Acknowledgments

This two-year curriculum was developed through a participatory and collaborative approach between the Academic faculty staff affiliated to Egyptian Universities as Alexandria University, Ain Shams University, Cairo University, Mansoura University, Al-Azhar University, Tanta University, Beni Souef University, Port Said University, Suez Canal University and MTI University and the Ministry of Health and Population (General Directorate of Technical Health Education (THE). The design of this course draws on rich discussions through workshops. The outcome of the workshop was course specification with Indented learning outcomes and the course contents, which served as a guide to the initial design.

We would like to thank Prof. Sabah Al-Sharkawi the General Coordinator of General Directorate of Technical Health Education, Dr. Azza Dosoky the Head of Central Administration of HR Development, Dr. Seada Farghly the General Director of THE and all share persons working at General Administration of the THE for their time and critical feedback during the development of this course.

Special thanks to the Minister of Health and Population Dr. Hala Zayed and Former Minister of Health Dr. Ahmed Emad Edin Rady for their decision to recognize and professionalize health education by issuing a decree to develop and strengthen the technical health education curriculum for pre-service training within the technical health.
<table>
<thead>
<tr>
<th>No</th>
<th>Content</th>
<th>Page no</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Module One</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Reproductive Biology</td>
<td>11</td>
</tr>
<tr>
<td>1</td>
<td>Female reproductive system</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Male reproductive system</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Menstrual cycle</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Reproductive health</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Family planning</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Module Two</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Normal &amp; Abnormal pregnancy</td>
<td>35</td>
</tr>
<tr>
<td>6</td>
<td>Conception and fetal development</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Physiological changes during pregnancy</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Nursing care during pregnancy</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Hypertensive Disorders</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Hemorrhagic Disorders in Pregnancy</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Endocrine and Metabolic Disorders</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Module three</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Childbirth &amp; Birth complications</td>
<td>77</td>
</tr>
<tr>
<td>12</td>
<td>Labor and Birth Processes</td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Nursing Care During Labor and Birth</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Abnormal labor</td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Labor emergencies</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Module four</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Normal &amp; Abnormal Postpartum Period</td>
<td>102</td>
</tr>
<tr>
<td>16</td>
<td>Postpartum physiological changes</td>
<td></td>
</tr>
<tr>
<td>----</td>
<td>----------------------------------</td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>Nursing care during postpartum Period</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>Postpartum hemorrhage</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>Puerperal sepsis</td>
<td></td>
</tr>
<tr>
<td><strong>Module Five</strong></td>
<td><strong>Care of newborn</strong></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>Physiological adaptations of the newborn</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>Nursing Care of the Newborn</td>
<td></td>
</tr>
<tr>
<td><strong>Module Six</strong></td>
<td><strong>Procedure Book in Maternity Nursing</strong></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Antenatal assessment</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Abdominal examination procedure (Leopold’s Maneuvers)</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Pitting edema assessment</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Intrapartum assessment</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Assessment of uterine contraction</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>Handling Procedure</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Immediate care of newborn procedure (Receiving procedure)</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Postnatal assessment</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Uterine massage Procedure</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Perinatal care procedure</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Perinatal examination procedure</td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>Breast care procedure</td>
<td></td>
</tr>
</tbody>
</table>

**References**
This course focuses on providing the necessary cognitive, intellectual, practical skills to the students for acquiring the basic body of knowledge about maternity nursing.

### Course Objectives:

1. **Identify the normal anatomical structure of female and male reproductive system and its significance for nursing.**
2. **Explain physiological adaptation to pregnancy and normal prenatal care.**
3. **Describe the physiology of labor and clinical features of each stage of labor.**
4. **Recognize principle of nursing intervention for parturient woman.**
5. **Identify the significant aspects of immediate newborn resuscitation.**
6. **Describe maternal physiological changes, needs, and management of puerperium.**
7. **Explain common physical complication of pregnancy, labor, and puerperium and appropriate nursing management.**

### Course Outcomes:

**A.** Formulates effective nursing care plan based on women health condition & illness according to needs priority.

**B.** Detect the woman at risk during pregnancy, labor & puerperium.
### B.3. Use health education & counseling for pregnant, laboring & postpartum mothers

| C.1. | Use assessment techniques to identify all health problems and needs. For women during the maternity cycle. |
| C.2. | Provide care to women during normal & abnormal condition of pregnancy, labor & postnatal according to nursing process. |
| C.3. | Use health education, instruction & counseling methods for common women concerns requiring during pregnancy, labor & postpartum events. |
| C.4. | Perform nursing procedures considered essential care for the scope of maternity nursing practice during pregnancy, labor & postnatal. |

### D.1. Work within team of health care providers in different women health care settings effectively.  
D.2. Manage time effectively during applying nursing intervention for women in pregnancy, labor & postpartum.  
D.3. Use appropriate learning resources including texts, internet and consultation with peers  
D.4. Use problem solving skills within the nursing process in maternity nursing.

### Theoretical part:
- Human Reproductive Biology  
- Normal pregnancy  
- Normal labor  
- Normal puerperium  
- High risk Pregnancy  
- Abnormal labor  
- Puerperium complications.
- Care of Newborn

Practical skills:
- Antenatal skills
- Labor skills
- Postnatal skills

- Modified Lectures
- Group discussion
- Brain storming
- Clinical in lab and in hospital through demonstration and redemonstration

- Self-learning.
- Referral to the academic advisor.
- Personal activities (office hours, group discussion, more redemonstration, and films).

- Quiz 1: to assess knowledge in writing exam
- Mid-term exam: to assess accumulative knowledge in writing exam.
- Clinical practice to assess the practical level through the semester
- Final written exam: to assess accumulative knowledge in writing exam.
- Final clinical exam to assess the accumulative practice

<table>
<thead>
<tr>
<th>Assessment I (Quiz)</th>
<th>Mid-term exam</th>
<th>Final exam</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 3</td>
<td>Week 6</td>
<td>Week 14</td>
</tr>
</tbody>
</table>

- Quiz 5
- Midterm exam 10
- Case study 5
- Clinical practice 60
- Final clinical exam 20
- Final written exam 100
- Total 200

5- اساليب التعليم والتعلم:
6- اساليب التعليم والتعلم ذوى القدرات المحدودة:
7- تقويم الطلاب:
8- قائمة الكتب الدراسية والمراجع:
9- مذكرات
Course Description

This course is designed for students to appreciate the concepts and principles of maternity nursing and helps them to acquire knowledge and develop attitude and beginning skills in rendering nursing care to normal and high risk pregnant women during antenatal, natal and postnatal periods in hospital. Also focuses on the role of the nurse in meeting the physiological, psychosocial, cultural needs of women during normal and abnormal aspects of the maternity cycle. These course includes reproductive biology, antepartum, labor, and postpartum care, complications of pregnancy, labor, postpartum and newborn care, it focus on the application of the basic knowledge, skills and attitude required for nursing management of women during normal and abnormal aspects of the maternity cycle in the form of Modules. Each Module contains normal and abnormal and its related practice and application of the nursing process as integrated course.
### Course overview

<table>
<thead>
<tr>
<th>ID</th>
<th>Topics</th>
<th>Interactive Lecture</th>
<th>Field Work</th>
<th>Class Assignm</th>
<th>Research</th>
<th>Lab</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>Module One: Reproductive biology</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Female reproductive system</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Male reproductive system</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Menstrual cycle</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>Reproductive health</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Family planning</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Module Two: Normal &amp; Abnormal Pregnancy</strong></td>
<td>10</td>
<td>25</td>
<td></td>
<td></td>
<td>6</td>
</tr>
<tr>
<td>6</td>
<td>Conception and fetal development</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Physiological changes during pregnancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Nursing care during pregnancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Hypertensive Disorders</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>Hemorrhagic Disorders in Pregnancy</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>Endocrine and Metabolic Disorders</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Module three: Child Birth &amp; Birth complications</strong></td>
<td>8</td>
<td>21</td>
<td></td>
<td></td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Labor and Birth Processes</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---------------------------</td>
<td>--</td>
<td>---</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>Nursing Care During Labor and Birth</td>
<td></td>
<td>0.5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>Abnormal labor</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>Labor emergencies</td>
<td></td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Module Four: Normal & Abnormal Postpartum**

<table>
<thead>
<tr>
<th></th>
<th>Postpartum physiological changes</th>
<th></th>
<th>0.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>16</td>
<td>Nursing care during postpartum Period</td>
<td></td>
<td>0.5</td>
</tr>
<tr>
<td>17</td>
<td>Postpartum hemorrhage</td>
<td></td>
<td>0.5</td>
</tr>
<tr>
<td>18</td>
<td>Puerperal sepsis</td>
<td></td>
<td>0.5</td>
</tr>
</tbody>
</table>

**Module Five: Normal Newborn**

<table>
<thead>
<tr>
<th></th>
<th>Physiological adaptations of the Newborn &amp; Nursing Care of the Newborn</th>
<th></th>
<th>0.5</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td></td>
<td></td>
<td>0.5</td>
</tr>
</tbody>
</table>

**TOTAL HOURS (144)**

|   | 36 | 76 | 11 | 21 |
Objective:

At the end of this module; each student should be able to:

- Identify component of internal and external female genitalia
- Explain Structure and function of internal and external genital tract of male genitalia
- Define menstrual cycle.
- Discuss nursing role during menstrual cycle
- Define Reproductive health
- Identify women's reproductive health needs.
- Define family planning.
- Identify methods of family planning
- Discuss client instruction for using each method.

Female reproductive system

External genitalia

The vulva refers to those parts that are outwardly visible which includes:

- Mons pubis
- Labia majora
- Labia minora
- Clitoris
- The vestibule: (Urethral opening & Vaginal opening)
- Perineum

1-Mons Pubis:

- Also called Mons veneris, The triangular mound of fatty tissue that covers the pubic bone
- During adolescence sex hormones trigger the growth of pubic hair on the Mons pubis
- Hair varies in coarseness, curliness, amount, color and thickness
- The function of Mons pubis is to protect the pelvic bones, especially during sexual intercourse.
2- **Labia Majora (Outer & greater lips):**

- These are two rounded, fleshy folds of fat and areolar tissue that extend from the mons pubis to the perineum
- They have a darker pigmentation
- They are covered with hair and sebaceous glands
- Tend to be smooth and moist
- The chief function of is to protect the structure lying between them.

2- **Labia Minora (Inner & lesser lips):**

- These are paired of erectile tissue folds that darkens and swells during sexual arousal
- Located inside the labia majora
- They are more sensitive and responsive to touch than the labia majora

3- **Clitoris:**

- At the apex of labia minora is a hooded body composed of erectile tissue called clitoris.
- It is very rich in blood and nerve supplies and allows the women to experience sexual pleasure & orgasm during sexual stimulation.

4- **The vestibule:**

- This is the area enclosed by the labia minora in which are situated the openings of the urethera, paraurethermal (skene's ) glands, vaginal opening or introitus and bartholin's glands. It is boat shape.

*The Urethral orifice:*

- This orifice lies 2.5cm posterior to the clitoris. its long is 4cmc
- On either side lie the openings of skene’s ducts, two small blind-ended tubules 0.5 cm long running within the urethral wall. Their secretions lubricate the vaginal vestibule to facilitate sexual intercourse.

*The vaginal orifice:*

- This is also known as introitus of the vagina and occupies the posterior two thirds of the vestibule.
- The orifice is partially closed by the hymen, a thin elastic membrane that tears during sexual intercourse or during the birth of the first child.
- The hymen is a vascular & it varies in shape from woman to woman.

*Bartholin’s glands (vulvovaginal glands):*
- There are two small glands that open on the either side of the vaginal orifice and lies in the posterior part of the labia majora.
- These glands secrete mucus that is clear and thick mucus with an alkaline pH that enhances the viability and motility of the sperm deposited in the vaginal vestibule.

5- Perineum:
- The muscle and tissue located between the vaginal opening and anal canal
- It supports and surrounds the lower parts of the urinary and digestive tracts
- The perinium contains an abundance of nerve endings that make it sensitive to touch
- An episiotomy is an incision of the perinium used during childbirth for widening the vaginal opening

Internal genitalia:
- Vagina
- Cervix
- Uterus
- Fallopian Tubes
- Ovaries

I-Vagina:
- The vagina connects the cervix to the external genitals
- It is located between the bladder and rectum
- Its length: (Anterior wall is 8-9 cm & Posterior wall is 10-11 cm)
Its functions:

- As a passageway for the menstrual flow
- For uterine secretions to pass down through the introitus
- As the birth canal during labor
- With the help of two Bartholin’s glands becomes lubricated during sexual intercourse

2-Cervix:

- The cervix connects the uterus to the vagina
- The cervical opening to the vagina is small
- This acts as a safety precaution against foreign bodies entering the uterus
- During childbirth, the cervix dilates to accommodate the passage of the fetus
- This dilation is a sign that labor has begun

3-Uterus:

- Commonly referred to as the womb
- A pear shaped organ about the size of a clenched fist
- It is made up of the endometrium, myometrium and perimetrium
- Consists of blood-enriched tissue that sloughs off each month during menstrual cycle
- The powerful muscles of the uterus expand to accommodate a growing fetus and push it through the birth canal
- Size: 7.5 long, 5cm wide, 2.5cm thick and weight about 60gms.

Divisions:

- The cervix: Forms the lower third of the uterus.
  The isthmus: Is the narrowed construction about 7mm thick lying between body of uterus and cervix.

- The corpus or body: Forms the upper two thirds of the uterus and is that portion of organ lying above the cervix.
- The corneas: Are the areas of uterus where fallopian tubes are inserted the lumen of this tubes opens into the uterine cavity.

- The fundus: It’s the portion lies above and between the corneas.

- The cavity: Is a triangular hollow shape in the center of the uterus. The wall of the uterus normally lies in opposition.

4-Fallopian tube:

- Serve as a pathway for the ovum to the uterus
- Are the site of fertilization by the male sperm
- Often referred to as the oviducts or uterine tubes
- Fertilized egg takes approximately 6 to 10 days to travel through the fallopian tube to implant in the uterine lining
- It consists of 4 parts:
  - Interstitial part: Lies within the wall of the uterus and is 2.5cm in length.
  - Isthmus: Is also 2.5cm in length. It is the narrowest portion of the tube and acts as reservoir for spermatozoa because the temperature is lower there than in the rest of the tube.
  - Ampulla: Is the widened lateral area of the tube where fertilization normally occurs. It is 5cm in length.
  - Infundibulum (2 cm): trumpet shaped outer end opens into the peritoneal cavity by the tubal ostium.

5- Ovaries:

- The female gonads or sex glands
- They develop and expel an ovum each month
- A woman is born with approximately 400,000 immature eggs called follicles
- During a lifetime a woman release @ 400 to 500 fully matured eggs for fertilization
- The follicles in the ovaries produce the female sex hormones, progesterone and estrogen
- These hormones prepare the uterus for implantation of the fertilized egg.
Male reproductive system

- The male reproductive system consists of external reproductive organs and internal reproductive organs.
- The purposes of male reproductive tract are to allow for sexual intimacy and reproduction of offspring, and to provide a conduit for urinary elimination.

External genitalia:
- It consist of:
1. Penis: male copulatory organ
2. Frenulum: underside of the penis, between shaft and glans
3. Glans: enlarged conic structure at the tip of the penis
4. Corona: raised rim or ridge of tissue that separates the glans from the shaft
5. Prepuce (foreskin): loose-fitting retractable casing of skin that forms over the glans
6. Smegma: accumulation of secretions on the penile glans from glands of foreskin
7. Scrotum: skin-covered pouch containing the testes

1. The Penis:

Position:
- It male external sexual organ located superior to the scrotum and inferior to the umbilicus
- The roots lies in the perineum, where it passes forward below the symphysis pubis, the lower two-thirds are outside the body in front of the scrotum.

Structure:
- It is an elongated cylindrical structure consisting of the body (shaft) and the glans.
- Also, it contains the urethra and the external opening of the urethra.
- Large pockets of erectile tissue in the penis allow it to fill with blood and become erect.
- The erection of the penis causes it to increase in size and become turgid.
Functions:
- The function of the penis is to deliver semen into the vagina during sexual intercourse.
- In addition to its reproductive function
- It allows for the excretion of urine through the urethra to the exterior of the body.

2. Glans:
- It is the most sensitive area on the penis because this is where the greatest concentration of nerve endings is found.
- This part of the penis is analogous to the clitoris in the female.
- At birth a layer of tissue, prepuce, or foreskin, covers the glans, it is the part removed during circumcision.

3. Shaft:
- It is composed of three column of sponge like erectile tissue, two corpora cavernosum and one corpus spongiosum.
- The cavernous bodies are parallel, and the spongy body lies atop theme in the midline.
- The spongy body is cradled in the channel created where the cavernous bodies meet, each column is encased in a thick sheat called the tunica albuginea.

Support system:
- The suspensory ligament is the main support for the penis extended from the symphysis pubis and merges with the deep fascia of the penis.

4. Scrotum:

Structure:
- The scrotum is a sac-like organ made of skin and muscles that houses the testes.
- The scrotum is made up of two side-by-side pouches with a testis located in each pouch.

Position:
- It is located inferior to the penis in the pubic region.

Functions:
- The smooth muscles that make up the scrotum allow it to regulate the distance between the testes and the rest of the body.
- When the testes become too warm to support spermatogenesis the scrotum relaxes to move the testes away from the body’s heat.
- Conversely, the scrotum contracts to move the testes closer to the body’s core heat when temperatures drop below the ideal range for spermatogenesis.

N.B: spermatogenesis;, "it is the process of producing sperm"
Internal Genitalia:

- Male internal reproductive organs include:

1. Corpora cavernosa: two large and upper most cylindrical masses of penile tissue
2. Corpus spongiosum: lower, smaller cylindrical mass of tissue in the penis, and contains the urethra
3. Crura: tapering part of the corpora cavernosa - forms the connection to the pubic bone
4. Testes: oval, glandular organs contained in the scrotum - produce sperm, and secrete male hormones
5. Spermatic cord: suspends the testes - contains arteries, nerves, veins, and vas deferens
6. Seminiferous tubules: tightly packed, convoluted structures in testicles, and produce sperm
7. Interstitial cells (Leydig’s cells): located between seminiferous tubules, produce androgens
8. Epididymis: tightly coiled tube lying along the top of each testis - stores spermatozoa
9. Vas deferens: structure that transports spermatozoa from testes to urethra
10. Ejaculatory ducts: short tubes that pass through prostate to urethra – passageway for semen and fluid from seminal vesicles
11. Urethra: tube for transporting urine and semen
12. Seminal vesicles: secretory glands
13. Prostate gland: secretes thin, milky, slightly alkaline fluid, rich in nutrients into the seminal fluid, these secretions protect spermatozoa from acidic environment (male urethra and vagina)
14. Cowper’s gland: contribute alkaline fluid to semen

Male internal reproductive organs

1. The testes (or testicles):
   Position:
   - The 2 testes, also known as testicles, are situated in the scrotum. In order to achieve their proper function, they
• It surrounds the urethera at the base of the bladder, lying between the rectum and the symphysis pubis.

Structure:
• It is 4 cm transversely, 3 cm in its vertical diameter and 2 cm deep.
• It composed of columnar epithelium, muscle tissue and fibrous tissue.
• Each testis is found inside its own pouch on one side of the scrotum and is connected to the abdomen by a spermatic cord and cremaster muscle.
• The cremaster muscles contract and relax along with the scrotum to regulate the temperature of the testes.
• The inside of the testes is divided into small compartments known as lobules. Each lobule contains a section of seminiferous tubule lined with epithelial cells.
• These epithelial cells contain many stem cells that divide and form sperm cells through the process of spermatogenesis.

Functions:
• The testes are the male gonads and produce spermatozoa.
• Secrete male hormones androgens (Testosterone).
• Testosterone is responsible for the development of the secondary sex characteristics together with follicle stimulating hormone (FSH), it also promote the production of the sperm.

2-C.Bulbo–Urethral (Cowper’s) gland
• A pair of pea-sized exocrine glands located inferior to the prostate and anterior to the anus their ducts about 3 cm long.
• The Cowper’s glands secrete a thin alkaline fluid into the urethra that lubricates the urethra and neutralizes acid from urine remaining in the urethra after urination.
• This fluid enters the urethra during sexual arousal prior to ejaculation to prepare the urethra for the

N.B:
• The alkaline fluids secreted by these glands are nutrient plasma with several functions, including:
  ✓ Enhancement of sperm motility.
  ✓ Nourishment of the sperm (i.e., provides a ready source of energy with the simple sugar fructose).
  ✓ Protection of the sperm (i.e., sperm are maintained in an alkaline environment to protect them from the acidic environment of the vagina).

Seminal fluid:
• This fluid in which the spermatozoon as suspended. It nourishes them and aids their motility.
• The prostatic secretion is the largest component of it. But secretions of seminal vesicles and Cowper’s glands all help to nourish as will as provide mean of transport for the sperm.
Normal semen analysis:
- Average amount of ejaculate are 3.5 ml but the normal range lies between 2 and 6 ml.
- Average density: is 40-250 000 000 sperm per milliliter of seminal fluid of these 75% are mobile and 20-25% will be malformed.
- Rate of movement: a speed of 2-3 mm per minute but reach to 0.5mm per minute in acidic vaginal secretion.

Semen:
- Semen is a thick, whitish fluid ejaculated by the man during orgasm. It contains spermatozoa and fructose rich nutrients.
- During ejaculation, semen receives contributions of fluid from the seminal vesicles and the prostate gland.
- Combined semen is alkaline (average pH 7.5).
- The average amount of semen released during ejaculation is 2.5 to 5 ml.
- About 60-120 million spermatozoa per ml.
- If the sperm count less than 20 million male is considered infertile.

Amature sperm consists of:
1. Head: containing the nucleus and covered by acrosome, which contains hyaluronidase enzyme, which facilitates fertilization of ovum.
2. Neck: Which units the head to the body.
3. Body is concerned with the production of energy required for motility.
4. Tail: it is specialized for motility.

- Sperm store in genital system 42 days in male genitalia and can live only 2 or 3 days in the female genital tract.

Sperm production and transportation:

<table>
<thead>
<tr>
<th>Organ</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Testes</td>
<td>Produce spermatogenic cells.</td>
</tr>
<tr>
<td>Seminiferous</td>
<td>Produce testosterone.</td>
</tr>
<tr>
<td>Tubules</td>
<td>Divide spermatocytes by meiosis.</td>
</tr>
<tr>
<td>Epididymis</td>
<td>Stores mature spermatozoa.</td>
</tr>
<tr>
<td></td>
<td>Moves sperm along tract by smooth muscle action.</td>
</tr>
</tbody>
</table>
Menstrual cycle

Definition:

Menarche: the onset of menstruation signals the bodily changes that transform a female body.

Menstrual cycle: Cyclic changes in the endometrium caused by estrogen and progesterone

- Average age is 12.8
- Amount of bleeding varies from woman to woman
- Expulsion of blood clots
- Blood color can vary from bright red to dark maroon
- Usually occurs every 25 to 32 days
- Women can experience fluid retention, cramping, mood swings, weight gain, breast tenderness, diarrhea, and constipation

Menstrual cycle: control by hormones
It is a hypothalamus pituitary ovarian axis
  • hypothalamus releases GnRH that stimulates pituitary
  • pituitary produces:
    ➢ Follicle-stimulating hormone (FSH):
      • Ovum maturation in follicles inside ovaries
      • Estrogen production in ovaries
    ➢ Luteinizing hormone (LH):
      • Stimulates release of mature ovum
      • Stimulates development of corpus luteum, the progesterone-secreting part of the follicle that remains after egg is released.
  • Negative feedback mechanism
    — Each hormone is secreted until the organ it acts upon is stimulated—then that organ secretes a hormone that reduces secretion of the first hormone.

Component of female reproductive cycle
  • Menstrual cycle
  • Ovarian cycle

Menstrual cycle

Cyclic changes in the endometrium caused by estrogen and progesterone
1-Menstrual Phase
  • Starts with 1st day of menstrual cycle
• Lasts for 4-5 days
• Functional layer of uterine wall is sloughed off and discarded with the menstrual flow
• Blood discharge from vagina is combined with small pieces of endometrial tissue
• Cyclic changes of the Endometrium
• Decidua functional is: 2/3 superficial, proliferate and shed each cycle
• Decidua basalis: deepest region, source of endometrial regeneration after each menses

2-Proliferative phase
• Is a phase of repair and proliferation
• Lasts for 9 days
• Controlled by estrogen secreted by follicles
• 2-3 mm increase in thickness of endometrium
• The glands increase in number and length and the spiral arteries elongate
• Glandular epithelium secrete glycogen rich material
• Endometrium thickens under the influence of estrogen and progesterone

3-Secretory Phase
• It begins with ovulation and end with menstruation
• Spiral arteries grow into the superficial layer
• Arteries become increasingly coiled
• Large venous network develops

If Fertilization Occurs
• Fertilized ovum implants in endometrium on about 6th day of this phase
• HCG hormone secreted by syncytiotrophoblast keeps the corpus luteum secreting estrogen and progesterone

If Fertilization Doesn’t Occur
• No HCG
• Corpus luteum degenerates
• Estrogen and progesterone levels fall
• Secretory endometrium enters an ischemic phase
• Menstruation occurs

4-Ischemic Phase
• Decreased levels of estrogen & progesterone
• Stoppage of glandular secretion
• Loss of interstitial fluid
• Marked shrinking of endometrium
• Spiral arteries become constricted
• Venous stasis & Ischemic necrosis
• Rupture of damaged vessel wall
• Blood seeps into the surrounding connective tissues
• 2 days before menses: dramatic increases in PMN migrate from vascular system
• Lasting about 13 days

Ovulation
• It occurs around mid-cycle about 14 days in a 28 day menstrual cycle
• Ovarian follicle undergoes sudden growth spurt (burst) under the influence of FSH & LH
• These hormones prepare endometrium for implantation of Fertilized Ovum (Blastocyst)

OVARIAN CYCLE
• FSH and LH produce cyclic changes in ovaries.

1. Follicular phase the primordial follicles start to grow under the effect of FSH. Only one reaches the maturity and called Graafian follicle. the grown follicle secrete steroidal

2. Ovulatory phase

Ovulation is outward expulsion of a mature ovum from a ruptured Graafian follicle. Where it is picked up by the fimbrial end of the tube. It occurs about 14 th day of
menstrual cycle

3. luteal phase

Ruptured Graafian follicle are termed corpus luteum

- It secretes Progesterone and little estrogen
- These hormones prepare endometrium for implantation of Fertilized Ovum (Blastocyst)
- If the oocyte is fertilized the corpus luteum enlarges & remains active for first 20 weeks of pregnancy
- If the oocyte is not fertilized the corpus luteum degenerates in 10-12 days

Nursing role during menstrual cycle:

*Nurse must provide health teaching about the following items:*

Sanitary pads and tampons:

- Wash hands before and after giving self perineal care.
- Washing or wiping the perineum should be always done from front to back.
- Reduce use of tampons by substitute sanitary pads part of the time especially at night.
- Apply perineal pad snugly enough so it won’t slide back and forth with her movements.
- Do not touch the side of the perineal pad that will come in contact with the perineum.
- Frequently take warm bath to maintain personal hygiene.

Diet:

- Decrease intake of caffeine (tea, coffee, coals, chocolate) to reduce anxiety.
- Decrease intake of simple sugars.
- Decrease intake of salty food to reduce fluid retention.
- Eat six small meals a day to prevent hypoglycemia.
- Increase fluid intake.
- Avoid alcohol which aggravates depression.

Nutritional self-care:
- Vitamin B complex neutralizes the excessive amounts of estrogen produced by the ovaries thus reduce nervousness that sometimes occur premenstrual. It is present in lean meats, whole grains, and dark green leafy vegetables.

- Vitamin B₆ can relieve the heavy bloated puffy feeling that is often experienced before the period.

- Vitamin E is a mild prostaglandin inhibitor similar to aspirin but without the side effects. It improves circulation; reduce muscular spasm and pain by reducing the uterus need for O₂. It is present the yeast, wheat germ.

- Iron is needed to prevent depletion of the female iron stores.

- Calcium may also provide relief from menstrual symptoms, it is present in yogurt and cheese.

Exercise:

- Daily exercise can prevent cramps, relieves constipation.

- Deep breathing brings more O₂ to the blood which relaxes the uterus.

- Aerobic activities as jogging or walking alleviate irritability and tension.

Heat and massage

- Using any form of warm application may be beneficial during painful periods.

- Massage can also soothe aching muscles, promote relaxation and blood flow.

---

**Reproductive Health**

**Definition:**

- Reproductive health is a status of complete physical, mental and social wellbeing and not merely the absence of disease or disability in all matters relating to the reproductive system and to its function and processes.

- Being able to choose when to get pregnant, apart from being health issue, greatly influences population growth, and environmental conditions.

- Increasing contraceptive choices and access leads to fewer unsafe abortions—arguably the most easily avoidable cause of maternal death.

- Life-saving care for complications from abortion is an excellent opportunity to provide contraception, avoiding another unwanted pregnancy.

- Reducing pregnancy-related deaths and illness in mothers increases newborn and child survival, and improves productivity.

