

Health Care and Fetal Assessment During Pregnancy


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Objectives

1. Define key terms listed.
2. Discuss the concept of preconception care.
3. Explain the significance of prenatal care.
4. Outline the care given during the initial prenatal visit.
5. Review care given on subsequent prenatal visits.
6. Explain five factors that place the fetus at risk.
7. Describe four methods of assessing the fetal condition during the antepartum period.
8. Explain the uses of ultrasonography during pregnancy.
9. Explain the uses of amniocentesis as a diagnostic tool.
10. Compare chorionic villi sampling with amniocentesis.
11. Explain the biophysical profile.
12. Describe the purpose of the nonstress test.
13. Determine the causes of common discomforts during pregnancy and the appropriate measures to alleviate them.
14. Demonstrate three exercises to strengthen and stretch muscles in preparation for childbirth.
15. Outline four safety precautions for exercising during pregnancy.
16. Discuss the benefits and limitations of immunizations during pregnancy.
17. Individualize various optimum weight gain patterns during pregnancy.
18. Identify the suggested dietary alterations during pregnancy.
19. Describe a common pica substance ingested by a pregnant woman.
20. Identify the basic philosophy of preparation for childbirth.
21. Illustrate three different breathing patterns used during labor and birth.

Key Terms

cleansing breath (p. 86)

doulas (DOO-lāz, p. 87)

effleurage (ēf-loo-RĀZH, p. 85)

Kegel exercises (KĒ-gūl, p. 69)

Lamaze technique (p. 84)

Leopold's maneuvers (p. 64)

MyPlate (p. 81)

paced breathing (p. 86)

pelvic tilt exercise (p. 69)

pica (PĪ-kā, p. 84)

preconception care (p. 61)

Valsalva's maneuver (vāl-SĀL-vāz, p. 87)

PRECONCEPTION CARE

Preconception care is health care and screening conducted before pregnancy occurs so that medical risk factors or lifestyle behaviors can be identified, managed, or changed before conception. The normalcy of pregnancy is greatly influenced by prepregnancy health. Most women who seek medical care as soon as they realize they may be pregnant are already at or past 8 weeks' gestation, which may be too late for some interventions to be effective. Most birth defects occur between 2 and 8 weeks' gestation. These missed opportunities include ensuring an adequate daily intake of folic acid, updating immunization status, ceasing smoking, treating current infections, and obtaining genetic counseling or testing. Prenatal data collection includes physical, psychological, and psychosocial factors that will affect the health of the mother and fetus. This includes exposure to hazardous materials in the

workplace. Ideally, prenatal care starts before pregnancy occurs. Preconception care is best achieved when a pregnancy is planned.

PRENATAL CARE

Early and regular prenatal care dramatically reduces infant and maternal morbidity and mortality and offers a unique opportunity for nurses to influence the family's health. Early detection of potential problems leads to prompt assessment and treatment, which greatly improves the pregnancy outcome. Pregnancy is a normal process, and the primary focus is education for self-care. Pregnancy affects the mother's body and the family's integrity; therefore, the entire family is included in the care plan (Figure 5-1). The major goals of prenatal care are listed in Box 5-1.



FIGURE 5-1 A sibling begins to anticipate the birth of her brother.

Box 5-1 Major Goals of Prenatal Care

- Ensuring a safe birth for mother and child by promoting good health habits and reducing risk factors
- Teaching health habits that may be continued after pregnancy
- Educating about self-care during pregnancy
- Providing physical assessment and care
- Preparing parents for adaptation to parenthood

COLLABORATIVE CARE

To collaborate is to work together with others. Collaborative care involves the patient and the nurse with other members of the health care team contributing to the care plan for the woman. The nurse, along with other multidisciplinary health team members, can tailor interventions to meet specific needs of the patient and family.

CULTURAL COMPETENCE

The woman's lifestyle may include culturally unique beliefs and behaviors that must be considered in a care plan. The focus of education should stand out as a key part of prenatal care and patient-nurse communication. Cultural considerations are important in caring for a woman during her pregnancy. Some cultures view pregnancy and childbirth as normal conditions that do not require any special health care.

Cultural Considerations

Providing Culturally Effective Prenatal Care

- Non-English-speaking parents should be offered interpreters who are familiar with their culture and their language in the labor room, the clinic, or the home setting.
- Parenting classes should have culturally appropriate content related to the minority groups they serve.
- Documentation should include the interpreters used in patient teaching plans.
- Illustrative material or handouts should be provided in the native language of the patient at the appropriate reading level and clearly provide information concerning informed choices.
- In-service educational classes should be offered to staff on a regular basis and emphasize how to communicate with patients from different cultures (relative to patients served).

Cultural competence is the awareness of, acceptance of, and respect for beliefs, values, traditions, and practices that are different from one's own. The ability to adapt health care so that it does not violate the culture or religion of the patient is the core of cultural competence. Achieving cultural competence is aided by knowledge, skills, and encounters with others of different cultures. The assumption that all people of one culture believe and behave the same way is cultural stereotyping and should be avoided. Individual differences should be identified and respected (Figure 5-2). For example, in some cultures, such as Orthodox Judaism, the husband may not view the newborn as it is delivered; only verbal encouragement is allowed. Many non-Western cultures expect the woman to have 40 days of rest after delivery. Chinese, African American, Hispanic, and Southeast Asian cultures usually avoid full washing of the body and hair until lochia has ceased. The "hot and cold" theory is observed by many cultures, and, because labor and delivery are considered a "cold" experience, it is balanced by "hot" conditions; therefore, ice water and air-conditioning are avoided. Cambodian women often discard colostrum. In the traditional Japanese culture, newborns are bathed twice a day, and the bathing is accompanied by loud noises to ward off evil spirits.

PRENATAL VISITS

The initial assessment interview can establish a trusting relationship between the nurse and the pregnant woman. It is a planned, purposeful communication that focuses on specific assessments. Observations include the woman's subjective interpretations of her health status and the nurse's objective examination. During the initial communication, the nurse observes the woman's body language, such as her posture and facial expressions, as well as other physical and emotional signs.

Cultural Assessment Data Collection Tool to Assist in Developing an Individualized Plan of Care

(This tool can be translated into multiple languages and allows the nurse to compare the client's answers to those on an identical tool written in the nurse's dominant language. This data collection will enable the nurse to provide care to clients in a way that is culturally satisfying to them.)

Birth Plan

Providing answers to the following questions will give us information that will enable us to make your birthing experience a more positive experience.

Whom do you plan on having present to support you while you are in labor?

- Husband
- Female family member
- Friend
- No one

Have you attended a childbirth class?

- Yes
- No

If yes, what method of childbirth preparation?

- Lamaze
- Bradley
- Other

Gender of health care provider preferred?

- Male
- Female
- No preference

During pelvic examinations does your husband wish to be present if done by a male physician?

- Yes
- No

During labor will you:

- Prefer to be involved in decision making
- Prefer to have someone tell you what to do

When you are in pain do you:

- Become quiet
- Verbally express your pain
- Yell and/or cry

Regarding pain medicine do you:

- Prefer to ask for it when you want it
- Have the nurse offer it to you

Do you feel comfortable in freely making requests to MD/CNM/nurse?

- Yes
- No

Do you prefer to be addressed by:

- Your first name
- Your last name

What type of infant feeding are you planning?

- Breastfeeding
- Bottle feeding
- Both
- Breastfeeding after colostrum changes to milk

Do you prefer to drink water:

- At room temperature
- With ice

After delivery do you prefer:

- Hot beverages
- Cold beverages

Do you want to know the sex of the baby:

- When an ultrasound is done
- Immediately after birth
- After the placenta is delivered

While in the hospital after having your baby, do you prefer:

- Showers
- Baths
- Sponge baths
- None

Do you believe it is okay to wash your hair in the first few days after delivery?

- Yes
- No

According to your cultural practices, when do women who have had a baby usually get up to walk around?

- Within the first few hours after delivery
- The day after delivery
- Prefer to stay in bed

According to your cultural practices, who usually provides most of the infant care in the first few days of life?

- Mother of infant
- Both parents of infant
- Nurse and/or family members

If infant is male, do you plan to have him circumcised?

- Yes
- No

If yes, when do you prefer it should be done?

- During hospitalization
- Day eight
- After discharge

According to your cultural practices when is it acceptable for others to praise your baby?

- Any time
- Only if they are touching infant
- Never

After delivery how long will it be before you resume normal activities outside the home?

- At least 1 week
- Two weeks
- One month
- 45 days
- Over 45 days
- No specific amount of time

FIGURE 5-2 Cultural assessment data collection tool to assist in developing an individualized plan of care. This tool can be translated into multiple languages and allows the nurse to compare the patient's answers to those on an identical tool written in the facility's dominant language. This data collection will enable the nurse to provide care to patients in a way that is culturally satisfying to them.

INITIAL HEALTH AND SOCIAL HISTORY

A health history summary, including a thorough medical and obstetric history, is taken during the first prenatal visit to determine the present status of the woman's health. First, the nurse obtains personal information, including age, marital status, education, and occupation. Second, the nurse takes the medical

history of the woman and her family. The family history and partner's history are important to identify certain health problems, such as heart disease and genetic disorders that could affect the outcome of pregnancy. The woman's personal history, including her nutritional history, is important in assessing her present and past health. A cultural history that includes the

use of self-medication, complementary or alternative medicine (CAM), alcohol use, or the use of recreational drugs is part of every pregnant woman's initial health history because it may have an impact on fetal development. Third, the nurse obtains information about the woman's obstetric history, including any previous pregnancies, birth weight of previous infants, length of previous labors, present attitude toward this pregnancy, date of last normal menstrual period (LNMP), and any problems that arose during a previous pregnancy, labor, birth, and postpartum period. This information can provide clues of what to expect during the present pregnancy.

Social history provides information about the woman's and partner's occupations, education, marital status, ethnic or cultural background, and socioeconomic status. Perception of this pregnancy, coping mechanisms, and family support are explored.

PHYSICAL EXAMINATION

In the physical examination, the physician or nurse-midwife examines all body systems. This includes a *head-to-toe* assessment. The patient's weight and blood pressure are recorded, and microscopic urine examination is performed in the first visit. Baseline weight and blood pressure are important because a sudden change in either is significant. A sudden elevation in blood pressure or sudden excessive weight gain may be a symptom of gestational hypertension (see Chapter 13). The pregnancy examination includes a pelvic examination, which is performed to determine the status of the reproductive organs and the birth canal. Pelvic measurements may be taken to determine whether the pelvis will allow the passage of a fetus at *delivery* (see Chapter 2). Before the pelvic examination is conducted, the nurse should advise the woman to empty her bladder and to take deep breaths during the examination to lessen her discomfort. Routine laboratory tests are performed throughout the pregnancy (Table 5-1).

SUBSEQUENT VISITS

Prenatal visits are scheduled every month for 7 months, every 2 weeks during the eighth month, and every week during the last month if the pregnancy is uneventful (normal). The woman's **weight** and **blood pressure** are recorded, and the **urine** is checked for protein, acetone, and glucose. These three assessments enable the early detection of hypertension and gestational diabetes mellitus. In addition, the physician or midwife measures the **height** of the **fundus** to see whether the pregnancy is progressing at the expected rate (Figure 5-3).

The woman's abdomen is palpated with **Leopold's maneuvers** to assess the presentation and position of the fetus (see Chapter 7). These consist of four basic maneuvers: (1) determining what is in the fundus,

either breech or head (the head is firm and round, whereas the breech feels softer); (2) determining the location of the fetal back (opposite from the extremities); (3) noting what part of the fetus is above the symphysis pubis, either head or breech; and (4) noting the position of the cephalic prominence.

Having determined the presentation and position of the fetus, the nurse then listens to the fetal heart rate. The fetal heart rate can be detected with a Doppler device or with a fetal stethoscope. Tenderness over the woman's kidney area (costovertebral angle [CVA]) or tenderness in the calf of her leg (Homans' sign) is assessed because, during pregnancy, a woman is at greater risk for renal infection and thrombophlebitis.

The woman is asked whether she has any discomforts. Sometimes, vague symptoms or subtle clues are the first indication of an impending complication. If the woman has complaints, nursing or medical measures are suggested to relieve them. Early in the subsequent visits, the type of delivery anticipated and how she intends to feed her baby should be discussed. Reassurance of the woman's capacity to be a good mother is important.

PRENATAL FETAL ASSESSMENT

High-risk pregnancies are those in which maternal and fetal outcomes are potentially not as good as in a normal pregnancy. The improved understanding of fetal disorders and extraordinary technical advances are changing the management of high-risk pregnancies. Newer diagnostic and therapeutic approaches are being used in the management of complex problems. High-risk pregnancy presents one of the most critical challenges in medical and nursing care. Emphasis must be placed on the safe birth of infants who can develop to their maximum potential (Box 5-2).

This section discusses a range of technologies and procedures designed to reduce risks to the woman and the fetus. These procedures include nursing responsibilities that must be carried out to provide safe care, reduce risks, and meet emotional needs. See Chapter 13 for detailed information concerning complications of pregnancy.

DIAGNOSTIC TECHNIQUES AND NURSING CONSIDERATIONS

A variety of tests can be used to assess fetal well-being during pregnancy and are indicated when maternal high-risk factors are present (Table 5-2). These tests include diagnostic ultrasound, Doppler ultrasound blood flow, chorionic villi sampling, amniocentesis, percutaneous cord blood sampling, nonstress test (NST), contraction stress test (CST), biophysical profile (BPP), vibroacoustic stimulation test, and maternal assessment of fetal movements (Figures 5-4 to 5-6 on p. 69).

