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Annamma Jacob's
A Comprehensive Textbook of
MIDWIFERY & GYNECOLOGICAL NURSING

7th Edition

As per INC Syllabus for GNM



Edited by
Kanimozhi K

Foreword
Krishnaveni TM

JAYPEE

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15 CHAPTER

Antenatal Care

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Learning Objectives

Upon completing this chapter, the learner will be able to:

- Explain the meaning and objectives of antenatal care.
- List the objectives and procedure of initial assessment, and review of body systems.
- Describe the physical examination of the mother during the initial and subsequent visits.
- Describe the steps of abdominal examination.
- Enumerate the steps of nursing process for an antenatal mother.

MEANING

Antenatal care refers to the care given to an expectant mother from the time conception is confirmed until the beginning of labor. It includes monitoring the progress of pregnancy, providing appropriate support to the woman and her family, and providing information, which will assist them to make sensible choices.

OBJECTIVES

The objectives of prenatal care are to:

- ❖ Promote, protect and maintain the health of the mother during pregnancy
- ❖ Detect 'high-risk' pregnancies, and give the mothers special attention
- ❖ Foresee complications and take preventive measures
- ❖ Remove anxiety and fear associated with pregnancy
- ❖ Reduce maternal-infant morbidity and mortality
- ❖ Teach the mother elements of nutrition, personal hygiene and newborn care
- ❖ Sensitize the mother to the need of family planning.

ANTENATAL VISITS

Ideally, the antenatal mother should visit the antenatal clinic once a month during the first 7 months; twice a month during the 8th month and thereafter once a week, if everything is normal. A large proportion of mothers in India are from lower socioeconomic group and many are working women. For women who find regular attendance at the clinic difficult due to economic reasons, if the pregnancy is uncomplicated, a minimum of four visits covering the entire period of pregnancy should be the target as outlined below (WHO recommendation). First visit at around 16 weeks or as soon as the pregnancy is known. Second visit between 24 and 28 weeks and third visit at 32 weeks and the fourth visit at 36 weeks. Schedule of regular antenatal visits is given in **(Box. 15.1 and Fig. 15.1)**.

Box 15.1: Client Education.

Antenatal/Prenatal Visits

- ❑ Up to 28 weeks of gestation—every 4 weeks
- ❑ 29–36 weeks of gestation—every 2 weeks
- ❑ 36 weeks till delivery—every week

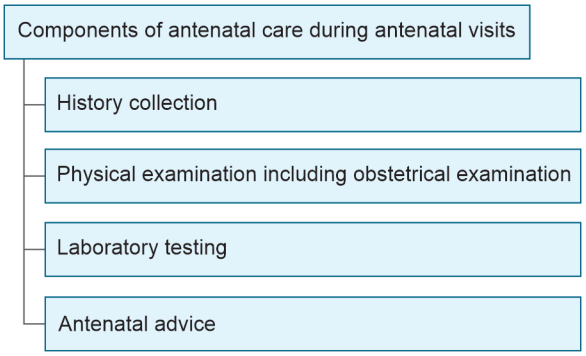

Fig. 15.1: Components of antenatal care during antenatal visits.



INITIAL EXAMINATION

The first visit, irrespective of when it occurs, should include the client's health history, obstetric history, physical and pelvic examinations and laboratory examinations.

History Collection

1. Identifying information of the pregnant woman:
   Name: _____
   Address: _____
   Age: First pregnancy in extreme age groups of pregnant women may lead to pregnancy-related complications. A pregnant woman at the age of ≥35 years of her first pregnancy (FIGO) is called an elderly primigravida, and a first pregnancy at the age of≥19 years is known as a teenage pregnancy.
2. **Chief complaints** in her own words. Medical conditions that affect pregnancy may vary from common urinary tract infections (UTIs) to severe cardiac conditions. Some of the medical conditions that require special care are:
   a. Urinary tract infection
   b. Essential hypertension that may lead to pregnancy-induced hypertension (PIH)
   c. Asthma, epilepsy, psychiatric disorders
   d. Medical conditions such as diabetes and cardiac conditions.

   Marital history: Duration of marriage and consanguinity are to be enquired as collecting marital history in pregnant women can provide valuable insights into their social support system, potential stressors, and overall well-being. This information can help healthcare providers:
   - Assess relationship dynamics and support systems.
   - Identify potential risk factors for domestic violence or abuse.
   - Understand the woman's social situation and potential stressors.

   Occupational history: Knowing a pregnant woman's occupation and her husband's occupation helps healthcare providers:
   - Understand potential work-related stress or physical demands that might affect her pregnancy.
   - Assess the family's socioeconomic status, which can impact access to healthcare and nutrition.
   - Provide tailored advice and anticipate potential complications related to socioeconomic factors.

Obstetric History

Obstetric history includes obtaining the date of her last menstrual period (LMP), calculation of her expected date of delivery (EDD), determination of the present number of weeks of gestation and calculation of her gravida and para status.

Gravida

Gravida refers to the number of times a woman has been pregnant. It does not take into account at what time during pregnancy it (the pregnancy) was terminated; nor does it matter how many babies were born from the pregnancy. It is the pregnancy that counts and not the number of babies. A woman who had one pregnancy from which she issued triplets would still be a gravida 1 until she becomes pregnant again, at which time she would be gravida 2. A woman who is pregnant for the first time is called ***primigravida*** and a woman who is pregnant for the second time is called *secundigravida*. Thereafter, if she becomes pregnant again, she is called ***multigravida***. A woman who has never been pregnant is called ***nulligravida***.

Para

Para refers to the number of pregnancies that terminated in the birth of a fetus or fetuses that reached the point of viability (the ability of the fetus to survive, if born). This point is considered to be 28 weeks of gestation or 1,000 g (in India). It is the number of pregnancies carried to the point of the fetus or fetuses reaching the point of viability that determines parity and not the number of fetuses reaching the point of viability. Para is not affected whether the fetus or fetuses are born alive or are stillbirths.

A ***primipara*** is a woman who has given birth to a fetus or fetuses that has reached the point of viability. A *multipara* is a woman who had given birth to two or more babies, live or still excluding abortions.

A ***grand multipara*** is a woman with a previous history of four births or more. A woman who has not carried a pregnancy to the point of viability is called *nullipara*. The items to be included in obstetric history are:

- Gravida, para
- Rhesus (Rh) and ABO blood type
- Previous pregnancy and delivery:
  - Weeks of gestation and dates of termination
  - Delivery in the hospital or at home
  - Length of labor
  - Type of delivery, i.e., spontaneous, instrumental or cesarean section
  - RhoGAM [Rho(D) immune globulin human] received
  - Any obstetric, medical problems during pregnancy, labor or delivery.
- Status of newborn at birth:
  - Cried immediately, problems and death
  - Sex and weight of the baby
  - Any congenital anomalies or neonatal problems.

Present Pregnancy

History of the present pregnancy is designed to detect complications, discomforts and any complaints about pregnancy; the woman may have experienced since her last menstrual period (LMP).

The date of the 1st day of the last normal menstrual period is used as the baseline for determining gestational age and estimated EDD. Hence, it is important to obtain the accurate date of this event. When the accuracy of pinpointing the LMP is impossible, other parameters may be used to arrive at the

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expected date of delivery. Ascertaining the approximate date on which the baby was conceived, is important to predict the date of giving birth and to calculate the gestational age at any point of pregnancy.

The EDD is calculated by ***Naegele's*** rule in which 7 days are added to the date of the first day of LMP and 3 months are subtracted from that date. It is also calculated by adding 9 calendar months and 7 days to the date of the 1st day of the woman's last menstrual period.

Example for expected date of delivery (EDD) using naegele's rule.

LMP: January 5, 2024

1. Add 9 months: October 5, 2024
2. Add 7 days: October 12, 2024

EDD: October 8, 2024

This method assumes a regular 28-day menstrual cycle and ovulation on day 14.

Alternative Method

Another method to calculate EDD is by subtracting 3 months from the first day of the LMP and adding 7 days.

Using the same LMP (September 15, 2024):

1. Subtract 3 months: June 15, 2024
2. Add 7 days: June 22, 2024

The actual period of gestation is from the time of fertilization. Since, ovulation is generally considered to occur approximately 14 days before the next menstrual period; the length of a woman's menstrual cycle will affect the accuracy of the EDD. A woman with a longer menstrual cycle (more than 28 days) will actually begin her pregnancy later in relation to her LMP and subsequently will deliver at a correspondingly later date. The reverse is true for women with shorter menstrual cycle. The majority of women will deliver within 10–14 days either earlier or later of their EDD and this is considered physiologically normal.

Only when the periods, particularly the previous three cycles, are regular can Naegeles' calculation be considered accurate. The EDD can be calculated by subtracting the less days if the interval between cycles is shorter, and adding the extra days if the period is greater (**Fig. 15.2**).

