

CHAPTER 3

HEALTHCARE ISSUES

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GENERAL APPROACH

- ▶ All countries throughout the world have financial limits on their abilities to support healthcare systems.
- ▶ The United States spends about 50% more per person than any other country in the world (National Center for Health Statistics, 2013).
- ▶ Healthcare access and health disparities in the United States continue even after passage of the Affordable Care Act.
- ▶ There are 6,234 primary care Health Professional Shortage Areas (HPSAs) representing the underserved with limited access to care.
- ▶ The leading causes of infant mortality in the United States are congenital malformations, disorders of short gestation and low birth weight, and sudden infant death syndrome.
- ▶ A resurgence of previously controlled infections and the emergence of newer infections, coupled with antibiotic resistance and an increasingly global environment, make infectious disease a persistent threat to people at either end of the age spectrum.
- ▶ Current healthcare trends support greater emphasis on disease prevention, risk reduction, health promotion, and chronic disease management care rather than exclusive disease management.
- ▶ There is increased emphasis on evidence-based practice (the use of current and best evidence to make decisions about care) and early translation of the best evidence into practice to improve healthcare quality and outcomes of care.
- ▶ There is increasing healthcare complexity through technological advances, particularly in healthcare information systems.

RED FLAGS

- ▶ *Health disparities*: the difference in the incidence, prevalence, mortality, and burden of disease and other adverse conditions that exist among specific population groups in the United States (National Institute on Aging, 2008)
- ▶ *Access*: the availability (or lack thereof) of healthcare services to all
- ▶ *Medically underserved community*: a setting with a shortage of primary care, dental, and/or mental health services
- ▶ *Vulnerability*: open to physical, emotional, and/or socioeconomic harm
- ▶ *Disadvantaged*: inhibited from knowledge, skills, and abilities to participate in the healthcare system as a provider and/or a receipt of health care because of economic, social, ethnic, or racial background, and/or physical or mental impairment
- ▶ *Underrepresented minorities*: racial and ethnic populations whose representation among the health professions is lower than their proportion of the general population
- ▶ *Social determinants of health*: defined by the World Health Organization as “conditions in which people are born, grow, live, work, and age, and the wider set of forces and systems shaping the conditions of daily life” (WHO, 2015)

THE PATIENT PROTECTION AND AFFORDABLE CARE ACT

- ▶ Patient Protection and Affordable Care Act (ACA) became law in 2010 (U.S. Department of Health and Human Services, n.d.).
- ▶ Persons are now required to have insurance under the ACA, but 11.4% of U.S. citizens are still without insurance in March 2015 (Obamacare Facts, 2015).
- ▶ ACA ended preexisting condition exclusions, keeps adults under 26 years old on parents’ plan, and ended lifetime limits.
- ▶ ACA requires insurers to offer preventive care with no copayment.

NATIONAL HEALTH PREVENTION STRATEGY

The National Prevention Strategy (Centers for Disease Control & Prevention, n.d.) presents evidence-based recommendations designed to reduce the burden of the most-common preventable causes of disease and death. The aim of this initiative is to guide the nation in the most effective and achievable ways to improve health and well-being. The strategic directions include healthy and safe community environments, clinical and community preventive services, empowered people, and the elimination of health disparities. Here are the priority areas:

- ▶ Tobacco-free living
- ▶ Preventing drug abuse and excessive alcohol use
- ▶ Healthy eating
- ▶ Active living
- ▶ Injury- and violence-free living
- ▶ Reproductive and sexual health
- ▶ Mental and emotional well-being

MODEL EPIDEMIOLOGIC PRINCIPLES

Definition

- ▶ The study of how disease is distributed in populations
- ▶ Includes factors that influence this distribution (Gordis, 2014)

Natural History of Disease

The course of disease is one of development, expression, and progression in a person over time. Several stages appear to be universally descriptive:

- ▶ Stage of susceptibility (pre-pathological)
- ▶ Stage of pre-symptomatic disease (subclinical)
- ▶ Stage of clinical disease
- ▶ Stage of disability (or death)

Prevention of Disease

The goal is to intervene as early as possible to prevent disease or disability.

Primary Prevention

- ▶ Interventions at the stage of susceptibility, directed at preventing disease from occurring
- ▶ Education, exercise, nutrition, water fluoridation, immunizations, food-handling regulations, pollution control

Secondary Prevention

- ▶ Interventions at the subclinical stage, directed at early detection of the illness or problem to reduce the progress and severity of the disease
- ▶ Genetic testing in newborns, lead screening, vision and hearing screening, smoking cessation programs, cholesterol screening, and mammography

Tertiary Prevention

- ▶ Interventions at the clinical stage of disease, directed at treatment and rehabilitation of the illness to prevent or minimize progression of the disease or its sequelae, such as disability
- ▶ Use of inhaled steroids in the management of asthma and penicillin prophylaxis in patients with sickle cell anemia

Etiology

The cause or the web of causation of a disease or problem:

- ▶ Any factors (direct or indirect) that increase the likelihood of disease
- ▶ Prevalence rates describe the number of persons who have a condition in the population at a specific time divided by the number of people in the population.
- ▶ Incidence rates describe the number of new cases that occur during a specified time in a group at risk. See Table 3–1, which identifies the leading causes of death per age group.

TABLE 3-1.
LEADING CAUSES OF DEATH BY AGE GROUP

AGE	CAUSE OF DEATH
Under 1 year	<ul style="list-style-type: none"> Congenital anomalies Short gestation Maternal complications Sudden infant death syndrome (SIDS) Unintentional injuries Placenta, cord, or membranes Bacterial sepsis Respiratory distress Circulatory system disease Neonatal hemorrhage
1-4 years	<ul style="list-style-type: none"> Unintentional injuries Congenital anomalies Homicide Malignant neoplasm Heart disease Influenza and pneumonia Chronic lower respiratory disease Septicemia Benign neoplasm Perinatal period
5-9 years	<ul style="list-style-type: none"> Unintentional injuries Malignant neoplasm Congenital anomalies Homicide Chronic lower respiratory disease Heart disease Influenza and pneumonia Cerebrovascular disease Septicemia Benign neoplasm
10-14 years	<ul style="list-style-type: none"> Unintentional injuries Malignant neoplasm Suicide Congenital anomalies Homicide Heart disease Chronic lower respiratory disease Influenza and pneumonia Cerebrovascular disease Benign neoplasms

AGE	CAUSE OF DEATH
15–24 years	Unintentional injuries Suicide Homicide Malignant neoplasm Heart disease Congenital anomalies Influenza and pneumonia Diabetes mellitus Complicated pregnancy Chronic lower respiratory disease
25–34 years	Unintentional injuries Homicide Suicide Malignant neoplasm Heart disease Diabetes mellitus Liver disease HIV Cerebrovascular disease Influenza and pneumonia
35–44 years	Unintentional injuries Malignant neoplasm Heart disease Suicide Homicide Liver disease Diabetes mellitus Cerebrovascular disease HIV Influenza and pneumonia
45–54 years	Malignant neoplasms Heart disease Unintentional injuries Liver disease Suicide Diabetes mellitus Cerebrovascular disease Chronic lower respiratory disease Septicemia HIV

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AGE	CAUSE OF DEATH
55–64 years	Malignant neoplasms Heart disease Unintentional injuries Chronic lower respiratory disease Diabetes mellitus Liver disease Cerebrovascular disease Suicide Septicemia Nephritis
65 years and older	Heart disease Malignant neoplasm Chronic lower respiratory disease Cerebrovascular disease Alzheimer's disease Diabetes mellitus Influenza and pneumonia Unintentional injuries Nephritis Septicemia

Adapted from "10 Leading Causes of Death by Age Group, United States – 2013," by Centers for Disease Control and Prevention, 2013. Retrieved from http://www.cdc.gov/injury/wisqars/pdf/leading_causes_of_death_by_age_group_2013-a.pdf

Risk Factors

- ▶ Age, sex, social, cultural, familial, racial/ethnic, genetic, occupation, and lifestyle history represent potential sources of problems and diseases that may be difficult or impossible to alter.
- ▶ Risk reduction programs may be established to decrease the vulnerability of persons to certain problems by modifying some risks.

Communicable or Infectious Diseases

Illnesses caused by organisms that attack and invade vulnerable persons

- ▶ Involve identification of causative agents,
- ▶ Rely on microbiology principles in understanding life cycle of organism,
- ▶ Focus on intervention at vulnerable phases in course of disease or life cycle of organism, and
- ▶ Use selected infectious disease definitions (Box 3–1).

Reservoirs of Infection

- ▶ Cases and carriers
- ▶ Animal carriers (lower vertebrate animals)

BOX 3.1**INFECTIOUS DISEASE DEFINITIONS****General Definitions**

- *Infection*: colonization and multiplication of an organism in the host, typically producing an immune response but no signs or symptoms
- *Disease*: Stage when an infection produces signs and/or symptoms (including pathologic changes). Certain organisms (such as influenza virus) are capable of infection with or without producing disease; other organisms (such as measles virus) always produce disease in susceptible persons. Disease may vary in severity.
- *Colonization*: The organism invades the host at a particular site, multiplies, and acts as a parasite but does not produce infection, immune response, or disease.
- *Carrier state*: persistence of an organism in a host; this stage may follow infection, disease, or colonization and may be infective to others

Agent (Organism) Properties

- *Infectivity*: Ability of an organism to invade and multiply in a susceptible host. Varicella is highly infective, rhinovirus is intermediate, and tubercle bacilli are of low infectivity.
- *Pathogenicity*: Ability of an organism to produce disease. Rabies, rhinovirus, and varicella are highly pathogenic; adenovirus and rubella are intermediate; and tubercle bacillus is low.
- *Virulence*: Severity of disease that an organism can produce, measured by criteria such as number of days in bed or the frequency of serious sequelae including death (fatality rate). Rabies virus is highly virulent (nearly 100% fatality rate); poliovirus is moderately virulent; varicella and rhinovirus are of low virulence (almost zero fatality rate).
- *Immunogenicity*: Ability to produce a lasting and effective immunity. Rhinovirus, which primarily acts locally, results in a poor systemic immune response. Systemic viral infections such as measles produce lasting immunity.