Table 5-1 Prenatal Laboratory Tests

TEST	PURPOSE
First Trimester (Routine)	
Blood type, Rh factor, and antibody screen	Determines risk for maternal-fetal blood incompatibility
Complete blood count (CBC)	Detects anemia, infection, or cell abnormalities
Hemoglobin or hematocrit	Detects anemia
Venereal Disease Research Laboratory (VDRL) test or rapid plasma reagin (RPR)	Syphilis screen mandated by law
Rubella titer	Determines immunity to rubella
Tuberculosis test	Screening test for exposure to tuberculosis
Hepatitis B screen	Identifies carriers for hepatitis B (recommended by American College of Obstetricians and Gynecologists)
Human immunodeficiency virus (HIV) screen	Detects HIV infection; required by some states (counseling concerning prevention and risks should be provided to all prenatal patients)
Urinalysis and culture	Detects infection, renal disease, or diabetes (recommended by U.S. Preventive Services Task Force to screen for asymptomatic bacteriuria)
Papanicolaou (Pap) test	Screens for cervical cancer (recommended if not done within 6 months before conception)
Vaginal or cervical culture	Detects group B streptococci, bacterial vaginosis, or sexually transmitted infections (STIs) such as gonorrhea, chlamydia
First Trimester (If Indicated)	
Hemoglobin electrophoresis	Identifies presence of sickle cell trait or disease in women of African or Mediterranean descent
Endovaginal ultrasound	Performed when high risk of fetal loss is suspected
Second Trimester (Routine)	
Blood glucose screen: 1 hr after ingesting 50 g of glucose liquid	Routine test done at 24-28 weeks' gestation to identify gestational diabetes mellitus; results >135 mg/dL require medical follow-up
Serum alpha-fetoprotein	Optional routine test to identify neural tube or chromosomal defect in fetus
Ultrasonography	Optional noninvasive routine test to identify some anomalies and confirm estimated date of delivery
Second Trimester (If Indicated)	
Amniocentesis	Performed at a 16-20 weeks' gestation when high-risk problem is suspected or if the mother is over 35 years of age
Third Trimester (If Indicated)	
Real-time ultrasonography	Performed when problem is suspected Identifies reduced amniotic fluid, which can result in fetal problem Identifies excess amniotic fluid, which would indicate fetal anomaly or maternal problem Confirms gestational age or cephalopelvic disproportion Determines fetal lung maturity (lecithin/sphingomyelin ratio) with amniocentesis Confirms presence of anomaly that may require fetal or neonatal surgery
Cervical fibronectin assay	Determines risk of preterm labor when problem is suspected

Modified from Leifer, G. (2011). *Introduction to maternity and pediatric nursing* (6th ed.). Philadelphia: Saunders.

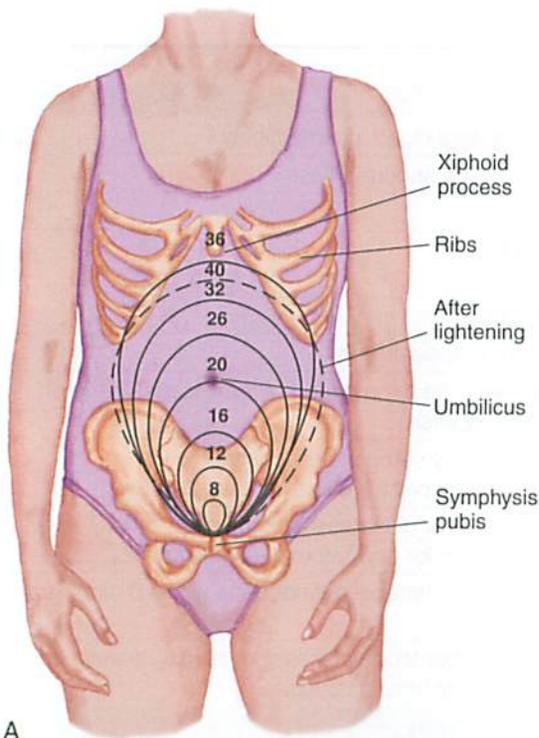
Nursing care during assessments of fetal health, especially with all of the new tests being performed, is important; the woman must understand the reason that specific tests are being performed. The nurse can provide an opportunity for the woman to ask questions regarding the procedure. Clarifying and interpreting test results should be carried out collaboratively by all health care providers involved in the procedures. However, the nurse is often the person who spends the most time with the woman (Nursing Care Plan 5-1 on p. 70).

Communication

Antepartum Fetal Test

Before any antepartum fetal test, parents should know the answer to each of these questions:

- What information will the test provide that is not already known?
- How will the information be used in the management of the mother and the baby?
- What is the risk for the mother and the baby?
- If an abnormal condition is detected, is treatment available?



A



B

FIGURE 5-3 Height of the fundus of the uterus during pregnancy. **A**, The numbers represent the weeks of gestation, and the circles represent the height of the fundus expected at that stage of gestation. The dotted line at the fortieth week indicates lightening has occurred. **B**, A health care provider measures the height of the fundus at a clinic visit.

Box 5-2

Prenatal High-Risk Factors Indicating Need for Special Prenatal Testing

- Maternal condition that increases risk for uteroplacental insufficiency such as diabetes mellitus or hypertension
- History of previous stillbirth
- Mother's age less than 16 or more than 35 years
- Multifetal pregnancy
- Postterm pregnancy
- Decreased fetal movement
- Oligohydramnios
- Intrauterine growth restriction (IUGR)
- History of congenital abnormalities

PSYCHOLOGICAL REACTIONS TO DIAGNOSTIC TESTING

Few psychological studies have been performed regarding the impact of antepartum diagnostic testing and monitoring of the fetal heart rate during labor on women's anxiety levels. However, health care providers have subjectively noticed that the need for testing produces fear. Ultrasound use during pregnancy has become almost routine, and many women expect it to be a part of prenatal care. Some women look forward to the ultrasound because it confirms the pregnancy with visualization of the fetus and the fetal heartbeat. They often learn the sex of the fetus at this time. These factors can have a positive effect on the woman and even promote psychological preparation for attachment to the fetus. Because other prenatal diagnostic testing can provoke anxiety and fear, it is important to allow time for the woman to ask questions and discuss her feelings. The nurse must be particularly sensitive to and respond to the emotional, informational, and comfort needs of the woman and her family. Fetal assessment during labor is discussed in Chapter 7.

PATIENT TEACHING FOR SELF-CARE AND COMMON DISCOMFORTS OF PREGNANCY

During the 9 months of pregnancy, women experience various types of discomforts, many of which are a result of normal physiologic changes that take place during pregnancy (discussed in Chapter 4). Nurses and other health care professionals often refer to these discomforts as minor, but the pregnant woman does not consider them minor. If discomforts are not anticipated or expected, they can make her feel anxious and worried. These discomforts can usually be relieved or prevented by simple measures (Table 5-3 on pp. 71–72). Teaching women about self-care is important (Figure 5-7 on p. 72).

The nurse should provide anticipatory guidance of changes to expect during pregnancy, labor, and birth and after childbirth. The nurse reviews positive health practices and discusses their adaptation during pregnancy (Nursing Care Plan 5-2 on pp. 73–75).



Patient Teaching

Assessing Communication Barriers

Assess the reading level and native language of the woman before giving written information concerning instructions or care during pregnancy.

BATHING

Women typically perspire profusely during pregnancy. Frequent baths or showers are needed. Bathing in the tub may become a problem later in pregnancy because of awkwardness; therefore, she should consider safety measures such as rubber mats and handrails. Bathing in

Table 5-2 Tests to Assess Fetal Well-Being

TEST AND DESCRIPTION	MAJOR USES DURING PREGNANCY
<p>Ultrasound imaging: High-frequency waves are used to visualize internal organs or tissues within the body (e.g., fetus, placenta, or moving object such as a beating fetal heart); also called ultrasonography; a transvaginal probe or abdominal transducer is used. Abdominal ultrasound requires a full bladder for better visualization (have the woman drink 1-2 qt of water before the examination). Procedure is noninvasive, is painless, and lasts approximately 20 minutes.</p>	<p>Confirms the pregnancy Confirms gestational age Identifies site of implantation (uterine or ectopic) Verifies fetal viability or death Identifies multifetal pregnancy (e.g., twins) Rules out specific fetal abnormalities Evaluates vaginal bleeding and location of placenta Determines amniotic fluid volume Observes fetal movements (fetal heartbeat, breathing, activity, and body movements) Used to guide procedures such as amniocentesis and chorionic villus sampling</p>
<p>Doppler ultrasound blood flow: Method of noninvasively studying blood flow in maternal and fetal circulations; a hand-held ultrasound device is used. Echo Doppler scan detects fetal heart activity at 6-10 weeks' gestation.</p>	<p>Assesses maternal-fetal blood flow Detects fetal anemia in Rh isoimmunization May identify intrauterine growth restriction (IUGR) and placental insufficiency Color Doppler imaging views heart and blood vessel structure and can detect anomalies in vessels within the umbilical cord</p>
<p>Chorionic villus sampling: A first-trimester alternative to amniocentesis for prenatal diagnosis of some conditions; small amount of the developing placenta (chorionic villi) is aspirated by syringe under the guidance of ultrasound and analyzed. Performed at 10-12 weeks' gestation.</p>	<p>Recommended only for women at risk for giving birth to baby with a genetic chromosomal or metabolic abnormality (cannot be used to determine spina bifida or anencephaly) Results of chromosome studies available in 24-48 hours Risk of abortion higher than in amniocentesis; potential limb reduction defect in fetus Rh_o(D) immune globulin (RhoGAM) is given to Rh-negative women Can be done earlier in gestation</p>
<p>Amniocentesis: Performed to obtain amniotic fluid—containing fetal cells; under direct visualization of ultrasound, a thin needle is inserted through the abdominal and uterine walls to withdraw amniotic fluid into a syringe (with cast-off cells). Sufficient fluid must be present for the test to be done (15-17 weeks' gestation and 12-14 weeks' gestation for some disorders).</p>	<p><i>Early pregnancy</i> Used to assess genetic disorders (e.g., Tay-Sachs disease) Tests for level of alpha-fetoprotein (AFP), which is also present in maternal blood High AFP levels found in neural tube defects such as spina bifida (open spine) or anencephaly (incomplete development of skull and brain) Low levels of AFP associated with chromosomal disorders or gestational trophoblastic disease <i>Late pregnancy</i> Assesses for severity of maternal-fetal blood incompatibility and fetal lung maturity; RhoGAM given to Rh-negative women Minimal risk for abortion in late pregnancy but higher in early pregnancy <i>Safety concerns:</i> risk of infection, pregnancy loss (although slight), and needle injuries to fetus or placenta</p>
<p>Tests for fetal lung maturity: Amniotic fluid obtained by amniocentesis is tested to indicate if fetal lungs are mature enough to adapt to extrauterine life. Lecithin/sphingomyelin (L/S) ratio: a 2:1 ratio indicates fetal lung maturity (3:1 ratio is desirable for diabetic mother) Presence of phosphatidylglycerol (PG) Foam stability index (FSI, or "shake test"): if ring of bubbles persists for 15 minutes after shaking solution, test is termed positive and indicates surfactant is present and fetal lungs are mature.</p>	<p>Determines whether the fetus is likely to have respiratory distress in adapting to extrauterine life Sometimes used to determine whether the fetal lungs are mature enough before cesarean birth Also evaluates whether the fetus should be removed immediately or whether the lungs should be allowed to develop more in utero after the membranes have ruptured and gestation is <37 weeks (or date is questionable) Absence of PG associated with respiratory distress Blood or meconium in the amniotic fluid alters accuracy of results</p>
<p>Percutaneous umbilical blood sampling (cordocentesis): Obtaining fetal blood sample from placental vessel or from the umbilical cord by guidance with ultrasound (see Figure 5-6).</p>	<p>Evaluates whether the fetus is anemic and needs a blood transfusion. Identifies Rh isoimmunization in the blood and chromosomal disorders and acid-base status of fetus</p>
<p>Nonstress test (NST): Assessment of fetal well-being by evaluating the fetal heart's ability to accelerate (speed up) in association with fetal movement by using an electronic fetal monitor; accelerations occur either spontaneously or in association with fetal movement. An external electronic</p>	<p>With adequate accelerations of the FHR, confirms that the placenta is functioning properly and that the fetus is well oxygenated with autonomic functions Blurred response indicative of hypoxia, acidosis, drugs, or fetal sleep</p>

