Labor and Birth Processes
13th, 14th & 15th Lectures
What is labour?

- **Labor** is a series of continuous, progressive contractions of the uterus which help the cervix to open (dilate) and to thin (efface), allowing the fetus to move through the birth canal and expel from the women’s body.

- **Childbirth** includes both labor (the process of birth) and delivery (the birth itself).
Signs of labor

- Preliminary
  - *lightening*: the descent of the fetus presenting part into the pelvis.
  - Sudden burst of energy
  - Braxton-Hicks contractions
  - Cervical ripening

- True signs
  - Regular contractions
  - Show
  - ROM
**Comparison of True and False Labor**

<table>
<thead>
<tr>
<th>True Labor</th>
<th>False Labor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contractions occur at regular intervals.</td>
<td>Contractions are irregular.</td>
</tr>
<tr>
<td>Interval between contractions gradually shortens.</td>
<td>Usually no change.</td>
</tr>
<tr>
<td>Contractions increase in duration and intensity.</td>
<td>Usually no change.</td>
</tr>
<tr>
<td>Discomfort begins in back and radiates around to abdomen.</td>
<td>Discomfort is usually in abdomen.</td>
</tr>
<tr>
<td>Intensity usually increases with walking.</td>
<td>Walking has no effect on or lessens contractions.</td>
</tr>
<tr>
<td>Cervical dilatation and effacement are progressive.</td>
<td>No change.</td>
</tr>
</tbody>
</table>
Components of labor The 5 “Ps”

- Passenger (fetus)
- Powers (uterine contractions)
- Passage (the pelvis & maternal soft parts)
- Position (maternal)
- Psyche (maternal psychological status)
PASSENGER (FETUS):

- Fetal head & Molding
  - Fetopelvic relationships
  - Cardinal movements

*The fetal head & Molding:*

- **Molding**: the change in shape of the fetal skull produced by the uterine contractions pressing the vertex against the non-yet dilated cervix.

- **Fontanel's**: Intersection of sutures, allows for molding, helps identify position of head
  - **Anterior**
    - Diamond shaped; Approx 2-3 cm
    - Ossifies in ~12-18 months
  - **Posterior**
    - Triangle shaped
    - Closes in 8-12 weeks
Fig. 18-4A Diameters of the fetal head at term.
Fetopelvic Relationships:

- **Attitude:** the degree of flexion of the fetus or the relation of fetal parts to each other.
  - *Complete flexion* = good attitude.
  - *Moderate flexion:* (military position)
  - *Partial extension* (Brow) = poor flexion

- **Fetal Lie:** refers to the relationship of the long axis of the fetus, as related to the spinal column, to the long axis of the mother. (vertical lie = most common). Or **Horizontal** (transverse)
Fetal lie

- Longitudinal – cephalic and breech
- Transverse – shoulder
Fetopelvic Relationships

- **Fetal Presentation:** The part of the fetal body that enters (or presents to) the maternal pelvis. Most common = cephalic presentation (head first).
  - *Cephalic (Vertex):*
    - *head is the body part that first contacts the cervix (95%)*

4 types:
- A. Vertex - Good full flexion
- B. Brow – Moderate (military)
- C. Face – Poor attitude
- D. Mentum – Very poor attitude
Cephalic presentation
Cephalic presentation. A, Vertex presentation. Complete flexion of the head allows the suboccipitobregmatic diameter to present to the pelvis. B, Military (median vertex) presentation with no flexion or extension. The occipitofrontal diameter presents to the pelvis. C, Brow presentation. The fetal head is in partial (halfway) extension. The occipitomental diameter, which is the largest diameter of the fetal head, presents to the pelvis. D, Face presentation. The fetal head is in complete extension, and the submentobregmatic diameter presents to the pelvis.
**Breech:** Buttocks or feet are the first parts to contact the cervix (3%)  
3 types: complete; frank; footling
Shoulder:

In transverse lie, the fetus is lying horizontally in the pelvis (acromion process is the presenting part) or the iliac crest, a hand or an elbow.

