

كلية التمريض/جامعة بغداد

Normal Pregnancy

اعداد/ المدرس رجاء طارق حسن

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Normal Pregnancy

Part one: Development & Physiology of Fetus

- **Stages of Fetal Development**

In just 38 weeks, a fertilized egg (ovum) matures from a single cell to a fully developed fetus ready to be born.

Fetal growth and development are typically divided into three periods: **preembryonic** (first 2 weeks, beginning with fertilization), **embryonic** (weeks 3 through 8), and **fetal** (from week 8 through birth).

Fertilization: the beginning of pregnancy

Fertilization (also referred to as conception and impregnation) is the union of an ovum and a spermatozoon. This usually occurs in the outer third of a fallopian tube, the ampullar portion.

Terms used denote fetal growth

Ovum From ovulation to fertilization

Zygote From fertilization to implantation

Embryo From implantation to 5–8 weeks

Fetus From 5–8 weeks until term

Conceptus Developing embryo or fetus and placental structures throughout pregnancy

Age of viability The earliest age at which fetuses could survive if they were born at that time, generally accepted as 24 weeks, or fetuses weighing more than 400 g

- **Embryonic and fetal structure**

The placenta, which will serve as the fetal lungs, kidneys, and digestive tract in utero, begins growth in early pregnancy in coordination with embryo growth

- **The decidua**

After fertilization, the corpus luteum in the ovary continues to function rather than atrophying, because of the influence of human chorionic gonadotropin (hCG), a hormone secreted by the trophoblast cells. This causes the uterine endometrium to continue to grow in thickness and vascularity, instead of sloughing off as in a usual menstrual cycle. The endometrium is now termed the decidua (the Latin word for “falling off”), because it will be discarded after the birth of the child. The decidua has three separate areas;

1. **Decidua basalis**, the part of the endometrium that lies directly under the embryo (or the portion where the trophoblast cells establish communication with maternal blood vessels)
2. **Decidua capsularis**, the portion of the endometrium that stretches or encapsulates the surface of the trophoblast
3. **Decidua vera**, the remaining portion of the uterine lining As the embryo continues to grow, it pushes the decidua capsularis before it like a blanket. Eventually, the embryo enlarges so much that this action brings the decidua capsularis into contact with the opposite uterine wall (the decidua vera). Here, the two decidua areas fuse, which is why, at birth, the entire inner surface of the uterus is stripped away, leaving the organ highly susceptible to hemorrhage and infection.

Chorionic Villi

Once implantation is complete, the trophoblastic layer of cells of the blastocyst begins to mature rapidly. As early as the 11th or 12th day, miniature villi that resemble probing fingers, termed **chorionic villi**, reach out from the single layer of cells into the uterine endometrium to begin formation of the placenta.

- **The placenta**

The placenta (Latin for “pancake,” which is descriptive of its size and appearance at term) arises out of the continuing growth of trophoblast tissue. Its growth parallels that of the fetus, growing from a few identifiable cells at the beginning of pregnancy to an organ 15 to 20 cm in diameter and 2 to 3 cm in depth, covering about half the surface area of the internal uterus at term.

- The Amniotic Fluid

amniotic fluid is constantly being newly formed and reabsorbed by the amniotic membrane, so it never becomes stagnant. Some of it is absorbed by direct contact with the fetal surface of the placenta. The major method of absorption, however, occurs because the fetus continually swallows the fluid. In the fetal intestine, it is absorbed into the fetal bloodstream. From there, it goes to the umbilical arteries and to the placenta, and it is exchanged across the placenta. At term, the amount of amniotic fluid has increased so much it ranges from 800 to 1200 mL. excessive amniotic fluid, or **hydramnios** (more than 2000 mL in total. Hydramnios also tends to occur in women with diabetes, because hyperglycemia. **oligohydramnios**, or a reduction in the amount of amniotic fluid (less than 300 mL in total. Amniotic fluid is slightly alkaline, with a pH of about 7.2. Checking the pH of the fluid at the time of rupture helps to differentiate it from urine, which is acidic (pH 5.0–5.5).