Continued

Table 5-2 Tests to Assess Fetal Well-Being—cont'd

TEST AND DESCRIPTION	MAJOR USES DURING PREGNANCY
<p>monitor is applied while the woman is in a semi-Fowler's or left-lateral position; conduction gel is put on the abdomen; two belts are applied on the woman's abdomen; one belt and a device to detect fetal heart rate (FHR) and the other belt detects fetal movement; the woman is given a button to press, which records the time she feels movement on the strip on which the FHR is recorded. The test is continued for up to 40 minutes, or until the criteria for reactivity are met; because almost all accelerations are accompanied by fetal movement, the movement need not be recorded for the test to be reactive.</p>	<p>Nonreactive NST indicates the fetal heartbeat does not accelerate adequately and further assessment may be required A reactive NST indicates the fetal heartbeat accelerated adequately with fetal movement</p>
<p>Contraction stress test (CST): Evaluation of the FHR response to mild uterine contractions by using an electronic fetal monitor. Contractions are induced by intravenous oxytocin (Pitocin) infusion or by self-stimulation of the nipples, which causes the woman's pituitary gland to release oxytocin; the woman must have at least three contractions of at least 40-seconds duration in a 10-minute period for interpretation of the CST test.</p>	<p>Same purposes as for the NST Negative CST indicates there were no late decelerations of the FHR with three uterine contractions in a 10-minute period Variable accelerations that occur with CST may indicate cord compression</p>
<p>Nipple stimulation: Done if inadequate contractions occur. Woman brushes her palm across nipple for 2-3 minutes, stopping when contraction begins; after 5-minute rest period, same process is repeated. To avoid hyperstimulation (uterine contractions lasting 90 seconds or more often than every 2 minutes), bilateral stimulation should not be done unless unilateral stimulation fails.</p>	<p>Stimulate contractions to result in FHR accelerations Intermittent nipple stimulation preferred to prevent hyperstimulation of the uterus</p>
<p>Biophysical profile (BPP): Method to evaluate the condition of the fetus that uses five observations: fetal breathing movements, gross fetal movements (movements of body), FHR variability and reactivity (the NST), and the volume of amniotic fluid (amniotic fluid index [AFI]). Some facilities omit the NST, and others assess only the NST or ultrasound and AFI.</p>	<p>Used after 26 weeks' gestation to assess fetal oxygenation; as fetal hypoxia increases, FHR changes occur first, then decreased breathing movement (<1 breath in 30 minutes), gross body movements (<3 in 20 minutes), and finally loss of muscle tone (failure to open and close the hand) Results immediately available and allow for delay of induction if fetal well-being is confirmed</p>
<p>Vibroacoustic stimulation test (vibration and sound): Stimulation of fetus by artificial larynx device; used as an adjunct to the NST. The artificial larynx is applied to the woman's abdomen over the fetal head, then is activated with a 2- to 3-second stimulus.</p>	<p>Used to clarify whether fetus was sleeping (or inactive) during previous NST Has reduced number of nonreactive NSTs as well as time and cost Fetal accelerations in response to stimulus indicate fetal health</p>
<p>Maternal assessment of fetal movement (kick counts): Simple but valuable method for monitoring fetus. It should be encouraged after 28 weeks' gestation, with women setting aside a consistent time to do the "kick counts." Mother should count the number of fetal movements for 30-60 minutes 2-3 times a day; other protocols may be used.</p>	<p>Recognizes that the presence of fetal movements is a reassuring sign of fetal health. Decreased fetal movements possibly caused by sleep Cessation of movements correlated with hypoxia and fetal death In the third trimester, woman counts and documents fetal movement for 30-60 minutes twice a day; <4 movements in 30 minutes on 2 consecutive days or <10 movements in 12-hour period should be reported to the health care provider NOTE: Maternal use of drugs may affect fetal activity.</p>
<p>Amniotic fluid index (AFI): This ultrasound scan measures the amniotic fluid pockets in all 4 quadrants surrounding the mother's umbilical area and produces an AFI. A reading of 15-19 cm is considered normal; <5 cm is known as oligohydramnios (decreased amniotic fluid); >30 cm is hydramnios (excess amniotic fluid).</p>	<p>Identifies oligohydramnios, which is associated with growth restriction and fetal distress during labor because of kinking of the umbilical cord Identifies hydramnios, which is associated with fetal anomalies such as gastrointestinal obstruction or fetal hydrops</p>
<p>Alpha-fetoprotein test (AFP): Determines the level of this protein in the pregnant woman's blood serum (MSAFP) or in a sample of amniotic fluid (AFAFP). Correct interpretation requires accurate gestational age. The test is usually performed at 16-18 weeks' gestation.</p>	<p>High levels associated with open defects such as spina bifida Low levels associated with chromosomal anomalies or hydatidiform mole</p>
<p>Triple marker screening: Detects levels of human chorionic gonadotropin (hCG) and unconjugated estriol. This is often done with AFP test.</p>	<p>May indicate trisomy 18 or 21 if estriol is low and hCG is high. May indicate trisomy 21 if Inhibin A is elevated</p>



FIGURE 5-4 Ultrasonography is a noninvasive, painless method of scanning a pregnant woman's abdomen with high-frequency waves to determine fetal growth and development. The ultrasound transducer is moved over the mother's abdomen to obtain an image.

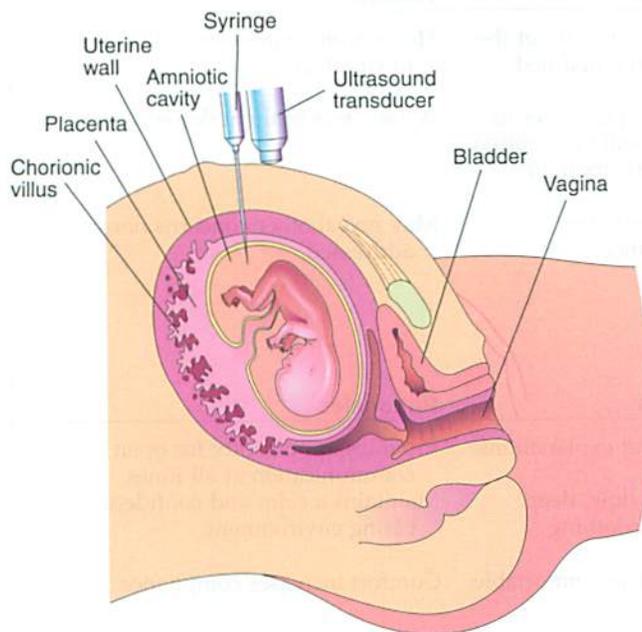


FIGURE 5-5 Amniocentesis. The woman is scanned by ultrasound to locate the placenta and determine the position of the fetus. A needle is inserted through the skin, fascia, and uterine wall, away from the placenta and body of the fetus. When the needle is within the uterine cavity, amniotic fluid is withdrawn.

hot tubs or saunas should be avoided because they increase body temperature, which may lead to fetal compromise. Tub baths are contraindicated when the amniotic membranes have ruptured or the mucous plug has been expelled.

PHYSICAL ACTIVITY AND EXERCISE DURING PREGNANCY

Pregnant women may benefit both psychologically and physically from retaining some portion of their prepregnancy fitness. The goal of exercising is to

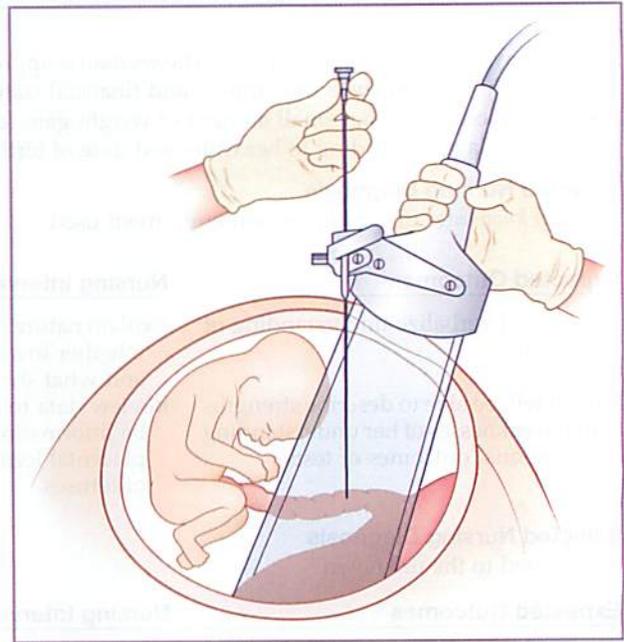


FIGURE 5-6 Fetoscopy and cord blood sampling (cordocentesis). A fine-gauge fiberoptic scope is passed into the amniotic sac under ultrasound direction, and cord blood is aspirated from umbilical vessels.

strengthen muscles while minimizing the risk of joint and ligament injuries. Fatigue and elevated temperatures should be avoided.

Mild to moderate exercise is known to be beneficial during normal pregnancy. The nurse should provide guidance, based on the understanding that the maternal circulatory system is the lifeline to the fetus and that any alteration can affect growth and survival of the fetus. The maternal cardiac status and fetoplacental reserve should determine the exercise levels during all trimesters of pregnancy. Current health and fitness lifestyles mandate the inclusion of information concerning exercise during pregnancy in prenatal education programs.

A history of the exercise practices of the woman is important, and gathering such information is the first step in the nursing process. Active women may have a higher tolerance for exercise than women who have a sedentary lifestyle. The goal of exercise during pregnancy should be the maintenance of fitness, not improvement of fitness or weight loss. The type of exercise is also important. The woman should not lie supine, twist, bounce, or make jerky movements during exercise (Box 5-3 on p. 76).

Specific exercises that are helpful during pregnancy include the **pelvic tilt exercise**, which involves alternately arching and straightening the back while on the hands and knees or while standing against a wall (Figure 5-8 on p. 77), squatting, and **Kegel exercises** to strengthen pelvic muscles. Kegel exercises involve the voluntary contraction and relaxation of the
(Text continued on p. 76)



Scenario

A multigravida (P2, G5) is 37 years old. The woman is approaching her twenty-fourth week of gestation. She has cut down on smoking. This pregnancy is unplanned, and financial status is unstable. She relates that her appetite has been poor when asked questions about her small amount of weight gain for the past 2 months. The certified nurse-midwife notes that fetal growth is delayed according to her estimated date of birth.

Selected Nursing Diagnosis

Deficient knowledge of conditions and equipment used

Expected Outcomes	Nursing Interventions	Rationales
Patient will verbalize understanding of procedure.	Explain nature of test being performed, whether invasive or noninvasive, and what she may experience.	Informing woman helps relieve anxiety and concern for fetal well-being.
Patient will be able to describe strengths and weaknesses of her understanding of potential outcomes of tests.	Review data to be obtained. This may be information about fetal growth, placental location, or number of fetuses.	Honest and open discussion promotes better understanding and trust. It satisfies need for recognition of value of data to be obtained.

Selected Nursing Diagnosis

Fear related to the unknown

Expected Outcomes	Nursing Interventions	Rationales
Patient will respond that all questions have been satisfactorily answered and will be able to discuss correctly.	Listen to woman's concerns about the test(s) that have been scheduled.	Helps woman develop realistic view of situation.
Patient will state her understanding of what she is to do and will cooperate throughout the procedure.	Instruct the woman in specific terms regarding what she will be required to do if she must participate in obtaining any data.	Avoids fear of the unknown.
Patient will demonstrate bonding with nurse and confidence by responding positively to instructions.	Encourage verbalization; offer appropriate reassurance.	May reveal other concerns not yet addressed.

Selected Nursing Diagnosis

Pain related to invasive procedures

Expected Outcomes	Nursing Interventions	Rationales
Patient will maintain and verbalize comfort throughout the procedure(s).	Offer clear, simple, short explanations. Give her directions on slow, deep breathing in a calm, soothing manner. Attempt to keep woman as comfortable and dry as possible.	Provides opportunity for open communication at all times. Maintains a calm and confident, caring environment. Comfort increases compliance.

Selected Nursing Diagnosis

Anxiety related to external monitor used for nonstress test or contraction stress test of fetal heart rate

Expected Outcomes	Nursing Interventions	Rationales
Patient will state her understanding of what she is to do and will cooperate throughout the procedure.	Explain how and why electronic monitoring is used and what to expect. Assure woman that someone will be with her or nearby continuously.	Women and families sometimes express dissatisfaction with noise, beeps, and sounds of monitor and even concern that the monitor is a substitute for nursing care. Reassures help is at hand.

Additional Nursing Diagnosis

Anxiety related to pregnancy and its outcome; *ineffective health maintenance* related to lack of material resources

Critical Thinking Questions

1. A woman in her twenty-fourth week of pregnancy states she is feeling fine and asks whether an ultrasound needs to be done. She states she does not want any invasive procedures done to her. How would you respond?
2. What are some nursing responsibilities in the care of a woman receiving an amnioinfusion after labor starts?

Table 5-3 Self-Care for Common Discomforts of Pregnancy

DISCOMFORT	INFLUENCING FACTORS	SELF-CARE MEASURES
First Trimester		
Nausea with or without vomiting	Elevation in hormones, decrease in gastric motility, fatigue, emotional factors; usually does not last beyond 16 weeks if vomiting persists, may lead to hyperemesis gravidarum	Avoid an empty stomach. Eat dry crackers or toast ½ to 1 hour before rising in the morning. Eat small, frequent meals. Drink fluids between meals. Avoid greasy, odorous, spicy, or gas-forming foods. Increase vitamin B ₆ .
Breast tenderness	Increased vascular supply and hypertrophy of breast tissue caused by estrogen and progesterone Results in tingling, fullness, and tenderness	Wear a supportive bra (to alleviate tingling and tenderness). Avoid soap to the nipples (to prevent cracking).
Urinary frequency	Pressure of growing uterus on bladder in both first and third trimesters Progesterone relaxes smooth muscles of bladder	Void when urge is felt (to prevent urinary stasis); increase fluid intake during day. Decrease fluid in late evening to lessen nocturia; limit caffeine. Practice Kegel exercises.
Vaginal discharge (leukorrhea)	Increased production of mucus by endocervical glands in response to elevated estrogen levels and increased blood supply to the pelvic area, causing white, viscid vaginal discharge	Bathe or shower daily. Wear cotton underwear. Avoid tight undergarments and pantyhose. Keep the perineal area clean and dry. Avoid douching and using tampons. Wipe the perineal area from front to back after toileting. Contact health care provider if there is a change in color, odor, or character of discharge.
Second and Third Trimesters		
Heartburn (pyrosis)	Increased production of progesterone causing relaxation of esophageal sphincter Regurgitation or backflow of gastric contents into the esophagus causing burning sensation behind the sternum, burping, and sour tastes in mouth	Sit up for 30 minutes after eating a meal. Avoid gas-forming and greasy foods. Avoid overeating. Use low-sodium liquid antacids such as Gelusil or Maalox (liquid will coat lining better than tablets); avoid sodium bicarbonate and Alka Seltzer.
Constipation and flatulence (gas)	Increased levels of progesterone causing bowel sluggishness, with increased water absorption (results in hardened stool) Pressure of enlarging uterus on intestine Diet, lack of exercise, and decreased fluids Iron supplements contributing to hardening of stools	Increase fluid intake (a minimum of 8 glasses per day, not including carbonated or caffeinated beverages because of their diuretic effect), roughage in diet, and exercise. Exercise to stimulate peristalsis. Establish regular schedule for bowel movement. Do not take mineral oil or enemas. Consult health care provider about taking a stool softener (docusate).
Hemorrhoids	Varicosities (distended veins) of rectum caused by vascular enlargement of pelvis, straining from constipation, and descent of fetal head into pelvis May disappear after birth, when pressure is relieved	Use anesthetic ointment, cool witch hazel pads, or rectal suppositories. May disappear after birth, when pressure is relieved Take sitz baths, increase fiber in diet, and have regular bowel habits to avoid constipation.
Backaches	Result of the spine's adaptation to posture changes as the uterus enlarges Enlarging uterus altering center of gravity, resulting in lordosis (exaggeration of lumbosacral curve) and muscle strain	Maintain correct posture with head up and shoulders back; use good body mechanics. Avoid exaggerating lumbar curve. Squat rather than bending over when picking up objects (bend at knees, not waist). Wear low-heeled shoes to help maintain better posture. Do exercises such as tailor sitting (cross-legged), shoulder circling, and pelvic rocking. Rest; applying localized heat may help.

