Al-Mustaqbal University
Nursing College

جامعة المستقبل
AL MUSTAQBAL UNIVERSITY

Labor & delivery

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KEY TERMS:

absent variability
accelerations
acrocyanosis (k-rō-sī--NŌ-sĭs,)
adjustment
amnioinfusion (m-nē-ō-ĭn-FYŪ-zhŭn,
amniotomy (m-nēŎT-ŏ-mē,
baseline fetal heart rate
baseline variability
bloody show
cold stress
coping
crowning
decelerations
Dilate doula (DŪ-l,)
efface (ĕ-FĀS,)
episodic changes
fetal bradycardia
fetal tachycardia

fontanelle (FŎN-t-nĕl,
laboring down
late decelerations
Leopold's maneuver
lie
marked variability
microbiome
microbiota
moderate variability
molding
neutral thermal environment
nitrazine test
nuchal cord (NŪ-kl kŏrd,
ophthalmia neonatorum (ŏf-THL-mē- nē-ō-n-TŎR-m,
periodic changes
prolonged decelerations
station
sutures
tachysystole
trial of labor after cesarean (TOLAC)
uteroplacental insufficiency (yū-tr-ō-pl-SĔN-tl ĭn-sŭ-FĬSH-n-sē,
vaginal birth after cesarean (VBAC)

the theories on labor initiation:

1.Hormonal Theory (Prostaglandins & Oxytocin):

1. **Prostaglandins** soften the cervix and promote uterine contractions.
2. **Oxytocin** stimulates uterine contractions, creating a **positive feedback loop**, where contractions stimulate more oxytocin release.

2.Fetal-Maternal Hormonal Signaling:

1. The **fetal adrenal glands** release **corticosteroids** and **corticotropin-releasing hormone (CRH)**, which trigger maternal hormone changes, signaling the body that it is ready for labor.

3.Stretch and Mechanical Theories:

1. **Cervical stretching** caused by the growing fetus leads to the release of **prostaglandins**, which then stimulate uterine contractions.

4.Immune System and Inflammatory Response:

1. **Cytokines** and other immune mediators cause an **inflammatory response** that helps soften the cervix and induce labor.

5.Uterine Distension:

1. As the fetus grows, the **stretching of the uterus** triggers contractions and helps initiate labor.

6.Endocrine Changes in Pregnancy:

1. A **drop in progesterone** levels and an increase in **estrogen sensitivity** stimulate labor. Additionally, **CRH** and **prostaglandins** contribute to the process.

7.Psychosocial and Environmental Factors:

1. External stress, emotional factors, and environmental stimuli can lead to hormonal changes that trigger the onset of labor.

8.Role of Placenta:

1. Aging or **placental insufficiency** may cause the release of hormones, such as prostaglandins, that signal the initiation of labor.

These theories collectively suggest that labor is a complex process involving hormonal, mechanical, immune, and environmental factors working together.

The four Ps of labor and birth refer to the four interrelated components that contribute to the process of labor and delivery. They are:

1. Powers (Uterine Contractions)

•Refers to the forces or contractions that help to expel the fetus from the uterus.

•**Primary Powers**: Uterine contractions that cause cervical dilation and effacement (thinning). These contractions also push the baby down toward the birth canal.

•**Secondary Powers**: Involuntary abdominal muscles that assist during the second stage of labor (pushing phase) to expel the baby.

2. Passage (Birth Canal)

•Refers to the maternal pelvis and birth canal through which the baby passes during labor.

•This includes the **pelvic bones**, **cervix**, and **vagina**, which must be of adequate size and shape to allow for the safe passage of the baby.

•Factors like pelvic shape, cervical readiness (dilation and effacement), and the flexibility of the birth canal play a key role in the delivery process.

3. Passengers (The Baby and Placenta)

•Refers to the fetus (baby) and placenta that must be delivered during labor.

•**Fetal Position**: The baby's orientation in the womb (e.g., head down, breech) is crucial in determining the ease or difficulty of the birth.

•**Fetal Presentation**: Typically, the baby presents head-first, but other presentations (like breech or transverse) can complicate labor.

•**Fetal Size**: The baby's size and the shape of the head can influence how easily the baby moves through the birth canal.

4. Psyche (Psychological Factors)

•Refers to the mental and emotional state of the laboring woman.

•Stress, anxiety, fear, and previous experiences can affect the release of hormones (e.g., adrenaline, oxytocin) that either hinder or support labor.

•Positive emotional support, relaxation, and coping strategies can significantly impact the progression of labor.

In Summary:

•**Powers**: Uterine contractions and abdominal muscles responsible for pushing.

•**Passage**: The birth canal (pelvis, cervix, vagina).

•**Passengers**: The baby and placenta, including factors like fetal position and size.

•**Psyche**: The emotional and psychological well-being of the mother.

Powers of Labor:

The **powers of labor** are the forces responsible for cervical dilation and for propelling the fetus downward through the birth canal. These powers are divided into two main components: **uterine contractions** and **the mother's pushing efforts**.

Uterine Contractions:

•**Role**: Uterine contractions are the primary forces that drive the labor process, responsible for opening (dilating) the cervix and pushing the fetus down through the birth canal.

•**Characteristics**:

- **Involuntary**: These are smooth muscle contractions that occur without conscious control; the woman cannot stop or start them intentionally.
- **Stages**: Uterine contractions occur during the **first stage of labor**, from the onset of labor until the cervix is fully dilated (10 cm).
- **Function**: They gradually increase in intensity, frequency, and duration, helping the cervix to efface (thin out) and dilate.
- **Factors Influencing Contractions**:
  - **Physical Activity**: Walking or changing positions may help stimulate contractions.
  - **Medications**: Pain-relieving drugs or interventions (e.g., epidurals) can reduce contraction intensity.
  - **Maternal Anxiety**: High levels of stress or anxiety can impact the strength and frequency of contractions.
  - **Vaginal Examinations**: Internal examinations during labor can sometimes stimulate stronger contractions due to physical touch.

Effect of Contractions on the Cervix:

Uterine contractions have a critical role in preparing the cervix for childbirth by causing it to **efface** (thin) and **dilate** (open). These changes allow the fetus to descend through the birth canal.

Before Labor:

•The cervix is typically a tubular structure about **2 to 3.8 cm** long.

During Labor:

•**Simultaneous Effects**: Contractions cause two main actions:

- **Pull the cervix upward**: This helps to shorten the cervix.
- **Push the fetus downward**: This drives the baby towards the birth canal.

•**Effacement**: The cervix gradually becomes **thinner** and **shorter**. This process is called **effacement**, and it is a key sign that labor is progressing. Effacement is measured by a **vaginal examination** and is usually described as a **percentage** of the cervix's original length.

- **100% Effaced**: The cervix is completely thinned out and feels like a **thin, slick membrane** over the fetus.

•**Dilation**: As the cervix effaces, it also begins to **dilate** (open) to allow the baby to pass through. The cervix dilates from 0 cm (closed) to 10 cm (fully dilated), which is necessary for the baby’s descent.

Summary:

•Contractions cause the cervix to **efface** (thin) and **dilate** (open), enabling the fetus to descend through the birth canal.

•Effacement is measured as a percentage and is complete when the cervix is 100% thinned out.

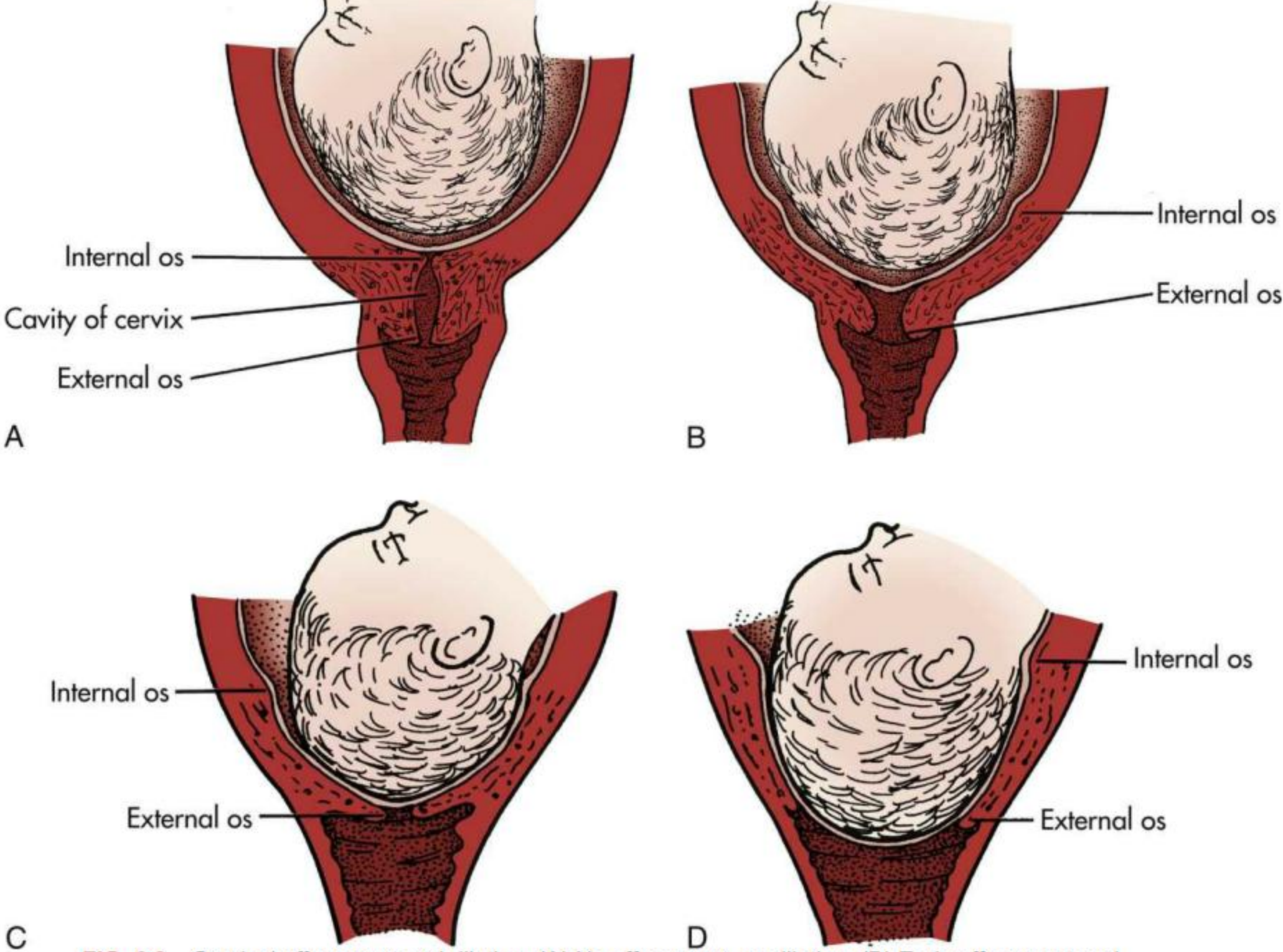


FIG. 6.2 Cervical effacement and dilation. (A) No effacement, no dilation. (B) Early effacement and dilation. (C) Complete effacement, some dilation. (D) Complete dilation and effacement. (From Lowdermilk DL, Perry SE, Cashion K, et al: *Maternity & Women's Health Care,* ed 11, St. Louis, 2016, Elsevier.)

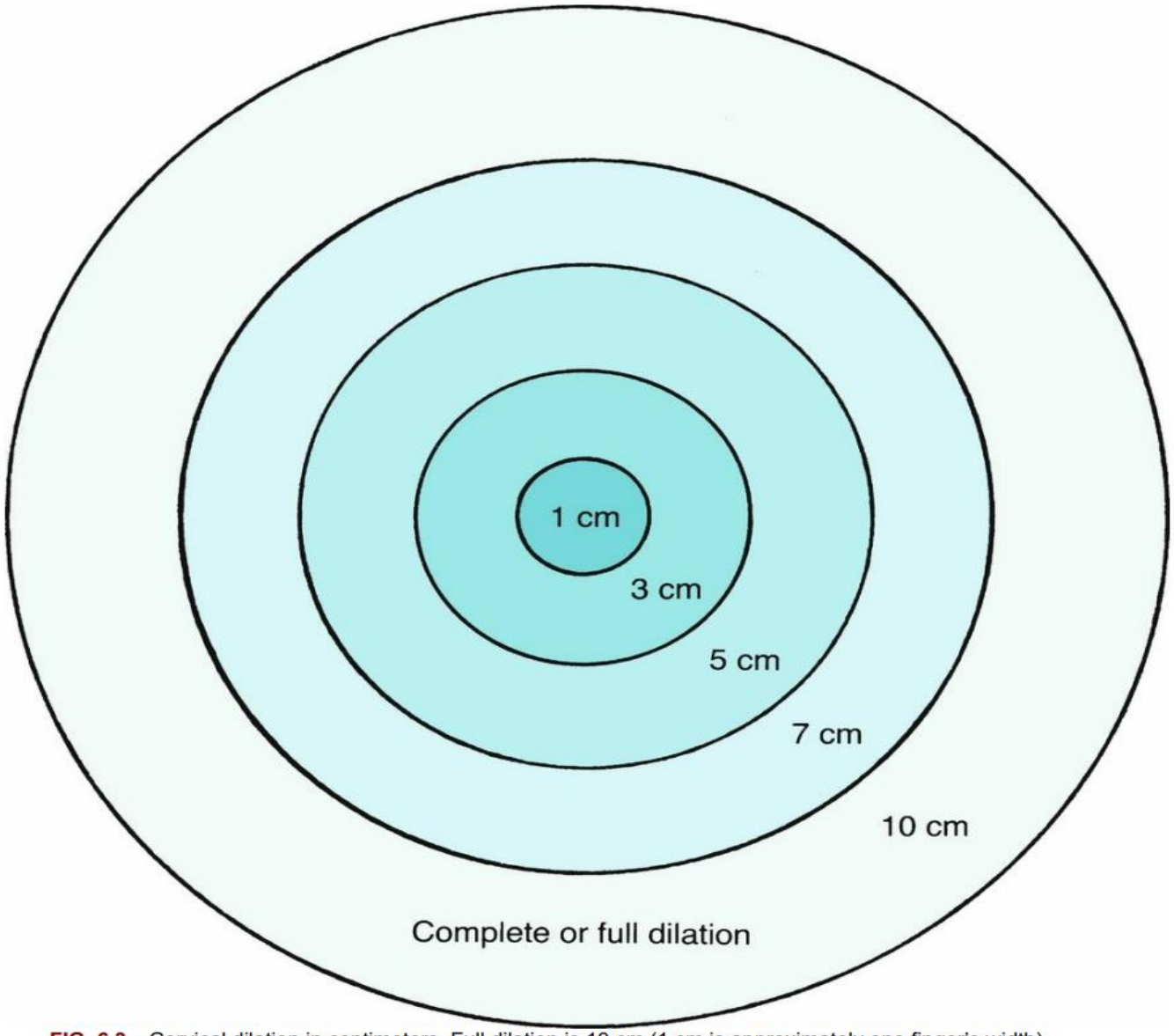


FIG. 6.3 Cervical dilation in centimeters. Full dilation is 10 cm (1 cm is approximately one finger's width).

Phases of Contractions:

Each uterine contraction consists of three distinct phases:

1.Increment:

1. **Description**: This is the period of **increasing strength** as the contraction builds up.
2. **Function**: During this phase, the intensity of the contraction gradually increases, preparing the uterus for the peak of the contraction.

2.Peak (Acme):

1. **Description**: This is the period of **greatest strength** of the contraction.
2. **Function**: The contraction reaches its maximum intensity. It is the most forceful part of the contraction, which helps in the dilation of the cervix and the pushing of the fetus downward.

3.Decrement:

1. **Description**: This is the period of **decreasing strength** as the contraction comes to an end.
2. **Function**: The intensity of the contraction diminishes, and the uterus begins to relax in preparation for the next contraction.

Summary:

- **Increment**: Increasing strength of the contraction.
- **Peak (Acme)**: Maximum strength of the contraction.
- **Decrement**: Decreasing strength as the contraction ends.

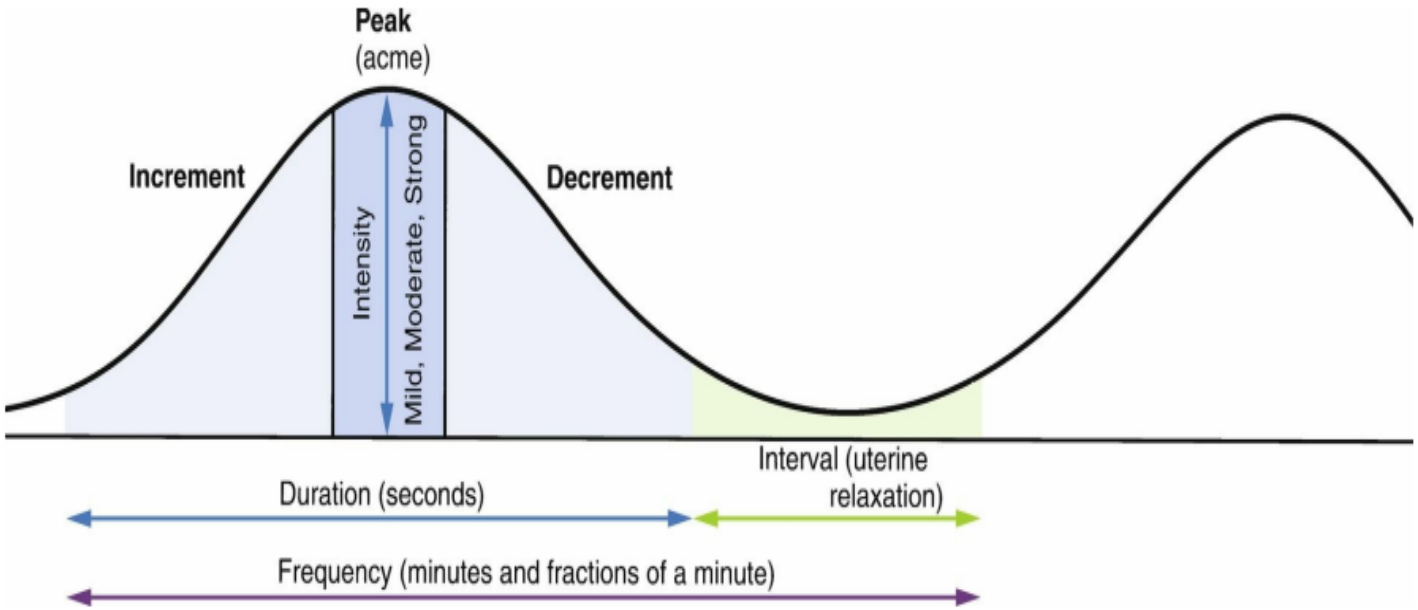


FIG. 6.4 Contraction cycle. Each contraction can be likened to a bell shape, with an increment, peak (acme), and decrement. The frequency of contractions is the average time from the beginning of one to the beginning of the next. The duration is the average time from the beginning to the end of one contraction. The interval is the period of uterine relaxation between contractions.

Describing Contractions:

Contractions are typically described by the following characteristics: **frequency**, **duration**, **intensity**, and **interval**. Below are the descriptions for **frequency** and **duration**:

Frequency:

•**Definition**: Frequency refers to the **elapsed time** between the **beginning of one contraction** and the **beginning of the next contraction**.

•**Measurement**: Frequency is typically expressed in minutes and fractions of minutes. For example, "contractions every 4 minutes."

•**Important Note**:

- **Normal Frequency**: Contractions generally occur every **2 to 5 minutes** during active labor.
- **Concern**: Contractions occurring **more frequently than every 2 minutes** may reduce the fetus's oxygen supply, which could be harmful. This should be closely monitored and reported.

Duration:

•**Definition**: Duration is the **elapsed time** from the **beginning of one contraction** until the **end of the same contraction**.

•**Measurement**: Duration is described in terms of how long each contraction lasts, typically in **seconds**. For example, "duration of 45 to 50 seconds."

•**Important Note**:

- **Normal Duration**: Contractions usually last between **30 to 90 seconds**.
- **Concern**: If a contraction lasts longer than **90 seconds** consistently, it may reduce the fetus’s oxygen supply, which could be harmful. This should be reported and monitored.

Intensity of Contractions:

Intensity refers to the **strength** of the uterine contractions, which can be assessed by palpating the **fundus** (the top of the uterus) during a contraction. It is typically described using the terms **mild**, **moderate**, and **strong**, which are defined as follows:

Mild Contractions:

•**Description**: The fundus is **easily indented** with the fingertips.

•**Feel**: The fundus feels similar to the **tip of the nose**.

•**Indication**: Mild contractions are less intense and are typically felt at the beginning of labor or in the early stages of labor.

Moderate Contractions:

•**Description**: The fundus can be **indented with the fingertips**, but it requires more **effort**.

•**Feel**: The fundus feels similar to the **chin**.

•**Indication**: Moderate contractions are usually observed as labor progresses and become stronger.

Strong Contractions:

•**Description**: The fundus **cannot be readily indented** with the fingertips.

•**Feel**: The fundus feels similar to the **forehead**.

•**Indication**: Strong contractions are typically experienced during active labor and are powerful enough to help push the fetus down the birth canal.

Summary:

•**Mild Contractions**: Easily indented, like the tip of the nose.

•**Moderate Contractions**: Indented with difficulty, like the chin.

•**Strong Contractions**: Cannot be indented, like the forehead.

The intensity of contractions increases as labor progresses, helping to facilitate cervical dilation and the descent of the fetus.

Interval Between Contractions:

Interval refers to the amount of time the uterus **relaxes** between contractions. This relaxation period is crucial for both maternal and fetal well-being.

Role of the Interval:

•**Blood Flow**: During contractions, the **uterus** contracts and compresses the blood vessels, causing **blood flow** from the mother to the placenta to decrease. This reduces the oxygen supply to the fetus.

•**Placental Refill**: During the **interval** (the relaxation period), blood flow to the placenta **resumes**, allowing the placenta to **refill with freshly oxygenated blood**. This is essential for supplying oxygen to the fetus and removing waste products from the fetus's blood.

Concerns with Short Intervals:

•**Short Intervals**: If the interval between contractions is too short (less than **60 seconds**), the uterus doesn't have enough time to fully relax and restore blood flow to the placenta. This can **reduce fetal oxygen supply** and may be harmful to the fetus.

•**Monitoring**: Persistent short intervals should be monitored closely during labor to ensure adequate oxygenation for the fetus.

Summary:

•**Interval** is the time between contractions during which the uterus relaxes and blood flow to the placenta resumes.

•Short intervals (less than 60 seconds) may reduce fetal oxygen supply and should be reported if persistent.

Safety Alert!

It is critical to report the following contraction patterns to the **registered nurse**:

1.Contractions occurring more frequently than every 2 minutes

1. Contractions that are too frequent may reduce fetal oxygen supply.

2.Contractions lasting longer than 90 seconds

1. Prolonged contractions can reduce blood flow to the placenta, potentially affecting fetal oxygenation.

3.Intervals shorter than 60 seconds between contractions

1. Short intervals may not provide enough time for the placenta to refill with oxygenated blood, affecting fetal oxygen levels.

Action:

•**Prompt Reporting** of these contraction patterns is essential for the safety of both the mother and fetus.

Maternal Pushing:

In **stage 2** of labor, when the cervix is fully dilated (10 cm), the woman begins **voluntary pushing** in addition to the **involuntary uterine contractions**. The combination of these two forces helps propel the fetus downward through the pelvis.