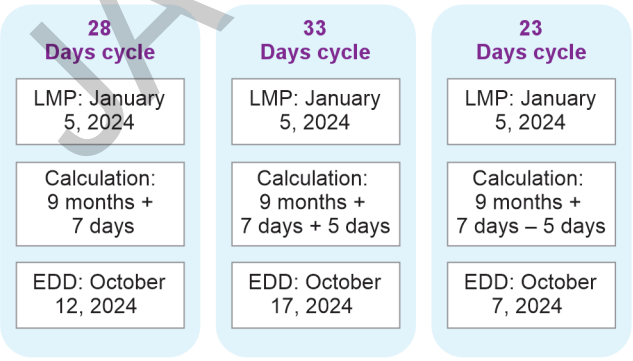

Fig. 15.2: Example for EDD calculation when menstrual cycle interval longer/shorter.

It is useless to calculate the EDD by Naegele's rule in the presence of the following situations:

- Irregular menstrual periods in which one or more months are amenorrheic
- Conception occurring, while the mother is breastfeeding and ovulating, but amenorrheic
- Conception occurring before regular menstruation is established after termination of pregnancy or discontinuation of oral contraceptive pills.

In such instances, an estimated date of delivery is arrived at based on clinical findings and if indicated an ultrasound scan is taken between 18th and 26th weeks of gestation.

In case of embryo transfer or IUI, EDD is calculated by following:

- The entire pregnancy lasted 280 days.
- From the day of fertilization, the pregnancy lasted 280 days minus 14 days, or 266 days.
- Fertilization occurs on the day of embryo transfer or IUI.

Thus, EDD = IUI Date + 266 Days

Calculation of gestational period: The number of completed weeks should be used to indicate the length of the pregnancy.

Assessment of Minor Ailments

The woman may be seen for her initial antenatal examination at any time during the present pregnancy and therefore the present pregnancy history here covers the symptoms of possible problems in all three trimesters of pregnancy:

- Headache, dizziness, visual disturbances
- Syncope, fatigue
- Nausea, vomiting, heartburn
- Breast changes
- Shortness of breath
- Abdominal pain, back pain, dyspareunia
- Vaginal discharge, vaginal bleeding
- Dysuria, urinary frequency
- Constipation, hemorrhoids
- Leg cramps, varicosities
- Edema—ankles, pretibial, face, hands
- Feelings about pregnancy—body image, feeling about the baby.

Family History

History of conditions that are genetic in origin, familial or have racial characteristics such as:

- Diabetes in a first-degree relative
- Hypertension
- Multiple Pregnancies
- Conditions like spina bifida, sickle cell anemia and thalassemia.

Menstrual History

- Age at menarche
- Frequency, duration and amount of menstrual flow

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- Dysfunctional uterine bleeding, i.e., menorrhagia, metrorrhagia or intermenstrual spotting
- Premenstrual spotting.

Past Medical History

Check the relevant history of previous illness or hospitalization.

Past Surgical History

Any previous general or gynecological surgical history to be noted.

Physical Examination

A complete screening physical examination is done during the initial antepartum examination in order to ascertain whether the woman has any medical disease or abnormalities. It includes a structured review of body systems through observation, inspection, examination and measurements. The physical examination should be carried out in an organized manner. As the midwife begins, the procedure she should be respectful to the client and gentle. The components of physical examination are:

- Physical measurements, i.e., temperature, pulse, respirations and blood pressure.
- General observations and client's own evaluation:
  - Appropriateness of appearance
  - Apparent state of health
  - Mental and emotional state
  - Posture, gait and body movements
  - Striking obvious findings such as pallor, cyanosis or respiratory distress
  - Client's own evaluation of health, dietary patterns and ability to carry-out daily living activities.

General Assessments

- **Height:** The woman's height is checked at the time of first visit. A woman who is short in stature may belong to a small-sized race or family, or may be stunted because of poor nutrition in utero or childhood. In individual situations, the size of the fetus will determine the adequacy of the pelvis. At about 36th week, when the fetus is almost fully grown the pelvic size is reassessed. If the fetal head will engage in the pelvic brim, there is little cause for concern about cephalopelvic disproportion. Therefore, it is advisable to measure the height of first-time pregnant women to assess the potential for short stature. In Western countries, a height of 5 feet is commonly regarded as short, while in India, a height of 4 feet 7 inches (140 cm) is considered the threshold, reflecting the country's lower average height.
- **Weight:** At every visit, weight has to be checked and the rate of gain assessed. Obesity is associated with an increased risk of gestational diabetes and PIH. Weight gain during pregnancy should be assessed based on Body Mass Index (BMI) of a pregnant woman, which is already discussed in chapter 12.
- *Blood pressure:* To provide a baseline reading for comparison throughout pregnancy, BP is checked. An adequate blood pressure is required to maintain placental perfusion. A blood pressure of 140/90 mm Hg at the first visit is indicative of hypertension.

Review of Systems

- **Integumentary system:** Rashes, moles, lesions, pruritus, bruises, hirsutism, pigmentation, moisture, scars, tumors and turgor.
- **Hair and scalp:** General character, scalp infections, lice, dandruff, alopecia and lumps.
- **Head:** Headache, dizziness, fainting, sinusitis and involuntary movements.
- **Eyes:** Blurring of vision, blind spots in vision, diplopia, photophobia, lacrimation discharge, redness, burning, glasses or contact lenses, injuries, infection, color of conjunctiva **(pallor may be seen in anemia),** pupillary size and reaction to light.
- **Ears:** Hearing acuity, ear aches or discharges, tinnitus, vertigo, infection, mastoid, tenderness, lesions and placement on head.
- **Nose:** Size, placement, patency of nostrils, epistaxis, discharge, sense of smell and septal deformity.
- **Mouth and throat:** Condition of lips, tongue and mucosa **(anemia may cause pallor),** gum, teeth, sense of taste, voice, speech, odor of breath, any inflammation or surgery.
- **Neck:** Movement, lymph node enlargement, vein distention, position of trachea.
- **Breasts:** Nipples—normal flat or inverted, discharge, skin and glandular changes.
- **Gastrointestinal system:** Appetite, nausea, vomiting, heartburn, belching, flatulence, bowel pattern, hemorrhoids food allergies and hernias.
- **Cardiorespiratory system:** Breathing pattern, cough, wheezing, infection, respiration rate and rhythm, auscultation findings.
- **Genitourinary system:** Urination difficulties and deviations, genital lesions and infections, history of hormone therapy.
- **Muscular, skeletal and vascular systems:** Status of joints, muscles and extremities, appearance of nails and fingers.
  Presence of edema to be checked over the medial malleolus and anterior surface of the lower one-third of the tibia in both legs. Press the areas with the index finger or thumb for at least 5 seconds **(Fig. 15.3 and Table 15.1)**. Check for varicosity in the legs.
- **Central nervous system:** There are as follows:
  - Speech and memory, complaints of vertigo and convulsions or loss of consciousness.
  - Mental status
  - Motor symptoms
  - Sensory symptoms
- **Lymphatic and hematopoietic system:** Lymph nodes, bruising tendencies, blood dyscrasias.

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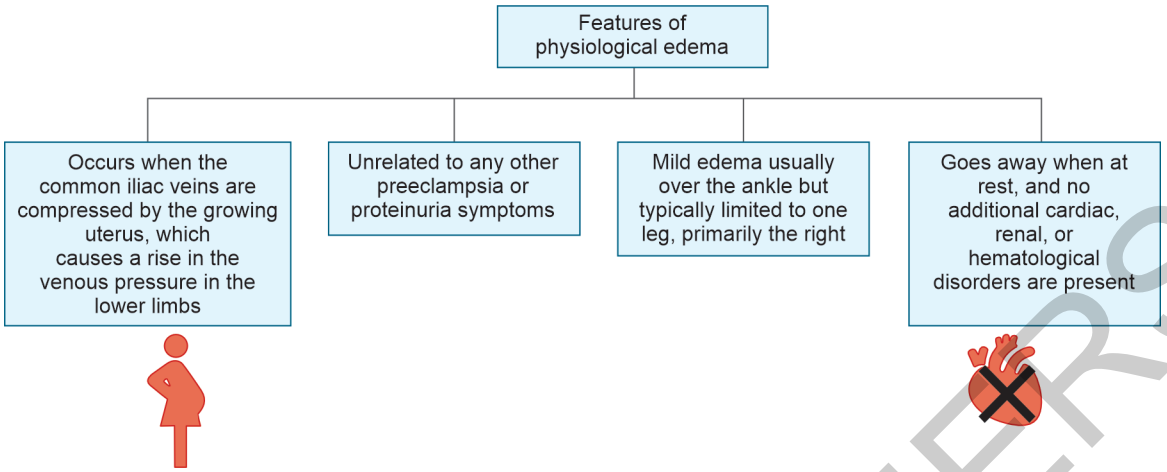

Fig. 15.3: Features of physiological edema.

Table 15.1: Edema assessment of legs in a pregnant woman.

Grade-1 (1+)	0–2 mm of depression over the site of edema, but rebound can be seen immediately
Grade-2 (2+)	3–4 mm of depression with rebound within 15 seconds
Grade-3 (3+)	5–6 mm of depression, rebound may be observed between 10–12 seconds
Grade-4 (4+)	8 mm of depression, takes more than 20 seconds to rebound

Laboratory Tests

Urinalysis

Urinalysis is done to exclude certain abnormalities. Pyelonephritis can readily develop because of changes in the renal tract during pregnancy. Possible findings in urinalysis include:

- Ketones due to increased maternal metabolism or vomiting
- Glucose caused by higher circulating blood levels, reduced renal threshold or disease
- Protein due to contamination by vaginal leukorrhea and diseases such as UTI or PIH.