Common among:-

- Grand multiparas
- Pelvic contraction (horizontal space larger than vertical space).
- Placenta previa
**Fetal Position:** refers to the relationship of an assigned area of the presenting part to the maternal pelvis.

To determine the fetal Position.

Mentally divide the maternal pelvis into 4 quadrants (R&L anterior, R&L posterior).

3 notations

- R or L
- Landmark: O, M, S, A
- Where landmark: A, P, T

- OA most common, easiest to deliver & Other positions are considered malpositions
- Painful diameter in posterior position (OP): back pain, longer 2nd stage
Notations used to describe the fetal position

1. Right (R) or left (L) side of maternal pelvic
2. The landmark of fetal presenting part:
   - Occiput (O)
   - Mentum (M)
   - Sacrum (S)
   - Acromion process (A)
3. Anterior (A), Posterior (P), or Transverse (T)
Terminology

- **Station:**
  - The relationship of presenting part of the fetus to the level of the ischial spines.
  - Ischial spines of pelvis (0 station)
  - Measured cm above (+) or below ischial spines (-)
  - Some use +3 to -3; some use +5 to -5
  - In normal pelvis, narrowest diameter thru which fetus passes
  - **Floating** is above the spines.
  - **Engaged** is the level of the spines.
  - **Crowning:** the presenting part is at the perineum and can be seen if the vulva is separated.
Cardinal movement) -(in an anterior occiput position) 

- Engagement (fetal head entering the maternal pelvis) 
- Descent 
- Flexion (of the fetal head) 
- Internal rotation (of the fetus) 
- Extension (of the fetal head) 
- Restitution (External Rotation). 
- Expulsion--Anterior shoulder delivery 
  --Posterior shoulder delivery
PASSAGE: “P” # 2

Refer to the route the fetus must travel from uterus through the cervix & vagina to external perineum

DIVISIONS:

- Pelvis is divided into halves – the false pelvis and the true pelvis.
- **False pelvis**: wide broad area btw. the iliac crests & has no major clinical significance for L&D (support pelvic organ).
- **True Pelvis**: the actual bony passage that the fetus must traverse during labor and birth. Shape is a curved axis, not a straight passage
PRENATAL ASSESSMENT OF PELVIS:

- Clinical pelvimetry reassures both the health care provider & the woman about the normalcy of the pelvis. When any variation exists in the pelvic structures guidance may include the planning for a C/S.

**Type of pelvis**
- Gynecoid (female)
- Android (male)
- Arthropoid
- Platypelloid
Comparison of Caldwell-Moley pelvic types.
SOFT PASSAGE THROUGH MATERNAL SOFT TISSUE STRUCTURES:

Soft tissues of the cervix, vagina, and perineum must stretch to allow passage of the fetus through the axis of the birth canal. Progesterone & relaxing facilitate the softening & increase the elasticity of muscles & ligaments.
Power P#3

- **Primary**: uterine muscles (causes dilation and effacement)
- **Secondary**: abdominal muscles (for 2\textsuperscript{nd} stage) Bearing down (Pushing)
In the last half of the 20th century, the position used most frequently for labor in Jordan has supine in a hospital bed. Lithotomy position.

Limited ambulation of laboring women resulted from use of continuous fetal monitoring, routine use of IV hydration, and use of analgesia.
The progress of labor and birth can be adversely affected by maternal fear and tension. Anxiety can also increase pain perception and lead to an increased need for analgesia & anesthesia.