1.Urge to Push:

1. Most women feel a **strong urge to push** or **bear down** when the cervix is fully dilated and the fetus begins to descend through the birth canal. This urge is a natural response to the pressure from the fetus against the rectum.

2.Involuntary vs. Voluntary Pushing:

1. **Uterine Contractions**: These are involuntary and help to push the baby down.
2. **Maternal Pushing**: This is voluntary and adds additional force to help with the descent of the fetus.

3.Factors Affecting the Urge to Push:

1. **Maternal Exhaustion**: Fatigue from prolonged labor can reduce the strength or frequency of the urge to push.
2. **Epidural Analgesia**: Epidural anesthesia can reduce or eliminate the natural urge to push, as it numbs the pelvic region, potentially making it harder for the woman to feel the contractions or the baby's descent.

4.Premature Urge to Push:

1. **Before Full Dilation**: Some women may feel an urge to push prematurely when the cervix is not yet fully dilated. This may occur because the fetus is pushing against the rectum.
2. **Discouragement**: Pushing before full dilation should be discouraged, as it can lead to **maternal exhaustion**, **fetal hypoxia** (lack of oxygen), and **tearing of maternal soft tissues**. Premature pushing can hinder the process of labor and cause unnecessary complications.

Nursing Tip: Emotional Support During Labor

- **Provide emotional support** to the laboring woman to help reduce **anxiety and fear**.
- **Why it matters**:
  - Excessive **anxiety** or **fear** can:
    - Increase the perception of pain.
    - Inhibit the progress of labor.
    - Reduce **blood flow** to the placenta, which can affect the fetus's oxygen supply.
- **How to help**:
  - Offer reassurance and comfort.
  - Encourage deep breathing and relaxation techniques.
  - Provide a calm and supportive environment.
  - Offer encouragement and assist with coping strategies.

Summary:

- Emotional support during labor is crucial for reducing anxiety and fear, which can positively influence pain management, labor progression, and fetal well-being.

Passage (Birth Canal):

The **passage** through which the fetus travels during labor consists of two components: the **bony pelvis** and the **soft tissues**. Both play essential roles in ensuring a safe delivery.

Bony Pelvis:

The pelvis is divided into two main parts:

1.False Pelvis:

1. The upper, flaring part of the pelvis.
2. It is not directly involved in childbirth.

2.True Pelvis:

1. The lower part of the pelvis, which is directly involved in the birth process.
2. The **true pelvis** is further divided into three sections:
    1. **Inlet**: The upper opening of the true pelvis.
    2. **Midpelvis**: The middle section of the pelvic cavity.
    3. **Outlet**: The lower opening near the perineum, through which the baby passes.

•**Shape**: The true pelvis is shaped like a **curved cylinder** or a **wide, curved funnel**.

•**Importance of Measurements**: The maternal bony pelvis must be of adequate size to allow the fetal head to pass through. If the measurements are inadequate, a condition called **cephalopelvic disproportion** may occur, which can make vaginal delivery difficult. In such cases, a **cesarean birth** may be necessary.

Soft Tissues and Bony Pelvis Overview:

Soft Tissues:

Soft tissues in the pelvis, including the **cervix**, **pelvic muscles**, **ligaments**, and **fascia**, support and surround the birth canal and perineum. These tissues play a crucial role in the progress of labor.

1.Previous Vaginal Births:

1. Women with **prior vaginal births** often experience faster labors in subsequent deliveries because their **soft tissues** are more **flexible** and **yield more readily** to the forces of contractions and pushing efforts.
2. This advantage is **not present** if the woman has had previous **cesarean sections**, as scarring may make the tissues less yielding.

2.Older Mothers:

1. As women age, their soft tissues may become **less elastic**, which can result in **slower labor** due to difficulty in the cervix and pelvic muscles stretching properly.

3.Cervical Procedures:

1. **Cervical procedures** (e.g., surgeries, biopsies, or lacerations) can cause **scarring** that makes the cervix less able to dilate, which can lead to **longer and more difficult labor**.

1.First-Time Births:

1. Women having their **first child** often experience **longer labor** because their soft tissues are **less elastic** and take longer to stretch and yield to the forces of labor.

Bony Pelvis:

The bony pelvis consists of two parts:

•**False Pelvis** (upper part): Not directly involved in childbirth.

•**True Pelvis** (lower part): Involved in the birth process and divided into:

- **Inlet**: The upper opening of the true pelvis.
- **Midpelvis**: The middle part of the pelvis.
- **Outlet**: The lower opening, near the perineum, where the baby passes through.

•The **size and shape** of the true pelvis must be adequate to allow the fetal head to pass through. If the pelvis is too small or misshapen, **cephalopelvic disproportion** may occur, necessitating a cesarean section.

Summary:

•**Bony Pelvis**: Composed of the **false pelvis** and **true pelvis**, with the true pelvis divided into **inlet**, **midpelvis**, and **outlet**, which must be of appropriate size and shape for a safe delivery.

•**Soft Tissues**: Include the **cervix**, **muscles**, and **ligaments**. Women with previous vaginal births often experience faster labor due to more **flexible tissues**, whereas **first-time mothers**, **older women**, or those with **cervical scarring** may have slower labors.

Passengers:

In the context of childbirth, the **passengers** refer to the **fetus**, **placenta (afterbirth)**, **amniotic membranes**, and **amniotic fluid**, all of which are involved in the birth process.

Fetal Head Anatomy:

The **fetal head** plays a critical role in the passage through the birth canal. It is composed of several bones that are not fully fused but are connected by strong **connective tissue** known as **sutures**. These sutures allow for some flexibility during labor, enabling the skull to mold as the head passes through the birth canal.

•**Fontanelles**: These are soft, flexible areas where the sutures meet. They allow for the shaping of the fetal head during delivery. Two key fontanelles are important in obstetrics:

Important Fontanelles:

1.Anterior Fontanelle:

1. **Shape**: Diamond-shaped.
2. **Location**: Formed by the intersection of four sutures: the **frontal**, **sagittal**, and two **coronal** sutures.
3. **Significance**: This fontanelle is larger and more noticeable, providing a critical area for assessing fetal head position during labor. It also plays a role in the molding process as the fetal head passes through the birth canal.

2.Posterior Fontanelle:

1. **Shape**: Small and triangular.
2. **Location**: Formed by the intersection of three sutures: one **sagittal** and two **lambdoid** sutures.
3. **Significance**: This fontanelle is smaller and less noticeable but can still be used to assess fetal head position, particularly during delivery.

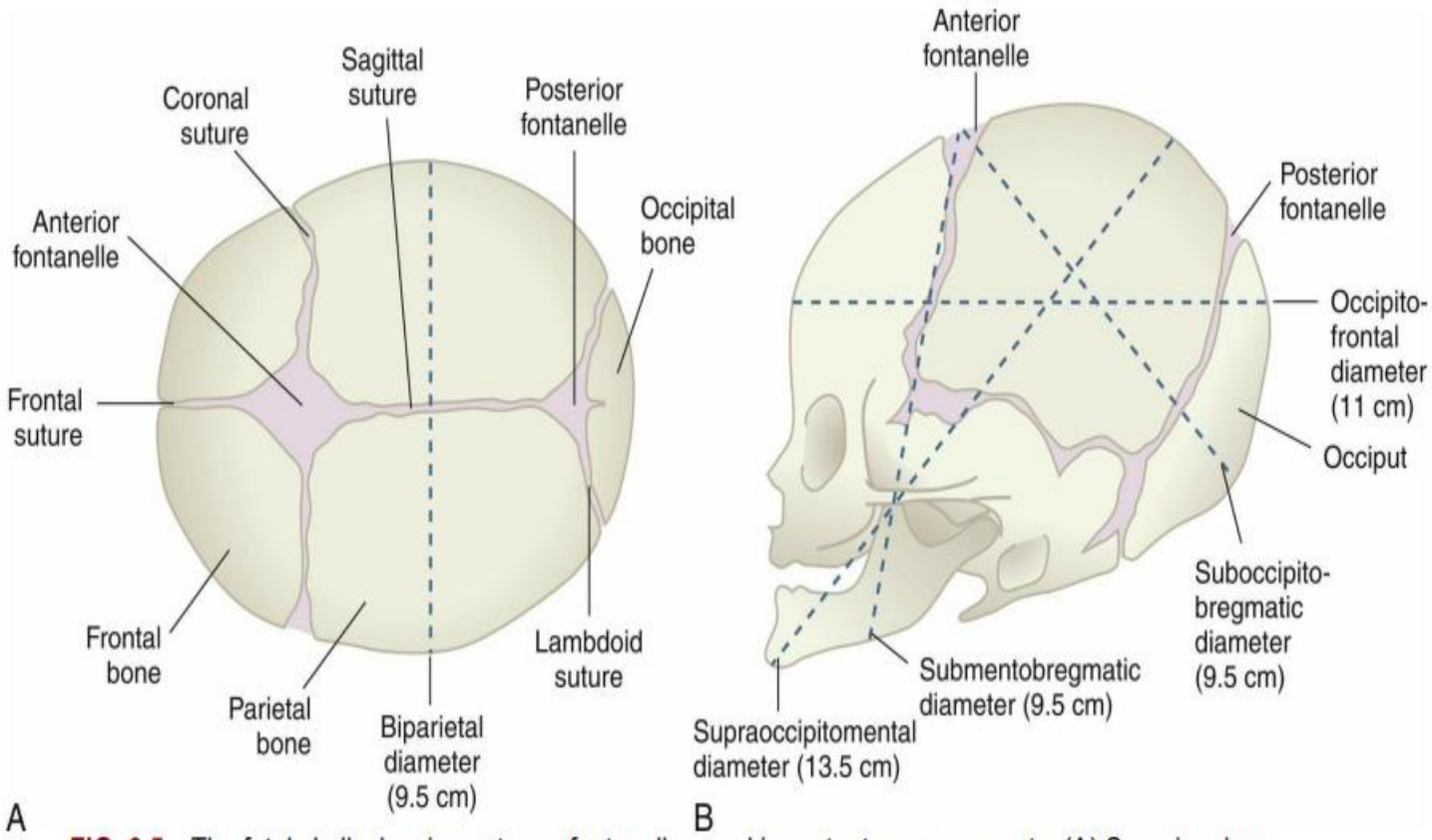


FIG. 6.5 The fetal skull, showing sutures, fontanelles, and important measurements. (A) Superior view. The anterior fontanelle has a diamond shape; the posterior fontanelle is triangular. The biparietal diameter is an important fetal skull measurement. (B) Lateral view. The measurements of the fetal skull are important to determine if cephalopelvic disproportion will be a problem. The mechanisms of labor allow the fetal head to rotate so that the smallest diameter of the head passes through the pelvis as it descends. (From Matteson PS: *Women's health during the childbearing years: a community-based approach,* St.

Molding and Fetal Head Measurements:

Importance of Sutures and Fontanelles:

•**Molding**: The sutures and fontanelles allow the skull to **mold** or **change shape** during the birth process, helping the fetal head adjust as it moves through the birth canal.

•**Landmarks**: These structures are used by healthcare providers to determine the **orientation** of the fetus within the mother's pelvis, which is essential for guiding the birth process.

Fetal Head Diameters:

1.Biparietal Diameter (BPD):

1. **Definition**: The **main transverse diameter** of the fetal head.
2. **Measurement**: It is measured between the points of the **two parietal bones** on each side of the head.
3. **Significance**: The **BPD** is a key measurement used to estimate the size of the fetal head and its ability to pass through the birth canal. It helps to assess whether the pelvis is large enough to accommodate the fetal head.

2.Anteroposterior Diameter:

1-Definition: The **anteroposterior diameter** of the fetal head refers to the distance measured from the front (anterior) to the back (posterior) of the fetal head.

2-Variation: This measurement can vary depending on the fetal head's **flexion** or **extension**.

1-Flexed Head: When the fetal head is well-flexed (chin tucked to the chest), the anteroposterior diameter is reduced, allowing the head to fit more easily into the birth canal.

2-Extended Head: When the head is extended (chin lifted), the anteroposterior diameter increases, which can make it more difficult for the head to pass through the pelvis.

Lie:

The term **lie** describes the orientation of the **fetus** in relation to the **mother's spine** during pregnancy. The position of the fetus within the uterus affects how the baby will present during labor and birth.

Types of Lie:

1.Longitudinal Lie:

1. **Definition**: The **fetus** is **parallel** to the mother's spine.
2. **Prevalence**: This is the most common orientation, with **greater than 99%** of births occurring in this position.
3. **Significance**: In a longitudinal lie, the baby is positioned head down (vertex presentation) or breech, making vaginal delivery possible.

2.Transverse Lie:

1. **Definition**: The **fetus** is positioned at a **right angle** to the mother's spine (horizontally).
2. **Other Name**: Often referred to as **shoulder presentation**, as the baby's shoulder may be the presenting part.
3. **Significance**: A transverse lie is not ideal for vaginal delivery. It may require a **cesarean section** if the position does not change.

3.Oblique Lie:

1. **Definition**: The **fetus** is positioned between a **longitudinal lie** and a **transverse lie**—at a diagonal angle.
2. **Significance**: This is a less common position and may resolve to a longitudinal or transverse lie as labor progresses. It can also lead to complications that may require medical intervention.

Summary:

- **Lie** refers to the orientation of the fetus in relation to the mother's spine.
- **Longitudinal lie** (parallel to the spine) is the most common and favorable position for delivery.
- **Transverse lie** (at a right angle to the spine) can lead to shoulder presentation and typically requires a cesarean section.
- **Oblique lie** is an intermediate position that may resolve into either longitudinal or transverse lie during labor.

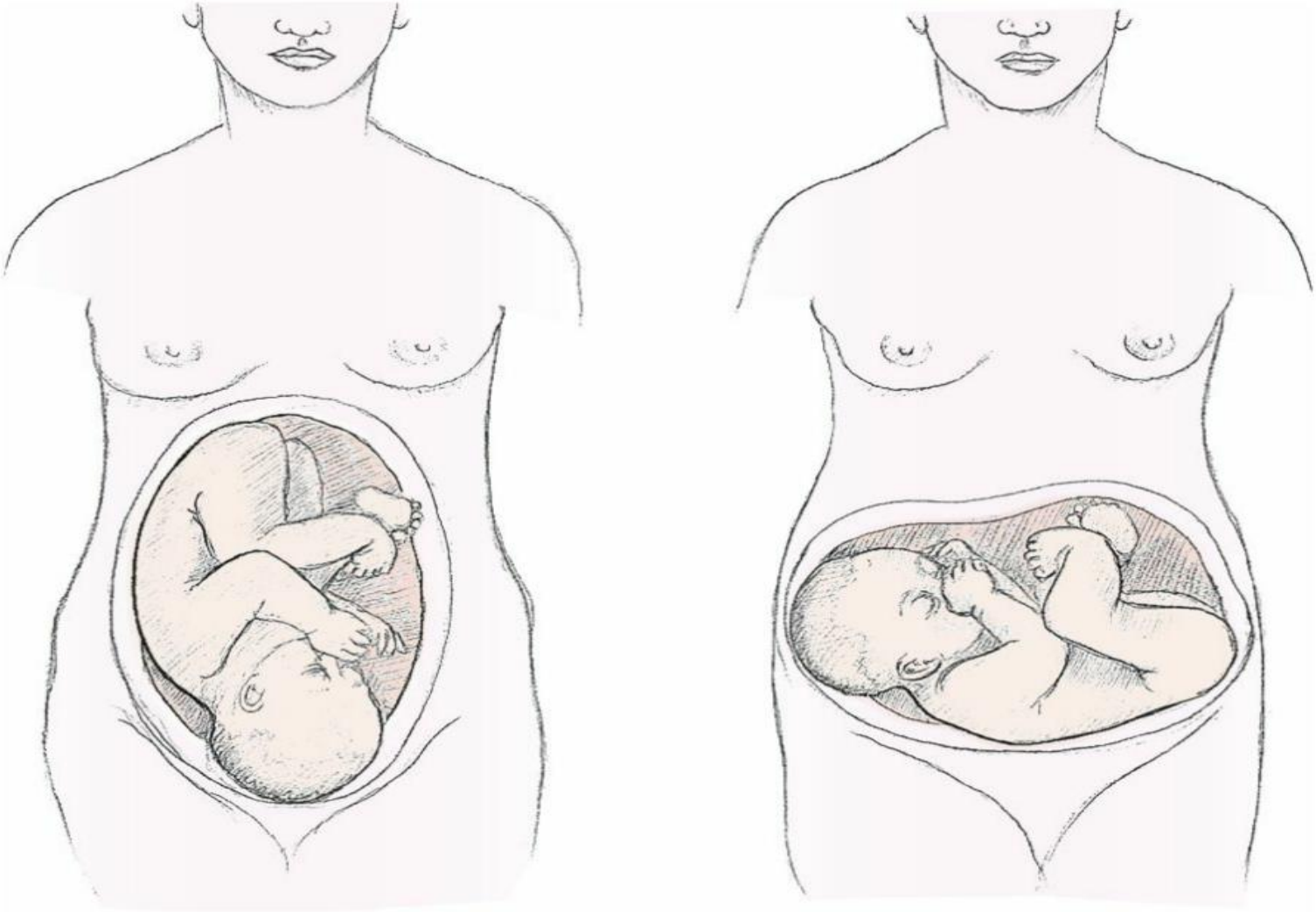


FIG. 6.6 Lie. In the longitudinal lie, the fetus is parallel to the mother's spine. In the transverse lie, the fetus is at right angles to the mother's spine. The shoulder presents at the cervix.

Attitude:

The **fetal attitude** refers to the **position** or **posture** of the fetus inside the uterus. It describes how the fetus's body parts are positioned relative to each other.

Normal Fetal Attitude:

•The **normal fetal attitude** is one of **flexion**, meaning:

- **Head Flexed**: The fetus's head is flexed forward toward the chest.
- **Arms and Legs Flexed**: The arms and legs are also flexed, typically drawn towards the body.

•**Compact and Ovoid Shape**:

Presentation:

Presentation refers to the **fetal part** that enters the pelvis first during labor. The **cephalic presentation** (head-first) is the most common and preferred type of presentation for vaginal delivery. However, within the cephalic presentation, there are several variations based on how the fetal head is positioned relative to the pelvis.

Types of Cephalic Presentations:

1.Vertex Presentation:

1. **Definition**: The fetal head is fully **flexed**.
2. **Significance**: This is the **most favorable** cephalic presentation because the **smallest diameter** of the fetal head enters the pelvis, making it easier for the baby to pass through the birth canal.
3. **Prevalence**: Occurs in approximately **96%** of births.

2.Military Presentation:

1. **Definition**: The fetal head is neither **flexed** nor **extended**.
2. **Significance**: The fetal head is in a neutral position. This is not as ideal as vertex presentation, but it is still a form of **cephalic presentation** that may proceed to a vaginal birth with some adjustments.

3.Brow Presentation:

1. **Definition**: The fetal head is **partly extended**.
2. **Significance**: In this position, the longest diameter of the fetal head presents, which can make delivery more difficult. Brow presentation is considered **unstable**, often converting to either a **vertex presentation** (head fully flexed) or **face presentation** as labor progresses.

4- Face Presentation:

1. **Definition**: The fetal head is fully **extended**, and the **face** is the presenting part.
2. **Significance**: This presentation occurs when the fetal neck is fully extended, and the face enters the pelvis. This can complicate delivery, and sometimes a **cesarean section** may be required if vaginal delivery is not possible due to the fetal position.

Summary:

•**Presentation** refers to which **fetal part** enters the pelvis first.

•**Cephalic presentation** (head-first) is the most common and optimal for vaginal delivery.

•Variations in cephalic presentation include:

- **Vertex presentation**: Fully flexed head (most favorable).
- **Military presentation**: Neutral head position.
- **Brow presentation**: Head partly extended (unstable).
- **Face presentation**: Fully extended head with face presenting.

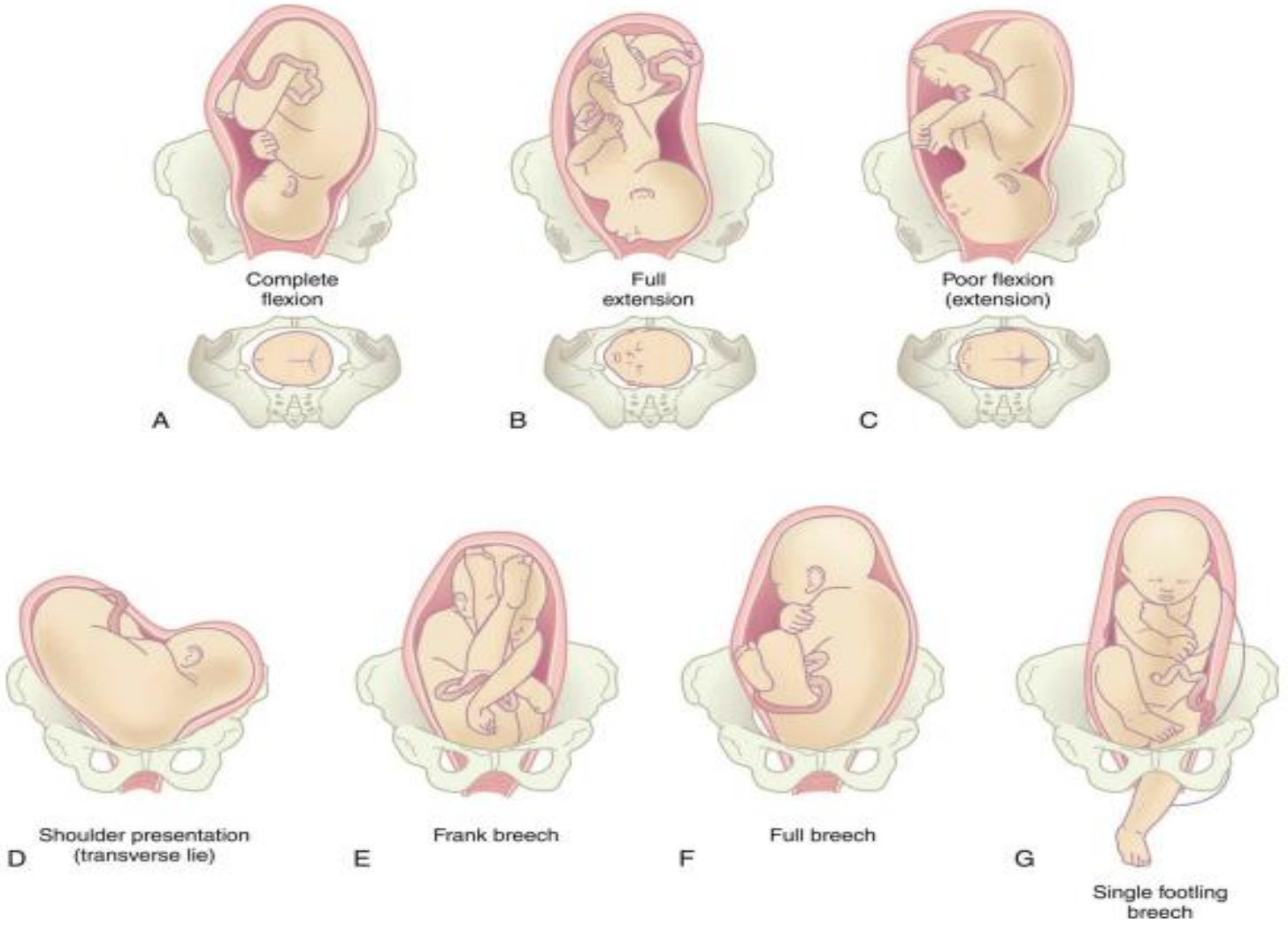


FIG. 6.7 Fetal presentations. (A) Cephalic vertex. (B) Cephalic face. (C) Cephalic brow. (D) Shoulder. (E) Frank breech. (F) Full or complete breech. (G) Footling breech (can be single or double). The vertex presentation in which the fetal chin is flexed on the chest is the most common and favorable for a vaginal birth because it allows the smallest diameter of the head to go through the bony pelvis of the mother. Note how the anterior and posterior fontanelles can be used to determine fetal presentation and position in the pelvis. (From Matteson PS: *Women's health during the childbearing years: a community-based approach*, St. Louis, 2001, Mosby.)