Blood Tests

- **ABO blood group and Rh factor:** Blood tests are done as part of the initial assessment to determine ABO blood group and Rh factor. Antibody screening is done followed by titration, if present. Follow-up of a woman, whose blood group is Rh negative will include further blood tests at 28th, 32nd, 36th and 40th week for Rh antibody titer to ensure that the pregnancy is not stimulating antibody activity. If the titration demonstrates a rising antibody response, more frequent assessment will be done in order to plan the management.
- **Hemoglobin and hematocrit:** These are performed in order to assess the adequacy of iron stores. Hemoglobin estimation is repeated at 28th week, when the physiological effects of hemodilution become more apparent and at 36th week to ensure that any anemia is treated prior to delivery. The decision to use supplements is made on an individual basis. However, most women in the rural population are given iron and folic acid supplements. Health education about including iron-rich foods in diet should also be given.
- **Venereal disease research laboratory (VDRL) test:** This test is done for all pregnant women. Early testing will allow the women to be treated adequately in order to prevent infection of the fetus. It is to remember that all positive results do not indicate active syphilis.
- **Human immunodeficiency virus (HIV) test:** Routine screening to detect HIV infection is done in many centers. It is important to gain informed consent prior to the blood test and to offer appropriate counseling.
- **Rubella immune status:** This is done by measuring the rubella antibody titer. Women who are not immune must be advised to avoid contact with anyone suffering from the disease. Other blood tests such as screening for blood disorders or hepatitis are done on individual cases based on the history.

Nursing Tips

Laboratory tests at the initial visit

- **Blood work:** Complete blood count, hemoglobin, hematocrit, Rh status, ABO blood group, and serology for rubella titer, syphilis, human immunodeficiency virus (HIV), hepatitis screening, glucose screening
- Urinalysis (with culture, if indicated), glucose, protein, erythrocytes, leukocytes, and bacteria
- Pelvic laboratory tests, pap smear, culture for gonorrhea and *Chlamydia*. Presence of group B streptococcus if the first visit is after 24 weeks of gestation

Abdominal Examination

Abdominal examination of the pregnant woman should be done in addition to the physical examination and assessment.

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The examination includes:

- Observation of the size of the uterus, the shape of the uterus, the contour of the abdominal wall, any scar or injury marks, linea nigra and striae gravidarum
- Determination of the lie, presentation, position and variety of the fetus
- Measurement of fundal height, abdominal girth, palpation of fetal position and auscultation of fetal heart tones.

Each of these items provides informative data useful in diagnosis of pregnancy, evaluation of fetal well-being and growth and serves as indicators of possible problems.

INSPECTION

- **Size of the uterus:** The examiner's eyes assess the size of the uterus roughly. A distended colon or obesity may give a false impression. Multiple pregnancy or polyhydramnios will enlarge both the length and breadth of the uterus, whereas a large baby increases only the length.
- **Shape of the uterus:**The shape of the uterus is longer than it is broad when the lie of the fetus is longitudinal. If the lie of the fetus is transverse, the uterus is low and broad, which occurs only in small percentage (0.5%). The multiparous uterus lacks the sung avoid shape of the primigravid uterus. Occasionally, it is possible to see the shape of the fetal back or limbs. In posterior positions of the occiput, a **saucer-like depression** is seen at or below the umbilicus.
- **Status of the umbilicus:** A full bladder may be visible and may be more obvious in the later weeks of pregnancy. The umbilicus becomes less **dimpled** as pregnancy advances and may **protrude** lightly in later weeks.
- **Lightening:** Lightening may be evident when the woman is erect.
- **Contour of the uterus:**The uterus may sag forwards in multiparous women with lax abdominal wall. This is known as **pendulous** abdomen or anterior obliquity. In the primigravida, it is a sign of pelvic contraction.
- **Skin changes:** Observation of *linea nigra* and *abdominal striae* are presumptive signs of pregnancy.
- **Presence of surgical scar:** A previous surgical scar may indicate past obstetricor abdominal surgery.
- **Visible fetal movements:** Observation or palpation of fetal movement and hearing fetal heart sounds (FHSs) are positive signs of pregnancy. The normal range of fetal heart tones is 120–160 beats per minute (bpm).

Determination of the lie, presentation, position and variety of the fetus varies in importance with the length of pregnancy. Prior to the 20th week of gestation, it is not possible to ascertain this information because of the smallness of the fetus, the thickness of the uterus and the high ratio of amniotic fluid to baby in the amniotic sac. The baby will continue to turn and somersault in the amniotic sac until the bulk of the baby's body is far greater than the amount of fluid and there is no longer room for the fetus to turn easily. By the 36th week, most babies have settled into what will be their lie and presentation for the intrapartal period. This is not absolute, however, as some babies will turn again. Malpresentation prior to 36 weeks is not a cause for concern because the baby is still turning. Malpresentation after this time, however, may be cause for possible concern and intervention. Lie, presentation, position, and variety (anterior or posterior) are pieces of information obtained by doing Leopold's maneuvers of abdominal examination by palpation.

Measurements of the Fundal Height (Table 15.2 and Fig. 15.4)

Fundal height provides information regarding the progressive growth of the fetus as a gross screening tool for detection of problems related to fundal height, which is too large or too small for the presumed gestational age by dates.

This method of assessment does not always produce an accurate result because the size and number of fetuses, and the amount of amniotic fluid vary. A fundal height that is not increasing, but remains the same over a period of time is

Table 15.2: Approximate expected locations of the fundal height at various weeks of gestation.

Week of gestation	*Approximate expected location of fundal height*
12	Level of the symphysis pubis
16	Halfway between symphysis pubis and umbilicus
20	1–2 fingerbreadth below the umbilicus
24	At the level of the umbilicus
28–30	1/3 of the way between umbilicus and xiphoid process (3 fingerbreadth above the umbilicus)
32	2/3 of the way between umbilicus and xiphoid process (3–4 fingerbreadth below the xiphoid process)
36	Level of the xiphoid process
40	2–3 fingerbreadth below the xiphoid process, if lightening occurs

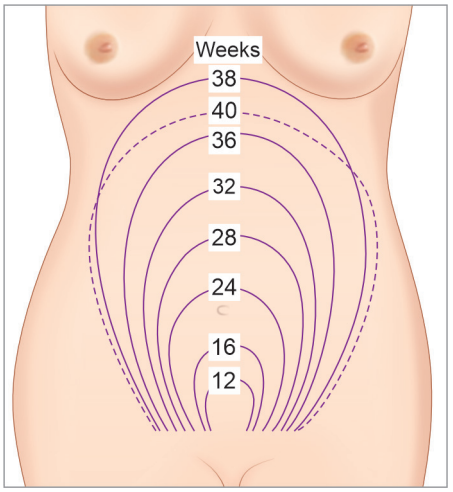

Fig. 15.4: Approximate height of the fundus as the uterus enlarges.

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ominous. Signs and symptoms of possible intrauterine fetal growth retardation or fetal death must be looked for and these possibilities ruled out.

The fundal height can be measured in one of three methods. All have an inherent degree of inaccuracy because each depends on the examiner's identifying the top of the fundus correctly.

First Method

The first method combines knowledge of where to expect the fundal height to be at various weeks of gestation in relation to the woman's symphysis pubis, umbilicus and the tip of the xiphoid process, and the use of the examiner's fingerbreadths as the measuring tool.

In order to determine the height of the fundus, the midwife places her hand just below the xiphisternum pressing gently. She moves her hand gently down the abdomen until she feels the curved upper border of the fundus. She notes the number of fingerbreadths, which can be comfortably accommodated between the two.

This method of measuring the fundal height combines knowledge of where to expect the fundal height to be at various weeks of gestation in relation to the woman's symphysis pubis, umbilicus and tip of the xiphoid process and the use of the examiner's fingerbreadths as the measuring tool. Though it is a time-honored method, it has inherent inaccuracies. First, there is considerable variation between women in the distance from their symphysis pubis to their xiphoid process and in the location of the umbilicus between these two points. Second, there is a considerable variation between examiners in the width of their fingers. For example, two fingerbreadth of a thick- fingered person can be the same as three fingerbreadths of a thin-fingered person.

Second Method

The caliper method of measuring fundal weight is probably the most accurate method of measuring the fundal height after the 22–24 weeks of gestation. In order to use a caliper or external pelvimeter **(Fig. 15.5)**, place one tip on the superior border of the symphysis pubis and the other tip at the top of the fundus. Both placements are in the abdominal midline. The measurement is then read on a centimeter scale located on an arc close to where the two ends of the calipers come together. The number of centimeters should be equal approximately to the weeks of gestation after about 22–24 weeks of gestation.

