

## FETAL DEVELOPMENT

Normal fetal growth and development follows a definite and predictable pattern. For example, infant growth and development, both before and after birth, follows cephalocaudal (head to toe) principle. Each fetus grows at its own rate, however. The average rates of fetal development are described and illustrated in the accompanying box.

### Signs and Symptoms OF Pregnancy

The signs and symptoms of pregnancy are customarily divided into three categories: presumptive, probable, and positive.

Presumptive symptoms appear early and only the patient (subjective) usually notes several of them. For this reason, they are often referred to as symptoms. While pregnancy may be presumed, these symptoms may indicate other conditions as well.

Probable signs and symptoms also appear early in pregnancy and are more objective. Often, the probable signs can be observed by medical personnel, as well as by the patient herself. While probable signs are more definite proof of an existing pregnancy.

### Presumptive Symptoms of Pregnancy

Presumptive symptoms of pregnancy involve body changes, largely as a result of changes in hormone levels.

**Amenorrhea.** Absence of menstruation is often one of the first indications of pregnancy, but a missed menstrual period does not always signify conception.

**Morning Sickness.** Nausea may begin soon after the first missed menstrual period and usually disappears by the third month of pregnancy. About 50% of all pregnant women experience some nausea or vomiting. Because this condition occurs most commonly in the morning, it is commonly called morning sickness. If this condition lasts beyond the fourth month, excessive in nature (**hyperemesis gravidarum**), or affects the general health of the mother, it is considered to be a complication of pregnancy.

**Frequent Urination.** When the enlarging uterus presses against the urinary bladder, it may cause the women to feel the need to urinate more frequently. As the uterus rises into the abdominal cavity, the pressure is relieved and the condition usually subsides until later in the pregnancy.

**Changes In the Breasts.** Many of the breast changes that occur in pregnancy are similar to those that are present during the normal menstrual cycle, just before

the menstrual flow begins. They include enlargement, heaviness, tingling, throbbing, or tenderness. As the pregnancy progresses, the areola tissues and the nipples enlarge and darken in color.

**Fatigue.** During the early months of pregnancy, the woman may experience drowsiness and a tendency to tire easily. She may find that she requires more rest and sleep than usual.

**Pigmentation.** Skin changes occur as a result of pregnancy. In addition to changes in the breasts, a suntanned, bronzed masking may appear across the face of dark-haired women and is known as chloasma (**chloasma gravidarum**), or the mask of pregnancy.

A definite pigmentation of the abdomen often appears as a dark line extending from the umbilicus to the pubis and is known as the **linea nigra**. **These changes in skin color are a result of alterations in hormonal levels.**

**Quickening.** The first movements of the baby felt by the expectant mother are called quickening. This first experience toward the end of the fifth month (18<sup>th</sup>-20<sup>th</sup>) of gestation. It is described as a light, fluttery sensation. This feeling of life is not a positive sign of pregnancy, because it cannot be corroborated objectively by anyone other than the mother and because movement of gas within the colon can simulate it.

**Vaginal changes.** Increased blood supply to the vaginal area during pregnancy results in a visible color change of the mucous membrane. The tissue develops a dark violet hue and is known as Chadwick's sign. This generally occurs in about the sixth week of gestation.

### **Determining the Estimated Date of Confinement**

It is desirable for the woman who thinks she is pregnant to consult a physician after one menstrual period has been missed. Many women do not keep an accurate record of menstrual periods and often do not resume normal periods after discontinuing the use of birth control pills. In these cases, the physician determines the **estimated date of confinement (EDC)**, based on objective physical evidence. A full-term pregnancy is (in theory) 280 days in length. This is 40 weeks or 10 lunar months. **The duration of pregnancy is determined by counting from the first day of the last normal menstrual period (LMP).**

## Methods for determining EDC:

- Nagele's rule: Count backward 3 months from the first day of the last menstrual period and add 7 days.
- Count 22 weeks from the day of quickening (the first perceptible movement of the fetus in the uterus) If it is the first pregnancy; and 24 weeks for a multipara (second or subsequent pregnancy).
- Count 273 days from the presumed date of impregnation.
- Count 2 weeks from the time of lightening (the sensation of decreased abdominal distention due to descent of the fetus into the pelvic cavity).
- Measure the fetus by pelvimetry.
- Listen to fetal heart tones. They should be clearly audible by the 20<sup>th</sup> week of gestation.
- Estimate fetal maturity by ultrasonography
- In a suspected disorder, amniocentesis may be performed for information about fetal maturity.