- The Umbilical Cord

The **umbilical cord** is formed from the fetal membranes (amnion and chorion) and provides a circulatory pathway that connects the embryo to the chorionic villi of the placenta. Its function is to transport oxygen and nutrients to the fetus from the placenta and to return waste products from the fetus to the placenta. It is about 53 cm (21 in) in length at term and about 2 cm (3/4 in) thick. The bulk of the cord is a gelatinous mucopolysaccharide called Wharton's jelly, which gives the cord body and prevents pressure on the vein and arteries that pass through it. The outer surface is covered with amniotic membrane. An umbilical cord contains only one vein (carrying blood from the placental villi to the fetus) but two arteries (carrying blood from the fetus back to the placental villi).

- Origin of Body Tissue

Ectoderm	Mesoderm	Endoderm
Central nervous system (brain and spinal cord)(outer layer) <ul style="list-style-type: none"> • Peripheral nervous system • Skin, hair, and nails 	Supporting structures of the body (connective tissue, bones, cartilage, muscle, ligaments, and tendons)(middle layer)	(inner layer) Lining of pericardial, pleura, and peritoneal cavities Lining of the gastrointestinal tract, respiratory tract, tonsils, parathyroid,

<ul style="list-style-type: none"> • Sebaceous glands • Sense organs • Mucous membranes of the anus, mouth, and nose • Tooth enamel • Mammary glands 	<ul style="list-style-type: none"> • Dentin of teeth • Upper portion of the urinary system (kidneys and ureters) • Reproductive system • Heart • Circulatory system • Blood cells • Lymph vessels 	<p>thyroid, thymus glands, Lower urinary system (bladder and urethra)</p>
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Part two: Physiology & Psychological Changes

- **Common Psychological Changes That Occur With Pregnancy**

First Trimester (Accepting the Pregnancy)

Woman and partner both spend time recovering from shock of learning they are pregnant and concentrate on what it feels like to be pregnant. A common reaction is ambivalence, or feeling both pleased and not pleased about the pregnancy.

Second Trimester (Accepting the Baby)

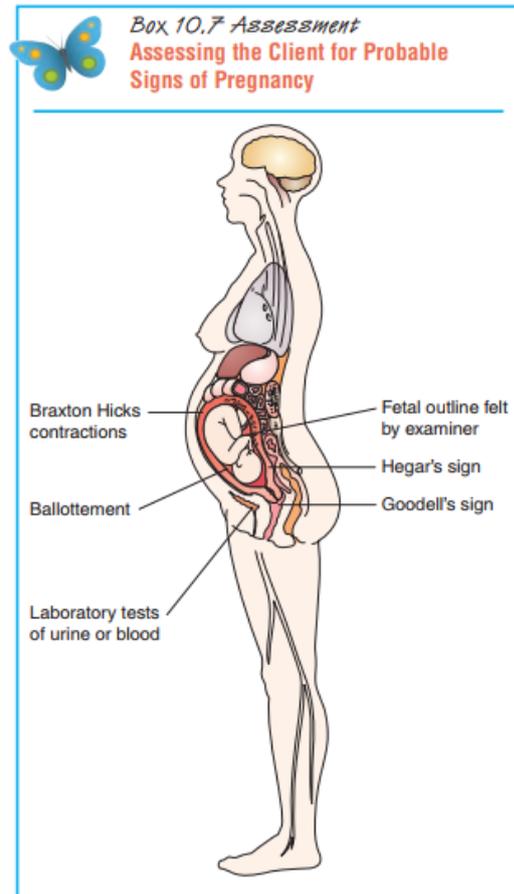
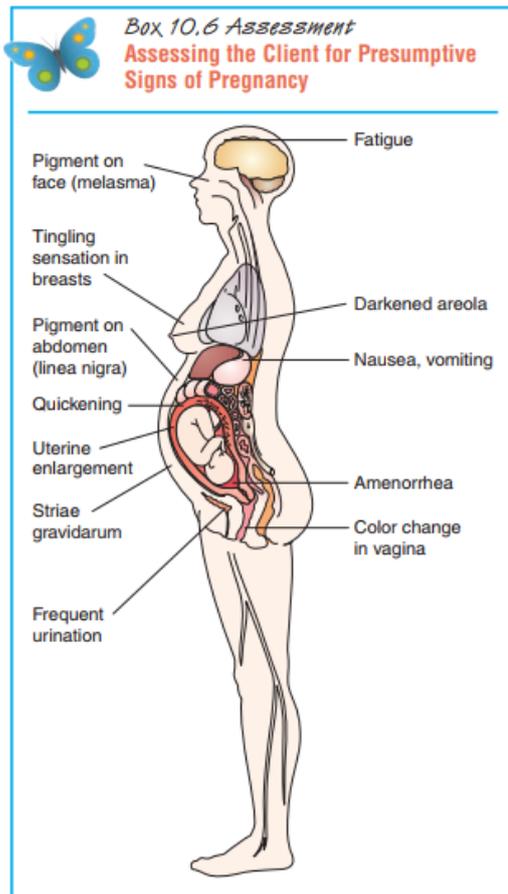
Woman and partner move through emotions such as narcissism and introversion as they concentrate on what it will feel like to be a parent. Roleplaying and increased dreaming are common.