Psychosocial Considerations
- Social support
- Past experience
- Knowledge
Reasons for admitted to hospital

1. If their contractions occur approximately every 5~10 min for at least 1 hr
2. If there is a sudden gush of fluid or a constant leakage of fluid
3. If there is any significant bleeding
4. If there is significant decrease in fetal movement
Admission procedures

- Place identification bracelet on patient
- Obtain information from labor record
- Record vital signs
- Assess uterine contractions
- Listen to FHR
- Assess progress of labor
- Check laboratory work is complete
- Start IV fluids if ordered/enema
- Prepare mother for labor and birth if imminent
- Take care of mothers personal items
Assessing Progress of Labor

The following information are to be noted and recorded carefully when performing vaginal examination:

(1) Cervical Dilation in centimeters
(2) Effacement of cervix in %
(3) Status of membranes and if ruptured-color of the liquor
(4) Presenting part and its Position by noting the fontanelles and sagittal suture in relation to the quadrants of the pelvis
(5) Station of the head in relation to ischial spines
Abdominal examination:

Using Leopold maneuvers that helps accurately determine fetal lie, fetal presentation, and fetal position. The fetal heart rate is checked and any abnormality of rate or rhythm is noted.

LABORATORY DATA:

- **URINE:** test for protein, ketones, glucose, WBCs
- **HEMOGLOBIN:**
- **WBC COUNT:** values of 4500 – 11,000 are normal; up to 25,000 can be normal for labor, birth, and early pp (d/t stress).
- **Rh FACTOR & ABO TYPING:**
First Stage: contractions

- Begin with the onset of contractions of the uterus to fully dilated of the cervix

**Contractions**
- **Frequency** - measure from beginning to beginning
- **Duration** - measure from beginning to end
- **Intensity** - rated as mild, moderate and strong
- **Interval** - measure from end one to beginning other one

- **The nurse should document as follows**
  - Contractions occur every 2 minutes with a duration of 35-45 seconds with strong intensity
Figure 1.5. Frequency and duration of contractions.
EFFACEMENT & DILATATION:

- **Effacement** = the thinning or shortening of the cervix and is recorded in %
- **Dilatation** is assessed by vaginal examination, and is recorded in centimeters from 0-10 cm and recorded in
Effacement of the cervix in the primigravida. A, Beginning of labor. There is no cervical effacement or dilatation. The fetal head is cushioned by amniotic fluid. B, Beginning cervical effacement. As the cervix begins to efface, more amniotic fluid collects below the fetal head. C, Cervix about one half effaced and slightly dilated. The increasing amount of amniotic fluid exerts hydrostatic pressure. D, Complete effacement and dilatation.
When the cervix has dilated to 10 cm, the mother has an uncontrollable urge to push.
PARTOGRAM
“Friedman’s Curve”

Mother information

Fetal condition
- Fetal heart rate
- Character of liquor
- Moulding

Labour progress
- Dilatation
- Descent
- Uterine contraction

Medications
- Oxytocin
- Pain relief (e.g. pethidine)

Maternal condition
- BP, Pulse, Temperature
- Urine – albumin, glucose, acetone
- Urine output
# Partograph

<table>
<thead>
<tr>
<th>Name</th>
<th>Gravida</th>
<th>Para</th>
<th>Hospital no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date of admission</td>
<td>Time of admission</td>
<td>Ruptured membranes</td>
<td>Hours</td>
</tr>
<tr>
<td>180</td>
<td>170</td>
<td>160</td>
<td>150</td>
</tr>
<tr>
<td>Fetal heart rate</td>
<td>Liquor Moulding</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Graphical Representation

- **Cervix (cm)**: [Plot X]
- **Descent of head**: [Plot O]
- **Active Phase**
- **Alert**
- **Action**
- **Latent Phase**

**Time (Hours)**: 0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24
Stage 1 divided into 3 phases 😊

• Latent phase: 0-3 cm
  • Excited, talkative, smiling

• Active phase: 4-7 cm
  About 60 sec in duration & 3-4 in 10 min
  ↑ anxiety, sense of hopelessness, fear of loss of control

Transition phase: 8-10 cm
  Contraction every 2 min & lasting 70-90 sec.
  Anxiety, restless, can’t get comfortable, fears being alone, yet may not want anyone to touch her

Dr. Shaban
Methods of Monitoring the Mother and Fetus During 1st stage of Labor

• The woman may walk or be in bed as she wishes.

• FHR's are checked q 60 min in latent phase, q 30 min. in active phase, and q 15 min. in transient phase. The maternal temp is taken q 4 hrs.