Agent–Host Relations

- *Latent infection*: The organism is not shedding or obtainable (likely hidden in host cells).
- *Patent infection*: The organism is shedding and/or obtainable from such areas as feces, urine, blood, or respiratory tract. Certain infections may remain permanently patent (some cases of hepatitis B) or be intermittently patent (herpes virus), or, after being latent for a long time, reactivate and produce disease (tuberculosis and herpes zoster).
- *Period of communicability*: the time when sufficient numbers of organisms are shed to cause transmission; usually concurrent with disease but not always
- *Incubation period*: the time from exposure to the onset of disease

- ▶ Invertebrate hosts (insects)
- ▶ Inanimate objects: Some infectious agents are free-living in the environment, multiplying on inanimate objects (such as *Salmonella* in food, *Legionella* in pools of water, and *Histoplasma* in oil).

Mechanisms of Transmission of Infection

- ▶ Direct: through touching, kissing, sexual intercourse, childbearing, breastfeeding, transfusions
- ▶ Indirect: through air, vector (insects, animals), vehicle (food, water, towels)

Control Measures

- ▶ Measures directed against the reservoir: isolation, quarantine, insect spraying
- ▶ Measures that interrupt the transmission of organisms: water purification, milk pasteurization, barrier protection during sexual intercourse
- ▶ Measures that reduce host susceptibility: immunization, appropriate use of antibiotics, improved nutrition

Concepts of Epidemic vs. Endemic Infections

- ▶ *Generation time*: interval between receipt of infection and the maximal communicability of the host; applied to both subclinical and clinical infections (incubation period applies only to clinical cases); used to describe and analyze the spread of infectious diseases (i.e., common vehicle, single-exposure epidemic, determined by the incubation or generation time)
- ▶ *Herd immunity*: resistance of a group to invasion and spread of an infectious agent because a large portion of the group is immune; decreases the likelihood of an epidemic in an area
- ▶ *Endemic*: a disease or infectious agent that is usually present in a population
- ▶ *Epidemic*: occurrence of disease in excess of what is normally expected in a population
- ▶ *Morbidity*: occurrence of illness in a population
- ▶ *Mortality*: occurrence of death in a population

HUMAN DEVELOPMENT

Definition

- ▶ Most development is patterned and orderly, with both a purpose and a direction.
- ▶ Development is continuous throughout life, although the degree of change in many areas decreases after adolescence.
- ▶ Development may occur simultaneously in several areas, such as physical and social, but the rate of change in each area varies.
- ▶ The pace of development varies among persons.
- ▶ Physical and mental stress during periods of critical developmental change, such as puberty, may make a person particularly susceptible to outside stressors.
- ▶ Anticipatory guidance is an important component of patient and family education throughout the life span.

Infant and Child Development

- ▶ Assessment of growth is determined by routine monitoring of height, weight, head circumference (until age 2), dental development, and appearance of secondary sex characteristics.
- ▶ Adequacy of growth is determined by comparison with normal growth parameters (see Tables 3–2 through 3–5) and/or plotting the measurements of height, weight,

TABLE 3-2.
NORMAL GROWTH PARAMETERS FOR HEIGHT AND WEIGHT

AGE	WEIGHT*	HEIGHT*
Newborn	95% of newborns weigh 5–10 lbs Approximately 5%–10% of body weight is lost in first few days, then birth weight is regained in 7–10 days.	95% of newborns are between 18 and 22 in. long.
Birth–6 months	Weekly gain 140–200 g (5–7 ounces). Birth weight doubles by 6 months.	Monthly gain is 2.5 cm (1 in.).
6–12 months	Weekly gain 85–140 g (3–5 ounces). Birth weight triples by age 1 year.	Monthly gain is 1.25 cm (0.5 in.). Birth length increases by approximately 50% by age 1 year.
Toddlers	Yearly gain 2–3 kg (4½–6½ lbs).	Growth is approximately 12 cm (5 in.) between ages 1 and 2 years; 6–8 cm (2½–3½ in.) between ages 2 and 3 years. Approximately 50% of adult height is reached by age 2 years.
School age	Yearly gain approximately 2–3 kg (4½–6½ lbs).	Growth is approximately 5–6 cm (2–2½ in.) per year. Birth length doubles by age 4 years and triples by age 13 years.
Puberty—girls (10–14 years)	Weight gain 15–55 lbs (mean 38 lbs).	Growth is approximately 5–25 cm (2–10 in.). 95% of adult height is achieved by menarche (skeletal age of 13 years).
Puberty—boys (11–16 years)	Weight gain 15–65 lbs (mean 52 lbs).	Growth is approximately 10–30 cm (4–12 in.). 95% of adult height is achieved by skeletal age of 15 years.

*These measurements are averages.

Adapted from “CDC Growth Charts,” by National Center for Health Statistics, 2010. Retrieved from <http://www.cdc.gov/growthcharts/>

and head circumference on a standard National Center for Health Statistics (NCHS) (2010) growth chart.

- ▶ There are two periods of rapid growth: infancy and adolescence; in between, growth is steady but slower.
- ▶ The growth of most body tissues parallels physical growth, which is most rapid in the first 2 years; lymph tissue growth is rapid in the preschool and early school-age years; growth of reproductive organs remains slow until puberty.

Patterns of Development

- ▶ The sequence of development is basically the same in all children, but the rate varies.
- ▶ Attainment of developmental landmarks in one area does not always run parallel to another area of development.
- ▶ Development is dependent on maturation of the nervous system.

- ▶ Generalized activity precedes specific movements (a young infant kicks and waves arms with excitement, whereas an older infant reaches out and grasps).
- ▶ Development occurs in a cephalocaudal direction (head control develops before walking) and a proximal-to-distal direction (shoulders before fingers).
- ▶ Certain primitive reflexes must be lost before the corresponding voluntary movement is acquired (grasp reflex lost before deliberately grasping objects can occur).

Tooth Eruption

- ▶ Deciduous teeth usually begin at 6 months of age with the central incisors and move laterally.
- ▶ All 20 deciduous teeth are usually in place by 2½ to 3 years of age.
- ▶ Delayed dentition is considered when no teeth have erupted by 13 months of age.
- ▶ Shedding of deciduous teeth begins at about 6 years of age and continues through age 12.
- ▶ Eruption of the first permanent teeth occurs with the first molars, at about age 6 years.
- ▶ Eruption of all 32 permanent teeth may not be complete until ages 17 to 21, with third molars.

Developmental Landmarks and Milestones

- ▶ Development typically assessed in four areas: gross motor, fine motor, language, and social skills
- ▶ Purpose is to identify children in need of further assessment and determine if a developmental disability exists
- ▶ All states required to have a system to identify and treat developmental disabilities in children ages 3 to 5 years; most states have voluntarily extended this age range

Interpreting Results

- ▶ Attainment of milestones is in ranges.
- ▶ A significant finding in any developmental assessment is the loss of developmental milestones previously achieved or lack of key milestones by certain age (see Table 3–3).
- ▶ Language and fine motor skills are sensitive indicators of intellectual development.
- ▶ Early attainment of gross motor skills is not a significant indicator of advanced intellectual development, but does usually preclude the diagnosis of intellectual disability. Developmental warning signs can be found in Table 3–4.
- ▶ No child is intellectually disabled if delayed in one area but normal in all others.

Adolescent Pubertal Changes

Boys

- ▶ Average age of onset is 10.5 to 16 years
- ▶ Precocious puberty is the development of secondary sex characteristics before age 9 and is often associated with a pathological etiology in boys.
- ▶ Delayed puberty is lack of changes by age 14 years.

TABLE 3-3.
DEVELOPMENTAL MILESTONES

TASKS	AVERAGE AGE (RANGE)*
GROSS MOTOR SKILLS	
Moves head from side to side	2 weeks
Lifts shoulders while prone	2 months
Rolls over	4 months (2–6 months)
Head control (no bobbing)	4 months
Sits alone	6 months (5–9 months)
Pulls to stand	9 months (6–10 months)
Crawls (reciprocal)	9 months (8–11 months)
Cruises	9 months (8–13 months)
Walks alone	12 months (9–15 months)
Runs, walks upstairs holding rail	18 months (14–21 months)
Throws ball overhand	19–20 months (16–24 months)
Pedals tricycle	28 months (21–36 months)
Balances on one foot	28–30 months (22–38 months)
Hops on one foot	4 years (3–4½ years)
Tandem walk	5 years (3½–5 years)
Skips	5 years
FINE MOTOR SKILLS	
Unfists	3–4 months
Holds objects placed in hand	3–4 months (2½–5 months)
Reaches for objects	4 months (3–5 months)
Transfers objects	6 months (4½–7 months)
Ulnar raking	6 months (5–7 months)
Inferior pincer	9–10 months
Mature pincer	11–12 months
Deliberate throw	12–13 months
Spontaneous scribble	14–16 months (12–16 months)
Tower of 2	15 months (12½–20 months)
Tower of 4	18 months (16–20 months)
Tower of 6	24 months (17–30 months)
Imitates line	24 months (19–30 months)
Tower of 10	36 months
Copies circle	36 months (2½–3½ years)
Uses scissors	3 years
Copies square	4 years (4–5 years)
Draws 3-part figure	4 years (3½–5 years)
Copies triangle	5 years
Draws 6-part figure	5½ years (4½–6 years)
LANGUAGE (RECEPTIVE AND EXPRESSIVE)	
Localizes sound	4–9 months
Babbling vowels	5–6 months
Babbling consonants	6–7 months
“Dada”/“mama”—nonspecific	9–10 months
“Dada”/“mama”—specific	10–12 months

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TASKS	AVERAGE AGE (RANGE)*
LANGUAGE (RECEPTIVE AND EXPRESSIVE) (CONTINUED)	
13 words	11–13 months
Follows one-step command	11–15 months
10–15 words, 25% intelligible	15–18 months
Points to named pictures when asked “show me”	18–24 months
Approximately 50-word vocabulary; 2-word combinations	21–24 months
Approximately 100-word vocabulary by 2nd birthday; says “me” and “mine” (As a rule, the number of words in a sentence equals the child’s age [2 by age 2, 3 by age 3]) 2- to 3-word phrases	2 years
Follows 2-step commands without gesture	30 months
Few possessives (“my ball”) and progressives (the –ing: “I playing”)	30 months
Concept of “I” questions	30 months
Knows few colors, pronouns, plurals, full name, age, approximately 250-word vocabulary, 3–4 word sentences (75% intelligible)	36 months
Counts to 4, can say a nursery rhyme, asks and answers why, how, when, knows opposite analogies, and uses past tense	4 years+
Uses complex sentences, understands meaning of words, counts to 10, has fluent speech, uses future tense	5 years
SOCIAL, INTERACTIVE, VISION	
Regards face	0–1 month
Smiles responsively	1–1½ months
Hand regard	4–5 months
Smiles at mirror image	5 months
Plays peek-a-boo	5½–8½ months
Plays pat-a-cake	10 months
Waves goodbye	10 months (7–14 months)
Indicates wants	12 months (10–14 months)
Imitates housework	15 months (13–18 months)
Washes and dries hands	22 months (19 months–2½ years)
Puts on clothing	22 months

*Ages will vary with different tests.