Breech Presentation:

The **breech presentation** occurs when the **buttocks or feet** of the fetus are the first to enter the pelvis, rather than the head. Breech presentations are less common than **cephalic presentations** and occur in about 3-4% of full-term pregnancies. There are three primary variations of breech presentation:

Types of Breech Presentation:

1.Frank Breech:

1. **Description**: The fetal **legs** are **flexed** at the **hips** and **extend toward the shoulders**.
2. **Presentation**: The **buttocks** present at the cervix.
3. **Prevalence**: This is the **most common** type of breech presentation.

2.Full (Complete) Breech:

1. **Description**: A reversal of the **cephalic presentation**, with flexion of the **head** and **extremities** (arms and legs).
2. **Presentation**: Both **feet** and the **buttocks** present at the cervix.

3.Footling Breech:

1. **Description**: One or **both feet** are present first at the cervix.
2. **Significance**: This is a more complicated form of breech, as the **feet** can potentially block the birth canal or result in an uneven delivery.

Challenges with Breech Presentation:

•**Head Delivery**: In a breech presentation, the **head**, which is the largest fetal part, is the last to be delivered. Because the fetal head is typically more difficult to pass through the pelvis after the body has been delivered, there are challenges:

- **Head Flexion**: In breech births, the fetus's head may not be in the ideal position for easy passage through the birth canal, as **flexion** of the head is typically restricted.

•**Compression of the Umbilical Cord**: After the fetal body is born, the **head** must be delivered quickly to prevent the umbilical cord from being compressed. Once part of the **umbilical cord** is outside the mother's body, the remaining cord inside is subject to compression between the **fetal head** and the **mother's pelvis**, which can interfere with blood flow to the fetus, posing risks for fetal **hypoxia** (lack of oxygen).

Cesarean Birth:

•Due to the complications involved in delivering a breech baby, many women with a **breech presentation** undergo **cesarean birth**. This is particularly true if the **fetal head** is not in a favorable position for delivery or if there are concerns about the safety of vaginal delivery.

Summary:

•**Breech presentation** occurs when the **buttocks or feet** of the fetus enter the pelvis first.

•The three main variations of breech presentation are:

- **Frank breech**: Buttocks present, legs flexed toward the shoulders.
- **Full (complete) breech**: Both feet and buttocks present, with flexed extremities.
- **Footling breech**: One or both feet present first.

•Breech births often result in **cesarean sections** due to the difficulty of delivering the head after the body and the risk of **umbilical cord compression**.

Position:

Position refers to the orientation of a **reference point** on the fetal presenting part within the **mother's pelvis** during labor. This is crucial for determining how the baby is positioned for birth and the ease with which it can pass through the birth canal.

Key Reference Points for Different Presentations:

1.Occiput:

1. **Definition**: The term **occiput** refers to the **back of the head**.
2. **Use**: It is used to describe the position of the fetus in a **cephalic vertex presentation**, where the baby's head is positioned to enter the pelvis first.

2.Sacrum:

1. **Definition**: The **sacrum** refers to the **tailbone area** of the fetus.
2. **Use**: It is used to describe the position of the fetus in a **breech presentation**, where the baby's buttocks or feet are entering the pelvis first.

3.Shoulder and Back:

1. **Definition**: These are used as reference points when the fetus is in a **shoulder presentation**.
2. **Use**: In shoulder presentations, the baby's shoulder or back enters the pelvis first.

The Maternal Pelvis and Its Four Quadrants:

To describe fetal position, the maternal pelvis is divided into four imaginary quadrants:

- **Right Anterior (RA)**
- **Left Anterior (LA)**
- **Right Posterior (RP)**
- **Left Posterior (LP)**

These quadrants help pinpoint where the fetal presenting part (e.g., occiput or sacrum) is located within the pelvis relative to the mother's body.

Examples of Position:

1.Left Occiput Anterior (LOA):

1. **Description**: The **occiput** (back of the fetal head) is located in the **left front** quadrant of the mother's pelvis.
2. **Significance**: This is a **favorable position** for vaginal delivery because the baby's head is facing downward and entering the pelvis optimally.

2.Right Sacrum Posterior (RSP):

1. **Description**: The **sacrum** (buttocks) of a breech fetus is located in the **right posterior** quadrant of the mother's pelvis.
2. **Significance**: This is one possible breech presentation, and it may affect the delivery process depending on how the baby is positioned.

Summary:

- **Position** refers to the orientation of a reference point on the fetal presenting part (such as the occiput, sacrum, or shoulder) in relation to the mother's pelvis.
- The maternal pelvis is divided into four quadrants: **right anterior, left anterior, right posterior**, and **left posterior**.
- Fetal positions are described using terms like **left occiput anterior (LOA)** for cephalic presentations or **right sacrum posterior (RSP)** for breech presentations, helping healthcare providers assess the optimal route for delivery.

shows various fetal presentations and positions.

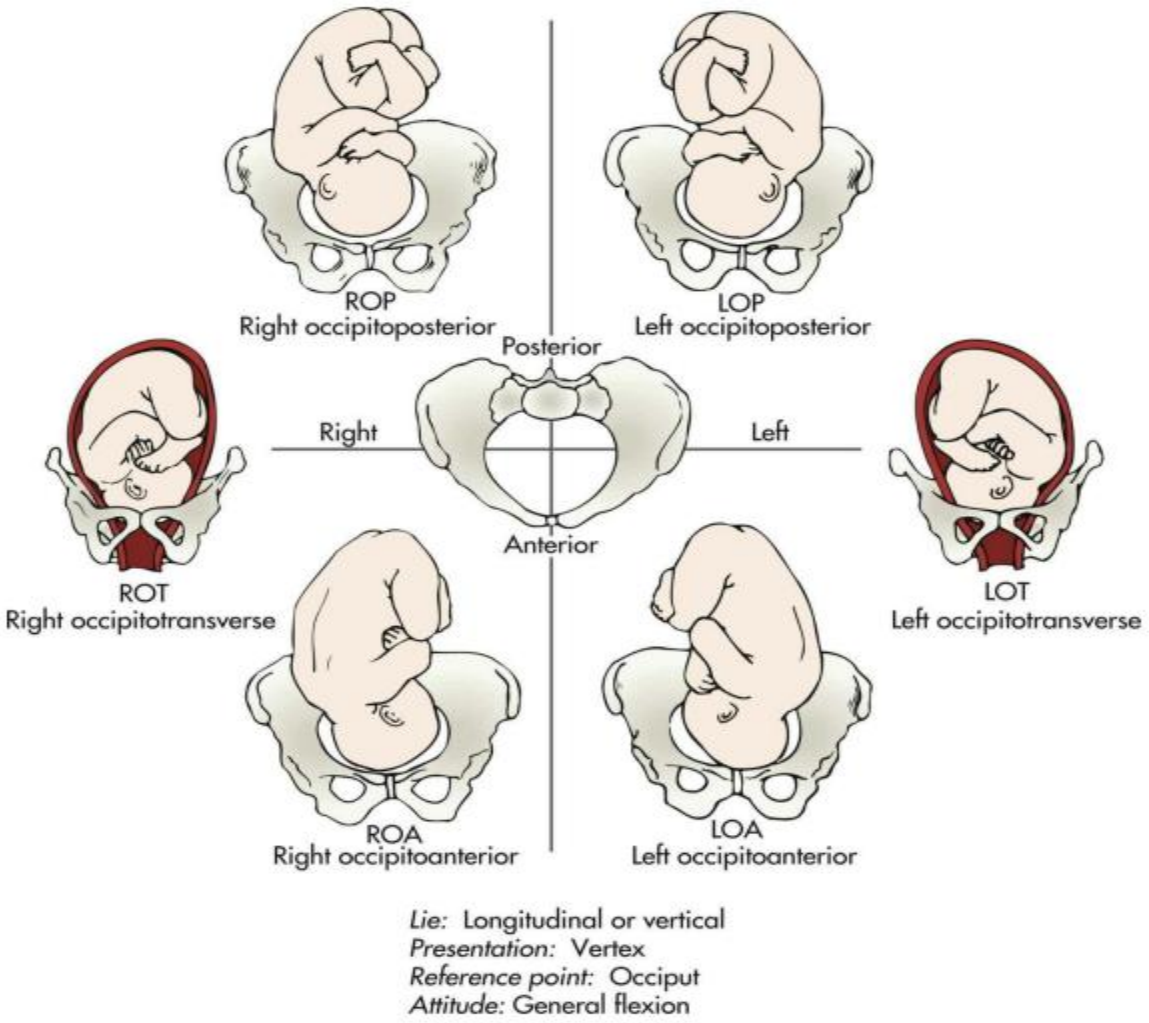


FIG. 6.8 Fetal position. The right occipitoanterior *(ROA)* or left occipitoanterior *(LOA)* is most favorable for normal labor. When the occiput faces the posterior section of the woman's pelvis, a longer, "back labor" birth process is anticipated. (From Lowdermilk DL, Perry SE, Cashion K, et al: *Maternity & Women's Health Care*, ed 11, St. Louis, 2016, Elsevier.)

Normal Childbirth: Onset of Labor

Factors Contributing to the Onset of Labor:

1.Stretching of the Uterine Muscles:

1. As the fetus grows, the **uterus** expands, leading to increased stretching of the uterine muscles. This stretching may signal the body to initiate labor.

2.Hormonal Changes:

1. **Hormonal shifts** play a key role in the onset of labor, with changes in **progesterone**, **estrogen**, and **oxytocin** levels preparing the body for birth. These hormones help facilitate uterine contractions and the dilation of the cervix.

3.Placental Aging:

1. As the **placenta** ages, its ability to support the fetus diminishes. This can result in the release of chemicals that stimulate uterine contractions and trigger labor.

4.Increased Sensitivity to Oxytocin:

1. The **uterus** becomes more sensitive to **oxytocin**, a hormone that is vital in stimulating uterine contractions. This increased sensitivity allows contractions to become more regular and powerful, leading to labor.

Timing of Labor:

Labor typically begins when the fetus reaches a level of maturity where it can **adjust to life outside the uterus** while still being small enough to pass through the **mother's pelvis**. This point is usually reached between **39 and 40 weeks** of pregnancy, or approximately **280 days** after the woman's last menstrual period (LMP).

Signs of Impending Labor

Labor may begin with signs and symptoms that can appear anywhere from a few hours to a few weeks before the actual onset of labor. Some of the common signs include:

1. Braxton Hicks Contractions:

•**Description**: **Braxton Hicks contractions** are **irregular** and **sporadic** contractions that usually begin in the early stages of pregnancy. As the pregnancy progresses and nears full term, these contractions may become **more intense** and **frequent**.

•**Characteristics**:

- They are often referred to as **“false labor”** because they do not lead to the progression of labor.
- These contractions are typically **uncomfortable** but not intense enough to be considered true labor contractions.

•**Role**: Despite being termed "false," Braxton Hicks contractions help prepare the cervix for dilation and may assist in the **adjustment** of the fetal position within the uterus.

•**When They Occur**:

- Braxton Hicks contractions usually become more noticeable **as full term approaches**.
- They may stop or become irregular with **change in activity** or **position**.

Summary:

•**Braxton Hicks contractions** are **pre-labor contractions** that help prepare the cervix and fetus for delivery. Although they are often called "false" labor, they play a vital role in the overall process of childbirth. They can increase in intensity as the pregnancy reaches full term and may sometimes be mistaken for true labor contractions.

2. Lightening and Increased Vaginal Discharge

•**Lightening**:

- **Definition**: Lightening refers to the phenomenon when the **fetus settles into the pelvic inlet** in preparation for birth.
- **Effect**: As the fetus descends, the **fundus (top of the uterus)** moves downward, relieving pressure on the diaphragm and making breathing easier for the mother.
- **Symptoms**: The woman may feel **increased pelvic pressure** and notice **increased vaginal discharge**. This is because the **fetal pressure** on the pelvic region leads to the production of **clear, non-irritating vaginal secretions**.

•**Increased Vaginal Discharge**:

- The increased discharge is **normal** and typically clear or milky.
- However, if there is any **irritation**, **itching**, or if the discharge has an **unpleasant odor**, these could indicate an infection, and it is important to **report** these symptoms to the healthcare provider.

3. Cervical Changes

•**Cervical Softening and Shortening**:

- **During pregnancy**, the cervix is typically **firm** and **rigid** to protect the fetus and maintain the pregnancy.
- As labor approaches, the cervix undergoes **softening** and may **shorten** significantly.
- This is a **preparatory change** for labor, allowing the cervix to dilate more easily during the actual process of childbirth.

•**Cervical Dilation**:

- The cervix may begin to dilate (open) slightly, typically between **1 to 2 cm**, as labor nears.
- This is often the first noticeable sign that the body is preparing for active labor.

4. Bloody Show

•**Definition**:

- **Bloody show** refers to the **thick mucus** that is **mixed with pink or dark brown blood**. This occurs as the cervix undergoes changes in preparation for labor.

•**Cause**:

- As the cervix **softens**, **effaces** (thins), and begins to **dilate** slightly, the **mucous plug** that has sealed the uterus during pregnancy is dislodged.
- During this process, small **capillaries** in the cervix are **torn**, resulting in the appearance of **blood** mixed with mucus.

•**When It Occurs**:

- **Timing**: The bloody show may occur **a few days** before labor begins, or it may appear **just before** or **during** the onset of labor.
- It can also occur if the woman has had a **recent vaginal examination** or **intercourse**, which can cause the cervix to be irritated and the mucous plug to be dislodged.

Summary:

•**Bloody show** is a sign of cervical changes as labor approaches. It occurs when the **mucous plug** is dislodged, often with **small amounts of blood** mixed in. This can happen days before labor begins or just as labor starts, and it can also be triggered by vaginal exams or intercourse.

5. Rupture of the Membranes

•**Definition**:

- The **amniotic sac**, often called the **bag of waters**, sometimes **ruptures** before labor begins. This is commonly referred to as **water breaking**.

•**Concerns**:

- **Infection Risk**: If **many hours** elapse between the rupture of membranes and the birth of the baby, there is a higher risk of infection because the amniotic sac normally acts as a barrier that protects the uterus from organisms in the vagina.
- **Umbilical Cord Compression**: After the membranes rupture, the **fetal umbilical cord** can slip down into the birth canal, becoming compressed between the mother's pelvis and the presenting part of the fetus. This can lead to **cord prolapse**, a serious situation.

•**Recommendation**:

- **Immediate Attention**: Women should go to the **birth facility** as soon as their membranes rupture, even if there are no other signs of labor, to monitor for potential complications like infection or cord prolapse.

6. Energy Spurt (Nesting)

•**Description**:

- Many women experience a **sudden burst of energy** shortly before labor begins, often called the **nesting instinct**.

•**Behavior**:

- During this time, women may feel a strong urge to **clean**, **organize**, or prepare the home for the arrival of the baby.

•**Nurse's Role**:

- It is important for the nurse to **encourage the woman** to **conserve her energy**, as this burst of energy may be short-lived, and it's best to save strength for the labor process.

7. Weight Loss

•**Description**:

- Some women may notice a **1 to 3 lb weight loss** shortly before labor starts.

•**Cause**:

- This is often due to **hormonal changes** in the body, which can lead to the excretion of excess body water.

•**Significance**:

- This weight loss is usually **temporary** and is a normal part of the body's preparation for labor.

Summary:

•**Rupture of the membranes** can increase the risk of infection and **umbilical cord compression**, so women should seek immediate medical attention if their water breaks.

•An **energy spurt** (nesting) is common before labor, but women should be advised to conserve their energy for the labor process.

•**Weight loss** due to hormonal changes can occur before labor and is typically a normal and temporary symptom.

Stages of Labor Summary

1. First Stage of Labor (Early Labor & Active Labor)

•**Duration**: 6 to 18 hours, shorter for women who've given birth before.

•**Divisions**:

- **Latent Phase (Early Labor)**:
  - Cervix dilates from 0 to 3 cm.
  - Contractions are mild, irregular, and occur every 10 to 30 minutes.
  - Women can talk and move, discomfort is present.
- **Active Phase**:
  - Cervix dilates from 4 to 7 cm.
  - Contractions become stronger, more frequent (3 to 5 minutes apart), and longer (40 to 60 seconds).
  - Pain intensifies and labor progresses more quickly.
- **Transition Phase**:
  - Cervix dilates from 8 to 10 cm.
  - Contractions are intense, 2 to 3 minutes apart, lasting 60 to 90 seconds.
  - Pressure on the rectum increases, and the urge to push intensifies.
  - Strong emotional changes, anxiety or restlessness may occur.

2. Second Stage of Labor (Pushing & Birth)

•**Duration**: Can last from minutes to a few hours.

•**Key Events**:

- Begins with full cervical dilation (10 cm) and ends with the birth of the baby.
- The woman pushes with contractions to help move the baby through the birth canal.
- The baby's head crowns, followed by the body, and is born.
- Skin-to-skin contact with the baby follows.

3. Third Stage of Labor (Delivery of the Placenta)

•**Duration**: 5 to 30 minutes.

•**Key Events**:

- The placenta is delivered after the baby.
- The uterus contracts to expel the placenta.
- The healthcare provider ensures the placenta is intact and there are no pieces left in the uterus.

4. Fourth Stage of Labor (Recovery Postpartum Period)

•**Duration**: 1 to 4 hours after birth.

•**Key Events**:

- The mother's vital signs are monitored, and the uterus contracts to prevent excessive bleeding.
- The mother and baby bond through immediate skin-to-skin contact.
- The mother may begin breastfeeding, and the healthcare team checks for complications.

Each stage serves a critical function in the birth process, and the duration can vary based on the woman's experience and the progress of labor.

Summary:

1.First Stage: **Early Labor**, **Active Labor**, and **Transition** — cervix dilates from 0 to 10 cm.

2.Second Stage: **Pushing** and **Birth** of the baby.

3.Third Stage: **Delivery of the Placenta**.

4.Fourth Stage: **Recovery** and monitoring of the mother and baby immediately after birth.

Each stage of labor serves a specific function in the birth process, and how long each stage lasts can vary depending on factors like the woman's health, the baby's position, and the progress of labor.

Mechanisms of Labor (Cardinal Movements)

As the fetus descends through the pelvis during labor, it undergoes a series of positional changes, known as the **cardinal movements**, to adapt to the shape and size of the birth canal. The key cardinal movements are as follows:

1.Engagement:

1. The fetal head enters the pelvic inlet, and the widest part of the head is aligned with the narrowest part of the pelvis.
2. This is typically the first movement, where the fetal head "engages" in the pelvic cavity.

2.Descent:

1. The fetus moves downward through the pelvis under the influence of uterine contractions.
2. This movement continues throughout labor, allowing the fetus to move lower into the birth canal.

3.Flexion:

1. As the head descends, it flexes (chin to chest), which reduces the diameter of the head and allows the smallest part of the fetal head to present through the pelvis.
2. This helps the head to navigate the curves of the birth canal more easily.

4- Internal Rotation:

1. The fetal head rotates to align with the mother's pelvis, typically rotating **90 degrees** from the transverse position to the anterior position.
2. This movement occurs as the head moves through the midpelvis and helps it face the mother's back.

5- Extension:

1. As the head passes under the pubic symphysis, it extends backward (chin moves away from the chest) to pass through the vaginal opening.
2. This is an essential step for the delivery of the fetal head.

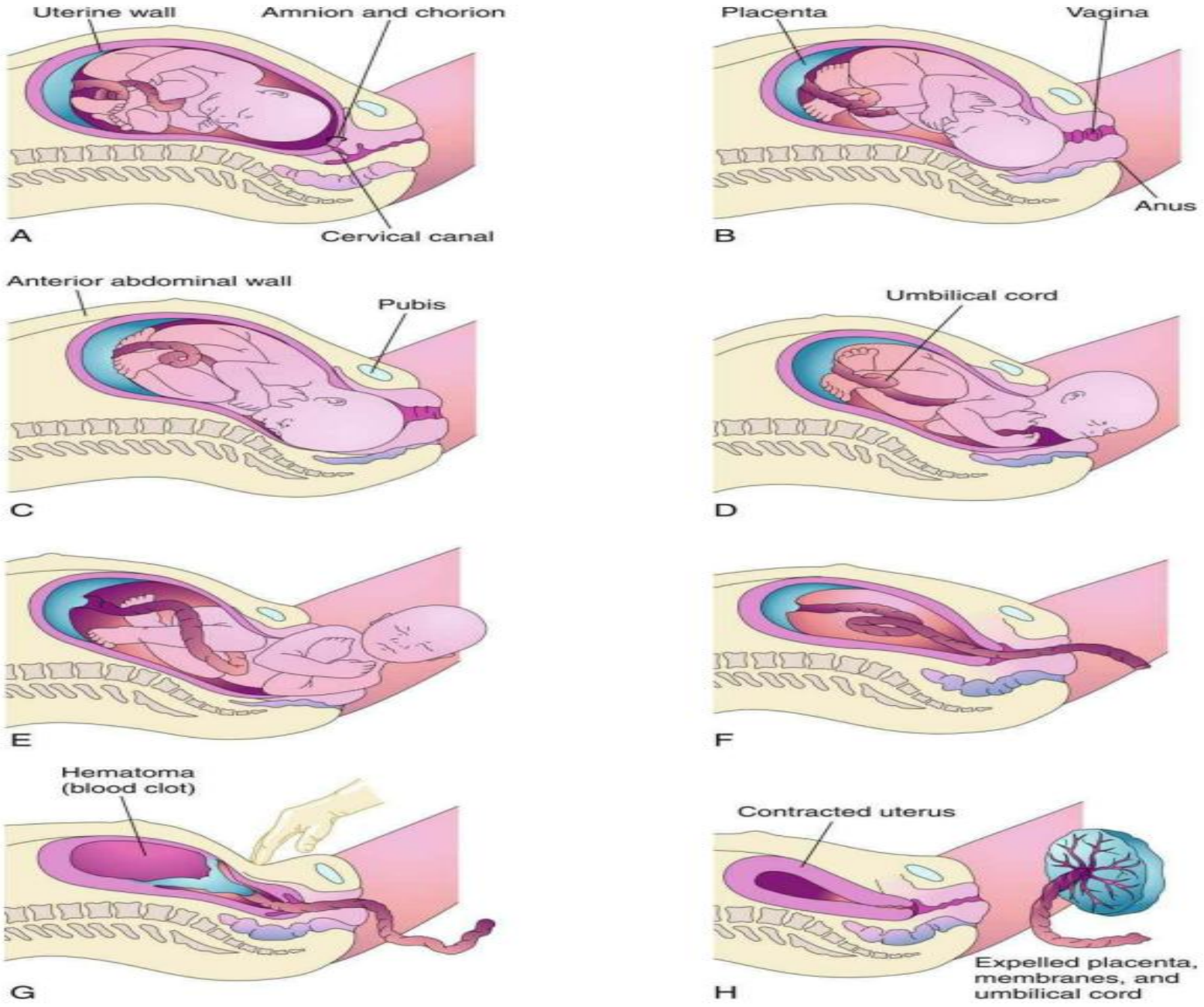
6- External Rotation (Restitution):

1. After the head is born, it rotates back to its original position (usually around **45 degrees**) to align with the shoulders.
2. This rotation allows the shoulders to maneuver into the birth canal.