Third Trimester (Preparing for Parenthood)

Woman and partner prepare clothing and sleeping arrangements for the baby but also grow impatient with pregnancy as they ready themselves for birth.

- **Signs & Symptoms of pregnancy**

Presumptive Signs	Probable Signs	Positive Signs
<ol style="list-style-type: none"> 1. Menstrual suppression (amenorrhea) 2. Nausea & Vomiting 3. Frequent micturition (urinary frequency) 4. Breast changes 5. Quickening 6. Skin changes 	<ol style="list-style-type: none"> 1. Abdominal changes 2. Changes in the uterus (hegar's sign) 3. Vaginal changes (goodell's sign) 4. Fetal outline 5. Ballottement 6. Cervical changes (chadwick's sign) 7. Braxton hicks contraction 8. Pregnancy test 	<ol style="list-style-type: none"> 1. Fetal heart sounds 2. Fetal movement felt by examiner 3. Ultrasonography



- **Physiological changes of pregnancy** : Physiologic changes that occur with pregnancy are both local (uterine, ovarian, and vaginal changes) and systemic (respiratory, cardiovascular, urinary, and skin changes).

TABLE 10.3 * Timetable for Physiologic Changes of Pregnancy

Location of Change	1st Trimester	2nd Trimester	3rd Trimester
Circulatory system	Blood volume increasing Pseudoanemia	Blood pressure slightly decreased	Blood pressure returns to prepregnancy levels
Ovary	Clotting factors increasing Corpus luteum active	Corpus luteum fading	
Uterus	Increased growth	Placenta forming estrogen and progesterone	
Cervix	Softening progressive		"Ripe"
Vagina	White discharge present		Increasing
Musculoskeletal system		Progressive cartilage softening Lordosis increasing	
Pigmentation		Progressively increasing	
Kidney	Maternal glomerular filtration rate increasing Aldosterone increased, retaining sodium and fluid	Glycosuria	
Gastrointestinal system		Slowed peristalsis	
Thyroid	Increased metabolic rate		

Part three: Prenatal Care

Prenatal Care (or Antenatal care): refers to medical & nursing supervision and care give to the pregnant woman during the period between conception & onset of labor.

Aims of Prenatal Care:

1. To promote & maintain good physical & mental health during pregnancy.
2. To ensure mature, live, healthy infant.
3. To prepare the woman for labor, lactation, subsequent care of the child.
4. To detect early and treat appropriately condition medical & obstetrical that would endanger the life & impair the health of the mother and baby.

• Health assessment during prenatal care

- **History:** Components of the Health History An initial interview serves several purposes:

1. Establishing rapport
2. Gaining information about a woman's physical and psychosocial health
3. Obtaining a basis for anticipatory guidance for the Pregnancy

- Demographic Data
- Chief Concern
- Family Profile
- History of Past Illnesses
- History of Family Illnesses
- Day History/Social Profile
- Gynecologic History
- Obstetric History

TABLE 11.2 * Terms Related to Pregnancy Status

Term	Definition
Para	Number of pregnancies that have reached viability, regardless of whether the infants were born alive
Gravida	Woman who is or has been pregnant
Primigravida	Woman who is pregnant for the first time
Primipara	Woman who has given birth to one child past age of viability
Multigravida	Woman who has been pregnant previously
Multipara	Woman who has carried two or more pregnancies to viability
Nulligravida	Woman who has never been and is not currently pregnant

- Physical examination

Height, Weight, Vital signs, General Appearance and Mental Status.

(Eyes, Nose, Ears, Sinuses, Mouth, Teeth, Throat, Neck, Lymph Nodes, Breasts, Heart, Lungs, Back, Rectum, Extremities and Skin.

Measurement of Fundal Height and Fetal Heart Sounds

- Laboratory tests

Blood tests, CBC, Hb, RH, HCT, blood group, FBS, and Urine specimen (GUE).