Adapted from “Child Development,” CDC, 2016. Retrieved from <http://www.cdc.gov/ncbddd/childdevelopment/index.html>

- ▶ First change is testicular enlargement, followed by pubic hair development at the base of the penis (adrenarche); testicular size larger than 2 to 2.5 cm indicates puberty has begun.
- ▶ Penile growth occurs approximately 6 to 12 months after testicular enlargement; penis grows from a prepubertal size of 3.5 to 5.5 cm to an adult length of 12 cm (7.5 to 15.5 cm).

TABLE 3-4.
DEVELOPMENTAL WARNING SIGNS

6 weeks	Absence of auditory alertness Lack of visual fixation (focusing) Excessive head lag on pulling-to-sitting position
6 months	Persistence of hand regard Failure to follow 180° (for both near and far objects) Persistent fisting Preference of one hand
10 months	Absence of babble No smiling or social responsiveness Absence of weight-bearing while hand held Failure to sit without support
18 months	No spontaneous vocalizations No single words No pincer grasp Inability to stand without support
2 years	No recognizable words No walking

- ▶ Growth spurt begins about 1 year after the first testicular changes (average age 12.5 years), peaks after 1.5 years, and lasts 2 to 4 years.
- ▶ Accompanying changes, such as axillary and facial hair and deepening voice, occur later in puberty.

Girls

- ▶ Average age of onset is 11 years, with a range of 8 to 13 years.
- ▶ Precocious puberty is the onset of changes before 8 years of age or menarche before age 10 years.
- ▶ Delayed puberty is no breast development by age 13 years or no menses by 15 to 16 years.
- ▶ First pubertal change is usually breast budding under the areola and pubertal fine hair over the mons pubis (adrenarche or pubarche).
- ▶ Menarche occurs at an average age of 12.5 years (range 10 to 15).

HEALTH MAINTENANCE

Current factors support greater emphasis on health promotion and disease prevention.

Healthy People 2020 (U.S. Department of Health and Human Services, n.d.):

- ▶ A set of goals and objectives based on annual targets to guide the nation's health promotion and prevention efforts
- ▶ National objectives that emphasize disease prevention and define leading health indicators necessary to measure health; as a group, reflect major health concerns in United States in 21st century

- ▶ Emphasizes social determinants of health and promotion of health across all stages of life and use of technology, such as interactive websites, as main vehicle of dissemination of evidence-based resources for implementation
- ▶ Leading health indicators selected on the basis of their ability to motivate action, availability of data to measure progress, and importance as public health issues. They include:
 - ▷ Access to health services
 - ▷ Clinical preventive services
 - ▷ Environmental quality
 - ▷ Injury and violence
 - ▷ Maternal, infant, and child health
 - ▷ Mental health
 - ▷ Nutrition, physical activity, and obesity
 - ▷ Oral health
 - ▷ Reproductive and sexual health
 - ▷ Social determinants
 - ▷ Substance abuse
 - ▷ Tobacco

HEALTH MAINTENANCE PRACTICE

Lifestyle/Health Behaviors

Routine counseling and chemoprophylaxis in primary prevention may prevent certain conditions (see Table 3–5). Specific health behaviors that are amenable to intervention can be found in Table 3–6.

Exercise

- ▶ Recommendation is 30 minutes of moderate physical activity on most days of the week; does not have to be continuous
- ▶ Recommendation is as important for children as for adults

Child and Adolescent Pre-Participation Sports Assessment

- ▶ Children and adolescents participating in sports should have a pre-participation evaluation (PPE). Almost all states require medical clearance before sports participation, although no standardization of PPEs exists and evaluations may vary. The American Academy of Pediatrics and the American Association of Sports Medicine Physicians each have developed guidelines.
- ▶ The PPE should involve parents for athletes younger than 18 years of age.
- ▶ The goal of the PPE is to identify those who may need conditioning or rehabilitation, need further evaluation for clearance, and should be excluded from participation. Particular attention should be directed at the cardiopulmonary and musculoskeletal systems.

TABLE 3-5.
CHEMOPROPHYLAXIS FOR DISEASE PREVENTION

CONDITION	RATIONALE	RECOMMENDATIONS
PREVENTING PRIMARY DISEASE		
Neural tube defects	Disorders of the cranium, spine, and nervous system that occur when the neural tube fails to close. Folic acid supplementation has resulted in more than 50% reduction in these birth defects. The average North American diet includes less than half of the recommended dietary intake of folic acid.	All women of childbearing years, whether pregnant or not, should take 0.4 mg daily of folic acid either alone or as part of a multivitamin supplement. The dose is increased with pregnancy.
Hemorrhagic disease of the newborn	Newborn gut lacks the bacteria necessary to synthesize vitamin K, which is used for coagulation.	Vitamin K (phytonadione), 1 mg, is administered once immediately after birth.
Ophthalmia neonatorum	Primary purpose is the prevention of gonococcal and <i>Chlamydial</i> conjunctivitis in the neonate. Silver nitrate is not effective against <i>Chlamydia</i> .	Instilled immediately postpartum: a single application of 1% silver nitrate ophthalmic drops, 0.5% erythromycin ophthalmic ointment, or 1% tetracycline ophthalmic ointment
Group B <i>Streptococcus</i> (GBS) (prevention in the newborn)	In the early 1970s, GBS was a primary cause of neonatal sepsis and meningitis. Prevention strategies began to screen women for GBS and provide antibiotic prophylaxis for women who were positive or had specific risk factors.	<p>Screen pregnant women for GBS in one of two ways:</p> <ul style="list-style-type: none"> • Obtain vaginal and rectal cultures at 35–37 weeks' gestation. • If no culture results are available, the decision for chemoprophylaxis is based on the presence of one or more risk factors: delivery at 37 weeks' gestation or less, membranes ruptured for more than 18 hours, intrapartum fever of 38° C or higher, or mother had a previous infant with GBS disease or had GBS bacteriuria herself. <p>Whichever screening method is used, the treatment is the same: IV penicillin G, 5 million units, followed by 2–5 million units every 4 hours until delivery. Treatment is most effective if at least two doses of penicillin are given.</p>
Dental caries	Reduction of dental caries can be accomplished with fluoride and sealants. Excess fluoride will cause fluorosis (mottling of the teeth).	Dose of fluoride is dependent on fluoride concentration in the water and age of the child. Sealants are plastic coverings applied by the dentist for secondary molars.

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CONDITION	RATIONALE	RECOMMENDATIONS
DISEASE PREVENTION IN HIGH-RISK PEOPLE		
Respiratory syncytial virus (RSV)	RSV is responsible for the majority of lower respiratory tract infections in children. RSV is a paramyxovirus that produces fusion of human cells in tissue. RSV attacks the upper and lower respiratory tracts, often causing life-threatening pneumonia and bronchiolitis. Bronchiolitis may begin as a mild upper respiratory tract infection that progresses to difficulty breathing with a cough and wheeze. RSV causes potentially life-threatening airway obstruction.	Treatment is focused on symptom relief. Airway management with bronchodilators, hydration, and antivirals may be used to manage RSV.
Infective endocarditis (IE) or subacute bacterial endocarditis (SBE)	<p>SBE prophylaxis with antibiotics is recommended for people with specific cardiac conditions who are undergoing procedures that may induce a transient bacteremia.</p> <p><i>High-risk conditions</i> include prosthetic valves, most congenital heart malformations, rheumatic heart disease, hypertrophic cardiomyopathy, mitral valve prolapse with regurgitation, and previous bacterial endocarditis.</p> <p><i>High-risk procedures</i> include most type of dental work (tooth extractions, cleaning, and surgery) and operations within the oropharynx, gastrointestinal, and genitourinary tract. Failures may occur even with adherence to recommendations.</p>	<p>Recommended prophylaxis: oral amoxicillin, 50 mg/kg (maximum 2 grams) 1 hour prior to the procedure. If allergic to penicillin, use cephalexin (50 mg/kg, maximum 2 grams) or azithromycin or clarithromycin (15 mg/kg, maximum 500 mg).</p> <p>Post-procedural antibiotics are no longer recommended.</p>
<i>Streptococcus pneumoniae</i> (pneumococcal disease)	Extended (possibly lifelong) antibiotic prophylaxis is recommended for those persons at risk for developing fulminant pneumococcal disease, particularly patients with sickle-cell disease and asplenia. Pneumococcal vaccine may change these recommendations, but currently antibiotics are recommended even if vaccine is given.	<p>Penicillin G or V</p> <p>Younger than 5 years of age, 125 mg b.i.d.</p> <p>Older than 5 years of age, 250 mg b.i.d.</p>

