonly used analgesic in labor because it has additional sedative and antispasmodic actions, these make it effective not only for relieving pain but also for relaxing cervix and providing feeling of euphoria and well-being

Narcotic antagonist : naloxon (Narcan)

Cont…

Advantages and disadvantages

Advantages

- An increased ability for a woman to cope with labor
- The medications may be nurse-administered

- It has no amnesic effect but create a felling of well-being or euphoria

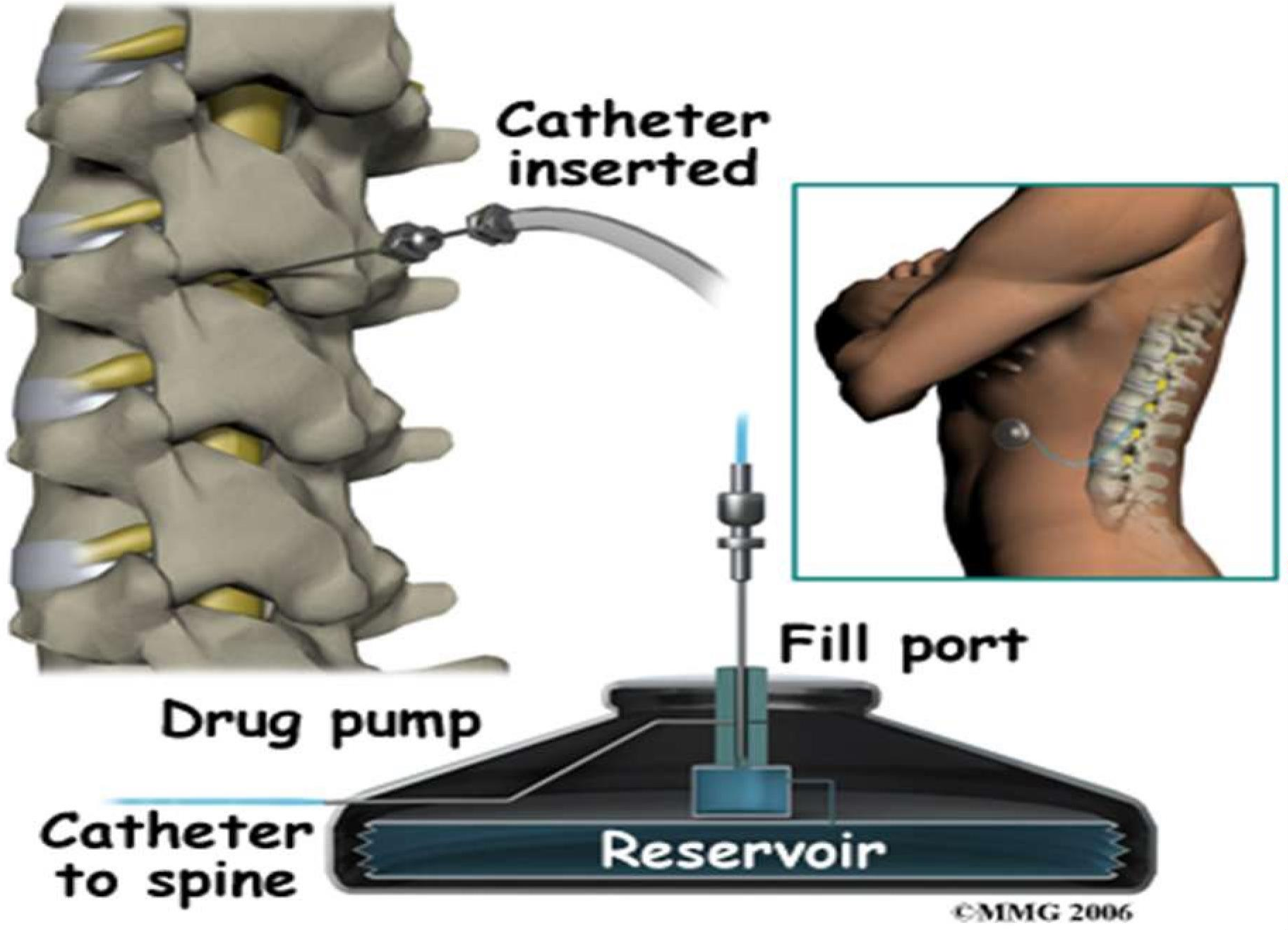
Disadvantages

- Frequent occurrence of uncomfortable side effects, such as nausea and vomiting, pruritus, drowsiness, and neonatal depression
- Pain is not eliminated completely

Cont…..

Intrathecally (spinal) narcotic: refers to opioid injection into spinal cord

- Ex: fentanyle 1.30-3hr with Multipara, morphine 4-7 hr with Nullipara or women with history of long labor
  - Excellent pain relief for labor pain they take effect 15-30min and last 4-7hr
  - Don’t cause maternal hypotension or affect VS
  - Women can fell contraction but no pain,
  - The ability to bear down during second stage of labor is preserved because the pushing reflex is not lost and her motor power remain intact


Catheter inserted
Fill port
Drug pump
Catheter to spine
Reservoir
©MMG 2006

2. Anesthesia

- The use of medication to partially or totally block all sensation to an area of the body

Local anesthesia

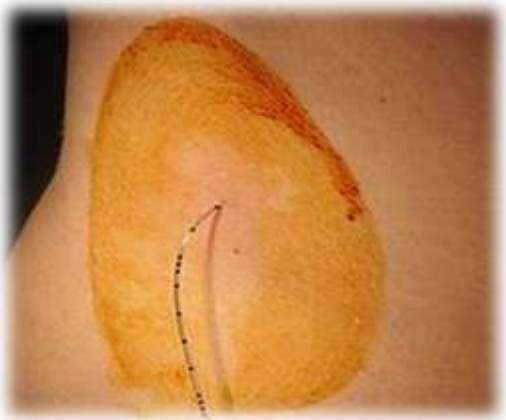
- Reduce ability of local nerve fiber to conduct pain
- Used to numb the perineum just before birth to allow for episiotomy and repair

Regional anesthesia

- Injection of local anesthetic agent to block specific nerve pathways that supply a particular organ or area
  - spinal analgesia
  - epidural analgesia
  - combined spinal epidural

General anesthesia

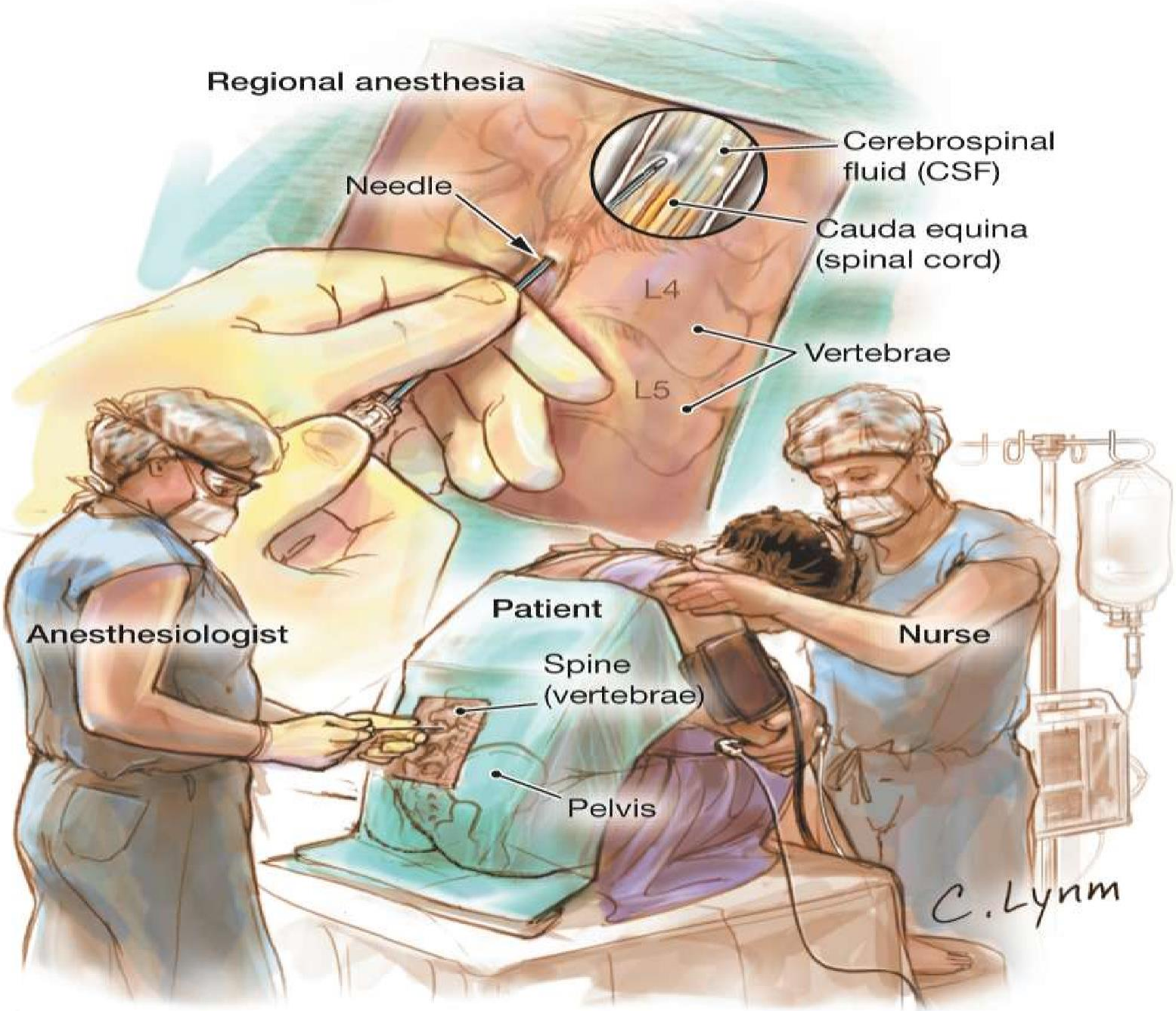
- Intra Venous Analgesia
- Inhalational Analgesia



Cont…

Spinal (subarachnoid)anesthesia

- local anesthetic agent such as (bupivacine or ropivacaine) injected In subarachnoid space through 3dr ,4th or 5th lumber interspace by using lumber puncture technique.
- Anesthesia mixed with CSF, used on elective and emergent CS birth not suitable of vaginal birth because it useful for shorter and simpler procedures.
- Anesthesia normally raise to level of T10 , up to umbilicus and including both legs.


