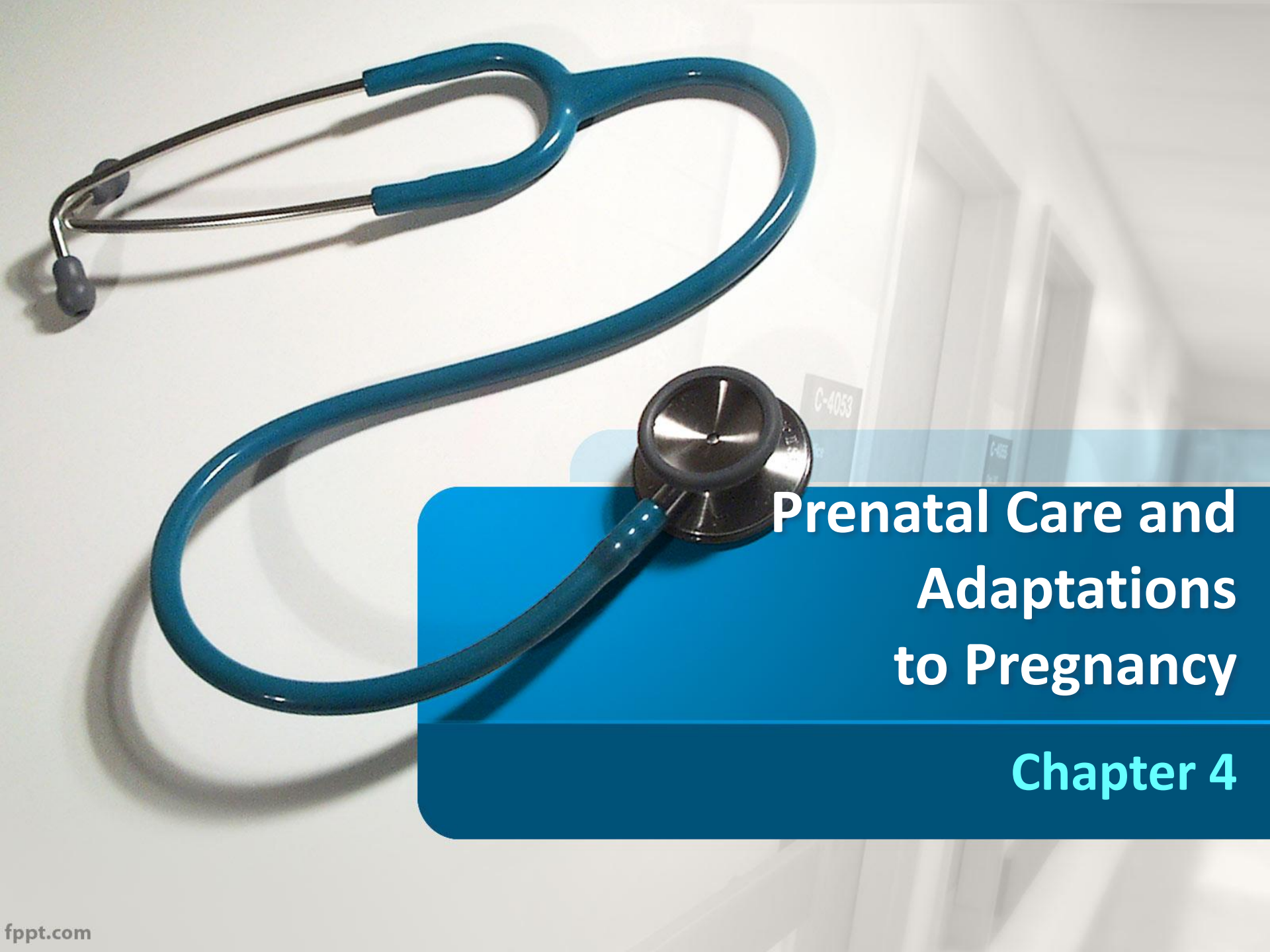


Prenatal Care and Adaptations to Pregnancy

Chapter 4

Phases of Pregnancy

- Antepartum
  - Before birth (prenatal)
- Intrapartum
  - During birth
- Postpartum
  - After birth

Prenatal Care Providers

- Obstetricians
- Family practice physicians
- Certified nurse midwives (CNMs)
- Nurse practitioners

Major Goals of Prenatal Care

- Ensure a safe birth for mother and child by promoting good health habits and reducing risk factors
- Teach health habits that may be continued after pregnancy
- Educate in self-care for pregnancy
- Provide physical care
- Prepare parents for the responsibilities of parenthood

Prenatal Visits

- Ideally, prenatal care should begin prior to the pregnancy to assist the woman in being in optimal health prior to conception.
- The gestation of the woman at the first prenatal care visit will vary.

