

Chapter 23

Complications of Adolescence

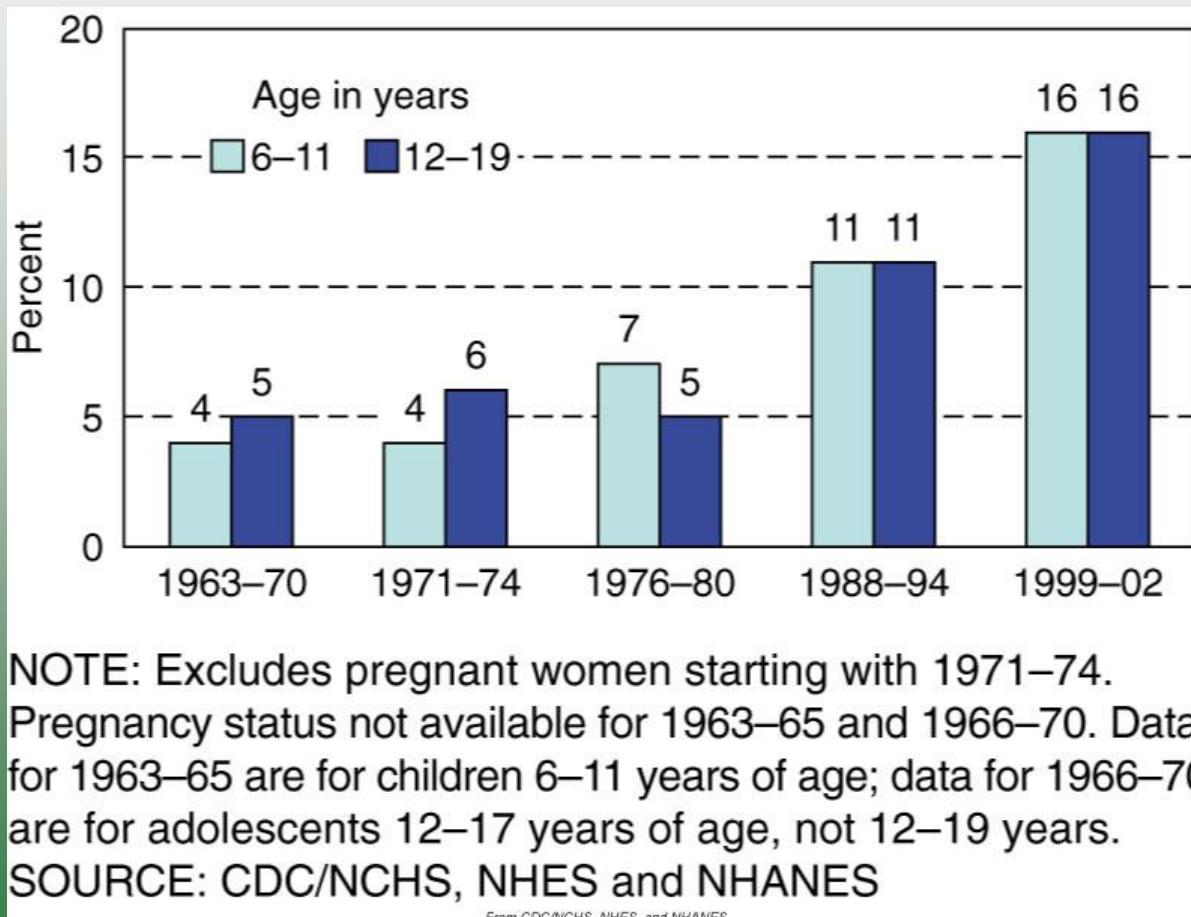
Adolescence

- Begins with the development of secondary sex characteristics
 - Around age of 10 to 12 years
- Continues until physical growth is completed
 - About age 18 years
- Puberty
 - Indicates the onset of reproductive changes
 - In females, this is breast development
 - In males, this is occurrence of nocturnal emissions

Obesity

- Determined by calculating the body mass index (BMI)
 - International standard calculated based on age, height, and weight
 - BMI in 95th percentile or greater—obese
 - BMI between 85th and 95th percentiles—risk of obesity
 - Adult BMI charts are not applicable to adolescents.