TABLE 11.4 * Assessments for a First Pregnancy Visit

Health History	
Demographic data	Name, address, age, telephone number, health insurance
Chief concern	Was pregnancy planned? When was last menstrual period? Any exposure to infectious diseases or ingestion of drugs since a woman thinks she has been pregnant?
Family and social profile	What is family composition? Does the woman have a support person? What is her occupation? Source of income? Level of exercise? Hobbies? Recreational drug use? Living conditions? Nutrition? Sleep pattern?
Past medical history	Any abdominal surgery, kidney, heart, hypertension, sexually transmitted infections, diabetes, allergies? What immunizations has she had?
Gynecologic history	When was menarche? What is length and duration of menstrual cycle?
Obstetric history	Any previous pregnancies? When? Type and outcome of birth? Any history of previous miscarriages?
Review of systems	Brief review of all body systems
Physical Examination	
Baseline data	Height, weight, vital signs, fundal height measurements (after 12 weeks), fetal heart sounds
System assessment	Full physical examination to confirm general health
Pelvic examination	General assessment, Pap smear, cultures for chlamydia, gonorrhea, group B streptococci, pelvic measurements
Laboratory Assessment	
Blood	Complete blood count, serologic test for syphilis, blood type and Rh, alpha-fetoprotein, antibody titer against Rh, hepatitis B, rubella, and possibly varicella and HIV
Urinalysis	Clean catch for glucose, protein, ketones, and culture
Tuberculosis	PPD test
Ultrasound	To date pregnancy or confirm fetal health (if date of last menstrual period is unknown)

Signs indicating complication of pregnancy

1. **Vaginal Bleeding**
2. **Persistent Vomiting**
3. **Chills and Fever**
4. **Sudden Escape of Clear Fluid From the Vagina**
5. **Abdominal or Chest Pain**
6. **Pregnancy-Induced Hypertension**
7. **Increase or Decrease in Fetal Movement**

• **Health promotion during pregnancy**

Health promotion during pregnancy begins with reviewing aspects of self-care.

1. **Self-Care Needs** Because pregnancy is not an illness, few special care measures other than common sense about self-care are required..
- **Bathing**
During pregnancy, sweating tends to increase because a woman excretes waste products for herself and a fetus. She also has an increase in vaginal discharge. For these reasons, daily tub baths or showers are now recommended.

- **Breast Care** Teach woman to wash her breasts with clear tap water (no soap, because that could be drying and cause nipples to crack) daily to remove the colostrum and reduce the risk of infection.
- **Dental Care**
- **Perineal Hygiene** Most women have an increased vaginal discharge during pregnancy and may desire to cleanse with a douche. Douching is contraindicated during pregnancy. The force of the irrigating fluid could cause it to enter the cervix and lead to infection. In addition, douching alters the pH of the vagina, leading to an increased risk of bacterial growth.
- **Clothing**

Caution women to avoid tight-fitting items such as garters, girdles with panty legs, and knee-high stockings during pregnancy. These items impede lower-extremity circulation. Suggest wearing shoes with a moderate to low heel to minimize pelvic tilt and possible backache.
- 2. **Sexual Activity**
- 3. **Exercise** Extreme exercise has been associated with lower birth weight but moderate exercise is healthy during pregnancy. It can help prevent circulatory stasis in the lower extremities. It also can offer a general feeling of well-being.
- 4. **Sleep** The optimal condition for body growth occurs when growth hormone secretion is at its highest level—that is, during sleep. This, plus the overall increased metabolic demand of pregnancy, appears to be the physiologic reason that pregnant women need an increased amount of sleep or at least need rest to build new body cells during pregnancy.
- 5. **Employment**
- 6. **Travel**

Discomforts of Early Pregnancy: The First Trimester

1. Breast Tenderness

Discomfort	Self-care education
<i>Breasts changes as pain , tingling, and tenderness.</i>	<ul style="list-style-type: none"> - Supportive nonrestrictive cotton bra with pads. - Wash with warm water ,Keep them dry. avoid soap. - Interfere with sexual expression but temporary.

2. Constipation

Discomfort	Self-care education
<i>Constipation</i>	<ul style="list-style-type: none"> - Drink six glasses of water each day . - Include roughage or fiber-rich diet . - Exercise moderately. - Use relaxation technique and deep breathing. - Do not take stool softener, laxatives, mineral oils, other drugs or enemas without counseling your health care provider. - Maintain regular schedule for bowel movements.