Preconception Care

- Identifies risk factors that may be changed *before* conception
  - Reduce their negative impact on outcome of pregnancy
- Ensure good nutritional state and immunizations
- Ensure adequate intake of folic acid
  - To prevent neural tube defects in developing fetus

Prenatal Care

- Complete history and physical
  - Identify problems that may affect the woman and her developing fetus
  - Ensure healthy pregnancy and delivery of healthy infant

Components of Prenatal Health History

- Obstetric
- Menstrual
- Contraceptive
- Medical and surgical
- Woman's family
- Partner's family
- Both woman's and partner's history to identify risk factors
- Psychosocial

Physical Examination Objectives

- Evaluate the woman's general health
- Determine baseline weight and vital signs
- Evaluate nutritional status
- Identify current physical/social problems
- Determines the estimated date of delivery (EDD)

Pelvic Examination Objectives

- Evaluate the size, adequacy, and condition of the pelvis and reproductive organs
- Assess for signs of pregnancy

Recommended Schedule of Prenatal Visits—Uncomplicated Pregnancy

- Conception to 28 weeks—every 4 weeks
- 29 to 36 weeks—every 2 to 3 weeks
- 37 weeks to birth—weekly
- Certain laboratory and/or diagnostic tests are performed at various times throughout the pregnancy
  - Blood Type and Rh factor
  - CBC; Rubella Titer-if no immunity given after pregnancy11
  - If family hx of sickle cell anemia may do a hemoglobin electophoresis
  - See Table 4-1 (p. 46)

Safety Alert

- Early and regular prenatal care is important for reducing the number of low-birthweight infants born and for reducing morbidity and mortality for both mothers and newborns

Routine Assessments at Each Prenatal Visit

- Risk factors: review known and assess for new
- Vital signs and weight: determine if gain is normal
- Urinalysis: protein, glucose, and ketone levels
- Blood glucose screening
- Fundal height: fetal growth/amniotic fluid volume
- Leopold's maneuvers: assess presentation/position
- Fetal heart rate
- Nutrition intake
- Any discomforts or problems since last visit

Vaginal Discharge During Pregnancy

- Bacterial vaginosis is most common
  - Caused by
    - Decrease in lactobacilli
    - Increase in bacteroids and other anaerobic microorganisms
    - May be milky-white discharge
- No other clinical symptoms may be present
- Has been associated with preterm labor

Role of the Nurse During Prenatal Care

- Collecting data from the pregnant woman
- Identifying and reevaluating risk factors
- Educating in self-care
- Providing nutrition counseling
- Promoting family adaptation to pregnancy

Terms Related to Pregnancy

- Gravida
- Nulligravida
- Primigravida
- Multigravida
- Para
- Primipara
- Refer to Box 4-1 TPALM System
- Multipara
- Nullipara
- Abortion
- Gestational age
- Fertilization age
- Age of viability

Determining the Estimated Date of Delivery

- Average pregnancy is 40 weeks (280 days) after first day of LNMP, plus or minus 2 weeks
  - Nägele's rule
    - Identify first day of LNMP
    - Count backward 3 months
    - Add 7 days
    - Update year, if applicable

Question

Determine EDD using Nägele's rule for a woman whose LMP began on June 7 and ended on June 12.