CONDITION	RATIONALE	RECOMMENDATIONS
PREVENT RECURRENCES OF DISEASE		
Acute rheumatic fever (ARF)	Continuous antibiotics effective against Group A streptococcus are provided for persons who have a documented history of acute rheumatic fever to prevent recurrences. Antibiotic prophylaxis should begin as soon as the diagnosis of ARF is made and continue through life.	Benzathine penicillin IM every 4 weeks or daily oral antibiotics: <ul style="list-style-type: none"> • Penicillin V, 125–250 mg b.i.d., or • Erythromycin 250 mg b.i.d., or • Sulfadiazine More than 60 pounds, 1 g daily Less than 60 pounds, 0.5 g daily
Urinary tract infections (UTIs)	Children (infants to adolescents) with recurrent UTIs (more than 2 to 3 episodes) may be candidates for antibiotic prophylaxis to prevent recurrences.	Daily antibiotic therapy, usually with nitrofurantoin or trimethoprim-sulfamethoxazole, is given for various lengths of time: <ul style="list-style-type: none"> • Children with normal urinary tracts are usually treated until infection-free for 6–12 months. • Children with vesiculoureteral reflux are treated until reflux resolves. • Children with urinary tract abnormalities are often on long-term therapy.
PREVENT DISEASE AFTER EXPOSURE		
Meningitis (<i>Neisseria meningitidis</i> or <i>Haemophilus influenzae</i>)	Antibiotic prophylaxis is recommended for household members and child-care contacts of infected person.	Administer rifampin within 24 hours of identifying the person at 10 mg/kg every 12 hours x 2 days (four doses) for <i>Neisseria</i> ; for <i>Haemophilus</i> , use a 4-day regimen.
Pertussis	Household contacts of infected person should receive antibiotic prophylaxis.	Administer erythromycin estolate (some experts use azithromycin) at 40–50 mg/kg/day (maximum 2 g/day) for 14 days.
Sexually transmitted diseases	Symptomatic or asymptomatic persons exposed to partners with <i>Chlamydia</i> , gonorrhea, or syphilis are treated with appropriate antibiotics.	Same treatment regimen is used for the infected and the exposed person.

- ▶ Sports physicals should not replace the routine physical exam, but may include preventive healthcare teaching on topics such as the use of supplemental aids and prevention of injuries.
- ▶ Results of the PPE may allow for full participation (the majority), temporary deferral (due to illness or injury), partial deferral (i.e., no contact or collision sports), recommendation for an appropriate sport for certain conditions, and/or exclusion.

TABLE 3-6.
SPECIFIC HEALTH BEHAVIORS AMENABLE TO INTERVENTION

FACTOR	STRENGTH OF EVIDENCE	BENEFIT	AGE FOR WHICH RECOMMENDED	RECOMMENDATION
Exercise	Good evidence	Many, including preventing cardiac disease, death	All ages	Individualize
Nutrition	Simple, focused intervention can be effective	Help with many chronic conditions	No upper limit	Counseling about adequate diet
Calcium	Good evidence in high-risk patients	Reduce risk of osteoporosis	Postmenopausal women	1,000–1,500 mg/day for women; no recommendation for men
Cholesterol	Diet not shown sufficient to reduce cholesterol level; normal levels protect young to middle-aged men	Reduce hyperlipidemia, atherosclerotic cardiovascular disease (ASCVD)	No support for screening and treatment over age 75	Total cholesterol under 200, LDL depends on risk factors
Weight loss	Well-documented in adults up to 65	Reduce risk factor for atherosclerotic coronary disease	Not studied in elderly	Maintain ideal body weight
Stop smoking	Strongest recommendation, simple interventions can have 5%–10% quit rate	Reduce risk for cardiovascular, pulmonary, gastrointestinal diseases and malignancies	Quitting at any time improves pulmonary function and decreases risk of myocardial infarction (MI) and death	Ask about and encourage cessation at each visit
Alcohol	Cessation difficult to achieve in alcoholics	Reduce risk for falls and confusion in the elderly	No age limit to improve safety	Ask about, counsel to use in moderation
Drugs	Well documented	Reduce many risks of polypharmacy: adverse reactions, drug interactions, death in the elderly	Never too late	Check medications at each visit; ask about over-the-counter and herbal remedies; use only medications that are medically necessary
Safety, injury/abuse prevention	Little data on prevention effectiveness	Reduce risk of falls, sixth leading cause of death	Different focus in the elderly	Home safety evaluation

FACTOR	STRENGTH OF EVIDENCE	BENEFIT	AGE FOR WHICH RECOMMENDED	RECOMMENDATION
Aspirin	Evidence in middle-aged men; few studies in elderly, look promising	Primary and secondary prevention of cardiovascular and cerebrovascular disease	Recommended for men over 40 or 50	Low dose: 81 mg/d for cardiovascular health
Estrogen	Well-documented; weigh risks (such as increased risk of breast cancer) versus benefits	Reduce risk of osteoporosis	Postmenopausal women with no contraindications	Progestin reduces risk of endometrial cancer, increases risk of breast cancer
IMMUNIZATION				
Influenza	Well-documented	Reduce incidence, severity of influenza	65+ years	Annually
Pneumonia	60% efficacy	Prevent <i>Streptococcus pneumoniae</i> infection	65+ years	Once; may repeat in 5 years
Tetanus	Well-proven	Prevent tetanus	No age limit	Every 10 years

Exercise Recommendations for Adults

- ▶ Focus on fundamental fitness and not sport-specific skills
- ▶ Goal: Sustain target heart rate for 30 minutes for maximum cardiopulmonary conditioning
 - ▷ Subtract patient's age from 220
 - ▷ Multiple result by 0.8 for target heart rate
 - ▷ A 40-year-old patient's target heart rate is 144 bpm
- ▶ Before prescribing an exercise program for any patient, conduct a history and physical examination and evaluate:
 - ▷ Fatigue, shortness of breath, chest pain
 - ▷ Risk factors for thromboembolic disease
 - ▷ Excessive bruising
 - ▷ Cardiac murmurs, clicks, hums
 - ▷ Carotid bruits
 - ▷ Other physical indicators of undiagnosed vascular disease
 - ▷ Current medications
- ▶ Decrease intensity or components of exercise program if the patient
 - ▷ Is unable to talk while exercising,

- ▷ Is fatigued for more than 1 hour after finishing, or
 - ▷ Develops swelling or pain.
- ▶ Increase intensity and/or time as patient develops tolerance

General Nutrition

- ▶ Goal: maintain or achieve ideal body weight and supply all essential body nutrients to maintain or regain health
- ▶ Normal growth requires appropriate intake of protein, fat, carbohydrates, water, vitamins, minerals, and trace elements.
- ▶ Recommended dietary allowances (RDA) are estimates of safe and adequate amounts of nutrients recommended to be consumed daily to maintain health. The RDA is the amount of nutrient needed to meet the known nutrient requirements of approximately 97% of the population.
- ▶ U.S. Department of Agriculture (USDA, n.d.) MyPlate suggests:
 - ▷ Make half your plate of fruits and vegetables
 - ▷ Switch to fat-free or low-fat (1%) milk
 - ▷ Make at least half your grains whole
 - ▷ Compare sodium, sugars, and saturated fats in foods and choose the foods with lower numbers

Infant/Childhood/Adolescent Nutrition

Diet planning

- ▶ Energy requirements can be determined using charts or the calculations in Table 3–7.
- ▶ Adolescents who have completed their growth and wish to lose weight will need to reduce calorie intake by 500 calories per day for each pound they wish to lose each week.
- ▶ No more than 2 pounds should be lost per week.
- ▶ Weight loss is not recommended for growing children (except under special circumstances and with close supervision).
- ▶ For children older than 2 years, 55% to 60% of calories should come from carbohydrates, 10% to 15% from protein, and no more than 30% from fat (with saturated fat 10% or less), and less than 300 mg of cholesterol per day.

TABLE 3–7.
DETERMINING ENERGY REQUIREMENTS

AGE	AVERAGE KCAL/KG/DAY
0–6 months	110–120
7–12 months	90–105
1–10 years	80
Adolescence	30–55

Ex: 9-month-old infant weighing 8 kg requires approximately 800 calories/day (8 kg × 100 kcal/kg/day = 800)

- ▶ Fat and cholesterol should not be restricted in the first 2 years of life.
- ▶ Recommended fiber intake is 0.5 g/kg/day, to a maximum of 35 g/day.

Recommended Nutritional Supplements

- ▶ Vitamin K, 1 mg IM, given at birth to all newborns to prevent hemorrhagic disease
- ▶ Vitamin D, 200 units/day, recommended for all breastfed infants until they are ingesting a minimum of 500 mL/day of vitamin D-fortified formula or milk
- ▶ Ferrous sulfate, 2–3 mg/kg/day (max 15 mg/day), recommended for breastfed pre-term infants by 2 months old
- ▶ Iron-fortified cereals starting by 6 months of age in all infants to replace iron stores, which are depleted by the time the infant doubles birth weight at approximately age 4 to 5 months
- ▶ Fluoride supplements to reduce susceptibility to dental caries
- ▶ No fluoride supplements before 6 months of age and where water fluoride content is higher than 0.6 ppm, to avoid fluorosis (excessive mottling of the teeth; see Table 3–8)

Infant Nutrition

- ▶ Breast milk and/or formulas are sufficient to meet the nutrient needs of infants up to 4 to 6 months of age (exceptions noted above); see Table 3–9.
- ▶ Advantages of breast milk: nutritionally balanced, contains antibodies and macrophages, allergic reactions are rare, savings on time and money
- ▶ Possible disadvantages: milk supply may be insufficient, mechanical difficulties such as inverted nipples may occur, medications and infectious organisms may pass to infant, nutritional deficiencies in the mother may affect infant
- ▶ All FDA-approved infant formulas meet minimum nutrient standards and are 20 calories/ounce except for those specifically labeled as higher in calories (e.g., Enfamil 24).
- ▶ Evaporated milk formula not recommended, although it may be used in extenuating circumstances (e.g., unable to breastfeed and/or cannot afford formula). It is made by mixing one can of evaporated milk (13 ounces) with 19½ ounces of water and 3 tablespoons of corn syrup. These infants must also receive a multivitamin with iron; dosage varies with age.