Continued

Table 5-3 Self-Care for Common Discomforts of Pregnancy—cont'd

DISCOMFORT	INFLUENCING FACTORS	SELF-CARE MEASURES
Round ligament pain	Abdominal ligaments stretched by enlarging uterus, causing pain in lower abdomen after sudden movements	Avoid jerky or quick movements. Use pillow support for abdomen. Use good body mechanics.
Leg cramps	Pressure of uterus on blood vessels that impairs circulation to legs, causing muscle strain and fatigue Imbalance in the calcium/phosphorus ratio	Dorsiflex foot and straighten leg with downward pressure on knee or stand with feet flat on floor when cramps occur (see Figure 5-7). Evaluate diet and calcium intake.
Headache	Emotional tension and fatigue Increased circulatory blood volume and heart rate causing dilation and distention of cerebral vessels	Obtain emotional support. Practice relaxation exercises. Eat regular meals. If headaches continue, report to caregiver (potential gestational hypertension).
Varicose veins	Relaxation of smooth muscle in walls of veins caused by elevated progesterone Pressure of enlarging uterus causing pressure on veins, resulting in development of varicosities in vulva, rectum, and legs	Avoid lengthy standing or sitting, constrictive clothing, and bearing down during bowel movements. Walk frequently. Rest with legs elevated. Wear support stockings; avoid tight knee-highs. Exercise (to stimulate venous return). Relieve hemorrhoid swelling with warm sitz baths, local application of astringent compresses, or analgesic ointment.
Edema of feet and ankles	Circulatory congestion of lower extremities	Elevate legs when sitting. Increase rest periods. Avoid constrictive clothing and prolonged standing or sitting.
Faintness and dizziness	Vasomotor instability or postural hypotension Standing for long periods with venous stasis in lower extremities	Avoid sudden changes in position, prolonged standing, and warm crowded areas. Move slowly from rest position. Avoid hypoglycemia by eating 4-5 small meals daily. Lie on left side when resting to avoid supine hypotensive syndrome (pressure of uterus on vena cava). If symptoms do not lessen, report to caregiver.
Fatigue	Hormonal changes in early pregnancy and periodic hypoglycemia as glucose is used by embryo for rapid growth More prominent in early months of pregnancy	Try to get 8-10 hours of sleep. Take naps during the day if possible. Use relaxation techniques, meditation, or change of scenery.
Dyspnea	Later in pregnancy, caused by uterus rising into abdomen and pressing on diaphragm	Sleep with several pillows under head. Use deep chest breathing before going to sleep. Use proper posture while sitting or standing. Avoid exertion.



FIGURE 5-7 Relieving a leg cramp in pregnancy. Extend the affected leg, keeping knee straight, and dorsiflex the foot (point toes toward head). Foot massage also aids in relaxation and is an effective technique for pain relief during labor.

Nursing Care Plan 5-2 Prenatal Care Plan

Scenario

A 21-year-old woman comes to the clinic for her first prenatal visit. She is pregnant for the first time and states she is very tired and feels it may be caused by her poor dietary habits. She wants to know “all there is to know” about having a healthy pregnancy. She asks the nurse for advice.

Selected Nursing Diagnosis

Deficient knowledge related to lack of education or experience

Expected Outcomes	Nursing Interventions	Rationales
Patient will be able to describe activities she can engage in that will promote wellness of self and fetus.	Assess current level of understanding, questions, and concerns.	Provides baseline information needed to assist in forming an individualized teaching plan Provides insight regarding any misconceptions the patient may have that need correcting
	Develop rapport with patient, and create pleasant learning environment.	To decrease patient anxiety level; high anxiety impedes learning. When adequate rapport has been established between nurse and patient, the patient usually feels more at ease to ask questions or share concerns.
	Teach support person along with patient.	The support person can reinforce information learned during the teaching sessions and can encourage patient to consistently put into practice what is learned. In some cultures, it is essential to include the father in teaching sessions; he may dictate decisions of what will or will not be done.
	Explain the importance of prenatal care and keeping all appointments.	Increased knowledge is often correlated with an increased level of compliance. Some cultures do not view prenatal care as important, so patients need to understand why they should attend prenatal visits.
Patient's actions will indicate an understanding of what is needed to promote wellness of self and fetus.	Teach about normal physiologic changes that occur during pregnancy (fatigue, average weight gain expected, gastrointestinal changes, urinary frequency, onset of quickening, etc.).	Anticipatory guidance of what to expect alleviates anxieties and fears from misconceptions that changes are abnormal.
	Explain how to alleviate common discomforts of pregnancy associated with normal physiologic changes.	Improves comfort level
	Explain self-care needs (exercise, nutrition, rest, etc.) and ways to best meet these needs.	Provides information needed regarding health-promoting behaviors that will help optimize pregnancy outcomes These activities can compromise fetal development and well-being.
Patient will be able to state at least five danger signs to report to health care provider.	Explain activities that are contraindicated during pregnancy (smoking, hot tubs, alcohol consumption, use of street drugs or over-the-counter medications, x-ray examinations, changing litter boxes, eating raw meat, etc.).	
	Teach danger signs of pregnancy to report immediately to health care provider (decreased fetal movement, vaginal bleeding, dysuria, edema of face and hands, blurred vision, frequent headaches, bag of waters rupture, etc.).	Ensures prompt interventions when complications occur.
	Provide patient with handouts, videos, and diagrams in a language the woman can read and understand.	To reinforce verbal teaching and to provide information that the patient can refer to at a later time

Continued

Nursing Care Plan 5-2 Prenatal Care Plan—cont'd

Expected Outcomes	Nursing Interventions	Rationales
	Inform patient of pregnancy-related classes that are available.	A variety of childbirth classes may be available to enhance the patient's learning (prenatal classes, sibling classes, childbirth classes, etc.). Classes also provide the opportunity for patients to interact with other pregnant women who can validate each other's experiences and support one another.
Patient will state that her questions have been answered satisfactorily.	Encourage patient to call whenever she has questions or concerns.	Providing permission to call will increase likelihood that patient will use this opportunity for increased learning and to have her concerns addressed.

Selected Nursing Diagnosis

Imbalanced nutrition, less than body requirements related to nausea, vomiting; knowledge deficit related to nutritional needs during pregnancy

Expected Outcomes	Nursing Interventions	Rationales
Intake of nutrition will be adequate to meet maternal metabolic needs and to support normal fetal growth and development as evidenced by:	Determine weight at each prenatal visit.	Maternal weight gain during pregnancy should average 1.4-1.6 kg during the first trimester and 0.44 kg/weeks during the last two trimesters.
Maternal weight gain of 1.6 kg (3½ lbs) during first trimester and 0.44 kg (1 lb) per week until delivery	Determine degree of nausea and vomiting.	Nausea and vomiting, which commonly occur during the first trimester as a result of hormonal changes that decrease gastric mobility, can, if excessive, interfere with adequate nutritional intake.
A lack of excessive nausea and vomiting	If patient is experiencing nausea and vomiting, instruct her to eat dry crackers or toast ½ hour before getting out of bed in the mornings, eat small frequent meals, drink noncaffeinated carbonated beverages, and increase intake of vitamin B ₆ .	These practices decrease nausea and vomiting because they prevent the stomach from becoming empty or distended and decrease gastric acidity.
Ensures adequate intake of essential nutrients	If patient has nausea and vomiting, instruct her to avoid beverages with meals; vitamins containing iron in the first trimester; and foods that are spicy, greasy, or have noxious odors.	Food that are spicy, greasy, or have noxious odors can increase episodes of nausea and vomiting. Iron supplements taken during the first trimester and ingestion of beverages with meals have both been associated with a higher incidence of nausea and vomiting.
	Teach patient to report excessive nausea and vomiting to health care provider.	Allows for early intervention of alternative forms of nutritional delivery if an oral diet cannot be tolerated.
24-hour dietary recall reflecting a balanced nutritional diet	Review 24-hour dietary intake and ask if this is typical of the normal diet.	Provide baseline information of patient's nutritional habits and provides insight regarding areas of deficiencies that need to be addressed.
	Determine current knowledge of nutritional needs during pregnancy.	Provides information needed to develop an individualized teaching plan. During pregnancy increased nutrients are required to meet the increased maternal metabolic rate and the needs of the developing fetus.
	Use a food guide to teach patient to eat a nutritional diet; provide her with a copy of the guide or the Internet address.	Food guides are easy-to-use visual references for what a healthy diet should consist of that can be adapted to accommodate cultural preferences.

Nursing Care Plan 5-2 Prenatal Care Plan—cont'd

Expected Outcomes	Nursing Interventions	Rationales
Hemoglobin ≥ 12 g/dL and hematocrit $\geq 37\%$	Refer to dietitian as needed.	Patients with specific chronic illnesses or special nutritional needs may require additional nutritional counseling and support.
	Review hemoglobin and hematocrit laboratory values.	Hemoglobin < 12 g/dL or hematocrit $< 37\%$ is indicative of iron deficiency anemia.
	Teach patient the importance of taking prenatal vitamins, iron supplements during the last two trimesters, and folic acid supplements as prescribed.	Prevents vitamin deficiencies, iron deficiency anemia, and neurotubular defects that have been associated with folic acid deficiencies
Fundal height reaching 28 cm by 28 weeks and then increasing 1 cm/week until delivery	Determine fundal height at each prenatal visit.	Measures fetal growth pattern. Fundal height averages 28 cm at 28 weeks and then increases approximately 1 cm/week.
Access to adequate nutrition	Discuss socioeconomic factors that can interfere with adequate nutrition.	If finances prohibit the purchase of foods necessary for a nutritional diet, referrals to community agencies may be required.
	Refer to community agencies and WIC program as needed.	Local organizations may be available to supply food to low-income families. WIC is a federally funded food program that supplies low-income women with both food vouchers and nutritional education.

Selected Nursing Diagnosis

Fatigue related to effects of physiologic changes of pregnancy

Expected Outcomes	Nursing Interventions	Rationales
Patient will state she has sufficient energy to carry out required activities of daily living.	Explain to patient physiologic changes responsible for increased feelings of fatigue during pregnancy.	Information provides knowledge that can motivate an individual to make lifestyle changes that will enhance energy level by promoting adequate rest.
	Assist patient in developing a plan to increase amount of rest and sleep (napping when children nap or during work lunch break, going to bed earlier, adjusting work schedules, etc.).	Mutually deciding on a plan increases the likelihood that the patient will follow through with the actions needed to successfully implement the plan.
	Instruct patient on ways to decrease insomnia (avoid drinking beverages with caffeine or exercising during the evening; promote relaxation with music, a warm bath, imagery, reading, etc.).	Caffeine and exercise late at night can act as stimulants to the body. Relaxation techniques before bed can eliminate stress that is inhibiting sleep.
	Instruct patient to limit fluid intake during the evening.	Prevents frequent awakenings from nocturia
	Instruct patient to position self in bed for maximum comfort (using pillows for support while side-lying or in a semi-Fowler's position).	Comfort promotes rest. As pregnancy progresses, it is important to avoid lying supine to prevent supine hypotensive syndrome. As the uterus enlarges upward, pressure is exerted against the diaphragm, which can make breathing more difficult; an upright position can alleviate dyspnea.
	Assist patient in eliminating nonessential tasks from her schedule.	Prevents fatigue from excessive demands and allows time for additional rest periods.

Critical Thinking Questions

1. A patient discovers she is pregnant for the first time. She is determined to give her baby the best environment possible in which to develop and asks you what she should avoid. What should you discuss with her?
2. A patient complains of feeling nauseated in the mornings with occasional episodes of vomiting. What teaching can you provide?

pubococcygeal muscles, as if starting and stopping urine flow (Box 5-4). Exercise can elevate the maternal temperature and result in decreased fetal circulation and cardiac function. Maternal body temperature should not exceed 38° C (100.4° F), thereby ruling out hot tub and sauna use during pregnancy.

When the supine position is assumed and the uterus presses on the vena cava, the increasing uterine weight and size can cause poor venous return and result in **supine hypotensive syndrome**. Orthostatic hypotension can occur and reduce the blood flow to the fetus. Certain positions need to be modified during pregnancy to avoid these problems, which can cause fetal hypoxia.