Third Method (Fig. 15.6)

Measuring fundal height with a tape is the most frequently used method for obtaining an exact measurement. It is probably the second most accurate method of measuring fundal height after 22–24 weeks of gestation. The zero line of the tape measure is placed on the superior border of the symphysis pubis and the tape measure stretched across the contour of the abdomen to the top of the fundus. The abdominal midline is used as the line of measurement. In order to avoid error in locating the superior border, you must palpate for the symphysis pubis. The number of centimeters measured should be approximately equal to about 22–24 weeks of gestation.

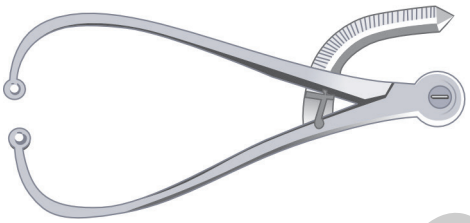

Fig. 15.5: External pelvimeter.



Fig. 15.6: Measuring fundal height with tape measure.

All of the three methods described above have an inherent degree of inaccuracy because each depends on the examiner's identifying the top of the fundus correctly. Some unidentifiable point on the anterior slope of the fundus is often mistaken for the top of the fundus. This error can be avoided by doing the following.

Facing the woman's head, as she lies supine, place your hands on each lateral side of the uterus approximately midway between the symphysis pubis and the fundus. Ballotte the uterus between your hands with gentle pressure and being sure to stay on the lateral portion of the uterus, palpate up to the fundus. As you near the top, your hands will begin to come together and they will meet at the top of the fundus. Staying on the lateral portion of the uterus assures reaching the actual top of the fundus and keeping off its anterior slope.

ABDOMINAL PALPATION AND LEOPOLD'S MANEUVERS

The term abdominal palpation is often used to mean doing Leopold's maneuvers for determining fetal lie, presentation, position and engagement. While doing Leopold's maneuvers, other information is also obtained and further palpation may be involved than that strictly needed for doing Leopold's maneuvers. The following information is obtained from abdominal palpation:

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Table 15.3: Preparation for abdominal palpation.

Sl. No.	*Preparatory steps of the procedure*	*Rationale*
1.	The woman's bladder should be empty	• A full bladder makes abdominal palpation very uncomfortable for the woman as pressure is applied to it • It is difficult to feel fetal structures beneath the bladder, thereby obscuring findings pertaining to the presenting part
2.	The woman's abdomen is completely exposed from just below the breasts to the symphysis pubis	• Complete exposure of the abdomen at one time is essential for visual observation of the contours of the abdomen • Expose no more than that necessary for examination
3.	The women's abdominal muscles should be relaxed. This is achieved by the following: • Placing a pillow under her head and upper shoulders • Having her arms by her sides • Explaining what you will be doing • Helping her with relaxation breathing • Having her knees bend slightly	Palpation is difficult for both the woman and the examiner if the abdominal muscles are contracted. It is difficult for the examiner to feel the fetus and therefore leads to longer and more forcible palpation. This causes the woman discomfort and she tenses her muscles more. This is avoided by starting with relaxed abdominal muscles, with warm hands and with smooth and gentle, but firm palpation
4.	Be sure your hands are warm. If not, rub them together or dip in warm water	Cold hands are uncomfortable to the woman. they may cause muscle contraction
5.	Before palpating, lightly rest your hands on the woman's abdomen. a good time for this is while you are explaining what you are going to do	This action gives the woman an opportunity adjust and become acquainted to your touching her. Since, this is not uncomfortable to her; the initial muscle tightening reaction gets dissipated
6.	The technique of palpation is as follows: • Use the flat palmar surface of your fingers for palpating, not your fingertips • Keep the fingers of your hands together • Apply smooth, deep pressure as firm as necessary to obtain accurate findings • Avoid any sudden movement, jabbing, poking or prodding	This technique is designed for the least possible discomfort for the woman and the gathering of the greatest amount of information for the examiner

- ❖ Evaluation of uterine irritability, tone, tenderness, consistency and any contractility present
- ❖ Evaluation of abdominal muscle tone
- ❖ Detection of fundal movement
- ❖ Estimation of fetal weight
- ❖ Determination of fetal lie, presentation, position and variety
- ❖ Determine whether the head is engaged.

Before performing abdominal palpation and Leopold's maneuvers, several preparatory steps are done **(Table 15.3)**.

Inspection of the Abdomen

Before actual palpation, the abdomen should be inspected for what its contours can tell you about the fetal lie, presentation and position. Palpation then gives you further information with which to confirm or rule out this initial impression **(Table 15.4)**.

Table 15.4: Inspection of abdomen.

Sl. No.	*Observations*	*Significance*
1.	A longitudinal ovoid, fundal height as expected for gestational age	Indicative of a longitudinal lie
2.	A transverse ovoid, fundal height lower than expected for gestational age	Indicative of a transverse lie
3.	Long-smooth curve prominent on one side of the abdomen	Indicative that the fetal back is on the side of abdomen
4.	A saucer-like depression just below the umbilicus and bulge like a full bladder above the symphysis pubis	Indicative of a posterior position
5.	Movement of fetal small parts all over the abdomen	Indicative of a posterior position

Leopold's Maneuvers (Figs. 15.7A to D and Table 15.5)

There are four maneuvers starting at the fundus and ending at the pelvic brim. It is suggested that learners go through the steps sequentially due to the fact that, in this pattern they form a thought process and create a mental image for determining fetal position that will most quickly aid in developing skill and accuracy. Consistently following an orderly sequence will also aid in remembering to include all the maneuvers and gathering all necessary information. In doing the Leopold's maneuvers, stand on the side of the bed most convenient and comfortable for you. Right-handed people usually stand on the right side of the women.

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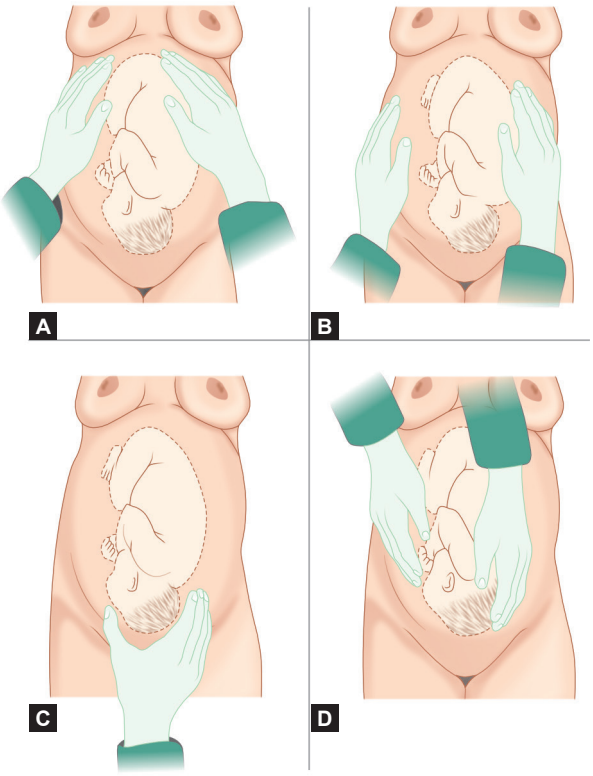

Figs. 15.7A to D: Abdominal palpation (Leopold's maneuvers). (A) First maneuver (fundal palpation); (B) Second maneuver (lateral palpation); (C) Third maneuver (Pawlik's grip/second pelvic grip); (D) Fourth maneuver (pelvic palpation/first pelvic grip).

Table 15.5: Abdominal palpation (Leopold's maneuvers).

Sl. No.	*Procedure steps*	*Findings and significance*
1.	**First maneuver/Fundal palpation (Fig. 15.7A):** • Face the woman's head. Place both hands on the woman's fundus and curve the fingers around the top of the fundus • Palpate for shape, size, consistency and mobility of the fetal part in the fundus	• Fetal parts that feel round and hard, which are readily movable and ballotable between fingers of two hands are indicative of fetal head. The mobility is due to the head being able to move independently of the trunk. The lie is longitudinal • Fetal part that feels irregular, large or bulkier and less firm than a head, which cannot be readily moved or balloted is indicative of fetal breech. The breech cannot move independently of the trunk. The lie is longitudinal • If neither of the above is felt in the fundus, it is indicative of transverse lie
2.	**Second maneuver/Lateral palpation (Fig. 15.7B):** • Continue to face the woman's head. Place your hands on both sides of the uterus about midway between the symphysis pubis and the fundus • Apply firm gentle pressure with one hand against the side of the uterus, thereby pushing the fetus to the other side of the abdomen and with your examining hand, stabilizing it there. Maintaining pressure on one side, palpate the other side of the uterus • With the examining hand, palpate the entire area from the abdominal midline to the lateral side and from the symphysis to the fundus. Use firm, smooth pressure and rotary movement • Reverse the procedure for examination of the other side of the uterus	• A firm, convex, continuously smooth and resistant mass extending from the breech to the neck is indicative of the fetal back. The location of the back in the left or right side of the woman's abdomen determines the position in longitudinal lie • Small knobby, irregular masses, which move when pressed or may kick, or hit your examining hand is indicative of the small parts—hands, feet, knees and elbow • These should be felt in the opposite side of the abdomen than the side where the fetal back is in • Small parts all over the abdomen and the fetal back difficult to feel as it may seem just out of reach in the posterior portion of the abdomen is indicative of a posterior position
3.	**Third maneuver/Pawlik's maneuver/Second pelvic grip (Fig. 15.7C):** • Continue to face the woman's head. Have her knees bend in order to avoid discomfort during this maneuver • Grasp the portion of the lower abdomen immediately above the symphysis pubis between the thumb and middle finger of one of your outstretched hands. Press gently into the abdomen in order to feel the presenting part below and between your thumb and finger • As in the first maneuver, palpate for size, shape, consistency and mobility in order to differentiate if it is the head or breech in the lower pole of the abdomen	• A movable mass will be felt, if the presenting part is not engaged • If the presenting part is the head that is engaged, it may not be readily movable