Food Introduction

- ▶ Guidelines have been directed more by tradition than by science.
- ▶ May be introduced when infant is able to sit with support and has good neuromuscular control of head and neck, typically around 4 to 6 months of age

TABLE 3–8.
RECOMMENDED FLUORIDE DOSES WHEN WATER HAS 0.3–0.6 PPM

AGE	< 0.3 PPM	0.3–0.6 PPM
6 months–3 years	0.25 mg	0
3–6 years	0.5 mg	0.25 mg
6–11 years	1.0 mg	0.5 mg

TABLE 3-9.
INFANT FORMULAS

	COW'S MILK-BASED	SOY PROTEIN ISOLATE	PROTEIN HYDROLYSATES
<i>Examples</i>	Enfamil, Similac, Good Start	Isomil, ProSobee	Nutramigen, Pregestimil, Alimentum
<i>Composition comments</i>	Casein/whey ratio varies with manufacturer Lactose is usual carbohydrate (CHO) source; lactose-free formulas using corn syrup and/or fructose now widely available Available in iron-fortified and low-iron preparations; low-iron formulas not recommended	CHO—sucrose and/or glucose Methionine added to all soy formulas to correct deficiencies All are iron-fortified	Partially hydrolyzed protein that results in peptides that do not elicit an immunologic response Most are lactose-free
<i>Uses</i>	Routine use in well infants	Infants with lactose intolerance Infants with cow's milk protein sensitivity (approximately 20% of infants allergic to cow's milk also allergic to soy)	Infants with cow's milk and soy sensitivity
<i>Contraindications</i>	Milk protein sensitivity Lactose intolerance Galactosemia	Soy protein allergy Preterm infants—CHO, protein, mineral absorption of soy formulas in preterm infants is not adequately documented and American Academy of Pediatrics (2004) does not recommend their use; soy formulas specifically developed for preterm infants available Infants with renal disease	None reported

- ▶ Tradition has held that cereals are a good place to begin; use a spoon, avoid adding to bottle.
- ▶ Start with single-ingredient foods and add one new food at a time, with up to 4 to 7 days between foods to identify intolerances.

Food/Formula Cautions

- ▶ No low-iron formula use
- ▶ No cow's milk in the first year of life

- ▶ No honey before age 1 year because of possible development of infantile botulism
- ▶ Avoid foods high in salt or sugar, such as canned or processed foods; RDA for sodium for infants is 17.6 mg/kg/day.
- ▶ Avoid foods that are easily choked on, such as grapes, popcorn, hot dogs, raisins, nuts, candy, and peanut butter.
- ▶ Home preparation of foods such as spinach, beets, carrots, or collard greens may have enough nitrates to cause methemoglobinemia and are therefore not recommended in infancy.
- ▶ Foods considered highly allergenic, such as eggs, wheat, seafood, and nuts, have traditionally been withheld in the first year of life to avoid a possible allergic reaction, but the validity of this practice is uncertain.

Adult Nutrition

- ▶ Calculate body mass index (BMI) to determine overweight and obesity: $\text{weight in lbs} \div \text{height in inches}^2 \times 703$. BMI of 25 or higher is considered overweight according to CDC, *Assessing Your Weight* (n.d.).
- ▶ An online BMI calculator can be found at www.cdc.gov/nccdphp/dnpa/bmi/adult_BMI/english_bmi_calculator/bmi_calculator.htm
 - ▷ Normal weight: BMI 18.5–25
 - ▷ Overweight: BMI 25–30
 - ▷ Class I obesity: BMI 30–34.9
 - ▷ Class II obesity: BMI 35–39.9
 - ▷ Class III obesity: BMI > 40

Losing Weight

- ▶ In establishing realistic weight goals, calculate relationship of current weight compared to ideal body weight:
- ▶ Determine IBW
- ▶ Divide IBW by current body weight
- ▶ Multiply by 100
- ▶ Subtract 100
- ▶ Result gives percent over or under ideal body weight

Diet Planning

- ▶ Determine caloric needs by adding basal calories (IBW \times 10) and activity calories (IBW \times 3) for sedentary people, IBW \times 5 for moderately active people, or IBW \times 10 for people involved in strenuous activity.
- ▶ Example: IBW = 120 lbs for sedentary person
- ▶ $120 \times 10 = 1,200$ basal calories; $120 \times 3 = 360$
- ▶ $1200 + 360 = 1,560$ total calories needed per day
- ▶ People who wish to lose weight will need to reduce calorie intake by 500 calories per day for each pound they wish to lose each week.

- ▶ Diets should limit fat to 30% or less of total calories, carbohydrates to 55% to 60% of calories, and the rest of calories from protein.

Geriatric Nutrition

- ▶ Goal: Supply all essential body nutrients to maintain or regain health
- ▶ Maintain, gain, or lose weight if necessary
- ▶ Adequate calcium intake: 1,000–1,500 mg a day
- ▶ Adequate vitamin D intake: 800 IU a day but consider higher deficiency levels in home-bound
- ▶ Frail elderly at risk for malnutrition—low albumin levels

Safety

Childhood Injuries

- ▶ Injury is the number one cause of death among children ages 16 and younger.
- ▶ Motor vehicle accidents, suffocation, drowning, poisoning, fires, and falls are some of the most common ways children are hurt or killed.
- ▶ Many injuries are preventable (see Table 3–10).

Injury Prevention in Adults/Geriatrics

- ▶ Home safety evaluation for fall prevention
 - ▷ Bathrooms are the site of most falls.
 - ▷ Throw rugs are dangerous.
 - ▷ Use contrast lighting to reduce hazards.
 - ▷ Sufficient lighting is needed both inside and outside the home.
 - ▷ Safe and appropriate assisting devices are important.
- ▶ Driving evaluations for safety
 - ▷ Driving is essential for independence, making patients reluctant to give it up.
 - ▷ Driving can be impaired due to dementia, impaired vision, slowed reflexes, or musculoskeletal disorders.
 - ▷ Seat belts are necessary for safety.
- ▶ Smoke and carbon monoxide detectors
- ▶ Safety locks on firearms
- ▶ Tips for environmental safety can be found in Table 3–11.

Assessment for Violence and Abuse

- ▶ Clinicians should ask about and watch for signs of physical abuse during encounters with patients.
- ▶ Patients will often admit to problems, but only if they are asked.
 - ▷ Know and use state laws in determining requirements for reporting suspected abuse.
 - ▷ Learn state requirements for a sexual assault examination.

TABLE 3–10.
INJURY AND PREVENTION

TYPE OF INJURY	EPIDEMIOLOGY	PREVENTION
Motor vehicle accident (MVA)	<p>MVAs account for about half of all unintentional injury deaths; infants and adolescents usually injured as occupants, school-age children predominantly injured as pedestrians.</p>	<p>Use of child restraints and seat belts is the most effective way to prevent occupant injuries. There are four basic types of restraints:</p> <ol style="list-style-type: none"> 1. Infant/toddler (birth to 2 years): Place semi-inclined and backward-facing in the back seat. 2. Toddler/preschool: Convertible seats and forward-facing seats with harnesses as long as possible up to the weight or height limit by the manufacturer. 3. School-aged: Belt positioning booster seat. Place preferably in the back seat. <p>An infant or toddler car seat fits if the child's ears are below the top of the seat's back and shoulders are below the seat strap slots.</p> <ol style="list-style-type: none"> 4. Older children: Use lap and shoulder belts. All children younger than 13 years should be restrained in rear seats. A shoulder strap should not be used if it goes across the face or throat. Child should be in booster seat to keep shoulder strap in proper place. <p>See https://www.healthychildren.org/English/safety-prevention/on-the-go/Pages/Car-Safety-Seats-Information-for-Families.aspx</p> <p>Car seat adaptations are available for premature infants and patients in casts, on ventilators, or with special medical conditions such as spina bifida.</p>
Drowning	<p>Drowning is the second leading cause of accidental death for children 1 to 4. Poor supervision plays a key role in drowning of young children and infants. Adolescent drowning is often associated with alcohol use. Approximately 75% of drowning occurs in bodies of water that are part of the person's home, particularly bathtubs and pools. Infants can drown in inches of water and in unusual ways, such as in pails of water and toilet bowls.</p> <p>Approximately one-third of all survivors of drowning will suffer irreversible brain injury.</p>	<p>Supervision is the key to prevention:</p> <ol style="list-style-type: none"> 1. Leave no children unattended in or near water and observe closely. 2. Keep the bathroom door closed. 3. Empty all pails of water. 4. Keep swimming pools completely fenced with a locking gate. 5. Make life jackets a must. 6. Teach children to swim and to behave safely around water, such as using life preservers. Infant swim lessons are not recommended because of the risk of water intoxication.