Prevalence of Obesity in U.S. Adolescents



Obesity (Cont.)

- Increase in obesity in United States between 1980 and 2000
- 6- to 11-year-old age group
 - Doubled
- 12- to 19-year-old age group
 - Tripled
- Resulting in
 - Increased type 2 diabetes in children and adolescents
 - Elevated blood cholesterol/lipid levels
 - Increased blood pressure
 - Psychological problems

Metabolic Syndrome

- Occurs in 1% to 4% of children and adolescents
- Occurs in 49% of significantly and clinically obese young people
- Three common factors
 - High BMI with presence of significant abdominal fat mass
 - Resulting in increased waistline measurements
 - Changes in glucose metabolism
 - Changes in lipoprotein metabolism

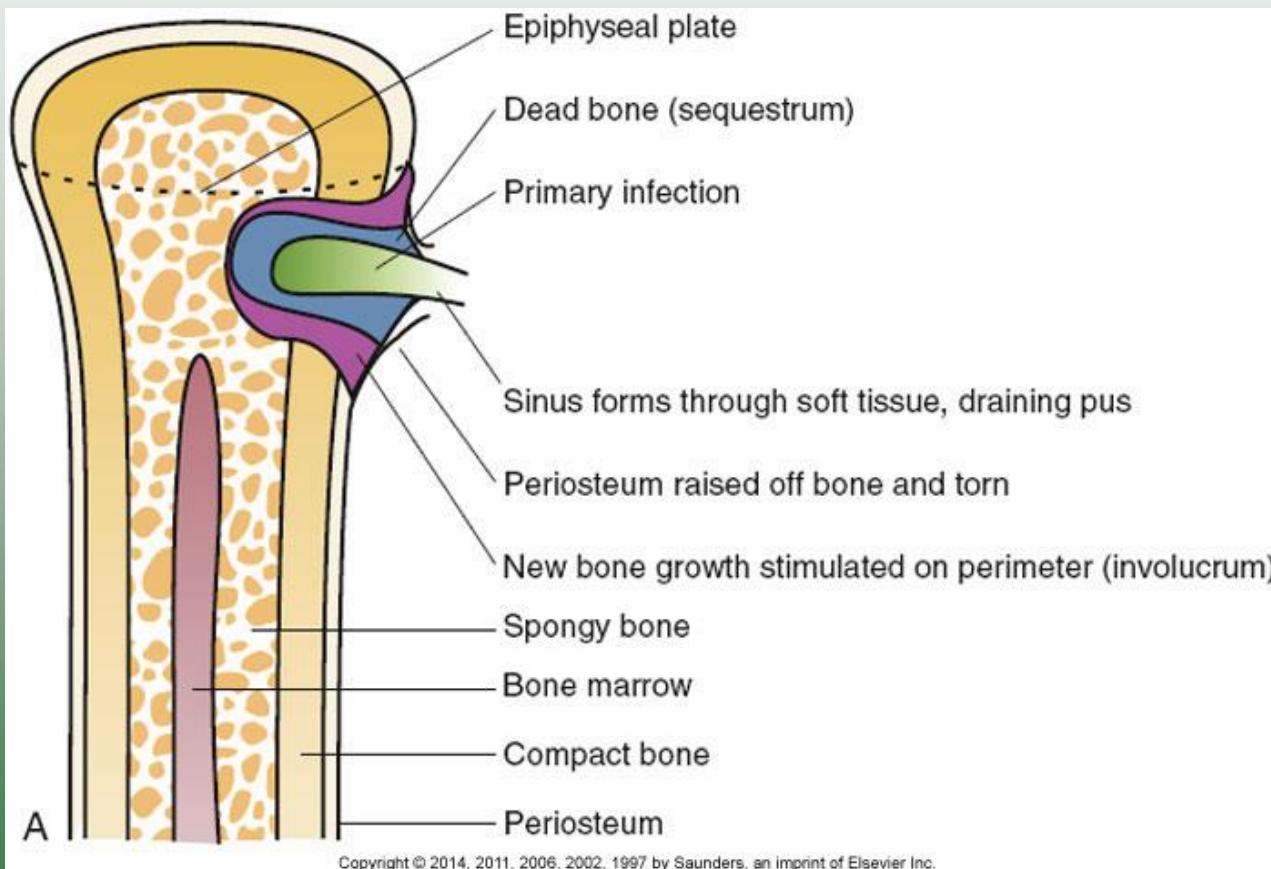
Complications of Metabolic Syndrome

- Hypertension
- Type 2 diabetes
- Coronary artery disease
- Stroke
- Kidney failure
- Significantly shortened life expectancy

Musculoskeletal Abnormalities

- Kyphosis
- Lordosis
- Scoliosis

Osteomyelitis



Musculoskeletal Disease (Cont.)