1) March 14
2) March 19
3) March 5
4) March 1

Trimesters

- Pregnancy divided into three 13-week parts
- Important to know what occurs during each trimester to both woman and fetus
- Helps provide anticipatory guidance
- Identify deviations from the expected pattern of development

Presumptive Signs of Pregnancy

- Amenorrhea
- Nausea
- Breast tenderness
- Deepening pigmentation
- Urinary frequency
- Fatigue and drowsiness
- Quickening-movement felt by the mother at 4-5 months

Probable and Positive Signs of Pregnancy

Probable

- Goodell's sign-softening of cervix and vagina
- Chadwick's sign-purlpish or bluish discoloration of cervix, vagina, and vulva
- Hegar's sign-softening of lower uterine ligament
- McDonald's sign-flexing body of uterus against cervix
- Abdominal enlargement
- Braxton Hicks contractions-irregular, painless uterine contractions start 2nd trimester
- Ballottement/fetal outline-manuever of the fetal part displaced by a tap of examining finger
- Abdominal striae-stretch marks
- Positive pregnancy test

Positive

- Audible fetal heartbeat as early 10 weeks by Doppler or by fetoscope at 18th week; heart rate 110/120 to 150/160 bpm
- Fetal movement felt by examiner
- Ultrasound visualization of fetus

Normal Physiological Changes in Pregnancy

- Pregnancy causes many changes in body systems:
  - Endocrine
  - Reproductive
  - Respiratory
  - Cardiovascular
  - Gastrointestinal
  - Urinary
  - Integumentary and skeletal

Effects of Pregnancy on the Endocrine System

- Dramatic increase in hormones affects all body systems
  - Essential to maintain pregnancy
  - Produced initially by the corpus luteum, later by the placenta
- Most striking change is addition of placenta as a temporary endocrine organ
- Primary role is to produce estrogen and progesterone to maintain pregnancy

Effects of Pregnancy on the Reproductive System

- Uterus
  - Becomes temporary abdominal organ
  - Capacity is 5000 mL (fetus, placenta, amniotic fluid)
- Cervix
  - Changes in color and consistency, glands in cervical mucosa increase
  - Mucus plug formed to prevent ascent of organisms into uterus
- Ovaries
  - Produce progesterone to maintain decidua (uterine lining) during first 6-7 weeks of gestation until placenta can take over task