• Abdominal or vaginal examination to note the position of the baby, the station of the presenting part, and the dilatation of the cervix
In the first stage

**Micturation**--- descent of the fetus causes the bladder to be elevated relative to the lower uterine segment and cervix. This often results in the patient having difficulty voiding. The patient, therefore, be encouraged to void frequently. Catheterization may become necessary if the bladder becomes distended.

**Diet** --- there is delay in the emptying time of the stomach and food or fluids may remain there for several hours. Solid food should be avoid intake. The diet should be liquid with sufficient food value and pleasant to take.
POSSIBLE NURSING DX
FIRST-STAGE LABOR

- **Pain** related to the process of labor or contractions.
- **Knowledge deficit**: lack of information related to expected physical changes, symptoms of labor, and options available to the childbearing woman.
- **Anxiety** related to childbirth, pelvic examinations, or obstetric interventions.
- **Fear** related to parenting.
- **Fluid volume excess** related to intake during labor.
- **Fluid volume deficit** r/t inadequate fluid intake
POSSIBLE NURSING DX
FIRST-STAGE LABOR-Cont.

- **Altered nutrition**: less than body requirements related to decreased intake during labor.
- **Health seeking behavior** R/T management of discomfort of labor
- **Situational low self steam** R/T inability to use prepared childbirth method or body exposure
- **Communication impaired** r/t inability to understand medical terminology or English
- **Urinary elimination altered**
- **Individual ineffective coping** r/t stress of labor
- **Uterine tissue perfusion altered** r/t strong uterine contractions
Comfort during 1st stage

- **Factors affecting response to pain:**
  - Preparation; Culture; anxiety
  - Fatigue and sleep deprivation
  - Previous experiences

**EVALUATION OF THE DEGREE OF PAIN**

- c. Facial Expression.
- d. Color of Skin.
- e. BP & Respirations.
- f. Posture.
Nursing Interventions (Pain, Fear, and Anxiety)

- Ambulation
- Give back rubs or pressure over sacrum area.
- Position - Lying on the left side.
- Provide for a quiet room. Dim the lights if possible to encourage relaxation.
- Keep mom comfortable
  - Bath, shower
  - Empty bladder (void every 2 hours) Perineal care
  - PO fluids, Vaseline to lips
Nursing Interventions (Pain, Fear, and Anxiety) - Cont.

- **Keep informed**: Establish rapport; Express confidence; Provide support
- **Supportive Relaxation Techniques**
  - Distraction
  - Touch
  - Effleurage; Massage; Warm compresses
- **Breathing Techniques**: slowly and evenly- “Hee Hee Hoo”

Hyperventilation: tingling, numbness in nose, mouth, lips, fingers, toes, spots before eyes

Rx: encourage to slow down breathing; paper bag
Medical pain control

- Nitrous Oxide Inhaled
- Pethidine
- Epidural Block
- Spinal Anesthesia
- General Anesthesia
- **Mother.** The medication will make the patient sleepy or drowsy. It will not totally eliminate the discomfort. Side effect: *maternal hypotension* and *fetal Bradycardia*
NURSING CARE: PATIENT RECEIVING ANESTHESIA

- Position the patient on her left side. This increases oxygen supply to the fetus.
- Administer oxygen per facemask, usually at 5 to 8 liters/minutes, as ordered.
- Elevate the patient's legs.
- Stay with the patient, do not leave her unattended.
- Notify the Charge Nurse or physician immediately.
- Antidote to Pethedine: **Lanexol: Narcan**
Second Stage of Labor

- Begins with complete dilation of the cervix and ends with delivery of fetus
- **Ch.ch. By** "bearing down," called **"pushing"** stage.
- Start when the baby's head is visible at the opening of the vagina, it is called **"crowning."**
- **Duration of Second Stage** -
  - Primigravida: 50 minutes (may take btw 30min-2 hrs).
  - Multiparous: 20 minutes or less
- **Contractions**
  - Interval: 2 to 3 minutes; Duration: 50 to 90 sec
Care during 2\textsuperscript{nd} stage

- Preparing for Delivery
- Positions for delivery
  - Lithotomy
  - Stirrups
    - Padded
    - Adjusted (no pressure on back of calves or knees)
  - Legs in and out together 😊
  - Privacy, comfort

- Perineal prep: Betadine, soap and water
Create sterile field around vaginal opening.