7- Expulsion:

1. Following external rotation, the shoulders pass through the birth canal.
2. The body of the baby follows, and the baby is fully delivered.

These movements, occurring in sequence, facilitate the efficient passage of the fetus through the pelvis and birth canal, helping to prevent injury to both the mother and the baby during childbirth.


Uterine wall
Amnion and chorion
Cervical canal
A
Placenta
Vagina
Anus
B
Anterior abdominal wall
Pubis
C
Umbilical cord
D
E
F
Hematoma
(blood clot)
G
Contracted uterus
Expelled placenta,
membranes, and
umbilical cord
H

The **cardinal movements** of labor are the positional changes the fetus undergoes to pass through the birth canal. They include:

1.Descent, Engagement, and Flexion: The fetus moves downward into the pelvis, and the head flexes to fit more easily.

2.Internal Rotation: The fetal head rotates 180 degrees to align with the pelvic axis.

3.Beginning Extension: The head begins to extend as it moves under the pubic bone.

4.Birth of the Head by Complete Extension: The head emerges fully as it extends backward.

5.External Rotation, Birth of Shoulders and Body: After the head is born, the body rotates externally, and the shoulders and body follow.

6.Separation of Placenta Begins: The placenta begins detaching from the uterine wall after birth.

7.Complete Separation of Placenta: The placenta fully detaches from the uterus.

8.Placenta Expulsion and Uterine Contraction: The placenta is expelled, and the uterus contracts to prevent bleeding and return to its normal size.

These movements allow the fetus to navigate the birth canal efficiently and facilitate delivery.

Descent and Station refer to the process of the fetus moving downward through the pelvis during labor. The position of the presenting part (typically the fetal head) is tracked using **station**, which helps assess how far the baby has descended into the birth canal.

Station:

•**Station** measures the level of the presenting part in relation to the **ischial spines**, bony landmarks in the pelvis.

- **0 station**: The presenting part is at the level of the ischial spines.
- **Minus stations**: The presenting part is above the ischial spines (e.g., -1, -2, -3).
- **Plus stations**: The presenting part is below the ischial spines (e.g., +1, +2, +3).

As the fetus descends during labor, the station moves from negative numbers (above the spines) to positive numbers (below the spines). When the fetal head reaches **+3 or +4**, it indicates that the baby is very close to being born.

Example of Station Numbers:

- **−3 station**: The fetal head is still above the ischial spines.
- **0 station**: The fetal head is at the level of the ischial spines.
- **+1 to +2 station**: The fetal head has descended past the ischial spines but remains within the birth canal.
- **+3 station**: The fetal head is about to be delivered.

Importance of Station:

- **Monitor Labor Progress**: Station provides a key measure of how far the fetus has descended through the pelvis.
- **Indicates Proximity to Birth**: As the fetal head moves lower in the birth canal, the cervix dilates further, indicating that labor is advancing toward the second stage (pushing and delivery).

Tracking station helps healthcare providers assess the progress of labor and determine how close the baby is to being born.

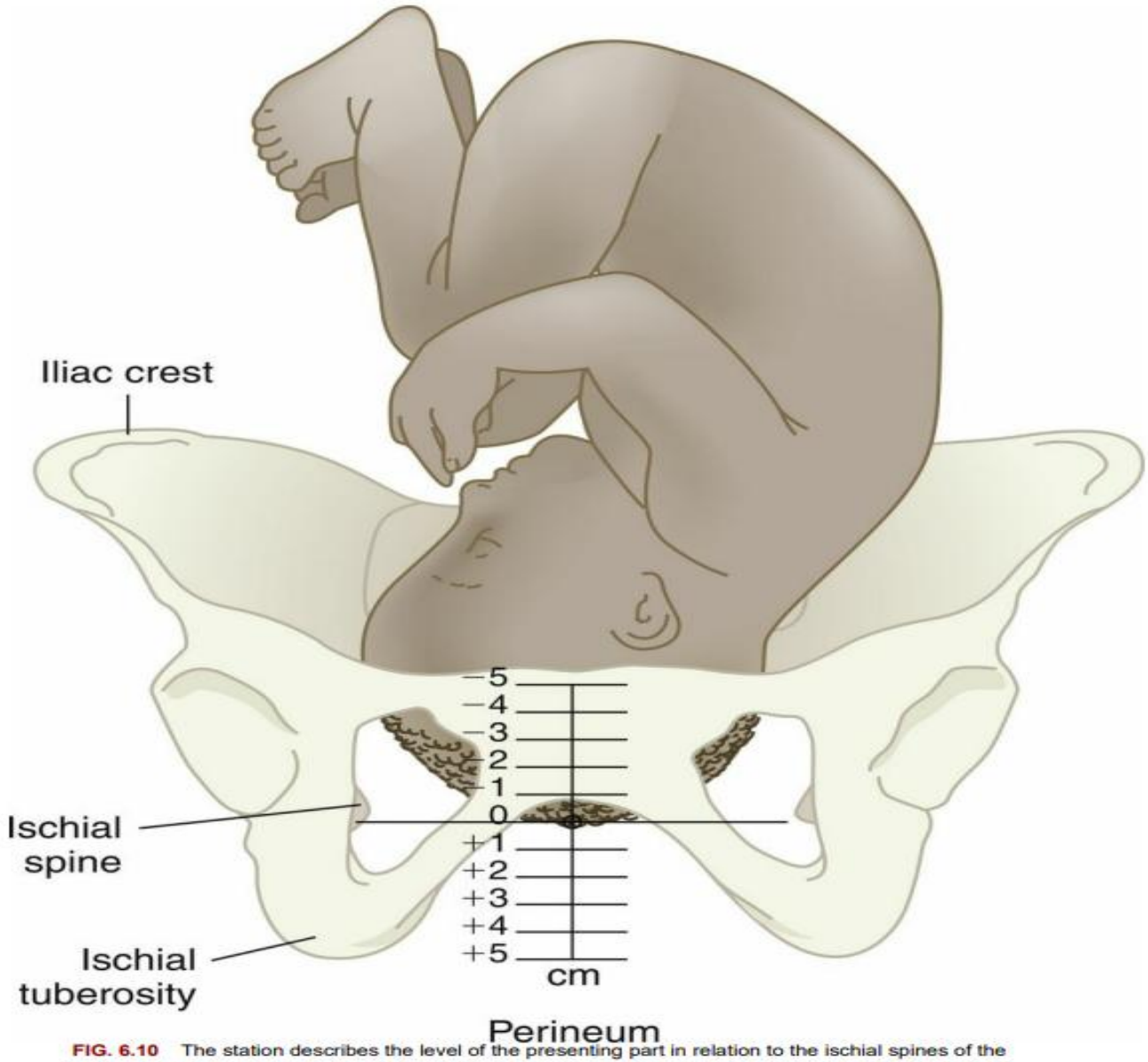


FIG. 6.10 The station describes the level of the presenting part in relation to the ischial spines of the mother's pelvis. The "minus" stations are above the ischial spines, and the "plus" stations are below the ischial spines. (From Matteson PS: *Women's health during the childbearing years: a community-based approach*, St. Louis, 2001, Mosby.)

Engagement:

Engagement is the process where the presenting part of the baby (usually the **fetal head's biparietal diameter**, the widest part of the head) reaches the level of the **ischial spines** in the mother's pelvis. It occurs when the presenting part has descended sufficiently into the birth canal, reaching **0 station** or lower.

Key Points about Engagement:

- **Presenting Part**: The fetal head, specifically the **biparietal diameter**, is the first part to enter the pelvis during engagement.
- **Station 0**: Engagement is marked when the presenting part reaches **0 station**, which aligns with the ischial spines.
- **Nullipara (first-time mothers)**: Engagement usually happens before labor begins because the baby's head moves into position in preparation for birth.
- **Multipara (women with previous births)**: Engagement may not happen until after labor starts, as their pelvis and soft tissues tend to be more flexible, allowing the baby to descend later in the labor process.

Importance of Engagement:

- **Progress of Labor**: Engagement indicates that the baby is entering the pelvis, signaling that labor is progressing.
- **Positioning**: It helps determine the baby's position and alignment with the birth canal, which is crucial for a smoother delivery.

Engagement is a significant milestone in the labor process, showing that the baby is ready to proceed through the birth canal.

Flexion:

•**Flexion** refers to the fetal head tilting forward, so the **chin touches the chest**, which is the most optimal position for passing through the pelvis.

•As labor progresses, uterine contractions help increase the amount of flexion, allowing the fetal head to fit more easily through the birth canal.

Internal Rotation:

•When the fetus enters the pelvis head-first, the head is initially positioned with the **occiput (back of the head)** facing either the mother's **right or left side**.

•As the fetus moves downward due to uterine contractions, the shape of the pelvis causes the fetal head to rotate. The head turns until the **occiput is positioned directly under the symphysis pubis**, which is known as **occiput anterior (OA)**.

Extension:

•Once the fetal head reaches the **symphysis pubis**, it must transition from **flexion to extension** to navigate through the pelvic curve.

•The fetal neck pivots under the symphysis pubis, and as the mother pushes, the head swings forward and extends with each push until the head is fully delivered.

These movements—**flexion**, **internal rotation**, and **extension**—work together to allow the fetal head to navigate the birth canal and be born safely.

External Rotation:

•After the fetal head is born, it is in **extension**, and the **shoulders** are positioned crosswise in the pelvis.

•**Restitution** occurs when the head spontaneously **turns** to one side, realigning with the shoulders.

•The shoulders then rotate within the pelvis, aligning their **transverse diameter** with the **mother's anteroposterior pelvic axis**.

•As the shoulders rotate, the fetal head turns further to one side, allowing the shoulders to fit through the birth canal more easily.

Expulsion:

•Once the shoulders are aligned, the **anterior shoulder** (front shoulder) is born first, followed quickly by the **posterior shoulder** (back shoulder).

•After the shoulders are delivered, the **rest of the body** follows quickly and is expelled from the birth canal.

External rotation and **expulsion** mark the final stages of delivery, ensuring that the shoulders and the rest of the body can be born smoothly following the head.

During late pregnancy, it is essential to educate the woman about when to go to the hospital or birth center. The indicators include:

1. Contractions:

•**First-time mothers** should go to the hospital when contractions are regular (every 5 minutes) for **1 hour**, as this indicates active labor.

•**Women with previous children** may be advised to go when contractions are **10 minutes apart** for 1 hour, as labor may progress more quickly for them.

2. Ruptured Membranes:

•If the woman's **membranes rupture** (water breaks) or if she suspects they have ruptured, she should go to the hospital or birth center immediately.

3. Bleeding Other Than Bloody Show:

•**Bloody show** is a normal mixture of blood and mucus that can occur before labor.

•**Active bleeding**, which is **bright red and free-flowing**, is a concerning sign and should be addressed immediately at the hospital, as it could indicate complications.

4. Decreased Fetal Movement:

•If the woman notices a significant reduction in fetal movement, she should be evaluated. While some fetal activity decreases before labor, **decreased movement** could signal **fetal distress** or **compromise**.

These signs are important for ensuring the safety of both the mother and baby during labor and delivery.

Determining Fetal Position and Presentation:

The nurse plays an important role in assisting the healthcare provider in determining the fetal position and presentation, typically using **Leopold's Maneuvers**. These are a series of abdominal palpations that help assess the position of the fetus in the womb.

Leopold's Maneuver:

1.First Maneuver: The nurse places their hands on the top of the abdomen to determine the **fundal height** and to feel for the **top part of the fetus** (head or breech). This helps identify whether the fetus is in a head-down (cephalic) or breech position.

2.Second Maneuver: The nurse palpates the sides of the abdomen to feel for the **fetal back** and **limbs**, which helps confirm the presentation (whether the fetus is head-first, breech, or transverse).

3.Third Maneuver: The nurse checks the lower abdomen to determine the **engagement** of the presenting part and whether the head or breech is descending into the pelvis.

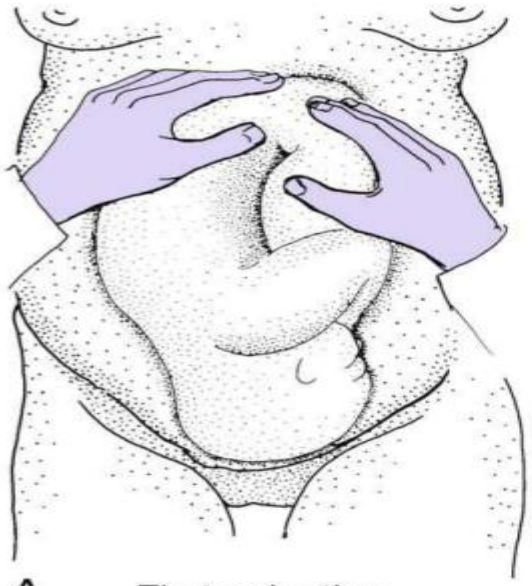
4.Fourth Maneuver: The nurse palpates around the lower abdomen and can determine **cephalic flexion** or **extension** (whether the head is flexed or extended).

Importance of Leopold's Maneuver:

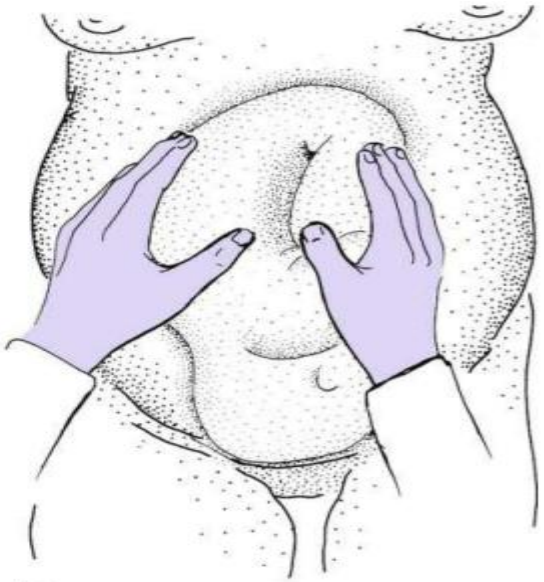
•**Multifetal Pregnancy**: Sometimes, performing Leopold's Maneuver at admission can reveal a **multifetal pregnancy** (twins or more), which may not have been previously identified.

•**Fetal Back Location**: The maneuver helps locate the **fetal back**, which is crucial for optimal placement of the **fetal heart rate (FHR) monitor**. The fetal back is the best place to listen for the FHR, as it is typically where the heartbeat is loudest and most consistent.

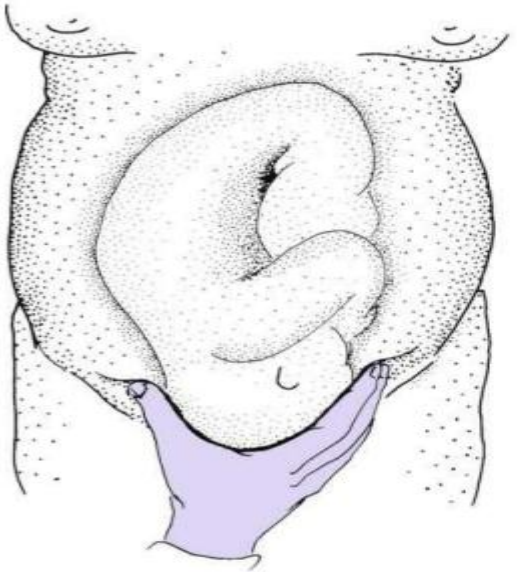
Leopold's Maneuvers are a valuable technique to determine fetal position and presentation, which helps healthcare providers plan for labor and delivery.



A First palpation



B Second palpation



C Third palpation

D Fourth palpation

Nursing care of the woman in false labor True labor is characterized by changes in the cervix (effacement and dilation), which is the key distinction between true and false labor. Table 6.2 lists other characteristics of true and false labor.

Table 6.2

Comparison of False Labor and True Labor

False labor (prodromal labor or prelabor)	True labor
Contractions are irregular or do not increase in frequency, duration, and intensity.	Contractions gradually develop a regular pattern and become more frequent, longer, and more intense.
Walking tends to relieve or decrease contractions.	Contractions become stronger and more effective with walking.
Discomfort is felt in the abdomen and groin.	Discomfort is felt in the lower back and the lower abdomen; often feels like menstrual cramps at first.
Bloody show is usually not present.	Bloody show is often present, especially in women having their first child.
There is no change in effacement or dilation of the cervix.	Progressive effacement and dilation of the cervix occur.

Nursing Care of the Woman in False Labor (Prodromal Labor):

False labor (or **prodromal labor**) involves contractions that prepare the body for true labor but do not cause significant cervical changes.

1.Initial Assessment:

1. **Contractions**: The nurse assesses the frequency, duration, and intensity of contractions. False labor contractions are irregular and don't result in cervical changes.
2. **Membrane Status**: The nurse checks if the membranes are intact. If intact and no cervical changes occur, it's likely false labor.

2.Observation Period:

1. The woman is monitored for **1 to 2 hours** to assess fetal well-being, often using **electronic fetal monitoring (EFM)** for at least 20 minutes.
2. **Walking**: Encouraged to walk, which may help intensify contractions if true labor is starting.

3.Reevaluation:

1. After the observation, the healthcare provider checks for cervical changes. If no progress is noted, the woman is typically sent home.

4.Special Considerations:

1. For **first-time mothers** or those in **early labor**, the latent phase can be lengthy. If the woman lives nearby, she may be sent home with advice to rest until true labor begins.

Nursing Care of the Woman in False Labor (or Early Latent-Phase Labor):

Each woman in **false labor** or the **early latent phase** is evaluated individually based on several factors:

1.Factors to Consider:

1. **Previous Labors**: The number and duration of prior labors are taken into account.
2. **Distance from Facility**: How far the woman lives from the hospital or birth center may influence whether she is admitted.
3. **Transportation Availability**: Accessibility of transportation is a factor in the decision to admit or send the woman home.

2.Membrane Rupture:

1. If the woman's **membranes are ruptured**, she is typically admitted, even if labor hasn't started, due to the risk of **infection** or **prolapsed umbilical cord**.

3.Emotional Support:

1. Women in false labor may feel frustrated, so **generous reassurance** is important. The nurse should provide comfort and encourage the woman, reminding her that **false labor** often transitions to **true labor**.

The care approach emphasizes **individualized evaluation**, **safety measures** for ruptured membranes, and **emotional support** for the woman.

Nursing Care Before Birth:

After admission to the labor unit, nursing care focuses on three main elements:

1.Monitoring the Fetus:

1. **Fetal Heart Rate (FHR)**: Continuous monitoring aims to detect **fetal hypoxia**, which can result from various causes. Early detection allows for timely interventions to prevent fetal injury.
2. **Methods of Monitoring**:
    1. **Intermittent Auscultation**: FHR can be assessed using a **fetoscope** or **Doppler transducer** at regular intervals.
    2. **Continuous Electronic Fetal Monitoring (EFM)**: Widely used in the U.S., EFM provides continuous tracking of the fetus' heart rate.
3. The goal is to detect **FHR patterns** that indicate fetal distress and ensure proper **oxygenation**.

2.Monitoring the Laboring Woman:

1. **Vital Signs**: Regular monitoring of the mother's **vital signs** (blood pressure, heart rate, temperature) ensures her well-being.
2. **Contraction Patterns**: The nurse monitors the **frequency, duration, and intensity** of contractions, as they affect fetal oxygen supply.

3.Helping the Woman Cope with Labor:

1. The nurse provides emotional support, **breathing techniques**, and comfort measures to help the woman manage pain and stress during labor.

In summary, nursing care before birth involves closely monitoring both the fetus and the laboring woman, ensuring fetal well-being through **FHR assessment** and addressing the woman's needs to help her cope with labor.

Assessing Fetal Heart Rate Using Different Methods:

1. Fetoscope:

- **Positioning**:
  - Place the **head attachment** (if applicable) over your head and the **earpieces** in your ears.
  - Position the **bell** of the fetoscope over the **fetal back** and apply gentle pressure.
- **Listening**:
  - Listen for **muffled fetal heart sounds**. These will become clearer as you position the fetoscope correctly.
  - Count the fetal heart rate for **6-second increments**, then multiply the number of beats by 10 to calculate the **beats per minute** (bpm).
  - For example, if you count 13-14 beats in 6 seconds, multiply by 10 to get an estimated **130-140 bpm**.
- **Timing**:
  - Assess the FHR **before and after** a full contraction cycle to identify any changes.
- **Confirming FHR**:
  - If unsure whether you are hearing the fetal heart rate or the mother's pulse, check the **mother's pulse** at the same time. The rhythms and rates will differ (maternal pulse typically 60-100 bpm).

2. Doppler Transducer:

•**Positioning**: The Doppler device is placed on the abdomen over the fetal heart to detect the sound waves.

•**Method**: This method uses ultrasound to detect the fetal heart rate by emitting sound waves and measuring the return signal.

•**Use**: The Doppler device will give an audible reading of the fetal heart rate, and it is typically used for intermittent assessments.

3. External Fetal Monitor:

•**Positioning**: The **external monitor** (electronic fetal monitor or EFM) is attached to the mother's abdomen with belts or straps.

•**Use**: The monitor continuously records the fetal heart rate and uterine contractions. The readings are displayed on a screen or printed for review.

•**Continuous Monitoring**: This method is widely used for continuous monitoring during labor to assess fetal well-being and identify any signs of fetal distress.

Summary:

•**Fetoscope** and **Doppler transducers** provide intermittent FHR assessment through direct listening to the fetal heart sounds.

•**External fetal monitors** provide continuous fetal heart rate monitoring, often used for high-risk pregnancies or during labor to assess ongoing fetal well-being.

4**Reporting Fetal Heart Rate (FHR) Abnormalities:**

1.Report abnormal FHR rates:

1. **Below 110 beats/min**: If the fetal heart rate is consistently below 110 bpm for a full-term fetus, it should be reported immediately. This could indicate fetal **bradycardia**, which may require intervention.
2. **Above 160 beats/min**: If the fetal heart rate is consistently above 160 bpm for a full-term fetus, it should also be promptly reported. This could suggest **fetal tachycardia**, which may require further assessment.

2.Report prolonged rate slowing:

1. If there is a **slowing of the fetal heart rate** that **persists beyond the end of a contraction**, it should be reported. This could indicate **fetal distress**, and further evaluation is necessary.

3.Report a lack of variability in FHR:

1. **Lack of variability** in the fetal heart rate (meaning there is no fluctuation in the baseline rate) should be reported. Normal fetal heart rate variability is a sign of a well-oxygenated and healthy fetus, so its absence can indicate **fetal compromise**.

Charting the FHR:

•**Normal Range for Full-Term Fetus**:

- The normal FHR range at term is:
  - **Lower limit**: **110 beats/min**
  - **Upper limit**: **160 beats/min**

•Document the FHR regularly, noting any abnormalities or trends that deviate from this normal range.