Regional anesthesia
Cerebrospinal fluid (CSF)
Needle
Cauda equina (spinal cord)
L4
Vertebrae
L5
Patient
Anesthesiologist
Nurse
Spine (vertebrae)
Pelvis
C. Lynm

Cont…

Epidural anesthesia

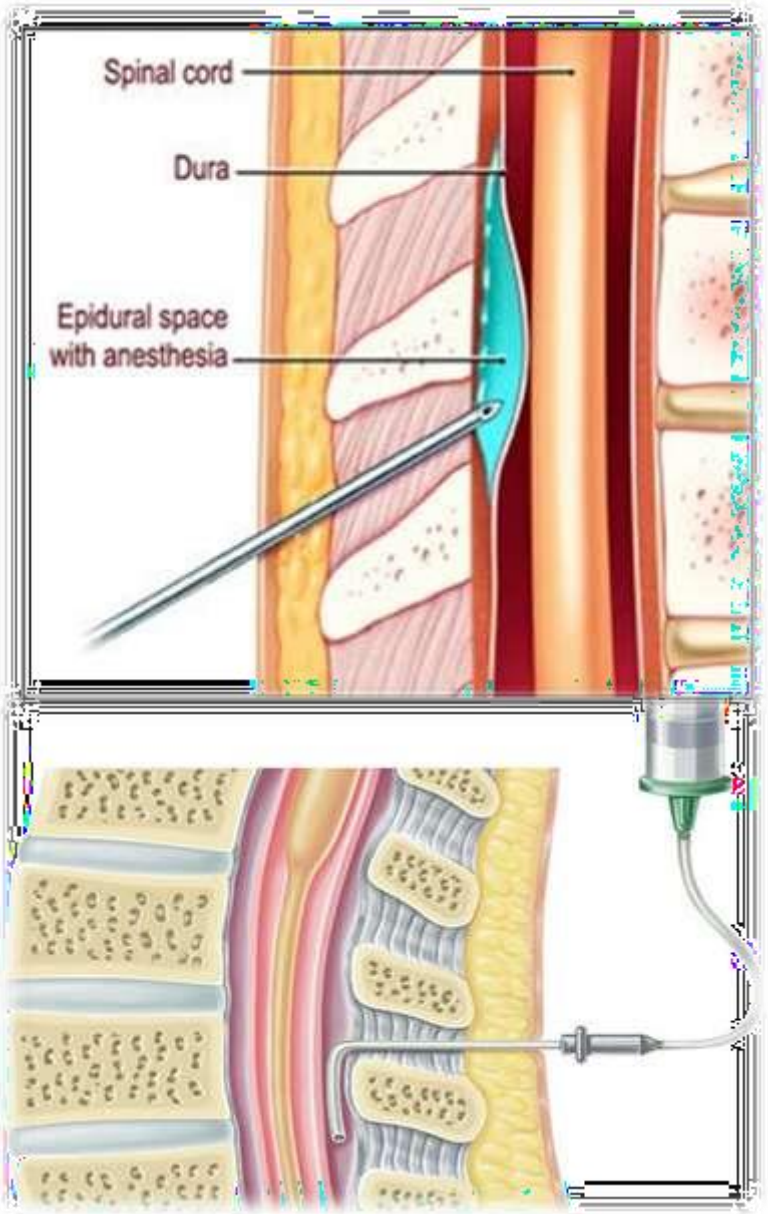
- Anesthetic agent placed inside epidural space at :

✓ L4-5

✓ L3-4

✓ L2-3

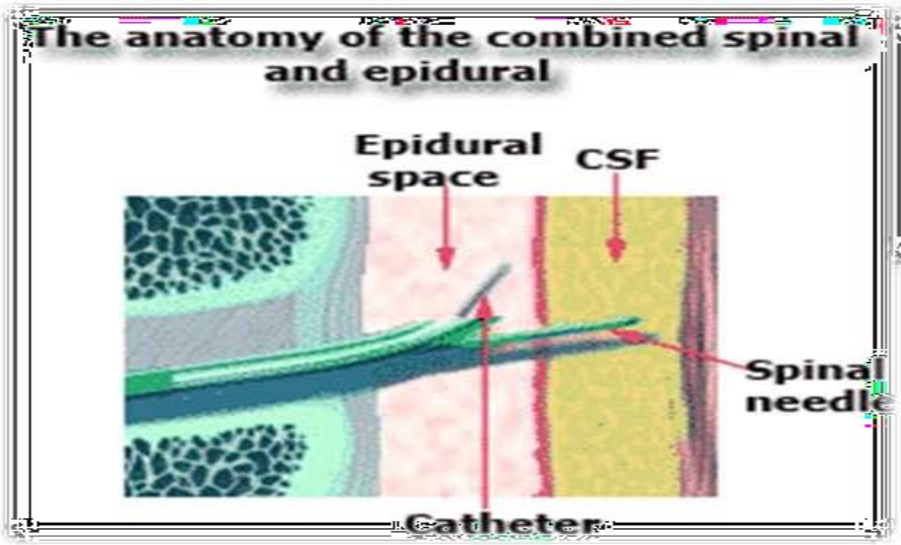
- Block not only nerve roots in the space but also sympathetic nerve fibers that travel with them

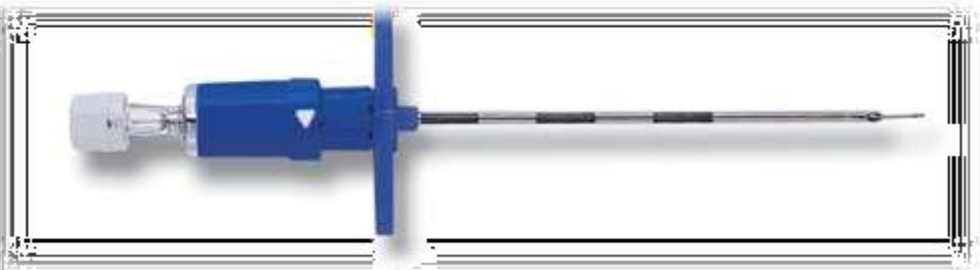


Cont…

Combined spinal-epidural analgesia

- Combination of opioid and local anesthesia injected inside spinal cord and in subarachnoid space , used to block pain transmission without compromising motor ability
- It is associated with greater incident with FHR abnormalities than epidural analgesia alone





Cont.…

Inhalational analgesia

during labour involves the self-administered inhalation of sub-anaesthetic concentrations of agents while the mother remains awake and her protective laryngeal reflexes remain intact

Active Management of The Third Stage of Labour:

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

    A) immediate oxytocin;

    B) controlled cord traction; and

    C)uterine massage after delivery of placenta.

A. 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 10IU IM.
  - Oxytocin is preferred because it is effective 2 to 3 minutes after injection, has minimal side effects and can be used in all women.
  - If **oxytocin is not available**, give ergometrine 0.2 mg IM or prostaglandins. Make sure there is no additional baby(s) before giving these medications.

B. Controlled Cord Traction (CCT)

- Clamp the umbilical cord close to the perineum (once pulsation of the blood vessels stops in the cord of a healthy newborn) and hold the cord in one hand.
- Place the other hand just above the woman's pubic bone and stabilize the uterus by applying counter-pressure to the abdomen during controlled cord traction.
- Keep slight tension on the cord and await a strong uterine contraction(usually every 2-3 minutes).

Cont ….. CCT

- With the strong uterine contraction, encourage the mother to push and very gently pull downward on the cord to deliver the placenta. **Continue to apply counter-pressure to the uterus**.
- Between contractions, gently hold the cord and wait until the uterus is well contracted again.
- With the next contraction, repeat controlled cord traction with counter-pressure.

Cont….

- If the placenta does not descend during 30-40 seconds of controlled cord traction do not continue to pull on the cord.
- 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.

Cont…….