(CONTINUED)

TYPE OF INJURY	EPIDEMIOLOGY	PREVENTION
Fire and burns	<p>More than 300 children between the ages of 0 to 19 are treated in emergency rooms daily for burn-related injuries.</p> <p>More than 1 million burn injuries occur per year and as many as 30,000 people younger than 15 years of age are hospitalized yearly for burns.</p> <p>Approximately 75% of all burns are scalds that occur in the kitchen. Bathtub water can cause burns if hotter than 120°F. Skin damage rarely occurs at temperatures below 110°F, but a full-thickness burn can occur in 1 second in water 160°F.</p> <p>Approximately 85% of all deaths from fire are due to smoke inhalation during house fires.</p>	<p>Keep smoke alarms on each floor of the house and check the batteries every month. (All three types—heat, photoelectric, and ionization—are effective.) Keep pot handles turned inward on the stove.</p> <p>Keep an ABC-rated fire extinguisher in the kitchen. Do not allow children to sit in adult laps when drinking hot liquids. Teach children fire escape route and rules, and practice escapes. Keep water temperature at 120°F.</p>
Asphyxiation and choking	<p>This type of injury accounts for approximately 40% of all unintentional deaths in children younger than 1 year of age. Food items commonly choked on are hot dogs, candy, nuts, grapes, raisins, and raw vegetables.</p> <p>Nonfood items that children choke on include balloons, undersized infant pacifiers, small toys such as balls and jacks, coins, pop-tops, and safety pins.</p> <p>Asphyxiation occurs from situations such as hanging from drapery cords or bibs tied around neck; crib strangulations (head entrapment); toy chest lids falling on a child's head and neck; or when the nose and mouth are covered in a soft pillow, beanbag, or waterbed.</p>	<p>Do not feed small, round, hard foods to children less than 2 to 3 years of age. Do not allow children to run with food.</p> <p>No balloons before age 3 years and then monitor. Keep small objects out of the reach of children; evaluate all toys for safety.</p> <p>Encourage parents to learn the Heimlich maneuver.</p> <p>Tie up all cords. Use bibs with Velcro instead of ties. Use cribs with slat spacing 2 3/8 in. or less. Do not place infants on any soft or enveloping surfaces.</p>

TYPE OF INJURY	EPIDEMIOLOGY	PREVENTION
Poisoning	<p>The American Association of Poison Control Centers estimates that there are 1.2 million poisonings in children younger than 6 years annually. Although the number of pediatric poisonings is high, the fatality rate is low—much less than 0.1%. Toddlers are at the greatest risk. Children 6–12 years account for a very small percentage. Adolescent exposures are usually intentional (suicide or abuse) or occupational. More than half of pediatric poisonings involve nondrug products—commonly, cosmetics, personal care products (deodorants), cleaning substances, and plants.</p> <p>Pharmaceutical preparations comprise the remainder of ingestion poisonings with vitamins (particularly iron-containing products), analgesics, cold/cough medications, and antibiotics being the most common agents.</p>	<p>Childproofing the home should include putting all medications and other substances out of reach and/or behind locked doors. Use child-resistant medication containers. Keep the phone number of poison control readily available. Syrup of ipecac no longer recommended.</p>
Falls	<p>Falls are the fifth leading cause of death in children and result in enormous morbidity. Approximately 13,000 deaths occur annually due to falls.</p> <p>A disproportionately large number of fall injuries are caused by falling down stairs in infant walkers and falls from bunk beds, playground equipment, skateboards, and trampolines.</p>	<p>Never leave infants or toddlers unattended on elevated surfaces.</p> <p>Do not use crib with rails that lower.</p> <p>Avoid walker use. Gates should be placed in front of all staircases.</p> <p>Windowsills and bunk beds should never be used as play areas. Use window guards. Do not allow children to participate in activities beyond their physical abilities, such as skateboarding down steep hills. Discourage the use of any trampolines. Use protective gear (helmets, pads) for bike riding, skateboarding, and sports.</p>

Adapted from *Guide to clinical preventive services*, by Agency on Healthcare Research and Quality. (2014). Washington, DC: Department of Health and Human Services. Retrieved from <http://www.ahrq.gov/professionals/clinicians-providers/guidelines-recommendations/guide/index.html>

TABLE 3–11.
PREVENTION OF ENVIRONMENT-RELATED HEALTH PROBLEMS

SAFETY HAZARD	RISK	RECOMMENDATIONS
Secondhand smoke	Increased risk of respiratory problems and cancer	No smoking in the home, car, or around children
Carbon monoxide exposure	Ranges from chronic flu-like symptoms to death	Use acceptable carbon monoxide detector in home; properly use and maintain fuel-burning devices
Radon	Increased risk of cancer	Test home for radon with a home test kit; if level exceeds 4pCi/L, identify and seal basement leaks
Lead	Lead poisoning—neurological damage, anemia	Do not use lead-containing utensils for cooking or eating. Renovations done with proper precautions Employment in high-risk places/occupations—use precautions

Adapted from *Guide to clinical preventive services*, by Agency on Healthcare Research and Quality. (2014). Washington, DC: Department of Health and Human Services. Retrieved from <http://www.ahrq.gov/professionals/clinicians-providers/guidelines-recommendations/guide/index.html>

Geriatric Abuse and Neglect

- ▶ Risk factors include age over 84; social isolation; lack of support; cognitive impairment; and physical, emotional, and financial dependency.

Stress

- ▶ Stress is the emotional and physical response to an increase in the environmental demands beyond the resources of a person to cope with those demands.
- ▶ Small amounts of stress may add excitement and variety and increase the quality of life. Large amounts of stress may be overwhelming and lead to disease.
- ▶ The goal is to find the right balance of stress in life.
- ▶ People often seem to have vulnerability to stress in one system (e.g., hypertension, ulcer, mental problems).

Management

Stress may be managed through various techniques:

- ▶ Avoid unnecessary change during stressful times.
- ▶ Manage time by keeping to predetermined goals and priorities.
- ▶ Avoid stressful triggers (people, activities, etc.) when possible.
- ▶ Create habits or routines to decrease stress.
- ▶ Develop alternative activities or friendships that increase pleasure.
- ▶ Physical exercise often decreases stress.
- ▶ Participate in religious, motivational, or service projects that increase self-esteem or change focus to helping others.

- ▶ Use biofeedback, tension-relaxation exercise, yoga, or imagery to control stress reactions.

Interpersonal Support

- ▶ High-quality interactions with others help persons maintain or regain health (Pender, 1996).
- ▶ Types of supporting behaviors (Friedman, 1998)
 - ▷ Instrumental support gives direct assistance and service.
 - ▷ Informational support uses advice, suggestions, and information in solving problems.
- ▶ Emotional support comes when love, care, empathy, and trust are provided through relationships.
 - ▷ Appraisal support uses feedback and affirmation to help people evaluate themselves.

Stressors in the Elderly

- ▶ A common myth about the elderly is that they do not tolerate change.
- ▶ The elderly do face major life changes, especially losses—death of spouse and/or friends, having to move, retiring or losing jobs, ability to do many activities, etc.; these changes cause major stress in the elderly.

Dependency

- ▶ A common personality tendency that, in its extreme form, causes a person to rely on other people or activities, such as eating food, drinking alcohol, having sex, gambling, or other activity, to try to satisfy an emotional hunger
- ▶ Action begun voluntarily but, through repetition, becomes involuntary
- ▶ Becomes addiction when there is loss of control (compulsivity), continuation despite adverse consequences, and obsession or preoccupation with the activity
- ▶ Treatment may be complex and require long-term therapy.

Pharmacology in the Geriatric Population

- ▶ Polypharmacy of five or more drugs at one time is a common problem with potential drug interactions.
- ▶ Age-related changes increase risk of drug toxicities.
 - ▷ Absorption is slower, delayed onset
 - ▷ Distribution in tissues affected by change in fat-to-muscle ratio
 - ▷ Metabolism slowed, increasing toxicity by drugs metabolized by the P450 system
 - ▷ Excretion through the kidney may be decreased due to reduced renal function
- ▶ Drug toxicities are more common and more serious in the elderly.
 - ▷ Use lower doses, titrate up slowly.
 - ▷ Monitor over-the-counter drug use closely.

Health Maintenance

Child Health Supervision

- ▶ The general health of children can be significantly improved through the effective use of healthcare supervision (e.g., disease prevention, early detection and intervention of disorders, providing anticipatory guidance).
- ▶ Health supervision should be done at regularly scheduled well visits and should include obtaining a history and physical exam; vital signs; assessment of growth and development; obtaining age-appropriate screening tests; and counseling about nutrition, safety, and other topics.
- ▶ Recommended ages for well visits are at 2 weeks; 2, 4, 6, 9, 12, 15, 18, and 24 months; yearly from ages 3 to 6 years; every other year from ages 6 to 11 years; and yearly during adolescence.
- ▶ Additional visits may be needed for children with some variations of normal, for sports physicals, and for presurgical procedures.

Pediatric Health Screening

- ▶ Purpose: early detection of treatable conditions (see Table 3–12)
- ▶ Not all abnormal results are identified on screening tests, so continual monitoring of patient's condition and repeat testing may be necessary.
- ▶ Use of screening tests will change as incidence of disease changes (e.g., lead testing) and as technology improves (e.g., newborn hearing tests).
- ▶ Screening tests may be recommended primarily for high-risk groups (e.g., lead, cholesterol) at certain ages; others are universal tests for all children (anemia).

Adult/Geriatric Health Screening and Supervision

- ▶ Routine periodic health supervision visits have not been established for adults.
- ▶ Routine screening recommendations are established by the U.S. Preventive Services Task Force and are updated for asymptomatic persons, based on evidence supporting the effectiveness of preventive measures (see Table 3–13).
- ▶ Various specialty groups, such as the American Cancer Society, National Cancer Institute, American College of Obstetricians and Gynecologists (ACOG), and American Academy of Family Physicians, also make recommendations, and these may not agree with the U.S. Preventive Services Task Force.
- ▶ Clinicians should be prepared to clearly identify and document the basis for their preventive practices because there is not always agreement among the recommending bodies.

GERIATRIC ASSESSMENT

Nonspecific presentation of illness

- ▶ The elderly often present with vague complaints or deterioration in functional independence as an early subtle sign of illness.
- ▶ This generally occurs in the absence of classical (typical) symptoms and signs of disease.