Contd…

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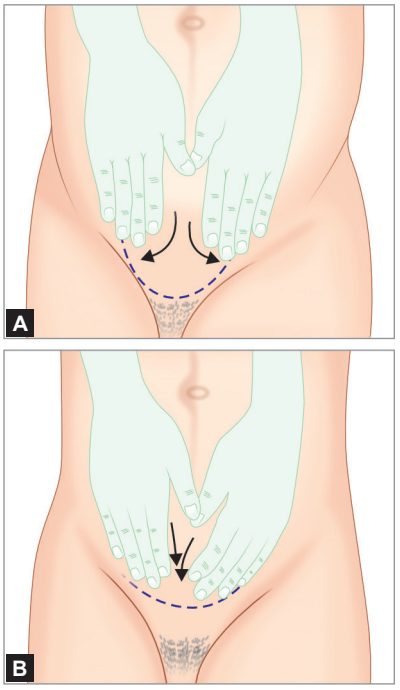
Sl. No.	Procedure steps	Findings and significance
4.	***Fourth maneuver/Pelvic palpation/First pelvic grip (Fig. 15.7D):** • Turn and face the woman's feet • Make sure that the woman's knees are bent to avoid pain during the maneuver • Place your hands on the sides of the uterus with the palms of your hands just below the level of the umbilicus and your fingers directed toward the symphysis pubis • Press deeply with your fingertips into the lower abdomen and move them towards the pelvic inlet • Continue to move your hands toward the pelvic inlet • Share your findings with the woman • Offer to help her feel and identify various fetal parts if she would like to	• If the head is the presenting part, one of your hands will make contact with a hard round mass, while your other hand continues in the direction of the pelvis. This is the cephalic prominence and if it is on the same side of the woman as the fetal back, the prominence is occiput and indicates a face presentation with the head extended • If the cephalic prominence is on the same side of the woman as are the fetal small parts, it is the sinciput and indicates a vertex presentation with the head well-flexed • If both hands will encounter simultaneously a hard mass, which is equally prominent on both sides, it is indicative of brow presentation due to partial flexion of the head. The occiput and sinciput are felt at the same time: – At the brim of the pelvis, your hands will converge around the presenting part with the fingertips of your two hands touching in the midline indicating the presenting part is not engaged. It is above the pelvic brim or floating as mentioned in **Figs. 15.8A and B** • If the presenting part is the breech, it will be readily movable – The hands will diverge away from the presenting part and the midline indicating the presenting part is either engaged or dipping • If the presenting part is the breech, it will have a feeling of give along with the trunk of the fetus: – If you are unable to feel the cephalic prominence because it is out of reach in the pelvis, the head is engaged

Note: *Leopold's maneuvers third and fourth:

1. Performing the third maneuver/Pawlik's grip/second pelvic grip following lateral palpation (second maneuver) enables the midwife to complete this stage without taking her hands off the woman's abdomen and still facing her head.
2. Performing the fourth maneuver/pelvic palpation/First pelvic grip following the third maneuver enables the midwife to change her position to face the woman's feet and place her hands with fingers directed toward the woman's symphysis pubis in order to palpate and feel the degree of flexion and descend of fetal presenting part. the maneuver that might give more discomfort to the client is then performed last.



Figs. 15.8A and B: Pelvic palpation. (A) Fingers diverge when head is engaged; (B) Fingers converge when head is not engaged.

The findings from the first and third maneuvers must be compared and final determination made of the lie and presentation before proceeding to the fourth maneuver. For a final determination of the fetal lie and presentation,

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a combined Pawlik's grip may be performed. In this case, Pawlik's grip is done with one hand and the fundus is grasped in the same way with the other hand at the same time. This combination enables you to compare simultaneously what are in the two poles for final determination of the fetal lie and presentation.

AUSCULTATION (FIG. 15.9)

Auscultation usually forms part of each abdominal examination and follows any procedure in order to assess fetal well-being. Abdominal palpation determining the lie, presentation and position of the fetus enable you to locate the fetal heart tones. This is because; the sound of the fetal heart is transmitted through the convex portion of the fetus closest to the anterior uterine wall. Therefore, the fetal heart tones are best heard through the fetal back in vertex and breech presentations, and through the chest in face presentations. Thus, if you know the position you can readily locate the fetal heart tones allowing for some variation depending on the amount of descend of the fetus into the pelvis.

Conversely, location of the fetal heart tones is an additional piece of data that serves to confirm or question your diagnosis of the fetal position. If you find the fetal heart tones loudest in a location different from where you expect to find them, then the question is raised, if you were in error in findings or in your interpretation of your findings from abdominal palpation.

Like all heartbeats, it is double sound, but more rapid than the adult heart. Pinard fetal stethoscope **(Fig. 15.10)** is commonly used to hear the fetal heart. It is placed on the mother's abdomen and at right angles. The ear must be in close, firm contact with the stethoscope, but the hand should not touch it, while listening because extraneous sounds are produced. The fetal stethoscope (fetoscope) should be moved about until the point of maximum intensity is located where the fetal heart is heard more clearly. In recent times, increasingly ultrasound equipment such as ultrasonic Doppler device **(Fig. 15.11)** and fetal monitor are used for this purpose. When the monitor is used, the woman may also hear the fetal heartbeat.

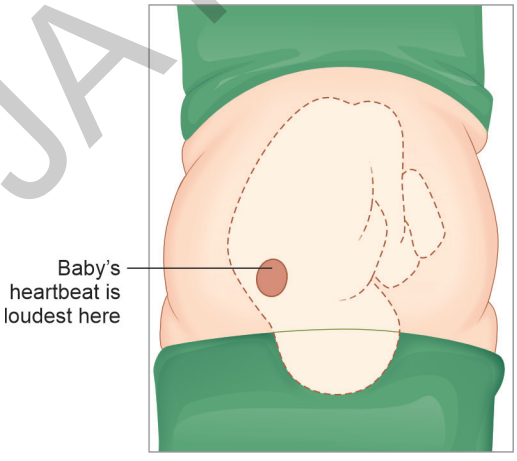

Fig. 15.9: Auscultation of the fetal heart sounds.

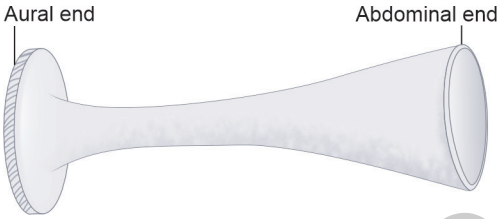

Fig. 15.10: Pinard fetal stethoscope.



Fig. 15.11: Ultrasonic Doppler device.

Table 15.6: Location of fetal heart tones in various fetal presentations and positional varieties.

Presentations and positional varieties	*Locations*
Cephalic	Midway between umbilicus and level of anterior superior iliac spine
Breech	At the level or above umbilicus
Anterior	Close to abdominal midline
Transverse	In lateral abdominal area
Posterior	In flank area or close to abdominal midline on other side of abdomen

In a full-term infant with an unengaged presenting part, the fetal heart tones are best heard in the following locations in relation to presentations and positions **(Table 15.6 and Fig. 15.12)**.

The nurse-midwife in making her diagnosis must assess all the information she had gathered from inspection, palpation and auscultation, and draw the conclusion, which accounts for all the factors. If one factor does not fit in with the rest she must think again.

OTHER FINDINGS

Gestational Age

During pregnancy, uterine size will usually equate with the gestation estimated by dates (*refer* **Table 15.1**). Later in pregnancy, increasing uterine size gives evidence of

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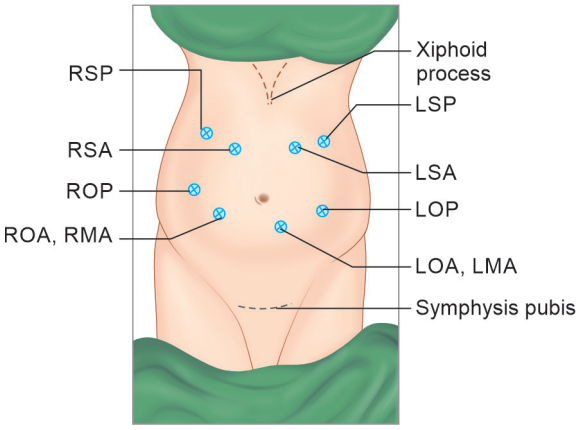


Fig. 15.12: Location of the point of maximum intensity of the fetal heart tones for specific fetal positions.