- Juvenile rheumatoid arthritis (JRA)
 - A group of **autoimmune diseases**
 - Cause inflammation in connective tissue such as in joints
 - Specific cause unknown
 - Diagnosis/indicator
 - Joint swelling or discomfort lasting more than six weeks
 - General signs of inflammation
 - Treatment
 - **Non-steroidal anti-inflammatory drugs, glucocorticoids for severe inflammation; disease-modifying anti-rheumatic drugs**

Eating Disorders

- Common problem in adolescents and young adults
- In Western cultures
- Primarily females but males are increasingly affected
- Major medical concern
 - Effect of poor nutrition on growth and development
- Two major problems
 - Anorexia nervosa
 - Bulimia nervosa

Anorexia Nervosa

- Extreme loss of weight due to self-starvation
- Two peak periods
 - First: early teens (12 to 14 years)
 - Later: in 16- to 17-year-old age range
- Results in severe malnutrition, protein and vitamin deficits
- Anorexic person appears emaciated (thin and wasted)
- Lack of menstrual cycles - amenorrhea

Anorexia Nervosa (Cont.)

- Low body temperature—cold intolerance
- Low blood pressure and slow heart rate
- Dry skin and brittle nails
- Development of fine body hair
- Low calcium intake—predisposition to osteoporosis later in life
- Dehydration affecting kidney and cardiovascular function

Anorexia Nervosa (Cont.)

- Electrolyte imbalances can cause cardiac arrhythmias and cardiac arrest.
- Anorexia can be **LIFE-THREATENING**.
- Treatment
 - Hospitalization
 - Long-term psychotherapy

Bulimia Nervosa

- Occurs more frequently in older adolescents
- Characterized by binge eating, followed by self-induced vomiting (purging)
- Excessive use of laxatives and diuretics
- Compulsive exercising
- Bulimia and anorexia may overlap.
- Bulimic person often maintains relatively normal weight.

Bulimia Nervosa (Cont.)

- May result in anemia
- Menstrual irregularities
- Fluid and electrolyte imbalances (frequent vomiting)
 - May cause cardiac arrhythmias, tetany, severe abdominal pain
- Erosion of tooth enamel
- Tears and ulcers in oral mucosa
- Esophagitis with sore throat and difficult swallowing

Acne Vulgaris

- Common skin infection in adolescence
 - Involve sebaceous glands and associated hair follicles on
 - Face
 - Neck
 - Upper trunk
- Wide variation between mild to severe
- If severe—permanent scarring