Guidelines for Auscultating and Documenting the Fetal Heart Rate:

1. For Low-Risk Women (No Identified Risk Factors):

- **Latent Phase**: Auscultate every **hour**.
- **Active Phase**: Auscultate every **30 minutes**.
- **Second Stage**: Auscultate every **15 minutes**.

2. For High-Risk Women (Identified Risk Factors):

- **Latent Phase**: Auscultate every **30 minutes**.
- **Active Phase**: Auscultate every **15 minutes**.
- **Second Stage**: Auscultate every **5 minutes**, before and after contractions.

3. Routine Auscultations:

- **When Membranes Rupture** (spontaneously or artificially): Auscultate to monitor FHR.
- **Before and After Ambulation**: Check FHR to assess fetal well-being after the woman moves.

4. After Medication or Anesthesia Administration:

- **Before and After**: Auscultate FHR before and after any changes in medications or anesthesia to assess fetal response.

5. At the Time of Peak Action of Analgesic Drugs:

•Monitor FHR during the peak action of analgesics to detect any effects on the fetus.

6. After a Vaginal Examination:

•Auscultate FHR after a vaginal exam to check for any signs of fetal distress.

7. After the Expulsion of an Enema:

•Check FHR after an enema is expelled, as this may affect uterine tone or pressure.

8. After Catheterization:

•Monitor FHR after **catheterization** to detect any changes due to bladder pressure or irritation.

9. If Uterine Contractions Are Abnormal or Excessive:

•Frequent auscultation is required if contractions are **abnormal** or **excessive** to assess fetal oxygenation and well-being.

problem pregnancies, ed 7, St. Louis, 2017, Elsevier.

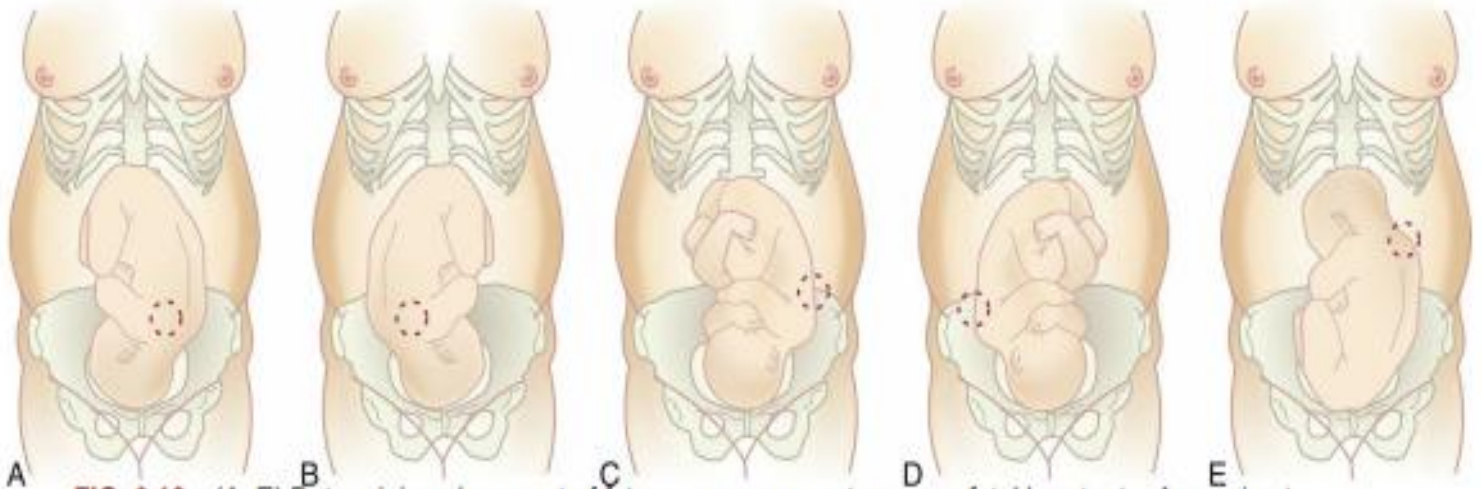
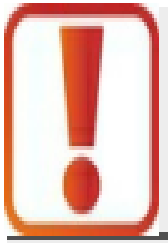


FIG. 6.12 (A–E) Determining placement of fetoscope or sensor to assess fetal heart rate. Approximate the location of the strongest fetal heart sound when the fetus is in various positions and presentations. The fetal heart sounds are heard best in the lower abdomen in a cephalic (vertex) presentation and higher on the abdomen when the fetus is in a breech presentation (E). (A) Left occipitoanterior (LOA); (B) right occipitoanterior (ROA); (C) left occipitoposterior (LOP); (D) right occipitoposterior (ROP); (E) left sacrum anterior (LSA). (From Matteson PS: *Women's health during the childbearing years: a community-based approach*, St. Louis, 2001, Mosby.)



Safety Alert!

Standard FHR monitoring is every 30 minutes in the active phase of the first stage of labor and every 15 minutes in the second stage. If any risk factor is present, FHR monitoring is every 15 minutes in the active first stage and every 5 minutes in the second stage.

Skill 6.3

External Electronic Fetal Monitoring

Purpose

To monitor the fetal heart rate continuously

Steps

1. Turn on the fetal monitoring device per hospital protocol.
2. Apply and secure the sensors on the mother's abdomen.
   a. Place one sensor over the fundus of the uterus to record uterine contractions.
   b. Place one sensor over the location of the strongest fetal heart sound to record the FHR.

This woman has twins and requires two fetal heart sensors. (Courtesy Pat Spier, RN-C.)

Evaluating Fetal Heart Rate (FHR) Patterns

1. Baseline FHR:

•**Normal Range**: The baseline fetal heart rate should be between **110 to 160 beats/min** for at least **2 minutes**.

•This range is considered **normal** for a full-term fetus and reflects good fetal oxygenation and well-being.

2. Fetal Bradycardia:

•**Definition**: Fetal bradycardia occurs when the FHR is less than **110 beats/min** for a duration of **10 minutes or longer**.

•**Causes**:

- Fetal **hypoxia** (lack of oxygen)
- Maternal **hypoglycemia** (low blood sugar)
- Maternal **hypotension** (low blood pressure)
- **Prolonged umbilical cord compression**

•**Significance**:

- Bradycardia is concerning when accompanied by **loss of baseline variability** or **late decelerations**.
- In this case, **immediate intervention** is required to improve fetal well-being and prevent injury.

3. Fetal Tachycardia:

•**Definition**: Fetal tachycardia is a baseline FHR greater than **160 beats/min** that lasts for **2 to 10 minutes** or longer.

•**Causes**:

- **Maternal fever**
- **Maternal dehydration**

•**Significance**:

- Tachycardia is concerning when associated with **loss of baseline variability** or **late decelerations**.
- In these cases, **immediate intervention** is needed to address potential issues such as **maternal infection**, **dehydration**, or **fetal distress**.

• Baseline variability describes fluctuation or constant changes in the baseline FHR above and below the baseline in a 10-minute window . Baseline variability is a reflection of an intact central nervous system and cardiac status of the fetus.

FIG. 6.13 Recording of the fetal heart rate (FHR) in the upper grid and the uterine contractions in the lower grid. The sawtooth appearance of the FHR tracing is a result of the constant changes in the rate (variability). NOTE: The space between each dark black line on the strip represents 1 minute. The space between each light black line (i.e., the small squares) represents 10 seconds. (Courtesy Corometrics Medical Systems, Wallingford, CT. Redrawn with permission.)

Fetal Heart Rate Variability and Changes

1. Baseline Variability:

•**Definition**: Baseline variability refers to the fluctuation or constant changes in the **baseline fetal heart rate (FHR)** above and below the baseline within a **10-minute window**.

•**Significance**: It reflects the health of the fetus, especially the **central nervous system** (CNS) and **cardiac status**.

- **Moderate Variability** (6–25 beats/min): This is **desirable** and indicates **good fetal oxygenation** and overall **fetal well-being**.
- **Marked Variability** (>25 beats/min): This can indicate **cord prolapse** or **maternal hypotension**, and may signal fetal distress.
- **Absent Variability** (<6 beats/min): Often caused by **uteroplacental insufficiency**, **maternal hypotension**, **cord compression**, or **fetal hypoxia**, and suggests compromised fetal oxygenation.

Nursing Interventions for Marked or Absent Variability:
•**Positioning**: Place the mother on her side to improve circulation.
•**Increase IV Fluids**: Ensure regular IV fluids to support maternal circulation.
•**Oxygen**: Administer **8 to 10 L/min** of oxygen by mask to improve fetal oxygenation.
•**Notify Healthcare Provider**: Prompt communication to determine next steps.
2. Episodic Changes:
•**Definition**: These are changes in the FHR that occur **independently** of uterine contractions.
•**Characteristics**: Brief changes that quickly return to baseline.
•**Significance**: These are not usually associated with fetal distress and are less concerning than periodic changes.
3. Periodic Changes:
•**Definition**: These are temporary changes in the **baseline FHR** associated with uterine contractions.
•**Characteristics**: Changes that occur in response to contractions and quickly return to baseline.
•**Significance**: Often expected during labor, but if these changes are **prolonged** or **severe**, they may require closer monitoring or intervention.
Summary:
•**Baseline Variability**: Reflects fetal CNS and cardiac status. **Moderate variability** is ideal, while **marked** or **absent variability** may indicate distress or other complications requiring immediate intervention.
•**Episodic Changes**: Short, non-contraction related changes, typically not concerning.
•**Periodic Changes**: Contraction-related changes, usually temporary, but require monitoring for any signs of fetal distress.

Classifications and Interpretation of Fetal Heart Rate (FHR) and Uterine Activity Patterns

1. Normal Fetal Heart Rate (FHR) and Uterine Activity:

•**Normal FHR**: **110 to 160 beats/min** for a term fetus.

•**Normal Baseline Variability**: Moderate variability, indicating good fetal oxygenation and CNS function.

•**Uterine Activity**:

- Regular contractions, but no **more than 5 contractions in a 10-minute period**.
- Each contraction should last **less than 90 seconds** and have at least **60 seconds of relaxation** between contractions.

2. Abnormal Fetal Heart Rate Patterns:

•**Absent Baseline Variability**:

- Little or no fluctuation in FHR.
- Associated with **fetal distress** or **hypoxia**.
- May be accompanied by **recurrent late decelerations** or **variable decelerations**.

•**Fetal Bradycardia**:

- **FHR less than 110 beats/min** for **10 minutes or longer**.
- Can result from **fetal hypoxia**, **maternal hypotension**, or **prolonged umbilical cord compression**.
- **Immediate intervention** is required, especially if accompanied by a loss of variability or decelerations.

•**Fetal Tachycardia**:

- **FHR greater than 160 beats/min** lasting for **2 to 10 minutes** or longer.
- Can be caused by **maternal fever**, **dehydration**, or **infection**.
- Requires monitoring for signs of **fetal distress**.

•**Late Decelerations**:

- **Decrease in FHR** begins **after contraction starts** and **persists after contraction is over**.
- Indicates **uteroplacental insufficiency** or **fetal hypoxia**.
- **Immediate intervention** is required.

•**Variable Decelerations**:

- **Abrupt FHR drop** to **less than 60 beats/min**, lasting **60 seconds or more**.
- **Prolonged return to baseline**.
- Typically caused by **cord compression**.
- May resolve with **maternal repositioning** but requires continued monitoring.

3. Abnormal Uterine Activity:

•**More than 5 contractions in a 10-minute period**.

•**Contractions lasting longer than 90 seconds**.

•**Less than 60 seconds relaxation** between contractions.

•These patterns may **reduce fetal oxygenation** and require intervention.

Summary:

•**Normal FHR** (110-160 bpm) and **moderate variability** indicate a healthy fetus.

•**Abnormal FHR patterns**, such as **bradycardia**, **tachycardia**, **decreased variability**, or **late/variable decelerations**, can indicate **fetal distress** or **hypoxia**, and necessitate **immediate intervention**.

•**Abnormal uterine activity** (excessive contractions, long durations, short relaxation times) can impede **fetal oxygenation** and requires careful monitoring.

Categories of Fetal Heart Tracings

Fetal heart rate patterns are classified into three categories to assess fetal well-being and guide intervention:

Category 1 (Normal)

- **FHR**: 110–160 beats/min.
- **Baseline Variability**: Moderate variability (6–25 beats/min).
- **Decelerations**: No late or variable decelerations.
- **Uterine Activity**: Normal contraction pattern.

Interpretation: The fetal heart rate is reassuring, and the fetus is likely well-oxygenated. No intervention is needed unless other clinical concerns arise.

Category 2 (Indeterminate)

- **FHR**: Occasional variability or changes that are not clearly abnormal.
- **Variability**: Could be minimal or absent variability.
- **Decelerations**: Occasional late or variable decelerations.
- **Uterine Activity**: May include tachysystole (more than 5 contractions in 10 minutes), with contractions lasting longer than 90 seconds and less than 60 seconds relaxation between them.

Interpretation: This category requires **close monitoring** and **prompt intervention**. The healthcare provider may need to address issues such as maternal position, oxygenation, or medications to optimize fetal well-being.

Category 3 (Abnormal)

•**FHR**: Bradycardia (< 110 beats/min) or tachycardia (> 160 beats/min).

•**Variability**: Absent variability (less than 6 beats/min), with or without decelerations.

•**Decelerations**: Recurrent late or variable decelerations, or prolonged decelerations.

•**Uterine Activity**: Tachysystole (more than 5 contractions in 10 minutes) or abnormal contraction pattern.

Interpretation: This is **a concerning fetal heart tracing** that indicates **fetal hypoxia** or **fetal distress**. **Immediate intervention** is required, which may include repositioning the mother, administering oxygen, discontinuing oxytocin, or preparing for more intensive interventions like emergency delivery.

Tachysystole (Excessive Uterine Activity)

•**Definition**: More than 5 contractions within a 10-minute period, with contractions lasting longer than 90 seconds and relaxation periods of less than 60 seconds between contractions.

•**Intervention**: Tachysystole must be reported immediately. Corrective actions, such as **position change**, **oxygen administration**, or adjusting **medications** (e.g., stopping oxytocin), may be necessary.

Summary of Categories:

•**Category 1**: Normal, no intervention needed.

•**Category 2**: Indeterminate, requires **close monitoring** and **prompt intervention**.

•**Category 3**: Abnormal, requires **immediate intervention**.

Nonreassuring Fetal Heart Rate Patterns

Accelerations

•**Definition**: Accelerations are brief, abrupt increases in fetal heart rate of at least **15 beats/min** above the baseline, lasting **15 seconds to less than 2 minutes**.

•**Interpretation**: Accelerations are considered a **reassuring pattern**, indicating that the fetus is well oxygenated.

•**Causes**: Often occur with **fetal movement**, and are an important component of the **non-stress test (NST)**.

•**Prolonged Acceleration**: If an acceleration lasts from **2 to 10 minutes**, it is considered a **prolonged acceleration**. If it lasts more than **10 minutes**, it is considered a **baseline FHR change**.

Summary: Accelerations are a sign of a healthy, well-oxygenated fetus and are a reassuring feature of fetal well-being.

Early Decelerations

•**Definition**: Early decelerations are **gradual decreases** in fetal heart rate that occur during uterine contractions, usually no more than **40 beats/min** below the baseline.

•**Timing**: The **peak** of the deceleration coincides with the **peak** of the contraction and **returns to baseline by the end of the contraction**.

•**Pattern**: The pattern is **U-shaped**, beginning early with the contraction and ending near the end of the contraction.

•**Cause**: Early decelerations are typically caused by **fetal head compression**, which is a **normal and reassuring sign** indicating that the fetus is experiencing no significant stress.

Summary: Early decelerations are considered **reassuring** and indicate that the fetal head is being compressed, which is common during labor.

Variable Decelerations: Classification

Definition:

•**Variable decelerations** are abrupt drops in fetal heart rate of at least 15 beats per minute below the baseline, lasting between 15 seconds and 2 minutes.

•They do not follow a consistent pattern with contractions.

Causes:

•These decelerations are typically caused by **umbilical cord compression**, which can occur if the cord is wrapped around the fetal neck (nuchal cord) or if there is insufficient amniotic fluid to cushion the cord.

•They are not directly associated with **fetal hypoxia** (lack of oxygen) but are linked to **fetal respiratory acidosis** (a build-up of carbon dioxide in the blood due to restricted breathing).

Classification of Variable Decelerations:

1.Mild:

1. Duration: Less than 30 seconds
2. Drop: Less than 80 beats per minute below baseline

2.Moderate:

1. Duration: Greater than 80 beats per minute below baseline

3.Severe:

1. Duration: More than 70 beats per minute below baseline for more than 60 seconds

Each category helps assess the severity of the deceleration and the potential impact on fetal health.

FIG. 6.14 Variable decelerations, showing their typically abrupt onset and offset. They are caused by umbilical cord compression. The first response to this pattern is to reposition the mother to relieve pressure on the cord. (Courtesy Corometrics Medical Systems, Wallingford, CT. Redrawn with permission.)

Late Decelerations: Definition:

•**Late decelerations** of the fetal heart rate (FHR) are similar to early decelerations but differ in timing. They begin after the onset of a contraction and do not return to baseline FHR until after the contraction ends.

Causes:

•Late decelerations suggest **uteroplacental insufficiency**, meaning the placenta is not providing enough oxygen to the fetus.

•This pattern is considered **nonreassuring**, indicating potential distress for the fetus.

Clinical Implications:

•**Mild Late Decelerations** (less than 15 beats per minute below baseline): Can be a **central nervous system response** to fetal hypoxia.

•**Severe Late Decelerations** (more than 45 beats per minute below baseline): May result from **placental aging** (postmaturity) or **fetal heart depression**, which are ominous signs and indicate more severe distress.

Nonreassuring Signs:

•When late decelerations are accompanied by **decreased variability** and **absent accelerations**, the pattern becomes concerning and requires **immediate intervention** by a healthcare provider to address potential fetal distress.

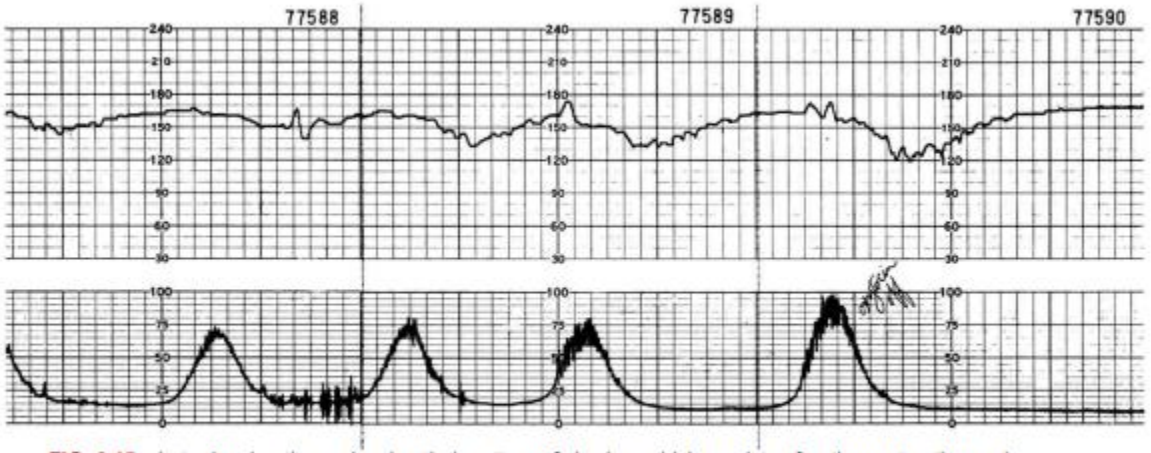


FIG. 6.15 Late decelerations, showing their pattern of slowing, which persists after the contraction ends. The usual cause is reduced blood flow from the placenta (uteroplacental insufficiency). Measures to correct this include repositioning the woman, giving oxygen, increasing nonmedicated intravenous fluid and stopping administration of oxytocin if it is being given, and administering drugs to reduce uterine contractions. (Courtesy Corometrics Medical Systems, Wallingford, CT. Redrawn with permission.)

Prolonged Decelerations: Definition:

•**Prolonged decelerations** refer to a sudden drop in fetal heart rate (FHR) of at least 15 beats per minute below the baseline that lasts longer than 60 seconds.

Causes:

•These decelerations typically result from an **interruption of oxygen supply** to the fetus, caused by factors such as:

- **Cord compression** or **cord prolapse** (when the cord is compressed or slips into the birth canal)
- **Maternal supine hypotension** (a decrease in blood pressure when the mother is lying on her back)
- **Regional anesthesia** (such as an epidural block)

•If a prolonged deceleration lasts longer than 10 minutes, it may be considered a change in the **baseline heart rate**.

Recurrent vs. Intermittent Decelerations

1.Recurrent Decelerations:

1. Occur in **more than 50%** of uterine contractions over a 20-minute period.
2. More concerning due to their frequency, indicating possible fetal distress or a more significant interruption to oxygen supply.

2.Intermittent Decelerations:

1. Occur in **less than 50%** of uterine contractions within a 20-minute period.
2. Less concerning than recurrent decelerations, but still require monitoring to ensure the fetus is not under distress.

These deceleration types help clinicians assess fetal health and guide necessary interventions for optimal outcomes.

Sinusoidal Pattern:

Definition:

•A **sinusoidal pattern** is a specific fetal heart rate (FHR) pattern characterized by a smooth, wavelike appearance or undulating pattern.

•This pattern typically recurs every **3 to 5 minutes** and persists for at least **20 minutes**.

Causes:

•The sinusoidal pattern may be caused by:

- **Fetal response to maternal medications** administered during labor, such as **meperidine (Demerol)** or **butorphanol (Stadol)**.
- **Fetal anemia**, where the fetus does not have enough red blood cells to carry adequate oxygen.

This pattern is concerning as it can indicate fetal distress, and its presence often requires further evaluation and clinical intervention.

Nursing Response to Monitor Patterns of FHR Changes

1. Change the Mother's Position:

•**Position changes** are often the first intervention to address fetal heart rate (FHR) changes. This helps relieve pressure on the umbilical cord and improves blood flow through it, potentially restoring a normal FHR pattern.

2. Common Position Changes:

•**Left Side-Lying Position:**

- Turning the mother to her **left side** can help improve circulation, increase uterine blood flow, and relieve compression on the umbilical cord. This is the most commonly used position for stabilizing FHR patterns.

•**Alternative Positions:**

- If the side-lying position does not restore a reassuring FHR pattern, other positions may be tried, such as:
  - **Knee-Chest Position**: Helps shift the uterus off the major blood vessels.
  - **Trendelenburg Position (Head-Down)**: Involves positioning the mother with her head lower than her chest, which may help increase placental blood flow.

By trying different positions, the nurse aims to optimize maternal and fetal oxygenation, monitor FHR changes, and assess the effectiveness of the interventions.

Table 6.3

Fetal Heart Rate Categories and Nursing Care

Category	Fetal heart rate tracings	Nursing responsibilities
I	Normal baseline rate and variability (no late decelerations)	Provide routine labor care.
II	Variable (other than listed in Category I)	Provide close observation and documentation.
III	Abnormal (e.g., absent baseline variability, recurrent late decelerations)	Prompt interventions are indicated to have a positive outcome for the woman and fetus.