- 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.
- **Examination of placenta:** Check for location & insertion of cord the lobes, the membrane and extra lobes
- **Examination of the umbilical cord:** Check number of blood vessel i.e. two artery & one vein and length of cord
- If **uterine inversion occurs**, reposition the uterus .

Cont….

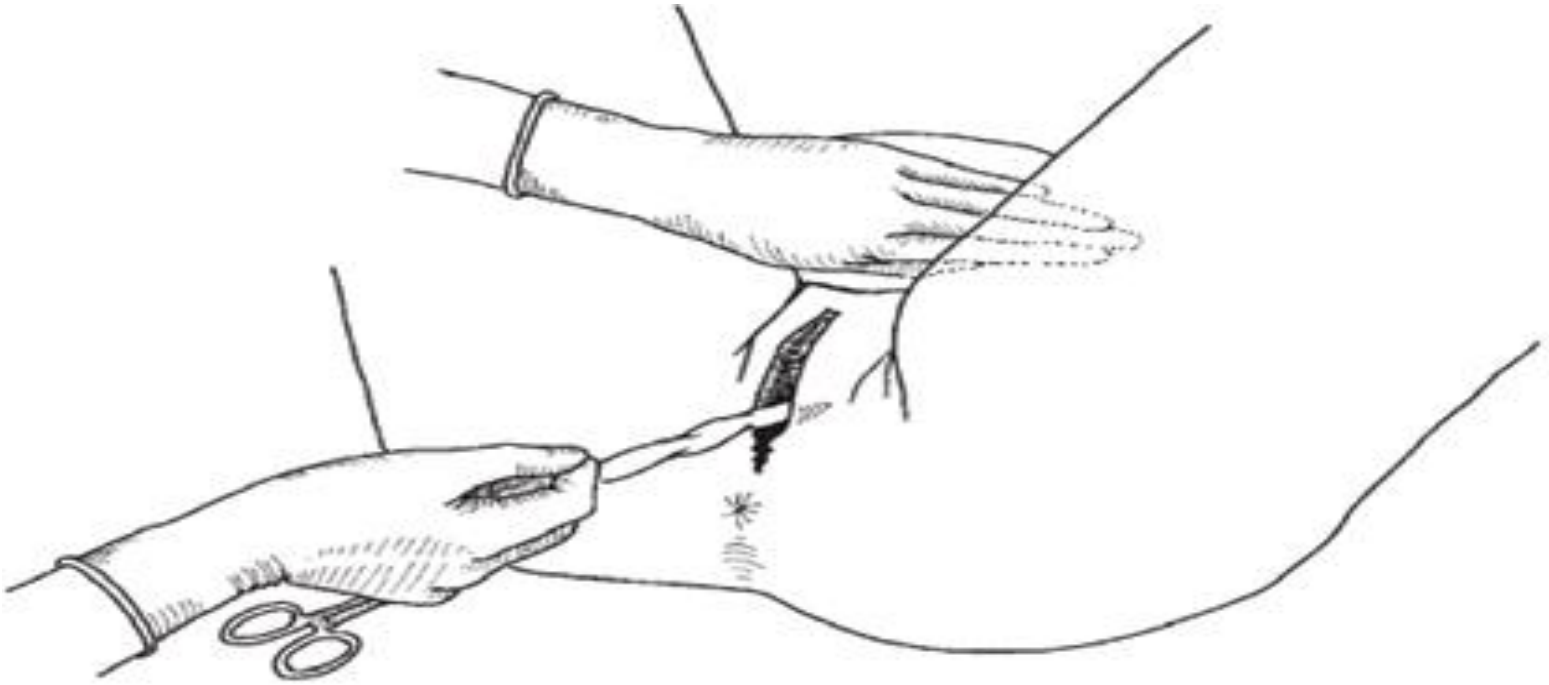


Figure Controlled cord traction. The right hand is pulling the clamped umbilical cord (making traction) while the left hand is exerting counter-pressure on the lower abdomen, just above the pubic bone. (Source: WHO, 2008, Midwifery Education Manual: Managing Postpartum Haemorrhage,

C. 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.

Summary of AMTSL

- Check the uterus for the presence of a second baby.
- In less than one minute, administer a uterotonic drug.
- Apply controlled cord traction.
- After delivery of the placenta, immediately start massaging the uterus.
- Examine the placenta to make sure it is complete and none of it has been retained in the uterus.
- Examine the woman’s vagina, perineum and external genitalia for lacerations and bleeding.

Fourth stage

- It is a critical stage for the women in which maternal death is high.
- Monitoring v/s at least every15minute for the 1st two hour.
- Examine uterine contraction(should be firmly contracted and at least level of umbilicus)
- Inspect the vulva for bleeding and hematoma.

Cont……

- **The observations include the following: -**
  - Contraction of the uterus
  - Emptying of the bladder
  - Bleeding from the vagina
  - Vital signs- P/R, BP, RR, T^{o} General conditions of the mother
  - The condition of the baby
    - ✓How it breaths
    - ✓Bleeding from the cord.

Infection Prevention
&
Patient Safety

Infection Prevention & Patient Safety

❖Infection Prevention

✓ Is a systematic effort or process of placing barriers between a susceptible host (person lacking effective natural or acquired protection) and the microorganism.

❖Patient Safety

✓ Is an issue focusing at reduction or aversion of unsafe acts/circumstances within the healthcare system through the use of best practices leading to optimal patient outcomes.

Why Infection Prevention & Patient Safety?

- ✓To protects patients/clients - helps provide quality care that is also safe for the patient
- ✓Prevents infection among healthcare staff and community
- ✓Lowers healthcare costs - prevention is less expensive than treatment
- ✓Limits number and spread of infectious agents that can become antibiotic-resistant

Infection Prevention and Patient Safety

Goal of Infection Prevention and Patient Safety:

- Is to make a healthcare facility a better place

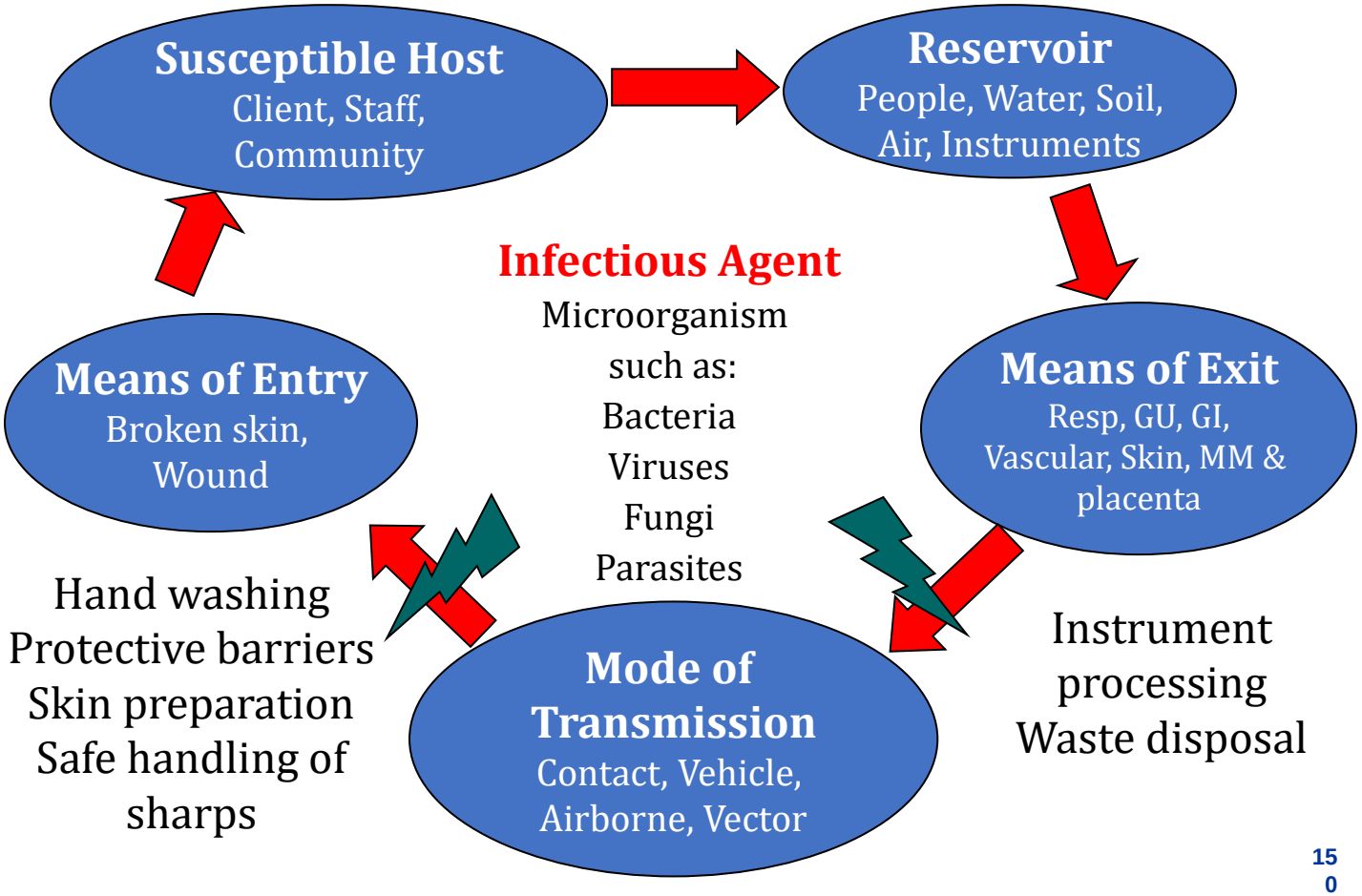
Objective of IP and PS :

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

The Six Components of Disease Transmission Cycle

1. **Agent:** Disease-producing microorganisms
2. **Reservoir:** Place where agent lives,
3. **Place of exit:** Where agent leaves host
4. **Mode of transmission:** How agent travels from place to place
5. **Place of entry:** Where agent enters next host
6. **Susceptible host:** Person who can become infected

Disease Transmission Cycle and how to break the cycle



Key Infection Prevention Precautions

- Regard all clients, patients, and healthcare staff as infectious and at risk of infection
- Wash hands or use alcohol-based hand rub
- Wear gloves before touching anything wet
- Wear personal protective equipment (PPE)

Cont …

- Use antiseptic agents before invasive procedures
- Follow safe work practices
- Vaccinate staff who are in direct contact with patients/clients

What is the most important Infection Prevention Precaution/Practice?