TABLE 3-12.
PEDIATRIC SCREENING RECOMMENDATIONS

SCREENING TESTS	AGES FOR SCREENING	TESTING AND INTERPRETATION
Neonatal, metabolic, and genetic screening (PKU test)	All full-term infants before discharge and in 1–2 weeks	All states screen for phenylketonuria (PKU) and hypothyroidism; most screen for galactosemia. Other tests are determined on a state-by-state basis and may include sickle-cell disease, maple syrup urine disease, homocystinuria, congenital toxoplasmosis, adrenal hyperplasia, and cystic fibrosis. All positive screening results require immediate confirmation and/or referral.
Hearing screening	All newborns	Newborns to be screened appropriately for hearing impairment.
Hearing screening	3, 4, 5, 10, 12, 15, and 18 years of age	Audiometric screening: Minimal evaluation should be 20 dB HL with frequencies of 1, 2, and 4 kHz. Any unheared frequency is a failure and the child should be retested at a later date. Failure again requires a referral.
Anemia screening	Hgb and Hct for asymptomatic children 6–12 months who are at increased risk of iron-deficiency anemia	Hgb is sensitive for iron-deficiency anemia but not mild deficiency states.
Lead screening	Selectively obtain blood lead levels (BLLs) of at-risk children at 9–12 months and possibly again at 2 years old. BLLs > 10 mg/dL require retesting and possible further evaluation and treatment, depending on the level.	<ol style="list-style-type: none"> 1. Screen children who live in communities where: 27% of housing was built before 1950 or 12% of 1–2-year-olds have BLLs > 10 mcg/dL. (Such information is provided by state health officials.) 2. In all other communities, screen children who live in or regularly visit homes/facilities built before 1950, or 1978 if renovated in the past 6 months, or who have siblings/playmates with elevated BLLs. 3. Screen all children where community and home information is unknown. 4. Any child may be screened if other risk factors for lead exposure exist, such as cultural practices (use of lead pottery or lead-containing folk medicines), parent occupation, or adoption from countries where lead poisoning is prevalent, or where elevated BLLs may be contributing to a problem such as developmental delay.

(CONTINUED)

SCREENING		
TESTS	AGES FOR SCREENING	TESTING AND INTERPRETATION
Tuberculin (TB) skin test	Annual testing, with Mantoux (PPD) skin test for children at high risk. For children with no risk factors who live in high-prevalence regions or who lack a clear history, do periodic testing at ages 1, 4–6, and 11–16 years of age (suggested; can be any age). IGRA blood test may be used in place of skin test.	Children at high risk include those who: <ol style="list-style-type: none"> 1. Have contacts with infected adults 2. Have clinical or X-ray findings suggestive of TB 3. Are immunosuppressed (HIV) 4. Have chronic illness (diabetes, renal disease) 5. Come from high-prevalence countries (or their parents did) 6. Have or had frequent exposure to high-risk adults: HIV positive, homeless, drug abuser, poor health, nursing home resident, malnutrition or migrant worker Induration considered positive if: <p>Larger than 5 mm: risk factors 1–3 (see above)</p> <p>Larger than 10 mm: risk factors 4–6, or any child less than 4 years old</p> <p>Larger than 15 mm: all other people</p>
Vision screening	Obtain visual acuity (V/A) and binocular vision by age 3–5 years.	Test V/A with the Snellen chart standardized at 20 feet. Use a Tumbling E or Lea chart (uses symbols—apple, circle, square, and house) if letters cannot be recognized. A failed test is V/A 20/40 or greater in either eye, or if there is a two-line discrepancy between the eyes (e.g., 20/20 in one eye and 20/40 in another). All children should be tested once for color blindness. Make referrals for all failures.

Adapted from *Guide to clinical preventive services*, by Agency on Healthcare Research and Quality. (2014). Washington, DC: Department of Health and Human Services. Retrieved from <http://www.ahrq.gov/professionals/clinicians-providers/guidelines-recommendations/guide/index.html>

- ▶ Acutely ill older adults often present with
 - ▷ Confusion or delirium,
 - ▷ Increased difficulty performing activities of daily living (ADLs),
 - ▷ Incontinence, or
 - ▷ Falls.

TABLE 3-13.
ADULT/GERIATRIC SCREENING RECOMMENDATIONS

PROBLEM OR ISSUE	GENERALLY ACCEPTED RECOMMENDATIONS
Asymptomatic heart disease	Do not screen asymptomatic adults at low risk for coronary heart disease.
Breast masses	Women 50–74 years every 2 years with mammography. Diagnostic exam if positive or with mass.
Cervical cancer	Screening women ages 21–65 with Pap smear every 3 years. Ages 30–65 screen with Pap smear every 3 years or co-testing with cytology and HPV every 5 years.
Colon cancer	Screen with high-sensitivity fecal occult blood testing (FOBT) every year, sigmoidoscopy every 5 years, with FOBT every 3 years or colonoscopy every 10 years in adults 50–75.
Vision	Screen visual acuity with Snellen testing and refer people at high risk for glaucoma to eye specialists.
Dental/oral	Yearly exam and counseling
Hearing	Assess hearing through physical exam and refer as needed.
Hyperlipidemia	Men older than 34 and women older than 44 who are at increased risk for coronary heart disease. Screening for others has lower level evidence.
Hypertension	Blood pressure screening every 2 years in normotensive patients older than 21
Menopause	Counsel all perimenopausal and postmenopausal women about potential risks and benefits of hormone replacement.
Osteoporosis	Counsel all women about the risks and benefits of hormone replacement therapy, dietary calcium, vitamin D, weight-bearing exercise, and smoking cessation. Bone density measurement for women older than 65, earlier in women at increased risk. Optimal intervals not established.
Prostate cancer	No recommended routine screening for prostate cancer such as digital rectal examinations, prostate-specific antigen (PSA), or transrectal ultrasound. Potential harm is greater than benefit.
Testicular cancer	No evidence supports routine screening of asymptomatic men.
Hypothyroidism	Evidence does not recommend screening with TSH in asymptomatic persons.
Skin cancer	Counsel about minimizing exposure to ultraviolet radiation. Screening not recommended for general population.
Dementia, functional impairment	Not recommended in asymptomatic persons
Sexually transmitted diseases	Offer high-intensity counseling for adults at increased risk for STIs.

Adapted from *Guide to clinical preventive services*, by Agency on Healthcare Research and Quality. (2014). Washington, DC: Department of Health and Human Services. Retrieved from <http://www.ahrq.gov/professionals/clinicians-providers/guidelines-recommendations/guide/index.html>

Functional Assessment

- ▶ Assessment tools provide standardized data to follow trends and evaluate response to treatment.
- ▶ Cognitive and functional assessments are the keystone to providing geriatric care.
- ▶ Many assessment tools are available.

Normal Changes of Aging

- ▶ What is normal becomes less uniform as patients age.
- ▶ Normal changes usually mean less functional reserve.
- ▶ It is often difficult to differentiate among normal aging, chronic disease, medication effect, and disuse.

IMMUNIZATION

- ▶ Recommended for various age groups to prevent the spread of disease and to reduce the mortality and morbidity related to diseases that are responsive to vaccines
- ▶ Immunization schedules change from time to time, so the advanced practice nurse must review update schedules annually, as well as stay apprised of schedule and vaccine changes for all age groups. This information is located on the Centers for Disease Control's Prevention Vaccine and Immunization website (<http://www.cdc.gov/vaccines/schedules/hcp/index.html>).
- ▶ Most children are immunized by the time they enter school, but many remain unimmunized until that time, leaving them at unnecessary risk for infections or considered risks to other children.
- ▶ Many adults are inadequately immunized from lack of immunization as children, failure to get boosters, or have not received newly recommended immunizations for adults.
- ▶ Some categories of workers may require additional immunizations such as food handlers, those working with animals, and travelers.
- ▶ Older adults are the largest age group acquiring tetanus.

Immunization Guidelines

- ▶ All states require children entering school and licensed day care are required to have vaccines. To check individual state laws, refer to the Immunization Action Coalition (<http://immunize.org/laws/index.htm>).
- ▶ The immunization schedule must be modified when immunization has not begun in early infancy or was interrupted. Previously given vaccines do not need to be repeated.
- ▶ The child is considered not immunized if the vaccine status is unknown.
- ▶ Preterm infants should be immunized with regular doses according to postnatal chronological age.

- ▶ Adverse effects: Common to almost all the vaccines are local injection-site reactions such as pain, tenderness, and erythema that are mild and transient, and mild to moderate fevers and myalgias for 24 to 48 hours.
- ▶ General contraindications to vaccinations include hypersensitivity reactions (urticaria, shock, wheezing) and prior encephalopathy within 7 days of pertussis vaccine; undefined illnesses where administering vaccines may confuse the diagnosis; and prior severe reactions where administering the vaccine would be more harmful than withholding.
- ▶ Not contraindications: minor illnesses, family history of seizure disorders, sudden infant death syndrome, presence of a pregnant woman in the household
- ▶ There is no contraindication to simultaneous administration of the routine vaccines.
- ▶ Informed consent from parent/guardian prior to vaccination with information provided regarding the disease to be prevented, risks and benefits of the vaccine, and potential adverse effects
- ▶ Additional vaccines may be indicated or recommended for specific illnesses and/or disorders, travel, geographical area, and/or special circumstances. Adult vaccines are listed in Table 3–14.
- ▶ Free vaccines are available through the Vaccines for Children program for uninsured and Medicaid-eligible children, and Native American and Alaskan Native children.

Other Disease-Prevention Programs

Back to Sleep Program

- ▶ For the prevention of SIDS, the most common cause of death in children under 1 year of age
- ▶ Risk factors for SIDS: sleep position, exposure to cigarette smoke, low birth weight, and prematurity; highest incidence in Black people and Native Americans, lowest in Asian people
- ▶ Recommends positioning infants on the back or side for sleeping. Incidence of SIDS has decreased dramatically with these sleeping positions.

Smoking Cessation

- ▶ More than 40% of U.S. children are exposed to environmental tobacco smoke in their own homes.
- ▶ Teenage smokers experience a decrease in physical fitness and lung function and, later, an increase in the risk of lung cancer and heart disease.
- ▶ Encourage cessation of smoking first without pharmacologic interventions; if unsuccessful, may educate regarding products available for assistance.