Purpose of FHR Monitoring:

The primary purpose of **fetal heart rate (FHR) monitoring** is to:

- **Assess the adequacy of oxygenation** and **uterine activity** during labor.
- **Detect potential complications** that could disrupt the fetus's oxygen supply, helping to prevent **hypoxic injury** to the fetus.

Key Points:

- **FHR patterns are not diagnostic** on their own, as they can have various possible causes.
- FHR patterns are used to **identify complications** such as **uteroplacental insufficiency**, **cord compression**, or other issues that may compromise fetal oxygenation.
- Monitoring helps to provide early detection of problems, allowing for timely intervention and ensuring the safety of both the mother and fetus during labor.

Corrective Actions for FHR Category 2:

When fetal heart rate (FHR) patterns are classified as **Category 2**, corrective actions are needed to restore oxygenation to the fetus. These interventions include:

1.Position Changes:

1. **Knee-Chest Position**: To relieve pressure on the umbilical cord, improving fetal oxygenation.
2. **Left-Lateral Position**: To relieve pressure on the **inferior vena cava**, improving blood flow to the uterus and placenta.

2.Administer Oxygen:

1. Provide **oxygen via facemask** at **10 L/min** for **30 minutes** to enhance fetal oxygenation.

3.Administer IV Fluids:

1. Administer **IV fluids** (such as saline solution) to improve:
    1. **Cardiac output**
    2. **Circulatory volume**
    3. **Uteroplacental perfusion**
2. **Monitor for fluid volume overload** and **pulmonary edema** as potential side effects.

4.Correct Hypotension:

1. **Hypotension** may result from dehydration or the effects of **analgesic drugs**. Correcting this can help restore adequate blood flow to the uterus and placenta.

1.Reduce Uterine Activity:

1. **Excessive uterine activity (tachysystole)** is defined as more than **five contractions in 10 minutes**, averaged over 30 minutes. This can reduce uteroplacental blood flow.
2. **Measures to reduce uterine activity** may include stopping or adjusting medications used for labor induction or augmentation.

These actions aim to improve fetal oxygenation and uterine perfusion, addressing any potential causes of fetal distress. Monitoring and prompt intervention can significantly improve maternal and fetal outcomes during labor.

Additional Interventions for FHR Category 2:

To further address **Category 2** FHR patterns and improve fetal oxygenation, the following interventions may be prescribed by the healthcare provider:

1.Discontinue Oxytocin or Administer Tocolytic Drugs:

1. **Oxytocin** (used for labor induction or augmentation) may be **discontinued** if excessive uterine activity (tachysystole) is contributing to fetal distress.
2. **Tocolytic drugs** may be administered to decrease uterine activity and prevent excessive contractions, improving uteroplacental blood flow.

2.Amnioinfusion:

1. **Amnioinfusion** involves **instilling a saline solution** via catheter into the **uterine cavity** to restore amniotic fluid volume.
2. This helps to **relieve umbilical cord compression**, a potential cause of interruptions in fetal oxygenation, thereby improving fetal well-being.

Altered Pushing and Breathing Techniques in the Second Stage of Labor:

To reduce fetal stress during the second stage of labor and support optimal oxygenation:

1.Switch from Valsalva to Open-Glottis Pushing:

1. **Valsalva maneuver** (holding the breath and pushing) can increase intra-abdominal pressure, potentially reducing placental blood flow. **Open-glottis pushing**, where the mother exhales during pushing, is gentler and allows for better oxygenation.

1.Fewer Pushing Efforts:

1. **Fewer pushing efforts** during contractions reduce maternal strain and improve fetal oxygenation by avoiding prolonged periods of increased intra-abdominal pressure.

2.Push with Every Other Contraction:

1. Instead of pushing with every contraction, pushing with **every other contraction** can help reduce excessive strain and maintain better uterine and placental perfusion.

3.Push Only with the Urge to Push:

1. Encouraging the mother to push **only when the urge to push is felt** ensures more effective pushing and reduces unnecessary strain, preventing excessive uterine pressure and promoting fetal oxygenation.

These interventions are designed to optimize both maternal and fetal health by reducing uterine strain, improving oxygenation, and mitigating any factors that could compromise the fetus during labor.

Inspection of Amniotic Fluid: Summary

After the **membranes rupture** (either spontaneously or artificially through **amniotomy**), the amniotic fluid is carefully assessed for its **color, odor, and amount**. This inspection provides important clues about fetal well-being and potential complications.

1.Color of Amniotic Fluid:

1. **Normal:** Clear, with possibly small flecks of **white vernix** (a protective skin coating).
2. **Green-Stained Fluid:** Indicates that the fetus may have passed **meconium** (the first stool) before birth. This situation is associated with **fetal compromise** and increases the risk of **respiratory problems** at birth.
3. **Cloudy or Yellow Fluid:** Suggests the presence of an **infection**, which may have an **offensive odor**. This requires **immediate reporting** and further investigation.

2.Amount of Amniotic Fluid:

1. **Scant:** A small amount, typically just a trickle of fluid.
2. **Moderate:** Approximately **500 mL** of fluid.
3. **Large: 1000 mL** or more of fluid.

3.Odor of Amniotic Fluid:

1. A **normal odor** should not be offensive.
2. An **offensive odor** could indicate an **infection** and must be reported immediately for proper management.

4.Fetal Heart Rate (FHR) Monitoring After Membrane Rupture:

1. The FHR should be assessed for at least **1 full minute** after the membranes rupture to check for any signs of fetal distress.
2. If there is **marked slowing** of the FHR or **variable decelerations**, this could suggest that the **fetal umbilical cord** has descended with the fluid and is being **compressed**, which may require intervention.

Nitrazine Test and Fern Test for Ruptured Membranes

Both the **Nitrazine Test** and the **Fern Test** are used to confirm whether a woman's membranes have ruptured and to determine if the fluid leaking from the vagina is amniotic fluid.

1. Nitrazine Test

- **Purpose**: To determine the presence of amniotic fluid in vaginal secretions.
- **Procedure**:
  - **Place a piece of nitrazine paper** into the fluid from the vagina.
  - **Read the color** on the strip of paper:
    - **Blue-green or dark blue**: Indicates an alkaline pH, suggesting that the fluid is likely amniotic fluid.
    - **Yellow to yellow-green**: Indicates an acidic pH, suggesting the fluid is most likely urine.
- **Documentation and Care**:
  - **Document and report results**.
  - **Offer perineal care**.
  - **Remove gloves and wash hands**.
  - **Document presence of bloody show**, as it may alter the accuracy of the results.

2. Fern Test

•**Purpose**: To confirm the presence of amniotic fluid.

•**Procedure**:

- A **sample of the fluid** is taken from the vagina and spread onto a microscope slide.
- Allow the sample to **dry**.
- View the dried sample under a microscope.
- **Crystals** in the fluid will appear, forming patterns resembling **tiny fern leaves**, which confirm that the fluid is amniotic.

Both tests are commonly used to assess if a woman's membranes have ruptured, helping determine whether the leaking fluid is amniotic or another substance, such as urine. These tests are often performed when the diagnosis is unclear based on clinical symptoms alone.

Intrapartum Monitoring of the Woman

1. Vital Signs:

•**Temperature**:

- **Frequency**: Check every **4 hours** or every **2 hours** if it is elevated or if membranes have ruptured (frequency varies by facility).
- **Action**: A temperature of **38°C (100.4°F) or higher** should be reported. Elevated temperature may indicate infection, and amniotic fluid should be assessed for signs of infection.
- **Management**: If a fever is present, **IV antibiotics** are often given to prevent group B streptococcus infection in the infant.

•**Pulse, Blood Pressure, and Respirations**:

- **Frequency**: Assess every **hour**.
- **Maternal Hypotension**: Low blood pressure (especially **systolic pressure < 90 mm Hg**) can decrease blood flow to the placenta.
- **Maternal Hypertension**: High blood pressure (greater than **140/90 mm Hg**) can also affect placental blood flow and fetal well-being.

2. Contractions:

- **Assessment Methods**:
  - **Palpation**: Placing the entire hand lightly on the uterine fundus to assess the strength, frequency, and duration of contractions.
  - **Electronic Fetal Monitoring (EFM)**: Provides continuous data on contraction frequency and fetal heart rate.
- **Frequency**:
  - Normal contractions occur **fewer than five contractions in a 10-minute period** for at least 30 minutes.
- **Palpation Tips**:
  - Some women may have **sensitive abdominal skin** (especially around the umbilicus), so the hand should be placed **lightly** on the fundus to avoid discomfort.

3. Labor Progress:

- **Cervical Dilation and Effacement**: Regular assessments should be made to evaluate the progress of cervical dilation and effacement.
- **Fetal Position and Station**: The fetal position, station, and engagement are monitored regularly to ensure the fetus is descending appropriately through the birth canal.
- **Membranes**: Check for rupture of membranes, including the presence of amniotic fluid. A **Nitrazine or Fern test** may be used to confirm the rupture of membranes.

4. Intake and Output:

•**Fluid Balance**: Monitor the woman's intake and output (e.g., IV fluids, oral fluids, urination) to ensure proper hydration and prevent complications such as fluid overload or dehydration.

•**Urine Output**: Regular assessment of urine output to ensure kidney function and monitor for signs of preeclampsia (e.g., oliguria).

5. Response to Labor:

•**Pain Management**: Assess the effectiveness of pain relief methods (e.g., epidural anesthesia, analgesics, breathing techniques).

•**Emotional Support**: Offer emotional support and reassurance to help the woman cope with the physical and emotional demands of labor.

•**Physical Comfort**: Monitor for signs of discomfort and adjust positioning, provide comfort measures, and suggest relaxation techniques.

Key Points:

•**Vital signs** (temperature, pulse, blood pressure, and respirations) are checked regularly to detect early signs of complications.

•**Contractions** should be assessed to ensure they are within normal limits.

•**Labor progress** (cervical dilation, fetal descent) and **intake/output** are continuously monitored.

•**Response to labor** includes evaluating pain relief and emotional well-being.

Intrapartum monitoring is crucial for preventing complications and ensuring the safety of both the mother and the fetus during labor.

FIG. 6.16 The nurse helps the mother maintain control and use breathing techniques during active labor. The use of an electronic monitor for fetal heart rate and contractions is *not* a substitute for personal hands-on care during labor. Note that the nurse places the entire hand on the fundus to determine the intensity of the contraction. (Courtesy Pat Spier, RN-C.)

Response to Labor

During labor, the nurse plays a key role in assessing the woman's responses and providing support, ensuring both physical and emotional well-being throughout the process. nursing interventions:

1. Breathing and Relaxation Techniques:

•**Assessment**: The nurse observes the woman's use of breathing and relaxation techniques, such as slow, deep breathing or patterned breathing, to manage pain and anxiety. Effective techniques help the woman stay calm, relaxed, and focused.

•**Support**: The nurse provides encouragement and coaching as needed, guiding the woman through her breathing techniques, reminding her to stay relaxed, and offering comfort measures.

2. Coping with Labor:

•**Nonverbal Indicators**: The nurse monitors the woman for nonverbal behaviors that may indicate difficulty coping with labor, including:

- **Tense body posture**: Indicates anxiety, pain, or discomfort.
- **Thrashing or restless movements in bed**: May suggest a lack of coping or increased discomfort.

•**Interventions**: The nurse can offer additional comfort measures such as repositioning, offering fluids, or adjusting the environment (e.g., dimming lights, providing quiet). If needed, the nurse will also assess whether the woman may require additional pain relief.

3. Request for Pain Relief:

•**Notification of Healthcare Provider**: If the woman requests more intense pain relief, such as an **epidural analgesia**, the nurse promptly informs the healthcare provider to evaluate the situation and determine whether this intervention is appropriate.

Safety Alert! – Rapid Progress of Labor

Signs that suggest **rapid labor progression** require immediate attention. These include:

- **Marked Increase in Bloody Show**: A significant increase in bloody show may indicate that labor is progressing rapidly.
- **Perineal Bulging**: As the fetal head descends, the perineum may bulge due to the pressure, signaling that the woman may be in the second stage of labor and delivery is imminent.

These signs need to be carefully observed by the nurse, who should prepare for potential delivery and alert the healthcare provider if rapid progression is suspected.

Physiological Changes in Labor and Nursing Interventions

The physiological changes that occur during labor require careful monitoring and corresponding nursing interventions to ensure both maternal and fetal well-being:

1. Cardiovascular System:

•**Physiological Changes**:

- **Increased cardiac output**: Cardiac output rises due to increased blood volume and uterine contractions.
- **Decreased blood pressure**: Especially during contractions, the systolic pressure may drop temporarily.

•**Nursing Interventions**:

- Monitor blood pressure regularly, especially if the woman is at risk for hypotension (e.g., epidural anesthesia).
- Encourage side-lying positions to optimize blood flow to the uterus and placenta.

2. Respiratory System:

•**Physiological Changes**:

- **Increased respiratory rate**: Due to increased metabolic demand and pain.
- **Possible hyperventilation**: Associated with anxiety or pain, leading to respiratory alkalosis.

•**Nursing Interventions**:

- Offer breathing techniques to help prevent hyperventilation.
- Ensure proper oxygenation, administering supplemental oxygen if needed.

3. Renal System:

•**Physiological Changes**:

- **Increased renal perfusion**: Enhanced kidney function during labor can cause increased urination.
- **Urine retention**: Due to pain or pressure on the bladder.

•**Nursing Interventions**:

- Monitor urine output to ensure adequate hydration.
- Encourage the woman to void regularly or consider catheterization if necessary.

4. Gastrointestinal System:

•**Physiological Changes**:

- **Reduced gastrointestinal motility**: Due to labor hormones and stress.
- **Decreased appetite**: Common during labor.

•**Nursing Interventions**:

- Offer light, easily digestible snacks or fluids (as per facility policy).
- Monitor for signs of nausea or vomiting, and provide antiemetics if needed.

5. Endocrine and Hormonal Changes:

•**Physiological Changes**:

- **Increased levels of prostaglandins**: Stimulates uterine contractions and cervical dilation.
- **Oxytocin release**: Stimulates uterine contractions and helps the cervix dilate.

•**Nursing Interventions**:

- Monitor uterine contractions to ensure they are effective and not excessive.
- Assess cervical dilation and effacement regularly.

6. Musculoskeletal System:

•**Physiological Changes**:

- **Increased pressure on the pelvic muscles**: As the baby descends, pressure on the pelvis and perineum increases, causing discomfort and possible muscle fatigue.

•**Nursing Interventions**:

- Encourage frequent position changes to relieve pressure and enhance comfort.
- Provide support for physical exhaustion and encourage rest during early labor.

7. Psychological Responses:

•**Physiological Changes**:

- **Increased anxiety and fear**: Common, especially during the early stages of labor.
- **Emotional rollercoaster**: Many women experience feelings of fear, excitement, or vulnerability.

•**Nursing Interventions**:

- Offer continuous emotional support and reassurance.
- Provide information about the stages of labor and what to expect, helping to reduce fear of the unknown.

In summary, **monitoring the woman's physiological changes during labor** and providing **appropriate nursing interventions** are crucial for supporting the laboring woman and ensuring the safety of both the mother and the fetus. Prompt identification of any signs of **rapid labor progression** or complications allows for timely interventions and helps facilitate a positive birth experience.

Helping the Woman Cope with Labor: Summary

1.Understanding the Physiology of Labor:

1. Nurse must understand normal labor processes to recognize abnormalities and anticipate complications.

2.Data Collection and Interpretation:

1. **Fetal Heart Rate (FHR)**: Monitor responses to uterine contractions.
2. **Maternal Physical Responses**: Assess vital signs, contraction duration, and intensity.
3. **Psychological Responses**: Observe signs of anxiety and tension.

3.Communication and Collaboration:

1. Maintain open communication with the healthcare provider to inform about labor progress and any abnormalities.

4.Comfort and Hygiene Measures:

1. Offer hygiene care (e.g., wiping face, adjusting position).
2. Provide emotional comfort through reassurance and encouragement.

5.Coping Strategies:

1. **Comforting**: Use techniques like massage and counterpressure.
2. **Positioning**: Assist with changing positions (side-lying, hands-and-knees).
3. **Teaching**: Explain labor stages, breathing techniques, and relaxation methods.
4. **Encouragement**: Provide positive reinforcement to boost confidence.

6-Care of the Woman's Partner:

1. Involve the partner by educating them on supporting the woman.
2. Provide emotional support and reassurance to the partner.

7- Psychological Support:

1. Manage anxiety with relaxation techniques (visualization, deep breathing).
2. Offer distractions and help the woman focus during labor.

8-Adapting to the Woman's Needs:

1. Continuously reassess the woman's coping strategies and adjust care as labor progresses.

9- Recognizing the Importance of Emotional Well-Being:

1. Acknowledge the woman's emotional responses and validate her feelings.
2. Provide reassurance that feeling overwhelmed is normal.

10 -Overall Approach:

1. Provide continuous support, a calm environment, and interventions to promote comfort and a positive labor experience.

Routine Interventions in Childbirth

Childbirth is a natural process, but modern medicine often introduces various interventions to ensure the safety and well-being of the mother and infant. Common routine interventions in hospital settings include:

1. **Limited Oral Intake**: Restrictions on food and drink during labor for medical reasons, such as preventing aspiration during anesthesia.
2. **IV Fluids**: Administered to maintain hydration, manage electrolytes, or provide medications during labor.
3. **Bed Rest**: Often prescribed for maternal and fetal monitoring, though it can limit the woman's mobility.
4. **External or Internal Fetal Monitoring**: Monitors the fetal heart rate and uterine contractions to assess fetal well-being.
5. **Separation of Mother and Infant**: Sometimes occurs immediately after birth for medical observation or procedures.
6. **Elective Cesarean Sections**: Performed for medical reasons or maternal choice, often without the presence of complications.

Lamaze Institute's Six Basic Principles for Normal Birth

The Lamaze Institute promotes a more natural approach to labor and birth, advocating for practices that support the mother's autonomy and minimize unnecessary medical interventions.

The following six principles serve as a guide for maternity care :

1. **Labor Should Begin on Its Own**: The body's natural labor process should not be rushed or induced unless medically necessary.
2. **The Woman Should Have Freedom of Movement**: Women should have the ability to move freely during labor, finding positions that are comfortable and conducive to labor progress.
3. **The Woman Should Have a Birth Support Person or Doula**: Continuous support from a partner, doula, or other support person is encouraged to help manage pain, anxiety, and provide emotional reassurance.
4. **No Interventions Should Be Performed Simply Because They Are Routine**: Procedures like epidurals, induction, or cesarean sections should only be performed if medically necessary, not just as standard practice.
5. **The Woman Should Be in Nonsupine Positions**: Avoiding lying flat on the back (supine position) during labor, as this position can limit blood flow to the placenta and hinder labor progression.
6. **The Woman Should Not Be Separated from the Infant**: Immediate skin-to-skin contact and bonding are encouraged to promote bonding, breastfeeding, and infant well-being.

Nurse's Role in Supporting Normal Birth

The nurse’s role in promoting a more natural childbirth experience involves continuous labor support that is **hands-on** and **in-person**. Rather than relying solely on external monitoring or medical interventions, nurses are encouraged to provide physical, emotional, and educational support directly to the woman in labor. This can include:

- **Physical support**: Assisting with positioning, offering comfort measures (e.g., massage, breathing techniques), and encouraging mobility.
- **Emotional support**: Providing reassurance, encouragement, and validation of the woman’s experience.
- **Educational support**: Explaining labor processes and options available, helping the woman make informed decisions about her care.

By emphasizing these principles and providing continuous, personalized support, the nurse helps create a labor experience that aligns with the woman’s desires and the natural process of childbirth.

Labor Support: Summary

1.Environmental Comfort:

1. Playing familiar music from home can create a calming atmosphere, reducing anxiety and stress during labor.
2. Adjusting the labor room environment (lighting, noise, temperature) to the woman's preferences enhances comfort.

2.Upright Positioning:

1. Maintaining an upright position encourages fetal descent and can shorten the first stage of labor.
2. **Comfortable positions** include sitting upright on a rocking chair or birthing ball to utilize gravity for labor progression.

3.Towel-Pull Technique:

1. The woman pulls on a towel secured to the bed during contractions, engaging abdominal muscles to aid in expulsion and improve pushing efforts.

4.Lateral Sims Position:

1. The woman lies on her side in the lateral Sims position to rest and avoid pressure on the sacrum, promoting comfort and uterine blood flow.

By using these strategies, nurses can support comfort, encourage labor progression, and create a calm environment to enhance the woman's experience during labor.

Body Support and Nonpharmacological Pain Relief in Labor:

1- Body Support:

1. **Pillows**: Used to support the body and prevent back strain, particularly when lying on the side.
2. **Anterior Rotation of the Fetus**: Lying on the side of the fetal spine can encourage the fetus's anterior rotation, helping with labor progress.
3. **Lunge**: The mother places one foot on a chair, turns the leg outward, and holds the position for 3 seconds to help rotate the fetus from an occiput posterior (OP) position. This maneuver increases pelvic space for fetal rotation.
4. **Squatting**: Squatting during contractions increases the pelvic diameter, which helps facilitate fetal rotation and descent.

2- Nonpharmacological Pain Relief Techniques:

1. **Touch**: Gentle touch, such as effleurage or massage, helps soothe and reduce pain.
2. **Back Pressure**: Applying pressure to the lower back can help alleviate back pain.
3. **Heat or Cold**: Heat or cold applications can relieve discomfort during labor.
4. **Relaxation Techniques**: Breathing exercises, visualization, and other relaxation methods can help manage pain and stress.
5. **Walking or Resting**: The woman's comfort should guide whether she prefers to walk or rest during labor.

3- IV Fluids:

1. **5% Dextrose**: Administering 5% dextrose IV fluids has been shown to shorten labor compared to saline.

4- Emotional Support:

1. Continuous **emotional support** through encouragement, clear communication about progress, and promoting positive thoughts is essential for helping the woman cope with labor and feel empowered.

By offering various physical supports, nonpharmacological pain relief methods, and emotional encouragement, the nurse can help facilitate a more comfortable and positive labor experience for the woman.

Teaching During Labor: Summary

1.Ongoing Teaching: The nurse continuously educates the laboring woman and her partner, adapting techniques from childbirth classes to the needs of labor.

2.Position and Technique Adjustment: Women are encouraged to try new positions or breathing techniques for a few contractions before deciding if they are effective.

3.Managing Expectations: Women may feel discouraged at 5 cm dilation, thinking they are halfway through labor. However, 5 cm often represents two-thirds of the process, as labor typically progresses faster after this point. Support and reassurance are essential during this stage.

The nurse's role includes providing guidance, adjusting techniques, and offering emotional support to help the woman feel confident and encouraged throughout labor.

Pushing Techniques and Support During Labor

1.Avoiding Early Pushing:

1. The nurse helps the woman avoid pushing before full cervical dilation by teaching her to blow out in short puffs when the urge to push is strong. Early pushing can lead to maternal exhaustion and fetal hypoxia, slowing labor progress.

2.Effective Pushing Techniques:

1. Once the cervix is fully dilated, Stage 2 of labor begins, and the nurse supports the woman in effective pushing techniques.
2. The woman takes a deep breath, exhales at the start of a contraction, and then takes another deep breath to push with her abdominal muscles while exhaling.

3.Managing the Valsalva Maneuver:

1. The nurse ensures the woman avoids prolonged breath-holding while pushing (Valsalva maneuver), as it can impair fetal blood circulation.