(LMA: left mentoanterior; LOA: left occipitoanterior; LOP: left occipitoposterior; LSA: left sacroanterior; LSP: left sacroposterior; RMA: right mentoanterior; ROA: right occipitoanterior; ROP: right occipitoposterior; RSA: right sacroanterior; RSP: right sacroposterior).

Nursing Tips

Accurate detection of the fetal heart rate

To ensure an accurate diagnosis of the fetal heart rate, it must be distinguished from the maternal pulse. to do this, the fetal heartbeat should be auscultated while simultaneously assessing the maternal radial pulse.

continuing fetal growth, but is less reliable as an indicator of gestational age.

Multiple pregnancies increase the overall uterine size and should be diagnosed by the 24th week of gestation. In a singleton pregnancy, the fundal height usually corresponds to the period of gestation, whereas in multiple pregnancy the uterine size is larger than expected for the gestational age.

Lie

Lie is the relationship of the long axis of the fetus to the long axis of the uterus. There are three possible lies—longitudinal, transverse and oblique **(Figs. 15.13A to C)**.

In 95% of cases, the lie is longitudinal owing to the ovoid shape of the uterus; the remainder is oblique or transverse. Oblique lie that results when the fetus is diagonally across the uterus must be distinguished from obliquity of the uterus, when the whole uterus is tilted to one side (usually right) and the fetus lies longitudinally within it. When the lie is transverse, the fetus lies at right angle across.

Presentation

Presentation refers to the part of the fetus, which lies at the pelvic brim or in the lower pole of the uterus. This is the first portion of the fetus to enter the pelvic brim or inlet. There are three possible presentations—cephalic, breech and shoulder. The first two are further subdivided—cephalic into vertex, sinciput, brow and face and breech into frank, full (or complete) and footling, which can be single or double **(Figs. 15.14A to F)**.

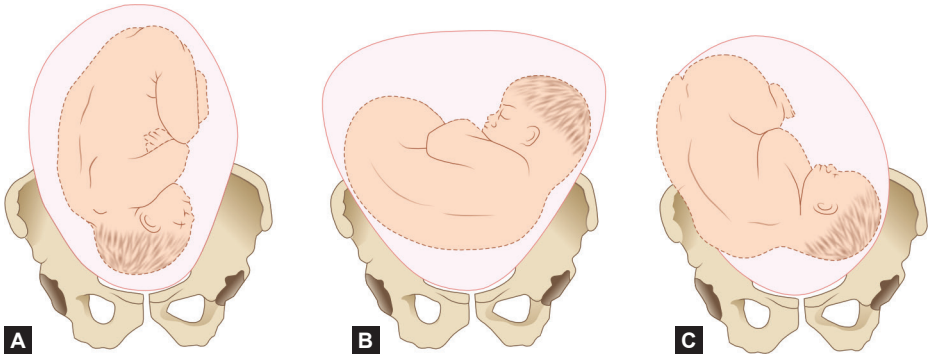
When the head is well-flexed, the vertex presents; when it is fully extended the face presents and when partially extended the brow presents. It is common for the head to present because the bulky breech finds more space in the fundus, which is the widest diameter of the uterus and the head lies in the narrower lower pole.

Attitude

Attitude is the relationship of the fetal head and limbs to its trunk. The attitude of the fetus varies according to its presentation. For example, a fetus in a vertex presentation has a well-flexed head, flexion of the extremities over the thorax and abdomen and a convexcurved back; while a fetus with a face presentation has a head, which is acutely extended, flexion of the extremities on the thorax and abdomen and a vertebral column, which not only is straightened but also has some degree of arching. Flexion of the fetal head enables the smallest diameters to present to the pelvis and results in an easier delivery **(Figs. 15.15A to D)**.

Denominator

The denominator is the name of the part of the presentation. It is an arbitrary bony fixed point on the presenting part that corresponds to the different maternal pelvic quadrants. This is used when referring to fetal position. Each presentation has a different denominator, which are as follows:



Figs. 15.13A to C: Fetal lie. (A) Longitudinal lie; (B) Transverse lie; (C) Oblique lie.

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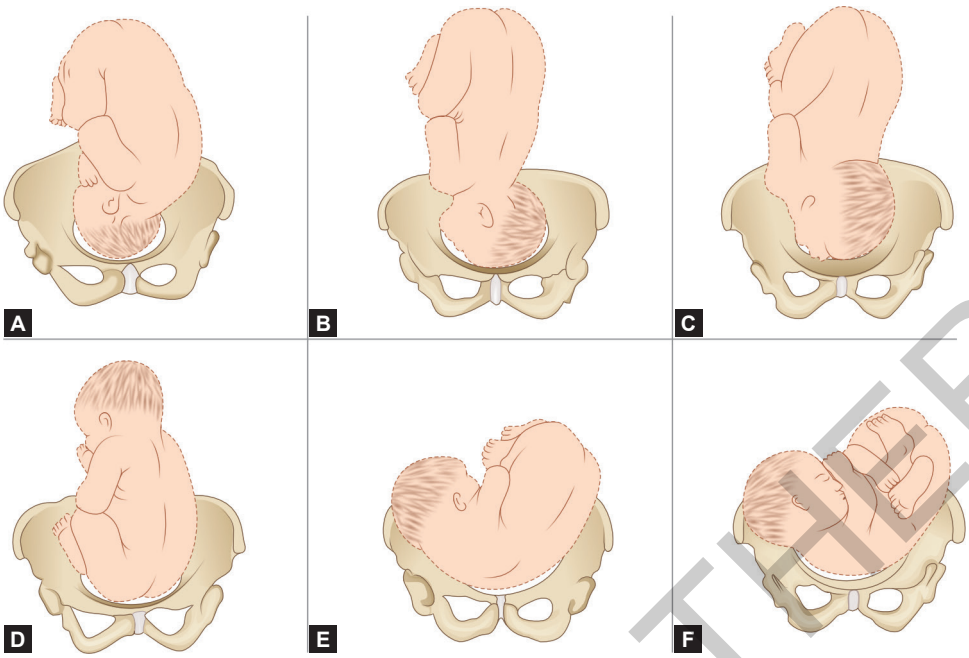
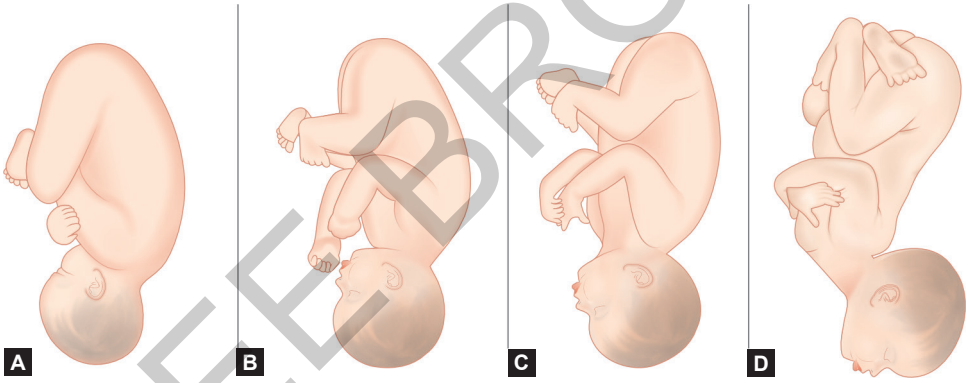


Figs. 15.14A to F: Fetal presentations. (A) Vertex; (B) Brow; (C) Face; (D) Breech; (E) Shoulder—dorsoanterior; (F) Shoulder—dorsoposterior.



Figs. 15.15A to D: Attitude of the fetus in vertex, brow and face presentations. (A) Vertex well-flexed head; (B) Vertex-deflexed head; (C) Brow military attitude; (D) Face-extended head.

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- *Occiput* in vertex presentation
- *Sacrum* in breech presentation
- *Mentum* in face presentation
- *Acromion process* in shoulder presentation.

In brow presentation, no denominator is used.

Position

It is the relationship between the denominator of fetus with various quadrants of the pelvic brim **(Figs. 15.16A to F)**.

Anterior positions are more favorable than posterior positions because when the fetal back is in front, it conforms to the concavity of the mother's abdominal wall and can therefore flex better. When the back is flexed, the head also tends to flex and a smaller diameter presents to the pelvic brim. There is more room in the anterior part of the brim for the broad biparietal diameter of the head.