Pregnancy increases the workload of the heart. The increase in peripheral venous pooling during pregnancy results in a decrease in cardiac output reserves for exercise. When exercise is allowed to exceed the ability of the cardiovascular system to respond, blood may be diverted from the uterus, causing fetal hypoxia. Exercise increases catecholamine levels, which the placenta may not be able to filter, resulting in fetal bradycardia and hypoxia. Strenuous and prolonged exercise will cause blood flow to be distributed to the skeletal muscles and skin and away from the viscera and uterus. If the reduction in uterine blood flow exceeds 50%, serious adverse effects to the fetus may

Box 5-3 Exercise During Pregnancy

- Consult the health care provider before starting an exercise program.
- The goal of the exercise program should be maintenance of fitness rather than improvement of fitness.
- Concentrate on non-weight-bearing exercise, such as swimming or cycling.
- Decrease high-impact activities as the third trimester approaches.
- Avoid activities that require balance and coordination.
- Avoid activities that involve holding the breath (Valsalva's maneuver).
- Avoid excessive intensity and sweating during exercise. Inability to complete a sentence in one breath indicates shortness of breath.
- Do not exercise in the supine position after the first trimester.
- Do not use hot tubs or saunas that raise the body temperature above 38° C (100.4° F).
- Prepare joints by warming up before exercise.
- Wear a supportive bra and appropriate shoes. Be aware of changes in the center of gravity.
- Heart rate should not exceed 140 beats/minute.
- Prevent dehydration by drinking fluids liberally before, during, and after exercise.
- Avoid becoming overly warm.
- Recognize warning signs that indicate the need to stop exercise.
- Avoid scuba diving or exercising above 5000 feet in altitude.

occur. For this reason, moderate exercise is preferred for pregnant women over strenuous or prolonged exercise. Exercise does increase maternal hematocrit levels, and uterine oxygen uptake increases during exercise, so moderate exercise will not cause decreased supplies to the fetus.

Joint instability related to hormonal changes can result in injury if the woman engages in deep flexion or extension of joints. Range of motion (ROM) should not be extended beyond prepregnancy abilities.

Safety measures should be used because of the changes in the body's center of gravity as the uterus enlarges. Liquid and caloric intake should be adjusted to meet the needs of pregnancy and the demands of exercise. Women who have complications or conditions, such as hypertension or multiple gestations, should consult a health care provider before engaging in any exercise program during pregnancy.

Prenatal Yoga

Yoga is an exercise that includes mental centering (meditation), physical stretching (posing), and breath awareness and control. It is a popular labor preparation experience for women with minimal obstetric and medical complications. Bikram (hot) yoga is not recommended for pregnant women and Ash-tanga yoga (vigorous) may be too strenuous for the novice (Kinser, 2008). The American College of Obstetricians and Gynecologists (ACOG) provides guidelines for exercise during pregnancy that can be beneficial to most pregnant women as preparation for labor as well as psychological well-being (ACOG, 2003).

SEXUAL ACTIVITY DURING PREGNANCY

In a healthy pregnancy, there is no valid reason to limit sexual activity. The woman should be advised that pregnancy may cause changes in comfort and desire. Some women experience heightened sexual tension during pregnancy, which is partly caused by greater blood congestion of the pelvis. Sexual intercourse should not be engaged in after the "bag of waters" (the membranes containing the amniotic fluid that surrounds the fetus) ruptures or after labor begins.

The couple may consider alternative positions, such as side-by-side or female-superior positions, if this increases the woman's comfort. The woman should communicate with her partner about physical changes, including discomfort, decreased mobility, increased urinary frequency, leg cramps, fatigue, and sexual desire. Increased uterine activity is often noted after sexual intercourse; this may be from breast stimulation, female orgasm, and prostaglandin in male ejaculate.



FIGURE 5-8 Exercises during pregnancy. **A** and **B**, The pelvic tilt. **C**, Proper stretch position. **D**, Tailor sitting. **E**, Proper squat position.

DOUCHING

Although normal vaginal secretions are intensified during pregnancy, the pregnant woman should not douche unless prescribed by a health care provider. Douching changes the vaginal pH and alters the normal vaginal flora, which has a protective effect against pathogenic organisms. If a douche is ordered by the health care provider, specific instructions will be given to keep the douche bag no more than 15 cm (6 inches) above the level of the vagina while douching so that the water pressure is kept low.

CLOTHING

Clothing in pregnancy is generally an important factor influencing the woman's feelings about herself and her appearance in public. Clothing should be adjustable,

Box 5-4 Exercises for Muscle Strengthening and Relaxation

Pelvic tilt: Seated with knees bent and arms in back for support, the woman arches the lower back then relaxes to the neutral position. This exercise strengthens back and abdominal muscles. The exercise can also be done on hands and knees as shown.

Tailor sitting: The woman sits cross-legged on the floor to strengthen thigh and pelvic muscles.

Kegel exercises (perineal muscle tightening): The woman contracts the pubococcygeal muscles, which surround the vagina and urinary meatus. This perineal exercise strengthens muscle tone and increases elasticity.

Relaxation: The woman relaxes body muscle groups, starting from head to toe. She relaxes all parts of the body, including face and hands.

loose, washable, and lightweight. For greatest comfort, maternity dresses should hang from the shoulders and allow for the enlargement of the abdomen.

The woman should avoid wearing such articles as knee-high or thigh-high stockings, tight garters, or panty girdles because they can interfere with the blood circulation of the legs. When constriction of the blood vessels in the legs occurs, edema and varicose veins may develop.

As pregnancy progresses, the woman's center of gravity moves forward, and she will have a greater tendency to fall. Thus, it is best for her not to wear high-heeled shoes. Also, high-heeled shoes aggravate back discomfort by increasing the curvature of the lower back. Low-heeled shoes improve balance and alleviate back pain.

BREAST AND NIPPLE CARE

During pregnancy, the breasts increase one or two cup sizes. The pregnant woman should wear a supportive bra to prevent the breakdown of elastic tissue within the breasts. If the woman plans to breastfeed her baby, the use of nursing bras should be encouraged.

During bathing, no soap should be applied to the nipple area of the breasts because it has a drying effect and removes the natural oils provided by Montgomery's glands.

Women should be advised that their breasts will secrete a substance called *colostrum*, a yellow fluid, before or during the last trimester. If colostrum secretion is profuse, she may need to place pads inside her bra to maintain dryness; otherwise, constant moisture next to the breast tissue may cause nipple excoriation. Nipple cups, designed for correcting inverted nipples, may be recommended during the last 2 months of pregnancy. The woman also needs to know that the size of her breasts has nothing to do with sufficient production of milk for the baby.

DENTAL CARE

Pregnant women can continue routine dental care, but radiologic procedures should be delayed until the completion of pregnancy. It is advisable to have cavities filled and infected teeth treated. Using a soft toothbrush will lessen bleeding from the gums, which increase in vascularity during pregnancy.

Pregnancy affects oral tissues. Estrogen levels cause gum hyperplasia and can predispose the woman to gingivitis, which is evidenced by inflamed and sensitive gums. Dry mouth (xerostomia) or excessive saliva production (ptyalism) may occur during pregnancy. Esophageal reflux or vomiting during pregnancy can erode tooth enamel. Women with periodontal disease are at increased risk for preterm or low-birth-weight newborns. Increased levels of prostaglandin (PGE₂) are associated with the inflammatory process of periodontal disease and also with the onset of labor.

Oral health is achieved by brushing with a soft toothbrush, flossing, adequately controlling plaque, obtaining regular professional check-ups, and maintaining adequate nutrition. Elective professional dental care is recommended during the second trimester of pregnancy.

Fetal tooth development begins in the sixth week of gestation for primary teeth and in the tenth week of gestation for permanent teeth. Taking prenatal vitamins and fluoride and consuming foods rich in vitamins A, C, and D and calcium, phosphorus, and protein during pregnancy is essential. Nurses should provide instructions concerning oral care and the need for professional dental prophylaxis and adequate nutrition.

IMMUNIZATIONS DURING PREGNANCY

The pregnant woman needs to know that immunizations with some attenuated live viruses should not be administered during pregnancy because of the possibility of a teratogenic effect (potential for fetal damage) of the live viruses on the developing embryo or fetus. The woman should be encouraged to notify health care providers that she may be pregnant before any immunization is administered.

The benefits of vaccination in pregnant women may outweigh the risks when the likelihood of disease exposure is high and infection would pose a risk to the mother or the fetus. Pregnant women who have not received a tetanus-diphtheria (Td) vaccination in the past 10 years can receive a booster. Women who have not received the Td vaccine series can start the process in the second trimester of pregnancy. The tetanus, diphtheria, and pertussis (Tdap) vaccine may be given after delivery (Centers for Disease Control and Prevention [CDC], 2006). During the influenza season, the influenza vaccine can be given to pregnant mothers in their second or third trimester. In high-risk situations, vaccines for yellow fever and anthrax can be given to pregnant women after the first trimester (CDC, 2007). Because a hepatitis B virus (HBV) infection in the pregnant woman can result in severe disease for both mother and newborn, women at high risk for HBV infection can be vaccinated during pregnancy; the vaccine contains noninfectious hepatitis B surface antigen (HBsAg) particles and should cause no risk to the developing fetus. A known allergy to yeast is a contraindication to the HBV vaccine in the United States (CDC, 2005).

Pregnancy is a contraindication for pneumococcal; hepatitis A; polio (oral [OPV] and inactivated [IPV]); measles, mumps, rubella (MMR); and varicella vaccines. Women should be counseled not to become pregnant for at least 28 days after an MMR or varicella vaccine has been administered. Women who are susceptible to rubella should be vaccinated immediately after delivery. No known risk exists for passive immunization of pregnant women with immune globulin preparations (CDC, 2005).

EMPLOYMENT DURING PREGNANCY

In 1978, Congress passed the Pregnancy Discrimination Act, and an amendment in Title VII of the Civil Rights Act of 1964 requires employers to treat pregnancy-related disabilities the same as other disabilities. A federally mandated 12-week unpaid leave of absence is available for the birth or adoption of a child under the Family Medical Leave Act (FMLA). Flexibility options for work also include telecommuting, part-time, flexible hours, or light duty.

Healthy pregnant women may work until their delivery date if the job has safeguards, such as frequent rest periods and no heavy lifting is required. Strenuous physical exercise, the need to maintain body balance or stand for a prolonged period, work on industrial machines, and other adverse environmental factors should be modified as necessary. Women in sedentary jobs should not sit or stand in one position for long periods. Movement is necessary to counter the sluggish circulation that encourages the development of varicosities and thrombophlebitis.

Some occupations are more hazardous because they bring women into contact with harmful substances. These occupations include those that involve working at refineries, research laboratories, sites where chemical fumes are present, and radiation sites. Pregnant nurses may be exposed to waste anesthetic gases in the OR or anesthetic gases expired by patients in the PACU. Exposure to radiation while assisting with portable x-rays also presents an occupational hazard to pregnant nurses (Alex, 2011).

TRAVEL DURING PREGNANCY

Many women choose to maintain a normal lifestyle and travel during pregnancy. Pregnant women should be advised against prolonged sitting during travel. Because of the increased levels of clotting factors and plasma fibrinogen that normally occurs during pregnancy, there is an increased risk of developing thromboembolism with prolonged sitting (Steffen, Dupont, & Wilder-Smith, 2007). The recommendation is a maximum of 6 hours a day driving, with stops made at least every 2 hours for 10 minutes to allow the woman to walk around. Walking will increase venous return from her legs. Although pregnant women should wear seatbelts like everyone else, they should adjust the lap belt so that it fits under the abdomen and across the pelvic bones (Figure 5-9). Traveling by plane shortens traveling time and is not contraindicated as long as the plane has a well-pressurized cabin and sitting time is not prolonged.

Late in pregnancy, the possibility of early labor should be considered when traveling. The woman should be advised to ask her health care provider for a copy of her prenatal records to have, in case of an unexpected complication. Guidance concerning hand hygiene and dietary precautions to prevent diarrhea are essential. If needed, special oral rehydration solutions may be available, or bottled drinks may provide

the fluid, sugar, and electrolytes needed. An oral rehydration formula recommended by the World Health Organization (WHO) is to combine 1 L of water that contains 1 teaspoon of salt, 4 teaspoons of cream of tartar, ½ teaspoon of baking soda, and 4 tablespoons of sugar (Caroll, 2005). The woman should be advised to wear comfortable shoes and long-sleeved clothing and use mosquito nets around the bed in insect-prone areas. Insect repellants with DEET are usually safe after the first trimester. Sunblock should be applied as appropriate.

EFFECT OF PREGNANCY ON MEDICATION METABOLISM

The normal physiologic changes that occur during pregnancy affect the metabolism of medications administered to the mother. Subtherapeutic levels may occur because of the increase in plasma volume, cardiac output, and glomerular filtration rate that occurs during pregnancy. Decreased gastric emptying time during pregnancy changes the absorption time of oral drugs and can delay onset of action. The increased levels of estrogen and progesterone may alter hepatic (liver) function resulting in drug accumulation in the body. Drugs can cross the placenta and have an impact on fetal development. Taking ibuprofen during the third trimester can cause an early closure of the ductus arteriosus, resulting in fetal distress. Drugs can pass into the breast milk after delivery and be ingested by the nursing newborn. The woman must be cautioned against taking *any medication* during pregnancy and lactation without first consulting her health care provider.



FIGURE 5-9 A seatbelt must be worn whenever riding in an automobile. The lap portion of the belt should be placed low, just below the protruding abdomen. The shoulder belt should be placed above the uterus in pregnancy.

The FDA has established risk categories for medication use during pregnancy, and it is published in all drug reference books (see Box 4-3). The nurse should carefully review the safety classification of any drug—prescription or over-the-counter (OTC)—administered to a pregnant woman. Maternal drug exposure is related to the occurrence of birth defects. More than 80% of pregnant women use OTC or prescription medication during pregnancy and may not realize the potential dangers involved. The woman should be informed about the effects of substance abuse on the developing fetus (see Chapter 16).