Hand washing is the single most practical procedure for preventing infection

Hand washing

Objective:

- Mechanically remove soil and debris from the skin and reduce the number of transient microorganisms

When to wash hands?

- Before and after examining client
- After contact with blood, body fluids, or soiled instruments even if gloves are worn
- Before and after removing gloves
- Upon arriving at and before leaving workplace

Hand washing: How to Wash Hands?

Steps:

- Use a plain or antiseptic soap.
- Vigorously rub lathered hands together for 10-15 second
- Rinse with clean **running** water from a tap or bucket.
- Dry hands with a clean personal towel

Alcohol-Based Hand Rub

Purpose: Is to inhibit or kill transient and resident flora.

- More effective than hand washing unless hands are visibly soiled
- 2 mL emollient (e.g., glycerin) + 100 mL ethyl or isopropyl alcohol 60–90%
- Use 3 to 5 ml for each application and continue rubbing the solution over the hands until dry.
- Washing hands with soap and water after every 5-10 application of the solution is recommended

Personal Protective Equipment

- Gloves: utility, examination, HLD/sterile
- Eyewear: face shields, goggles, glasses
- Aprons
  - Should be fluid-resistant
  - Should be decontaminated after use
- Protective Footwear
  - Protects from injury from sharps or heavy items
  - Should cover entire foot

Gloves

- As a general rule:
  - If the risk is to the patient, **“Sterile”** gloves are required.
  - If the risk is to the user, use **“Non-Sterile”** gloves.
- Gloves should not be worn when it is not required,
- If gloves are to be discarded, briefly immerse them in 0.5% chlorine solution
- Wearing gloves does not replace the need for hand washing or use of antiseptic hand rubs,

When to Glove

- When there is reasonable chance of contact with broken skin, mucous membranes, blood, or other body fluids
- When performing invasive procedure
- When handling:
  - Soiled instruments
  - Medical, or contaminated, waste
  - When touching contaminated surfaces

Double gloving

- Although double gloving is of little benefit in preventing blood exposure if needle sticks or other injuries occur, it may decrease the risk of blood hand contact
- Recommended in the following conditions:
  - For procedures that involves coming in contact with large amount of blood or other body fluid (e.g. vaginal deliveries and cesarean sections).
  - For surgical procedures lasting more than 30 minutes.
  - Orthopedic procedures

Elbow length Gloves

- Important manual removal of a retained placenta
- The steps for making elbow-length gloves if ready made elbow-length gloves are not available are:
  - Cut one or more fingers depending on the size of your hands completely off. Do the same for the other pair of the glove to allow all of the fingers slip into the gloves.
  - Sterilize or high-level disinfect 2–3 pairs of cut-off (fingerless) gloves and store them in a sterile or high-level disinfected container until needed

Elbow Length gloves

Step One

Step Two

Step Three

Step Four

Guidelines for Gloving

- Wear separate pair of gloves for each woman/newborn to prevent spreading infection from client to client
- What kind of gloves do you wear for:
  - Procedures involving contact with broken skin or tissue under skin?
  - Starting IV, drawing blood, or handling blood or body fluid?
  - Cleaning instruments, handling waste, and cleaning up blood and body fluids?

  Never wear gloves that are cracked, peeling or have holes.

Antisepsis

- Antiseptic (antimicrobial agents) are chemicals that are applied to the skin or other living tissue to inhibit or kill microorganisms (both transient and resident) thereby reducing the total bacterial count)
- The use of antisepsis :
  - For hand hygiene practice
  - For skin preparation prior to surgical procedure
  - For cervical or vaginal preparation
  - Skin Preparation for injection

Antisepsis; con…

- Antisepsis for mucus membranes
  - Ask about allergic reactions
  - Use water-based product (e.g., iodophor or chlorhexidine), as alcohols may burn or irritate mucous membranes
- Skin preparation for injections
  - If skin is clean, antisepsis is not necessary
  - If skin appears dirty, wash with soap and water
  - Before giving injection, dry with clean towel

Handling sharp instruments and needles

- Never pass sharp instrument from one hand directly to another person's hand
- After use, decontaminate syringes and needles by flushing three times with chlorine solution
- Immediately dispose of sharps in puncture-proof container
- Do not recap, bend, break, or disassemble needles before disposal
- Always use needle holder when suturing
- Never hold or guide needle with fingers

Use safe injection techniques

- Do not recap needles. When recapping is necessary, use the **one-handed scoop technique** for recapping needles.
- **Step 1:** Scoop up the cap
- **Step 2:** Push cap firmly down

Healthcare Waste Management

- Health care waste refers to all waste stream generated in health care settings, health related research institutions, laboratories and home based health care services.
- Healthcare waste includes both infectious/hazardous and non-infectious/non-hazardous wastes.
- Healthcare waste is considered the second most hazardous waste next to radioactive wastes.

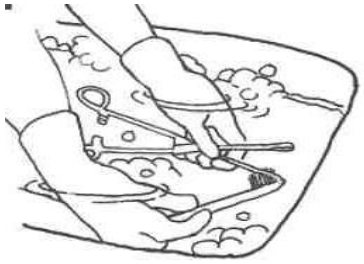
Key Waste Management Steps:

1. Minimization
2. Segregation
3. Handling: the activity of collection and storage.
4. Transportation
5. Treatment: to render the waste non-hazardous
6. Disposal:-
   - ✓ Burial- is placing waste into a pit and covering with earth.
   - ✓ Incineration

Instrument Processing

- Pass all sharp instruments on to a receiver, rather than hand-to-hand.
- Use needle holders and forceps so as to avoid using your fingers for needle placement and retrieval.
- Properly process instruments, devices, and equipment used during invasive procedures
  - Decontaminate,
  - Clean, and
  - Disinfect or sterilize all devices and equipment.

Instrument Processing steps



Step 1: Decontamination

Step 2: Cleaning

Step 3: HLD / Sterilization

Step 4: Storage

- HLD container
- Sterile container

Instrument Processing ……

- **Decontamination**
  - ➢Should be done immediately after use
  - ➢Makes objects safer to handle

  How do you make a 0.5% chlorine solution for decontamination?

- **Cleaning**
  - ➢Most effective way to reduce number of organisms
  - ➢Removes visible dirt and debris

Instructions for Preparing Dilute Chlorine Solutions

Preparing Dilute Chlorine Solutions from Concentrated Chlorine solution

$$\text{Total parts (TP) } (H_2O) = \left[\frac{\%\,\text{Concentrate}}{\%\,\text{Dilute}}\right] - 1$$

Example:

$$\text{Total parts (TP) } (H_2O) = \left[\frac{5\%\,\text{Concentrate}}{.5\%\,\text{Dilute}}\right] - 1 = 9 \text{ Total parts (TP) } (H_2O)$$

To make a 0.5% chlorine solution from 5% bleach, mix 1 part bleach to 9 parts water.

Instructions for Preparing Dilute Chlorine Solutions

II. Instructions for Preparing Dilute Chlorine Solution from a Powder

$$\text{Gram/Liter} = \left[\frac{\%\,\text{Dilute}}{\%\,\text{Concentrate}}\right] \text{X } 1000$$

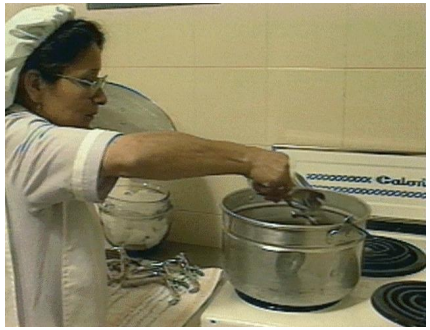
Example:

$$\text{Gram/Liter} = \left[\frac{.5\%\,\text{Dilute}}{35\%\,\text{Concentrate}}\right] \text{X } 1000 = 14.2 \text{ Gram/Liter}$$

To make a 0.5% chlorine solution from a 35% chlorine powder, mix 14.2 grams of powder to 1 liter of water

Instrument Processing (cont.)