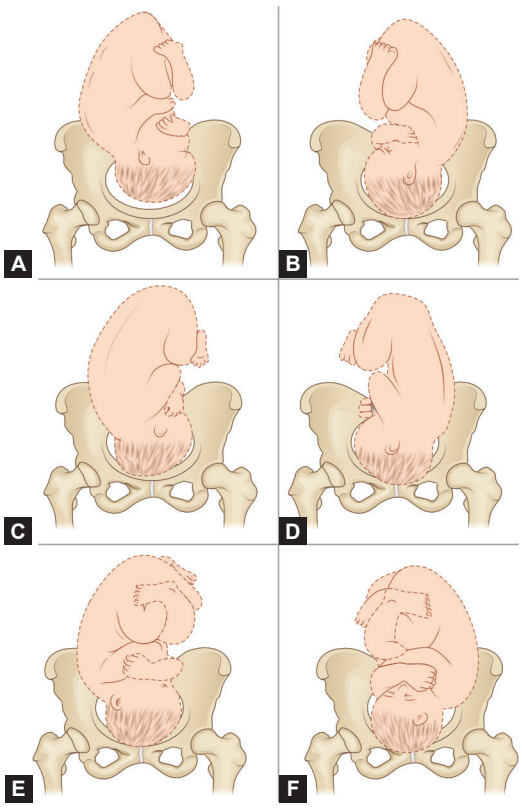
Engagement

Engagement may occur when the widest presenting transverse diameter of the fetal part has passed through the brim of the pelvis **(Fig. 15.17)**. In head presentations, this is biparietal diameter. Engagement is an important sign that the maternal pelvis is adequate for the particular fetus and that vaginal delivery may be expected **(Table 15.7)**.

In a primigravid woman, the head normally engages between the 36th and 38th week of pregnancy, but in a multipara this may not occur until after the onset of labor.

When the vertex presents and the head is engaged, the following will be evident on clinical examination:

- The head is not mobile
- Less than half the head is palpable above the brim
- The anterior shoulder is little more than 5 cm above the brim.



Figs. 15.16A to F: Diagrammatic presentation of six positions of the vertex. (A) Right occipitotransverse (ROT); (B) Left occipitotransverse (LOT); (C) Right occipitoanterior (ROA); (D) Left occipitoanterior (LOA); (E) Right occipitoposterior (ROP); (F) Left occipitoposterior (LOP).

Table 15.7: Possibilities of fetal relationship to the maternal pelvis (positions).

Lie	*Presentation*	*Position and variety*
Longitudinal	Cephalic, vertex	Left occipitoanterior (LOA), right occipitoanterior (ROA) Left occipitotransverse (LOT), right occipitotransverse (ROT) Left occipitoposterior (LOP), right occipitoposterior (ROP)
	Sinciput, brow	These two usually convert to either vertex or face presentation
	Face	Left mentoanterior (LMA), right mentoanterior (RMA) Left mentotransverse (LMT), right mentotransverse (RMT) Left mentoposterior (LMP), right mentoposterior (RMP)
	Breech—frank, full and footling	Left sacroanterior (LSA), right sacroanterior (RSA) Left sacrotransverse (LST), right sacrotransverse (RST) Left sacroposterior (LSP), right sacroposterior (RSP)
Transverse	Shoulder	Left acromion anterior (LAA), right acromion anterior (RAA) Left acromion posterior (LAP), right acromion posterior (RAP)
Oblique	Nothing is felt at the inlet and there is no presentation, position or variety associated with this lie; an oblique usually is a transitory condition	

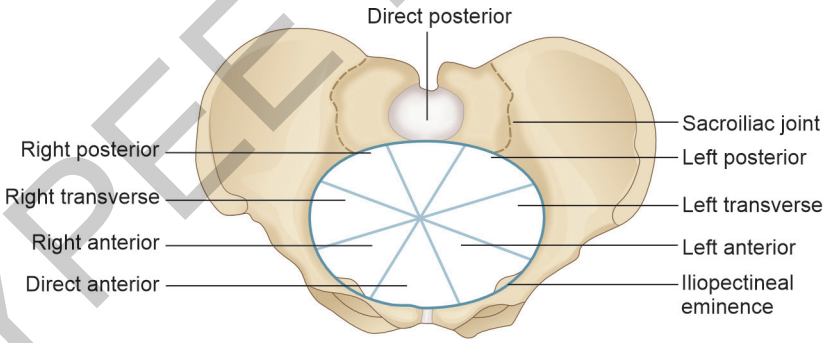


Fig. 15.17: Segments of pelvis showing positions of fetus.

If the head is not engaged, the findings are as follows:

- More than half the head is palpable above the brim
- The head may be high and freely movable
- The sinciput may be 7.5 cm above the brim.

If the head remains unengaged in a primigravid woman at 38th week, the possibility of cephalopelvic disproportion should be ruled out.

Transverse and oblique lies in labor are abnormal conditions and they require cesarean section. Approximately 0.5–3.5% of women will enter labor with a breech presentation and 0.5% with a face presentation.

Although the breech of the fetus (podalic pole) is smaller than the fetal head (cephalic pole), the combination of the breech and the flexed lower extremities is bulkier because the flexed lower extremities are kept close to the breech **(Figs. 15.18A and B)**.

PELVIC EXAMINATION

A complete pelvic examination is done during the initial antepartal examination. This includes speculum examination, bimanual and rectovaginal examination as well as evaluation of the bony pelvis for assessment of pelvic capacity.

ANTENATAL ADVICE

The **Figure 15.19** and **Table 15.8** discuss the guidelines a pregnant woman should adhere to.

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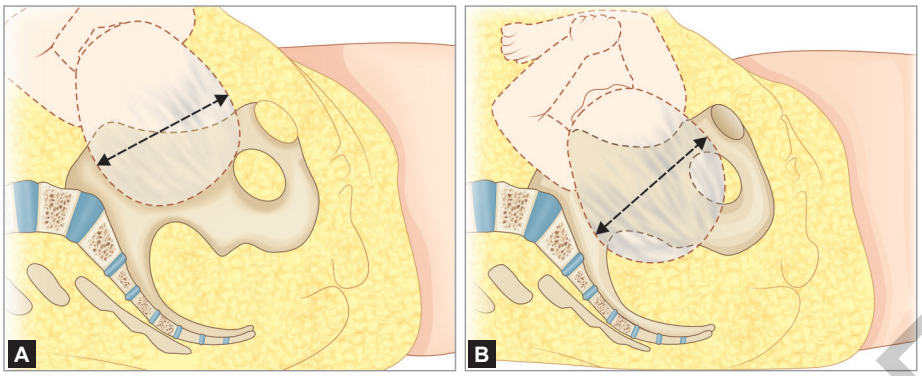

Figs. 15.18A and B: Diagrammatic presentation of engagement of fetal head. (A) Head fixed, not engaged; (B) Head engaged.

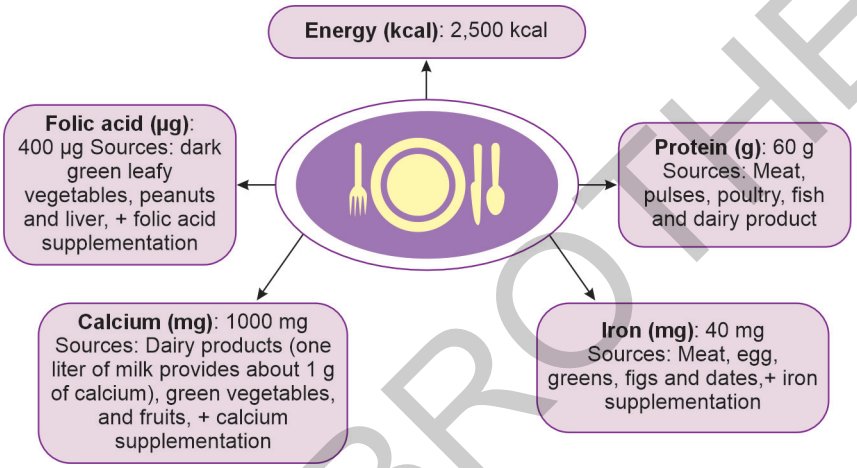

Fig. 15.19: Daily dietary need of pregnant woman.

Table 15.8: Antenatal advice during pregnancy.

Rest and sleep: • Continue usual activities throughout pregnancy • Avoid excessive and strenuous work • Need to sleep for about 10 hours (8 hours at night and 2 hours at noon) **Dental care:** • It is critical to practice good dental hygiene throughout pregnancy • Frequent dental examinations can assist in detecting and treating problems such as cavities, and the second trimester is a comfortable time for any necessary procedures like fillings or extractions	**Bowel:** • Constipation during pregnancy is often due to hormonal changes, pressure from the growing uterus, iron supplements, and decreased physical activity • Simple treatments include eating more fiber-rich foods, drinking plenty of water, exercising regularly, and considering a fiber supplement if needed, after consulting a healthcare provider
Bathing and Care of the breast: • Take a daily bath • Keep breasts clean with mild soap and water • Wear a supportive bra to reduce discomfort • Avoid harsh soaps or lotions that can dry the skin **Clothing, shoes, and belt:** • Wear loose but comfortable garments • Avoid high-heeled shoes • A constricting belt should be avoided	**Travel:** • Avoid travel, especially in the first trimester and the last 6 weeks • If necessary, rail route is better than the bus route. Avoid prolonged sitting while travelling to reduce the risk of venous stasis and thromboembolism • Pregnant women with sickle cell disease, severe anemia, preeclampsia, or placenta previa should avoid air travel
Coitus: • Coitus is typically unrestricted during pregnancy. Uterine contractions may result from the release of oxytocin and prostaglandins during coitus. • Coitus should be avoided by women who are at a higher risk of miscarriage or preterm labor **Smoking and alcohol:** Avoid smoking and alcohol to prevent the incidence of smaller babies, the chance of abortion, and fetal maldevelopment	**Immunization:** • Tetanus vaccination protects both mother and newborn • Unprotected women receive two doses of tetanus toxoid intramuscularly between 16–24 weeks, 6 weeks apart • Women previously vaccinated receive a booster dose of 0.5 mL in the last trimester • There are contraindications for live virus vaccines (rubella, measles, mumps, varicella, and yellow fever) during pregnancy • However, certain vaccines like rabies and hepatitis A and B can be given if needed, similar to non-pregnant individuals

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Diet During Pregnancy

A balanced diet during pregnancy promotes the health of both mother and baby, supports fetal development, and prepares the body for childbirth and breastfeeding.