- Reducing maternal deaths depends on a functioning death system. Strengthening the system to improve maternal health benefits in many other areas of death.
**Basic elements of reproductive health:**
- Employment of women.
- Woman’s nutrition.
- Care of adolescent.
- Safe sexual behavior.
- Safe motherhood.
- Widely available family planning services.
- Elimination of unsafe abortion.
- Prevention of unwanted pregnancy.
- Prevention and management of infertility.
- Male involvement.
- Prevention and treatment of malignancies and post menopausal care.
- Women’s and men's reproductive health needs

Women's reproductive health needs are:
- A continuum from sexual health.
- Prevention and management of infertility.
- Fertility by choice, not by chance.
- Pre-conceptional care.
- Keeping labour normal.
- Pregnancy and child birth, postnatal care.
- In addition, it covers menopausal and postmenopausal health care.
- Women’s reproductive health needs include:
  1. Sexuality.
  2. Protection against sexually transmitted infectious.
  4. Protection against prostatic hypertrophy and prostatic cancer is another concern

Reproductive health rights:
- Right to be free from all forms of discrimination.
- Right to life, liberty and security.
- Right to marry and found a family.
- Right to education and information.
- Right to benefit from scientific progress.
- The right of sexual equality.
- Right to health and health care.
- The Egyptian women work law.
- Right of adolescents to meet their needs.

Strategies for improving reproductive health and assuring women's rights:
- Efforts to delay early marriage and/or childbearing through good reproductive health education.
- Effective prenatal care and safe management of routine deliveries.
- Access to emergency medical care and dealing with complications of childbirth.
- Access to high quality of family planning services and a choice of contraceptive methods.
- Emergency care for complications that accompany unsafe abortion.
- Public education and counseling to prevent the spread of AIDs and STDs.
- Diagnosis and treatment of STDs and reproductive cancers, where resources and circumstances permit.
- Effective and accessible infertility treatment.
- Efforts to educate local communities about harmful cultural practices that influence the health as female circumcision.
- Elimination of all forms of violence against women, female youth and children.
- Improvement of women's status and enhancement of quality.
- Applying human rights in national constitutions and international conventions to advance safe motherhood (e.g. by requiring states to take effective preventive and curative measures to reduce mortality and to treat women with respect and dignity).
- Reducing inequalities in social and economic policies.
- Protecting and promoting women’s rights, choices and autonomy are critical to reduce maternal deaths and ill health.

**Family Planning**

**Introduction:**

Family planning allows individuals and couples to anticipate and attain their desired number of children and the spacing and timing of their births. It is achieved through use of contraceptive methods and the treatment of involuntary infertility. A woman’s ability to space and limit her pregnancies has a direct impact on her health and well-being as well as on the outcome of each pregnancy.

**Definition of family planning (FP) :**

The WHO considered family planning as the practice that helps individuals or couples to attain certain objectives, which are:
- Avoidance of unwanted births.
- Bringing about wanted births.
- Regulation of the interval between pregnancies.
- Control the time at which births occur in relation to parents’ age.
- Determine the number of children in the family.
- Avoid pregnancy for women with serious diseases.
- Avoid pregnancy for women with genetic diseases.

**Benefits of family planning:**

**A. For women:**
- Decrease maternal mortality and morbidity by reducing high-risk pregnancies (maintenance of good health standards).
- Improve health and the quality of life.
- Avoidance of hazards & complications of high parity:
  - Nutritional deficiency (anemia)
  - Obstetric risk (disproportion, malpresentation, obstructed labor, rupture uterus, antepartum, postpartum hemorrhage, toxemia of pregnancy, induced abortion for unwanted pregnancy)
  - Medical disorders complicating pregnancy (hypertension, renal disorders, and diabetes)
  - Gynecologic problems resulting from repeated pregnancies & deliveries (prolapse, perineal tears, urinary incontinence)
- Supporting women’s rights and opportunities for education, employment, and full participation in society.
Enjoyment of marital life

B. For children:
- Deceased child Mortality
- Improve intellectual development
- Prevent genetic diseases and improve genetic potentials.
- Prevent communicable diseases.
- Improve the nutritional status and prevent nutritional diseases.
- Provide better opportunities for education, recreation and interaction with other family members.

C. For the family:
- Improves the financial status.
- Improves the educational opportunities for children.
- Improves work opportunities especially women.
- Improves nutrition and quality of life.

D. For the community:
- Less drain on resources
- High levels of socioeconomic development
- Fighting HIV/AIDS through providing information
- Protecting the environment by stabilizing population growth

Family Planning Methods

A) Hormonal Methods:

1) Oral Contraceptive: "Ocs, Pills", Combined Oral Contraceptive:

What it is and how it works:
The oral contraceptive combines synthetic forms of the hormones progesterone and estrogen. OCS stop ovulations by interfering with cyclical hormonal changes required for ovulation, make cervical mucus thick and impenetrable to sperm, and induce endometrial changes. Pills are taken every day in 21 —day cycles or 28 - day cycles. The whole cycle must be taken on schedule to work most effectively.

When OCS are stopped menstruation occurs

Advantages of OCS:
- *Highly effective when used properly, easily used.
- *Reduce menstrual cramping and menstrual blood loss, reduce iron deficiency anemia.
- *Reduce risk of same pelvic infection and ectopic pregnancy.
- *Reduce risk of ovarian and uterine cancer, protects against ovarian cysts and benign breast cysts.

Disadvantages of OCS:
- *The failure rate of the oral contraceptive increases if the pill is not taken regularly.
- *Common minor side effects include: breast tenderness, nausea, headache, vomiting, weight gain or loss and spotting between periods; these often clean up
after two or three months of use.

OC users have greater chance than non-users of developing:

*Serious cardiovascular diseases including blood clots.
*Heart attack and strokes.
*High blood pressure, usually is mild and may be reverse by discontinuing use
*OCS users may have a greater risk than non-users of having gall bladder disease.
*may decrease quantity of breast milk

Who should not use the method?

*Women over age 35
*Smokers
*Women with heart attacks, stroke, angina pectoris, blood clots, cancer of breast or uterus, liver tumor or impaired liver function.

Warning signs a user should know:

*Swelling or pain in the legs.
*Yellowing of skin or eyes.
*Pain in the abdomen, chest or arms.
*Shortness of breath, severe headache or depression.
*Eye problems such as blurred or double vision.

2) Progestin-only Pill (minipill):

What is it and how it works?
The progestin-only pills contain the same synthetic. progestin as the OCS but no estrogen. The progestin causes thick cervical mucus impenetrable to sperm end induces a thin atrophic endometrium.

Advantages of progestin-only pill.

*Does not affect lactation.
*Theoretically this pill posses less risk of serious cardiovascular side effects than combined OCS.
*It decreases painful menses and menstrual blood loss.

Disadvantage of progestin-only pill:
The progestin-only pill has a higher pregnancy rate than combined OCS, more likely to cause menstrual irregularity and vaginal spotting, high rate of ectopic pregnancy.

Who should not use the method?

*Women who experience genital bleeding.
*Women who have ectopic pregnancy.

Warning signs a user should know:
If 45 days passed since the last menstruation, minipill users must seek medical care to check for pregnancy including ectopic pregnancy.

3) Injectable Contraceptives:

What it is and how it works?
The synthetic progestin hormones of the injectable contraceptive are injected into muscle from which they are slowly released. They prevent pregnancy by suppressing ovulation inducing a thin atrophic endometrium and causing thick cervical mucus which is impenetrable to sperm. A three month injection of DMPA is the most common (150 mg).

Advantage:
* Injectable contraceptives are one of the most effective reversible contraceptives, no serious side effects other than occasional heavy bleeding.
* Convenient only every 3 months.
* Does not interfere with lactation.
* There is no evidence that the minute amount which passes into breast milk affect the nursing infant.
* The return of fertility, although delayed 4-8 months is not impaired.
* Have health benefits similar to oral contraceptives.

Disadvantages:
* Inter menstrual bleeding
* Amenorrhea
* Delay of fertility 4-8 months after the last dose.

Who should not use the method?
* An injectable contraceptive should not be used if pregnancy is suspected or if undiagnosed genital bleeding is present.
* If there is a history of malignancy or cardiovascular disease.

Warning signs a user should know:
Those using an injectable contraceptive should seek medical care in case of dizziness, headache or heavy bleeding.

4) Norplant:

What it is and how it works?
The Norplant consists of six tiny silicone rubber capsules containing the progestin levonorgestrel. They are surgically inserted under the skin of the arm. The tubes allow a steady diffusion of the drug into the bloodstream. The implant must be removed surgically when it used up (after 5 years) or when the women wishes to discontinue the method. The progestin works by blocking ovulation, causing thick cervical mucus impenetrable to sperm, and inducing thin endometrium
Now Implaon consists of only one thread and could be left for 3 years.

B) Intrauterine method or device (IUD, CU. T, lippes loop):

**What it is and how it works?**

The IUD is a small plastic or metal device that is placed in the uterus through the cervical canal. How the IUD prevent pregnancy is not completely understood. IUD seems to induce an environment in the uterus which make it inhospitable both egg and sperm.

**Advantages of IUD:**

- Highly effective, long term, easy to use, no re-supply problems, reversible, inexpensive.
- Very safe if side effects receive proper care.

**Disadvantages of IUD:**

- Insertion and removal and follow up require trained health personnel with appropriate equipment and facilities.
- Insertion sometimes is painful
- May cause irregular or heavy bleeding and anemia.
- Occasionally severe abdominal cramping.

**Who should not use the method?**

- Women who have had pelvic inflammatory disease (pelvic infection) or sexually transmitted diseases.
- Women with very heavy menstruation or abnormal vaginal bleeding, with anemia.
- Possible pregnancy.
- Women with history of tubal pregnancy.
- Women with cervical or uterine cancer.

**Warning signs a user should know:**

IUD users must seek medical care to check for pregnancy if menstruation is late or if having abdominal pain, chills, fevers, vaginal discharge or heavy bleeding or spotting.

C) Barrier Methods:

1) Condom:
What it is and how it works?
The condom is a sheath of thin rubber (latex) which is put on man’s erect penis before intercourse to collect the semen; keeping the sperm from entering the woman’s vagina. A new condom must be used for each act of intercourse.

Advantages:
- Easy to use, effective, inexpensive, easily obtained.
- Protect against sexually transmitted disease including AIDS.

Disadvantages:
- May tear if it has been stored in too heat, humidity or sunlight.
- It use interrupts lovemaking and users find sexual pleasure decreased.

Who should not use the method?
Any man can use a condom unless he or his partner is sensitive to latex.

Warning signs a user should know:
If user is allergic to latex, local irritation will occur.

2) Spermicidal products:

What it is and how it works?
These are foams, creams, jellies, tablets and suppositories. Before intercourse the contraceptive is inserted into the vagina, where it spreads over the vagina and cervix. They inactivate sperm and mechanically prevent sperm from entering uterus.

Advantages of spermicidal:
* Can be used by anyone.
* They protect against sexually transmitted diseases.

Disadvantages:
* It is unreliable method used from 5-10 minutes before each act of intercourse.
* Some women produce a slight genital irritation.

D) Surgical Methods:
1- Tubal ligation. (Female sterilization):

What it is and how it works:
Tubal ligation is a permanent method of contraception in which the fallopian tubes are closed so that the ovum cannot travel through them to meet the sperm. The tubes are surgically closed with bands, clips, electro-cautery or by cutting and...
tying.

Advantages:
Highly effective method requires a single procedure and no subsequent risks.

Disadvantages
*Sterilization requires skills medical practitioners. Complications are rare but sometimes bleeding, infection, injury to other organs and complications from anaesthesia.

Warning signs a user should know:
Bleeding, shock, infection and bowel injury, fever, weakness, rapid pulse, persistent abdominal pain, vomiting, pus and tenderness at the surgical site. Medical care is needed for these symptoms

2-Vasectomy (Male sterilization)

Definition of vasectomy:
It is a permanent surgical method in which the vas deferens which carries a man’s sperm from the scrotum to the urethra during ejaculation is cutted. This operation keeps sperm from mixing into the semen when men ejaculate. After a vasectomy, sperm cannot move out of the testes.

Advantages of vasectomy:
• Very effective.
• Permanent. A single, quick procedure leads to lifelong, safe, and very effective family planning.
• Nothing to remember except to use condoms or another effective method for at least the first 20 ejaculations or the first 3 months.
• No interference with sex. Does not affect a man’s ability to have sex.
• Increased sexual enjoyment because no need to worry about pregnancy.
• No supplies to get, and no repeated clinic visits required.
• No apparent long-term health risks.

Disadvantages of vasectomy:
• Common minor short-term complications of surgery:-
  – Usually uncomfortable for 2 or 3 days,
  – Pain in the scrotum, swelling and bruising,
  – Brief feeling of faintness after the procedure.
• Uncommon complications of surgery:
  – Bleeding or infection at the incision site or inside the incision,
  – Blood clots in the scrotum.
• Requires minor surgery by a specially trained provider.

Contraindication:
• Diabetic patient.
• Anemic patient.
• Skin infection.

Complications of Vasectomy:
• Bleeding, Hematoma, Local infection
Module Two: Normal and abnormal Pregnancy

Objectives
At the end of this module, the student will be able to:

- Discuss the progression of the fertilized egg from conception to birth.
- Explain Stages Of fetal development
- Differentiate between presumptive, probable, and positive signs of pregnancy.
- Review the physiological changes that occur in each system and cause discomfort to the women during pregnancy.
- Discuss nursing interventions during pregnancy
- Define the concept of high risk pregnancy.
- Identify the classification of hypertensive disorders of pregnancy.
- Explain nursing interventions for pregnancy induced hypertension
- Identify causes of bleeding in early pregnancy
- Discuss nursing interventions for early and late bleeding during pregnancy
- Describe the gestational diabetes and its risk factors.
- Discuss the nursing management for pregnant women with diabetes mellitus

Conception and Fetal Development

Related Definitions:

Gametogenesis:
It is the formation and release of mature eggs in women or sperm in men.

Oogenesis:
It is the process by which female ova are produced.

Spermatogenesis:
It is the process by which male sperm are produced.

Fertilization:
It is union of the sperm with ovum in the fallopian tube. The sex of the infant is determined at Fertilization.

The sperm: each sperm is 60 microns long and consist of a head, body and tail. The tip of the head is covered by acrosome. This contains enzymes to dissolve the covering of the ovum in order to penetrate it.
Stages of fetal development:

Three major stages growth & development Occur after conception which includes:

* Pre-embryonic stage: the first two weeks following conception are a period of rapid growth and change. In which all the cells look like each other. This period is called the "fertilized ovum" or germinal or zygote stage.

*Embryonic stage "embryo": The interval from the "beginning" of the third week to "end" of the second month (eighth week) is called embryonic stage. In which the tissues, organs & systems are formed.

*Fetal stage: The period from the beginning of the third month till the time of birth is called the "fetus". This is a time of growth and refinement of existing structures and organs.

Fertilization process:

- After ovulation has occurred, the finger like projection (fimbriae) of the fallopian tube sweep the egg into the outer third of the tube, where fertilization normally takes place.

- Mature sperm that have entered the uterine cavity swim to this area and attempt to fertilize the ovum. If fertilization occurs: the ovum becomes fertilized & is now called a Zygote.

Fertilization

- If the attempt is not successful within 24 to 48 hours, ovum dies & is lost in the uterine secretions. The mature sperm live 48-72 hrs.

What is happen after fertilization?

- Immediately after fertilization, the nuclei of the sperm and ovum to form a zygote with a full complement of 46 chromosomes, 23 from the sperm and 23 from the ovum.

- At this time, sex of zygote is determined, depending on whether the male contributed an X or Y chromosome.

- Cell division (mitosis) begins which the fertilized ovum divided into 2 cells, then into 4 cells, then 16 cells and so on until a cluster of cells is formed known as the morula.

- During the next 4 days, the morula continues its journey down the fallopian...
tube. Fluid develops in the center of the structure and pushes the cells towards the outer walls.

- The cells then develop into two specialized layers. The outer most layers & the inner layer. The outer layer is called the feeding layer (trophoblast) and is responsible for nourishing the inner layer. The cells which lie in the center form an inner cell mass which is called (embryoblast).

- While the trophoblast will form the placenta & chorion, the inner cell mass will form the fetus, amnion, and umbilical cord. The zygote is now called the blastocyst.

- The blastocyst reaches the cavity of the uterus about the 5th day after ovulation.

- The blastocyst begins its implantation in the endometrium of the uterus about the 6th or 7th d

**Implantation:**

Implantation is the process by which the blastocyst penetrates the superficial layer of the endometrium (of the uterus).

**Normal site of implantation:**

Normally implantation takes place in the endometrium of the "posterior" wall of the fundus of the uterus.

**Time of implantation:**

Implantation begins about the 6th or 7th day & is complete about the 11th day after fertilization.
How does implantation occur?

- When blastocyst reach the cavity of the uterus, & becomes attached to the endometrium, at this time, the cells of the trophoblast which lie over the inner cell mass start to secrete proteolytic enzymes which make them able to penetrate between the epithelial cells of the endometrium & cause erosion not only of the epithelial cells (of the endometrium) but also of the uterine vessels in the area penetrated.

- During the second week, the blastocyst completes its implantation in the endometrium.

- Once the implantation has taken place, the endometrium is called the decidua. It is differentiate into three layers:

  - **Decidua capsularis**: Covering the blastocyst.
  
  - **Decidua basalis**: It lies between the blastocyst and wall of the uterus.
  
  - **Decidua vera**: It is the remaining part of the uterine cavity.

**Implantation Process**

- The inner cell mass differentiate into three layers (Ectoderm & Endoderm & mesoderm).

  - **The ectoderm**: This layer mainly forms the skin and nervous system.
  
  - **The mesoderm**: This layer forms bones, muscles, and also heart, blood vessels, including those in the placenta.
  
  - **The endoderm**: This layer forms mucous membranes and glands.

- Two cavities are formed (Amniotic cavity & Primary yolk sac).
* One cavity is known as the yolk sac that provides nourishment for the developing embryo for a brief time & then it disappears.
  * Another cavity is known as the amniotic sac & contains fluid that is later called amniotic fluid.

- After implantation, the deciduas continues to thicken under the implanted blastocyst and the trophoblast develops finger-like projections called chorionic villi which contain the blood of developing zygote, admit oxygen and nutrition from mother's blood vessels walls through the processes of osmosis and diffusion.

**Development of the placenta and membranes:**

- Three weeks after fertilization projections from the trophoblastic layer proliferate and branch forming the chorionic villi. The villi become most profuse in the basal deciduas where the blood supply is richest and will develop into the placenta.
- The villi penetrate the deciduas and erode the walls of maternal blood vessels. Which the maternal blood surrounding the villi, circulate slowly to enable the nutritive villi to absorb food and oxygen and excrete waste.

**Development of the placenta**

- The placenta is completely formed and functioning from 10-12 weeks after fertilization

**Functions of the Mature Placenta:**

The placenta is completely formed & functioning from 10-12 weeks after fertilization.

1-**Respiration:**
- The fetus obtains oxygen and excretes carbon dioxide through the placenta. 
- Oxygen from the mother's hemoglobin passes into the fetal blood and carbon dioxide from fetal blood passes into the maternal blood by simple diffusion.

2-Nutrition:
- Food for the fetus comes from the mother's diet which has been broken down into simpler forms.
- Protein is transferred across the placenta as amino acids.
- Protein is transferred across the placenta as amino acids, carbohydrates as glucose and fats as fatty acids.
- Water, vitamins and minerals also pass to the fetus.
- The placenta can break down complex nutrients into compounds that can be used by the fetus.

3-Storage:
- The placenta metabolizes glucose that is stored in the form of glycogen and reconverted to glucose as required.
- It also stores iron and fat and soluble vitamins.

4-Excretion:
- Carbon dioxide is the main substance excreted from the fetus.
- Bilirubin and very small amounts of urea and uric acid are also excreted

5-Protection:
- The placenta provides a limited barrier to infection.
- Some bacteria, for example treponema pallidum of syphilis and the tubercle bacilli, can cross the placenta.
- Rubella virus and some drugs can also cross to the fetus.
- Antibodies are transferred to the fetus from the mother and give immunity to the infant for the first 3 months after birth

6-Endocrine:
- Human chorionic gonadotrophin (HCG) forms the basis of pregnancy tests as it is excreted in the mother's urine.
- Its function is to stimulate the growth and activity of the corpus luteum.
  • Estrogens are produced by the placenta. The amount of estrogen produced is an index of fetoplacental wellbeing.
  • Progesterone is secreted by the placenta in large amounts
until it falls before the onset of labor.
• Human placental lactogen (HPL) has a role in glucose metabolism in pregnancy and the activity of human growth hormone.

The Placenta at Term
- The placenta is a round flat mass, about 20cm in diameter and 2.5cm thick at its centre.
- It weighs one-sixth of the infant’s weight at term.

1-The Maternal Surface
- This surface is dark red in colour.
- The chorionic villi are arranged in about 20 lobules known as cotyledons that are separated by sulci, each cotyledon containing a single villus with its branches.

2-The Fetal Surface
The amnion covering the fetal surface gives it a white, shiny appearance. Branches of the umbilical vein and arteries are visible, spreading out from the insertion of umbilical cord (normally the center).

The Fetal Sac
The fetal sac protects the fetus against ascending bacterial infection. It consists of a double membrane:
*Chorion:
The outer membrane that lies under the capsular decidua and adheres to the uterine wall is a thick, opaque, friable membrane derived from the trophoblast.
*Amnion:
The inner membrane which contains the amniotic fluid is a smooth, tough, translucent membrane derived from the inner cell mass.

Functions
- The fluid allows for the growth and free movement of the fetus
- It equalizes pressure and protects the fetus from injury.
- The fluid maintains a constant temperature to the fetus.
- It provides small amounts of nutrients.
- In labor, the fluid protects the placenta and umbilical cord from the pressure of uterine contractions.
- It aids effacement and dilatation of the cervix.

Origin
Fetal:
Amniotic fluid is secreted by the amnion that covers the placenta and umbilical cord, and fluid exuded from feta vessels in the placenta. Fetal urine also contributes
to the volume from the 10th week of pregnancy.

Maternal:
- Fluid exudate from maternal vessels in the decidua.

Volume
- Throughout pregnancy, the amniotic fluid increases and the normal volume is 500-1500 ml.

• *Polyhydranmos:* amniotic fluid more than 1500mI
• *Oligohydramnios:* amniotic fluid less than 500mI

Constituents
- Amniotic fluid or liquor is a clear pale straw-colored fluid consisting of 99% water
- • The remaining 1% is dissolved solid matter including food substances, waste products, dead skin cells, vernix cascosa and lanugo.

The Umbilical Cord
- The umbilical cord extends from the fetus to the placenta and transmits two umbilical arteries and one vein.
- These are enclosed and protected by Wharton's jelly, a gelatinous substance formed from mesoderm.
- The whole cord is covered by amnion.
- The length of the cord is about 50cm.

Fetal Circulation:
The temporary structures that enable fetal circulation to take place are:
- The umbilical vein which leads from the umbilical cord to the underside of the liver.
- The ductus venosus connects the umbilical vein with the inferior vena cava.
- The foramen oval is a temporary opening between the atria.
- The ductus arteriosus leads from the bifurcation of the pulmonary artery to the descending aorta.
- The hypogastric arteries branch off from the internal iliac arteries and become the umbilical arteries when they enter the umbilical cord. They return blood to the placenta.

Physiological changes during pregnancy

Related definitions:
- Ante: means before.
- Natal: means delivery.
- Antenatal: means before delivery.
- Antenatal care: comprehensive health supervision of a pregnant woman before delivery.
- Prenatal: time before delivery.
- Gravida: any pregnancy, regardless of duration. It includes the present pregnancy.
Para: number of births after 20 weeks' gestation regardless of whether the infants were born alive or dead.

Fetal Circulation

- Primigravida: a woman pregnant for the first time.
- Multigravida: a woman who is in her second or a subsequent pregnancy.
- Nuligravida: a woman who has not given birth at more than 20 weeks' gestation.
  - Primipara: a woman who has given birth to a fetus (dead or alive) that has reached 20 weeks' gestation.
- Multipara: a woman who has given birth two or more times at more than 20 weeks' gestation.
- Stillbirth: A fetus born dead after 20 weeks' gestation.
- LMP: Last menstrual period. Pregnancies are dated from the first day of the LMP
- EDC: Estimated date of confinement (EDD: estimated date of delivery)
  - For a rough estimate: Add 7 days to 1st day of LMP, then add 9 months. (Nagele rule)
- Linea Nigra: This is a dark line that runs from the umbilicus to the symphysis pubis and may extend as high as the sternum. It is a hormone-induced pigmentation. Noted in some women during the later months of pregnancy (after 20 weeks).
- Striae Gravidarum (Stretch Marks). Fine pinkish white or gray lines resulting from stretching of skin during pregnancy. They generally appear on the woman's abdomen, breasts, thighs and buttocks. Usually appears in the second half of pregnancy (between 6 to 12 wks)
- Cholosma --- brownish pigmentation of the face during pregnancy; also called “mask of pregnancy.” Or it is a butterfly pigmentation may appear on cheeks and nose, it disappears after delivery.
- Braxton Hicks contraction: Irregular, mild, painless uterine contractions that occur throughout pregnancy; they become stronger in the last trimester.
- Hegar’s sign -- A softening of the lower segment of the uterus found upon palpation in the second or third month of pregnancy suggesting pregnancy. It occurs between 6 to 12 wks (bimanual examination).
- Goodell’s sign --- softening of the cervix, uterus and vagina during pregnancy.
- Chadwick’s sign-- bluish discoloration of the cervix, vagina, and labia during pregnancy as a result of vascular congestion.
- Palmer sign: Intermittent uterine contraction early in pregnancy detected by bimanual examination.
- Leucorrhea: it is colorless, non-effective normal vaginal discharge due to hormonal changes occur during pregnancy.
- Amenorrhea: Absence of menstruation.
• Quickening: It’s the first time at which the mother feels fetal movements.
  o PG: usually occurs between the 18th and 20th week
  o MG: usually occurs between the 16th and 18th week.

• Ptyalism: increase of saliva.

Ballottement: It refers to the fetal movement in the amniotic fluid

Presumptive signs:
  1. Amenorrhea.
  3. Fatigue
  4. Urinary frequency.
  5. Breast & skin changes.
  6. Quickening

Positive signs of pregnancy:
  1. Visualization of fetal sac by ultrasound
  2. Hearing FHS by Doppler or stethoscope
  3. Felt fetal movement
  4. Palpate fetal parts

Physiological changes in pregnancy

1. Reproductive system:
   A. The uterus:
      - Size: increase to 20 times of its non-pregnant size.
      - Weight: increase from 60gm-1000gm. This enlargement due to 
        hypertrophy "increase the size of preexisting muscle cells" and
        hyperplasia "formation of the new cells"
      - Capacity: increase to 5000ml and has sufficient capacity for the fetus –
        placenta-amniotic fluid.
      - As the pregnancy advanced the uterus divided into upper and lower
        uterine segment the lower uterine segment composed of lower part of
        uterus and the upper cervix composed mainly from connective tissue
        because of this the lower uterine segment becomes stretched in late
        pregnancy.
      - The endometrial layer increased in thickness and called deciduas
      - By the 12 weeks' gestation the uterus can be felt above the symphysis pubis
        , and at 24 weeks the fundus is at the umbilical level. By 36 weeks the
        fundus is at the xiphoid process. By 40 weeks the fetus descends, with the
        fetus head entering into pelvis.

B. Ovaries:
   - Stop producing ova during pregnancy
   - Progesterone and estrogen continues produce until 10th _ 12th weeks of
     gestation to maintain pregnancy until the placenta develops and can take
     over adequate hormone production

C. Cervix:
The cervix becomes softer and swollen in pregnancy. Prostaglandins and collagenase especially in the last weeks of pregnancy act on collagen fiber make cervix softer.

Chadwick's sign: it is bluish color of the vagina and labia due to increase the level of estrogen which is one of the earliest signs of pregnancy.

Goodell sign: it is a softening of the cervical tip.

The secretion from cervical gland forms the mucus plug in the cervical canal that acts as a barrier to prevent organisms from entering the uterus. The mucus plug is usually expelled from the vagina during labor.

D. Vagina:

- Increased vascularity prominently affects the vagina resulting in the violet color characteristic of (Chadwick sign).
- Considerable increase in the thickness of the vaginal mucosa, loosening of the connective tissue, hypertrophy of smooth muscle cells.
- Vaginal secretion increase (thick, white and acidic) acidity help to prevent bacterial infection.
- In end of pregnancy the vagina & perineal body are sufficiently relaxed to permit of the infant.

E-breasts and lactation:

- There are changes in both size & appearance due to 'effect of estrogen & progesterone'.
- The earliest changes is a swelling of the breast tissue.
- The nipple increase in size & become larger & more pigmented.
- Yellowish breast fluid 'colostrums' is present in greater or lesser amounts throughout pregnancy especially in 3rd trimester.

2. Cardiovascular system:

- Cardiac hypertrophy from increased blood volume and cardiac output.
- Progressive increase in blood volume, peaking in the third trimester at 30% to 50% of prepregnancy levels.
- Increased heart rate and increased cardiac output to meet demands of enlarging uterus & fetal oxygenation.
- Smooth-muscle relaxation and arteriole dilation, resulting in vasodilatation due to increase in progesterone level.
- Supine hypotension due to the enlarging uterus compresses both the inferior vena cava and the lower aorta when the woman lies in supine position. This reduces venous return to the heart this condition happen in 10% of pregnant women.
- Increased levels of blood coagulation factors & White cell count.
- Decrease in Red cell count, hemoglobin concentration, haematocrit, Platelets & blood pressure.