- **Sterilization**
  - Destroys all microorganisms
  - Includes autoclave, dry heat, chemicals
- **High level disinfection (HLD)**
  - Destroys all microorganisms except bacterial endospores
  - Includes boiling, steaming, soaking
- **Storage**
  - After processing, must remain dry and clean



DECONTAMINATION

Soak in 0.5%

Chlorine solution for 10 minutes

THOROUGHLY WASH AND RINSE

Wear glove and other protective barriers(glasses, visors or goggles)

Preferred method

STERILIZATION

Chemical
Soak
10-24 hours

Autoclave
106 k Pa pressure
(15 lbs./in^2)
121_0C (250^{0}F)
20 min. unwrapped
30 min. wrapped

Dry Heat
170^{0}C
60 minutes

Acceptable methods

HIGH-LEVEL DISINFECTION

Boil or Steam
Lid on
20 minutes

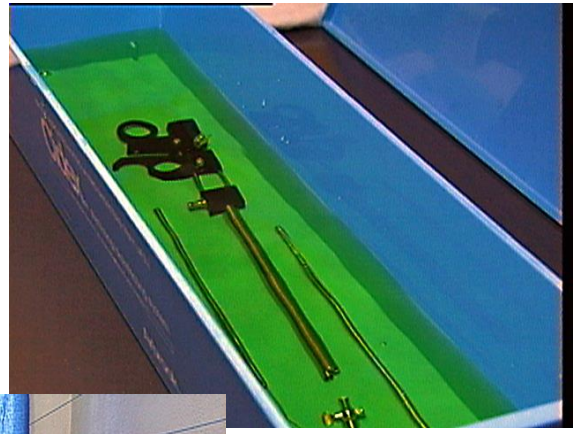
Chemical
Soak
20 minutes

COOL (Use immediately or store)

Common Methods of Sterilization

High-Pressure Steam (autoclave)

Chemical



Dry-heat (oven)

Housekeeping

- Each site should follow housekeeping schedule
- Always wear utility gloves when cleaning
- Clean from top to bottom
- Ensure that fresh bucket of disinfectant solution is available at all times
- Immediately clean up spills of blood or body fluids
- After each use, wipe off beds, tables, and procedure trolleys using disinfectant solution
- Decontaminate cleaning equipment with chlorine solution

Prevention of Mother-to-Child Transmission of HIV

- MTCT is the transmission of HIV from an infected mother to her baby.
- It can occur during:
  - Pregnancy
  - Labour and childbirth
  - Breastfeeding
- It is also referred to as “vertical transmission” or “perinatal transmission”.
- It is the main cause of HIV infection in children.

PMTCT of HIV …….. Cont

- Note that not all HIV-positive women will transmit the virus to their child.
- 100 infants born to HIV-infected women who breastfeed, without any interventions
  - ➢55–80 infants will not be HIV-infected
  - ➢20–45 infants will be HIV-infected
    - ✓5–10 infants infected during pregnancy
    - ✓10–15 infants infected during labour and delivery
    - ✓5–20 infants infected during breast-feeding

Risk Factors for MTCT of HIV

- The most important risk factor for MTCT of HIV is the amount of HIV virus in the mother's blood, known as the viral load.
- The risk of transmission to the infant is greatest when the mother's viral load is high−which is often the case with recent or advanced HIV infection.

During pregnancy ……factors

Strong evidence

- High viral load in the mother
  - new infection (viral "spike")
  - advanced stage of HIV infection (AIDS)
- Poor immune status (low CD4 count)
- Sexually transmitted infections (STIs)
- Certain HIV viral strains

Weak evidence

- Poor maternal nutritional status
- Maternal anemia
- Malaria
- Substance (drug) use or cigarette smoking during pregnancy
- External cephalic version
- Invasive obstetric procedures
  - amniocentesis
  - chorionic villus sampling (CVS)

During labour and childbirth ….factors

Strong Evidence

- High viral load in the mother
  - new infection (viral "spike")
  - advanced stage of HIV infection (AIDS)
- Vaginal delivery
- Prolonged rupture of membranes (>4 hours)
- Prolonged labour
- Instrumental delivery (forceps or vacuum extraction)
- Prematurity
- First infant in multiple birth

Weak Evidence

- Chorioamnionitis
- Suctioning newborn
- Invasive obstetrical procedures
  - episiotomy
  - early artificial rupture of membranes

During breastfeeding

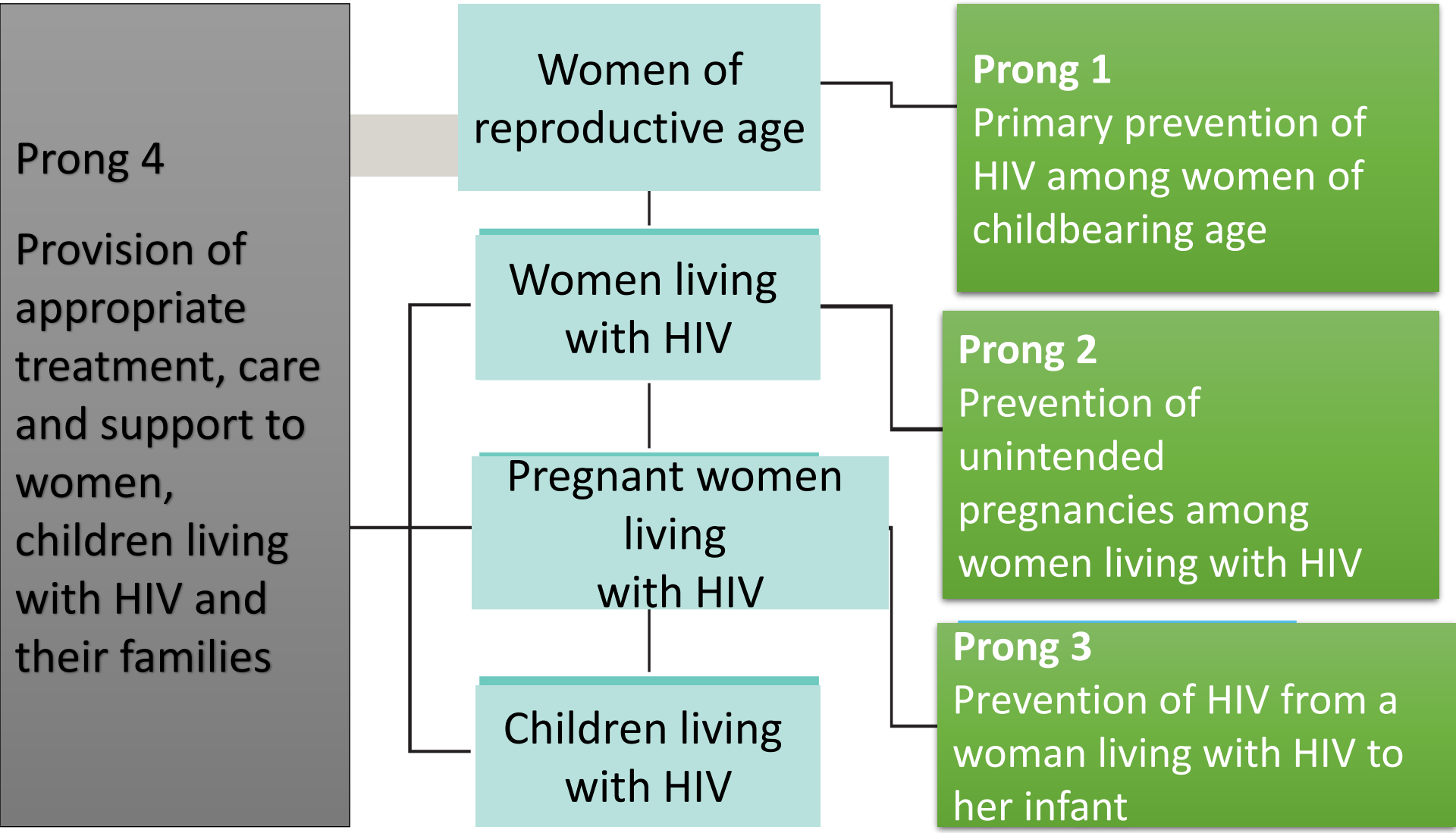
Strong Evidence

- High viral load in the mother
  - new infection (viral "spike")
  - advanced stage of HIV infection (AIDS)
- Breastfeeding*
- Mixed feeding (non-exclusive breastfeeding or non-exclusive replacement feeding)
- Long duration of breastfeeding
- Mastitis, nipple fissures, breast abscess

Weak Evidence

- Poor maternal nutritional status
- Oral disease in the baby (e.g. thrush or sores)

Prongs for PMTCT



Cont…….

- **Primary prevention (minimizing transmission of HIV)**
  - *Promote safer and responsible sexual behavior and practices through BCC using the* “ABC” approach:
  - Provide early diagnosis and treatment of sexually transmitted infections
  - Make HTC widely available
  - Provide Pretest test information

Cont…….

- **Prevention of unintended pregnancies among women with HIV**
  - ➢Improving women's access to information, education, sexual and RH services including FP.
- **Prevention of HIV transmission from mothers to infants**

a. Increasing women's access to ART

b. Provide ARV prophylaxis for the newborn

c. Ensuring safer delivery procedures

d. Reducing transmission through breastfeeding.