Iron supplementation is recommended for pregnant women starting at 16 weeks. The dosage varies based on hemoglobin levels: 1 tablet (60 mg of elemental iron) for levels above 10 g%, and 2–3 tablets for lower hemoglobin levels.

It is recommended to take folic acid supplements (4 mg daily) from 4 weeks before conception to 12 weeks of pregnancy. The frequency of neural tube abnormalities may decrease as a result.

Exercise During Pregnancy

Physical exercise during pregnancy is safe and desirable, and pregnant women should be encouraged to start or maintain safe physical activities as long as there are no obstetric or medical difficulties or contraindications. Antenatal exercises are discussed in detail in Chapter 54.

ONGOING ANTENATAL CARE

All the information gathered during the first visit will enable a decision to be made for subsequent visits. The timing and number of visits may vary for different mothers depending on the risk factors identified during the initial visit. Someone who develops complications during pregnancy will have more frequent visits. Each revisit consists of:

- A chart review
- A history and physical examination geared toward evaluation of the well-being of mother and fetus
- A speculum and/or pelvic examination when indicated
- Laboratory and adjunctive studies when indicated
- Explanations and teaching appropriate to the patient's needs and her baby's gestational age.

Nursing Process for the Antenatal mother

Step 1: Collection of the Database

Data may be collected from the following:

- Chart review for evaluation of preceding concerns and their management
- History of any symptoms of complications or discomforts, use of medicines and any medical care
- Physical examination
- Pelvic examination
- Laboratory studies.

Step 2: Interpretation of Database

Interpretation of database to identify the client's problems and needs to:

- Determine normality
- Identify the discomforts and possible complications
- Identify the signs and symptoms of complications.

Step 3: Development of a Comprehensive Plan of Care

Development of a comprehensive plan of care includes the following components:

- Measures for dietary re-evaluation and intervention
- Instructional measures for meeting learning needs
- Measures for relief of any discomfort
- Measures for treatment of minor complications (e.g. vaginitis, UTI, anemia)
- Measures for referrals to other health professionals (e.g. nutritionist, social worker)
- Measures for special counseling or anticipatory guidance by the physician
- Schedule for the next revisit.

Revisits for a woman who is progressing normally through her pregnancy are usually scheduled as follows:

- Up to 28th week of gestation: Every 4 weeks
- Between 28th and 36th week: Every 2 weeks
- Between 36th week and delivery: Every week.

Though there is a general pattern recommended for prenatal visits to the clinic, if the mother develops any risk factors during pregnancy, she must be advised to visit more frequently.

Risk Factors

Following risk factors can arise during the course of pregnancy:

- Change in fetal movement pattern
- Weight loss or poor weight gain
- Proteinuria, glycosuria
- Hypertension
- Uterus large or small for dates
- Excess or decreased liquor
- Malpresentation
- Head not engaged by 38 weeks in primigravid women
- Vaginal bleeding
- Vaginal or urinary infection
- Premature labor.

Record Keeping

In order to evaluate the effectiveness of advice and treatment during prenatal period, good record keeping is essential. Legibly written and signed entries are important for different health workers to know the well-being of mother and baby.

Indicators of Fetal Well-being

- Increasing maternal weight in association with increasing uterine size compatible with the gestational age of the fetus
- Fetal movements, which follow a regular pattern throughout pregnancy
- Fetal heart rate between 110 and 150 bpm
- Beginning at week 28, the fetal movement count should be carried out every day by a pregnant woman. There are two methods of fetal movement count.

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i. *Cardif "count 10" formula:* Evidence of at least 10 movements a day is considered normal. The movements are usually observed for 12 hours starting at 9:00 AM. The same time should be used each day to allow for comparison.
ii. *Daily fetal movement count (DFMC):* It is advised to do three counts of one hour each in the morning, noon, and evening. The daily (12-hour) fetal movement count (DFMC) is calculated by multiplying the total counts by four.

If the fetus takes longer time to achieve these 10 movements, this indicates that the fetus is becoming compromised in utero. It is important that the woman is asked to seek help if the fetus has not moved 10 times in the 12 hours labor period or if its pattern of activity changes greatly (fetal activity is often greatest during late afternoons). She should not wait for the next clinic appointment.

Preparation for Labor

During the last weeks of pregnancy, labor should be discussed with the mother. A woman who has decided to give birth at home must be visited by the public health nurse or the female health worker to help her make the final arrangements. Most women choose hospital delivery and they should be explained how to recognize the onset of labor, emphasizing the normal pattern of events with clear instructions as to when they should reach the hospital.

Study Questions

Multiple Choice Questions

1. **Which nutrient is crucial for preventing neural tube defects?**
   a. Folic acid
   b. Iron
   c. Calcium
   d. Protein

2. **What is the minimum number of antenatal visits recommended by the World Health Organization (WHO)?**
   a. 4
   b. 8
   c. 12
   d. 16

3. **What term describes the number of viable births a woman has had?**
   a. Gravida
   b. Para
   c. Abortus
   d. Gestation

4. **If the last menstrual period (LMP) is February 25, 2025, what would be the estimated date of delivery (EDD)?**
   a. November 2, 2025
   b. November 18, 2025
   c. November 25, 2025
   d. December 2, 2025

5. **All of the following are features of physiological edema in pregnancy, *except*:**
   a. Slight degree, usually confined to one leg
   b. Associated with preeclampsia and proteinuria
   c. Disappears on rest alone
   d. Absence of cardiac, renal, and hematological pathologies

6. **During inspection, if a saucer-like depression at or below the umbilicus is noted, it is likely indicative of_____**
   a. Occiput anterior position
   b. Occiput posterior position
   c. Breech presentation
   d. Transverse lie

7. **What term describes the relationship between the denominator of the fetus with various quadrants of the pelvic brim?**
   a. Fetal lie
   b. Fetal attitude
   c. Fetal position
   d. Fetal presentation

8. **In a primigravid woman, when does the fetal head typically engage?**
   a. Between 36th and 38th week of pregnancy
   b. Between 38th and 40th week of pregnancy
   c. At the onset of labor
   d. After rupture of membranes

9. **All of the following vaccines are contraindicated in pregnancy, *except*:**
   a. Rubella
   b. Measles
   c. Varicella
   d. Hepatitis B

10. **What is considered a normal number of fetal movements per day?**
    a. At least 5
    b. At least 10
    c. At least 20
    d. More than 30

Answer Key

1. a	2. a	3. b	4. d
5. b	6. b	7. c	8. a
9. d	10. b		

Short Notes

1. Fetal lie.
2. Fetal presentation.
3. Fetal attitude.
4. Denominator in different fetal positions.
5. Engagement of fetal head.

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Short Answer Questions

1. Approximate levels of fundal height as uterus enlarge in pregnancy.
2. Laboratory tests and assessments in prenatal period.
3. Indicators of fetal well-being in pregnancy.

Essay Questions

1. Explain the examination of a pregnant woman at the time of first visit to the hospital or health center.
2. Explain the abdominal palpation and Leopold's maneuvers on a mother of 34 weeks of gestation.

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Kanimozhi K completed her undergraduate nursing education at the College of Nursing, Sri Ramachandra Medical College, Chennai, and obtained her Master's degree in Obstetrics and Gynecological Nursing from Apollo College of Nursing, Chennai, under The Tamil Nadu Dr MGR Medical University, where she was awarded the Gold Medal for academic excellence. She has over 25 years of teaching experience in nursing education and has taught undergraduate, postgraduate, and Post Basic diploma nursing students. Her professional career includes progressive academic roles ranging from Clinical Instructor to Associate Professor, and she has also served as Head of the Department of Obstetrics and Gynecological Nursing at Apollo College of Nursing, Chennai. She is presently working as a Tutor at Jawaharlal Institute of Postgraduate Medical Education and Research (JIPMER), Puducherry, a premier central government institution. She has been actively involved in classroom teaching, clinical supervision, student evaluation, curriculum implementation, and academic mentoring. Continuous engagement with nursing students and awareness of examination patterns and clinical expectations have guided the systematic revision of this book. She academic interests include maternal and reproductive health, nursing education, and evidence-based practice, with a commitment to strengthening the quality of nursing education and professional competence among future nurses.

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