3. Respiratory system:

- Increased vascularization of the respiratory tract caused by increased estrogen levels.
- Shortening of the lungs caused by the enlarging uterus.
- Upward displacement of the diaphragm by the uterus.
- Breathlessness due to hyperventilation and elevation of diaphragm.
- Increased tidal volume, causing slight hyperventilation.
- Increased chest circumference (by about 2% [6 cm]).
- Altered breathing, with abdominal breathing replacing thoracic breathing as pregnancy progresses.
- Slight increase (2 breaths/minute) in respiratory rate.
Increase O2 demand by 20%.

4-Central nervous system:
- Pregnant women frequently decreased attention, concentration & memory during & shortly after pregnancy.
- Some women are sleepy & depressed, others may be irritable & suffer from insomnia.

5-urinary system:
- Decreased bladder capacity and bladder tone.
- Frequency of micturition is a common symptom of early pregnancy due to pressure on bladder by uterus and again at term due to pressure of presenting part on bladder when engages.

6-Gastrointestinal system:
- Morning sickness: means nausea and vomiting are common during the first trimester in response to increasing level of human gonadotropin
- Heartburn: is common & is caused by reflux of acidic secretions into lower esophagus & decreased tone of sphincter and relaxation of smooth muscle & high progesterone levels of pregnancy
- Reduced motility of large intestine lead to increase time for water absorption to induce constipation

7-Endocrine system:
- Parathyroid Gland: This gland increases in size slightly. It meets the increased requirements for calcium needed for fetal growth.
- Posterior Pituitary. Near the end of term, the posterior pituitary will begin to secrete oxytocin that was produced in the hypothalamus and stored there. It will serve to initiate labor.
- Anterior Pituitary. At birth, the anterior pituitary will begin to secrete prolactin. This stimulates the production of breast milk.
- Placenta. The placenta acts as a temporary endocrine gland during pregnancy. It produces large amounts of estrogen and progesterone by 10 to 12 weeks of pregnancy. It serves to maintain the growth of the uterus, helps to control uterine activity, and is responsible for many of the maternal changes in the body

8-Integumentary system: (skin changes):
- Hair growth (abdomen and face)
- Linea nigra
- Striae gravidarum
- Cholasma
- Hyperpigmentation (esp. linea nigra)
- Rashes and acne relatively common

Nursing Care during Pregnancy

Definition of antenatal Care:
It refers to the care that given to an expected mother from time of conception is confirmed until the begging of labor.

Significance of prenatal care:
- To reduce maternal and prenatal mortality and morbidity rates.
- To improve the physical and mental health of women and children.
- To ensure that the pregnant woman and her fetus are in the best possible health.
- To prepare the woman for labor, lactation and care of her infant.
- To detect early and treat properly complicated conditions that could endanger the life or impair the health of the mother or the fetus.
- Promotion of health for both maternal & fetal wellbeing.

Elements of antenatal care:
1. Complete history taking (personal history, menstrual history, family history, past history of previous pregnancy, obstetric history, present complain
2. Physical examination (general and local)
3. Laboratory investigation
4. Health education
5. General examination

Schedule of Antenatal Care Visits:
Regular antenatal care can detect anemia, hypertensive disease, infections and other existing conditions and diseases that lead to high-risk pregnancy.

Antenatal visits should take place:
- Before 28th weeks gestation (every 4 weeks)
- From 28th-36th weeks (every 2 weeks)
- Thereafter (every week)
- In a normal pregnancy, with no complications, a minimum of three antenatal visits is acceptable in the first 20 weeks.

Prenatal Visits:
Initial Visit
1- Taking history
2- Physical Ex. (general & local)
3- Investigations (urine, stool & blood)

1- History taking:
Should be taken carefully and the details should be recorded in the relevant section in the Maternal Health record which includes the following.

a-Personal and social history
- The woman's name and address should be filled out clearly.
- Other personal details should be recorded such as age, education, marital status, duration of marriage, and occupation of both partners.
- Religion may give an indication of particular attitudes, beliefs or practices associated with childbirth and lifestyle such as dietary taboos.
- Nationality and language should also be recorded.

b-Medical and surgical history:
Certain diseases may have an adverse effect on pregnancy, so a note is made about details regarding:

- Childhood illnesses and any serious, chronic diseases such as: *diabetes mellitus, hypertension, urinary tract troubles, heart diseases,*
- Allergies, radiation exposure, blood transfusions, and current medications.
- Previous operations such as cesarean section, genital repair, and cervical cerclage.
- Recent surgery, particularly on the genital tract.
- Accidents involving injury of the bony pelvis.

c- Obstetrical history:
Details of previous pregnancies such as:
- Length, outcome, and problems of each pregnancy.
- Date of last abortion.
- Details of previous labors such as:
  - Sex and weight of each infant.
  - Whether live or stillborn.
  - Whether breast or artificially feed.
  - Prematurity and neonatal death.
  - Complications of previous labors.
  - Date of last delivery.
Details of previous postpartum such as:
- Contraceptive history.
- Complications such as postpartum hemorrhage.

d- Menstrual history:
- Age of menarche.
- Regularity and frequency of menstrual cycle.
- Duration and nature of menstrual flow.
- Any previous treatment of menstrual problems or infertility.
- Date and character of last menstrual period (LMP).(

**Expected date of delivery (EDD) is calculated as follows:**
- *1st day of LMP + 7 days + 9 months.*

e- Family history:
- Some families have genetic pre-dispositions to certain diseases especially if the parents are close relatives.
- *Prevalence of any of the following within the families of both parents should be noted;* diabetes mellitus, essential hypertension, cardiac disease, mental illness, multiple pregnancy, congenital abnormalities, allergic
conditions such as (asthma, eczema). Sickle cell anemia and thalassemia are common in particular races,

**F- History of present pregnancy:**

- Symptoms of pregnancy,
- Main complaint, duration of complaint,
- Any associated complication: pre-eclampsia.
- Fetal movement, self-care practice
- Investigation done.

**4-Physical Examinations**

**a-General Examination:**

► It should be started from the moment the pregnant woman walks into the examination room.
► A general examination should be done systematically. Start by looking at the woman's face, then progress downwards to finish with an inspection of her legs and feet.
► Examine general appearance:

- Observe the woman for stature or body build and gait.
- Check the hair of woman to assess her health. The hair of a healthy woman is shiny and glossy.
- Look at the woman's face to assess her health.
- The face is observed for skin color as pallor and pigmentation as chloasma.
- Observe the eyes for edema of the eyelids and color of conjunctiva. Healthy eyes are bright and clear.
► Observe the mouth for:

- Dryness or cyanosis of the lips.
- Gingivitis of the gums.
- Septic focus or caries of the teeth.
- Observe the neck for enlarged thyroid gland and scars of previous operations.
► Examine height:
• Height of over 150 cm and shoe size above 3 give an indication of an average-sized pelvis

► Weight:
• The approximate weight gain during pregnancy is 12 kg.; 2 kg in the first 20 weeks and 10 kg in the remaining 20 weeks (1.5 kg per week until term).
• Little or no maternal weight gain leads to fetal jeopardy.
• Obesity (more than 20 kg above the weight-height formula) leads to an increased risk of gestational diabetes, pregnancy-induced hypertension and thromboembolic disorders.
• Underweight (less than 20 kg below the weight-height formula) also puts the pregnant woman at great risk.

► Blood pressure:
• It is taken to ascertain normality and provide a base line reading for a comparison throughout the pregnancy.
• If the blood pressure is elevated because the woman is nervous and anxious, take it again when the woman is more relaxed.
• In late pregnancy, raised systolic pressure of 30 mm Hg or raised diastolic pressure of 15 mm Hg above the baseline values on at least two occasions of 6 or more hours apart indicates toxemia.

► Breast examination:
• The breast should be gently palpated to feel any lump.
• The nipple should be drawn forward to see if it is protractile.
• The breast should be observed for pregnancy changes.

► Elimination:
• Ask the woman about her bowel habits.
• Carry out routine urine analysis.
• Check the presence of dysuria and frequency of micturition.

► Vaginal discharge:
• Ask the woman about any increase or change of vaginal discharge.
• Report to the obstetrician any mucoid loss before the 37th week of pregnancy.

► Vaginal bleeding:
Vaginal bleeding at any time during pregnancy should be reported to the obstetrician to investigate its origin.

► Legs:
• Legs should be noted for edema. They should be observed for varicose veins which predispose to deep vein thrombosis.
- The calf must be observed for reddened areas which may be caused by phlebitis and white areas which could be caused by deep vein thrombosis.
- Ask the woman to report tenderness during examination.
- The legs should be observed for unequal length or muscle wasting which may be an indication of pelvic abnormalities.

**b-Local Abdominal Examination:**
- Inspection
- Palpation
- Auscultation

1) **Inspection:**

*The nurse should look at the following:*

- Skin changes such as linea nigra, striae gravidarum and scars of previous operations.
  - The size of the abdomen is inspected for:
    - Height of the fundus, which determines the period of gestation.
    - Multiple pregnancy and polyhydramnios will enlarge both the length and breadth of the uterus.
    - A large fetus increases only the length of the uterus.
  - The shape of the abdomen is inspected for:
    - Fetal lie and position.
    - The abdomen is longer if the fetal lie is longitudinal as occurs in 99.5% of cases.
    - The abdomen is lower and broader if the lie is transverse.
    - Contour of the abdominal wall is observed for pendulous abdomen, lightening protrusion of umbilicus and full bladder.
    - Fetal movements are inspected as evidence of fetal life and position.
    - The abdomen is also inspected for edema and varicose veins.

2) **Palpation**

*The uterus will be palpable per abdomen after the 12th week of gestation*

Abdominal palpation includes:

* Estimation of the period of gestation. This is done by determination of fundal height.
* The uterus may be higher than expected due to large fetus, multiple pregnancies, polyhydramnios or mistaken date of last menstrual period.
* The uterus may be lower than expected due to small fetus, intrauterine growth retardation, oligohydramnios or mistaken date of last menstrual period.

*Fundal palpation is performed to determine:
Whether it contains the breech or the head.
    This will help to diagnose the fetal lie and presentation.

• Pelvic palpation is done to determine:
Fetal position and presentation.
Engagement of fetal head.
    Disproportion between head and pelvis.

• Pawlik’s maneuver is sometimes used to:
    * Locate the round, hard head.
    * Judge the size flexion and mobility of the head.

3) Auscultation:
* Fetal heart sound is heard by sonicaid as early as 10th week of pregnancy.
    * Fetal heart sound is heard by pinard’s fetal stethoscope after the 20th week of pregnancy.
    * The normal fetal heart rate is 120-160 beats/minute.
    * Fetal heart sound has been described as the ticking of a watch under the pillow.

5-investigations

- Urine is tested for protein, glucose, and ketones.
- Stool analysis for ova and parasites.
- Complete blood picture: results in

- Hemodilution of blood during pregnancy results in lowered hemoglobin level (11-12 g/dl), hematocrit, & red blood cell count (normal range is 3,600,000-4,7000/mm3).
- White blood cells are increased especially neutrophils (more than 70%), which enhances the blood phagocytotic and bactericidal properties.
- Coagulation time changes from 12 to 8 minutes. This increased capacity for clotting results in higher risk of thrombosis and embolism.
- Screening for sickle cell anemia, thalassemia and hepatitis may be necessary for some women.
- Testing for rubella antibodies if the pregnant woman comes in contact with the disease is required.
- ABO blood group and Rhesus factor (Rh)
- Random blood glucose (80-120 mg/100ml).
- Venereal disease tests should be performed.
- Toxoplasmosis.
- Ultrasound scanning is used to assess the fetal growth and wellbeing.

Subsequent Prenatal Visits:

1-History:
** Of any new problems and worries.

2- Measurement of weight, assessment of edema and blood pressure.

3- Local abdominal examinations such as:
** Fundal level, fetal size, lie, presentation and fetal heart rate.

4-Investigations:
** Urine should be tested for sugar, ketones, and protein.

** Hemoglobin will be repeated:
At 36 weeks of gestation.
• Every 4 weeks if Hb is < 9 g/dl.

• If there is any other clinical reason.

5-Fetal kick count:
** The pregnant woman reports at least 10 movements in 12 hours.
** Absence of fetal movements precedes intrauterine fetal death by 48 hours.

Education for self care & home care during pregnancy:

Physiological changes:
* The changes that affect all systems during pregnancy should be explained to the pregnant woman in a simple way.
* Enlargement of the abdomen.
* Skin pigmentation as chloasma, striae gravidarum and linea nigra
* Vascular spiders.

Weight gain:
* During the 1st trimester, the pregnant woman gains about 1-2 kg.
* During the 2nd trimester, the pregnant woman gains about 6-7 kg.
* During the 3rd trimester, the pregnant woman gains about 3-4 kg.

Rest and sleep:
** The pregnant woman should lie down to relax or sleep for one or two hours during the afternoon.
At least 8 hours sleep should be obtained every night and increased towards term.

**Diet**: 
**Diet is important for the health of the pregnant woman, her developing fetus, and the alleviation of minor disorders of pregnancy.**
**Diet should be contained protein, fat and carbohydrates, fibers, vitamins and minerals.**
**The prime sources of bodybuilding foods are meat, fish and cheese, but cheaper sources may be advised such as peas, beans and lentils, milk and eggs.**
**Calcium and iron are vital in pregnancy, calcium is found in milk and eggs. Iron is found in red meat and offal, and to a lesser extent in green vegetables and red fruits.**
**Pregnant women should be encouraged to consume a good quantity of fresh fruit and vegetables because they contain vitamin C that helps the absorption of iron and contributes to the fiber content which helps to prevent constipation. Other high fiber foods include wholemeal bread, cereals and pulses.**
**A certain amount of carbohydrates and fats is required to provide heat and energy, but high sugar and fat intake should be avoided and starches are taken instead because they are absorbed more slowly.**
**Salt should be restricted in case of edema.**
**Lemon or vinegar is allowed in case of excessive sweating**
**In the latter part of the second trimester when the fetus starts to store iron in the liver, the woman is advised to take an iron concentrate.**

**Exercises and relaxation:**
* Exercise should be simple, mild exercise out of doors, in the fresh air. Walking is ideal, but long periods of walking should be avoided.
* The pregnant woman should avoid lifting heavy weights such as mattresses furniture or large, heavy shopping bags, as it may lead to abortion.
* The pregnant woman should avoid long period of standing because it predisposes her to varicose veins.
* She should avoid sitting with legs crossed because it will impede circulation.

**Clothing:**
* Suitable clothes are a necessity not a luxury. Loose, light clothes are the most comfortable.
* The pregnant woman should avoid wearing tight clothes such as belts or corset
and constricting bands on the legs.
* A suitable larger bra with wide shoulder straps should be used in order to give good support to the heavy breasts. It should be light and not tight enough to depress the nipples.
* Shoes need to be comfortable. High heels, flat shoes and thin soles should be avoided.

**Hygiene:**
* Daily all-over wash is necessary because it is stimulating, refreshing and relaxing.
* Warm showers or sponge baths are better than tub baths
* Hot baths should be avoided because they may cause fainting.
* Regular and frequent washing of genital area, axilla and breasts due to increased discharge and sweating.
* Vaginal douches should not be allowed except in case of excessive secretions or infections.
* Perineal care should be done due to frequency of urination and increased discharge

**Teeth:**
* The teeth should be brushed carefully in the morning, after each meal and at night.
* The pregnant woman should visit the dentist twice during pregnancy.

**Bladder and bowel:**
* Regular habit of defecation should be maintained.
* Bowels should move without using laxatives.
* Adequate fluid should be taken, a glass of warm water in the morning should be taken to avoid constipation. Strong tea is avoided
* Plenty of roughage should be included in the diet to avoid constipation.

**Sexual intercourse:**
* Sexual intercourse is allowed with moderation, is absolutely safe and normal unless specific problem exists.
* If a woman has a history of abortion, she should avoid sexual intercourse in the early months of pregnancy.
* If the pregnant woman has a history of preterm labor, she should avoid sexual intercourse in the late months of pregnancy.

**Smoking:**
* Pregnant women who are heavy smokers should stop smoking or reduce the number of cigarettes to less than 4 each day.
* Smoking may lead to ptyalism, nervousness and hyperemesis and make pregnant women at increased risk of chest infections and thrombo-embolic disorders.

**Medication**
* Pregnant women should avoid all unnecessary drugs because many drugs are known to have an adverse effect on pregnancy.
* Minor complaints should be managed without drugs on pregnancy.

Infection
* Pregnant woman should be avoid contact with infectious diseases especially rubella or ( German measles ) because it has deleterious effects on the fetus.

Immunization:
* All pregnant women should be fully immunized with tetanus toxoid vaccine in order to prevent neonatal tetanus.
* If TT vaccine is not given before, it should be given during pregnancy in the form of 2 doses, 4 weeks apart starting from the third month.
* Remaining TT doses should be completed later according to the approved schedule.

Irradiation
* Pregnant women should avoid exposure to x-ray or irradiation because of possible teratogenic effects on the fetus such as birth defects or childhood leukemia.

Occupational & environmental hazards
* Pollutants, radioactive substances & chemicals such as ethylene oxide, lead, mercury and benzene that workers can carry home on skin or clothes may cause reproductive problems.

Travel
* Long unbroken rail or car journey should not be undertaken because jarring and excitement may induce abortion in susceptible women.
* Airlines ask for a doctor's certificate stating that a pregnant woman is fit to travel and do not permit pregnant women to fly after the 32nd week.
* If traveling is essential, it is allowed when comfortable. Taking extra fluids and taking breaks can cause any discomfort.

Follow up
* The pregnant woman should visits the antenatal clinic monthly, during the first & second trimester.
* During the second trimester pregnant woman should visits the antenatal clinic every 2 weeks during the 7th to 8th months (from 28th - 36th week).
* Every week during the 9th month (from 36th - 40th week).

Danger signs during pregnancy:
* Pregnant women should be encouraged to report and seek advice as soon as any of the following occurs:
  - Persistent vomiting.
- Severe persistent abdominal pain.
- Vaginal bleeding.
- Vaginal discharge with odor or itching
- Chills or fever.
- Marked changes of fetal movements.
- Dysuria or burning sensation.
- Severe headache.
- Sudden swelling of face, fingers and feet.
- Blurring of vision.
- Sudden enlargement of the abdomen.
- Premature onset of contractions.
- Sudden escape of fluid from the vagina.
- Dysuria, oliguria or anuria.

**Delivery:**
- **The woman should be encouraged to deliver in the hospital.**
- **She should be taught the signs and symptoms of early labor, when to go to the hospital and what to take with her.**

**Family planning:**
- **Counselling about family planning and different contraceptive methods available should be done to prepare parents for their use after postpartum.**

---

**High risk pregnancy**

**Concept of high risk pregnancy:**

High risk pregnancy is defined as one in which the mother or the fetus has significantly increased chance of death.

OR

It is one in which some condition puts the mother, the developing fetus, or both at higher – than – normal risk for complications during pregnancy.

**Risk factors that affect on pregnancy:**

1- **Biophysical factors**
   - Genetic diseases
   - Cardiovascular diseases
   - Hypertension
   - Diabetes
   - Autoimmune disorder
   - Adolescent pregnancy
   - Advanced maternal age
   - Uterine or cervical, abnormalities
- Asthma

2- Enviromental factors
- Environmental pollutions, poor sanitation.
- Poor socio-economic status
- Ignorance
- Alcoholism- smoking
- Poor nutrition

3- Obstetrical factors
(1) Maternal:
- Premature rupture membrane - hydraminos
- Multiple pregnancies - Placental abnormalities
- Contracted pelvis - congenital anomalies
- Grand multipara - Anemia & malnutrition
- Ante-partum hemorrhage
(2) Fetal
- Fetal size - Cord complication
- Congenital anomalies - Fetal infection
- Mal presentation - Prematurity

4- Medical factors
- Hypertension - Diabetes mellitus
- Cardiac disorders - Renal diseases
- Anemia - Rh-incompatibility

5- Biological factors
- Age: less 15 yrs increase risk for anemia or preterm labor and women aged 35 or over increase risk for pre-eclampsia and gestational diabetes.
- Height : woman shorter than 5 feet are more likely to have small pelvic , which make movement of the fetus through pelvis and vagina (birth canal) difficult during labor and this complication is called shoulder dystocia.
- Obesity: increase risk for high BP, diabetes.
- Multiple births: is higher in woman carrying more than one fetus, more complication include preterm birth, more than half of all twins and as many as 93% of triplet are born at less than 37 week gestation.

6- Problem in previous pregnancy
- Preterm baby.
- Underweight baby.
- Baby with birth defect.
- Previous mis carriage.
- RH in compatibility that required blood transfusion to fetus.
- Polyhydraminos.

Hypertensive Disorders During Pregnancy

Introduction
Hypertensive disorders of pregnancy are multisystem affection unique to human female pregnancy. Hypertensive disorders of pregnancy are the third leading cause of maternal mortality and morbidity and also major causes for perinatal mortality and morbidity. In Egypt it is reported to be the 2nd leading
direct cause of maternal mortality and estimated to be 13% of all maternal deaths

Classifications:
1- Gestational hypertension (transient hypertension): it is defined as new hypertension (systolic blood pressure ≥ 140 mmHg or diastolic blood pressure ≥ 90 mmHg or both) presenting at or after 20 weeks gestation without proteinuria or other features of preeclampsia.
2-Chronic hypertension: This is known hypertension before pregnancy of a rise in blood pressure > 140/90mmhg before 20wks gestation, and persisting 6wks after delivery
3- Pregnancy induced hypertension (PIH): It is defined as the development of new arterial hypertension in a pregnant woman after 20 weeks gestation it includes two types' pre elampsia & eclampsia)

Pre-eclampsia:
It is a condition that can develop during pregnancy characterized by high blood pressure (hypertension) and protein in the urine (proteinuria) after the 20th week of pregnancy and can even occur in the days following birth.

Incidence:
It constitute about 75% of cases of hypertensive disorder of pregnancy and Eclampsia complicates 5-7% of all pregnancies.

Risk factors:
- Chronic hypertension.
- Past history
- Obesity .Polyhydramnios.
- Nulliparity.
- Multiple pregnancies
- Chronic nephritis.
- Family history.
- Diabetes mellitus.
- Teenage Pregnancy.
- Smoking& stress.

a) Signs
1- Hypertension:
   It is diagnosed when the systolic blood pressure is a rise to 140/90 mmHg
2- Proteinuria:
   It is a late sign. It is due to glomerular damage allowing a leak of protein.
   Proteinuria in pregnancy is described as the presence of ≥ 300 mg or more of urinary protein per 24hrs.
3- Edema:
   It may be Manifest in the feet and ankle may be physiological due to pressure of the pregnant uterus on pelvic veins. Or Occult edema; in the internal organs. It is observed by sudden increase in body weight more than 1kg/week or >3kg/month, or the presence of generalized edema affecting the vulva, lower abdominal wall, face and hands.

B) Symptoms:
1- Headache due to hypertension, often frontal but may be occipital.
2- Blurring of vision
3- Epigastria pain
4- Oliguria and anuria dye to kidney pathology
5- May be nausea and vomiting

Classifications of preeclampsia:
1- Mild preeclampsia
   • Hypertension, but not reaching 160/110 mmHg after 20 weeks gestation.
   • Proteinuria 1+ dipsticks (300 mg / 24 hrs)
• Manifestation disappearing < 12 weeks postpartum.

2-Severe preeclampsia
• Bp ≥ 160 / 110 mmHg, plus one or more of the following criteria.
• Proteinuria ≥ +2 or +3 dipstick (2 gms or 5gms / 24 hrs).
• Serum creatinine ≥ 1.2 mg / dl unless known to be previously elevated.
• Persistent headache, visual disturbance and persistent epigastria pain.
• Oliguria or anuria.
• Pulmonary edema.

Complications or prognosis of pre eclampsia:

- Maternal:
  • Convulsions and coma (eclampsia 1-2% of cases).
  • Cerebral hemorrhage.
  • Renal failure.
  • Liver failure.
  • Abruption placenta.
  • Residual chronic hypertension in about 1/3 of cases.
  • Recurrent pre-eclampsia in next pregnancies.
  • Retinal detachment
  • Hemolytic anemia
  • HELLP Syndrome

- Fetal:
  • Intrauterine growth retardation (IUGR).
  • Intrauterine fetal death.
  • Prematurity and its complications as respiratory distress, hge and infection in the newborn.

HELPP syndrome:

It is a group of symptoms that occur in pregnant women who have:

- H -- hemolysis (the breakdown of red blood cells)
- EL -- elevated liver enzymes
- LP -- low platelet count

HELLP occur in 10-20% of pregnant women with severe preeclampsia or eclampsia.

Symptoms

- Fatigue or feeling unwell
- Fluid retention and excess weight gain
- Headache
- Nausea and vomiting that continues to get worse
- Epigastric pain
- Seizures or convulsions (rare)

Management of mild preeclampsia

The only way to cure preeclampsia is to deliver the baby.

- If baby is developed enough (usually 37 weeks or later), . Pregnant women may receive medicines to help trigger labor, or may need a c-section.
If baby is not fully developed and women have mild preeclampsia, the disease can often be managed at home until baby has a good chance of surviving after delivery.

**The nurse should instruct the women about:**

- Decrease activities and promote bed rest
- Lie in left lateral position
- Remain quiet and calm – restrict visitors and phone calls
- Weigh daily at the same time
- Keep record of fetal movement - kick counts
- Check urine for Protein
- Frequent doctor visits to make sure women and her baby are doing well
- Medicines to lower blood pressure (sometimes)
- Sedative drugs

**Dietary modifications**

- Increase protein intake to 70 - 80 g/day
- Caffeine avoidance
- Drinking plenty of water
- Eating less salt

Nursing management at the hospital may include:

- Provide for a Quiet Environment and Rest
- Explain plans and provide Emotional Support
- Bed rest in left or right lateral position
- Close monitoring of the mother and baby
- Check B / P frequently.
- Assess Reflexes
- Assess Subjective Symptoms "headache, visual disturbance"
- Check hourly output
- Count fetal movement
- Dipstick for Protein
- Weigh daily
- Give Antihypertensive Drugs
- Administer antiepileptic Magnesium Sulfate
- Administer Sedative -- Diazepam (Valium)
- Steroid injections (after 24 weeks) to help speed up the development of the baby's lungs
- Keep Emergency Supplies Available

**Management of severe preeclampsia:**

**Hospitalization:**

- Prevention of eclampsia.
- Termination of pregnancy

**a) Prevention of eclamptic seizures:**

Seizures can be prevented by the use of magnesium sulfate & potent antihypertensive

Magnesium sulfate:
Dosage:
- **A loading dose:** of 4 to 6 gm diluted in 100 ml of 5% glucose and injected I.V. over 15-20 minutes.
- **Maintenance dosage:**
  - Infusion of 2 gm/hour as a continuous infusion (diluted in glucose 5%)
  - Measure serum magnesium levels every 4-6 hrs. This is indicated when there is oligouria.
  - Maintenance dose of Mag. sulfate can be given I.M. every 4 hrs give 5 gm of 50% solution (one 10 ml ampule)

1- **Eclampsia**

A life-threatening complication of pregnancy, it is characterized by high blood pressure and protein in the urine, seizures or coma.

**Incidence:** Less than one in 1000 women with preeclampsia will develop eclampsia or (convulsions or seizures) or coma.

**Stages of eclampsia (4 stages):**

1-Premonitory stage (1/2 minute):
- Eye rolled up.
- Twitches of the face and hands.

2-Tonic stage (1/2 minute):
- Generalized tonic spasm with
- Cyanosis.
- Tongue may be bitten between the clenched teeth.

3-Clonic stage (1-2 minutes):
- Convulsions.
- Tongue may be bitten.
- Face is congested and cyanosed.
- conjunctival congestion.
- Blood stained froth from the mouth.
- Stertorous breathing,
- Temperature may rise.
- Involuntary passage of urine or stool.
- Gradually convulsions stop.

4-Coma:
- Variable duration due to respiratory and metabolic acidosis.
- Deep coma may occur (cerebral hemorrhage).
- Labor usually starts shortly after the fit.
- Sometimes labor does not start and convulsions recur again the so called ‘intercurrent eclampsia’ and carries a bad prognosis.
Complications of eclampsia:

- **Maternal complications:**
  - Respiratory distress syndrome from aspiration pneumonia, inhalation of blood, saliva and vomitus, airway obstruction by the tongue and pulmonary edema.
  - Heart failure.
  - Hypovolemic shock from placental abruption circulatory collapse post partum.
  - Cerebral hge.
  - Acute renal failure.
  - Liver failure.
  - HELLP syndrome.
  - Fetal hypoxia may also result.

- **Fetal complication.**
  - The prenatal mortality is about 10-15% due to
  - Fetal hypoxia due to placental infarctions, premature separation of the placenta by accidental hemorrhage and maternal hypoxia during convulsion.
  - Prematurity and its complications.

**Management of Eclampsia:**
The treatment of patient that has got one or more eclamptic seizures comprises the following:

- **General measurements and nursing care of a patient with seizures.**
  - Prevent injury
    - Padding on side rails of bed
  - Other post-Seizure measures
    - Foley Catheter to monitor urinary output
    - Internal fetal monitor (Internal Scalp electrode)
    - Consider central venous pressure catheter
    - Fluid administration needed to be monitored by central venous pressure (CVP) monitoring
    - Continuous hourly monitoring of patient's plus, temperature, B.p, respiration rate and fluid intake and output.