Cont……

- **Care, support, and treatment for mothers living with HIV, their children, and families**
  - Prevention and treatment of OI
  - ART
  - Positive living
  - HTC for other family members using family matrix
  - Nutritional supplements
  - Social and psychological support
    - ✓Peer/mother support groups
    - ✓Counseling on Adherence, FP, infant feeding and attachment , partner testing, disclosure, proper usage of condom …)

HIV testing and counseling

- **HIV testing** is a process that determines whether or not a person is infected with HIV.
- **HIV counseling** in the context of PMTCT is a confidential dialogue between women of childbearing age and their health care providers to help women examine their risk of acquiring HIV infection before, during, and after pregnancy as well as the risk of transmitting HIV infection to their children or their partners.

Pre test information at ANC setting

- Provide basic information about HIV/AIDS and MTCT of HIV.
- Reasons for recommending HIV testing, for all pregnant women
- The clinical and preventive benefits of HIV testing
- Available services, for the woman, her baby, and her partner
- Reassurance on confidentially
- The right of the woman to decline testing
- Information and support.

Guiding principles of HTC for PMTCT

- The 6 C's −
  - **C**onsent,
  - **C**onfidentiality,
  - **C**ounseling,
  - **C**orrect test results,
  - **C**onnections to care and
  - **C**omfort

Basic counseling skills

- Empathizing:
- Active Listening:
- Open Questioning and Probing:
- Focusing:
- Paraphrasing:
- Correcting Misconceptions

The Benefits of HTC Services for Women

For HIV-negative women

- Helps them remain uninfected
- Helps them to have HIV-free babies
- Help them receive the FP methods of their choice

Cont…… benefits for women

For HIV-positive women:

- Make informed decisions about FP
- Receive appropriate and timely interventions to reduce MTCT including:
  - Getting ARV treatment to reduce MTCT
  - Infant feeding counseling and support
  - Information and counseling on FP
  - Prevention of transmission of HIV to her partner
- Disclose their results to partners and family members and get support

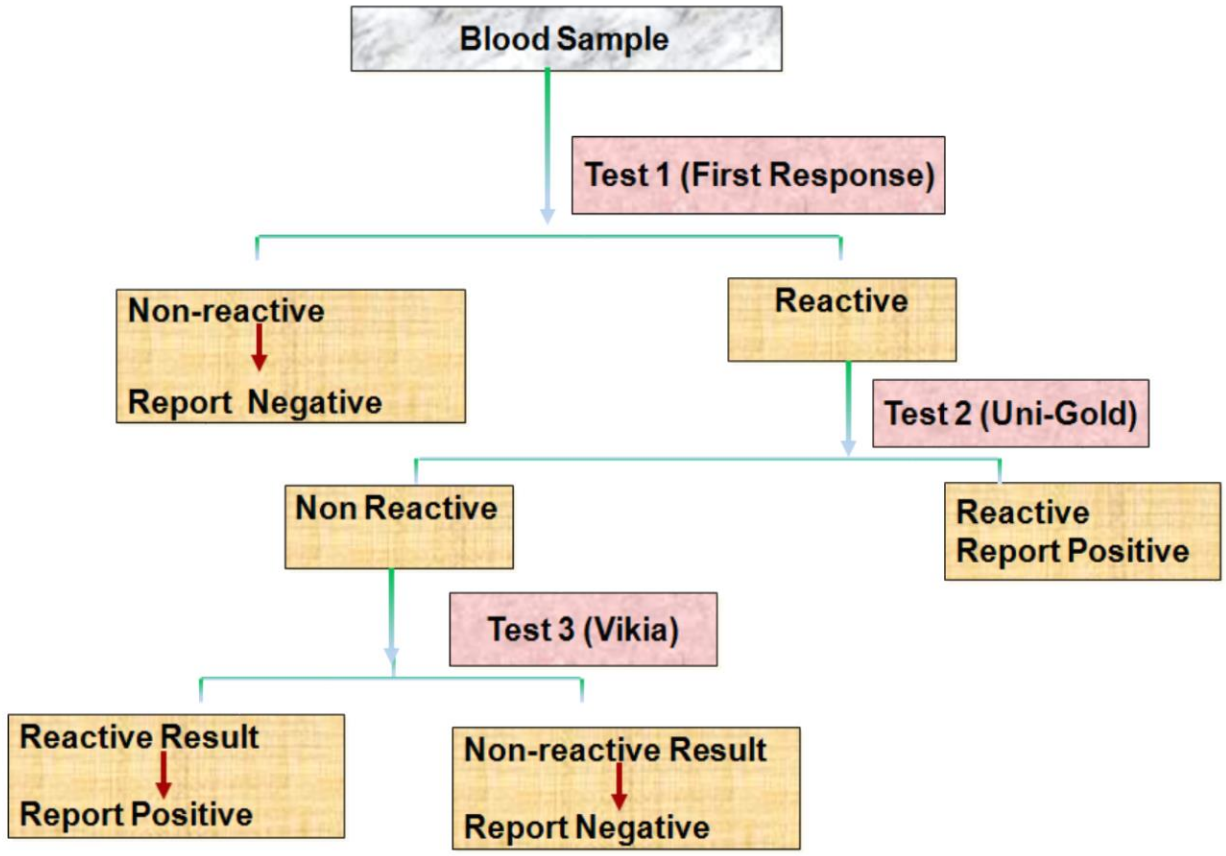
HIV Rapid Testing

- HIV testing detects antibodies, antigens or viral particles (testing for HIV PCR which is less commonly available) associated with HIV in whole blood, saliva, or urine.
- Blood is the most commonly used sample.
- The results of different tests can be combined to confirm HIV test results.
- When properly performed, HIV tests offer a high degree of accuracy.

HIV Antibody tests

- Includes the following:
  - Rapid HIV test
  - Enzyme-linked immuno-sorbent assay (ELISA)
  - Western blot test
- Rapid HIV tests are the most commonly used HIV tests in Ethiopia.

HIV Rapid Test Algorithm for Ethiopia



Care and Treatment for HIV Positive Women

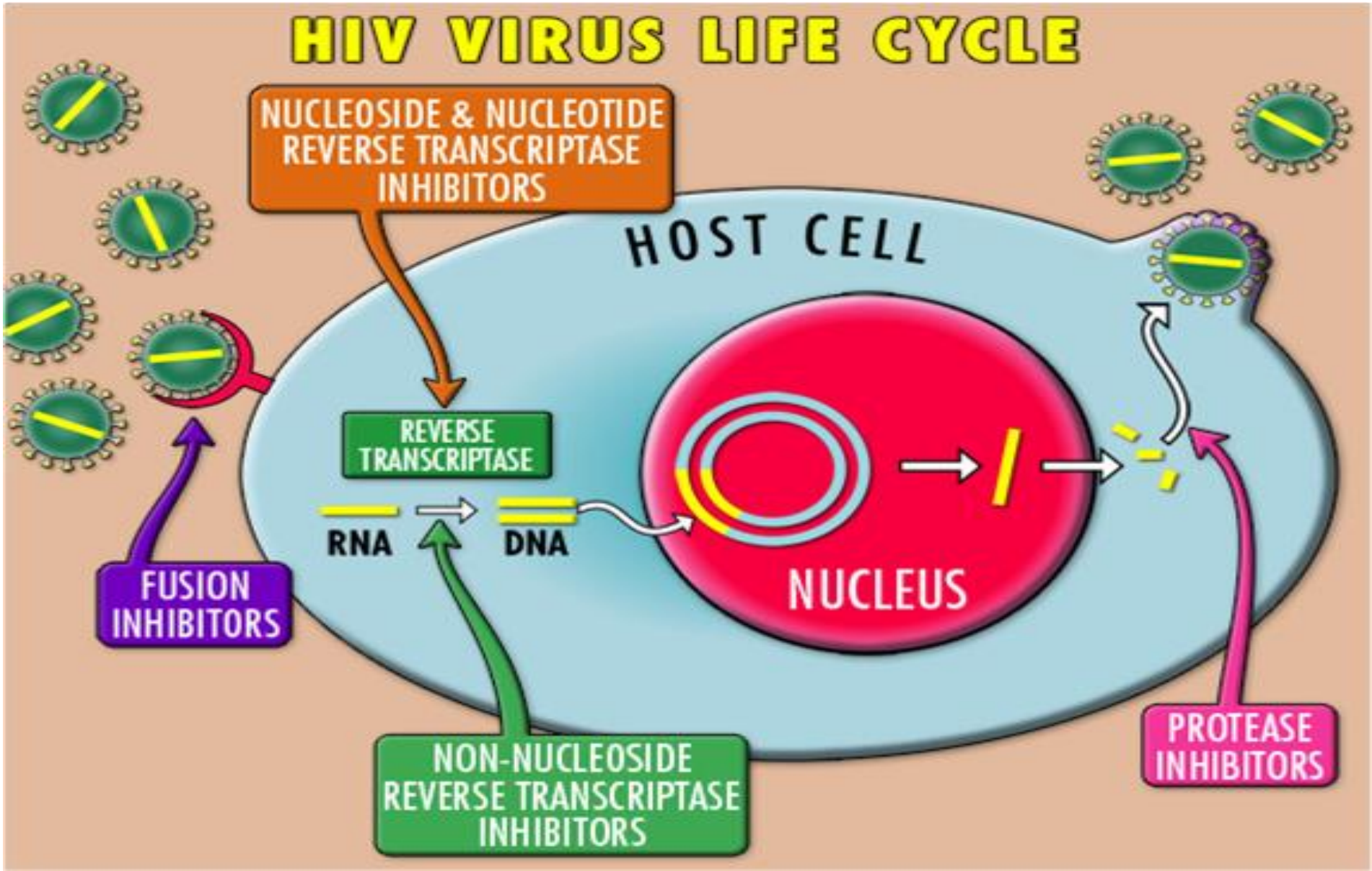
- What is ART?
- ART is the treatment of HIV infected individual with anti-retroviral drug.
  - A-anti,
  - R-retroviral,
  - T-Therapy,
- What is HAART?
  - H-Highly, A-Active, A-anti, R-retroviral, T-Therapy
- It is the use of three or more anti-retroviral drugs for the treatment of HIV infection.