Medication Safety Alert

OTC Medications

The pregnant woman should be advised not to take any OTC medication without first consulting her health care provider.

DANGER SIGNS

The pregnant woman should be taught the danger signs that must be reported to the nurse-midwife or physician. Each woman should be given written information listing the important signs, written at a level and in a language that she can read. She should have specific directions and telephone numbers so that she can obtain assistance immediately.



Safety Alert

Danger Signs During Pregnancy

- Headaches, visual disturbance, or dizziness
- Increase in systolic blood pressure of 30 mm Hg or greater
- Increase in diastolic blood pressure of 15 mm Hg or greater or blood pressure greater than 140/80 mm Hg
- Epigastric, abdominal, or severe flank pain
- Burning during urination or severe backache
- Abnormal fatigue and nervousness
- Anginal pain and shortness of breath noted with activity
- Muscular irritability, confusion, or seizures
- Vaginal bleeding or fluid leaking from the vagina
- Decrease in fetal movement (decreased kick count)
- Fever greater than 38° C (100.4° F)

WEIGHT GAIN AND FETAL GROWTH

Adequate weight gain during pregnancy is required for maternal health and normal fetal growth and development (Table 5-4 and Figure 5-10). Mothers who are underweight or who have a small weight gain during pregnancy place their infants at a higher risk for low birth weight, prematurity, low Apgar scores, and morbidity. The accepted weight gain in pregnancy for a healthy outcome in women of normal weight is 11.5 to 16 kg (25 to 35 lbs). The recommended weight gain during the first trimester is approximately 1.3 kg (3 lbs), and after the first trimester, 0.45 kg (1 lb) per week. The weight gain during the first trimester is almost entirely growth of

maternal tissues. In the second trimester, growth is primarily maternal tissue with some fetal tissue. Growth is mainly fetal in the third trimester. Obese women face a greater risk of certain medical complications. Emphasis must be placed on the quality of food intake.

NUTRITION

The mother's nutritional status can affect the outcome of her pregnancy. Pregnancy is a time when the well-being of one (fetus) directly depends on another (mother). With this knowledge, nursing strategies to determine the nutritional health of a pregnant woman include obtaining a complete nutritional history of food habits and preferences, monitoring nutritional status, and promoting nutritional education (see Evolve for more information). Studies have shown that poor fetal growth resulting from an inadequate maternal intake of nutrients can have long-term consequences for the fetus and be the cause of certain diseases in adulthood. Allergies and cultural factors

Table 5-4 Recommended Weight Gain During Pregnancy

Underweight women (BMI* less than 18.5)	12.5-18 kg (28-40 lbs)
Normal weight women (BMI 18.5-24.9)	11.5-16 kg (25-35 lbs)
Overweight women (BMI 25-29.9)	7-11.5 kg (15-25 lbs)
Obese women (BMI over 30)	5-9 kg (11-20 lbs)

Data from Institute of Medicine. (2009). *Weight gain during pregnancy: Re-examining the guidelines*. National Academy Press. Washington, D.C.: Author. BMI, body mass index.

*BMI is calculated by dividing weight in kilograms by height in meters squared or by dividing weight in pounds by height in inches squared multiplied by 703 (CDC, 2007a). A calculator for measuring BMI is available on Evolve.

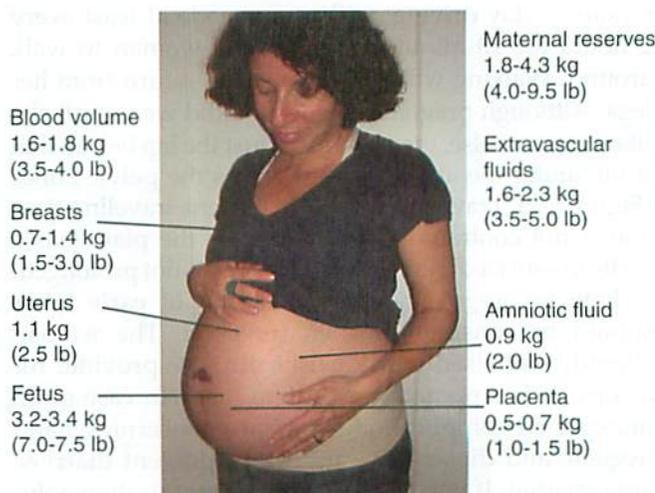


FIGURE 5-10 Weight gain in an average pregnancy.

may alter the dietary practices of some women. For example, in some cultures, milk is not a part of the traditional diet. Intake of some dark green, leafy vegetables, and tofu can provide calcium and iron.

Cultural Considerations

Common Foods Considered “Hot” or “Cold” in Some Cultures*

SOUTHEAST ASIA

Hot Foods (Yang)

Pepper

Onion

Meat, poultry, fish

Eggs

Sweets

Cold Foods (Yin)

Flour

Fruits

Cold or sour foods

HISPANIC

Hot Foods

Onions

Chili peppers

Potatoes

Cheese

Evaporated milk

Chicken, lamb

Flour tortilla

Kidney beans

Cold Foods

Fruits and vegetables

Milk

Fish

Corn tortilla

Red beans

*Some cultures classify illnesses or conditions as *hot* or *cold*. A balance is sought so that “hot” foods are preferred in conditions considered “cold,” and “cold” foods are preferred for conditions considered “hot.” Special care is required when counseling the woman to increase needed nutrients without deviating from the culturally required diet.

FOOD GUIDES

MyPlate (Figure 5-11) provides a quick reference for recommendations needed for a healthy diet. These guidelines were updated by the combined efforts of the U.S. Department of Health and Human Services and the U.S. Department of Agriculture (USDA) in 2011. A well-balanced, nutrient-dense diet combined with adequate physical activity is the core of the revised guidelines. Dietary guidelines, sample menus, recipes, and many other resources for consumers are available online (see Online Resources). Women who follow this guide during pregnancy can be well nourished at the time of delivery.

Different countries and cultures have their own food guides based on cultural food preferences and food availability (Figure 5-12). Universal guidelines are not effective for all populations. They should be used as guides in providing a well-balanced diet and avoiding empty calories. The guidelines can be designed to meet the individual needs of the pregnant woman.

NUTRITIONAL REQUIREMENTS DURING PREGNANCY

Good nutrition influences the outcome of pregnancy, and a determination of nutritional needs is an important part of prenatal care. Research has shown that a daily supplement of 0.4 mg folic acid *in the first weeks of pregnancy* significantly reduces neural tube defects in newborns, such as spina bifida (CDC, 2010). Foods high in folate include beans, leafy green vegetables, and whole grains.

Nutrition Considerations

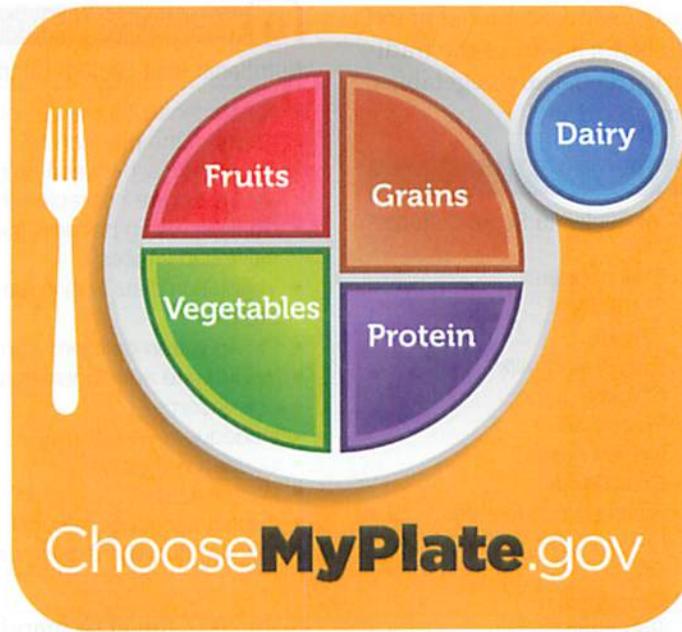
Nutritional Risk Factors During Pregnancy

- Adolescence (demands of normal growth spurt added to needs of the pregnancy)
- Short interval between pregnancies because depleted nutrient stores are not replenished
- Unusual eating patterns (pica, or eating inedible and nonnutritive substances)
- Vegetarian diets with incomplete intake of the eight essential proteins
- Previous iron deficiency anemia
- Inadequate nutritional intake
- Low income
- Inadequate weight gain
- Sudden weight gain
- Weight loss
- Substance abuse (alcohol, tobacco, illicit drugs)
- Medical conditions such as diabetes or kidney dysfunction

In 2000, the FDA mandated folic acid fortification of cereal grain (but not corn mesa grain) because folic acid supplements do not help those women with unplanned pregnancies. Folic acid is needed in the first few weeks of pregnancy before many women are aware they are pregnant. In 2004, the CDC and Emory University formed the Flour Fortification Initiative (FFI) with the goal of having 80% of the world’s wheat flour fortified with folic acid by the year 2015 (Berry, 2010). This will significantly reduce the occurrence of neural tube defects around the world. (The upper limit of RDI folic acid intake is 1000 µg.) The recommended calorie increase from prepregnancy needs is approximately 340 calories in the second trimester and 450 to 500 calories in the third trimester. Breastfeeding requires an increase of 500 calories from prepregnancy needs.

A fluid intake of six to eight glasses (1500 to 2000 mL) per day is recommended to maintain body temperature and prevent constipation. Although an excessive intake of caffeine-containing fluids may cause constriction of blood vessels and has been associated with fetal growth restriction, a moderate intake of caffeine (limit to 2 cups of coffee or tea) may protect against gestational diabetes (Cox, 2009).

Most women do not have iron stores to meet the demands of pregnancy (Gabbe, Niebyl, & Simpson, 2007). Because iron needs of pregnancy cannot be met by diet alone, supplementation of one 325-mg tablet of ferrous gluconate per day starting at 14 to 20 weeks’ gestation is recommended. Taking iron on an empty stomach between meals increases its absorption (Gabbe et al., 2007), and eating citrus or foods high in vitamin C also aids in the absorption of iron. The ferrous form of iron is the only type readily absorbed by the intestine, and the nausea common to the first trimester usually subsides between 14 and 20 weeks’ gestation. A stool softener, such as docusate sodium, may



A

Food Group	1st Trimester	2nd and 3rd Trimesters	What counts as 1 cup or 1 ounce?	Remember to...
Eat this amount from each group daily.*				
Fruits 	2 cups	2 cups	1 cup fruit or juice ½ cup dried fruit	<i>Focus on fruits—</i> Eat a variety of fruits.
Vegetables 	2½ cups	3 cups	1 cup raw or cooked vegetables or juice 2 cups raw leafy vegetables	<i>Vary your veggies—</i> Eat more dark-green and orange vegetables and cooked dry beans.
Grains 	6 ounces	8 ounces	1 slice bread 1 ounce ready-to-eat cereal ½ cup cooked pasta, rice, or cereal	<i>Make half your grains whole—</i> Choose whole instead of refined grains.
Meat & Beans 	5½ ounces	6½ ounces	1 ounce lean meat, poultry, or fish ¼ cup cooked dry beans ½ ounce nuts or 1 egg 1 tablespoon peanut butter	<i>Go lean with protein—</i> Choose low-fat or lean meats and poultry.
Milk 	3 cups	3 cups	1 cup milk 8 ounces yogurt 1½ ounces cheese 2 ounces processed cheese	<i>Get your calcium-rich foods—</i> Go low-fat or fat-free when you choose milk, yogurt, and cheese.

*These amounts are for an average pregnant woman. You may need more or less than the average. Check with your doctor to make sure you are gaining weight as you should.

In each food group, choose foods that are low in "extras"—solid fats and added sugars.

Pregnant women and women who may become pregnant should not drink alcohol. Any amount of alcohol during pregnancy could cause problems for your baby.

Most doctors recommend that pregnant women take a prenatal vitamin and mineral supplement every day **in addition to** eating a healthy diet. This is so you and your baby get enough folic acid, iron, and other nutrients. But don't overdo it. Taking too much can be harmful.

B

FIGURE 5-11 A, MyPlate is a guide to healthful eating for all people. The colors represent the basic food groups in the diet, with approximate recommended amounts to consume in relation to the total diet plan. Portion size can be individualized for the consumer by accessing the site, www.choosemyplate.gov, and entering the individual's weight, gender, and activity level. The orange color represents whole grains; green represents vegetables; red represents fruit; blue represents a calcium source such as milk; and purple represents meat, poultry, eggs, and beans. **B**, The USDA provides specific recommendations for pregnant women.



FIGURE 5-12 Food guide plate from Mexico. The use of foods that respect dietary limitations or restrictions may increase compliance when teaching parents and children concerning a balanced diet that promotes optimum health.

be taken to avoid constipation. Large amounts of iron and folic acid may reduce zinc absorption, and sources of zinc, such as shellfish and whole grains, should be part of the diet.

! Medication Safety Alert

Iron Supplements

Iron supplements should be taken between meals or at bedtime. Milk, tea, coffee, antacids, calcium and oxalic acids in some vegetables such as spinach, and EDTA additives present in some foods can decrease the absorption of iron.

Nondairy sources of calcium, such as collard or turnip greens, juices with added calcium, and nonanimal protein sources, are available for lactose-intolerant or vegetarian women.

! Nutrition Considerations

Proteins for Vegetarians

- Dry peas and beans
- Soybeans and lentils
- Peanut butter
- Nuts and sesame seeds
- Sunflower seeds
- Cottage cheese
- Cheese
- Eggs

Use complementary proteins to supply all essential proteins (amino acids).