1) General measurements and nursing care of a patient with seizures:

- Airway and respiratory management
- Place patient in left lateral decubitus position
- Suction oral secretions
- Anesthesia at bedside for possible intubation
- Consider Oral Airway
- Supplemental Oxygen
- Arterial Blood Gas
- Prevent injury

2) Medical measurements

a) Magnesium sulfate treatment
b) Parenteral anti-hypertensive drugs to prevent cerebral hge and left ventricular
heart failure.
c) Delivery: Eclampsia frequently precipitates preterm labor.
   - If the patient is not in labor within few hours (3-4) after the last seizure, labor should be induced by pitocin drip.
   - C.S. should not be a routine for all eclamptic patients.

**Hemorrhagic Disorders in Pregnancy**

**Bleeding in early pregnancy**

**Definition:**
It means bleeding before 20 weeks of gestation.

**Causes**
1. Abortion.
2. Vesicular mole.
3. Ectopic pregnancy.

**1- Abortion**

**Definition:** It is the termination of pregnancy before 24 weeks, or products of conception weighing below 500 grams. It occurs in 10-15% of pregnancy, 80% of them occur in the first trimester.

**Causes:**

- **Fetal:**
  - Chromosomal anomalies.
  - Diseases of the fertilized ovum.
  - Hypoxia.

- **Maternal:**
  - Infections e.g. influenza, malaria, syphilis, HIV.
  - Disease such as chronic nephritis, TB.
  - Drug intake during pregnancy.
  - Rh and ABO incompatibility.
  - Incompetent cervix.
  - Uterine malformation.
  - Acquired uterine defect as uterine fibroid or adhesions
  - Trauma - criminal interference,
  - Endocrinol disorder as hypothyrodism, diabetes mellitus
Types of abortion:
- Spontaneous abortion
- Threatened abortion
- Missed abortion
- Inevitable abortion
- Complete abortion
- Incomplete abortion
- Habitual abortion
- Therapeutic abortion
- Criminal abortion
- Septic abortion

2- Threatened abortion:
It is an attempt of uterus to get rid of its contents

Signs & symptoms:
- Vaginal bleeding, mild & bright red in color
- Abdominal pain and backache may or may not be present.
- Cervical os is closed.
- Membranes are intact.

Nursing management:
- Complete bed rest
- Avoid, heavy work enema & constipation
- no sexual intercourse
- Administration of prescribed drugs

2- Inevitable abortion

- Bleeding is excessive (more than 10 days).
- Blood is red in color with clots.
- Severe colicky lower abdominal pain.
- Cervical os is dilated and rupture of membranes has occurred.
• There is severe blood loss and the woman becomes shocked.

**Nursing management:**
- Hospitalization
- Antisock measure:
- Fluid infusion
- Bl. transfusion if indicate
- O2/mask 6-8L/m
- Warmth
- Sedative ; 10mg morphia
- If no heart beats are detected a dilute solution of oxytocin may be given as the doctor orders to help in the expulsion of the contents of the uterus.
- Dilatation and curettage should be done.

**3-Missed abortion:**
Fetus is dead and retained inside the uterus

**Signs & symptoms:**
- Some signs of pregnancy disappear.
- Pregnancy test will be negative.
- Fundal height does not increase in size.
- The breasts may secrete milk due to hormonal changes
- FHR are absent.
- No fetal movement.
- A sonar test confirms fetal death.
- Some brownish vaginal discharge

**Management**
- Wait about 2-4 weeks aiming spontaneous expulsion & follow up by coagulation profile
- Evacuation

**4- Septic abortion:**

**Definition:** Any type of abortion complicated by infections e.g., missed or criminal abortion

**Signs & symptoms:**
- Tender and painful uterus.
- Offensive vaginal bleeding.
• Shock.

**Nursing management:**
- Isolation.
- Complete bed rest → in fowler's position
- Monitoring for vital signs & fluid chart.
- Fluid infusion (5% glucose + saline) to maintain urine flow > 30 ml/hr
- Clinical bacteriological to identify the infectious organisms.
- Administration of antibiotics, Antipyretic & Analgesic as doctor orders.
- The soiled pads should be properly collected and burned

5- Incomplete abortion

**Signs & symptoms:**
- Severe bleeding.
- Cervical is partly closed.
- No uterine involution.
- Pain may or may not be present.
- Uterus is soft and smaller than the expected period of pregnancy.

6- Complete abortion:

**Signs & symptoms:**
- There is minimal bleeding.
- Pain stops.
- Uterus is hard and much smaller
- The cervix is closed
- Rh incompatibility.

**Treatment:** of the cause such as cervical incompetence or treatment of causative diseases as syphilis, DM, etc.

**Nursing Management of Abortion**

Prevention measures should be taken to avoid risk of a spontaneous abortion:
• A nutritional diet.
• Avoiding smoking or drinking.
• Receiving available immunizations against infectious diseases.
• Treatment of vaginal or pelvic infections.
Hydatidiform Mole (Vesicular Mole)

Definition: is a gross malformation of the trophoblast in which the chorionic villi proliferate and become avascular.

Causes:
- The exact cause is unknown.

Risk factors are:
- Maternal age above 40 years or below 19 years.
- Malnutrition

Types
- partial mole
- complete mole

Signs and Symptoms
- Excessive frequent vomiting.
- Over distension of the uterus and larger than expected for weeks of gestation.
- Some vaginal bleeding may occur plus vesicles.
- No fetal movements, No fetal parts
- Positive pregnancy test result in highly diluted urine 1:500.

Complications:
- Hemorrhage.
- Shock
- Perforation
- Uterine sepsis.
- Choriocarcinoma

Nursing management:
- Admit the woman into hospital.
- Evacuation of the uterus under general anesthesia.
- Health education on the following:
  - Need for monitoring HCG levels for two years (monthly for the first 3 months, then every three months for one year).
  - Birth spacing methods to prevent pregnancy for two years.
• If HCG levels remain more than five international units per liter eight weeks postpartum, prophylactic chemotherapy is indicated.

3- Ectopic Pregnancy

Definition:
pregnancy occurring outside the normal uterine cavity. It usually occurs 99% of cases in the uterine tube.

Tubal Pregnancy

Causes:
• Impaired tubal ciliary action.
• Impaired tubal contractility.
• Decreased sperm mobility.
• The use of intrauterine contraceptive device.

Risk Factors:
• Pelvic inflammatory disease.
• History of previous pelvic operations such as D and C, ovarian surgery.

Signs and Symptoms
• Short periods of amenorrhea.
• Sudden/recurrent severe, colicky abdominal pain in one iliac fossa or entire lower abdomen.
• Blood stained vaginal discharge.
• Signs of shock.
• Dyspareunia.

Management:

Surgical
• Especially in undisturbed ectopic.
• Evacuated immediately.
• Salpingectomy is performed.
• Provide emotional support.
• Follow-up is needed.

Medical
• When undisturbed.
• B-HCG less than 10000
Methotrexate is used and follow up of B-HCG titre is a must.

**Bleeding late in pregnancy**

**Definition:**
It is defined as bleeding from the genital tract between 28th week of pregnancy and onset of labor.

**Classification:**
- Placenta previa
- Abruptio placenta
- Vasa previa

1. **Placenta Previa**
Abnormal situated placenta in lower uterine segment.

**Signs & Symptoms:**
- Vaginal bleeding bright red, painless, recurrent
- Soft, pain free uterus
- Easy to feel fetus & hear FHR

**Degrees**

1. *Complete "Centralis"*: placenta completely covers the internal os even when it is fully dilated.
2. *Incomplete "Partials"*: placenta covers the internal os when it is closed, but covers it partially when it is fully dilated.
3. *Lateralis*: placenta on LUS but does not reach internal os.
4. *Marginalis*: placenta reaches internal os but does not cover it

**Nursing management:**
- Bed rest and restriction of physical activity for at least 24 hours after admission.
- Avoid constipation, enemas, and vaginal and rectal examinations
- Follow strict aseptic technique to avoid infection.
- Continuous observation of bleeding and signs of shock.
- listening FHR every 4 hours.
- accurate recording of intake and output.
• I.V fluids & o2 mask

2- Abruptio Placenta:
Premature separation of normally situated placenta.

**Signs & Symptoms**

- Abdominal pain
- Dark red vaginal bleeding
- Tender uterus
- Fetal parts hard to feel
- No fetal heart is heard

**Types**

- Revealed: almost all the blood expelled through the cervix.
- Concealed: almost all the blood is retained inside the uterus.
- Combined: some blood is retained inside the uterus and some is expelled through the cervix.

**Nursing management:**

- Continuous observation of patient’s general condition, blood pressure, vital signs, bleeding and signs of shock.
- Continuous observation of fetal condition.
- Initiation and continuous observation of IV transfusion.
- Give medications accurately, especially for hypotension and shock if present.
- Regular urine analysis for proteinuria.
- Assessment and recording of intake and output.
- Assist in vaginal delivery,
- Provide pre-operative care & post-operative care.

**Endocrine and Metabolic Disorders**

**Gestational diabetes mellitus**

**Definition:**

Is defined as any degree of glucose intolerance that has its onset or is first diagnosed during pregnancy. This definition acknowledges the possibility that patients may have previously undiagnosed diabetes mellitus, or may have developed diabetes unexpectedly with pregnancy.
Risk factors for gestational diabetes include:

Several risk factors are associated with the development of GDM. The most common risk factors include:

- A previous diagnosis of gestational diabetes or pre-diabetes, impaired glucose tolerance, or impaired fasting glycaemia
- A family history revealing a first-degree relative with type 2 diabetes
- Maternal age - a woman's risk factor increases as she gets older (especially for women over 35 years of age).
- Being overweight, or severely obese.
- Persistent glucosuria and a history of GDM in a previous pregnancy. No known risk factors are identified in 50% of patients with GDM
- A previous pregnancy which resulted in a child with a macrosomia (high birth weight: >4000 g )
- Smoking, statistics show a double risk of GDM in smokers
- Essential hypertension or pregnancy-related hypertension
- History of spontaneous abortions and unexplained stillbirths

Symptoms of gestational diabetes

Most women with gestational diabetes have no recognizable symptoms for this reason it is recommended that all pregnant women be screened for gestational diabetes during the 24th and 28th weeks of their pregnancy. The symptoms are usually mild and not life-threatening to the pregnant woman like:

- Polyuria (frequent urination), result because water is not re-absorbed by the renal tubules due to osmotic activity of glucose.
- Polydipsia (excessive thirst), is caused by dehydration from Polyuria .
- Polyphagia (excessive hunger), is caused by tissue loss and state of starvation, which result from the inability of the cells to use the blood glucose .
- Weight loss is due to use of fat and muscle tissue for energy.
- Fatigue.
- Nausea and vomiting.
- Blurred vision
- Frequent infection include vagina, bladder and skin.

Influence of pregnancy on diabetes

Pregnancy can affect diabetes in the following way:

- DM may be difficult to control because insulin requirements are changeable.
- During the first trimester, the need for insulin frequently decreases;
- Fetal needs are minimal; and women consume less food because of nausea and vomiting.
- Nausea and vomiting may cause dietary fluctuations and increase the risk of hypoglycemia, or insulin shock.
- Insulin requirements begin to rise in the second trimester, increase requirements may double by the end of pregnancy as a result of placental maturation and human placental lactogen (hpl) production.
- A decrease renal threshold for glucose leads to a higher incidence of glycosuria.
- The vascular disease that accompanies DM may progress.
- Hypertension may occur 3-4 times than usual.
- Nephropathy and retinopathy may result from renal impairment.
Influence of diabetes on pregnancy

Complications on the mother:-
- Hydramnios, or an increase in the volume of amniotic fluid, occurs in 10% to 20% of pregnant women with diabetes. It is thought to be as a result of excessive fetal urination because of fetal hyperglycemia.
- Premature rupture of membranes may be a problem with hydramnios.
- Preeclampsia. The risk of preeclampsia was between 13% and 37% higher, especially when vascular change already exist.
- Nephropathy and retinopathy may result from renal impairment.
- Hyperglycemia can lead to Ketoacidosis as a result of an increase in ketone bodies. Ketoacidosis is usually develop slowly but, if un-treated, can lead to coma and death for mother and fetus.
- Increase risk for vaginitis and urinary tract infection due to increase glycosuria, which make good environment for bacterial growth.
- Placenta previa or abruption and Abortion.
- Obstructed labor.
- Gestational diabetes put the woman more likely to need a caesarean delivery than women who don’t have diabetes.
- Woman also more likely to develop gestational diabetes in future pregnancies, and are at a higher risk of developing type II diabetes later on life.

Complications on the fetus:-
- Ketoacidosis is usually develop slowly but, if un-treated, can lead to death for mother and fetus.
- Congenital anomalies, malformation including (congenital cardiac, central nervous system anomalies, and skeletal muscle malformations, it is about 5% to 10%.
- Macrosomia (excessive growth to baby), as a result of maternal high blood sugar, from which the fetus derives its glucose. These elevated levels continually stimulate the fetal islets of Langerhans to produce insulin. This hyper-insulin state causes the fetus to use the available glucose.
- Macrosomic infant is at increased risk for shoulder dystocia and traumatic injuries, if born vaginally.
- IUGR and IUFD, which occurs because vascular change in the mother decrease the efficiency of placental perfusion and the fetus is not as well sustained.
- Increased fetal insulin may inhibit fetal surfactant production and cause respiratory distress syndrome.
- Polycythemia (excessive number of red blood cells) in the newborn is mainly due to the diminished ability of the mother’s blood to release oxygen.
- Hyperbilirubinemia may result from the inability of immature liver enzymes to metabolize the increased bilirubin resulting from Polycythemia, red blood cell destruction.
- Prematurity.
- Hypoglycemia after birth this is because he or she makes extra insulin to respond to high blood sugar levels. Shortly after birth, the baby may continue to make extra insulin causing his or her blood sugar level to be low.
- It becomes more liable to develop obesity and cardiovascular disease.

Treatment of gestational diabetes
Treatment for gestational diabetes will depend on the severity of the diabetes. The goals of treatment are to maintain blood glucose levels within normal limits during the duration of the pregnancy, and ensure the well-being of the fetus, reduce the incidence of macoosmic baby. A large baby can be hard to deliver through the pelvis (shoulder dystocia). This increases the risk of injuring the infant (eg, broken bones or nerve injury). A large baby is also more likely to cause injury to the woman during the delivery.

**Diet:**

The following are some general dietary recommendations:

- Avoid high-calorie snacks and desserts, including soda with sugar, fruit punch, candy, chips, cookies, cakes, and full-fat ice cream
- Eat three small meals and two or three snacks at regular times every day. Do not skip meals or snacks. Carbohydrates should be 40%-45% of the total calories with breakfast and a bedtime snack containing 15-30 grams of carbohydrates.
- For morning sickness, eat 1-2 servings of cereal, or pretzels before getting out of bed. Eat small, frequent meals throughout the day and avoid fatty, fried and greasy foods. If you take insulin and have morning sickness, make sure you know how to treat low blood sugar.
- Choose foods high in fiber such as whole-grain breads, cereals, pasta, fruits, and vegetables. All pregnant women should eat 20-35 grams of fiber a day.
- Fats should be less than 40% of calories with less than 10% consumed being from saturated fats.
- Drink at least 8 cups of liquids per day.
- Make sure you are getting enough vitamins and minerals in your daily diet. Ask your health care provider about taking a prenatal vitamin and mineral supplement to meet the nutritional needs of your pregnancy.
- Use liquid oils (olive) instead of solid fats (butter, margarine, shortening) for cooking.

**Exercise:**

Regular physical activity is sometimes used to keep blood sugar levels lower because contracting muscles help stimulate glucose transport. In the absence of either medical or obstetrical contraindications, exercise prescription can be an alternative or adjunct therapy for women who have gestational diabetes. Non-weight-bearing exercises such as stationary cycling, swimming, and arm exercises, may be most suitable for these patients, to improve and maintain glucose homeostasis. Walking may be another safe option.

Try exercising frequently 4 to 5 days per week to get the blood sugar lowering. Don't omit a warm-up period of 5 to 10 minutes and a cool-down period of 5 to 10 minutes. Always stop exercising if you feel pain, dizziness, shortness of breath, faintness, palpitations, back or pelvic pain, or experience vaginal bleeding. Also, avoid vigorous exercise in hot, humid weather or if you have a fever. It is important to prevent dehydration during exercise, especially during pregnancy.

**Medication:**

When diet and exercise do not keep blood glucose levels within an acceptable range, a patient may need to take regular shots of insulin. Self-monitoring of blood glucose is required for effective treatment with insulin. Patients are often asked to regularly measure their blood sugar.
Insulin
Approximately 15 percent of women with gestational diabetes will require insulin. Insulin is a medication that helps to reduce blood sugar levels and can reduce the risk of gestational diabetes-related complications.

Insulin is given by injection because it does not work when it is taken by mouth. Oral diabetes medicines, such as those taken by people with type II diabetes are not commonly used during pregnancy.

If you take insulin, you should check your blood sugar level at least four times per day.

Nursing Management of gestational diabetes:
To ensure an optimally healthy mother and newborn, good prenatal care using a team approach must be a top priority:

- Women with gestational diabetes may need clear explanations and teaching to gain good outcome
- The nurse educator plays a major role in mother counseling
- The woman with pregastational diabetes needs to understand what changes she can expect during pregnancy
- Preconception care focuses on stringent blood glucose control prior to conception and during the first trimester this helps to reduce the rate of infant malformations
- The pregnant woman with diabetes need to increase her caloric intake by about 300 kcal/day
- The food is divided among three meals and three snacks, the bed time snack is important and should include both protein and complex carbohydrates to prevent night-time hypoglycemia
- Glucose monitoring is essential to determine the need for insulin and to assess glucose control
- Woman have to come weekly for assessment of her fasting glucose levels and one or two postprandial levels
- Frequent self-monitoring of glucose levels
- Many women with gestational diabetes need insulin to maintain normal glucose levels
- Evaluation of fetal status, information about the well-being, size, and maturation of the fetus is important for planning the course of pregnancy and the timing of birth
- Ultrasound is done at 18 weeks to determine gestational age and detect anomalies
- Repeated ultrasound at 28 weeks to monitor fetal growth for IUGR or macrosomia
• Some agencies do fetal biophysical profiles (ultrasound evaluations of fetal well-being that assess fetal breathing movements, fetal activity, reactivity, muscle tone, and amniotic fluid volume) as a part of an ongoing evaluation of fetal status.

• Daily maternal evaluation of fetal activity is begun at about 28 weeks.

• Non stress test is usually begun weekly at 28 weeks and increased to twice at 32 weeks.
Objectives
At the end of this module each student should be able to:

- Define criteria of normal labor correctly
- Describe the structure and diameters of bony pelvis, fetal head and
distinguish between the anterior and posterior fontanels
- Describe the structure and diameters of Describe premonitory and sure
  signs of labor
- Identify the stages of labor
- Describe nursing care for each stage of labor
- Identify problems in passage and passenger.
- Discuss nursing management for abnormal labor
- Identify obstetric emergencies accurately.
- Explain nursing management for emergencies according to priority of care.

Child Birth
Introduction:
During late pregnancy the woman and fetus prepare for the labor process. The
fetus has grown and developed in preparation for extrauterine life. The woman has
undergone various physiologic adaptations during pregnancy that prepare her for
birth and motherhood. Labor and birth represent the end of pregnancy, the
beginning of extrauterine life for the newborn, and a change in the lives of the
family.

Terminology
Primipara: The woman who delivers for the first time.

Multipara: The woman that delivers several times before.

Nulli para: The woman that hasn’t past delivery.

Para X+O:
X: number of deliveries.
O: number of abortions.

Normal labor (eutocia):
It is expulsion of mature viable fetus, presenting by vertex through the birth canal,
spontaneously within reasonable time (24 hrs) without interference & without fetal or
maternal complications.

Immature labor:
Termination of pregnancy between 20-28 wks (fetal weight 500-1000).

Premature labor:
Termination of pregnancy between 28-38 weeks and fetal weight between (1000-
2500gm).

Post maturity:
Prolongation of pregnancy 2 weeks or more over the E.D.D

Show: It is a blood stained cervical mucous (cervical mucus plug which close the cervical canal during pregnancy to prevent infection and noticed at the start of labor when cervix starts to dilate).

Lie: It is the relationship of the long axis of the fetus to the long axis of the mother (Normally is longitudinal lie 99.5%), but may be transverse or oblique 0.5%.

Attitude:
It is the relationship of the fetal parts to each other; normally the fetus is in an attitude of generalization or complete

Presentation: It refers to the first part of the fetus which enters the pelvic brim or inlet and felt by vaginal examination and it may be:
(Cephalic: 96% / Breech: 3.5% / Shoulder: 0.5%)

Denominator: It is the landmark on the presenting part by which the position of the fetus is known;

- Vertex presentation, the dominator is the occiput.
- Face presentation, the dominator is the chin (mentum).
- Brow presentation, the dominator is the frontal bone.
- Breech presentation, the dominator is the sacrum.
- Shoulder presentation, the dominator is the scapula.

Position: It is the relationship of a certain point on the presenting part of the fetus to the back of the mother.

- Breech presentation, the positions (R.S.A, R.S.P, L.S.A, L.S.P).

Crowning: It is distention of the vulva by the largest diameter of the fetal skull bone (biparietal diameter) and not return again after the end of uterine Contraction.
Station: It is the relationship between the presenting part of the fetus and the imaginary line between the two ischial spines of the maternal pelvis (-2, -1, 0, +1, +2).

Moulding: It is decrease of the fetal head in size and shape by overlapping of fetal skull bones to pass through the maternal pelvis.

Degrees:
(0) = Bones are separated and sutures can be felt easily.
(+1) = Bones are just touching each other.
(+2) = Bones are overlapping each other but separate by genital pressure.
(+3) = Bones are severely overlapping each other but not separate by pressure and may make intracranial pressure.

19. Effacement:
It is the shortening or taking up of the cervical canal.

Lightening:
It is descend of the fundal level of the uterus at 32 wks level due to engagement of the fetal head in the maternal pelvis, (occur in PG at 2 weeks before labor and MG at onset of labor) and this leads to:
- Relief of dyspnea and palpitation.
- Complain of frequency of micturation.
- Complain of heaviness in the pelvis and difficulty in walking.

Engagement: It is passage of biparietal diameter of fetal head through pelvic brim. PG at 38 wks & MG at onset of labor or at 2nd stage of labor.

Apgar score:
It is the newborn observational check list that includes five parameters (heart rate, respiration, color, muscle tone and reflexes) and it is recorded at 1 min and 5 min after delivery.

Partogram: It is a graphic analysis tool to follow the progress of labor (for cervical dilatation in the time spent in labor) and includes all events occur during labor to the mother and fetus.

Episiotomy: A surgically incision on the perineum and posterior vaginal wall during the second stage of labor to widen the vaginal orifice to facilitate passage of the fetus from the vagina.

Caput succedaneum: Accumulation of fluid under fetal scalp due to compression during labor of the fetal head, it usually not require medical intervention as it resolve normally after one to two days after birth.

Criteria of normal labor:
- Mature viable fetus
- Vertex presentation
- Through birth canal
- Spontaneously
- Within reasonable time
- Without interference except episiotomy
- Without complication for the mother and fetus

Premonitory S&S of labor:
- Lightening.
- Greet pressure below.
- Frequency of micturation.
- False labor pain.

Sure S&S of labor:
- True labor pain.
- Show is present.
- Cervical dilatation.

Factors Affecting Labor (5 Ps):
- Passage: (Bony pelvis & Soft tissue (Birth canal).
- Passenger: (Fetus & Placenta & membranes).
- Power: (Primary (uterine contraction) & Secondary (Bearing down).
- Prejudice (place & personnel)
- Psychological aspect

1-Passage:
It is composed of the mother’s bony pelvis and the soft tissues of uterus, the cervix, the vagina and the perineum.

Pelvis is divided into halves:
1) The false pelvis: it lies above the pelvic brim and is formed by the wings of the ileum. It has no major clinical significance for labor.
2) The true pelvis: it lies below the linea terminalis. It is a bony basin and form the canal through which the fetus passes. It is composed of an inlet, a cavity and an outlet.
   - The pelvic inlet (Pelvic brim): It is that plane which separates the false pelvis above from the true pelvis below, it is heartly shaped bounded by the sacrum posteriorly, the linea terminalis laterally, and the symphysis pubis anteriorly.
   - The pelvic cavity (midpelvis): is a curved passage with a short anterior wall and a much longer posterior wall.
   - The pelvic outlet: Is the lower border of the true pelvis viewed from below, it is ovoid, somewhat diamond shaped.

Normal Female Pelvis

2-PASSENGER:
It includes the placenta, membranes and fetus.

a) The Placenta & membranes:
Shape: it is a round flat mass, about 20cm in diameter and 2.5cm thick.
Maternity Nursing

at its center.
Size: It weighs one-eighth of the infant's weight at term.
Structure: It consists of 15-20 lobes and it has two surfaces:
- *The Maternal Surface:* it is dark red in color.
- *The Fetal Surface:* it is a white, shiny appearance.

b) The Umbilical Cord:
- It extends from the fetus to the placenta and transmits *two umbilical arteries and one vein*.
- The length of the cord is about 50 cm.

c) Fetus:

**Fetal Skull:**
It includes bones and fontanels.

*The skull is composed of:*
- **Vault:** the large & more compressible area.
- **Face:** smaller & incompressible.
- **Base of the skull:** it is composed of 2 parietal bones, 2 temporal bones, 2 frontal bones, one occipital bone.

The fontanels:
It is spaces filled membranes located where the sutures intersect”. The two most important fontanels are:
- **A - Anterior fontanel:** it is diamond shaped, is about 3 cm by 2 cm, and lies at the junction of the coronal & sagittal sutures. It closes by 12-18 months after birth.
- **B - Posterior fontanel:** it is at the junction between the sagittal suture & lambdoidal suture. It is triangular in shape, and is about 1 cm by 2 cm. It is closed at full term.

Structure of placenta
It is spaces filled membranes located where the sutures intersect”. The two most important fontanels are:

- **Anterior fontanel:** it is diamond shaped, is about 3 cm by 2 cm, and lies at the junction of the coronal & sagittal sutures. It closes by 12-18 months after birth.
- **Posterior fontanel:** it is at the junction between the sagittal suture & lambdoidal suture. It is triangular in shape, and is about 1 cm by 2 cm. It is closed at full term.

Fetal dispoition includes:
1 - Presentation.
2 - Attitude.
3 - Lie.
4 - Position.

3 - Power:

A) Primary involuntary power (uterine contraction)

The contraction wave of the uterus begins in the fundus, which contains the greatest concentration of myometrial cells and moves downward throughout the entire myometrium.

*Description of uterine contraction:*

- **Frequency:** it refers to the number of uterine contraction contractions per 10 minutes.
- **Interval:** it refers to the period of time between the end of one contraction to the beginning of the next contraction.
- **Duration:** it refers to the length of time a contraction lasts.
Intensity: it refers to the strength of the uterine contraction, (mild, moderate, severe).

**Normal criteria of contraction**
- Frequency 3-5/10min
- Duration not more than 90 sec.
- Interval not less than 60 sec.

**B)-Secondary voluntary power (Bearing Down)**

**Factors affecting bearing down:**
- Maternal condition (Fatigue, severe pain).
- Fear & anxiety: lead to muscle tension.....general fatigue..... increase perception of pain.
- Child births education (labor preparation).
- Motivation of child bearing (unwanted pregnancy- intra uterine fetal death).

**Advantages of bearing down during 2nd stage of labor:**
- Help in pushing down of the fetus
- Help in facilitate descend of the head
- Aids in cervical dilatation
- Facilitate labor
- Shortening of the 2nd stage of labor.

**Disadvantage of bearing down during 1st stage of labor:**
- Weakness of pelvic muscles
- Genital or cord prolapsed
- Edema of the cervix
- Placental insufficiency
- Exhausted mother

**4-Psychological factors affecting labor:**
- Social support
- Past experience
- Knowledge
- Beliefs, values, culture

**5- Prejudice:**
- Personnel; number & skills
- Place of delivery; facilities

**Stages of normal labor :**
- **1st stage (Dilatation):** begins with true labor pain & ends with fully cervical dilatation (10cm).
  - PG: 16 hrs.                     MP: 8 hrs.
- **2nd stage (Birth):** begins with fully cervical dilatation & ends with complete delivery of the baby.
  - PG: 45 min-1 hour hrs.         MP: 15-30 min.
- **3rd stage (Delivery of placenta):** begins with complete delivery of the baby & ends with complete delivery of the placenta. PG: 10-20 min.               MP: 10-20 min.
- **4th stage (Recovery):** It is the first 2-4 hours immediate after delivery of the placenta.

**1- First stage of labor (Dilatation):**

- **Phases of 1st stage:**
  - **Latent phase:** (0-3 cm)
- Contractions become every 10-15 minutes and least 2/10 min with each lasting > 20 seconds, moderately strong and are quite well tolerated without analgesia
  - Active phase: (4-10 cm)
- Contraction comes every 3-5 minutes and at least 3/10 min, with each lasting > 40 seconds.
- Normal rate of CD in active phase is 1.2cm/hour in PG and 1.5cm/hour in MP.