ARV Drugs for Pregnant Women

Classes of antiretroviral drugs

- There are **three major classes of ARV drugs** available for use in Ethiopia:
- The NRTI: This stands for 'Nucleoside and Nucleotide Reverse Transcriptase Inhibitors'
- The NNRTI: This stands for 'Non-Nucleoside Reverse Transcriptase Inhibitors’.
- The PI: This stands for ‘Protease Inhibitor’.

Site of actions for NRTI, NNRTI, and PI



Classes and Dosages of ARV Drugs in Ethiopia

Drug class/ drug	**Dose**
Nucleoside RTIs	
Abacavir (ABC)	300 mg twice daily
Lamivudine (3TC)	150 mg BID or 300 mg once daily
Zidovudine (ZDV)	300 mg twice daily.
Nucleotide RTI	
Tenofovir (TDF)	300 mg once daily
Non-nucleoside RTIs	
Efavirenz (EFV)	600 mg once daily
Nevirapine (NVP)	200 mg daily for the first 14 days, then 200 mg twice daily
Protease inhibitors	
Lopinavir/ ritonavir (LPV/r)	400 mg/ 100 mg twice daily
Atazanavir /ritonavir(ATV/r)	300mg/100 oncedaily

Cont….

- Combination therapy makes sense for lots of reasons
- It takes three drugs to have sustained viral suppression (low level of virus in the body).
- Antiretroviral drugs from different drug groups attack the virus in different ways.
- Combinations of anti-HIV drugs may overcome or delay resistance.

Three options of PMTCT

	Treatment (for CD4 count < 350 cells/mm3)	**Prophylaxis (for CD4 count> 350 cells/mm3)**	**Infant receives**
Option A	Triple ARVs starting as soon as diagnosed, *continued for life*	*Antepartum*: AZT starting as early as 14 weeks gestation *Intrapartum*: at onset of labour, sd NVP and first dose of AZT/3TC *Postpartum*: daily AZT/3TC through 7 days postpartum	Daily NVP from birth until 1 week after cessation of breastfeeding; or, if not breastfeeding or if mother is on treatment, through age 4–6 weeks
Option B	Triple ARVs starting as soon as diagnosed, *continued for life*	Triple ARVs starting as early as 14 weeks gestation and *continued intrapartum and through childbirth if not breastfeeding or until 1 week after cessation of all breastfeeding*	Daily NVP or AZT from birth through age 4–6 weeks regardless of infant feeding method
Option B+	Similar	Triple ARVs starting as soon as diagnosed, *continued for life*	Daily NVP or AZT from birth through age 4–6 weeks regardless of infant feeding method

ART for pregnant women (Option B+ regimen)

- ART
  - Improves the health of the woman and
  - The most effective intervention in decreasing the risk.
- All HIV positive pregnant women should start ART as soon as possible irrespective of:
  - Gestational age, clinical stage and CD4 count.
- HAART for HIV positive pregnant is indicated based on Option B+ (test-and-treat principle).
- Once started, a woman should continue taking ART for her entire life.

Recommended regimen in PMTCT

Scenario:-Diagnosis of HIV and initiation of ART at:	Type of regimen for the woman
ANC (newly identified)	TDF+3TC+EFV
Intra-partum(L&D), newly identified	TDF+3TC+EFV
Postpartum period(newly identified)	TDF+3TC+EFV
Pregnant mother on Pre-ART follow up	TDF+3TC+EFV
Already on HAART before pregnancy	Continue with the regimen the woman has started

Possible side effects of first line regimen

ARV Drug	Potentially Serious side effects (Warn patients to seek Care)
Zidovudine (AZT)	Pallor
Tenofovir (TDF)	Renal insufficiency, Effect on fetal bone
Lamivudine (3TC)	
Nevirapine (NVP)	Yellow eyes Skin rash Fatigue AND shortness of breath Fever
Efavirenz(EVF)	Seek care urgently, Yellow Eyes, Psychosis or confusion, Skin Rash

Monitoring of response to ART

Drugs	Monitoring Tests	Frequency
TDF/3TC/EFV	CD4	Baseline and every 6 months
	ALT	Symptom-directed
	Creatinine	symptom-directed
	HIV viral load test	6 months after ART initiation and Every 12 months
AZT/3TC/NVP	Haemoglobin	At baseline, 4th, 8th, and 12th weeks. Thereafter symptom-directed
	ALT	Symptom-directed
	CD4 Count	Baseline and 6 monthly (if available)
	HIV viral load test	6 months after ART initiation and Every 12 months
AZT/3TC/EFV	Haemoglobin	At baseline, 4th, 8th, and 12th weeks; thereafter symptom-directed
	ALT	Symptom-directed
	CD4 count	At baseline and 6 monthly
	HIV viral load test	6 months after ART initiation and Every 12 months thereafter

Diagnosis of Treatment failure

- Monitoring individuals receiving ART is important to
  - ensure successful treatment,
  - Identify adherence problems and
  - determine occurrence of treatment failure.
- Viral load testing should be done after 6 months of initiating ART and every 12 months then after

Cont…..

- Indicators of treatment failure:
  - clinical or
  - immunologic suspicion
  - Virologic failure.
- If treatment failure is diagnosed switch to 2nd line regimen.

Clinical failure

- New or recurrent clinical event indicating severe immunodeficiency (WHO clinical stage 4 condition and certain WHO clinical stage 3 conditions (pulmonary TB and severe bacterial infections)) after 6 months of effective treatment

What to do?

- The condition must be differentiated from immune reconstitution inflammatory syndrome occurring after initiating ART.

Immunologic failure

- CD4 count falls to the baseline (or below) or

  Persistent CD4 levels below 100 cells/mm3

What to Do?

- Without concomitant or recent infection to cause a transient decline in the CD4 cell count.
- Current WHO clinical and immunological criteria have low sensitivity and positive predictive value for identifying individuals with virological failure

Virologic failure

- Plasma viral load above 1000 copies/ ml

What to do?

- An individual must be taking
- ART for at least 6 months before it can be determined that a regimen has failed.
  - VL testing should not be done when there is an acute infection/fever.

Safer infant feeding

- All HIV-positive women should receive counseling on infant feeding options as part of antenatal and postnatal care.
- **Mothers known to be HIV-infected** (HIV exposed infant) should
  - Exclusively breastfeed their infants for first 6 months,
  - Introducing appropriate complementary foods, and
  - Continue breastfeeding for the first12 months of life.

Cont….

- Mothers known to be HIV-positive who decide to stop breast feeding at anytime should stop gradually within one month.
- When an HIV-positive mother decides to stop breastfeeding at anytime,
  - Provide infants with safe,
  - Adequate replacement feeds to enable normal growth and development.
- All children need complementary foods from6 months of age.

Alternatives to breastfeeding

- **<u>For infants less than 6 months of age</u>:**
  - Commercial infant formula milk.
  - Expressed heat-treated breast-milk.
  - Home-modified animal milk is **not recommended** as replacement food in the first 6 months.
- **<u>For children over6 months of age</u>:**
  - Commercial infant formula milk.
  - Animal milk – boil for infants less than 12 months.
  - Meals, including milk-only, other foods and combination of milk and other foods.

Normal puerperium

- It is the period from the expulsion of the placenta to the time when reproductive organ returns to its non gravid state of 6 weeks.
- Is the period of adjustment following pregnancy and delivery when anatomic and physiologic changes of pregnancy are reversed and the body returns to non pregnant state.

Cont.…

- It is classified in to three phases
  - **Immediate:** extends from delivery to 24hours postpartum
  - **Early:** extends from 24hours to the end of the first week
  - **Late:** extends from the end of the first week to complete involution of the generative organs which is traditionally 6weeks.

Cont…

- **Characterized by**
  - Reproductive organ return to non gravid state
  - Lactation established
  - Increase bond b/n mother & infant
  - Recovery from the stress of pregnancy & delivery
- **Care of the puerperium is based on**
  - Promoting physical well being of the mother & baby
  - Encourage infant feeding
  - Promoting maternal & child relation ship.
  - Full fill her mothering role.