A calcium supplement may be prescribed when the imbalance of the calcium/phosphorus ratio causes leg cramps. Vitamin D supplementation may be recommended for dark-skinned women, for women who cover most of their bodies when outdoors, or for those who use sunscreen with an SPF rating of 15 or above because sunlight on the skin aids in vitamin D production. The FDA and the USDA have developed uniform food labels to inform consumers of contents of packages and

canned food. The woman should be educated to carefully read food labels, especially sodium content, to promote the intake of nutrient-dense foods.

! Nutrition Considerations

Reading Labels Concerning Sodium Content

Salt free, sodium free: <5 mg

Low sodium: <35 mg

Unsalted or no added salt: No salt added during processing (but the food itself may not be salt-free)

During pregnancy and lactation, the maternal intake of docosahexaenoic acid (DHA), an omega-3 fatty acid, is essential for optimum brain development of the fetus and infant. The WHO recommends that a term infant receive 20 mg DHA per kilogram per day. Maternal sources of DHA include fatty fish, such as Atlantic and sockeye salmon, halibut, tuna, and flounder; egg yolk; red meat and poultry; canola oil; and soybean oil. Frying foods negatively alters DHA content (Colombo, Carlson, & Levine, 2004). Choline is an essential nutrient that is best obtained via foods such as chicken liver, eggs, soybeans, salmon, chicken, and cauliflower. Malabsorption syndromes and medications such as Phenytoin and barbiturates can interrupt absorption of choline and folates (Zeisel & da Costa, 2009).

Because the need for additional calories during pregnancy and lactation is less than the increased need for specific nutrients, nutrient-dense foods (foods that are high in nutrients related to the calories provided) are recommended. Nutrient-dense foods include whole grain breads, fresh fruits and vegetables, and dried peas and beans. Low-nutrient foods should be limited. Low-nutrient foods, also known as foods with “empty calories,” include sweets and fats. The health care provider should be consulted before adding nutritional supplements during pregnancy because excessive amounts of some supplements can be toxic to the fetus (Box 5-5).

! Patient Teaching

Diet and Fetal Health

A correlation exists between maternal diet and fetal health. The nurse should guide women of childbearing age concerning the value of a well-balanced diet so that they can be in a good nutritional condition at conception and birth.

Box 5-5 Complementary and Alternative Therapies

Supplements to avoid during pregnancy include licorice, papain, and black cohosh. Large amounts of green tea can have an antifolate action. Dietary supplements containing herbs are not recommended during pregnancy because concentrations are not monitored, and interactions can be detrimental.

FOODS TO AVOID DURING PREGNANCY

Women who are pregnant should avoid eating shark, swordfish, and king mackerel because these fish contain high levels of mercury that could be toxic to the fetus's developing nervous system. The mercury binds to the amino acids rather than to the fats and is retained after cooking. Other fish that should be limited include grouper, red snapper, trout, halibut, white albacore tuna, and marlin; they also have high levels of methyl mercury. The Environmental Protection Agency (EPA) advises pregnant women to limit fish intake to 170 g (6 oz) freshwater fish per week. Tuna, sushi, and all raw fish should be avoided during pregnancy. Eating limited amounts of salmon, trout, sardines, anchovies, and herring can provide needed DHA with minimal risk (Taylor, 2010).

Guidance from a dietitian should be sought if the woman is a strict vegetarian, is lactose intolerant, experiences pica, or has a high-risk medical condition. Large amounts of liver should be avoided, especially in the first trimester, because of high levels of preformed vitamin A (Cox, 2009). Saccharine-containing sweeteners should be avoided because it may accumulate in fetal tissue; however, other non-nutritive sweeteners are safe in moderation. Foods high in nitrites can cause fetal methemoglobinemia. Although nitrates are not harmful, some foods high in nitrates convert to nitrites and can be toxic, especially around 30 weeks' gestation (Cox, 2009).

RECOMMENDED DIETARY ALLOWANCES AND DIETARY REFERENCE INTAKES

In the United States, the Food and Nutrition Board of the Institute of Medicine (IOM) and the National Academy of Science, in cooperation with the USDA and the U.S. Department of Health and Human Services, developed recommended dietary allowances (RDA) of dietary nutrient intake required to maintain optimal health. Research has shown an increase in the use of dietary supplements, resulting in the need to describe the upper limits of intake levels to prevent toxicity. Consuming dietary supplements containing trace elements can result in toxicity if upper limits of intake are consistently exceeded. In response, a committee of the USDA Human Nutrition and Research Center published recommended dietary intakes (RDI) focusing on specific nutrients. *Dietary reference intakes (DRIs)* are an umbrella term that includes RDA and RDI.

Safety Alert

Exceeding Recommended Doses

Avoid exceeding recommended doses of vitamin and minerals because a balance is needed. For example, excess intake of vitamin C can inhibit the utilization of vitamin B₁₂.

PICA

Pica is the consumption of substances usually considered inedible and with no nutrient value, such as cornstarch, laundry starch, red clay, or ice cubes. Iron deficiency anemia is a common concern with pica. There is no evidence-based research that shows pica or food cravings reflect the body's need for the nutrient.

NUTRITION AND THE PREGNANT ADOLESCENT

The pregnant adolescent may be nutritionally at risk because of social and economic factors. The pregnant teenager has the dual demands of pregnancy and adolescence. She must consume enough nutrients for her growing fetus and for her own continued growth.

Many adolescents eat frequently during the day. They often indulge in soft drinks, tortilla chips, French fries, or fad diets. Counseling adolescents may be difficult because they often are not in charge of buying or cooking their food. Therefore, the person responsible for buying and cooking their food should be included in the counseling sessions. The adolescent should gain in the upper limit of the range recommended for normal adult women.

EDUCATION FOR CHILDBIRTH

The goals of education for childbirth are to help the expectant parents and family become knowledgeable consumers, to be active participants in maintaining health during pregnancy and birth, and to learn applicable coping strategies that empower women and their partners to decide how to best manage their pregnancy and discomforts within the limits of medical safety. Parents are informed about the numerous comfort and pain-relief strategies available to them, as well as the benefits and risks. Throughout the decision-making process, they need support for their choices. The various childbirth education programs, such as **Lamaze technique** (psychoprophylactic method) and Bradley technique, share these common goals. Many hospital-based childbirth education programs cover a variety of options and techniques. Several nonpharmacologic forms of pain relief can be used alone or as complements to pharmacologic interventions (see also Chapters 8 and 21).

Relaxation is one form that is taught in most childbirth preparation classes. Relaxation can keep the abdominal wall from becoming tense and allow the uterus to rise with contractions. It also can serve as a distraction technique. **Focusing** and **imagery** are another method for distraction and for keeping the sensory input of pain from reaching the cortex of the brain. **Breathing techniques** help relax the abdomen and also have a distraction value. Touch and massage provide comfort and may release endorphins.

Effleurage is a technique of gentle abdominal massage often taught in childbirth classes (see Chapter 8). Women can perform effleurage of their abdomens during contractions by using fingertip circular motions with both hands (Figure 5-13, A). Applying **sacral pressure** (firm pressure against the sacrum) is helpful when the woman experiences pain in her back during contractions (Figure 5-13, B). Other methods, discussed in Chapter 21, include hydrotherapy, biofeedback, acupuncture, transcutaneous electrical nerve stimulation, and hypnosis.

Preparing for coached childbirth emphasizes working in harmony with the body by using breath control, abdominal breathing, and general body relaxation. Breathing techniques are encouraged and are the basis for most prepared childbirth classes in the United States. Controlled breathing patterns are used to avoid losing control. Coping strategies include concentrating on a focal point, such as a favorite picture, to keep nerve pathways occupied so that they cannot respond to painful stimuli. Specific relaxation strategies (e.g., touch, imagery, music, and hydrotherapy) are used to deal with pain. The woman is taught to contract specific muscle groups while relaxing the remainder of her body. Instead of tensing during uterine contractions, the woman responds with conditioned relaxation and breathing patterns.

The basic underlying principles of most childbirth education include partner participation and support, relaxation and breathing strategies, muscle conditioning, and knowledge of choices and alternatives that can empower a laboring woman and her support person.

Early prenatal classes focus on the first and second trimesters and discuss early gestational changes, self-care during pregnancy, fetal development, nutrition, rest, posture, exercises, and relief measures for common discomforts of pregnancy (Box 5-6). Emphasis is placed on how to have a healthy pregnancy and avoid injury to the fetus. Later prenatal classes focus on changes that occur during middle pregnancy, danger signs to report, and preparation for labor and birth and include anticipatory guidance, birth choices, postpartum care, infant care and feeding, and newborn safety issues.

Patient Teaching

Packing the Labor Bag

Items the woman can take to the hospital for personal use during labor and after delivery may include:

- Lotion for massage
- Warm socks
- Personal washcloths
- Portable mini-fan
- Tennis balls for back massage
- Sugarless lollipops for dry mouth
- Lip balm
- Simple games for early labor
- CDs and CD player, iPod, or headphones
- Robe or nightgown
- Nursing bra
- Toiletries
- Clothes for mother and baby for hospital discharge

Childbirth preparation classes are available for grandparents and siblings, and most hospitals have



FIGURE 5-13 **A**, Effleurage. Slow massage of the abdomen in a circular motion using the fingertips stimulates large-diameter nerve fibers, thus interfering with transmission of pain sensations. Pressure should be firm enough to prevent a tickling sensation. **B**, Firm sacral pressure helps relieve back pain. The partner can use the palm of the hand, the knuckles, or a tennis ball to apply controlled sacral pressure. Practicing the technique during pregnancy enables effective application during labor.

Box 5-6 Types of Prenatal Classes**CHILDBIRTH PREPARATION CLASSES**

- Changes of pregnancy
- Fetal development
- Prenatal care
- Hazardous substances to avoid
- Good nutrition for pregnancy
- Relieving common pregnancy discomforts
- Working during pregnancy and parenthood
- Coping with labor and delivery
- Care of the infant, such as feeding methods, choosing a pediatrician, and selecting clothing and equipment
- Early growth and development

GRANDPARENT CLASSES

- Trends in childbirth and parenting styles
- Importance of grandparents to a child's development
- Reducing conflict between the generations

EXERCISE CLASSES

- Maintaining the woman's fitness during pregnancy
- Postpartum classes for toning and fitness
- Positions and environments to avoid

BREASTFEEDING CLASSES

- Processes of breastfeeding
- Feeding techniques
- Solving common problems
- Continuation of some classes after birth with lactation specialists

GESTATIONAL DIABETES MELLITUS

- Monitoring blood glucose levels
- Diet modifications
- Need for frequent prenatal visits
- Preventing infection and complications

INFANT CARE CLASSES

- Growth, development, and care of the newborn
- Needed clothing and equipment
- Adolescent classes for birth and parenthood preparation

SIBLING CLASSES

- Helping children prepare realistically for their new brother or sister
- Helping children understand that feelings of jealousy and anger are normal
- Giving parents tips about helping older children adjust to the new baby after birth

VAGINAL BIRTH AFTER CESAREAN (VBAC) CLASSES

- What to expect during labor when previous childbirth was a cesarean section

separate classes for adolescents and women with high-risk pregnancies.

BREATHING PATTERNS USED DURING LABOR

Breathing techniques are used to help the woman relax and override the pain of the uterine contractions (Box 5-7).

Box 5-7 Breathing Techniques

- Breathing techniques are used during a contraction.
- Inspiration and expiration should be equal in length.
- Hyperventilation (a decrease in carbon dioxide) can occur as a result of rapid breathing. Carbon dioxide depletion can cause tingling of fingers and mouth. Dizziness may also occur. The woman should be instructed to rebreathe some carbon dioxide from cupped hands. If hyperventilation is allowed to continue, the infant can be deprived of oxygen.
- A cleansing breath, or deep breath, before each contraction helps the woman relax. If the woman inhales through her nose (rather than her mouth), she will lessen dryness of her mouth.
- "Pant-blow" breathing is rapid, shallow, or light chest breathing used in late labor.
- Expulsive breathing is modified pant-blow breathing. The woman can set a pattern by using a random number of pant breaths followed by a blow (exhalation).

Paced breathing is a method in which the woman paces herself by breathing rhythmically and, by self-regulation, is able to conserve energy. A cleansing breath should be as effortless and as deep as is comfortable. It helps the woman relax and may play a role in enhancing oxygenation. Simple measures to overcome hyperventilation include rebreathing some exhaled carbon dioxide from cupped hands or breathing normally while compressing one nostril with the index finger. Another technique is to have the woman breathe in a paper surgical mask to rebreathe some carbon dioxide. The key is to change the rapid shallow breathing to slow, deep breathing. This may be accomplished by having the woman count aloud and pace herself.

Relaxation is the foundation of all breathing patterns. The breathing rate should be comfortable for the woman. If the woman chooses to inhale through her mouth instead of her nose, she should be taught ways to protect her mucous membranes from drying out, such as sucking on crushed ice or sipping clear liquids. The overall goals of teaching breathing techniques (or paced breathing) are to (1) maintain adequate oxygenation of the mother and fetus, (2) increase physical and psychological relaxation and possibly decrease discomfort and anxiety, and (3) provide a means of focusing attention.

There is no "correct" breathing technique to prepare the woman for childbirth. The woman should be allowed to do what is most comfortable for her. If the woman has not attended childbirth classes, she can be taught as needed. It is important that each breathing pattern begin and end with a **cleansing breath**, which is a deep inspiration and expiration similar to a deep sigh. The cleansing breath helps the woman focus on relaxing.

First-Stage Breathing

Slow Paced Breathing. In the early stages of labor, the woman uses a slow, deep breathing technique that increases relaxation. She starts with a cleansing breath and then breathes slowly, as during sleep. At the end of a contraction, a cleansing breath is taken.