Differentiate between true labor pain & false labor pain:

<table>
<thead>
<tr>
<th>True Labor contractions</th>
<th>False labor pain (Braxton Hicks Contraction)</th>
</tr>
</thead>
<tbody>
<tr>
<td>*Regular</td>
<td>*irregular</td>
</tr>
<tr>
<td>*increase in frequency, duration &amp; intensity</td>
<td>*does not increase in frequency, duration &amp; intensity</td>
</tr>
<tr>
<td>*Interval between contraction gradually shorten</td>
<td>*Usually no change</td>
</tr>
<tr>
<td>*not relieved by analgesic</td>
<td>*relieved by analgesic</td>
</tr>
<tr>
<td>*Spasmodic colicky pain begins in the lower back &amp; radiates around to abdomen</td>
<td>*pain usually in the abdomen</td>
</tr>
<tr>
<td>*Productive:associated with stretching &amp; dilatation of cervix</td>
<td>*not productive</td>
</tr>
<tr>
<td>*Intensity increases with walking</td>
<td>*not increased with walking</td>
</tr>
</tbody>
</table>

2- Second stage (Birth):

Criteria of 2nd stage of labor:
- Full dilatation, complete effacement of cervix.
- Strong uterine contraction.
- Spontaneous rupture of membranes
- Urge to bear down.
- Appearance of presenting part from the vulva.
- Plugging of perineum.
- Flushing of the face.
- Changing in woman voice begin to cry.

Mechanism of normal labor:
1. Descent
2. Engagement
3. Flexion
4. Internal rotation
5. Extension
6. Restitution
7. External rotation
8. Delivery of shoulder

Mechanism of normal labor

3-Third stage of labor: (Delivery of placenta):

Signs of placental separation:
1. The uterus becomes smaller, harder, higher, and more globular.
2. A suprapubic bulge appears due to presence of the placenta in the lower uterine segment.
3. The passage of gush of blood per vagina.
4. Elongation the umbilical cord.
5. Loss of pulsation in the cord.

6. **Methods of placental separation:**

<table>
<thead>
<tr>
<th>Shultze method</th>
<th>Duncan’s method</th>
</tr>
</thead>
<tbody>
<tr>
<td>- 97% of cases.</td>
<td>- 3% of cases.</td>
</tr>
<tr>
<td>- Separation started at the center then at the edges as an inverted umbrella.</td>
<td>- The edges of placenta separated first.</td>
</tr>
<tr>
<td>- Less liability for bleeding.</td>
<td>- More liability for bleeding</td>
</tr>
<tr>
<td>- Less retention of membranes.</td>
<td>- Retention of membranes.</td>
</tr>
</tbody>
</table>

4. The fourth stage (Recovery): It is the immediate postpartum period, as it is the 1st 2-4 hrs after delivery of the placenta.

**Nursing management of normal labor**

Nursing care during the first stage of labor:

1- Assessment at admission: It is divided into:
   - Initial assessment
   - Ongoing assessment

   ❖ Initial assessments:
   When the woman arrives to peinatal unite. Assessment is the top priority of nursing care. It includes history taking, physical examination and investigation.

   1- History taking: (subjective data)
   A maternal health history should include:
   ➢ Personal history, which involves (name, age and address).
   ➢ Mother life-style; such as (Housing condition, daily living activities, personal hygiene, nutrition and habits).
   ➢ Medical history; chronic diseases such as cardiac disease, liver disease & renal disease.
   ➢ Family history; such as (twin pregnancies, diabetes mellitus, hypertension and history of congenital malformation, any operations, receiving blood transfusion and allergy to food or drugs).
   ➢ Surgical history: as appendectomy, ovarian cyst, caesarian section.
   ➢ Obstetric history; which includes:
     - L.M.P, E.D.D, gravidity and parity
     - previous pregnancy & delivery history; which includes (number of full term pregnancies, number of premature pregnancies, number of abortion, all information concerning the outcome of each of the previous pregnancies, duration of pregnancy, duration of labor, mode of delivery, puererium and the condition of the newborn.
     - History of current labor; this includes onset, frequency, duration and intensity of uterine contraction, passage of show and its amount and the status of membrane. If the membrane ruptured, it is essential to ask about the time of rupture and the color and amount of amniotic fluid.

2- Physical examination:
A- General examination:
The nurse should take and record the parturient vital signs. (temperature / 4hrs after ROM /2hr-pulse / 4hrs in latent phase & 30 min in active phase- BP / 4 hrs in latent phase & 2hrs in active phase. Respiration on admission.and FHR / 2hrs.in latent phase & /30 min. in active phase), weight and height. Then she checks for the presence of edema, varicose vein

B- Local examination:

- Abdominal examination; This includes assessment of the pattern of contraction, "frequency, duration, intensity & interval" as well as abdominal grips through inspection, palpation and auscultation

1st Maneuver
2nd Maneuver
3rd maneuver
4th maneuver

"Leopold’s Maneuvers"

- Examination of the vulva: inspect gaping of introitus, observe color and odor of amniotic fluid and check edema of the vulva.
- Vaginal examination: to assess progress of labor, determine cervical effacement & degree of dilatation, assess the condition of membranes, determine presentation, position & station of the fetus, and detect any abnormalities.

Contraindications of vaginal examination are:

- Ante partum Hg
- Premature rupture of membrane
- Cord prolepe
- Urinary tract infection
• Previous history of abortion
• Obstructed labour.

3- Investigation:
*Hematology test, includes, "Hb, RH & Blood group".
*Urine analysis; includes," Glucose, acetone, and albumin"

❖ Ongoing assessment:
  Continuity & follow up of all types of data, SD (complaints)/ OD (labor progress).

2- Planning management according to assessment:
1-Comfort measures:

a) Ambulation and positioning.
   ➢ Ambulation and a specific maternal position is helpful to reduce discomfort and assist the labor process.
   ➢ Frequent change position sitting, walking, kneeling, standing, lying down, getting on hands and knees, and using a birthing ball:
     • Reduce discomfort from constant pressure
     • Help the fetus adapt to the pelvic contours
     • Promote fetal descent.
   ➢ Supine and sitting positions should be avoided because it may interfere with placental blood flow and consequently with oxygenation of the fetus

b) Voiding.
   • The nurse should encourage the woman to void every 2 hours because a distended bladder may impede descent of the presenting part, inhibit uterine contractions, and lead to decreased bladder tone or atony after birth.
   • The bladder is only catheterized if the parturient is unable to void after some time and then only after the usual nursing measures have been tried and failed. All urine passed during labor is charted and tested for acetone.

c) General hygiene:
   • Women in labor should be offered the use of showers or warm water baths, if they are available, to enhance the feeling of well-being and to minimize the discomfort of contractions.
   • If the membranes have ruptured, a wash in bed is preferable, necessary care is given to hair and nails.
   • Also, mouth care is important, especially if oral fluid intake is limited because the dry mouth and lips can be very uncomfortable.
   • The nurse should keep the women’s clothes and bed dry and clean.

d) Nutrient and fluid intake:
   • The nurse should encourage the mother to eat soft diet and fluid.
     like jelly, honey, juice jam, milk during early first stage of labor and

e) Pain relievers measures:
Nonpharmacological pain relive measures may include continuous labor support, hydrotherapy, ambulation and position changes, acupuncture and acupressure, attention focusing and imagery, therapeutic touch and massage, and breathing techniques and effleurage.
   ➢ Hydrotherapy: in which the woman immerses herself in warm water for relaxation and relief of discomfort
- Acupressure: It involves the application of a firm finger or massage at the same trigger points to reduce the pain sensation.
- Attention Focusing and Imagery
- Breathing techniques
- Homeopathy. Homeopathic remedies are prepared from plant extracts & from minerals such as Aconitum to relieve anxiety & Kali carbonicum to alleviate back pain during labor.

2-Observation of the progress of labor
Progress of labor should be noted through Partogram, which is a tool to help the management of labor, it is used to record all observation made on a woman in labor, it provides a graphic method of recording the silent features of labor.

Components of the pantograph:
- Part I: Fetal condition:
  This part of the graph is used to monitor and assess fetal condition
  1- Fetal heart rate
  2- Membranes and liquor
  3- Moulding the fetal skull bones
- Part II: Progress of labor: It includes:
  - Cervical dilatation
  - Descent of the fetal head
  - Uterine contractions
- Part III: Maternal condition
Assess maternal condition regularly by monitoring:
- Drugs, IV fluids, and oxytocin, if labour is augmented
- Pulse, blood pressure, & Temperature
- Urine volume, analysis for protein and acetone

Signs of fetal and maternal distress
*Signs of fetal distress
- Bradycardia decrease heart rate less than 100 b/min (deceleration), Tachycardia (acceleration) increase heart rate more than 160 b/min.
- Passage of meconium stained with amniotic fluid in cephalic presentation.
- Excessive formation of caput succedenum.

* Signs of maternal distress
1- Flushing of face
2- Elevating pulse rate
3- Epigastric pain
4- Excessive respiration
5- Elevation of the temperature 38°C
6- Dark vomiting
7- Headache
8- Appearance of ketone bodies in urine.

Nursing management during 2nd stage of labor:

It includes the following actions:
1. Preparation: (Place, attendant & mother)
2. Observation: V.S, UC, FHR, FD
3. Assist doctor during delivery:
4. Documentation

A) Preparation:
- Prepare the equipment & preparation of attendant: As in handling procedure
- Prepare the mother: This is through:-
1- Transfer her to the delivery room
2- Put her in lithotomy position as through this position
   • Help pushing more effective.
   • It is easy for the woman to rest between contractions without changing her position.
   • F.H.S is easily heard.
   • It is easier to carry aseptic technique.
   • No need to change position for 3rd stage.
   • The attendant has a better view of the woman’s facial expression.
3- Empty the bladder.
4- Perineal care.
5- Apply a sterile pad.
6- Drape the woman.
7- Help the mother to push down with each contraction until vertex crown "Crowning; is distention of the vulva by the largest diameter of the fetal skull bone (biparietal diameter) and not return again after the end of uterine Contraction"; she should instruct the mother to; Hold deep breathing then pushes then bearing down with every contraction. She should be relaxed after every contraction.

B) Observation of the mother and the fetus through:
- Check the F.H.S after every contraction.
- Take Bp every ¼ hour and if signs of exertion appears.
- Check pulse every other contraction.
- Observe for bleeding.
- Watch for passage of meconium in non breech presentation.

C) Assist doctor during delivery:
- Aid the flexion of the head by pressing occiput toward the perineum as the mother bears down during contraction with the other hand support the perineum during contraction to decrease incidence of laceration.
- Help the doctor during episiotomy.
- Once the fetal head has emerged, the nurse explores the fetal neck to see if the umbilical cord is wrapped around it. If it is, the cord is slipped over the head to facilitate delivery.
- With a sterile gauze take of the mucus on the eyes, nose and mouth.
- Watch the external rotation of the head, then try to deliver the anterior shoulder by pressing the head gently down wards to get the shoulder out from under the symphysis pubis.
- To deliver the posterior shoulder, support the head in an upward direction to ease it out over the perineum.
- Deliver the rest of the baby by lateral flexion towards the mother’s abdomen.
- Umbilical cord is double-clamped and cut between the clamps. With the first cries of the newborn.

Nursing role for receiving baby:

I. Warmth:
- Drying the newborn and providing warmth
- Placing the newborn under a radiant heat source
2. **Care of respiration:**
   - Place the newborn in trendlenburg position
   - Suction, of the mouth & nose by a catheter connected to a suction pump
   - Apgar score is done for assessment of the newborn. It is the newborn observational check list that includes five parameters (heart rate, respiration, color, muscle tone and reflexes) and it is recorded at 1 min and 5 min after delivery.

3. **Care of the umbilical cord stump:**
   - It is ligated by 2 silk ligatures or plastic clamps 2 and 3 cm from the umbilicus.
   - The cord is cut distal to the 2nd ligature to avoid tying an umbilical hernia
   - Examine the umbilical cord structure.

4. **Care of the eyes:**
   - Clean it with warm water from inner to outside & dry it
   - Penicillin or tetracycline drops are used to prevent infection of the eyes.

5. **Newborn Identification**
   - ID bands
   - Footprints/mother’s fingerprint

---

**Nursing care during 3rd stage of labor**

- Assist with placental delivery
- Inspect the placenta immediately for any missing lobe, which may cause hemorrhage, sepsis and sub-involution.
- Examine the placenta to be sure that the membranes are completely.
- Examine the cord to (2 arteries and one vein).
- Administering an oxytocic if ordered and indicated after placental to prevent postpartum hemorrhage.
- Help in repairing the episiotomy.
- Be prepared to administer of blood or I.V fluids.
- The nurse should be assessed the contractility of the uterus
- Check the height and degree of firmness of fundus.
- Observe the amount of blood loss and estimate it. (normal 200 – 600 ml)
- Perineal care by ante septic solution.
- Apply sterile pad on the perineal area
- Health education about perineal care at home

---

**Nursing role during 4th stage of labor:**

1. Observation: should be provided to mother and newborn, for the following
   - Maternal:
     - Vital signs; should be assessed every 15 minutes in the first hour
     - Uterus; Assess the firmness, height, and positioning of the uterine fundus with each vital sign
Maternity Nursing

- The fundus should be firm, in the midline, and below the umbilicus (about the size of a large grapefruit).
- If the fundus is firm, no massage is needed; if it is soft (boggy), it should be massaged every 15 minutes until it is firm.
- Lochia; assess the amount, color and odor of lochia
- Perineal and Labial Areas. Observe these areas for hematoma formation using REEDA scale.

**The nurse should be alert for the danger signs during this stage:**
- Severe perineal pain suggestive for hematoma formation.
- Rapid pulse increases hypotension.
- Severe headache hyponglycemia may precede eclampsia.
- Distended bladder often visible will lead to enhanced uterine bleeding, catheterization for retention when necessary.

Newborn:
- The nurse should observe VS, reflexes, cord, defecation/urination, skin color of the newborn

2. **Comfort measures:**
   - **Position:** The mother is allowed to sleep in any comfortable position, prone position or either lateral positions should be encouraged in order to facilitate involution and to help drainage of lochia.
   - **Hygienic measures:**
     - Clean the vulva and perineal area with warm water and antiseptic solution, this area must be kept clean and dry and free from infection.
     - Breast care should be done before and after feeding. The nurse teaches the mother the technique of breast care and encourages her to initiate breast-feeding.

   **Instruct the mother how to care an episiotomy:**
   - Avoid touching the open wound to avoid infection.
   - Cold packs to the perineum to decrease swelling.
   - Don't sit in a warm bath three or four times a day after perineal care to soothe the perineum & cleanse the wound.
   - Apply a topical spray to the perineum to relieve pain.
   - Sit on a pillow or inflatable ring to avoid pain.
   - Walking can be good exercise to increase blood flow & speed healing.
   - Do 10 – 12 kegel exercises every time to help tighten your pelvic floor muscles & increase blood flow to the perineum.
   - Call your provider if; the area of the episiotomy becomes reddened, the area becomes more swollen, there is an increase in drainage or discharge from the vagina, a fever develops or the pain gets worse.

**Pain relievers measures:**
   - **Icepacks:**
     - Apply an ice pack to the perineum promptly after vaginal birth to reduce edema and limit hematoma formation.
   - **Analgesia:**
     - The nurse should encourage the woman to take analgesics on a regular schedule to stay ahead of both perineal and after pain discomfort Regular
     - Massage, abdominal effleurage, breathing exercise..ect.
- **Warmth:**
  - A warm blanket shortens the chill common after birth. A portable radiant warmer provides warmth to both the mother and infant.
  - Encourage the mother to take warm fluids initially.

- **Voiding:**
  - Encourage the mother to empty her bladder; urination reduces the severity of after pains because the uterus contracts most effectively.

- **Psychological support**

  3-Promoting early family attachment:
  - Ideal time at one hour after birth.
  - Provide privacy when parents observe their baby.
  - Put the baby in the parent’s arm.
  - Encourage breast-feeding.
  - Consider cultural especially.

---

**Birth Complications**

### Abnormal labor

**Introduction:**

While many risk factors may appear in the prenatal period, others will only become evident in admission in the birthing unit or develop during birth. The nurse plays a central role in promptly recognizing suspected and obvious abnormalities. When life-threatening condition arises rapid appraisal is necessary.

**Dystocia (obstructed labor):**

It is prolonged, painful, or difficult delivery results from deviation from normal interrelationships between five essential factors of labor (power, passage, passenger, placenta & psychological status).

**Factors that might complicate progress of labor:**

**Uterine factors (abnormalities of the power):**

1) Hypotonic uterine contraction.
2) Hypertonic uterine contraction.

**Pelvic factors (abnormalities of the passage):**

1) Contracted pelvis (inlet – midpelvis – outlet) contracture.
2) Abnormal pelvic shape.
3) Soft tissues obstruction.

**Fetal factors (abnormalities of the Passenger):**

1) Unusually large fetus & Fetal anomaly.
2) Abnormal fetal number.
3) Abnormal fetal disposition.

**Placental factors (abnormalities of the Placenta):**

1) Unusually large placenta.
2) Abnormal shape.
3) Abnormal site of insertion.

**Psychological status:** it refers to

- Client’s psychological state
- available support system
• preparation for childbirth
• Past experiences & coping strategies.

Abnormalities in the power:
➤ Abnormal uterine contraction: it prevents normal progress of cervical dilation, effacement, and descent of the presenting part.

1- Hypotonic uterine contraction:
It means weak contraction that caused by
• Over stretching in the uterus by multiple pregnancy
• Epidural anaesthesia.
• Chorioamnionitis.
• Mal presentation, mal position.
• Maternal disease.

It results in:

Prolonged labor
The labor last for more than 24 hour in PG & 16 hour in MG.

Signs & symptoms:
• Weak contraction.
• Exhaustion.
• Dehydration.
• Sever pain.
• Cervical and vaginal edema.
• Premature rupture of membranes (PROM).
• Sings of fetal distress.

Nursing management:
• Continuous monitoring of progress of labor and fetal condition.
• Close monitor of intake and output and vital signs.
• Comfort measures to relieve pain.
• Give IV glucose to avoid dehydration.
• Antibiotics to control infection.
• IV oxytocin is started and fetal monitoring & uterine contraction is closely observed.

2- Hypertonic uterine contraction:
Characteristics:
• Increase duration by more than 90 second
• Decrease interval less than 60 second
• Incomplete relaxation between contractions.

This condition caused by
• Disturbance in the fundal pacemaker.
• Fetal mal presentation or mal position.
• Over stimulation by Oxytocin.

It results in:

Precipitated labor:
The labor last for about 1 – 3 hours

Signs & symptoms:
• Tetanic (long and painful) uterine activity.
• Exhaustion.
• Sever pain.
• Signs of fetal distress.
Nursing management:
The main objectives of care are as follows: Preventing maternal trauma, Preventing transmission of infection, Establishing the neonate’s airway and maintaining respiration and Minimizing blood loss.
- Reassuring the woman and securing medical help.
- The nurse must be prepared to evaluate the woman’s labor status, alert the birth attendant and other staff as needed.
- The nurse must immediately assess labor patterns, cervical dilatation and effacement, and fetal station and presentation.
- Monitor FHR at once for signs of fetal distress.
- Once the second stage is initiated, place the palm of the hand firmly against the perineum and emerging fetal head (apply pressure to prevent perineal tear).
- When the head is born, suction the neonate’s mouth & nose.
- Clamp the cord, and complete the care as normal labor.

Factors leading to weak voluntary power (bearing down) are:
- Weak abdominal muscles.
- Obesity associated with weak abdominal Muscles.
- Epidural anesthesia.
- Maternal diseases as anemia, HD & diabetes.

Abnormalities in the passage:
- **Abnormal pelvic size:**
  1-Contracted pelvis; means that the essential diameters of pelvis are decreased by 1 cm or more. Small size lead to inlet, mid pelvis or outlet contracture.
  2-Cephalopelvic Disproportion: Disproportion between the size of the fetal head and that of the maternal pelvis with resultant difficult labor, and danger to the fetus.

  **Cause:**
  - large head
  - small pelvis
  **Risk Factors:**
  - Primigravida women of small stature with a large baby.
  - A large newborn (macrosomia) may be associated with diabetes mellitus, multiparity, and genetics
  **CPD suspect in labour if:**
  - Progress slow efficient uterine contractions.
  - Foetal head not engaged.
  - Vaginal examination shows severe moulding
  **Only management for contracted pelvis & cephalo pelvic disproportion is cesarean section**

- **Soft tissues Obstruction:**
  - Ovarian tumor.
  - Uterine fibroid,
  - Bicornuate, double uterus, septate uterus or didelphys.
  - Cervical polyps.
  - Vaginal stenosis.
  - Perineal tumors or cysts.
Abnormalities in passenger:
1- Unusually large fetus:
  ➢ Macrosomia, which is defined as a fetal weight of 4500 g or more (common in diabetic mother).
  ➢ Fetuses with anomalies such as hydrocephaly, enlarged abdomen, or neck masses can also present with dysfunctional labors.

2- Abnormal fetal number:
  ➢ Multifetal gestation:
    It includes twins pregnancy, triplets, or quadrates.

  predisposing factors:
  - Age: it's more common among women aged 20-35 years.
  - Fertility drugs: that stimulates the ovaries to produce many ovum.
  - Multiparity: more common among parous women than nulliparous women.

Nursing management:
  - The nurse should evaluate fundal height on her first assessment and perform abdominal examination to identify fetal extremities.
  - Report immediately suspicion of multiple gestations.
  - Intrapartum care includes close observation of vital signs. Assessment of signs of pregnancy induced hypertension, including edema, proteinuria and hypertension. Close monitoring of fetal heart rates guided by ultrasonography is useful.
  - Assessment of progress of labor and early detection of dystocia.
  - Immediate newborn care and identification of the two twins, weighing them and keep them warm all the time. Avoidance of invasive procedure and gentle suctioning is essential.

3- Abnormal fetal presentation:
Abnormal fetal presentation and position can lead to dystocia and ineffective uterine contractions. It includes the follows:

➤ Breech presentation:
  - Breech presentations are more common cause of dystocia and in many settings contribute significantly to the incidence of caesarean section.
  - It is associated with ineffective cervical dilatation due to the soft buttocks. The soft buttocks passes easily through incomplete dilated cervix and the head becomes trapped leading to hypoxia and may be asphyxia.

Classification:
- Frank breech (extended knees, flexed hips). It occurs in 65%.
- Incomplete or footling breech (extended knees, extended hips). It occurs in 25% of breech presentation.
- Complete breech (flexed knees, flexed hips). It occurs in 10% of breech presentation.

Caused by premature fetus and low birth weight, multiple pregnancies, cord around neck.

Factors affecting mode of delivery in breech presentation:

Criteria for vaginal delivery:
  - Frank or complete breech.
  - Fetal weight estimated as less than 3500gm.
  - Adequate pelvic size.
  - Gestational age of 36-42 weeks.
  - Birth attendants experienced in vaginal breech delivery
  - Pediatric support must be available.
Criteria for cesarean delivery:
- Absence of labor when fetal status requires delivery.
- Previous history of perinatal death or infant with birth trauma.
- Inadequate pelvis.

Nursing management:
- Grasp the baby so that your thumbs are over the baby's hips.
- A towel can be wrapped around the lower body to give a more stable grip.
- Have your assistant apply suprapubic pressure to keep the fetal head flexed.
- Gentle outward traction on the baby while rotating the baby first clockwise and then counterclockwise a few degrees to free up the arms.
- Keep your hands low on the baby's hips, to prevent injury to the abdominal organs.
- During the delivery, always keep the baby at or below the horizontal plane or axis of the birth canal to avoid injuring the baby's spine.
- Only when the baby's nose and mouth are visible at the introitus is it wise to bring the body up.

Abnormalities in placenta:
1. Abnormal placental size:
   - large placenta (most common in diabetic mother) lead to dystocia in 3rd stage.
2. Abnormal site of placental insertion:
   - Placenta previa: that means abnormal situated placenta in lower uterine segment (LUS).
   - Placenta accerta: abnormally adherence placenta to the uterine wall.
   - Placenta increta: the villi invade the myometrium.
   - Placenta percreta: the villi penetrate the myometrium.

"Abnormal site of placental insertion"
Nursing management:
- Often after about 30 minutes of waiting, a manual removal of the placenta is undertaken with anesthesia.
- One hand is inserted through the introitus and into the uterine cavity. Grasp the edge of the placenta and use the side of your hand to sweep the placenta off the uterus. Then pull the placenta through the cervix.
- When you manually remove the placenta, be prepared to deal with an abnormally adherent placenta.
- If partial and focal, the attachments can be manually broken and the placenta removed. It may be necessary to curette the placental bed to reduce bleeding.
- If extensive or complete, hysterectomy is performed.
Problems in psychological status:

Psychological factors that affect tolerance of pain:
1. Culture; some cultures encourage loud & vigorous expression of pain.
2. Previous experience; previous bad experience do always adversely affect a woman’s ability to deal with pain.
3. Preparation for delivery; learn the mother a variety of skills to master pain.
4. Support system; the birth experiences of a woman’s family & friends can be an important source of support if they convey realistic information about labor pain & it’s control.
5. Fear & anxiety increase muscle tension, general fatigue increase pain perception and decrease coping skills to relieve pain which increase maternal anxiety, exhaustion and loss the power to bear down during 2nd stage (secondary power).

Complications of obstructed labor:

On the Mother:
- Postpartum hemorrhage.
- Increased rate of traumatic complications: Lacerations, injuries to
- Increased risk of infection (prolonged labor)
- Increased rate of instrumental deliveries.
- Psychological effects of a Traumatic Experience

On the Fetus:
- Increased rate of perinatal morbidity and mortality
- Potential Complications of traumatic delivery
- Low Apgar score
- Neonatal complications (Birth Asphyxia, trauma ..etc.)

Nursing management for dystocia (obstructed labor):

Nursing management during first stage:
1. Complete assessment for mother in admission to detect the cause of dystocia. It includes.
   - Complete history: It includes:
     - Personal, medical, family, surgical, obstetric history and history of current labor; this includes onset, frequency, duration and intensity of uterine contraction, passage of show and its amount and the status of membrane. If the membrane ruptured, it is essential to ask about the time of rupture and the color and amount of amniotic fluid.
     - A careful physical examination must be performed which includes:
       - General, local examination and investigations
       - Close observation using electronic monitoring for Progress of labor (cervical dilatation, fetal decent, uterine contraction and condition of membranes), Fetal condition (FHR) and Maternal condition especially for dehydration, pallor, exhaustion, cervical & vaginal edema and severe pain, signs of shock and recording for any abnormality.
2. Management of dystocia depends on underlying factors related to the maternal condition and fetal status.
3. Provide comfort measures to relieve pain and help client to adapt comfortable position.
4. IV fluids to maintain hydration and observe intake & output.
5. Encourage frequent evacuation of bladder.
6. Administer the prescribed drugs (antibiotics, analgesics).

Nursing management during second stage:

Prepare the mother for instrumental delivery e.g. Forceps or Vacuum extraction or CS if necessary.
Instrumental delivery:
- Preparation for place, equipment & apparatus.
- Preparation for mother; positioning, sterilization, evacuate the bladder and anesthesia.
- Close observation for FHR, vital signs & contraction.
- Assist the doctor during delivery; follow fetal decent, supporting the perineum, cutting the episiotomy…
- Suctioning & oxygenation for baby at birth.

Cesarean section:
- Preparation for place, equipment & apparatus
- Preparation for mother; remove any jewelry, assess vital signs, catheterization, IV line, collect specimen for lab, signed consent and anesthesia.
- Assist the doctor during delivery.
- Suctioning & oxygenation for baby at birth.

Ng management during Third stage:
- If the placenta has not been delivered within 45 to 60 min of delivery, manual removal may be necessary. The entire hand is inserted into the uterine cavity, separating the placenta from its attachment, then extracting the placenta.
- The placenta should be examined for completeness because fragments left in the uterus can cause hemorrhage or infection. If the placenta is incomplete, the uterine cavity should be explored manually under general anesthesia to detect retained placental fragments.

Ng management during Fourth stage:
- Observation for mother includes vital signs, uterus, lochia, perineum, wound condition, intake & output.
- Uterine massage in case of instrumental delivery
- Perineal & breast care.
- IV fluids with oxytocic drugs.
- Physical & neurological examination for baby.
- Eye, cord & diaper care.
- Reassure the mother if there is any injury result from delivery.
- Encourage breast feeding as early as possible after delivery.

Obstetric Emergencies

Definition:
Obstetrical emergencies: are life-threatening medical conditions that occur in pregnancy or during or after labor and delivery.

Labor emergencies:
It divided into:
1. Maternal emergencies:
   - Late vaginal bleeding
   - Severe preeclampsia
   - Obstructed labor
   - Maternal distress
   - Rupture uterus
   - Premature rupture of membrane
   - Shock
   - Shoulder dystocia

2. Fetal emergencies
   - Cord prolapse and cord presentation
   - Fetal distress

Maternal Emergencies:

1. Ruptured uterus:
It means abrupt tearing of the uterus either
complete (all layers of uterus include peritoneum) or incomplete (include endometrium & myometrium).

Causes:
- Over distension of uterus.
- Hypertonic contraction.
- Obstructed labor.
- Grandmultipara.
- Abdominal trauma.
- Trauma with obstetric instruments.

Sings & symptoms:
- Internal and/or external blood loss.
- Abdominal pain.
- Tachycardia.
- The infant easily felt through the abdominal wall.

Nursing management:
- Anti-shock measures (oxygen mask, one or more IV line to restore circulation, drug therapy, administer antibiotics and prepare the client for surgery).
- Preparation for surgery (monitor V.S & FHR, insert urinary catheter to measure intake & output and reparation for blood transfusion if needed). "Rupture uterus"
- Operation; The placenta and fetus are removed and hysterectomy is performed. If ruptured scar with clean cut edges or if patient young or child less than tear is sutured and the pregnancy avoided for one year and CS is done 2 weeks before expected date of delivery (EED).