TABLE 3–14.
IMMUNIZATION GUIDELINES FOR ADULTS

Please visit <http://www.cdc.gov/vaccines/schedules/hcp/imz/adult.html> for the latest vaccination guidelines as the recommendations change frequently.

TYPE OF IMMUNIZATION	RECOMMENDATIONS FOR ADULTS
Hepatitis A	Two doses if another risk factor is present (medical, occupation, or lifestyle indication)
Hepatitis B	All people 12–25 years with no history of infection or previous immunization; high-risk adults
<i>Human papillomavirus</i> (HPV)	Women through age 26 years, men through age 21 years; men who have sex with men and men who have compromised immune systems including HIV through age 26
Influenza	Pregnant women; annually for all adults 50+ years of age; others if at high risk or household contacts of those at high risk. Healthy, ages 2–49, and nonpregnant women, can receive either intranasally administered live, attenuated influenza vaccine (LAIV), (FluMist), or IIV. Annually for healthcare workers, particularly those who care for severely immunocompromised people (i.e., those who require care in a protected environment); should receive IIV rather than LAIV.
Measles, mumps, and rubella (MMR)	Administer one or two doses to anyone over 18 years of age born after 1957 with no documented proof of immunity. Contraindicated in pregnancy or immunocompromising conditions
Meningococcal	College freshmen living in dormitories and travelers to endemic areas with no history of prior infections; anyone whose spleen was damaged or removed
Pneumococcal polysaccharide (PPSV23)	Once at 65+; one or two doses over age 18 if at high risk and repeat if injection was more than 5 years ago
Pneumococcal 13-valent conjugate (PCV13)	One dose for adults over the age of 18 with another risk factor present
Rubella screen or immunization	Women of childbearing age
Tetanus, diphtheria, pertussis (Tdap/DTaP/Td)	Substitute one-time dose of Tdap for Td booster, then booster every 10 years; booster at 5 years for wound management. Administer one dose of Tdap vaccine to pregnant women during each pregnancy (preferred during 27–36 weeks' gestation), regardless of number of years since prior Td or Tdap vaccination.
Varicella	Administer two doses in adults with no history of varicella or previous vaccination. Contraindicated in pregnancy and immunocompromising conditions.
Zoster	Once at 60+ for all adults with history of chicken pox infection

Adapted from *Immunization schedules*, by Centers for Disease Control and Prevention. (2015). Retrieved from <http://www.cdc.gov/vaccines/schedules/hcp/index.html>

Other Healthcare Considerations

Cultural Influences

- ▶ The healthcare provider who is sensitive to issues surrounding health care and the traditional health beliefs of the patient can provide more comprehensive healthcare.
- ▶ Family structure and values have an impact on the health encounter.
- ▶ Ethnicity is based on the race, tribe, or nation with which a person identifies and influences the person's beliefs and behaviors.

Environmental Factors

- ▶ General circumstances such as climate, altitude, and temperature affect all people in a region and cannot be modified unless the person relocates.
- ▶ Other factors such as air pollution, water fluoridation and contamination, crime, poverty, and transportation are examples of factors that might be manipulated to have a positive effect on the community.

Evidence-Based Medicine

- ▶ The trend today is to base decisions on evidence from randomized controlled research trials when possible but at times evidence with less confidence is used. Many sources of recommendations are available through U.S. government-sponsored websites like CDC, NIH, and AHRQ.
- ▶ There are conflicting guidelines among various organizations, and these must be reconciled by the practitioner.

Clinical Guidelines

- ▶ Standards of practice are devised from research by experts in the field to guide and standardize practice across the nation. Nurse practitioners should know how to analyze clinical guidelines to determine those that are written by objective scholars and are without organizational, professional, or pharmaceutical bias. (See the National Guideline Clearinghouse at www.guideline.gov.)
- ▶ Factors to consider in evaluating guidelines include source of guideline; appropriateness of methodology used to develop guideline such as randomized trials; use of expert opinion/clinical experience in decision-making; public policy issue considerations; feasibility issues; use of peer review; and congruence with other practice guidelines, timeliness, and funding source.

CASE STUDIES

Case 1

Emily, 2 months old, has been brought by her parents to the clinic for her well baby exam. Her gestation and birth history are unremarkable. She was born at 39 weeks with a birth weight of 7 pounds, 8 ounces (3.4 kg) and length of 20.5 inches. She is breastfed on demand, about every 3 to 4 hours. She has not had any immunizations.

1. What vaccines will Emily need today?
2. What developmental milestones would you assess for in a 2-month-old?
3. There is no fluoride in the tap water at her home. When should you start Emily on fluoride? How much will you give her each day?
4. Emily's mother is thinking about discontinuing breastfeeding and starting infant formula. What information should you provide to her that might encourage her to continue to breastfeed?

Case 2

Travis, a 4½-year-old, comes to the clinic for a school physical. His last checkup was at 3 years of age. He is 40 pounds and 39 inches. His immunization records indicate he has had four DtaP, three IPV, one MMR, two hepatitis B, and three HiB vaccine shots.

1. What vaccines would he need today?
2. What anticipatory guidance and safety issues would you discuss with Travis and his parents?

Case 3

Josh, Travis's 14-year-old brother, needs a pre-participation sports physical. Josh weighs 225 pounds and is 5 feet, 8 inches tall.

1. What would be the focus of your assessment examination?
2. What counseling does Josh need?
3. What immunizations might Josh need?

Case 4

You have been asked to set up a health fair for a large computer company. The company would like to focus on employees, their families, and retired workers. You research the company and find out that equal numbers of employees with young children, single employees, and retired employees plan to attend the health fair.

1. What primary prevention topics would you address for parents of young children?
2. What secondary prevention topics would you address for adults ages 18 to 50?
3. What secondary prevention topics would you address for adults 50 and older?
4. How would you educate the participants about stress management?

Case 5

Jose M. is a 65-year-old man who has scheduled his “Welcome to Medicare” exam with you. He has recently moved to this community to be closer to his children and is new to your practice. He is particularly interested in remaining healthy and wants to do what is appropriate in screening and prevention.

1. What are the age and gender-specific screening tests that you would recommend?
2. What vaccines would you recommend?
3. What specific counseling would you recommend?

Case 6

Ms. J. is a 45-year-old Black woman who has been told she has Type 2 diabetes mellitus and that she should attempt to reduce her weight. She is 68 inches tall and weighs 237 pounds.

1. What is her BMI? What is a desired BMI for her?
2. She reports that she has seen Internet advertisements for weight-loss programs that guarantee she will lose 5 pounds in the first week and that some people have lost over 100 pounds on this plan. She asks for your advice on enrolling on this plan. What is your recommendation?

CASE STUDIES DISCUSSION

Case 1

1. What vaccines will Emily need today?
DTaP, IPV, HBV, HIB, PCV, rotavirus
2. What developmental milestones would you assess for in a 2-month-old?
Begins to smile at people, coos, makes gurgling sounds; begins to follow things with eyes; can hold head up
3. There is no fluoride in the tap water at her home. When should you start Emily on fluoride? How much will you give her each day?
Begin at 6 months with 0.25 mg per day
4. Emily's mother is thinking about discontinuing breastfeeding and starting infant formula. What information should you provide to her that might encourage her to continue to breastfeed?
Ask why she is considering the change. Breastmilk is nutritionally balanced and contains antibodies and macrophages, which are important to immunity and wound healing. Allergic reactions are rare. Breastfeeding may save money.

Case 2

1. What vaccines would he need today?
DtaP, IPV, MMR, hepatitis B, and varicella; depending on time of year, add influenza and give hepatitis A, if not given
2. What anticipatory guidance and safety issues would you discuss with Travis and his parents?
Recreational sports protection gear (helmets, pads); swimming safety; automobile (street safety, seatbelts); knows his address, phone number, how to call 911; smoke alarms in the house; access/storage of guns in the home

Case 3

1. What would be the focus of your assessment examination?
History, immunization status, vital signs, pubertal development, musculoskeletal and cardiopulmonary systems
2. What counseling does Josh need?
Weight management (his BMI is 34.2), safety (seatbelts, recreational protective gear)
3. What immunizations might Josh need?
Assure he completed the series Tdap, hepB, varicella, MMR, IPV, MCV, and hepA. Tdap and MCV if he did not have at age 11 to 13 years. HPV series to begin at age 11.

Case 4

1. What primary prevention topics would you address for parents of young children?
Nutrition, iron intake, fluoride, safety (car seats, falls, poisonings, drowning), immunizations, sunscreen, access/storage gun safety
2. What secondary prevention topics would you address for adults ages 18 to 50?
Exercise, weight management, stop smoking, influenza prevention, mammography, Pap smears
3. What secondary prevention topics would you address for adults 50 and older?
Mammography, Pap smears, colon screening, avoid UV radiation
4. How would you educate the participants about stress management?
Large amounts of stress can lead to disease. Discuss stress management techniques (relaxation, imagery, time management). Seek out support. Recognize sources of stress for the geriatric clients—loss.

Case 5

1. What are the age- and gender-specific screening tests that you would recommend?
Some form of colon screening, lipids screening, blood pressure
2. What vaccines would you recommend?
Flu every year, Tdap booster every 10 years, zoster, PCV13, PCV23. hepA and hepB series if he has not had these. Others depend on his medical history.
3. What specific counseling would you recommend?
Depends on his risk factors; general counseling for exercise, balanced diet, avoiding ultraviolet radiation, STIs if at risk

Case 6

1. What is her BMI? What is a desired BMI for her?
Her BMI is 36. A desired BMI is between 18.5 and 25.
2. She reports that she has seen Internet advertisements for weight-loss programs that guarantee she will lose 5 pounds in the first week and that some people have lost over 100 pounds on this plan. She asks for your advice on enrolling on this plan. What is your recommendation?
Plans that propose more than 1 or 2 pounds of weight loss per week are difficult to sustain. Advertised programs are often expensive and may not consider the needs of people with diabetes. She will need to lose over 70 pounds to reach her desired BMI, and this may take a year or more to achieve and sustain.

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