3. Nausea, Vomiting

Discomfort	Self-care education
<i>Morning Sickness “ nausea with or without vomiting”</i>	<ul style="list-style-type: none"> - Avoid empty or overload stomach. - Maintain good posture. - Give stomach ample room. - Stop smoking. - Eat dry carbohydrate on awakening. - Remain in bed until feeling subsides. - Alternate dry carbohydrate with fluids such as hot herbal , milk or clear coffee. - Eat five to six small meals per day. - Avoid fried, odorous, spicy, greasy or gas forming foods. - Get plenty of fresh air. - Avoid eating fatty foods or foods that are hard to digest.

4. Fatigue

Discomfort	Self-care education
<i>malaise and fatigue</i>	<ul style="list-style-type: none"> - rest as needed. - eat well balanced diet.

5. Muscle Cramps

Discomfort	Self-care education
<i>Leg Cramps</i>	<ul style="list-style-type: none"> -Eat calcium-rich foods, such as milk and milk products, fish and citrus fruits. your doctor may prescribe calcium supplements along with vitamin D. -Don't wear high heeled shoes. -Massage the affected calf or foot and walk around for some time once the pain has reduced.

6. Heart Palpitations

7. Hypotension

Discomfort	Self-care education
<i>Palpitation</i>	<ul style="list-style-type: none"> - not preventable . - contact primary health care provider if accompanied with cardiac decompensation.
<i>Supine hypotension</i>	- Side-lying position or semi-setting position with knees slightly flexed .

8. Varicosities

9. Hemorrhoids

10.Frequent Urination

Discomfort	Self-care education
<i>Urgency and frequency of urination</i>	<ul style="list-style-type: none"> - empty bladder regularly. - perform kegel exercise: They strengthen the muscles that keep the urethra by squeezing the muscles you use to stop the flow of urine and holding them for 10 seconds. Do this 10-20 times in a row at least three times a day. - Limit fluid intake before bed time. - wear perineal pads. - report pain or burning sensation to primary health care provider. - Avoid diuretics as coffee, tea and colas that contain caffeine can make you urinate more frequently.

11. Abdominal Discomfort

12. Leukorrhea

Discomfort	Self-care education
<i>Leukorrhea</i>	<ul style="list-style-type: none"> - not preventable. - do not douche. - wear perineal pads. - hygienic practices. - <u>warning signs</u> as pruritus, foul odor, change in character or color.

Discomforts of Middle to Late Pregnancy

1. Backache

Discomfort	Self-care education
<i>Backache</i>	<ul style="list-style-type: none"> - maintain good posture and body mechanics. - Exercising but avoid fatigue. - Wear low-heeled shoes. - Abdominal support may be useful. - Sleep on firm mattress. - Avoid lifting heavy objects. - Keep objects you need close by so you don't have to bend or stretch to pick them up. - Avoid standing for long periods of time, if possible. - Sit in chairs with good back support. Tuck a small pillow behind your lower back for extra support while sitting. - A heating pad, warm water bottle or cold compress can help ease backache.

2. Headache

Discomfort	Self-care education
<i>headache</i>	<ul style="list-style-type: none"> - Warm or cold compresses: to soothe a headache in the sinus area, apply warm compresses to the front and sides of your face and around your nose, eyes and temples; while To relieve a tension headache, apply a cold compress to the back of your neck. <ul style="list-style-type: none"> - Reduce stress. Avoid placing yourself in stressful situations. Relaxation exercises, which may consist of deep breathing or simply closing your eyes and imagining a peaceful scene, may also help. - Rest and exercise. Resting in a dark, quiet room can soothe headaches. - Eat well-balanced meals: eating smaller, more frequent meals throughout the day can help keep your blood sugar from getting too low.

	<ul style="list-style-type: none"> - Get a massage. Massaging your temples, shoulders and neck can help reduce the pain of headaches
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3. Dyspnea

Discomfort	Self-care education
<i>Shortness of breathing</i>	<ul style="list-style-type: none"> - Good posture. - Sleep with extra-pillows. - Avoid overloading stomach. - Stop smoking. - Contact health care provider if symptoms worsen

4. Ankle Edema

5. Braxton Hicks Contractions

References : Pillitteri , A. (2010). *Maternal & Child Health Nursing: Care of the child bearing & child rearing family*, 6th ed, Lippincott Williams & Wilkins, Philadelphia: 191-288.