2-Shock:
It is a generalized physiologic state characterized by a reduction in blood flow to the tissues with resulting dysfunction of organs & cells. It entails progressive collapse of the circulatory system and if left untreated can result in death.

Risk factors:
- Placenta previa & abruptio placenta,
- Ruptured uterus
- uterine atony
- Tears of genital tract
- retained placenta
- infection

Types:
- Hypovolemic shock: caused by any loss of circulating fluid volume as in hemorrhage or severe vomiting.
- Septic shock: results from the systemic inflammatory response to an infection as in septic abortion.
- Neurogenic shock: caused by severe pain related to trauma, rupture uterus, precipitated labor, uterine inversion.

Nursing management:
- Anti shock measures (oxygen mask, one or more IV line to restore circulation, drug therapy, administer antibiotics & sedative
- Monitor vital signs (pulse, blood pressure, respiration, temperature)
- Turn the woman onto her side to minimize the risk of aspiration
- Keep the woman warm
- Elevate the legs to increase return of blood to the heart
- Rapidly infuse IV fluids initially in the first hour
- Administer antibiotics & sedative
- Finally determine the cause of shock (bleeding, infection) after the woman is stabilized

3-PROM (premature rupture of membranes):
It refers to rupture of membranes (chorion & amnion) 1 hour or more before the onset of labor.

Causes:
- Malpresentation.
- Possible weak areas in the membranes.
- Infection.
- Incompetent cervix.

Signs & symptoms:
The main symptom of PROM is fluid leaking from the vagina. It may be a sudden, large gush of fluid, or it may be a slow, constant trickle of fluid.

Nursing management:
_Pregnancy of 34 wks or more_, induction of labor if spontaneous labor has not begun by approximately 12 hrs after PROM (potential for CS).
_Pregnancy less than 34 wks:_
- Complete bed rest.
- Hydration.
- Sedation & tocolytics.
- High vaginal swab for culture.
- Corticosteroids to improve fetal lung maturity.
- Antibiotics to guard against infection.
- Observation for maternal infection e.g. fever, tachycardia, increase WBCs, uterine tenderness & foul smelling.

_N.B._ when pregnancy reaches 34 wks, labor is induced with oxytocin.

4-Shoulder dystocia:
Defined as impaction of the anterior shoulder (and less commonly the posterior shoulder) following delivery of the vertex.

Or

Arrest of baby shoulder behind pubic bone.

Shoulder dystocia
Risk factors:
- Post-term pregnancy
- High parity
- Previous history of shoulder dystocia
- Previous large babies
- Maternal obesity
- Maternal age over 35 years
Maternity Nursing

Maternal diabetes and gestational diabetes
Abnormal pelvic anatomy
Fetal macrosomia

Nursing management:
HELPERR Mnemonic for management of shoulder dystocia: it is a clinical tool that offers a structured framework for coping with shoulder dystocia.

- H Call for help
- E Evaluate for episiotomy
- L Legs (The McRoberts Maneuver)
- P Suprapubic (not fundal) pressure to disengage the anterior shoulder
- E Enter internal rotation maneuvers (―Wood Screw‖)
- R Remove posterior arm
- R Roll the patient over

Mc Roberts maneuver:
- Flex the legs toward the patient's chest to open the anterior posterior diameter of the pelvis
- Suprapubic pressure – apply a “rolling” pressure over the fetal anterior shoulder on mother's lower abdomen so that the shoulder will adduct and pass under the symphysis

Mc Robert’s maneuver

Rubin Maneuver; hand is inserted into the vagina and digital pressure is applied to the posterior aspect of the anterior shoulder pushing it towards the fetal chest, rotating the shoulders forward into an oblique diameter

Woods Screw Maneuver; while maintaining pressure as above in the Rubin maneuver, a second hand locates the anterior aspect of the posterior shoulder. Apply pressure to rotate the posterior shoulder. Attempt delivery once the shoulders move into the oblique diameter. If unsuccessful continue rotation through 180° and attempt delivery.

Fetal emergencies:
1- Cord prolapse and cord presentation:

Cord prolapsed: It is descent of the cord into the vagina in front the presenting part after ROM.
Cord presentation: is descent of the cord in front the presenting part before ROM, while Occult prolapsed: the cord is beside the presenting part.
Causes:
- Multiple birth.
- Malpresentation (eg. breech).
- Increased liquor volume.
- Placenta previa.
- Long cord.

"Umbilical cord prolapsed"

Nursing management:
- Place client in knee chest position to decrease pressure on cord or trendlenburg position and hips elevated with pillows with side lying position.
- Assess the cord for pulsation, apply firm upward manual pressure to the presenting part of the fetus with sterile gloved hand to elevate it and relieve pressure from the cord.
- Gently wrap gauze soaked in sterile normal warm saline solution around the prolapsed cord.
- Frequent evaluate FHR and signs of distress.
- Prepare for CS and support the woman (when cervix is dilated CS will performed, when cervix is fully dilated NVD with forceps).

2-Fetal distress

It is defined as decrease of oxygen and increase of carbon dioxide, leading to a state of “hypoxia and acidosis” during intra-uterine life.

Signs of fetal distress:
- Passage of Meconium in cephalic presentation
- Bradycardia; decrease fetal heart rate less than 120 b/min.
- Tachycardia; increase fetal heart rate more than 160 b/min.
- Increased or decreased fetal movement.
- Excessive formation of caput succedaneum.
- Excessive formation of moulding.

Nursing management:
- Stop oxytocin
- Reposition the patient : put the mother in lateral side position
- Give oxygen to the mother
- I.V fluids
- Check FHR
- P.V examination to follow progress of labor
- Preparation for delivery
- Shortening 2nd stage of labor by episiotomy

The golden rules of obstetric emergencies:
(ACTION Model)
A ➔ Availability of facilities
C ➔ Call for assistance
T ➔ Team work
I ➔ Insert one or more I.V line & O2 mask
O ➔ Organized skilled actions
N ➔ Needs and patient's rights must be maintained

Module four: Normal and abnormal Postpartum

Objectives
At the end of this module, each student will be able to:

- Describe the psychological changes that occur during the postpartum period.
- Identify characteristics of uterine involution and differentiate between
- Discuss nursing care during postpartum period
- Discuss postpartum hemorrhage "PPHg".
- Describe the puerperal sepsis.

Postpartum physiologic changes:

Puerperium:
- The first 6 weeks "40 days" following the birth of an infant in which maternal body in general
  and genital organs in particular return to nearly pre-pregnancy state.
- Puerperium is divided into immediate postpartum (first 24 hours), early postpartum (first week), and late postpartum "from second week till end of six weeks".

Post-Partum Physiological Changes:
- Reproductive system:
  - Involution of the uterus:
    - It refers to changes that reproductive organs, especially the uterus, undergo after childbirth to return to their nearly pre-pregnancy size and condition.
    - The involution occurs by two processes:
      a. Autolysis “self-digestion”
      The protein material of the muscle fibers is broken down by certain enzymes “protolytic enzyme” and absorbed in the blood stream, and excreted by the kidneys in the urine.
      b) Ischemia “Decreased blood supply”
      Contraction and retraction of the uterine muscle fibers compresses. The blood vessels and reduces the blood supply to the uterus. The old blood vessels become obliterated by thrombosis, and then under go degenerative changes. The remains of blood vessels can be detected as elastic fibers in the multiparous uterus.
      Endometrial regeneration is completed by about 3 weeks except for the placental site, where regeneration is not complete until 6 weeks.
    - Involution rate:
Immediately following delivery, the size of uterus as large grapefruit and can be palpated midway between the symphysis pubis and umbilicus,
Within an hour, the fundus rises to the level above the umbilicus and should remain at this level for about 24 hours the uterus now weighs approximately 1000 gm.
After 24 hours, the fundus begins to descend by approximately 1cm, or one fingerbreadth, per day, so that by the 10th day it is in the pelvic cavity and cannot be palpated abdominally.
Within a week, the weight of the uterus decreases to about 500g; at 6 weeks, the uterus weight 60g. This is roughly the pre-pregnancy weight.

Lochia:
- It is the uterine discharge coming through the vagina during the first 3-4 weeks or the post partum.
- It is alkaline in reaction; the amount is more than the menstrual flow, with fleshy odor.
- It contains blood, fibrin, leucocytes, dead decidual tissue, vaginal cells, peptone, cholesterol, and numerous nonpathogenic bacteria.

Types of Lochia:
Lochia rubra:
- Red in color due to the presence of a fair amount of blood, shreds of the decidua, large amount of chorion, amniotic fluid, lanugo hair, vernix caseosa, and.
- Lasts from the 1st post partum days, to the 4th day (and sometimes to 7th day).
Lochia serosa:
- Pinkish yellow discharge containing less blood and more serum.
- Extends for another 3 to 4 days.
Lochia alba:
- Creamy or white colored discharge containing leucocytes and mucus.
- It remains the 10th day postpartum.

2. Cervix:
- Small tears or lacerations may be present, and the cervix is often edematous. Rapid healing takes place, and the end of the first week the cervix feels firm and the external os is the width of a pencil.
- The internal os closes as nearly before pregnancy, but the shape of the external os is permanently changed. It remains slightly open and appears slit-like rather than round, as in the nulliparous women.

3. Vagina:
- The vagina diminishes in size, but not as the pregravid state. Rugea reappears in the third week. These are small skin folds in the lower part, dark red in color.
- The vagina and vaginal introitus are greatly stretched during birth to allow passage of the fetus. Soon after childbirth, the vaginal walls appear edematous, and multiple small lacerations may be present.
- The hymen is permanently torn and heals with small, irregular tag of tissue visible at the vaginal introitus.

4. Vulva:
- Edema, minute or frank laceration may be seen immediately after labor. Edema disappears gradually in a few days while lacerations, if not properly mended by sutures, may lead to the formation of a postpartum ulcer.

5. Perineum:
- The perineum has been stretched and thinned to accommodate the size of the infant.
- The pelvic floor muscles are overstretched and weak. The appearance of the perineum will vary greatly, depending on the type and extent of the episiotomy or laceration. Commonly the soft tissues of the perineum are edematous and bruised. Ecchymosis due to rupture of surface capillaries.
Resumption of Ovulation and Menstruation:

- Most non-nursing mothers resume menstruation within 7 to 9 weeks after childbirth.
- In lactating mothers, menstruation usually reappears not earlier than 3-4 months, and sometimes as late as 24 months.
- The first period is generally profuse and prolonged.
- It should be mentioned that ovulation can commence in the absence of menstruation, and another pregnancy can occur.

Body weight:

- Loss of weight is observed during the first 10 days particularly in the non-lactating mothers. There is about a 4 – 5 kg loss of body weight (sometimes 8 kg) due to evacuation of uterine contents and diuresis.

Cardiovascular System:

- **Blood volume:**
  - Following delivery, despite 300 to 500 ml of blood loss during normal vaginal delivery, and 500-1000 ml is lost in cesarean births, excess blood volume, which was necessary during pregnancy, remains in the intravascular compartment and in interstitial spaces.

The body rids itself of the excess fluids by two methods

- *Diuresis:* “increased excretion of urine” is facilitated by a decline in the adrenal hormone aldosterone, which is increased during pregnancy to counteract the salt-wasting effect of progesterone. As aldosterone production decreases, sodium retention declines and fluid excretion accelerates. A urinary output of 3000 ml per day is not common for the first few days of the postpartum period.
- *Diaphoresis:* “profuse perspiration” also rids the body of excess fluids through skin "sweating often occurs at night" can be uncomfortable for the mothers who is not prepared for it, explanation of the cause and comfortable measures, such as showers and dry clothing are generally sufficient.

- **Coagulation:**
  - During pregnancy, plasma fibrinogen necessary for coagulation increased as a protection against postpartum hemorrhage. As a result, the mother’s body has a great ability to form clots and thus prevent excessive bleeding.
  - Increase in plasminogen “necessary for lysis of clots” has not occurred during pregnancy. The end result is that during pregnancy and the postpartum period she is at risk for thrombus (clot) formation.

- **Vital signs:**
  - **Temperature:**
    - The temperature is slightly elevated: 0.5 degree for the first 24 hours and up to 38 degrees is known. This rise in temperature is due to the absorption of waste products of muscular contractions of labor "dehydration".
    - Transient rise in temperature later on is due to:
      1. Milk engorgement “by the 3rd - 4th day postpartum”
      2. Constipation.
  - **Pulse:**
    - The heart rate often decreases to rate 60 to 70 b/m and is known as physiological bradycardia for 24-48 hrs after labor it is due to the rest period after labor.
    - The rapid pulse may be due to pain, visitors, excitement, exhaustion, the nursing infant, hemorrhage or infection.
  - **Respiration:**
This is in usual relation with pulse and temperature. Because of a reduction in the size of the uterus and relaxation of the abdominal wall respiration is more abdominal in character.

**Blood pressure:**
- No change is counted, but if hypotension is present, post-partum hemorrhage may be suspected.
- If hypertension is present (over 140/90 mm Hg) postpartum toxemia may be suspected.

**Gastrointestinal System:**
- Thirst is present due to the marked fluid loss through sweat and urine.
- Tendency to atony of the gastrointestinal tract, with flatulence and constipation.
- Constipation may be present as a result of:
  - Intestinal atony.
  - Anorexia after labor.
  - Loss of body fluids.
  - Laxity of the abdominal wall.
  - Haemorrhoids, perineal trauma and episiotomy.
  - Reflex inhibition enema in labor.

**Urinary system:**
- The bladder of the postpartum woman has an increased capacity and has lost some of its muscle tone.
- During childbirth the urethra, bladder, and tissue around the urinary meatus may become edematous and traumatized. This often results in diminish sensitivity to fluid pressure, and many mothers have no sensation of needing to void even when the bladder is distended.
- Urinary retention and over-distension of the bladder may cause two complications:
  1. Urinary tract infection.
  2. Postpartum haemorrhage.

**Musculoskeletal system:**
- **Muscles and joints:**
  - During the first few days, levels of the hormone relaxin gradually subside. Ligaments and cartilage of the pelvis begin to return to their pre-pregnancy position. This can cause hip or joint pain that interferes with ambulation and exercise.
  - Good body mechanics and correct posture are important during this time to prevent low back pain and injury to the joint.
- **Abdominal wall:**
  - During pregnancy, the abdominal walls stretch to accommodate the growing of the fetus and muscle tone diminished.
  - Many women, expecting that the abdominal muscles will return to the pre-pregnancy condition after labor, are dismayed to find the abdominal muscles weak, soft, and Flabby.

**Integumentary system:**
- Chloasma of pregnancy usually disappears at the end of pregnancy.
- Skin pigmentation gradually decrease.
- Hyperpigmentation of the areolae and linea nigra may not regress completely after childbirth, and it may be permanent in some women.
- **Danger signs during postpartum period for the mother:**
  - Excessive bleeding
- Foul smelling vaginal discharge
- Fever with or without chills
- Severe abdominal pain
- Excessive tiredness or breathlessness
- Swollen hands, face and legs with severe headaches or blurred vision
- Painful, engorged breasts or sore, cracked, bleeding nipples

- Danger signs during postpartum period for the baby:
  - Fever (above 38°C)
  - Low body temperature (below 35.5°C)
  - Fast breathing (more than 60 breaths per minute)
  - Severe diarrhea or constipation
  - Colic
  - Repeated vomiting esp. projectile vomiting
  - Bleeding or offensive odor from the site of the cord

### Nursing care during Postpartum Period

Nursing care during the postpartum period:
1. Immediate care of the mother
2. Late care of the mother
3. Care of the new born

#### Immediate care of the mother

1- Observation and recording to:

- **Vital signs**
  - Check vital signs 2 times daily "morning and evening".
  - A temperature of 38°C or above, for two consecutive days after the first 24hrs.is considered an early sign of puerperal infection.
  - Bradycardia is a normal physiological phenomenon.
- **Uterus**
  - Palpate the uterus daily to assess firmness, level of fundus, and the rate of involution of the uterus.
  - It should be well contracted, central and involutes gradually at the rate of about 1cm daily during the first seven to ten days of the puerperium.
- **Breast**:
  - The breasts are examined to note their tension and consistency, and the signs of infection.
  - In breast-feeding mothers, the amount and flow of milk and the condition of the nipples and areola should be observed.
- **Perineum**
Maternity Nursing

- Observe perineum and suture line if present, for redness, ecchymosis, and edema or gapping. Check healing and cleanliness.
- During the examination haemorroids may be noted and appropriate treatment advised.

- **Lochia**
  - Check lochia for color, amount, odor, consistency and blood clots.
  - **Urine output**
  - The urine output is usually recorded for the first 24 hours after delivery to ensure that the woman is passing and adequate amount of urine.

- **Legs**
  - The midwife examines the patient's leg for pain and edema.

- **Emotional state**
  - Phases of developing maternal role.
  - Postpartum blues.

2. **Rest and sleep:**

- Provide for sufficient periods of rest and sleep to maintain physical and mental health, as to promote lactation (8hrs nighttime sleep and 2hrs after noon-nap are needed).

3. **Diet:**

- Provide diet high in proteins and calories to restore tissues.
- A daily requirement of 3000-3500 cal/day is needed in the form of a well balanced diet rich in 1st class proteins, calcium, iron, vitamins, thiamine, riboflavin and ascorbic acid.
- Liberal amounts of fluids are required "the daily fluid intake should be 2.5-3 liters" (e.g. milk, juice ....ect.)

4. **Hygiene:**

- The women should be taken shower daily.
- The vulva and perineal care include washing or swabbing with warm water and antiseptic solution, the area must be kept clean and dry and free from infection.
- The perineum must be inspected daily if there are sutures to see that healing is taking place. Non-absorbable sutures are removed on the fifth or sixth day.
- Breast care should be done before and after feeding. The nurse teaches the mother the technique of breast care and encourages her to initiate breast-feeding.
5. Breast-feeding:
Advantages of Breast Feeding

For baby:
- Immunological properties help prevent infections.
- Provides nutritional needs.
- Easily digested.
- Less sodium and protein than in cow's milk; puts less stress on newborn's kidneys.
- Calcium is better absorbed.
- Least allergenic food for infant.
- Promotes development of facial muscles, jaw, and teeth.
- Less likely to be overfed; less obesity.
- Have natural laxative effects.
- Fulfilling psychological needs.

For the mother:
- Oxytocin release aids uterine involution.
- Strong mother-infant relationship.
- Convenient; always available; no preparation.
- Cost effective.
- Less incidence of cancer breast.
- Natural contraception.

6. Proper positioning:
- During the first 8hrs. after labor, the mother is allowed to sleep in any comfortable position.
- After that, prone position or either lateral positions should be encouraged in order to facilitate involution and to help drainage of lochia.
- Sitting position is also recommended since it promotes contraction of the abdominal muscles, aids pelvic circulation, and helps drainage of lochia.
- Knee-chest position is indicated in certain conditions because it prevents RVF of the uterus and hastens its involution.
- Both supine and semi-sitting positions should be avoided.

7. Ambulation:
- Encourage early ambulation to prevent blood stasis and deep venous thrombosis.
- Heavy activities are avoided to prevent complications.

8. Promote bladder and bowel function:

Bladder
- Voiding should be encouraged within 6-8hrs after labor.
- If no urine is passed after 12 hrs. Initiate simple nursing measure to induce voiding.
- If failed, catheterization, under complete a septic technique is performed.

Bowel
- There may be no bowel action for a couple of days because the bowel has probably been emptied during labor.
- Glycerin suppository may be used to relieve constipation.
8. Post natal exercise:

Important of exercises:
1. Promotes circulation.
2. Lessen the possibility of DVT and restore the muscle tone of the abdominal wall and pelvic floor.
3. Give the patient a sense of wellbeing.
   - Deep breathing and free movements in the bed started at the day of delivery. On the second day the following exercises may be done provided for NVD.
   - Breathing exercises:
   - Pelvic floor tone. Several exercises may be performed e.g. kagel exercises

Late care of the mother

Health education and counseling

The midwife nurse plays an important role as health educator and counseling which should provide the woman health education and counseling about:
1. Breast feeding, definite, technique and position.
2. Post natal exercise, hygiene, rest, sleep and nutrition.
3. The care of the baby which includes hygiene, prevention of infection, feeding and giving him love and sense of security feel her about the advantages of rooming in.
5. Stress the importance of postpartum examination. Visits and follow up to assess involution, general health and wellbeing of the mother before discharge.

Care of the newborn infant:

- Observing the general condition.
- observe Temperature, skin color, newborn rash, jaundice
- Cleanliness, handling, clothing, cord care, feeding, bonding, diapering, circumcision of male infant, immunization, weaning.
- Stool & voiding [ 6 or more voids/day]
- Ensure adequate hours of sleep.
- Protect from environmental hazards.
- Encourage early skin to skin contact, bonding and attachment.

Danger signs during post partum period:

For the mother:

- Excessive vaginal bleeding
- Foul smelling vaginal discharge
- Fever with or without chills
- Severe abdominal pain
- Edema in the hands, face and legs
- Severe headaches or blurred vision
- Painful, engorged breasts or sore, cracked, bleeding nipples
For the baby:

- Diarrhea, constipation
- Colic, repeated vomiting esp. projectile vomiting
- Fever (above 38°C)
- Low body temperature (below 35.5°C)
- S/S inflammation / infection of the cord stump
- Bleeding at circumcision site

Postpartum complications

I. Postpartum haemorrhage

Definition:
It is defined as excessive loss of blood more than 500 ml in the first 24 hr after delivery from the genital tract at any time following baby’s birth up to the end of puerperium.

Types of Postpartum Haemorrhage:

- Primary postpartum haemorrhage
- Secondary postpartum haemorrhage

Primary Postpartum Hemorrhage:

Definition:
It is an abnormal loss of more than 500 ml of blood from genital tract occurring during first 24 hours after (delivery of fetus and affecting general condition of mother.

Causes of Primary Postpartum Haemorrhage:

- Atonic uterus.
- Trauma "laceration or hematoma".
- Hemorrhagic blood diseases.

1. Causes of Atonic uterus

- General causes.
- Local causes.
- Nervous causes.
- Idiopathic causes.
- Hemorrhagic diseases.

General Causes:

- Anemia.
- Multiparty: reducing uterus contractility.
- Prolonged Labor: Muscles of uterus became exhausted during 1st & 2nd stages of labor so, Uterine muscles loose its contractility.
- Excessive sedation and deep anesthesia: Sedation & anesthesia will depress high centers, which stimulate uterine contractility.
Local Causes:

- Over-Distension of uterus: Hydraminos, multiple pregnancy and big fetus. Myometrium become excessively stretched and less efficient during contraction.
- Uterine-fibroid: This impact efficient uterine action
- Incomplete placental separation with retained fragments: If placental tissues remain partially embedded in the spongy decidua, efficient contraction and retraction is interrupted retained fragments will ooze blood so produce bleeding.
- Presence of uterine scar: Scar will stretch fibers and tissues of uterus so it will limit its movement.
- Blood clots or piece of membranes.
- Rapid or precipitate labor: When uterus has contracted vigorously during 1st & 2nd stages of labor muscle have insufficient opportunity to retract.
- Placenta Previa: Placental site at lower segment so the thinner muscle layer contains few oblique muscle fibres. This result in poor control of bleeding.
- Abruptio-Placenta: Blood which oozed between muscle fibres interfere with uterine action.

Nervous causes:

- Full Bladder or Rectum reflexes inhibit uterine contractions.

Idiopathic Causes:

Past history of postpartum haemorrhage or ante partum haemorrhage.

Haemorrhagic Blood Diseases:

- There are certain blood diseases, which anticipate postpartum Hg: (Leukaemia, Thrombocytopenia, and Fibrinogenemia).

2-Causes of Trauma during labour:

- Difficult or precipitate labour.
- Birth of large baby.
- Instrumental delivery.
- Rupture uterus.
- Inversion of uterus due to "sudden pressure on uterus or repeated massage with CS".

Signs and symptoms of primary postpartum haemorrhage:

1-General: As signs and symptoms of hemorrhage:

- Tachycardia.
- Hypothermia.
- Pallor.
- Hypotension.
- Coldness.
- Thirsty.
- Restlessness.
- Irritability.
- Exhaustion and Lassitude.

2- Signs and symptoms indicated from abdominal examination:

When the examiner palpate uterus abdominally

- If the bleeding is concealed: in uterus atony:
  1. Uterus is boggy i.e. soft, distended, no tone.
  2. Gradually enlargement of uterus.
  3. Squeezing fundus will lead to gush of blood.
- If the bleeding is revealed: in Trauma
1. Uterus is subinvoluted
2. Uterus is hard, firm, and well contracted
3. Uterus is large.

**3-Signs and symptoms indicated from vaginal Examination:**

➢ *In case of Trauma.*
1. Cervical birth canal laceration or injury.
2. Bleeding will be bright red in color.
3. Bleeding will be dark red in retained fragments.

**Nursing Management of Primary Postpartum Haemorrhage:**

**Preventive measures**

**During ante partum period:**

- Complete history should be taken to identify high-risk patients who are likely to develop PPH.
- Improvement of health status specially to raise the hemoglobin level.
- Hospital delivery of high-risk patients who are likely to develop PPH. e.g. polyhydraminios, multiple pregnancy, grand multiparous, APH and severe anemia.
- Routine blood grouping and typing for immediate management during emergency.
- Woman who has hemorrhagic blood diseases should give antifibrinolytic factors.

**During Intrapartum period:**

Proper management during labor including:

- Proper assessment.
- Careful observation for mother and baby.
- Avoid misuse if oxytocin.
- Avoid bearing down in 1st stage.
- Empty bladder every one hour.
- Unhurried in delivery of placenta.
- Prevention of tear by careful episiotomy – support perineum – maintains flexion.
- Assessment for amount of bleeding.
- Careful administration of sedatives and analgesic drugs.
- Prophylactic administration of oxytocic drugs with delivery of anterior shoulder or at the end of third stage.
- Avoid massaging the uterus before separation of the placenta.
- Examine the placenta and membranes for completeness.
- Examine the utero-vaginal canal for trauma and prompt repair if present.
- Effective management of the fourth stage of labor.
- No forceps or breech delivery before fully dilatation of the cervix.

**Curative measures**

**Control bleeding through the following steps:**

- Uterine massage.
- Exploration of uterus under general anesthesia.
- Bimanual compression (Uterus is firmly squeezed between 2 hands).
- Tight intrauterine packing to exert direct homeostatic pressure on the open uterine sinuses and to stimulate uterine contractions.
- If all the above measures fail to achieve homeostasis a hysterectomy is performed.
- In traumatic PPH speculum, examination to find out trauma and homeostasis is achieved by appropriate sutures.
Observation of the Mother:

- Record pulse and BP every 15 minutes.
- Palpate uterus every 15 minutes to ensure that it is well contracted.
- Check temperature 4 hourly.
- Examine lochia for amount and consistency.
- Examine IV infusion.
- Intake and output chart.
- Relieve anxiety by explaining her condition and administer prophylactic antibiotics prescribed considering the risk for infection.

2-Secondary postpartum Hemorrhage:

Definition:
It is bleeding which occur after the first 24 hours of delivery and up to the end of puerperium.

Causes of secondary Postpartum Haemorrhage:

1. Retained products of conception as:
   - Placental fragments.
   - Accessory lobe.
   - Placental polyp.
   - Retained piece of membranes.
   - Blood clots.

2. Infection: It is due to separation of septic through site of bleeding:
   - Placental site.
   - Caesarian wound.
   - Cervix.

3. Sub involution of uterus.
5. Inversion of Uterus
6. Local gynaecological lesions as:
   - Cervical erosion
   - carcinoma in Cervix
7. Haemorrhagic blood diseases as:
   - Leukemia
   - Thrombocytopenia.

Signs and symptoms of secondary Postpartum Haemorrhage:

- General: Tachycardia and Low grade fever.
- Abdominal examination: Subinvolution of uterus.
- Vaginal examination: Lochia heavier in amount, fresh in color & offensive in odor. If infection occurs retained placenta may present.

Nursing Management for secondary Postpartum Haemorrhage:

- Call the Doctor.
- Massage fundus if it is still palpable.
- Express any clots.
Maternity Nursing

- Encourage mother to empty her bladder.
- Give an oxytocin drug as Ergometrine I.V or I.M route.
- Keep all pieces & lines to assess volume of blood loss.
- In case of retained products of conception, the patient is given Ergometrine & antibiotic if the bleeding is slight. The products are examined histological to exclude Choriocarcinoma.

II-Puerperal sepsis

It is an infection of the genital tract that occurs at any time between the onset of rupture of the membranes or labor and the 40 day following delivery or abortion.

Predisposing factors for developing postpartum infections:

1-General Risk Factors:

- Anemia.
- Poor nutrition.
- Lack of prenatal care.
- Obesity.
- Low socioeconomic status.
- Sexual intercourse after rupture of membranes.
- Immunosuppression.

2-Lobar Management:

- Prolonged labor.
- Prolonged rupture of membranes.
- Chorioamninitis.
- Intrauterine fetal monitoring.
- Number of examinations during labor.
- Hemorrhage.
- Retained placental fragment.
- Intrauterine manipulation.
- Infection control practice during different stage of labor.