The actual duration of pregnancy varies greatly and one should remember that the EDC is an estimated due date. Only about 50% of women are delivered within 5 days before or after their estimated due date.

## Prenatal and Antepartal Care

Prenatal refers to the period between conception and the birth of the baby, while antepartal refers to the period between conception and the onset of labor. The two are often used interchangeably. Since prenatal still seems to have wide usage, it is retained here.

Good prenatal care has as its goal the maximum physical and mental fitness of the mother with the reward of an uncomplicated delivery and a healthy mother and baby. Because the public has become so aware of the value of prenatal care, a woman often seeks care as soon she suspects that she is pregnant. Indeed, in recent years, emphasis has been placed on premarital and pregnancy examination to encourage positive maternal and child health.

## THE FIRST VISIT

The father should be encouraged to go with the mother on her first visit to the physician or midwife. It might help if he went on subsequent visits too, so that he would hear firsthand what the practitioner says. Parenthood is a partnership in which both partners have an equal interest. Also, the mother might be helped to carry out her program if the father understands it.

The physician or midwife performs a complete physical examination of the mother, which includes:

- Head to toe assessment, including the gums, teeth, thyroid gland, heart, lungs, breasts, and all body systems.
- Blood and urine tests, including blood type and Rh factor.
- Blood pressure and weight
- A pelvic examination, including a Pap test and a test for gonorrhea, syphilis, and sometimes, AIDS (Chap. 46 describes the procedures for a pelvic examination.)
- PPD test for tuberculosis
- Rubella titer to determine susceptibility to measles

### Nutritional Needs

- Increase caloric intake by approximately 300 calories daily.
- Increase calcium intake during the last half of the pregnancy; calcium is essential to the development of the baby's bones and teeth. It is also important in blood clotting. Milk intake should be increased to one quart daily.
- Maintain iron intake; it is essential in the production of hemoglobin. The fetus to be used after birth, since breast milk contains little iron stores iron. Most physicians order an iron supplement during pregnancy because of its importance in the diet.
- Increase protein intake; protein is essential for building and repair of all body tissues and aids in the production of milk for the nursing mother.
- Avoid empty calories. (This includes alcohol, sugared soda drinks and other sweets, and salty foods.)
- Use iodized salt; it promotes proper functioning of the thyroid gland
- Include a wide variety of foods. Especially during the first few months of pregnancy if the mother is experiencing nausea, a variety of foods will encourage proper nutrition.
- Do not take laxatives unless the physician specifically orders them. Stool softeners are ordered more often than laxatives. Fiber is essential to prevent and treat constipation.
- Increase fluid intake 8 to 10 glasses per day to assist in kidney and bowel function. Water is the preferred fluid.

## Teratogenic Factors

A **teratogen** is an environmental agent or factor that causes defects in the fetus. Most teratogenic effects occur in the first trimester of pregnancy, often before the woman knows that she is pregnant. These events occur after fertilization and are not genetic in nature; although they are congenital (present at birth).

**Diseases.** Fetal damage caused by rubella and complications caused by maternal herpes virus. To avoid another dangerous infection, toxoplasmosis, the pregnant women should not handle cat litter and should cook meat well, especially poultry. She should wash her hands carefully after handling raw meat and wash all raw fruits and vegetables thoroughly before eating them, Gloves should be worn while gardening or cleaning.

**Medications.** The accepted practice is for the pregnant woman not to take any medications unless they are absolutely necessary and are ordered by the obstetrician. Prescribed medications should be taken in the smallest effective dose should be discontinued as soon as possible. The safety of any drug in pregnancy is unpredictable.

Even commonly used medications can cause problems in the fetus. For example, aspirin, a mild anticoagulant, can cause a pro thrombin problem in the fetus. Medications, such as nose drops, diet pills, diuretics, and cold remedies can also cause serious difficulties.

Some medications cause defects that show up many years later in the child. One example is diethylstilbestrol (DES), previously taken in pregnancy to prevent miscarriage. DES has been linked to later cervical cancer in girls and infertility in boys.

**Drug Abuse.** Street drugs, such as amphetamines and stimulants, can cause difficulties for the fetus. Addicting drugs, such as cocaine and heroin, can cause congenital addiction in the newborn. Other drugs are either known or suspected teratogens. Substance abuse and chemical dependency, and some of the specific effects of drugs and alcohol on pregnancy and the fetus will be discussed on a manual of references.