Effects of Pregnancy on the Reproductive System

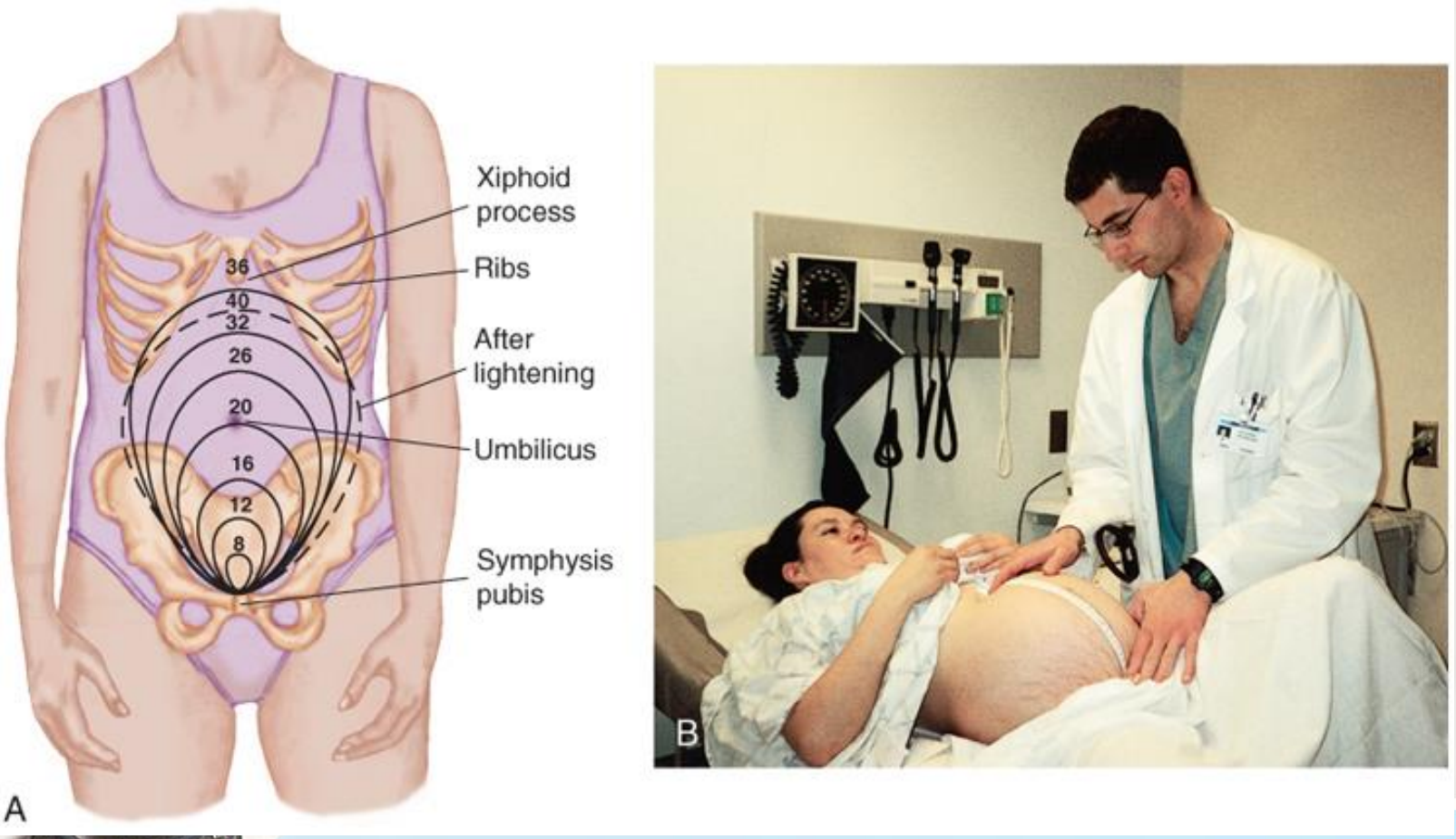
Vagina

- Increased blood supply causes it to have a bluish color
- Vaginal secretions increase, pH more acidic
- Higher glycogen level which promotes *Candida albicans* (yeast) growth

Breasts

- High levels of estrogen and progesterone prepare breasts for lactation
- Tubercles of Montgomery secrete substance to lubricate nipples
- “Premilk” is expressed and is high in protein, fat-soluble vitamins, and minerals
- Low in calories, fats, and sugar

Height of Fundus During Gestation



Effects of Pregnancy on the Respiratory System

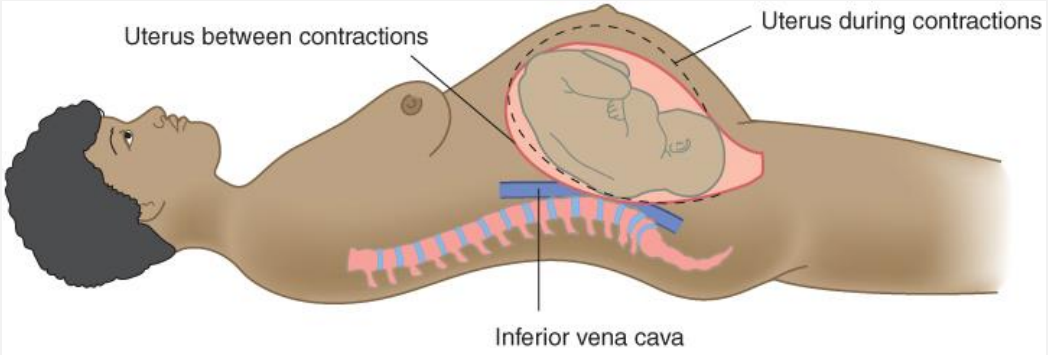
- Oxygen consumption increases by 15% because she breathes more deeply and slight increase in rate
- Diaphragm rises ~4 cm (1.6 inches)
- Causes ribs to flare
- Dyspnea can occur until fetus descends into pelvis
- Increased estrogen causes edema or swelling of mucous membranes of nose, pharynx, mouth, and trachea
- Woman may complain of nasal stuffiness, epistaxis, and voice changes

Effects of Pregnancy on the Cardiovascular System

- Blood volume increases by ~45%
- Increase provides for
  - Exchange of nutrients, oxygen, and waste products within the placenta
  - Needs of expanded maternal tissue
  - Reserve for blood loss at birth
- Pulse rate increases by 10 to 15 beats/min