3-Factors Related to Operative delivery:

- Cesarean delivery.
- General anesthesia.
- Urgency of operation.
- Breaks in operative technique.
- Forceps delivery, Episiotomy.
- Lacerations.

Signs and Symptoms of puerperal sepsis:

Specific: elevation of body temperature to 38.5 C persisting for two consecutive days within the first 6 weeks postpartum.

- Abdominal:
  - Pelvic and / or suprapubic pain.
  - Subinvolution.
- Vaginal: Foul smelling colored lochia.
Maternity Nursing

General symptoms: malaise Fatigue, tachycardia, and abdominal distension, meteorism: reflex paralysis of Aurbach's plexus of nerves in colon and intestine.

Nursing management of Puerperal Sepsis

Preventive Measures:

- **During antepartum care:**
  - Eliminate septic focus located in teeth, gums, tonsils, middle ear or skin.
  - Correct anemia and prevent pregnancy-induced hypertension.
  - Avoid contact with persons having communicable diseases.
  - Maintain good personal hygiene.
  - Early detection of high risk group.
  - Hospital delivery of high risk group.
  - Improve standards of maternity services.
  - Follow up and health education.

- **During intrapartum care:**
  - Proper assessment on admission.
  - Close observation for labor progress.
  - Follow strict asepsis during conduct of labor.
  - Isolate women with infection.
  - Minimize vaginal examinations.
  - Preserve membranes as long as possible.
  - Unhurried in placental expulsion.
  - Inspection of placenta & membranes.
  - Proper inspection of genital tract after delivery for any laceration & repair it promptly.
  - Replace excess blood loss to improve general body resistance.
  - Prophylactic antibiotics in premature rupture of membranes.
  - Prolonged labor and operative delivery.

**During postpartum care:**

- Follow strict aseptic technique while caring for perineal wound.
  - Avoid too many visitors.
  - Frequent changing of sanitary pads.
  - Swab vulva and perineum using antiseptic solution after each voiding or defeation.
  - Maintain proper environmental sanitation.

Nursing Intervention:

- Assess vital signs every 2-4 hours.
  - Obtain blood sample for cultures, CBC, blood glucose levels, and send it to the lab.
  - Collect urine and send it to the laboratory for analysis.
  - Interpret the result findings.
  - Evaluate pain and lochia.
  - Administer IV antibiotics, fluids, and analgesics as prescribed.
  - Prepare woman for ultrasonography for detection of any intrauterine contents.
  - Provide routine postpartum care. Use meticulous hand-washing techniques.
  - Provide warm baths and compresses or heat lamp.
  - Provide reassurance and support. Isolate woman as indicated.
Module five: Newborn

Objectives
At the end of this module, each student will be able to:
- Identify characteristics of the newborn
- Explain adaptation of the newborn to extra uterine life
- Review the different between Caput Succedaneum and Cephalo-haematoma
- Clarify reflexes of the newborn infants
- Discuss nursing care of the newborn

Neonatal Period (Newborn)

Definition:
It is the period of life started at birth to 4 weeks of life

Characteristics of the newborn:

1- Physical Characteristics:
- Weight  2.700-4000 gm
- Length  48-53 cm
- Head circumference  33-37 cm
- Chest circumference  31-35 cm

2- Physiological Characteristics:
   a- Vital signs:
      - Temperature( Axillaries 36.5-37°C/ rectal 36.5-37.2°C)
      - HR 120-160 b/m
      - BP 65/41

3- General appearance:
   * Posture:
      - Flexion of head & extremities

   * Skin:
      - At birth, bright red smooth
      - Second to third day dark pink and dry
      - It is soft and as good elasticity, edema is seen around eye, legs and scrotum or labia. Cyanosis of hands and feet

   * Vernix caseosa:
      - It is a soft yellowish cream, which covers the neonate at birth to protect the skin from sebaceous gland mixed with old epithelial cells
*Lanugo hair:*
- It is a soft growth of fine hair observed (shoulders-back-extremities, forehead). in premature baby lanugo is heavier than normal

*Mongolian Spots:*
- Black coloration on the lower back, buttocks, anterior trunk, and its most found in black people and disappear during preschool years without treatment

*Milia:*
- This is small pinpoint white or yellow spots due to increased fat secretion. Common on nose, forehead, and chin of the newborn

*Desquamation:*
- Pealing of the skin occurs within 2-4 weeks

*Physiological jaundice:*
- Appears 2-3 days after delivery due to excessive destruction of RBC that is not needed after birth. Its usually disappears by the 7-10 days

*Head:*
- Vaginal delivery – elongated (molding)
- Breech or cesarean birth (round & symmetrical)

*Fontanels:*
- Flat, soft and firm

Anterior fontanel: is diamond shape a located at junction of two parital and frontal bones. Its 2-3 cm in width and 3-4 cm in length. It closes between 12-18 months of age

Posterior fontanel: its triangular and located between the occipital and partial bones, it close by the age of 2 months

Caput-succedaneum:
- Swelling or edema of the presenting part of skull due to pressure during labour leads to accumulation of fluids and disappear by the 3rd day.

Cephalo-haematoma:
- Accumulation of blood between periosteum (membrane covers the surface of bone and flat bone of the skull).

Disappear after few weeks.
Comparison of Caput Succedaneum and Cephalo-haematoma:

<table>
<thead>
<tr>
<th>Characteristics</th>
<th>Caput Succedaneum</th>
<th>Cephalo-haematoma</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appears</td>
<td>At birth no increase in size</td>
<td>Several hours after birth increase in size for 2-3cw</td>
</tr>
<tr>
<td>Disappears</td>
<td>Several days after birth</td>
<td>Approximately 6 weeks after birth</td>
</tr>
<tr>
<td>Border</td>
<td>Vague, poorly defined</td>
<td>Marked, well defined</td>
</tr>
<tr>
<td>Cross suture line</td>
<td>Sometimes</td>
<td>Never</td>
</tr>
<tr>
<td>Cause</td>
<td>Diffuse, edematous swelling involving the soft tissue</td>
<td>Subperiosteal hemorrhage</td>
</tr>
<tr>
<td>Complication</td>
<td>Rarely anemia</td>
<td>Jaundice, underlying skull fracture, intracranial</td>
</tr>
<tr>
<td></td>
<td></td>
<td>bleeding, shock</td>
</tr>
</tbody>
</table>

*Face: No expression on face of newborn.

*Eyes:

Lids: Usually edematous.
Color: Gray, dark blue, brown. True eyes color is not determined until the age of 3-6 months.
Pupil: React to light.
tears: Absence of tears.
Blinking reflex in response to light or touch.
Rudimentary fixation on objects

*Ears:

Position: Top of pinna on horizontal line with outer canthus of eye.

*Nose:
- Nasal patency.
- Nasal discharge — thin white mucous.
*Neck:*
- Short, thick, usually surrounded by skin folds.
- Tonic neck reflex present.

*Chest:*
- The chest is ball shaped, the thorax of the newborn is almost circular.

*Abdomen:*
- Cylindrical in shape

*Liver:* Palpable 2-3 cm below costal margin

*Spleen:* Tip palpable at end of first week of age

*Bladder:*
- Normally the first voiding occurs within 4-6 hours of birth
- Normal urine output is 1-3 ml/kg/hr
- Normal voiding pattern is 2-6 per day during first day then 5-25 daily
- Daily fluid need is 65 ml/kg during the first days of life then 10-150 ml/kg

Female genitalia:
- Labia and clitoris usually edematous.
- Urethral meatus behind clitoris.
- Vernix caseosa between labia.

Male genitalia:
- Urethral opening is at tip of glans penis.
- Testes palpable in each scrotum.
- Scrotum usually large edematous, pendulous and covered with rugae and pigmented.

* Stool:*
- Meconium is thick, tarry, dark green, and odorless
- The passage of the meconium is followed by *transitional stools*, which are combination of meconium and fecal matter
- Transitional stools are greenish brown and looser than meconium
- Milk stool are pale yellow or orange-yellow and more liquid than the formula feeding

**Neurological assessment:**

Inborn reflexes, that are important to newborn nutrition include suckling, swallowing, & rooting.

Other reflexes present at birth, such as sneezing, gagging, & Moro reflexes, are protective.

<table>
<thead>
<tr>
<th>Reflexes of the newborn infants</th>
<th>Description</th>
<th>Presence and duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Protective reflexes</td>
<td>Startle (Moro)</td>
<td>Sudden stimulus causes arms to fly out and up, tremble. And slowly relax.</td>
</tr>
<tr>
<td>Description</td>
<td>Presence and duration</td>
<td></td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------------</td>
<td></td>
</tr>
<tr>
<td><strong>Feeding reflexes</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sucking</td>
<td>Lips sucker, tongue rolls, inward pull or sucking caused by hunger, lip stimulation</td>
<td>At birth 6-8 months of age (as a reflex movement)</td>
</tr>
<tr>
<td>Rooting</td>
<td>Touch of check or lips causes head to run toward touch</td>
<td>At birth, 6 months</td>
</tr>
<tr>
<td>Swallowing</td>
<td>Throat muscles close trachea. open esophagus when food is in mouth</td>
<td>A birth, lifelong</td>
</tr>
<tr>
<td>Gag</td>
<td>At stimulation of uvula. Esophagus open, reverse peristalsis occurs</td>
<td>At birth, lifelong</td>
</tr>
<tr>
<td>Tonic neck</td>
<td>Postural “fencing” response; head, arm, and leg turn to one side, slowly relax.</td>
<td>At birth, fades at about 2-3 months of age</td>
</tr>
<tr>
<td>Grasping</td>
<td>Infant grasps any object put in the hands firmly enough to hold body weight, relaxes</td>
<td>At birth, fades at about 2 months of age</td>
</tr>
<tr>
<td>Eye blinking</td>
<td>Eyelids close and open when stimulated by touch</td>
<td>At birth, lifelong</td>
</tr>
<tr>
<td>Crying</td>
<td>Sudden pain, cold, hunger cause air to through vocal cords</td>
<td>At birth, lifelong</td>
</tr>
</tbody>
</table>

**Behavioral assessment:**

Assessment of the infant’s behavior provides information about their behavioral characteristics.

Behavior changes occur in the following phases:

* **Reactive Phases:**
  - The newborn is alert during the first period of reactivity
  - His eyes are open and alert and respond to stimuli.
  - Heart and respiration rate are increased
  - The newborn can focus attention on the parent’s faces and focus on voices

* **Active alertness phase:**
  - The newborn infant demonstrates a strong sucking reflexes and may appear hungry. It is an ideal time to initiate breast feeding

(A) Rooting reflex. (B) Moro reflex. (C) Tonic neck reflex. (D) Plantar grasp reflex. (E) Palmer grasp reflex. (F) Babinski reflex.
. Nursing Care of the Newborn

Immediate baby care

Objectives of Immediate Care of the New-born:
• To establish and maintain respiratory function.
• To provide warmth and prevent hypothermia.
• To ensure safety from injury and infection.
• To identify actual and potential problems that might require immediate action.

ABCW Principles of Delivery

Remember the following ABCW principles of delivery to ensure adequate resuscitation of the infant: Airway. Breathing. Circulation. Warmth.

Assessment of the Infant's Condition

• The airway:
  ** To clear the airway, hold the infant upside down for few seconds and perform gentle suction to establish breathing, and improve infant's color.

• The APGAR Score:
  ** APGAR Score involves consideration of 5 signs, and the degree to which they are present or absent. It is recorded at 1 and 5 minutes after birth.

The APGAR Score

<table>
<thead>
<tr>
<th>Sign</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heart rate</td>
<td>Absent</td>
<td>Slow (below 100)</td>
<td>Fast (above 140)</td>
</tr>
<tr>
<td>Respiration</td>
<td>Absent</td>
<td>Weak crying</td>
<td>Good crying</td>
</tr>
<tr>
<td>Muscle tone</td>
<td>Limp flaccid</td>
<td>Some flexion</td>
<td>Active flexion</td>
</tr>
<tr>
<td>Reflex irritability</td>
<td>No response</td>
<td>Grimace</td>
<td>Good response</td>
</tr>
<tr>
<td>Color</td>
<td>Blue &amp; pale</td>
<td>Body pink &amp; extremities blue</td>
<td>Completely pink</td>
</tr>
</tbody>
</table>

Warmth:
** It is very important to keep the infant warm at birth because he will lose heat rapidly through evaporation.
** So, the labor room should be warm and the infant should be dried gently and wrapped in a warm dry towel to avoid exposure.

• Umbilical cord:
  ** Double ligation may be used.

The first at 5 cm from umbilicus to prevent strangulation of a congenital umbilical hernia.
The second at 2 cm further for security.
** A disposable plastic clamp may also be used and placed 3-5 cm from the umbilicus.

** The excess cord is cut off.

** Nowadays, alcohol gauze and bandage are not applied to the stump.

** Weight and measurements:
** Weigh the infant after birth. The normal weight is 2.5-3.5 kg.
** Measure its length. The average length is 50 cm.
** Measure its circumferences. The head and chest circumferences are 13 inches.

• Care of eyes:
** The eyes are washed with sterile warm water.
** Erythromycin ointment is the drug of choice now.

** Vitamin K should be given to prevent bleeding.

• Identification:
** It is very important to identify the infant by its sex, and its mother’s name.
** An identity bracelet is placed around the infant’s wrist or ankle.
** A wrist or ankle band or a footprint may be used.

• Position:
** The head of the infant should be placed lower than the body in order to drain mucus and secretions by gravity, stimulate the brain centers, and improve circulation. This is done only to the full term babies.

• Examinations:
** It is very important to examine the infant properly to determine whether any abnormalities are present from head to toe.

• Breastfeeding:
** The infant should be given to the mother for breastfeeding.
** Early breastfeeding is recommended to prevent hypoglycemia, promote mother infant bonding, and stimulate milk secretion.
Antenatal Assessment

<table>
<thead>
<tr>
<th>Steps</th>
<th>Student's Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td><strong>1- History taking</strong></td>
<td></td>
</tr>
<tr>
<td>➢ Personal history:</td>
<td></td>
</tr>
<tr>
<td>• Name</td>
<td></td>
</tr>
<tr>
<td>• Age</td>
<td></td>
</tr>
<tr>
<td>• Marital status:</td>
<td></td>
</tr>
<tr>
<td>➢ Menstrual history:</td>
<td></td>
</tr>
<tr>
<td>• First day of the last normal menstrual period (LNMP)</td>
<td></td>
</tr>
<tr>
<td>• Calculation of gestational age, and expected date of delivery (EDD)</td>
<td></td>
</tr>
<tr>
<td>➢ Obstetric history:</td>
<td></td>
</tr>
<tr>
<td>• Antepartum care, labor, and puerperium of previous pregnancies</td>
<td></td>
</tr>
<tr>
<td>• Mode of delivery</td>
<td></td>
</tr>
<tr>
<td>• Number and sex of living children</td>
<td></td>
</tr>
<tr>
<td>• Birth weights</td>
<td></td>
</tr>
<tr>
<td>• Mode of infant feeding</td>
<td></td>
</tr>
<tr>
<td>• Date of last labor and last abortion (LL and LA)</td>
<td></td>
</tr>
<tr>
<td>➢ Present obstetric history</td>
<td></td>
</tr>
<tr>
<td>• Symptoms of pregnancy</td>
<td></td>
</tr>
<tr>
<td>• Symptoms of pre-eclampsia</td>
<td></td>
</tr>
<tr>
<td>• Symptoms of disease in other organ systems</td>
<td></td>
</tr>
<tr>
<td>• Fetal movements</td>
<td></td>
</tr>
<tr>
<td><strong>Present Complaints:</strong></td>
<td></td>
</tr>
<tr>
<td>• In detail and duration</td>
<td></td>
</tr>
</tbody>
</table>
Family history:
- Diabetes mellitus
- Hypertension
- Multiple pregnancies
- Congenital anomalies

Medical history:

Chronic disease diseases:
- Diabetes mellitus
- Hypertension
- Urinary tract infections
- Heart diseases
- Viral infection
- Drugs/allergies

Surgical history:
- Dilation and curettage
- Vaginal repair
- Cesarean section
- Cerclage
- Non-Gynecologic operations

2- Physical Examination:
A) General Examination
- Observe her general wellbeing.
- Measure accurately woman's weight without shoes.
- Measure accurately her height without shoes.
- Measure blood pressure.
- Measure correctly pulse rate.
- Place the woman on the examination couch.
- Drape her and provide privacy.
- Stand at the right side of the woman.
- Examine the head.
- Examine the neck.
- Examine the chest assist with examination of the heart and lung.
- Examine the breasts nipples & areola.
- Examine the genitalia
- Examine the extremities.
- Check for danger signs of pregnancy.
B) Local Examination

- Abdominal Examination
  - Inspection:
    - Contour and size of abdomen
    - Scars of previous operations
    - Signs of pregnancy
    - Fetal movements
  - Palpation:
    - Fundal level (FL):
      - Fundal grip:
      - Umbilical grip:
      - Pelvic grip
Auscultation - Fetal Heart Sounds (FHS)
- At 10 weeks, by Sonicaid
- At 20 weeks, by Pinard's fetal stethoscope

Laboratory investigations:
- Urine analysis
- Stool analysis for ova and parasites
- Blood analysis:

Instructor's signature:
- Student's signature:
### Abdominal Examination Procedure

**Objectives:**
1. observe the signs of pregnancy.
2. assess the fetal size and growth.
3. auscultate the fetal heart when indicated.
4. locate fetal parts.
5. detect any deviation from normal.

**Equipment:**
- Gloves
- Pinard

**Procedure:**

<table>
<thead>
<tr>
<th>Pre-procedure</th>
<th>During procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- prepare place and maintain adequate light.</td>
<td>1-Inspect the mother abdomen for scar, pigment, shape and size.</td>
</tr>
<tr>
<td>2- prepare equipment. (gloves, pinard)</td>
<td>2-Measure fundal height.</td>
</tr>
<tr>
<td>3- explain procedure to women and rational for each step.</td>
<td></td>
</tr>
</tbody>
</table>
(Fundal grip)
4- Palpate the sides of the uterus to locate the fetal back and limbs.

(Umbilical grip)
5- Palpate the lower part of the uterus to locate the part of the fetus occupying it.

(pelvic grip)
6- Determine engagement of the presenting part by using pawliksgrip.

7- Put the pinard on the predetermine side on anterior shoulder (between head and face).

8- Determine fetal heart sound and rhythm and record it.

Auscultate fetal heart rate.
- Fetal heart sound is heard by sonic aid as early 10th week of pregnancy.
- Fetal heart sound is heard by pinard fetal stethoscope of the 25th week of pregnancy.
- The normal fetal heart rate is 120:160 beats/min.
- The fetal heart sound has been described as the ticking of watch under pillow.
Post procedure
1-Back the mother to comfortable position.
2-Reassurance the mother on her condition.
3-Record and report if you find any abnormality.
Check List for Abdominal Examination

- Student’s name:
- Date:

<table>
<thead>
<tr>
<th>Steps</th>
<th>Student’s Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Washing hands.</td>
<td>1</td>
</tr>
<tr>
<td>- Preparing mother</td>
<td>2</td>
</tr>
<tr>
<td>- Explaining procedure</td>
<td>3</td>
</tr>
<tr>
<td>- Asking mother to empty her bladder before the procedure</td>
<td></td>
</tr>
<tr>
<td>- Positioning mother on her back on a firm bed or examination table.</td>
<td></td>
</tr>
<tr>
<td>- Standing at the side of bed, facing the mother during the first three maneuvers but in the last one the nurse reverses her position and faces her feet.</td>
<td></td>
</tr>
</tbody>
</table>

First Maneuver:
- Ascertaining the fundus and determined its level.
  Gently palpate the fundus with the tips of the fingers of both hands in order to define which fetal part is present in the fundus.
<table>
<thead>
<tr>
<th>Steps</th>
<th>Student’s Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Second Maneuver:</strong></td>
<td></td>
</tr>
<tr>
<td>- Applying the palm of the hands on either side of the mother abdomen gentle but deep pressure is exerted to locate the back of the fetus in relation to the right and left sides of the mother.</td>
<td></td>
</tr>
<tr>
<td><strong>Third Maneuver:</strong></td>
<td></td>
</tr>
<tr>
<td>- Employing the thumb and fingers grasping the lower portion of the maternal abdomen, just above symphysis pubis to determine if the presenting part is engaged or not.</td>
<td></td>
</tr>
<tr>
<td><strong>Fourth Maneuver:</strong></td>
<td></td>
</tr>
<tr>
<td>- Facing the mother’s feet, using the tips of the first three fingers of each hand, making deep pressure in the direction of the axis of the pelvic inlet to ascertain presenting part of the engaged head.</td>
<td></td>
</tr>
<tr>
<td>- Identifying the fetal position correctly.</td>
<td></td>
</tr>
<tr>
<td>- Identifying which best place to hear the fetal heart tone.</td>
<td></td>
</tr>
<tr>
<td>- Hearing the fetal heart tone and count.</td>
<td></td>
</tr>
</tbody>
</table>

- Instructor's signature:

- Student's signature:
Pitting Edema Assessment

Objectives
1. To assess degree of edema.
2. Early detection of pre-eclampsia.

Steps of procedure:
Pre procedure:
1. Greet the mother
2. Explain the procedure to the mother
3. Ask the women and/or family member if the woman's face or hands appear swollen.
4. Position the mother flat in the bed.
5. Wash hands

EDEMA ASSESSMENT STEPS
1. Observe for general appearance, skin texture, swelling.
2. Inspect the woman's face, extremities, and sacral area for signs of pitting edema.
3. Press each area firmly with the thumb or index finger for several seconds and release.
4. Evaluate the extensiveness of the edema, the depth of the depression, and the length of time it takes to clear.
5. Grade the pitting edema.
Post procedure task
1. Record the findings and compare the finding with those previously recorded
2. Cover the woman and keep her in comfortable position
Checklist for Pitting Edema

- Student’s name:
- Date:

<table>
<thead>
<tr>
<th>Step</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre procedure</strong></td>
<td>(Getting ready)</td>
</tr>
<tr>
<td>1. Greet the mother</td>
<td></td>
</tr>
<tr>
<td>2. Explain procedure to the mother</td>
<td></td>
</tr>
<tr>
<td>3. Ask the women and or family member if the woman face or hand appear swollen.</td>
<td></td>
</tr>
<tr>
<td>4. Put mother in supin position</td>
<td></td>
</tr>
<tr>
<td>5. Wash hands</td>
<td></td>
</tr>
<tr>
<td><strong>During procedure</strong></td>
<td></td>
</tr>
<tr>
<td>Edema Assessment Steps</td>
<td></td>
</tr>
<tr>
<td>1. Observe for general appearance skin texture &amp; presence of swelling</td>
<td></td>
</tr>
<tr>
<td>2. Inspect the woman face, extremities and sacral area for signs of pitting edema.</td>
<td></td>
</tr>
<tr>
<td>3. Press each area firmly with the thumb or index finger for several seconds and release</td>
<td></td>
</tr>
<tr>
<td>4. Evaluate the extensiveness of the edema the depth of the depression and the length of time it takes to clear</td>
<td></td>
</tr>
<tr>
<td>5. Grade the pitting edema</td>
<td></td>
</tr>
<tr>
<td><strong>Post procedure</strong></td>
<td></td>
</tr>
<tr>
<td>1. Wash hands.</td>
<td></td>
</tr>
<tr>
<td>2. Record the findings and compare the finding with those previously recorded</td>
<td></td>
</tr>
<tr>
<td>3. Cover the woman and keep her in comfortable position</td>
<td></td>
</tr>
</tbody>
</table>

- Instructor's signature:
- Student's signature:
# Intrapartum Assessment

<table>
<thead>
<tr>
<th>Steps</th>
<th>Student’s Experience</th>
</tr>
</thead>
</table>
| 3- History taking: *(subjective data)*  
A maternal health history should include:  
- **Personal history**, which involves (name, age and address).  
- **Mother life-style**: such as (Housing condition, daily living activities, personal hygiene, nutrition and habits).  
- **Medical history**: chronic diseases such as cardiac disease, liver disease & renal disease)  
- **Family history**: such as (twin pregnancies, diabetes mellitus, hypertension and history of congenital malformation, any operations, receiving blood transfusion and allergy to food or drugs).  
- **Surgical history**: as appendectomy, ovarian cyst, caesarian section.  
- **Obstetric history**: which includes:  
  - L.M.P, E.D.D, gravidity and parity  
  - previous pregnancy & delivery history; which includes (number of full term pregnancies, number of premature pregnancies, number of abortion, all information concerning the outcome of each of the previous pregnancies, duration of pregnancy, duration of labor, mode of delivery, puererium and the condition of the newborn.  
  - History of current labor; this includes onset, frequency, duration and intensity of uterine contraction, passage of show and its amount and the status of membrane. If the membrane ruptured, it is essential to ask about the time of rupture and the color and amount of amniotic fluid.  
2- Physical examination:  
A-**General examination**:  
The nurse should take and record the parturient vital signs. *(temperature / 4hrs after ROM /2hr-pulse / 4hrs in latent phase & 30 min in active phase- BP / 4 hrs in latent phase & 2hrs in active phase.  
Respiration on admission.and FHR / 2hrs. in latent
phase & /30 min. in active phase), weight and height. Then she checks for the presence of edema, varicose vein.

B- Local examination:

- **Abdominal examination:** This includes assessment of the pattern of contraction, "frequency, duration, intensity & interval" as well as abdominal grips through inspection, palpation and auscultation.

- Examination of the vulva: inspect gaping of introitus, observe color and odor of amniotic fluid and check edema of the vulva.

- **Vaginal examination:** to assess progress of labor, determine cervical effacement & degree of dilatation, assess the condition of membranes, determine presentation, position & station of the fetus, evaluate pelvic capacity and detect any abnormalities.

3- Investigation:

* Hematology test, includes, "Hb, RH & Blood group".

* Urine analysis; includes, "Glucose, acetone, and albumin".

- Instructor's signature:

- Student's signature
Assessment of uterine contraction

**Objective:**

1. Progress of labor
2. Determine normal criteria of uterine contraction.
3. To detect any complication such as hypotonic or hypertonic

**Equipment**
- A watch / clock with a second hand
- Pencil and paper

---

Procedure Steps:

**Pre procedure tasks**
- Prepare equipment
- Explain procedure
- Put the mother in comfortable position

**During procedure tasks**

Assess fundal level
- Place fingertips of one hand on uterine fundus, keep fingertips relatively still rather than moving them over uterus for 10 minutes.

During 10 minutes evaluate for:
- Contraction frequency means number of uterine contraction within 10 minutes.
- Contraction duration means: Determine duration by noting average time in seconds from beginning to end of the same uterine contraction
- Contraction interval means: Determine interval by noting average time between end of one contraction & beginning of the next one.
- Contraction intensity:
  - Mild = tip of nose.
  - Moderate = chin.
  - Severe = forehead

<table>
<thead>
<tr>
<th>Contraction Intensity</th>
<th>Corresponds to Palpation of Body Part</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>Tip of nose</td>
</tr>
<tr>
<td>Moderate</td>
<td>Chin</td>
</tr>
<tr>
<td>Strong</td>
<td>Forehead</td>
</tr>
</tbody>
</table>

Guidelines for minimum frequency of assessment are:
- Hourly during latent phase.
- Every 30 minutes during active phase
- Every 15 minutes during 2nd stage

Report Hypertonic uterine contraction:
*Criteria of hypertonic uterine contraction*
1- Occurring less than 2 minutes apart and no more than 5 contractions in 10 minutes.
   2- The duration of contraction is more than 90 seconds
   3- The interval between contraction is less than 60 seconds
   4- Incomplete relaxation between contraction

Post procedure tasks
1- Wash hands.
2- Record the findings into the proper cared.
3- Clean and remove all equipment.
Checklist for assessment of uterine contraction

- Student's Name:
- Date:

<table>
<thead>
<tr>
<th>Steps</th>
<th>Student’s Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Explain the procedure &amp; its purpose to the mother.</td>
<td></td>
</tr>
<tr>
<td>2- Prepare equipment &amp; take to bed side.</td>
<td></td>
</tr>
<tr>
<td>3- Screen the mother’s bed.</td>
<td></td>
</tr>
<tr>
<td>4- Close window if open &amp; drafty.</td>
<td></td>
</tr>
<tr>
<td>5- Wash hands.</td>
<td></td>
</tr>
<tr>
<td>6- Assess at least 3 contractions in a row. But preferably more.</td>
<td></td>
</tr>
<tr>
<td>** Guidelines for minimum frequency of assessment are :</td>
<td></td>
</tr>
<tr>
<td>a- Hourly during latent phase.</td>
<td></td>
</tr>
<tr>
<td>b- Every 30 minutes - during active phase &amp; transition.</td>
<td></td>
</tr>
<tr>
<td>c. Every 15 minutes during second stage.</td>
<td></td>
</tr>
<tr>
<td>7- Place finger tips of one hand on uterine fundus keep finger tips relatively stem rather than moving them over uterus.</td>
<td></td>
</tr>
<tr>
<td>8- Note the time when each contractions – begins &amp; ends.</td>
<td></td>
</tr>
<tr>
<td>a. Determine Frequency by calculating average time that elapses from beginning of one contraction until beginning of next one.</td>
<td></td>
</tr>
<tr>
<td>b. Determine duration by noting average time in seconds from beginning to end of each contraction.</td>
<td></td>
</tr>
<tr>
<td>c. Determine interval by noting average time between end of one contraction &amp; beginning of the next one.</td>
<td></td>
</tr>
<tr>
<td>9- Estimate the average intensity of contractions by noting how easily the uterus can be indented during the acme (peak) of the contraction as follow:</td>
<td></td>
</tr>
<tr>
<td>a- Mild contractions are easily indented with finger tips, they feel similar to the tip of the nose.</td>
<td></td>
</tr>
<tr>
<td>b. Moderate contractions can be indented with more</td>
<td></td>
</tr>
</tbody>
</table>
difficulty. They feel - similar to the chin.
C. Firm contractions feel “Woody” & can not be readily indented. They feel similar to the fore head.