Physiology of puerperium

1. Involution

- This is a process by which the reproductive organs return to the pre-gravid state.
- **The uterus**
  - A size of 20 weeks just after delivery
  - Decreases in size at a rate of one finger per day.
  - By the end of the first week it is 12weeks,and by 10-14days it becomes impalpable per abdomen
  - Reaches non gravid state by 6weeks.
  - Its weight reduces from 1000grams at the end of delivery to 50-100grams by 6weeks.

Cont…

- In the first 2-3 days after delivery the uterus contracts strongly causing lower abdominal discomfort and pain known called the after pain.
- The endometrium differentiates into superficial and basal layers in 2-3 days.
  - The superficial layer gets necrotic & is cast off as lochia.
  - Regeneration of the basal layer ends in 10-16 days.
- The placental site is reduced by 50% following delivery.
- Regeneration starts by day 7 and is completed between 3-6 weeks.

Mechanisms

Step-1 Ischemia

- uterine muscle and blood vessels contracts → blood circulation decreases → localized anemia → ischemia (necrosis)

Step-2 Autolysis

- Necrotized muscle fibers are digested by proteolytic enzyme → Waste product then pass into the blood stream → eliminated by the kidneys.

Step-3 Regeneration

- New endometrium from the basal layer develops
- The superficial layer of the endometrium gets necrotic and is cast off as lochia.

Cont…

Cervix

- Contract slowly & the external os admits two finger for a few days but at the end of the 1st week narrows down to admit a tip of finger only.
- For those that have delivered vaginally, the external os changes to traverse slit.
- Complete healing and re epithialization of laceration takes 6-12weeks.

Cont….

Vagina

- The cervix Vagina, perineum and abdominal wall regain their tone but some degree of laxity remain.
- The torn hymen forms carenculae myrtiformis.
- Traumatic lesions of the vagina and the vulva heal in 5-7 days.
- It takes long time to involute (4-8 weeks)
- It can never be the same degree as in pre pregnant state

Post partum discharge (lochia)

Lochia is an alkaline discharge of variable amount from the uterus during puerperium.

- **Lochia rubra:** reddish discharge from day 1-4 rapidly becomes reddish brown mainly containing blood.
- **Lochia serosa:** pink colored discharge from day 5-9
- **Lochia Alba:** thick yellowish discharge starting from day 10 and extends for variable period.
  - ✓It mainly contains white blood cells and degenerated decidual cells.

2. **Systemic changes**

- Enlargement of the kidneys persist for months,
- Glomerular filtration rate returns to normal in 8 weeks.
- Ureteric dilatation persists for 12weeks.
- Urinary bladder capacity is increased with little increase in intravesical pressure.
  - Incomplete implying results in more residual urine.
- Diuresis of the excess extra cellular fluid starts between days 2-5 and cause weight loss of 4 kilograms.

Cont….Systemic

- There is rapid consumption of clotting factors in the first few hours after delivery.
- But after the first day, there is rapid increase in clotting factors which reaches maximum days 3-5 and maintained for 2 weeks.
- Leukocytosis of up-to 25000 per mm^3 is common.
- Blood volume returns to normal in third week.
- Blood pressure tends to increase is the first 5 days owing to the increase in peripheral resistance.
- Cardiac output takes months to return to normal.

3. Endocrine changes

- **Human placental lactogen:**
  - become undetectable with in one day.
- **HCG:**
  - gradually decline to the lowest between 3-7days.
- **Pituitary:**
  - starts to regress after the first week.
- **Prolactin:**
  - Returns to non pregnant level by 2 weeks in non lactating mother
  - In lactating mother, it remains above the non pregnant level with dramatic increase during suckling.
- **Insulin:**
  - With the disappearance of human placental lactogen, relative hyperinsulinemia.

4. Return of fertility and menstruation

- Follicular phase level of estrogen is reached in 19-21 days in non lactating, in 60 – 80days in lactating and menstruating women vagina up to 180 days lactating amenorrhic women.
- FSH ad LH levels are
  - Very low in the first 10-12days in all women.
  - Levels then reach follicular phase levels at the end of second and third weeks.

Menstruation

- Resumes in 6 weeks in 30% and in 12 weeks in 70% of non lactating women
- In lactating women, the range for resumption of menstruation is 2-18 months.
- In non-lactating women, ovulation resumes as early as 33 days.
- In lactating women this is highly variable and is largely dependent on the strength of suckling and the earliest time of ovulation is 10 weeks

5. Lactation

- Two events needed for the initiation of lactation are
  - Drop in placental hormones (progesterone and estrogen)
  - Release of oxytocin and prolactin by suckling reflex (milk letdown reflex).
- **Advantages of breast feeding** :-
  - Acceleration of uterine involution,
  - Provides postpartum contraception,
  - Provides nutrients and antibodies to the neonate,
  - Ideal food at right temperature and is sterile,
  - Does no need preparation and
  - Enhances mother to child bonding.

Basic Postpartum Care Provision

- Ongoing supportive care
- Mother and baby should be seen at 6 hours after birth, and again before discharge if in a facility.
- Every mother and baby should be visited again by a provider or trained community health worker by 72 hours after birth

Cont…..

- Basic care package PNC:-
  - Breastfeeding and breast care
  - Complication readiness plan
  - Support for mother-baby-family relationships
  - Family planning
  - Nutritional support
  - Self-care and other healthy practices
  - HIV counseling and testing
  - Immunizations and other preventive measures

Cont……

Component of post natal care

A) Early detection and management of complication.

B) Promotion health and preventing disease.

C) Providing women –centered education and counseling.

Cont…..

Post Natal follow up

- The post natal period starts after birth and extends to six weeks.
- The visit carried out at:
  - birth
  - within the 1st 24 hrs
  - 3rd day and
  - 7th day

Maternal danger signs

- Vaginal bleeding (heavy or sudden increase)
- Breathing difficulty
- Fever
- Severe abdominal pain
- Severe headache/blurred vision
- Convulsions/loss of consciousness
- Foul-smelling vaginal/laceration discharge
- Pain in calf, with our without swelling

Cont.…

- Hallucination/Verbalization/behavior change indicating attempt to self or baby injury
- Persistent bloody lochia, offensive lochia,
- Severe perineal pain or swelling,

Neonatal care

Breast feeding –

- Initiate BF within an hour,
- explain the importance of the colostrums,
- BF frequently on demands about 8-10times day & night, EBF

Umbilical cord care

- Don’t cover the cord with a diaper or a bandage.
- Make sure that the cord is dry and clean. If it’s dry, clean it with soap & water and dry
- Don’t apply any substance

Cont….

Temperature maintenance

- keep the baby warm,
- KMC for preterm babies,
- the room should be warm,
- change the diaper quickly,
- keep the baby warm during bath.

Danger signs for the Newbor

- Breathing difficulty
- Convulsion, spasms, loss of consciousness, or arching of back
- Cyanosis (blueness)
- Hot to touch (fever)
- Cold to touch
- Bleeding
- Jaundice (yellowness)
- Pallor
- Diarrhea
- Persistent vomiting or abdominal distension
- Not feeding or poor sucking
- Pus or redness of umbilicus, eyes, or skin
- Swollen limb or joint
- Floppiness
- Lethargy
- Danger signs of new born

Assessment of breast feeding

- Assess whether the baby suck the breast or not before the mother leave the health institution
- If the infant do not suck the breast assess the cause & solve the problem.
- The cause may be from the mother or from the infant.

Cont….

- **Maternal cause**
  - Abnormal structure & shape of the breast like retracted nipple & cracked nipple
  - Infection of the breast like mastitis
  - Soreness of the breast.
  - Lack of knowledge about breast feeding advantage.
  - Unwanted pregnancy, unwanted infant
- **Child cause**
  - Prematurity
  - Congenital abnormality
  - Cleft lip and/or Cleft palate
  - Blocked nose

Management of breast feeding

- Both breasts must be used at each feed.
- The baby should feed both breasts after finishing the 1st one.
- If the baby satisfy with the 1st breast, feed the next breast at the next feed.
- Each feed last 10-15 minute to finish one breast/suck.
- The breast should hold away the baby's nose during feeding.
- The baby should feed at regular interval i.e. at least of 8 feed /24/hrs

Signs of good sucking

- You can see the baby sucking slow, deep sucks & sometimes pauses.
- The baby is relaxed & happy & satisfied at the end of the feed.
- The mother doesn’t feel nipple pain
- You may be able to hear the baby swallowing

Cont…

- **Sign of good position**

-Infant's neck is straight or slightly bends back.

-Infant's body is turned towards the mother

-Infant's whole body is supported.

-Infant's body is close to the mother

- **Sign of good attachment**

-There should be more areola above the infant's mouth than below

-Infant's mouth should be wide open

-Infant's lower lip turned out ward.

-Infant's chin should touch the breast.

Cont….

Breast care:

- To prevent engorgement, breastfeed every 2-3 hours
- Wear supportive (but not tight) bra or binder
- Keep nipples clean and dry
- Wash nipples with water only once per day – no soap
- After breastfeeding, leave milk on nipples and allow to air dry

I THANK U!!!
STAY AT HOME BE SAFE!!!