4.Pushing Duration and Position:

1. The woman should push for about 4 to 6 seconds per contraction.
2. If in a semisitting position, she can pull back on her knees with her hands behind her thighs or use handholds on the bed to aid the pushing effort.

By supporting proper pushing techniques and encouraging effective strategies, the nurse helps facilitate the progress of labor while minimizing risks to both the mother and fetus.

Laboring Down and Supportive Care During Labor

1.Laboring Down:

1. **Definition**: Laboring down refers to allowing passive fetal descent during the second stage of labor before actively encouraging pushing.
2. **Use**: This intervention is often used in facilities with privately insured women, especially for those with induced labor or epidural anesthesia, to increase the likelihood of a vaginal delivery.
3. **Impact**: While laboring down may extend the second stage of labor, it may be beneficial in some cases.

2.Encouragement and Emotional Support:

1. Encouragement is a powerful tool for helping the woman summon inner strength and stay motivated during labor.
2. The nurse provides positive reinforcement after vaginal exams by updating the woman on cervical changes and fetal descent.
3. Praise is given when the woman effectively uses coping techniques.
4. **Partner Support**: The woman's partner also needs encouragement, as labor coaching is demanding.
5. Some women may opt for a **doula**, whose sole role is to provide emotional and physical support throughout labor.

Laboring down, combined with consistent emotional support and encouragement, can help the woman feel empowered and improve her ability to cope during labor.

Patient Teaching for the Father or Partner

1.Understanding Labor Pains:

1. The father or partner should be taught how labor pains affect the woman's behavior and attitude, helping them to understand her emotional and physical responses during labor.

2.Adapting to the Woman’s Behavior:

1. The partner should learn how to adapt their responses to the woman’s behavior, offering support and reassurance as she navigates labor.

3.Emotional Responses:

1. The partner should be prepared for their own emotional responses as the woman may become introverted or negative at times, especially as labor progresses.

4.Epidural Analgesia:

1. The partner should be informed about the effects of epidural analgesia, including how it may alter the woman's experience of pain and movement, and what changes to expect in her condition during labor.

Providing this education helps the partner feel more prepared, reducing stress and enhancing their ability to support the woman throughout labor.

Stages and Phases of Labor:

Labor is divided into **four stages**:

1. **First Stage**: Early and active labor, where the cervix dilates and effaces.
2. **Second Stage**: The woman actively pushes as the fetus descends through the birth canal.
3. **Third Stage**: Delivery of the placenta.
4. **Fourth Stage**: Recovery after birth, when the woman's body stabilizes and adjusts.

1.Behavioral and Physical Characteristics:

1. During each stage, women display typical **physical** and **behavioral characteristics** (e.g., pain, restlessness, focus, urge to push).
2. Women who receive **epidural analgesia** may not exhibit these typical signs and sensations, as the epidural can reduce pain and sensations associated with labor.

2.Individual Variation:

1. The nurse should recognize that every woman experiences labor differently. Responses to each stage or phase can vary based on pain tolerance, emotional state, and individual circumstances.

Understanding these stages and individual responses helps the nurse provide personalized care and support throughout labor.

Nursing Care During Birth: Preparation for Delivery:

1. **Primigravida (First-time mother)**: Delivery preparation begins when about **3-4 cm of the fetal head** is visible at the vaginal opening (crowning).
2. **Multiparous Women (Experienced mother)**: They are usually prepared for delivery when the **cervix is fully dilated**, but before crowning occurs.
3. **Transfer to Delivery Room**: If a transfer to a delivery room is needed (instead of a labor-delivery-recovery room), the woman should be moved early to avoid a last-minute rush.

1.Epidural Anesthesia Considerations:

1. If the woman has an **epidural**, which can limit leg sensation and movement, **padded stirrups** may be used for support during delivery.
2. The nurse must monitor for **excess pressure behind the knees**, which can increase the risk of **thrombophlebitis** (blood clots).

2.Positions for Birth:

1. Women can give birth in **various positions**, and while the traditional **semisitting position with foot supports** provides good access to the perineum, it may not always be the most comfortable or effective.
2. Alternative positions include **side-lying**, **squatting**, and **standing**, depending on what is most comfortable and effective for the woman.

By preparing the woman appropriately for delivery, considering epidural effects, and supporting her preferred birth position, the nurse helps facilitate a smooth and comfortable delivery process.

Nursing Responsibilities During Delivery:

Preparation:

1. The nurse prepares **delivery instruments** and **infant equipment** needed for the birth.
2. **Perineal scrub preparation** is performed to ensure a sterile environment for delivery.

1.Medication Administration:

1. The nurse administers **drugs to the mother or infant** as ordered, ensuring proper dosage and timing.

2.Initial Care for the Infant:

1. The nurse provides immediate care to the newborn, including:
    1. **Suctioning** any secretions from the airway using a **bulb syringe**.
    2. **Drying the infant's skin** to stimulate warmth and alertness.
    3. Placing the infant in a **radiant warmer** to maintain body temperature.

3.Apgar Score Assessment:

1. The nurse **assesses the infant's Apgar score** at 1 and 5 minutes post-birth to evaluate the newborn's physical condition.

4.Placenta Examination:

1. The nurse **examines the placenta** to ensure it is **intact** and records if it was expelled using the **Schultze** or **Duncan mechanism** (two different methods of placental expulsion).

These responsibilities ensure that both the mother and infant receive the appropriate care and monitoring during the critical moments of delivery.

• **Additional Nursing Responsibilities During Delivery:**

Placenta, Cord, and Insertion Site:

1. Any **abnormalities of the placenta, cord, or insertion site** should be promptly reported, as they may be linked to potential **fetal anomalies**.

1.Maternal Perineum Examination:

1. The nurse examines the **maternal perineum** for **lacerations** or **bleeding** to prevent complications and ensure proper healing.

2.Infant Assessment:

1. The nurse assesses the **infant for obvious abnormalities** immediately after birth.
2. Notes are made if the infant **stools** or **urinates**, as this may indicate proper functioning of the gastrointestinal and urinary systems.

3.Identification and Security:

4. The **mother and infant** are identified with **like-numbered identification bands** to ensure proper matching.
5. **Additional identification** may include **infant footprints** and the **mother's fingerprints** for security.
6. The **father or support person** usually receives a band as well for identification purposes.

7.Promoting Parent-Infant Bonding:

1. The nurse encourages **parent–infant bonding** by promoting initial interactions such as **holding** and **exploring** the infant, while ensuring the infant's **body temperature** is maintained.
2. The nurse observes for signs of bonding, such as **eye contact**, **fingertip or palm touch**, and **talking to the infant**—all of which contribute to positive bonding. These observations continue throughout the **postpartum period**.

- Preparing the delivery instruments and infant equipment (Fig. 6.20)

FIG. 6.20 The table contains the sterile instruments that the health care provider will use for delivery. The table is kept covered with a sterile sheet in the labor, delivery, and recovery room until it is ready for use.

- Doing the perineal scrub preparation (Fig. 6.21)

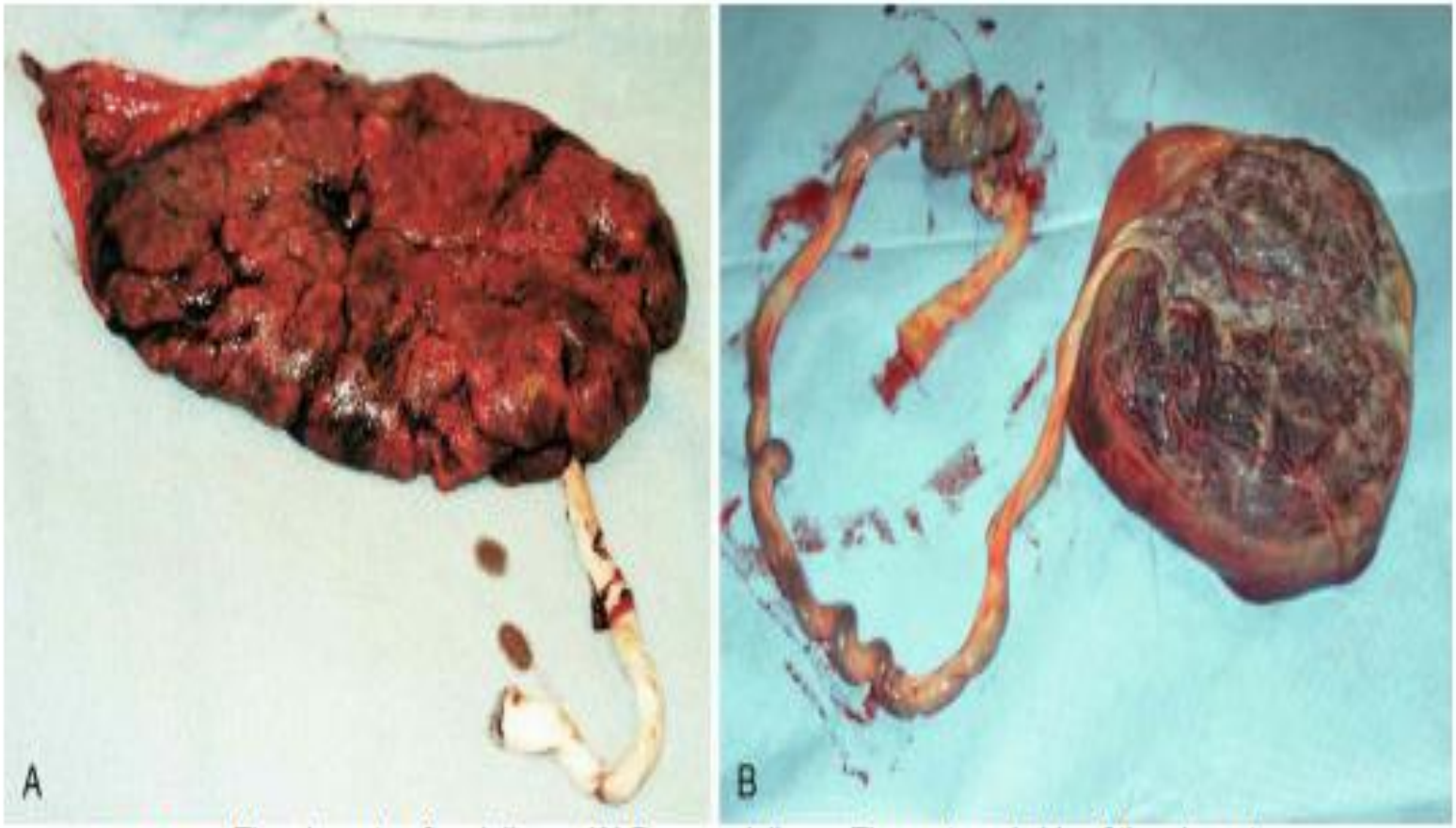


FIG. 6.22 The placenta after delivery. (A) Duncan delivery. The maternal side of the placenta, which is dull and rough, is delivered first. (B) Schultze delivery. The fetal side of the placenta, which is shiny and smooth, is delivered first. (Courtesy Pat Spier, RN-C.)

Immediate postpartum period:

the third and fourth stages of labor:

The third stage of labor is the expulsion of the placenta.

The nurse examines the placenta and monitors the woman's vital signs

The fourth stage of labor is the first 1 to 4 hours after birth of the placenta or until the mother is physiologically stable.

Nursing care during the fourth stage of labor includes the following general care:

- Identifying and preventing hemorrhage
- Evaluating and intervening for pain
- Observing bladder function and urine output
- Evaluating recovery from anesthesia
- Providing initial care to the newborn infant
- Promoting bonding and attachment between the infant and family

The Labor Process and Nursing Interventions

Nursing Care Immediately After Birth: Care of the Mother

Assessment Schedule:

- **Fourth Stage of Labor**:
  - Assess the mother **every 15 minutes for 1 hour**, **every 30 minutes during the second hour**, and **hourly thereafter** until transferred to the postpartum unit.
- After transfer to the postpartum unit, **routine assessments** are performed **every 4 to 8 hours**.

Assessment Areas During the Fourth Stage:

1. **Vital Signs**:
   1. **Temperature** may be taken hourly if normal.
2. **Skin Color**:
   1. Assess the mother's skin tone to detect any changes or issues.
3. **Uterine Fundus**:
   1. Assess the **location** and **firmness** of the uterine fundus to ensure proper contraction and prevent hemorrhage.
4. **Lochia**:
   1. Monitor the **amount** and **color** of **lochia** (postpartum vaginal discharge) to assess for abnormal bleeding or infection.
5. **Oxytocin Administration**:
   1. **Administer oxytocin** if needed to help contract the uterus and reduce the risk of hemorrhage.
6. **Pain Assessment**:
   1. Evaluate the **presence and location** of pain to address discomfort.

7- IV Infusion and Medications:

1. Monitor **IV infusion** and ensure any **medications** are administered as prescribed.

8- Bladder and Urine Output:

1. Check the **fullness of the bladder** or monitor **urine output** from a catheter.

9- Perineum (for vaginal birth):

1. Examine the **condition of the perineum** for any lacerations or signs of infection.

10- Dressing Condition (for cesarean birth or tubal ligation):

1. Assess the **condition of the dressing** for cesarean birth or tubal ligation to monitor for complications.

11- Sensation and Mobility (if epidural or spinal block used):

1. Evaluate the **level of sensation** and **ability to move lower extremities** if the woman had an epidural or spinal block during labor.

Observing for Hemorrhage and Bladder Distention:

Uterine Fundus Assessment:

- **Firmness**: The fundus should be firm to prevent excessive bleeding.
- **Height**: The fundus should be at or near the level of the **umbilicus**.
- **Position**: It should be **midline**; if displaced, it may indicate a full bladder or other issue.

•**Vaginal Bleeding**:

- The bleeding should be **dark red** (lochia rubra) and should **not saturate more than one pad per hour**.
- **Large clots** should not be passed.
- A **continuous trickle of bright red blood** suggests a **bleeding laceration**, which needs immediate attention.

•**Vital Signs**:

- **Pulse rate**, **blood pressure**, and **respirations** should be closely monitored.
- **Rising pulse** or **falling blood pressure** are signs of **shock**.

•**Temperature**:

- An **oral temperature** of **38°C (100.4°F) or higher** may indicate **infection**.
- It should be reported, especially if the woman is at higher risk for infection.

2. Observing for Bladder Distention:

•**Bladder Distention**:

- **Bladder distention** is common soon after birth due to the effects of **anesthesia**, **perineal trauma**, and **loss of fetal pressure against the bladder**.
- The woman may not feel the urge to urinate.

•**Signs of Full Bladder**:

- A **full bladder** can lead to the uterus being higher than expected and **displaced to one side**.
- A **full bladder** can inhibit uterine contraction and increase the risk of **hemorrhage**.

•**Intervention**:

- If the woman cannot urinate on her own, **catheterization** may be necessary to relieve bladder distention and prevent complications.

These assessments help ensure that the woman does not experience excessive blood loss and that any complications such as bladder distention or hemorrhage are identified and treated promptly.

Promoting Comfort:

1. Shaking Chills After Birth:

•**Shaking chills** are common post-birth, though the woman may not feel cold.

•**Warm blankets** are provided to enhance comfort and maintain warmth until the chills subside.

2. Maintaining Infant's Warmth:

•A **warm blanket** is also used to help keep the **newborn** warm while the parents spend time together.

3. Perineal Comfort:

•An **ice pack** may be applied to the mother's perineum to reduce **bruising** and **edema**.

•A glove filled with ice or **chemical cold packs** in perineal pads can be used.

- These cold packs reduce swelling but absorb less **lochia** than regular pads, so this should be factored into **bleeding assessments**.

•**Cold applications** are typically used for **12 hours** post-birth.

4. Warm Pack for Perineal Comfort:

•After the first **12 to 24 hours**, a **warm pack** can be applied to encourage **blood flow** to the area.

5. Infant Care During Recovery:

•The infant is generally kept with the mother unless complications arise.

•**Priority care** for the infant focuses on **respiratory function** and maintaining **body temperature**.

These comfort measures help promote the well-being of both mother and infant immediately after birth, while ensuring appropriate management of discomfort and potential complications.

Care of the Newborn Immediately After Delivery:

Care of the newborn is divided into three **transition phases** as the baby adapts to extrauterine life:

1.Phase 1: Immediate Care After Birth (Birth to 1 Hour)

1. This phase takes place **immediately after birth**, usually in the **delivery room**.
2. The newborn undergoes initial assessments and interventions like:
    1. **Apgar score** assessment at 1 and 5 minutes.
    2. **Clearing the airways** if necessary (bulb suction).
    3. **Drying and stimulating** to promote breathing.
    4. **Temperature regulation**, often through skin-to-skin contact with the mother or in a radiant warmer.

2.Phase 2: 1 to 3 Hours After Birth

1. This phase usually occurs in the **transition nursery** or **postpartum unit**.
2. The newborn's status continues to be monitored:
    1. **Feeding support** (breastfeeding or formula).
    2. Further monitoring of **vital signs** and **temperature regulation**.
    3. Continue assessment of **Apgar score** and overall well-being.
    4. **Bonding** with parents is encouraged.

3- Phase 3: 2 to 12 Hours After Birth

1. This phase usually occurs in the **postpartum unit** if the baby is rooming-in with the mother.
2. Ongoing care includes:
    1. **Feeding** support and evaluation of the newborn’s ability to feed.
    2. **Observation of newborn's behavior**, alertness, and interactions.
    3. **Assessment of vital signs** and overall physical condition.

Throughout these phases, the primary focus is on the newborn's adaptation to life outside the womb, ensuring respiratory function, temperature regulation, feeding, and bonding with the parents.

Phase 1: Care of the Newborn (Immediate Care After Birth)

1.Maintaining Thermoregulation:

1. The newborn is prone to **heat loss** after birth, so it is important to ensure the baby is kept warm through **skin-to-skin contact** with the mother or in a **radiant warmer**.

2.Maintaining Cardiorespiratory Function:

1. Immediate assessment of the newborn's **breathing** and **heart rate** is crucial.
2. If the baby has difficulty breathing or is not crying, interventions such as **airway clearing** and **stimulating breathing** may be required.

3.Observing and Documenting for Urination and Passage of Meconium:

1. It's important to monitor the **newborn's urine output** and the first **meconium stool** as this indicates proper gastrointestinal function.

4.Identifying the Mother, Father/Partner, and Newborn:

1. **Identification bands** are placed on the **mother** and **newborn** to ensure proper identification.
2. The **father** or **partner** may also receive a matching identification band.

5.Performing and Documenting a Brief Assessment for Major Anomalies:

1. A **quick physical exam** is done to check for any obvious **anomalies** or health concerns. This includes checking the baby's **head**, **chest**, **abdomen**, **limbs**, and **genitalia**.

6.Encouraging Bonding and Breastfeeding:

1. **Skin-to-skin contact** with the mother and **early breastfeeding** are encouraged to promote **parent-infant bonding** and stimulate the baby's natural feeding reflexes.

Additional Considerations:

- The newborn will be covered in **blood** and **amniotic fluid** after birth.
- **Gloves and fluid-resistant covergowns** should be worn by caregivers during this initial care until after the baby has had its **first bath** to prevent contamination and ensure hygiene.

These initial actions are critical in the newborn's adjustment to extrauterine life and to ensure the baby is stable and ready for the next phase of care.

Maintaining Thermoregulation in Newborns:

1.Neutral Thermal Environment (NTE):

1. Ensures minimal heat loss and reduces oxygen consumption.
2. Helps maintain optimal body temperature for the newborn.

2.Hypothermia:

1. Low body temperature can cause **hypoglycemia**, which may lead to neurological problems.
2. Increased metabolic rate to generate heat causes **cold stress**, increasing respiratory rate and oxygen demand.

3.Cold Stress:

1. Occurs when the body works harder to generate heat, leading to higher respiratory rate and increased oxygen needs.
2. If the baby cannot meet the increased demand, **hypoxia** may develop.

4.Nursing Interventions:

1. **Skin-to-skin contact** to maintain warmth.
2. Use of **radiant warmers** and **warming blankets**.
3. **Drying** the baby immediately after birth and covering with warm blankets.
4. **Regular temperature monitoring** to identify and manage any temperature issues early.

By ensuring proper thermoregulation, the newborn is less likely to experience complications such as hypoglycemia, cold stress, or hypoxia.

Essential Nursing Interventions to Maintain a Neutral Thermal Environment:

1.Drying the Infant:

1. Dry the infant gently with a warm towel to prevent heat loss from evaporation, especially from amniotic fluid on the skin.
2. Focus on drying the body and head to maintain warmth.

2.Placing Infant in a Radiant Warmer:

1. Use a skin probe placed on the right upper abdomen to regulate the temperature of the radiant warmer, ensuring the proper heat setting for the infant.

3.Placing a Hat on the Infant:

1. After drying the head, place a hat on the infant to prevent significant heat loss, as the head is the largest surface area for heat loss.

4.Wrapping the Infant in Warm Blankets:

1. After removing the infant from the warmer, wrap them in warm blankets to retain heat.

5.Skin-to-Skin (Kangaroo) Contact:

1. Encourage skin-to-skin contact between the mother and newborn during bonding or breastfeeding to prevent heat loss and promote warmth.

6.Use of an Incubator:

1. If the infant is unable to stabilize body temperature, an incubator may be necessary for thermal regulation.

7.Delaying the First Bath:

1. The first bath should be delayed until the infant's temperature stabilizes at 36.5°C to 37°C to avoid heat loss.

FIG. 6.24 The nurse applies the sensor and assesses the newborn in the radiant warmer. *Note:* This nurse is wearing purple nitrite (latex-free) gloves when handling the newborn. (Some newborns can be allergic to latex.)

Maintaining Cardiorespiratory Function:

1.Wiping the Face, Nose, and Mouth:

1. Gently wipe the newborn's face, nose, and mouth to remove mucus and excess amniotic fluid to clear the airways and promote breathing.

2.Gentle Bulb Suctioning:

1. Perform gentle bulb suctioning of the nose and mouth to clear secretions and ensure the airways are unobstructed, facilitating effective breathing.

3.Placing the Infant on the Mother's Abdomen:

1. If the infant is stable, place them on the mother's abdomen to promote bonding. Suctioning may be performed prior to cutting the umbilical cord if necessary.

4.Further Suctioning:

1. Suctioning may continue as needed after the infant is placed in the radiant warmer to ensure airways remain clear and respiratory function is adequate.

5.Cord Clamping:

1. A cord clamp is applied once the infant is stabilized in the radiant warmer, completing the process of cord separation.

These steps ensure that the infant's airways are cleared, cardiorespiratory function is supported, and the transition to breathing outside the womb occurs smoothly.

FIG. 6.25 The nurse assists the father in cutting the umbilical cord to a proper length so the umbilical clamp can be applied.

Spontaneous Breathing and Respiratory Function

- **Spontaneous Breathing**: This begins within a few seconds after birth.
- **Initial Cyanosis**: The infant may appear cyanotic (blue) at birth, but the color quickly changes to pink, except for the hands and feet.
- **Acrocyanosis**: This is a normal condition where the hands and feet appear blue due to sluggish peripheral circulation. It typically resolves as the baby adjusts to life outside the womb.
- **Crying and Skin Color**: As the baby cries, skin color should become pink, signaling the initiation of effective respiratory function.
- **Oxygen Support**: If necessary, oxygen may be administered by facemask until the infant is crying vigorously.