<table>
<thead>
<tr>
<th>10- Chart the average frequency, duration &amp; intensity.</th>
</tr>
</thead>
<tbody>
<tr>
<td>11- Report hypertonic - contractions:</td>
</tr>
<tr>
<td>a. Duration longer than 90 sec.</td>
</tr>
<tr>
<td>b. Interval shorter than 60 seconds.</td>
</tr>
<tr>
<td>c. Incomplete relaxation of the uterus between contractions.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>12- Remover screen &amp; equipment.</th>
</tr>
</thead>
<tbody>
<tr>
<td>13 - Wash hands.</td>
</tr>
</tbody>
</table>

* Instructor’s Signature.
* Learner’s Signature:
Handling procedure

➢ Objectives:

- To maintain sterile field during labor
- To maintain health promotion of the mother and fetus
- To prevent health hazards which mother and fetus may be exposed
- To assist doctor in labor procedure
- To detect and provide proper management of any hazards as possible

➢ Equipments:

- 2 gowns
- 2 gloves
- 5 towels & 2 legns
- 2 masks
- dressing
- urinary catheter
- Two syringes for local anaesthesia & oxytocin
- VICRYL Suture
Sterile Instruments packet includes:
1 needle holder 1 scissor 1 kidney basin
2 arteries 1 toothed 1 nontoothed
2 cokhers 4 rings 2 sims retractor 1 tissue forceps

Newborn tray: clamp, identification band, suction tube, alcohol swab, scissor, eye drop and towel
Steps of procedure:

- **Pre procedure tasks:**
  1. Check good place, light and complete equipment
  2. Put mother in lithotomy position
  3. Scrubbing, gowning and gloving
  4. Prepare sterile equipment

- **During procedure tasks:**
  1. Perineal care
2. Follow up of labor progress by Per vaginal examination (PV)

3. Evacuate mother bladder by catheter

4. Give the doctor the syringe of local anaesthesia

5. Episiotomy cutting

6. Delivery of baby with:
   A. Support the perineum and maintain head flexion
B. Delivery of the head

C. Delivery of anterior shoulder

D. Delivery of the trunk and lower body

E. Clamping and cutting of umbilical cord

7. Delivery of the placenta

A. Assist doctor in gently expulsion of placenta in a circle motion

B. Placental examination
C. Suture episiotomy by the chromic

8. Assessing and massaging of uterus

9. Perineal care

✓ Post procedure tasks:

1. Remove equipment
2. Wash hand
3. Prepare the place for the next case
## Check list for Handling

**Student Name:** - **Date:**

<table>
<thead>
<tr>
<th>Steps</th>
<th>Student’s Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Check good place, Light &amp; complete equipment.</td>
<td>1</td>
</tr>
<tr>
<td>2- Put mother in lithotomy - position.</td>
<td>1</td>
</tr>
<tr>
<td>3- Identify signs of starting second stage of labor.</td>
<td>1</td>
</tr>
<tr>
<td>4- Explain procedure to the mother.</td>
<td>1</td>
</tr>
<tr>
<td>5- Put on mask &amp; Over.</td>
<td>1</td>
</tr>
<tr>
<td>6- Scrubbing, gowning &amp; gloving is done.</td>
<td>1</td>
</tr>
<tr>
<td>7- Arrange equipment on the tray.</td>
<td>1</td>
</tr>
<tr>
<td>8- Provide perineal care.</td>
<td>1</td>
</tr>
<tr>
<td>9- Drape the mother.</td>
<td>1</td>
</tr>
<tr>
<td>10- Evacuate mother's bladder by catheterization.</td>
<td>1</td>
</tr>
<tr>
<td>11- Follow up mother's progress by P. V.</td>
<td>1</td>
</tr>
<tr>
<td>12- Instruct mother to bear down during contraction &amp; relax in between.</td>
<td>1</td>
</tr>
<tr>
<td>13- Give the doctor syringe of local anaesthesia.</td>
<td>1</td>
</tr>
<tr>
<td>14- Observe presenting part for crowning. It occurs when 3-4 cm of the head appear during uterine contraction.</td>
<td>1</td>
</tr>
<tr>
<td>15- Give scissor to the doctor to cut episiotomy.</td>
<td>1</td>
</tr>
<tr>
<td>16- Assist the Doctor to support perineum with sterile dressing &amp; maintain good flexion of the fetal head at the same time.</td>
<td>1</td>
</tr>
<tr>
<td>17- Deliver head &amp; expulsion of fetal body.</td>
<td>1</td>
</tr>
<tr>
<td>18- Clamp 1st cokher on the cord far from the mother at least 20 cm.</td>
<td>1</td>
</tr>
<tr>
<td>19- Evacuate small segment.</td>
<td>1</td>
</tr>
<tr>
<td>20- Clamp 2nd cokher on the cord far from the 1st about 10 cm.</td>
<td>1</td>
</tr>
<tr>
<td>21- Cut cord between 2 cokher down ward.</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td><strong>22-</strong> Assist doctor in expulsion of the placenta.</td>
<td></td>
</tr>
<tr>
<td><strong>23-</strong> Inspect the placenta by examining fetal &amp; maternal parts.</td>
<td></td>
</tr>
<tr>
<td><strong>24-</strong> Give syringe of methergine to circulating nurse to give to the mother as order.</td>
<td></td>
</tr>
<tr>
<td><strong>25-</strong> Cover the episiotomy incision with sterile dressing.</td>
<td></td>
</tr>
<tr>
<td><strong>26-</strong> Give perineal care.</td>
<td></td>
</tr>
<tr>
<td><strong>27-</strong> Change the towel under the mother.</td>
<td></td>
</tr>
<tr>
<td><strong>28-</strong> Assist doctor in episiotomy repair according to procedure.</td>
<td></td>
</tr>
<tr>
<td><strong>29-</strong> Ensure that the uterus is well contracted.</td>
<td></td>
</tr>
<tr>
<td><strong>30-</strong> Give perineal care.</td>
<td></td>
</tr>
<tr>
<td><strong>31-</strong> Explore area of episiotomy.</td>
<td></td>
</tr>
<tr>
<td><strong>32-</strong> Swab with betadine on the perineal area.</td>
<td></td>
</tr>
<tr>
<td><strong>33-</strong> Remove all towels from the mother.</td>
<td></td>
</tr>
<tr>
<td><strong>34-</strong> Collect equipment and clean instrument.</td>
<td></td>
</tr>
<tr>
<td><strong>35-</strong> Wash hands.</td>
<td></td>
</tr>
<tr>
<td><strong>36-</strong> Prepare the delivery setting to new labor.</td>
<td></td>
</tr>
<tr>
<td><strong>37-</strong> Report complete information about mother &amp; baby.</td>
<td></td>
</tr>
</tbody>
</table>

* Student’s Sig.:  

* Instructor’s Sig.:
## Immediate baby care

### Objectives:
- To maintain baby airway, breathing and circulation (ABC)
- To maintain survival for baby
- To prevent hypothermia
- To prevent infection
- To detect any abnormality

### Procedure

<table>
<thead>
<tr>
<th>Pre Procedure</th>
<th>1) prepare place:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Check oxygenation source.</td>
</tr>
<tr>
<td></td>
<td>• Check suction source.</td>
</tr>
<tr>
<td></td>
<td>• Check warm place (source of heat).</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>2) prepare nurse:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• Hand washing.</td>
</tr>
<tr>
<td></td>
<td>• Wearing gloves.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
<th>3) prepare equipment:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>• 2 towels</td>
</tr>
<tr>
<td></td>
<td>• Thermometer.</td>
</tr>
<tr>
<td></td>
<td>• Clamp &amp; scissors.</td>
</tr>
<tr>
<td></td>
<td>• O2 saturation monitor.</td>
</tr>
<tr>
<td></td>
<td>• Suctioning monitor.</td>
</tr>
<tr>
<td></td>
<td>• Cotton and alcohol.</td>
</tr>
<tr>
<td></td>
<td>• Warm water.</td>
</tr>
<tr>
<td></td>
<td>• eye drop (toprin).</td>
</tr>
<tr>
<td></td>
<td>• ID bands.</td>
</tr>
<tr>
<td></td>
<td>• Measurement tape.</td>
</tr>
</tbody>
</table>

**During procedure:**

- Delivery the baby
During Procedure

- Suction mouth and nose of baby by suction tube and suction machine

- Use O₂ source

- Neurological examination by checking common reflexes of the newborn
  
  Grasping reflex

- Evaluate the newborn condition using Apgar scoring system at 1ˢᵗ and 5ᵗʰ five minutes after birth

The Apgar score rates:

- Respiration, crying
- Reflexes, irritability
- Pulse, heart rate
- Skin color of body and extremities
- Muscle tone

<table>
<thead>
<tr>
<th>Heart rate</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>absent</td>
<td>&lt; 100 beats/min</td>
<td>100 beats/min</td>
<td>over 100 beats/min</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Respirations</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>absent</td>
<td>weak cry</td>
<td>strong cry</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Muscle tone</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>limp</td>
<td>some bending</td>
<td>active motion</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Reflex irritability</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>no response</td>
<td>prime</td>
<td>cry</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Color</th>
<th>0</th>
<th>1</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>blue or pale</td>
<td>body pink, arms and legs blue</td>
<td>completely pink</td>
<td></td>
</tr>
</tbody>
</table>
Suckling reflex  Rooting reflex

Planter Reflex  Moro reflex

Use the clamp to clamped the cord

-Cut the cord
- Eye care

- Dry the eye in the same manner

- Use eye drops

- Nose care

- Mouth care
- Measure the size of head and body of baby with Measurement tab

- Measure the temperature of baby

- Give vitamin K I.M

- Use ID and foot print
– Weight baby

– Wear baby his clothes

Post procedure

- Wash hand
- Remove equipment
- Assist mother in carrying her infant
## Check list for Immediate baby care

- **Student Name:**
- **Date:**

<table>
<thead>
<tr>
<th>Steps</th>
<th>Student's Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
</tbody>
</table>

### [1] Suctioning:
1. Wash hands & wear gloves.
2. Receive newborn in warmed blanket & place under radiant warmer.
3. Place newborn in trendlenburng position.
4. Do suction of oropharyngeal canal.
5. Oxygen may be given.
6. Continue suction as fluid is aspirated.
7. Avoid deep suction during early min.
8. Do minimum nasopharyngeal suctioning.

### [2] General physical examination:
1. Complete 1 minute Apgar score & complete 5 minute Apgar score.
2. Neurological examination by checking common reflexes of the newborn.
3. Measure vital signs pulse, respiration & temperature.
4. Growth measurement include length, weight, head circumference & chest circumference.
5. Assess for any gross abnormality, congenital defects in head, eyes, ears, chest, spine, face, nose, abdomen, anus, external genitalia & extremities.

### [3] Cord Care:
1. Wash hands before manipulating cord.
2. Use sterile plastic clamp or ligature, the first ligature is placed about 2 inch from the abdomen & second ligature is placed about 1 cm from the first ligature.
3. Press between the two ligatures.
4. Cut the cord by blunt sterile scissor after the second knot.
5. Examine umbilical cord structure.
6. Paint the end of the stump with alcohol.
7. Cover the cord with sterile gauze.

### [4] Eye care:
1. Wash hands.
2. Clean the eye lids é sterile warm water.
3. Wipe from the nose outward.
4. Install one drop of solution of isophenocol (lower
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>lid should be pulled down).</strong></td>
<td></td>
</tr>
<tr>
<td><strong>5- Lid is released 2mins. waiting period, then wipe é the excess of solution by sterile cotton.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>[5] Identification of the newborn which place on wrist or ankle (mother name, hospital no, sex, weight of newborn).</strong></td>
<td></td>
</tr>
<tr>
<td><strong>[6] Wrape the baby &amp; give to parent.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>[7] Assist mother to breast feed if she desire.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>[8] Complete charting, reporting &amp; recording</strong></td>
<td></td>
</tr>
<tr>
<td><strong>[9] Replace equipment after use &amp; care for it.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>[10] Wash hands.</strong></td>
<td></td>
</tr>
</tbody>
</table>

Instructor’s signature:

- Student’s signature:
# Postnatal Assessment

## Steps

|  | Student’s Experience |
|---|---|---|
| 1- History Taking | 1 | 2 | 3 |
| 2- Physical Examination: | | | |
| ➢ General Examination: | | | |
| ▪ Examine the mother from head to toe to detect any abnormality. | | | |
| ➢ Local Examination: | | | |
| ▪ Check and record temperature pulse and respiration. (It is done 4 times daily for the first and second day. Then twice daily, if elevated, report to doctor.) | | | |
| ▪ Check blood pressure for the first two stages, if normal check again at the end of postpartum period (If systolic BP below 70, refer) | | | |
| ▪ Examine the breasts for sore or cracked nipples | | | |
| ▪ Check the fundus of the uterus, frequently for the first twelve hours and thereafter daily. | | | |
| ▪ Note lochia, observe for color, odor, and quantity (Look at the perineal pad. Examine lochia at least twice a day at the beginning it is seen every five minutes.) | | | |
| ▪ Observe the perineum, the vagina and perineal area regularly. | | | |
| ▪ Examine mother’s legs note any swelling varicose veins, shape, size, temperature and color, range of motion and signs of thrombophlebitis. | | | |
| ▪ Record findings. | | | |

Instructor's signature: 
- Student’s signature:
Uterine massage

Objectives

- To assess uterine condition for contractility, size, consistency and fundus level in relation to mother birth date
- To assess characteristics of uterine discharge
- To maintain well contracted uterus
- To detect and provide proper management of any hazards such as boggy uterus and postpartum hemorrhage as early as possible

Procedure

Pre-procedure

1) Preparation
   - Place & equipment
     - Adequate lightening
     - Maintain keep privacy
     - Closed the door
   - Mother
     - Position the patient in dorsal recumbent position and drape according to procedure
     - Ask the mother to empty bladder after procedure.
     - Explain the procedure and its purpose to the mother
   - My self
     - Wash hand
     - Wear gloves

During-procedure

- Put the mother on dorsal recumbent position
- Ask the women to undress her clothes
- Place the machntoch under the mother hips.
- If mother is wearing a pad remove solide pad from front to back.
- Observe color, odor and amount of discharge.

- **Scant:** 2-inch stain (10 ml)
- **Small:** 4-inch stain (10 to 25 ml)
- **Moderate:** 6-inch stain (25 to 50 ml)
- **Large:** >6-inch stain (50 to 80 ml)

Wrap pad in newspaper and discard in bag.

Place of the non dominant hand above the symphysis pubis.


Fig. 28-2. Assessing the volume of lochia.
- Use the flat part of the fingers (not the finger tips) for palpation.

- Begin palpation at the umbilicus & palpate gently until the fundus is located.

- Determine size, position, and consistency of the uterus.

- Massage the boggy and soft uterus till it become contracted and firm.
  - Use a new perineal pad to cover the perineum after perineal care.

**Post-procedure**

- Rearrange bed, clothes and make the women comfortable.
- Remove screen.
- Remove equipment from bedside.
- Clean equipment.
- Wash hand.
- Recording time and date of procedure discharging (amounts color, odor) genitalia condition.
- Give health teaching to the mother about self perineal care.
### Check List for Uterine massage

- **Student Name:**
- **Date:**

<table>
<thead>
<tr>
<th>Steps</th>
<th>Student’s Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Explain the procedure &amp; its purpose to the mother.</td>
<td>1</td>
</tr>
<tr>
<td>2- Prepare equipment &amp; take to bed side.</td>
<td>2</td>
</tr>
<tr>
<td>3- Screen the mother’s bed.</td>
<td>3</td>
</tr>
<tr>
<td>4- Close window if open &amp; drafty.</td>
<td></td>
</tr>
<tr>
<td>5- Wash hands.</td>
<td></td>
</tr>
<tr>
<td>6- Have the mother empty her bladder if she has not voided – recently.</td>
<td></td>
</tr>
<tr>
<td>7- Place mother in a supine position with her knee slightly flexed.</td>
<td></td>
</tr>
<tr>
<td>8- Put on clean gloves &amp; lower the perineal pad to observe amount of saturation &amp; characteristics of lochia.</td>
<td></td>
</tr>
<tr>
<td>9- Place of the non-dominant hand above the symphysis pubis.</td>
<td></td>
</tr>
<tr>
<td>10- Use the flat part of the fingers (not the finger tips) for palpation.</td>
<td></td>
</tr>
<tr>
<td>11- Begin palpation at the umbilicus &amp; palpate gently unit the fundus is located.</td>
<td></td>
</tr>
<tr>
<td>12- Not firmness and location of the fundus “The fundus should be firm, in midline” approximately at the level of umbilicus.</td>
<td></td>
</tr>
<tr>
<td>13- If the fundus is difficult to locate or is soft or “boggy” atonic, keep the non-dominant hand above the symphysis pubis &amp; massage the fundus until the fundus is firm.</td>
<td></td>
</tr>
</tbody>
</table>
14- Observe the vulva for passage of blood clots & for development of hematoma or bleeding from lacerations.

15- Remove bloody pads, clean perineum & pads, clean perineum & apply sterile perineal pad.

16- Help the client to find a comfortable position.

17- Record consistency & location of the fundus bleeding & perineum.

18- Report a fundus that does not stay firm.

19- Clean equipment.

20- Wash hands.

* Instructor’s Signature:

* Student’s Signature:
Perennial care & examination

Objectives:
- To maintain the perineal area clean and dry
- To prevent postpartum complications as puerperal sepsis
- To assess integrity of perineal area and episiotomy for REEDA scale (redness, edema, ecchymosis, discharge, and approximation)

Procedure

<table>
<thead>
<tr>
<th>Pre-Procedure</th>
<th>During Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Prepare the necessary equipment and taken to the bedside table.</td>
<td>• Encourage patient to void.</td>
</tr>
<tr>
<td>• Place</td>
<td>• Test temperature of solution by pouring small amount on inside of wrist.</td>
</tr>
<tr>
<td>• Adequate lightening.</td>
<td>• Wash the perineum by betadine solution in the following way:</td>
</tr>
<tr>
<td>• Maintain keep privacy.</td>
<td>1- Clean the mons veneers from the level of clitoris up ward into the lower abdomen</td>
</tr>
<tr>
<td>• Mother</td>
<td></td>
</tr>
<tr>
<td>1- Greet the woman, and explain the procedure to obtain her consent.</td>
<td></td>
</tr>
<tr>
<td>2- Ask the women to empty her bladder before the procedure</td>
<td></td>
</tr>
<tr>
<td>3- Ask the women &quot;position&quot; to lie on her back with her knees slightly bent.</td>
<td></td>
</tr>
<tr>
<td>• Nurse</td>
<td></td>
</tr>
<tr>
<td>• Wash hands</td>
<td></td>
</tr>
<tr>
<td>• Wear gloves</td>
<td></td>
</tr>
</tbody>
</table>
2- Clean for thing beginning from inside to outside.
3- Clean the near thigh by the same manner.
4- Clean the far labia from the level of clitoris down ward post the level of anus.
5- Clean the near labia by the same way.
6- Clean the introitus (in between the two labia) by single down ward motion from tap to bottom

- Dry the perineum by the same way of cleaning using the same sequence and technique.
- Remove the bedpan and dry buttocks.
- Apply sterile dry pad from up to down without touching the surface close to the women.
- Rearrange bed, cloths and make the women comfort.
- Remove screen.

| Post Procedure | To record and report any abnormalities to doctor order |
Check List for Perineal Care

- Student Name:
- Date:

<table>
<thead>
<tr>
<th>Steps</th>
<th>Student’s Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td>1- Explain the procedure &amp; its purpose to the mother.</td>
<td></td>
</tr>
<tr>
<td>2- Prepare equipment &amp; take to bed side.</td>
<td></td>
</tr>
<tr>
<td>3- Screen the mother’s bed.</td>
<td></td>
</tr>
<tr>
<td>4- Close window if open &amp; drafty.</td>
<td></td>
</tr>
<tr>
<td>5- Wash hands.</td>
<td></td>
</tr>
<tr>
<td>6- Wear gloves.</td>
<td></td>
</tr>
<tr>
<td>7- Fold bed clothes to the foot of the bed using drape sheet.</td>
<td></td>
</tr>
<tr>
<td>8- Position patient in dorsal recumbent position &amp; drape according to procedure.</td>
<td></td>
</tr>
<tr>
<td>9- Place the mackintosh under the mother’s hips.</td>
<td></td>
</tr>
<tr>
<td>10- If mother is wearing a pad remove soiled pad from front to back.</td>
<td></td>
</tr>
<tr>
<td>11- Observe color, order &amp; amount of discharge.</td>
<td></td>
</tr>
<tr>
<td>12- Wrap pad in news – paper &amp; discard in bag.</td>
<td></td>
</tr>
<tr>
<td>13- Place the patient on a bed pan.</td>
<td></td>
</tr>
<tr>
<td>14- Encourage patient to void.</td>
<td></td>
</tr>
<tr>
<td>Steps</td>
<td>Student’s Experience</td>
</tr>
<tr>
<td>---------------------------------------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td>15- Test temperature of solution by pouring-small amount on inside of wrist.</td>
<td></td>
</tr>
<tr>
<td>16- Wash the perineum by dettol or savlon. solution in the following way:</td>
<td></td>
</tr>
<tr>
<td>a- Clean the mons veneris from the level of clitoris upward into the lower abdomen.</td>
<td></td>
</tr>
<tr>
<td>b- Clean far thing-beginning from inside to out side.</td>
<td></td>
</tr>
<tr>
<td>c- Clean the near thigh by the same manner.</td>
<td></td>
</tr>
<tr>
<td>d- Clean the far Labia from the level of clitoris downward post the level of anus.</td>
<td></td>
</tr>
<tr>
<td>e- Clean the near Labia by the same way.</td>
<td></td>
</tr>
<tr>
<td>f- Clean the entroitus (in between the two Labia) by single downward motion from top to bottom.</td>
<td></td>
</tr>
<tr>
<td>17- Dry the perineum by the same way of cleaning-using the same sequence &amp; techniques.</td>
<td></td>
</tr>
<tr>
<td>18- Remove the bedpan &amp; dry buttocks.</td>
<td></td>
</tr>
<tr>
<td>19- Apply Sterile dry pad from up to down without touching the surface close to the woman.</td>
<td></td>
</tr>
<tr>
<td>20- Rearrange bed, clothes &amp; make the women comfort.</td>
<td></td>
</tr>
<tr>
<td>21- Remove screen.</td>
<td></td>
</tr>
<tr>
<td>22- Remove equipment from bed side.</td>
<td></td>
</tr>
<tr>
<td>Steps</td>
<td>Student’s Experience</td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>----------------------</td>
</tr>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>23- Clean equipment.</td>
<td></td>
</tr>
<tr>
<td>24- Wash hands.</td>
<td></td>
</tr>
<tr>
<td>25- Recording:</td>
<td></td>
</tr>
<tr>
<td>Time &amp; date of procedure.</td>
<td></td>
</tr>
<tr>
<td>Discharge (Amounts color, odor) Genitalia condition.</td>
<td></td>
</tr>
<tr>
<td>26- Give health teaching about self perineal care.</td>
<td></td>
</tr>
</tbody>
</table>

-Instructor’s Signature:

- Student’s Signature:
Check List for Perineal Examination

- Student Name:
- Date:

<table>
<thead>
<tr>
<th>Steps</th>
<th>Student’s Experience</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
</tr>
<tr>
<td>1- Explain the procedure &amp; its purpose to the mother.</td>
<td></td>
</tr>
<tr>
<td>2- Prepare equipment &amp; take to bed side.</td>
<td></td>
</tr>
<tr>
<td>3- Screen the mother’s bed.</td>
<td></td>
</tr>
<tr>
<td>4- Close window if open &amp; drafty.</td>
<td></td>
</tr>
<tr>
<td>5- Wash hands.</td>
<td></td>
</tr>
<tr>
<td>6- Put on clean gloves.</td>
<td></td>
</tr>
<tr>
<td>7- Request the mother to assume a sim’s position &amp; flex her upper leg &amp; expose perineum..</td>
<td></td>
</tr>
<tr>
<td>8- Lower the perineal pads &amp; lift the superior buttocks.</td>
<td></td>
</tr>
<tr>
<td>9- Lies a flash light to – inspect the perineal area.</td>
<td></td>
</tr>
<tr>
<td>10- Not the extent &amp; location of edema or brusing.</td>
<td></td>
</tr>
<tr>
<td>11- Examine the episiotomy or laceration for REEDA.</td>
<td></td>
</tr>
<tr>
<td>12- Note number &amp; size of hemorrhoids.</td>
<td></td>
</tr>
<tr>
<td>13- Instruct mother to turn on back &amp; cover her.</td>
<td></td>
</tr>
<tr>
<td>14- Remove screen.</td>
<td></td>
</tr>
<tr>
<td>15- Remove equipment * clean it.</td>
<td></td>
</tr>
<tr>
<td>16- Wash hands.</td>
<td></td>
</tr>
<tr>
<td>17- Report abnormalities if present.</td>
<td></td>
</tr>
</tbody>
</table>

-Instructor’s Signature:

- Student’s Signature:
Breast care procedure

Objectives:

- To keep breast clean & dry
- To promote circulation
- To prevent infection
- To detect any abnormality

Equipments:

Steps of procedure:
- Latex gloves
- Cotton ball
- Cup with warm water
- Paper bag
- Disposable pad

Ministry of Health & Population
✓ Pre procedure tasks:

- Prepare the place by:

1. Keep woman privacy & adequate lightning

- Prepare myself by:

1. Wash hand and wear gloves

- Prepare the woman by:

Explain procedure for the woman

1. Place mackintosh under the woman breast

✓ During procedure tasks:

1. Assess & Observe two breasts for

   A. Skin changes

   B. Condition of nipple
      Cracked nipples
      Types of nipples

   C. Nipple discharge
2. **Massage & palpation of the breast**

3. **Squeeze nipple to ensure breast milk flow**

3. **Clean the breast in circle motion with cotton balls and warm water**

4. **Drying the breast in the same manner**
5. Re squeezing & Apply two drop of milk to lubricate nipple

6. Apply disposable pad if present excess breast milk flow

✓ Post procedure tasks:

1. Draping the mother
2. Remove equipment
3. Wash hand
### Breast care Check List

- **Student name:**
- **Date**

<table>
<thead>
<tr>
<th>Task/ step</th>
<th>Cases</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Pre procedure</strong></td>
<td></td>
</tr>
<tr>
<td><em>(Getting ready)</em></td>
<td></td>
</tr>
<tr>
<td>1. Prepare the necessary equipment &amp; take it into the bed side table</td>
<td></td>
</tr>
<tr>
<td>2. Obtain women's consent after simple explanation to the procedure</td>
<td></td>
</tr>
<tr>
<td>3. Protect the women from air drafts &amp; keep her privacy</td>
<td></td>
</tr>
<tr>
<td>4. Wash, dry hands &amp; wear gloves</td>
<td></td>
</tr>
<tr>
<td><strong>During procedure</strong></td>
<td></td>
</tr>
<tr>
<td>1. Place mackintosh under the women breast</td>
<td></td>
</tr>
<tr>
<td>2. Assess each breast for signs of engorgement, abscess, mastitis or cracked nipples; also the nipple condition &amp; types are cracked (inflamed or not); ( normal: protruded, flat or inverted)</td>
<td></td>
</tr>
<tr>
<td>3. Massage &amp; palpate each breast from the areola down to the nipple</td>
<td></td>
</tr>
<tr>
<td>4. Check the availability of enough milk flow to breast feeding by expressing few drops of colostrum or milk from each breast</td>
<td></td>
</tr>
<tr>
<td>5. Hold each breast with one hand and gently clean with the other hand using warm water &amp; cotton swab. Start cleaning from the nipple upward to areola &amp; to the rest of the breast in one direction with circular motion</td>
<td></td>
</tr>
<tr>
<td>6. Dispose the used cotton is correctly in the paper bag</td>
<td></td>
</tr>
<tr>
<td>7. Dry each breast using the previous technique</td>
<td></td>
</tr>
<tr>
<td>8. Apply two drop from breast milk on nipple to lubricate it and prevent the nipple from dryness &amp; cracked</td>
<td></td>
</tr>
<tr>
<td>9. Apply disposable pad on the nipple to absorb running milk</td>
<td></td>
</tr>
<tr>
<td><strong>Post procedure</strong></td>
<td></td>
</tr>
<tr>
<td>1. Inform the women about the procedure findings &amp; instruct her about the routine breast self-care</td>
<td></td>
</tr>
<tr>
<td>2. Document the procedure accurately</td>
<td></td>
</tr>
<tr>
<td>3. Remove equipment after use &amp; clean it</td>
<td></td>
</tr>
<tr>
<td>4. Wash hand &amp; dry it</td>
<td></td>
</tr>
</tbody>
</table>
References

- Carol J. Green, (2016): Maternal Newborn Nursing Care Plans, Jones & Barlett Learning Company, USA.


Book Coordinator: Mostafa Fathallah

General Directorate of Technical Education for Health