Modified Paced Breathing. Modified paced breathing begins and ends with a cleansing breath. During the contraction, the woman's breaths are more rapid and shallow. The rate should be no more than twice her usual rate. Some women combine both slow and modified paced breathing during the contraction. The primary considerations are adequate oxygenation and the woman's comfort.

Patterned Paced Breathing. Patterned paced breathing is used during the later part of cervical dilation. It begins with a cleansing breath, which is followed by more rapid breaths, with an interspersed soft blow, which is often called "pant-blow" or "hee-hoo" breathing. If the woman feels an urge to push before her cervix is fully dilated, she should be encouraged to use a series of soft blows to counteract the desire to push (Figure 5-14).

Second-Stage Breathing (Expulsion Breathing)

When the woman has the urge and it is time for her to push, she should take a cleansing breath, then take another deep breath, and push down while exhaling (open-glottis technique). There is controversy about whether pushing over an extended period is a safe and effective method. The question is: Can it decrease the cardiac output and reduce placental blood flow? Traditional pushing with sustained breath holding against a closed glottis (**Valsalva's maneuver**) results in an increase in intrathoracic pressure, possibly resulting in fetal hypoxia. Proponents of open-glottis pushing assert that pushing while exhaling, as if blowing out a candle, does not inhibit venous return to the heart or impair blood flow to the fetus. If the woman does hold her breath, it is important that it be for a maximum of 6 seconds, followed by a deep cleansing breath.

The nurse may position the woman with her head and shoulders bent forward, leaning on the diaphragm, to encourage the pushing sensation. Also, the woman may prefer a 45-degree recumbent position.

NATURAL CHILDBIRTH

Today, natural childbirth is the process of giving birth with minimum medical and pharmacologic interventions. The woman who requires or accepts assistance with pain relief should not be made to feel she has failed in her efforts. Prenatal classes also review the

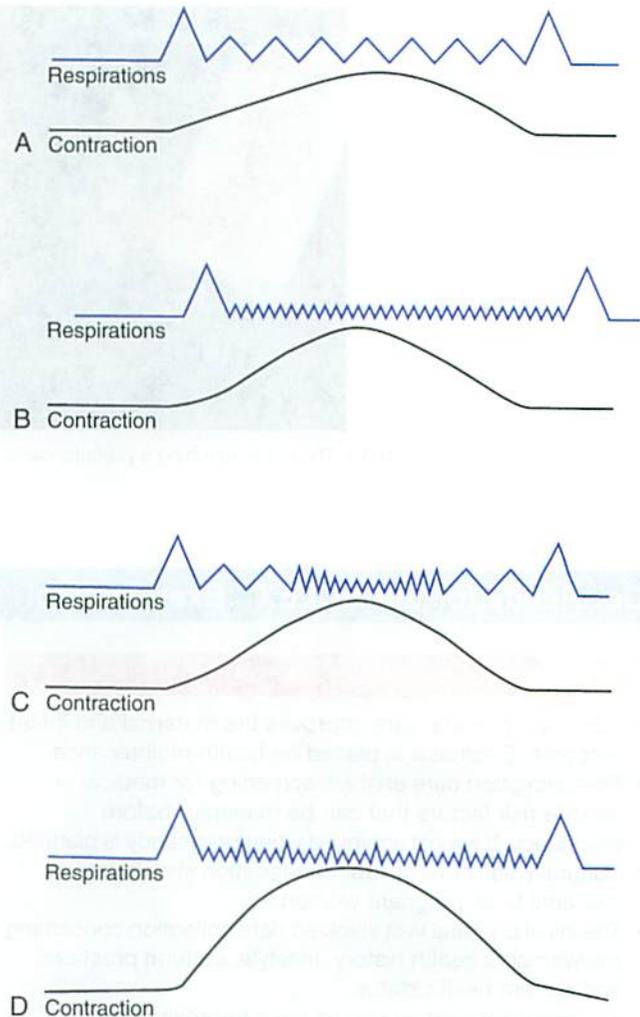


FIGURE 5-14 **A**, Slow paced breathing. The pattern starts with a cleansing breath as the contraction begins. The woman breathes slowly, at about half her usual rate, and ends with a second cleansing breath at the end of the contraction. **B**, As labor intensifies, the woman may need to use modified paced breathing. The pattern begins and ends with a cleansing breath. The woman breathes rapidly, no faster than twice her usual respiratory rate, during the peak of the contraction. **C**, In this variation of modified paced breathing the woman begins with slow paced breathing at the beginning of the contraction, switching to faster breathing during its peak. A cleansing breath also begins and ends this pattern. **D**, Patterned paced breathing begins and ends with a cleansing breath. During the contraction, the woman emphasizes the exhalation of some breaths. She may use a specific pattern or may randomly emphasize the blow.

birth process (Figure 5-15), pain management choices, and care provider choices. Obstetricians and nurse-midwives usually staff labor and delivery rooms in hospitals. **Doulas** are professionally trained to provide support during labor to the woman and her partner. The care of the newborn, breastfeeding, family adaptation at home, and telephone advice lines to call for help after discharge are all important components of a childbirth education program.



FIGURE 5-15 The nurse teaching a prenatal class discusses the movement of the fetus through the pelvis.

Get Ready for the NCLEX® Examination!

Key Points

- Adequate prenatal care improves the maternal and infant outcome. Emphasis is placed on health maintenance.
- Preconception care enables screening for medical or lifestyle risk factors that can be managed before pregnancy. It is best achieved when pregnancy is planned.
- Culturally sensitive childbirth education should be available to all pregnant women.
- The initial prenatal visit involved data collection concerning the woman's health history, lifestyle, cultural practices, and current health status.
- The pregnant woman should have approximately 13 prenatal visits to the health care provider to monitor weight, vital signs, height of the fundus, FHR, and other assessments as needed.
- Ultrasound is a noninvasive, painless, and safe method of assessing fetal and placental conditions. It offers a valuable means of confirming pregnancy, assessing fetal growth, determining placental and fetal position, and ruling out fetal and placental abnormalities.
- Doppler ultrasound blood flow analysis is a noninvasive study of blood flow changes that occur in fetal and uteroplacental circulations.
- Chorionic villus sampling is a first-trimester alternative to amniocentesis for prenatal diagnosis of some genetic conditions.
- Amniocentesis is performed to obtain amniotic fluid cells, under the visualization of an ultrasound, through the abdominal and uterine walls into the amniotic sac. Sufficient amniotic fluid must be present for the test to be done. It is used in high-risk pregnancies to assess conditions such as genetic disorders, alpha-fetoprotein levels, and maternal-fetal blood incompatibility.
- BPP is used to evaluate the condition of the fetus by observing five variables: fetal breathing movements, gross fetal movements, fetal heart rate (FHR) variability and reactivity, fetal muscle tone, and the volume of amniotic fluid index (AFI).
- The NST is used to assess fetal well-being by evaluating the ability of the fetal heart to accelerate with fetal movement. The CST evaluates the response of fetal heart rate to uterine contractions.
- The common discomforts of pregnancy occur as a result of hormonal, physiologic, and anatomic changes. The nurse provides the pregnant woman with facts about self-care actions aimed at relieving discomforts and anxiety.
- The nurse provides education and encouragement concerning ways to promote a healthy lifestyle, including exercises, body mechanics, and travel precautions.
- The pelvic tilt, Kegel exercises, and tailor sitting are exercises taught in prenatal classes.
- Exercises should not increase body temperature above 38° C (100.4° F); should not be performed while lying flat on the back; should not cause the heartbeat to exceed 140 beats/min; and should focus on maintenance of fitness instead of improving fitness or weight loss during pregnancy.
- Passive immunization with immune globulin is safe during pregnancy. Live virus vaccines such as MMR, varicella, or rubella can cause fetal damage and should not be administered during pregnancy.
- The nurse reviews hazards that can occur, such as supine hypotension syndrome.
- The optimum weight gain during pregnancy is 11.5 to 16 kg (25 to 35 lbs) for normal weight women.
- There is a high correlation between an adequate diet during pregnancy and fetal health.
- Folic acid supplementation is advised to prevent neural tube defects.

- Iron supplementation is recommended after 20 weeks' gestation. An adequate intake of iron is difficult to obtain from dietary sources alone.
- An adequate DHA intake by the pregnant woman is essential for optimum brain development in the fetus.
- Pica is the consumption of inedible items such as laundry starch, ice chips, or clay that has no nutrient value.
- Education for childbirth helps couples become more knowledgeable, active participants in pregnancy, labor, and birth.
- Several types of classes are available for pregnant women and their partners. In addition, classes are available for siblings and grandparents.
- Relaxation and conditioning exercises during prenatal classes are used to lessen discomfort during labor and birth.
- Commonly used breathing techniques, such as slow, modified, and patterned paced breathing, and conscious relaxation are beneficial to the woman in labor.

Additional Learning Resources

SG Go to your Study Guide on pages 481–482 for additional Review Questions for the NCLEX[®] Examination, Critical Thinking Clinical Situations, and other learning activities to help you master this chapter content.

evolve Go to your Evolve website (<http://evolve.elsevier.com/Leifer/maternity>) for the following FREE learning resources:

- Animations
- Answer Guidelines for Critical Thinking Questions
- Answers and Rationales for Review Questions for the NCLEX[®] Examination
- Concept Map Creator
- Glossary with pronunciations in English and Spanish
- Patient Teaching Plans
- Skills Performance Checklists and more!

Online Resources

- www.acog.org
- www.cdc.gov/niosh/docs/2007-151/pdfs/2007-151.pdf
- www.cdc.gov/nip
- www.cdc.gov/travel/spec_needs.htm
- www.choosemyplate.gov
- www.epa.gov/waterscience/fish/states.htm
- <http://fnic.nal.usda.gov>
- www.lamaze.org
- www.marchofdimes.com
- www.preconception.com

Review Questions for the NCLEX[®] Examination

1. Pregnancy is a contraindication for all of the following vaccines except:
 1. Inactivated polio (IPV) vaccine
 2. Hepatitis B vaccine
 3. Varicella vaccine
 4. Measles, mumps, and rubella (MMR) vaccine
2. According to the Family Medical Leave Act (FMLA), how long is the Federally mandated leave of absence available for a parent following the birth or adoption of a child?
 1. 6 weeks
 2. 8 weeks
 3. 10 weeks
 4. 12 weeks
3. Which medication would be contraindicated for a woman in the 3rd trimester of pregnancy?
 1. Acetaminophen
 2. Ibuprofen
 3. Ferrous sulfate
 4. Docusate sodium
4. At her first prenatal visit, a woman asks the nurse how much weight is acceptable to gain during pregnancy. The nurse correctly responds that a woman of normal weight prior to pregnancy should gain:
 1. 10 to 15 pounds
 2. 25 to 35 pounds
 3. 30 to 40 pounds
 4. 40 to 50 pounds
5. When counseling a woman on nutritional requirements during pregnancy, the health care provider should provide which instruction(s)? (*Select all that apply.*)
 1. A daily supplement of 0.4 mg folic acid in the first weeks of pregnancy significantly reduces neural tube defects in newborns.
 2. The recommended calorie increase in the second trimester is approximately 500 calories greater than pre-pregnancy needs.
 3. Moderate caffeine intake is acceptable.
 4. Breastfeeding requires a decrease of 500 calories.
 5. Fluid intake of six to eight glasses per day is recommended.
6. Women who are pregnant should limit their intake of:
 1. Calcium
 2. Liver
 3. Poultry
 4. Tuna
7. A couple attending an early prenatal class would most likely learn about:
 1. Postpartum care
 2. Birth choices
 3. Fetal development
 4. Newborn safety
8. A woman in labor is 8 cm dilated and feels the urge to push. The nurse should encourage this woman to use:
 1. Patterned-paced breathing
 2. Slow-paced breathing
 3. Modified-paced breathing
 4. Expulsion breathing

Critical Thinking Questions

A 28-year-old patient is GTPALM 100000. She came to the clinic because her home pregnancy test was positive, and she states she has been trying to get pregnant. Her only complaint is nausea in the mornings. She states her husband is a fisherman, and she loves to eat all kinds of fish. She asks whether it is OK to continue eating fish during her pregnancy. Her physical exam reveals an enlarged uterus and a positive Chadwick's sign.

1. What does GTPALM stand for?
2. If today is April 10 and her last menstrual period was March 1, what is her due date?
3. What is Chadwick's sign? Is it normal? Is it a positive sign of pregnancy?
4. What advice would you give to the patient to relieve her nausea and vomiting in the mornings?
5. What advice will you give concerning her diet?

Case Study: Mrs. J. Smith

Mrs. J. Smith, a 28-year-old GTPALM 100000, presents to the clinic with a complaint of nausea and vomiting in the mornings. She states her husband is a fisherman, and she loves to eat all kinds of fish. She asks whether it is OK to continue eating fish during her pregnancy. Her physical exam reveals an enlarged uterus and a positive Chadwick's sign.

Question 1: What does GTPALM stand for?

- G: Gravida (number of pregnancies)
- T: Term (number of term pregnancies)
- P: Preterm (number of preterm pregnancies)
- A: Abortifacient (number of abortions)
- L: Living (number of living children)
- M: Miscarriage (number of miscarriages)

Question 2: If today is April 10 and her last menstrual period was March 1, what is her due date?

- Naegele's rule: LMP + 280 days
- LMP: March 1
- Due date: October 6

Case Study: Mrs. J. Smith (Continued)

Question 3: What is Chadwick's sign? Is it normal? Is it a positive sign of pregnancy?

- Chadwick's sign: Bluish discoloration of the cervix
- Normal: Yes
- Positive sign of pregnancy: Yes

Question 4: What advice would you give to the patient to relieve her nausea and vomiting in the mornings?

- Eat small, frequent meals
- Avoid spicy and fatty foods
- Drink ginger tea
- Take prenatal vitamins