Positioning for Delivery
Be attention

• Never leave the patient alone, never turn your back on the perineum because the baby could push through the vaginal opening while your back is turned.

• Encourage the patient to rest between contractions and to push with contractions (Valsalva maneuvers: Breathing then holding of breath and push down)

• Mother may feel urge to push, coach to push only during a contraction once the cervix has been determined to be fully dilated

• Episiotomy: Perform to avoid unnecessary tearing when head is crowning, to make or repair episiotomy. Lidocaine® 1percent drug normally used and is short acting.

dr. Shaban
Second Stage of Labor

- **Delivery of head**: The heel of one hand is placed over the posterior perineum. The other hand is placed over the fetal occiput with pressure applied **downward to flex the fetal head**.

- Check for presence of cord around neck. If the cord is wrapped, double-clamped and cut.

- **Aspirate oral and nasal cavities with bulb syringe**

- Deliver anterior shoulder with downward pressure

- Complete delivery and placed on mom’s abd. Cord clamped and cut. Check for 3 vessels
POSSIBLE NURSING DX
SECOND-STAGE LABOR

- **Fear** related to birth process, pain, and unknown outcome.
- **Fatigue** related to physical exertion during labor and lack of sleep.
- **Pain** related to fetal descent, crowning, and perineal stretching.
Third Stage of Labor (afterbirth)

- Begins after delivery of baby and ends with delivery of the placenta
- Leave 3 - 6 inches of cord on baby & clamp cord
- Average duration: 5 minutes up to 30 mins
- **Signs of separation**
  - Uterus rises to become globular
  - Increase (gush) of blood from vagina
  - Lengthening of cord
- Do not PULL cord. Apply gentle traction
- Check Placenta for completeness
- Given IV or IM Oxytocin & Methergin IM
<table>
<thead>
<tr>
<th>Name of Drug/Preparation</th>
<th>Drug Action &amp; Effectiveness</th>
<th>Dose and route</th>
<th>Side Effects &amp; Cautions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxytocin Posterior pituitary extract</td>
<td>Oxytocin is a synthetic compound. It is identical to the natural hormone which is found in the posterior pituitary. It causes potent and selective stimulation of uterine and mammary gland smooth muscle. -Acts within 2-3 minutes _Effect lasts about 15 - 30 minutes</td>
<td>IV (Adults): 0.52 milliunits/min; increase by 12 milliunits/min maximum 20 milliunits/min, then decrease dose. Postpartum Hemorrhage IV (Adults): 10 units IM (Adults): 10 units after delivery of placenta.</td>
<td>-No known contraindication postpartum use _No or minimal side effects _If used for labour induction augmentation: do not use oxytocin until at least 6 hours after Misoprostol dose</td>
</tr>
</tbody>
</table>
| Misoprostol E1 analog prostaglandin | Misoprostol, a prostaglandin, binds to myometrial cells to cause strong myometrial contractions leading to expulsion of tissue. This agent also causes cervical ripening with softening and dilation of the cervix. Orally: _Acts within 3-5 minutes _Peak serum concentration between 18 – 34 minutes _Effect lasts 75 minutes | - Transvaginally (25-50 mcg repeated every 3-6 hours as needed to a maximum of 300-400 mcg in a 24-hour period. - Orally(50-100mcg) q4-6 hour | -No known contraindications postpartum use _Shivering and temperature elevated temperature is common
<table>
<thead>
<tr>
<th>Syntometrine Combination of 5 IU oxytocin plus 0.5 mg ergometrine</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Syntometrine is used: to help the delivery of the placenta</td>
</tr>
<tr>
<td>*to prevent or control bleeding after delivery of your baby.</td>
</tr>
<tr>
<td>*Combined rapid action of oxytocin and sustained action of ergometrine</td>
</tr>
<tr>
<td>Active management of third stage of labor: I.M injection of 1ml after delivery of the child Each 1ml ampoule contains 5IU oxytocin and 0.5mg ergometrine</td>
</tr>
<tr>
<td>Same precautions contraindications as ergometrine</td>
</tr>
<tr>
<td>_Only for use in the presence of bleeding after delivery</td>
</tr>
<tr>
<td>_Side effects: nausea, headaches, and hypertension</td>
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<table>
<thead>
<tr>
<th>Ergometrine Preparation of ergot (Methergin)</th>
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<tbody>
<tr>
<td>Acts within 6-7-hours IM</td>
</tr>
<tr>
<td>_Effect lasts 2-4 Hours</td>
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<tr>
<td>Treatment of PPH 0.2mg I.M. Repeat within 2 to 4 hours if necessary</td>
</tr>
<tr>
<td>_Contraindicated with or having hypertension, heart disease, or eclampsia, eclampsia</td>
</tr>
<tr>
<td>_Only for use in the presence of bleeding after delivery</td>
</tr>
<tr>
<td>_Causes tonic contraction of the uterus which may increase risk of retained placenta</td>
</tr>
<tr>
<td>_Side effects: nausea, headaches, and hypertension</td>
</tr>
<tr>
<td>_Do not use if drug has changed color</td>
</tr>
</tbody>
</table>
Stages of Labor 😊