Signs of Respiratory Distress (To be Reported Immediately)

- **Persistent Cyanosis**: Cyanosis beyond the hands and feet could indicate poor oxygenation and requires immediate attention.
- **Grunting Respirations**: A grunting sound heard during exhalation, which may suggest respiratory distress.
- **Nostril Flaring**: Indicates difficulty breathing and needs further evaluation.
- **Retractions**: Visible indentations of the chest beneath the sternum or between ribs, showing that the infant is struggling to breathe. delivery.

•**Increased or Decreased Respiratory Rate**: A sustained respiratory rate greater than 60 breaths per minute or less than 30 breaths per minute indicates distress.
•**Abnormal Heart Rate**: A heart rate consistently over 160 beats per minute or below 110 beats per minute could signal respiratory or circulatory problems.

Medication for Respiratory Support

•**Narcan (Naloxone)**: Narcan is kept on hand to reverse respiratory depression caused by narcotics administered to the mother during labor and

Apgar Scoring

The **Apgar score** is a quick and simple assessment of the newborn's condition, performed at **1 minute** and **5 minutes** after birth. It helps evaluate the infant's need for resuscitation and overall health. The system, developed by **Dr. Virginia Apgar**, rates five critical factors on a scale from 0 to 2, with a maximum score of **10**. A higher score indicates a healthier infant. The factors evaluated are:

1.Heart Rate:

1. 0: Absent
2. 1: Less than 100 beats per minute
3. 2: Over 100 beats per minute

2.Respiratory Effort:

1. 0: Absent
2. 1: Weak, irregular, or slow
3. 2: Good, crying, or regular breathing

3.Muscle Tone:

1. 0: Flaccid (limp)
2. 1: Some flexion of arms and legs
3. 2: Active motion (good flexion and movement)

4.Reflex Response (to suction or gentle stimulation on the soles of the feet):

1. 0: No response
2. 1: Grimace or weak cry
3. 2: Vigorous cry, cough, or sneeze

5- Skin Color:

1. 0: Pale or blue all over
2. 1: Body pink, but hands and feet blue (Acrocyanosis)
3. 2: Entire body pink

The scores are recorded separately at **1 minute** and **5 minutes** to assess how well the baby is adapting to life outside the womb. The **1-minute score** reflects the infant's initial transition to the external environment, while the **5-minute score** indicates how well the infant is doing with continued support. If the infant scores low, further interventions may be needed.

Apgar Scoring System

SIGN	SCORE			
	0	1	2	
Heart rate	Absent	< 100 beats/min	≥ 100 beats/min	
Respiratory effort	No spontaneous respirations	Slow; weak cry	Spontaneous, with a strong, lusty cry	
Muscle tone	Limp	Minimal flexion of extremities; sluggish movement	Active spontaneous motion; flexed body posture	
Reflex irritability	No response to suction or gentle slap on sole of foot	Minimal response (grimace) to stimulation	Prompt response to suction, with cry or active movement in response to gentle slap on sole of foot or backrub	
Color	Blue or pale	Body pink, extremities blue	Completely pink (light skin) or absence of cyanosis (dark skin)	
	1 Minute	**5 Minutes**	**10 Minutes**	**15 Minutes**
Oxygen				
PPV/NCPAP				
Endotracheal tube				
Chest compression				
Epinephrine				

NOTE: The nurse evaluates each sign in the Apgar and totals the score at 1, 5, 10, and 15 minutes after birth to assess the condition of the infant and to determine what interventions the infant needs. A score of 8–10 requires no action other than continued observation and support of the infant's adaptation. A score of 4–7 means the infant needs gentle stimulation such as rubbing the back; the possibility of narcotic-induced respiratory depression should also be considered. Scores < 3 mean that the infant needs active resuscitation. If resuscitative measures are applied, the following scoring chart is added to the routine Apgar:

NCPAP, Nasal continuous positive airway pressure; *PPV*, positive pressure ventilation.

Identifying the Infant

Infant identification is critical to ensure that the newborn is correctly matched with the mother and other support persons. The following procedures are followed to ensure accurate identification:

1.Wristbands:

1. **Preprinted wristbands** with matching numbers are placed on the **mother**, **infant**, and often the **father** or another **support person**.
2. All wristbands should have identical numbers. The nurse verifies this by checking the band numbers or having the mother read the numbers herself.
3. Additional identifying information is included on the wristbands, such as:
    1. Mother's name
    2. Birth attendant's name
    3. Date and time of birth
    4. Infant's sex
    5. Mother’s hospital ID number

2.Application of Wristbands:

1. The wristbands are applied snugly to the infant's **wrist** and **ankle**, with only a finger's width of slack, as infants lose weight after birth.
2. The nurse must verify the wristband information every time the infant is returned to the mother or when the mother retrieves the infant from the nursery.

3- Security Measures:

1. **Security chips** may be embedded in the identification bands, which are compatible with the hospital's **security system**.
2. **Footprints** of the infant and **fingerprints** (usually one or both index fingers of the mother) may be taken.
3. A **photograph** of the infant is often taken shortly after birth, which may include identifying birthmarks or other unique features for additional verification.

This process helps ensure the safety and correct identification of the infant, particularly in case of separation or emergency situations like abduction.

Observing Urinary Function and Passage of Meconium

Urinary Function:

•Newborns may not urinate for up to **24 hours** after birth.

•If the infant **voids** (urine) in the Labor, Delivery, and Recovery (LDR) room, it must be **documented** in the medical chart.

Passage of Meconium:

•**Meconium**, the first stool, can be passed anytime within **12 to 24 hours** after birth.

•If the infant passes meconium in the LDR room, it should also be **documented** in the chart.

•The infant **cannot be discharged** home until it is confirmed that the **gastrointestinal** and **genitourinary systems** are functioning properly, which is confirmed by the passage of meconium and urination.

Importance:

•The passage of **meconium** and **urine** is key to determining whether the newborn's gastrointestinal and urinary systems are functioning as expected. These functions are part of standard newborn care and assessment.

Promoting Maternal–Infant Bonding:

•Encouraging **skin-to-skin contact** and early **breastfeeding** is essential for promoting **maternal-infant bonding**. These practices also support the infant's thermoregulation and emotional well-being.

Promoting Maternal–Infant Bonding

- **Facilitating Contact**: Every effort should be made to promote immediate **maternal-infant contact** after birth.
- **Skin-to-Skin Contact**: After the infant is dried, warmed, and stabilized in terms of cardiorespiratory function, the infant should be placed in the mother's arms or have skin-to-skin contact.
- **First Hour**: The first hour of life is a crucial period when the infant is **alert**, making it the ideal time to begin **breastfeeding** and **bonding** with the mother.
- **Baby-Friendly Hospitals**: Hospitals that support skin-to-skin contact and immediate breastfeeding often receive the **"baby-friendly hospital"** designation, promoting these practices in the LDR room.
- **Breastfeeding Support**: If the mother requires assistance with breastfeeding, referral to a **lactation specialist** may be made to support successful breastfeeding initiation.

FIG. 6.26 The mother and father bond with the newborn infant in the labor, delivery, and recovery room.

FIG. 6.27 The naked infant placed on the bare chest of the mother will move toward the breast and breastfeed. Studies show this is beneficial to infant neurodevelopment and behavior and parent–infant bonding. (From Leifer G: *Maternity nursing,* ed 11, St. Louis, 2012, Saunders.)

Eye Care for Newborns

- **Purpose**: Newborns are given eye care to prevent **ophthalmia neonatorum**, a condition caused by **Neisseria gonorrhoeae**, as well as to protect against **Chlamydia trachomatis**.
- **Treatment**: **Erythromycin eye ointment** is applied to each eye to prevent these infections. The ointment is typically administered from single-dose tubes.
- **Timing**: Eye care is usually performed **1 hour after birth** to allow time for bonding between the mother and infant. However, it must be done and documented before the infant leaves the delivery room.

Purpose

To protect against ophthalmia neonatorum and chlamydia infections (all newborns have this prophylactic treatment before leaving the delivery room)

Steps

1. Apply an antimicrobial ointment to the lower conjunctival sac of the newborn's eyes.

(Courtesy Pat Spier, RN-C.)

Administering Medications to Newborns

1.Optimal Timing: After the first hour of life, when the infant enters a sleep pattern with decreased motor activity, is the best time to administer medications. The infant should be placed in the warmer for comfort before leaving the delivery room.

2.Intramuscular Injections:

1. **Needle Handling**: If drawing medication from a glass ampule, change the needle before administering it to the infant. If using a vial, a needle change is not necessary.
2. **Injection Site**: The **vastus lateralis muscle** in the anterolateral thigh is the recommended site for intramuscular injections. This site is preferred because it lacks large blood vessels, making aspiration unnecessary.
3. **Administration**: The medication should be injected rapidly, and the infant should be held skin-to-skin. Additionally, offering a sweetened sucrose nipple or breastfeeding immediately after the injection helps soothe the infant.

3.Vitamin K Administration:

1. **Purpose**: Newborns are given vitamin K to assist in blood clotting since they lack the intestinal flora required to produce it naturally.
2. **Administration**: A single dose of **vitamin K (AquaMEPHYTON)** is injected into the vastus lateralis muscle (thigh) before the infant leaves the delivery room. This helps prevent bleeding complications in the newborn.

- **1 hour of age.**

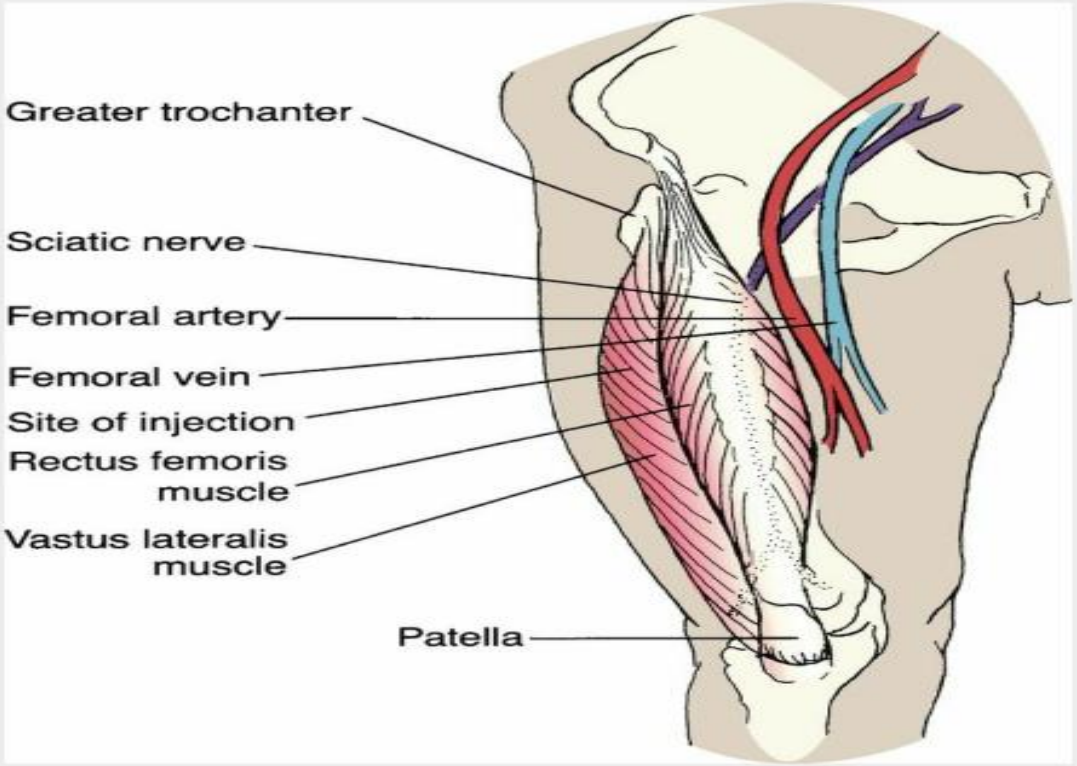
Administering Intramuscular Injections to the Newborn

Purpose

To administer an intramuscular injection to the newborn effectively

Steps

1. Prepare medication for injection.
    a. A 1-mL syringe with a {5/8}-inch, 25-gauge needle is often used. A small needle reaches the muscle but potentially prevents striking the bone.
2. Put on gloves to protect against contamination with blood.
3. Locate the correct site. The middle third of the vastus lateralis muscle is the preferred site (see illustration). The middle third of the rectus femoris is an alternate site, but its proximity to major vessels and the sciatic nerve necessitates caution during injection.



4. Cleanse the area with an alcohol wipe.
5. Stabilize leg while grasping tissues (upper thigh) between thumb and fingers to prevent sudden movement by newborn and possible injury. (NOTE: When an injection is administered to the newborn *after* the first bath, the infant should be held in the "hug position" or breastfeeding position and given a sucrose-sweetened nipple to suck on.)
6. Insert needle at 90-degree angle to the thigh.
7. Do not aspirate, and inject rapidly.
8. Remove needle quickly, and gently massage the site with an alcohol swab. Massage helps medication absorb.
9. Calm and soothe infant; reposition infant. Remove gloves, wash hands, and document in medical record.

Observing for Major Anomalies in Newborns

The nurse monitors the newborn for any signs of injury or anomalies during routine assessments. Key observations include:

- **Symmetry and Movement**: Watching for equal facial expressions and movements, especially during crying.
- **Head and Face**: Checking for trauma, such as from forceps or fetal monitoring devices like spiral electrodes.
- **Common Anomalies**: Identifying obvious issues like spina bifida or cleft lip and ensuring the correct number of fingers and toes.
- **Limbs and Feet**: Ensuring limbs are of equal length and feet are straight or can be corrected if deviated.
- **Urination and Meconium**: Confirming the passage of meconium and urination to ensure normal gastrointestinal and urinary tract function.
- **Comprehensive Assessment**: A detailed examination of anomalies and gestational age is performed after admission to the nursery or postpartum unit.

KCord Blood Banking:

1.Cord Blood as a Resource: Traditionally discarded, but now recognized for its regenerative stem cells.

2.Similar to Bone Marrow: Contains stem cells that can be used for medical treatments.

3.Uses in Treatment: Can treat malignant and genetic diseases in both children and adults.

4.Reduced Rejection Risk: Cord blood stem cells have a lower likelihood of causing a severe rejection response during transplants.

5.Storage: Cord blood can be stored for potential future use, offering long-term medical benefits.

Microbiomes and Nursing Care During Labor and Delivery:

1. **Microbiota**: Refers to the community of microorganisms, both harmful and beneficial, present in the human body.
2. **Composition of Microbiomes**: Contains bacteria, fungi, and single-cell organisms (Archaea), influencing both health and disease.
3. **Microbiome Transfer to Newborn**: At birth, the mother transfers microbiomes to the newborn, especially through vaginal contact or oral exposure.
4. **Importance for Infant Health**: This transfer plays a significant role in shaping the infant's immune system and future health.
5. **Impact of Birth Practices**: Labor and delivery practices affect microbiome transfer. Vaginal birth enhances the transfer of microbiomes, while frequent vaginal exams or antibiotic use can interfere.
6. **Cesarean Section Considerations**: Infants born via cesarean section miss exposure to vaginal microbiota, which could increase the risk of future health issues.

Skin-to-Skin Contact and Microbiome Transfer:

1.Skin-to-Skin Contact: In the first hours after birth, skin-to-skin contact between mother and newborn facilitates the transfer of protective microbiomes, contributing to the infant's health.

2.Breastfeeding: Early breastfeeding helps transfer beneficial microbiomes from mother to infant, supporting the infant's immune system and long-term health.

3.Nurse's Role in Promoting Microbiome Transfer: Nurses can support microbiome transfer by:

1. Promoting vaginal birth when possible.
2. Encouraging early skin-to-skin contact and breastfeeding.
3. Limiting unnecessary antibiotic use and interventions during labor and delivery.

4.Postpartum Care Influence: The microbiomes of both the mother and infant continue to be influenced postpartum.

1. The **maternal diet** affects lactation, which in turn supports the establishment of the newborn's microbiome.
2. Postpartum nurses can positively impact the newborn microbiome by:
    1. Supporting breastfeeding.
    2. Encouraging safe skin care practices (using plain water).
    3. Ensuring the mother receives adequate nutrition and rest.
    4. Providing proper perineal care.
    5. Offering detailed patient education on microbiome health.

Tess is admitted to the obstetric unit in her 40th week of pregnancy, complaining of frequent contractions.
She states that a sudden gush of fluid has been expelled into her underwear.

Questions :

1. What is the probable cause of the gush of fluid that she expelled? What is the nursing responsibility when this happens to a woman during pregnancy?
2. What findings would indicate that Tess is close to delivering her infant?
3. The health care provider performs a Leopold's maneuver. What information can be obtained by this procedure?
4. The nurse auscultates the fetal heart. What kind of variations of the FHR are normal, and what findings should immediately be reported to the health care provider?
5. If late decelerations of the fetal heart are noted, what nursing action is indicated?
6. Tess' husband Luis is standing in the corner of the labor room. How can the nurse offer support to Luis during the labor process?

1. **Cause of Fluid Gush**: Likely amniotic fluid from rupture of membranes.
2. **Nursing Responsibility**: Assess fluid, monitor fetal heart rate, document rupture time, check for complications.
3. **Signs Tess is Close to Delivering**: Frequent contractions, cervical dilation, bloody show, fetal descent.
4. **Leopold's Maneuver**: Determines fetal position, presentation, lie, and engagement.
5. **Normal vs. Abnormal FHR**: Normal variations include accelerations and early decelerations. Abnormal include late decelerations, prolonged decelerations, bradycardia, and tachycardia.
6. **Nursing Action for Late Decelerations**: Position mother on left side, give oxygen, increase IV fluids, notify healthcare provider.
7. **Supporting Luis**: Provide information, encourage involvement, offer comfort, and ensure inclusion.

for preparing for the NCLEX® Examination related to the birth process:

1.The Four Ps of Birth:

1. **Powers**: The forces (contractions) involved in labor.
2. **Passage**: The birth canal, including the pelvis and soft tissues.
3. **Passengers**: The fetus and placenta.
4. **Psyche**: The emotional state and mental readiness of the mother.

2.True Labor vs. False Labor:

1. True labor results in **cervical changes** (effacement or dilation), while false labor does not.

3.When to Go to the Hospital:

1. Persistent, regular contractions (every 5 minutes for first-time mothers, every 10 minutes for those who have given birth before).
2. Ruptured membranes.
3. Abnormal bleeding.
4. Decreased fetal movement.
5. Other concerns not covered by basic guidelines.

4.Key Assessments on Admission:

1. **Fetal condition**: Assess fetal heart rate and well-being.
2. **Maternal condition**: Monitor vital signs, contractions, and comfort.
3. **Nearness to birth**: Determine the stage of labor.

5- Stages of Labor:

1. **First stage (dilation)**: From onset of labor to full cervical dilation (10 cm). Subdivided into:
    1. **Latent phase**: Early labor.
    2. **Active phase**: Rapid cervical dilation.
    3. **Transition phase**: Intense phase just before full dilation.
2. **Second stage (expulsion)**: From full dilation to the birth of the baby.
3. **Third stage (placental)**: From the birth of the baby to the delivery of the placenta.
4. **Fourth stage (postbirth recovery)**: The first 1 to 4 hours after placenta delivery, monitoring for complications.

This outline can help guide your understanding of the birth process and the important factors to consider during labor and delivery.

- **1. Fetal and Maternal Risks:**

•**First-Stage and Second-Stage Labor (Fetal Risk)**: The main risk is **fetal compromise** caused by interruptions in the fetal oxygen supply.

•**Fourth-Stage Labor (Maternal Risk)**: The main risk is **hemorrhage** due to uterine relaxation.

2. Nursing Care Focus:

•During **first and second stages of labor**, nursing care focuses on:

- Observing **fetal and maternal conditions**.
- Assisting the woman in coping with labor.

3. Fetal Heart Rate (FHR) Monitoring:

•**Continuous Electronic Fetal Monitoring (EFM)** is common in hospital births, but **intermittent auscultation** is also a valid method.

•**Normal baseline FHR**: Between **110-160 beats/min**.

•FHR tracings show the relationship between the baseline rate and **uterine contractions**.

4. Periodic FHR Changes:

•**Accelerations** and **moderate variability** in the FHR pattern indicate that the fetus is well-oxygenated.

•**Abnormal FHR patterns** (such as decelerations) must be promptly reported to the healthcare provider to ensure a favorable outcome.

This guide provides an overview of the key aspects of fetal and maternal risk, FHR monitoring, and appropriate nursing care during labor.

1. Laboring Positions:

- **Upright positions**: Help with gravity, promoting effective labor.
- **Hands-and-knees or leaning-forward positions**: Promote normal fetal rotation, especially useful in cases of "back labor".
- **Squatting**: Facilitates fetal descent during the second stage of labor.
- **Supine position**: Should be discouraged as it can compress the mother's major blood vessels, reducing oxygen supply to the fetus.

2. Immediate Newborn Care:

- **Maintain warmth** to prevent hypothermia.
- **Ensure cardiorespiratory function** (monitoring breathing, heart rate, and oxygenation).
- **Assess for major anomalies** immediately after birth.
- **Encourage parent–infant bonding** through skin-to-skin contact and early breastfeeding.
- **Provide proper identification and documentation** (wristbands, foot printing, etc.).

These practices ensure a safe and supportive environment for both the mother and newborn during and after labor.

Review Questions for the NCLEX® Examination

1. To determine the frequency of uterine contractions, the nurse should note the time from the:

1. beginning to end of the same contraction.
2. end of one contraction to the beginning of the next contraction.
3. beginning of one contraction to the beginning of the next contraction.
4. contraction's peak until the contraction begins to relax.

2. Excessive anxiety and fear during labor may result in a(n):

1.ineffective labor pattern.
2. abnormal fetal presentation or position.
3. release of oxytocin from the pituitary gland.
4. rapid labor and uncontrolled birth.

3. A woman who is pregnant with her first child phones an intrapartum facility and says her "water broke." The nurse should tell her to:

1. wait until she has contractions every 5 minutes for 1 hour.
2. take her temperature every 4 hours and come to the facility if it is over 38°C (100.4°F).
3. come to the facility promptly, but safely.
4. call an ambulance to bring her to the facility.

4. A laboring woman suddenly begins making grunting sounds and bearing down during astrong contraction. The nurse should initially:

1. leave the room to find an experienced nurse to assess the woman.
2. look at her perineum for increased bloody show or perineal bulging.
3. ask her if she needs pain medication.
4. tell her that these are common sensations in late labor.

5. A woman in active labor has contractions every 3 minutes lasting 60 seconds, and her uterus relaxes between contractions. The electronic fetal monitor shows the FHR reaching 90 beats/min for periods lasting 20 seconds during a uterine contraction. The appropriate priority nursing action is to:

1. continue to monitor closely.
2. administer oxygen by mask at 10 L/min.
3. notify the health care provider.
4. prepare for a cesarean section.

6. The nurse is caring for a woman in labor. Which of the following observations require immediate nursing intervention?

a. FHR of 90 beats/min between contractions

b. maternal tachysystole

c. contractions lasting 60 seconds with an interval of 90 seconds

d. FHR baseline variability

1. b and c

2. a and d

3. a and b

4. c and d

Critical Thinking Question

1. A para 0, gravida 1 woman is admitted in active labor.

She states she has completed prenatal care and wishes for a natural, unmedicated childbirth.

However, she states she now does not feel she can cope with the increasing levels of pain and asks if it is okay if she takes pain medication.

What is the best response of the nurse?

Thanks for listening