Supine Hypotension Syndrome

- Also called *aortocaval compression* or *vena cava syndrome*
- Occurs if woman lies flat on her back
  - Allows heavy uterus to compress inferior vena cava
  - Reduces blood returned to her heart
  - Can lead to fetal hypoxia
- Symptoms
  - Faintness
  - Lightheadedness
  - Dizziness
  - Agitation



- Turning to one side relieves pressure on inferior vena cava, preferably the left side

Effects of Pregnancy on the Cardiovascular System

- Orthostatic hypotension
- Gestational hypertension
- Palpitations
- Dilutional anemia (a.k.a. pseudoanemia)
- Increased clotting factors in second and third trimesters
  - Increases risk of thrombophlebitis

Question

The nurse educating a pregnant woman in her last trimester will encourage her to sleep on her side because it will:

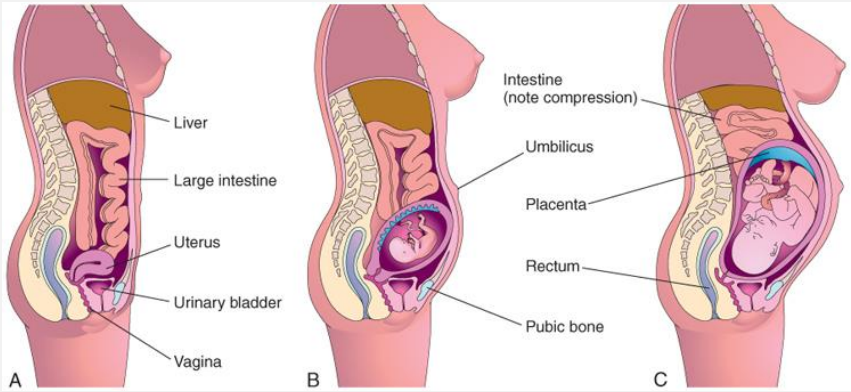
1) relieve bladder pressure.
2) prevent hypotension.
3) facilitate sleep.
4) encourage fetal movement.

Effects of Pregnancy on the Gastrointestinal System

- Growing uterus displaces stomach and intestines
- Increased salivary secretions
  - Oral mucosa may become tender and bleed more easily
- Appetite and thirst may increase
- Gastric acid secretions decrease
  - Delayed gastric emptying and intestinal movement

Progesterone and estrogen relax muscle tone of gallbladder

- Leads to retained bile salts
  - Can cause pruritus during pregnancy



Effects of Pregnancy on the Urinary System

- Excretes waste products of woman and fetus
  - Glomerular filtration rate of kidneys increases
  - Glycosuria and proteinuria more common
- Water retention due to increased blood volume and dissolving nutrients provided for fetus
- Progesterone causes renal pelvis and ureters to lose tone, leads to urinary stasis
- Woman more susceptible to UTIs
- 99% of sodium is reabsorbed, leads to fluid retention

Effects of Pregnancy on the Integumentary and Skeletal Systems

- Striae
- Spider nevi
- Sweat and sebaceous glands become more active
  - To dissipate heat from woman and fetus
- Posture changes
  - Low backaches
  - Relaxation of pelvic joints
  - Waddling gait
  - Change in center of gravity
    - Balance may become an issue

Safety Alert

- A change in the center of gravity and joint instability because of the softening of the ligaments predispose the pregnant woman to problems with balance.
  - Interventions concerning safety should be part of prenatal education.

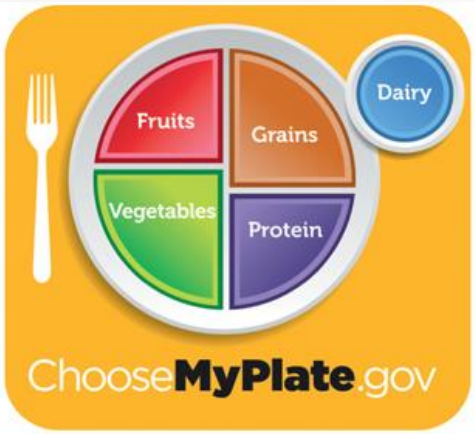
Nutrition for Pregnancy and Lactation

- Women must be educated that they are not “eating for two.”
- The intake must be evaluated for both caloric content and value to the growing fetus.
- DHA (docosahexaenoic acid omega 3 fatty acid helps with brain development-mackerel, salmon, tuna, egg yolk, red meat, canola oil and soybean oil