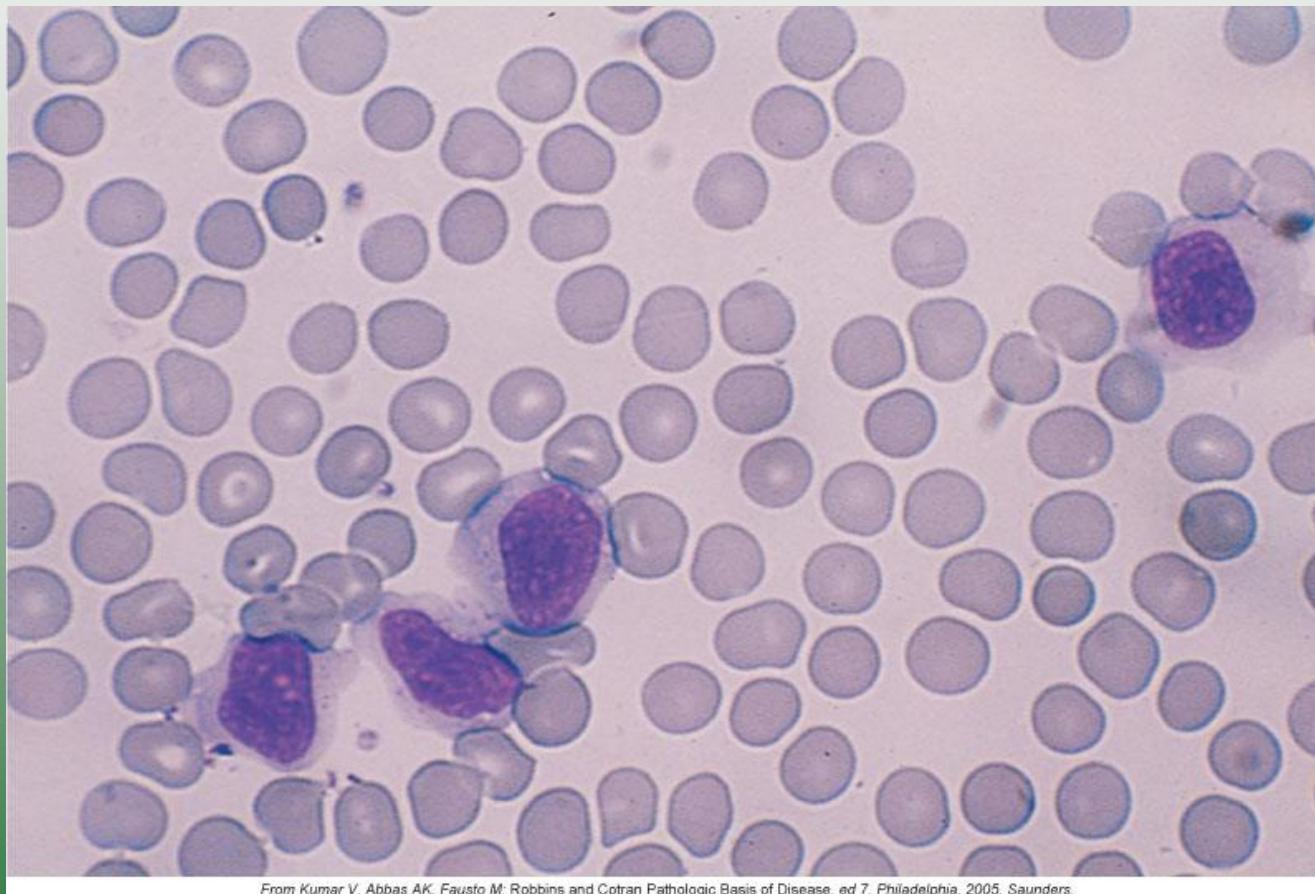
Acne Vulgaris (Cont.)

- Comedones
 - Whiteheads or blackheads
 - Non-inflammatory collection of sebum
- Inflammatory
 - Hair follicle swells and ruptures.
 - *Propionibacterium acnes* breaks down sebum—
inflammation
 - Staphylococcal organisms invade.
 - Creation of a pustule

Infectious Mononucleosis

- Caused by the Epstein-Barr virus
- Affects lymphocytes
- Common in adolescents and young adults
- Usually mild and self-limiting but complications may occur
- Transmitted by direct contact with infected saliva, airborne droplets, blood
- Incubation period about 4 to 6 weeks

Atypical Lymphocytes in Infectious Mononucleosis



From Kumar V, Abbas AK, Fausto N: Robbins and Cotran Pathologic Basis of Disease, ed 7, Philadelphia, 2005, Saunders.

Infectious Mononucleosis (Cont.)

- Manifestations

- Sore throat, headache
- Fever
- Fatigue, malaise
- Enlarged lymph nodes and spleen
- Rash on the trunk
- Increase in lymphocytes and monocytes in blood
- Atypical T-lymphocytes
- Positive heterophil antibody test

Disorders Affecting Sexual Development

- Chromosomal disorders
 - Klinefelter syndrome
 - Turner syndrome
- Tumors
 - Testicular tumors uncommon prior to age 20
 - Usually malignant
- Menstrual abnormalities
 - Delayed menarche
 - Dysmenorrhea