4th stage (1st. 4 hours after delivery)
- Blood loss normal up to 500mL (vag del)
- Hemodynamic changes → ↓ BP, ↑ pulse
- Uterus contracted and midline ~1/2 way between symphysis and umbilicus. Within 1st hour about level of umbilicus
- Shaking, hunger, thirst
- Bladder is hypotonic
POSSIBLE NURSING DX
THIRD & FOURTH-STAGE LABOR

• **Risk for infection** related to uterine placental site, episiotomy incision, and fatigue.

• **Urinary retention** related to loss of sensation to void and rapid bladder filling.

• **Ineffective breastfeeding** related to maternal knowledge deficit, anxiety, or fatigue.
Care of the Mother

- The mother should go to the bathroom within an hour after the baby is born.
- Make sure she has had something to eat and is not dizzy when she gets up.
- When a new mother gets out of bed, first she should sit up on the side of the bed to see how she feels.
- Take her to the bathroom and wait to be sure that she is not feeling faint.
INFORMATION TO BE RECORDED ABOUT THE DELIVERY

- Exact **date** and time of delivery.
- **Sex** of the infant.
- Condition of the infant (**APGAR**) after birth.
- Position of the infant at delivery.
- Type of episiotomy, lacerations.
- Spontaneous or forceps delivery.
- Use of oxygen and suction on the infant.
- Number of vessels in the cord.
- Mother's name.
- Any other pertinent facts about the delivery.
Initial Newborn Care

- Given to mom or radiant warmer
- **1st Priority=Airway 😊**
  - Placed in modified trendelenburg
  - Suctioned with bulb syringe/deep suctioning
- **2nd priority=provide warmth 😊**
  - Kept dry (head first)
- **Apgar Score 😊**
  - Heart rate; Resp effort; Muscle tone; Reflex irritability; Color

**Scoring:**
- 7 to 10 provide supportive care
- 4 to 6 indicates moderate depression
- < 4 requires aggressive resuscitation
Initial Newborn Care

- Physical Assessment
  - Gross inspection
  - Vital signs
    - Temp: >36.6 (1st temp rectally)
    - Pulse: 110-160, may be irregular
    - Resp: 30-60, irreg, abd breathing; no retractions, nasal flaring, grunting.

- Newborn Identification
  - ID bands
  - Footprints/ mother’s fingerprint
  - Weighting & Vit K administration

- Initiation of attachment