Nutrition Education

- Read food labels
- Eat foods that are nutrient-dense
- Protein versus sugary foods

MyPlate (p. 56)



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	*Focus on fruits*—Eat a variety of fruits.
Vegetables	2½ cups	3 cups	1 cup raw or cooked vegetables or juice 2 cups raw leafy vegetables	*Vary your veggies*—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	*Make half your grains whole*—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	*Go lean with protein*—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	*Get your calcium-rich foods*—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

Traditional Healthy Latin American Diet Pyramid (p 57)

Weight Gain

- Women of normal weight: 25 to 35 pounds (11.5 to 16 kg)
- Overweight women: 11 to 25 pounds (5 to 11.5 kg)
- Obese women: 11 to 15 pounds (5 to 6.8 kg)
- Multifetal pregnancy: twins—woman should gain 4 to 6 pounds in first trimester, 1½ pounds per week in second and third trimesters, for a total of 37 to 54 pounds (16.5 to 24.5 kg)

Nutrition Requirements for Pregnant Women

- Increase kCal by 300 per day, and should include
  - Protein—60 g/day-meats, fish, poultry, dairy prod., beans, lentils, legumes, breads, cereals, seeds & nuts
  - Calcium—1200 mg/day-green leafy vegetables, enriched cereals, legumes, nuts, dried fruits, canned salmon & sardines
  - Iron—30 mg/day-heme-organ meats; nonheme-molasses, whole grains, cereals/breads, dried fruits, dark green leafy vgetables
  - Folic acid—400 mcg (0.4mg)/day-liver, lean beef, kidney, lima beans, dried beans, potatoes, whole wheat bread, peanuts, fresh dark leafy vegetables

Special Nutrition Considerations

- Pregnant adolescent
- Sodium intake
- Vegetarian
- Pica
- Lactose intolerance
- Cultural preferences
- Gestational diabetes mellitus

Nutritional Requirements During Lactation

- Caloric intake during lactation should be about 500 calories more than the nonpregnant woman's RDA
- Protein intake should be 65 mg/day
- Calcium and iron intake is the same as during pregnancy
- Vitamin supplements are often continued during lactation
- Limit intake of caffeine and alcohol
- Drugs should only be taken upon the advice of the health care provider

Exercise During Pregnancy

- Maternal cardiac status and fetoplacental reserve should be the basis for determining exercise levels during all trimesters of pregnancy
- It is important to assess the exercise practices of the woman
- Goal of exercise during pregnancy should be *maintenance* of fitness, not improvement of fitness or weight loss

Basic Factors Related to Exercise and Pregnancy

- Elevated temperature: can impact fetal circulation and cardiac function
- Hypotension: can reduce blood flow to the fetus
- Cardiac output: peripheral pooling decreases cardiac reserves for exercise
- Hormones: changes in oxygen consumption and epinephrine, glucagon, cortisol, prolactin, and endorphin levels
- Other factors: moderate exercise has many benefits—more positive self-image, a decrease in musculoskeletal discomfort during pregnancy, and a more rapid return to prepregnant weight after delivery

Nursing Guidance for Exercise

- Start with a warm-up and end with a cool-down
- Do not exceed American College of Obstetricians and Gynecologists (ACOG) recommendations for moderate exercise
- Combined with balanced diet is beneficial
- Eating 2 to 3 hours before exercise or immediately after is recommended
- Avoid marked changes in depth of water (such as scuba diving) and/or altitude
- Avoid becoming overheated, increase fluid intake
- Intensity of exercise should be modified based on the “talk test”

Travel During Pregnancy

- Air travel generally safe
- Avoid sitting for extended periods of time
- Avoid locations that increase the risk of exposure to infectious diseases
- Bring a copy of obstetric records
- Obtain information about nearest health care facility
- Encourage hand hygiene and dietary precautions
- Provide the “recipe” for oral rehydration formula

Common Discomforts in Pregnancy

- Fatigue-sleep 8-10 hrs; take naps
- Nasal stuffiness
- Nausea-dry crackers or toast, fluids between meals
- Heartburn-sit after meals
- Constipation-increase fluid intake
- Hemorrhoids-ointments; sitz baths
- Vaginal discharge
- Backache
- Varicose veins
- Leg cramps
- Edema of the lower extremities

Psychosocial Adaptations to Pregnancy

- Identifying and managing psychosocial problems is essential to the positive outcome of pregnancy
- Nutritional needs and patterns relating to age, ethnicity, or financial constraints should be discussed

Impact on Mother

- According to Reva Rubin, four maternal tasks the woman accomplishes during pregnancy include
  - Seeing safe passage for herself and her fetus
  - Securing acceptance of herself as a mother and for her fetus
  - Learning to give of self and to receive the care and concern of others
  - Committing herself to the child as she progresses through pregnancy

Development Stage of Fatherhood

- Announcement when pregnancy is confirmed
  - Acceptance results in strengthening of family
- Adjustment
- Focus
  - Active plans for participation in labor, birth process

Impact on the Father

- Cultural values influence the role of fathers because pregnancy and birth are viewed exclusively as women's work in some cultures
- The nurse should not assume that a father is uninterested if he takes a less active role in pregnancy and birth
- Acceptance of the pregnancy results in strengthening of the family support system and expansion of the social network

Impact on the Adolescent

- The nurse must assess the girl's developmental and educational level, as well as her support system to best provide care for her
- Consider her developmental level and the priorities typical of her age
- Must cope with two of life's most stress-laden transitions at the same time: adolescence and parenthood

Question

What would be the first priority in working with the pregnant adolescent?

1) Obtain substance abuse history.
2) Assess her attitude toward pregnancy.
3) Determine maturational level.
4) Establish a trusting relationship.

Impact on the Older Couple

- Tend to adjust to the pregnancy because they are well-educated, have achieved life experiences that enable them to better cope with realities of parenthood

Postponement of Pregnancy Until After Age 35 "Elderly Primips" or "Advanced Maternal Age"

- Effective birth control alternatives
- Increasing career options for women
- High cost of living
- Development of fertilization techniques to enable later pregnancy

Impact on the Single Mother

- May be an adolescent or a mature woman
- May have unique emotional needs
- Single women who plan pregnancies often prepare for the financial and lifestyle changes

Impact on the Single Father

- May take an active interest in and financial responsibility for the child
- May want to participate in plans for the child and take part in the care of the infant after it is born
- His participation is sometimes rejected by the woman

Impact on the Grandparents

- May eagerly anticipate the woman's pregnancy
- Some will take a more active role in the care of the grandchild
- If grandparents and expectant couple have similar views of their roles, little conflict is likely
- The nurse may be able to help the new parents to understand their own parents' reactions and help them to negotiate solutions to conflicts that are satisfactory to both generations

Prenatal Education

- Should progress according to the nursing process:
  - *Assess* the history and cultural needs
  - *Diagnose* the knowledge deficit
  - *Plan* the goals and priorities
  - *Outcomes identification* clarifies expected outcomes
  - *Teach* (intervene) the facts and rationales
  - *Evaluate* knowledge gained and goals achieved

The Effect of Pregnancy and Lactation on Medication Ingestion

- Pregnancy affects the metabolism of medications
- May have subtherapeutic levels
- Parenteral medications may be absorbed more rapidly due to increased cardiac output
- Drugs can cross the placenta, can be passed through breast milk

FDA Pregnancy Risk Category for Drugs

- Category A: no risk demonstrated to the fetus in any trimester
- Category B: no adverse effects in animals; no human studies available
- Category C: Only prescribed after risks to the fetus are considered. Animal studies have shown adverse reaction; no human studies available
- Category D: Definite fetal risks, but may be given in spite of risks in life-threatening situations
- Category X: Absolute fetal abnormalities. Not to be used anytime during pregnancy

Immunizations and Pregnancy

- Live virus vaccines are contraindicated during pregnancy
- Thimerosal should not be given during pregnancy due to risk of mercury poisoning
- Avoid pregnancy for at least 1 month after receiving an MMR vaccine
- Select immunizations are allowable during pregnancy, such as influenza vaccine and Tdap vaccine