Age-Specific Guidelines

3.00 Contact Hours

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Outcomes

≥ 92% of participants will know healthcare issues and screening recommendations for infants, children, adolescents, adults, and aging adults.

Objectives

After completing this course, the participant will be able to:

1. Describe a safety issue for a specific age group.
2. Identify a need/issue for a specific age group.
3. Choose a preventive intervention for each age group covered in this module.
4. Summarize an assessment approach that is specific to an age group.
5. Analyze health risks that are specific to an age group.

Introduction

There are significant physical and developmental differences between age groups, and this module will discuss how those differences influence the healthcare needs of specific populations. Infancy, childhood, adolescence, and older age are times of intense changes, and the health needs of those age groups will be discussed in detail. The nutritional and medication issues of adults will not be covered.

There are many authoritative sources for screening and preventive care guidelines, e.g., the Centers for Disease Control and Prevention (CDC), professional medical organizations like the American Academy of Pediatrics (AAP), the American College of Obstetricians and Gynecologists (ACOG), the American Cancer Society (ACS), and the United States Preventive Services Task Force (USPSTF). Recommendations for health needs and disease screening may differ, depending on the source, but they are not *significantly* different from one another.

Case Study

A 16-year-old female self-referred to an emergency department (ED). Her chief complaints were vaginal discharge and dysuria, duration of seven days. The patient's parents did not come to the ED with her.

The patient had been seen in the ED once before, so the provider had access to her electronic health record (EHR). The patient had asthma, but no other medical conditions, and the only prescription medication she used was a beta-2 agonist inhaler for exacerbations. The patient said she had been sexually active starting at age 15, and since then, she has had two partners.

She and her newest partner had used barrier protection (male condoms) but not consistently; occasionally, they practiced coitus interruptus, or the withdrawal method. She denied the use of alcohol or illicit drugs.

The patient's vital signs were within normal limits. A pelvic examination was done: The cervix appeared normal, but mucopurulent discharge was noted. She did not have pain in the pelvic area or the lower abdomen. A swab sample of the vaginal discharge was obtained. A provisional diagnosis of gonorrheal infection was made, and empirical antibiotic therapy was begun.

The patient requested a prescription for oral contraception, which the physician agreed to. The physician advised the patient that:

1. in this state, she (the patient) was allowed to provide consent for the treatment of a sexually transmitted infection (STI),
2. she (the provider) can and has prescribed oral contraceptives to adolescents, and
3. federal regulations allow patients to have online access to their medical chart (state regulations supersede the federal regulations when determining if an adolescent's parents can access the adolescent's online medical chart).

In this state, noted the physician, parents are not allowed to do so unless the adolescent patient agrees. The provider informed the patient that in other states and even in other hospitals in this state, her parents might be able to view her EHR. The patient stated that she understood these issues.

Confidentiality and consent are important when providing adolescents with medical care (Mientkiewicz & Grover, 2022). Confidentiality means information about a patient's health and treatment is confidential and protected. Adolescents are more likely to seek care if their information is protected (Mientkiewicz & Grover, 2022), so ensuring confidentiality is important in serving the health needs of this patient population. Consent to treatment means that the patient can understand the benefits and risks of the treatment, the risks of not being treated, and other aspects of the plan of care (Mientkiewicz & Grover, 2022). In many circumstances, adolescents cannot consent to treatment and may not be able to maintain the confidentiality of their medical information as they are minors. However, all states allow minors to consent for treatments of STIs (Mientkiewicz & Grover, 2022). Also, in 1977, the Supreme Court ruled that the right to privacy allowed minors to have access to non-medical contraceptives, e.g., condoms (Mientkiewicz & Grover, 2022). Mientkiewicz & Grover (2022) noted: "Although there has been no subsequent ruling to include prescriptive contraceptives, they are generally considered to be included." Considering those points and the widespread use of prescription oral contraceptives in United States (US) adolescents (Darney et al., 2022), the provider's treatment was correct. The provider was also prudent in informing the patient that access to her EHR and her ability to maintain confidentiality are situational. Furman (2023) noted that a review of pediatric hospitals in multiple states found that policies regarding access to a minor's EHR varied widely from state to state and even within a state.

Infants and Children: Ages One Month to 12 Years

An infant's and a child's anatomy and physiology differ from an adult's in many ways other than height and weight, and clinical interventions and screening must be applied with these factors in mind. Children have less pulmonary reserve than adults and a proportionally higher oxygen requirement. They can maintain central organ perfusion during a period of significant fluid loss because of powerful peripheral vasoconstriction that shunts blood from the limbs to the central circulation. Children are less able to increase cardiac output by increasing cardiac

contractility; they maintain cardiac output by increasing heart rate (Meckler, 2020). Children are more susceptible than adults to heat loss because they have proportionally larger heads and a greater surface-area/body-mass ratio than adults.

Temperature, pulse, respiratory rate, and blood pressure considered normal for infants and children are listed in Table 1 (Children's Hospital of Philadelphia, 2023; Cleveland Clinic, 2022).

Table 1: Vital Signs: Infants and Children

Age	Temperature	Pulse	Respiratory Rate	Systolic BP/Diastolic BP
1-12 months	97.2 - 99.4	120-160	25-60 (60 for 1 to 3 months)	50-70/30-60
1-3 years	95.9 - 99	80-130	20-30	80-110/53-66
3-5 years	95.9 - 99	80 -120	20-25	80-110/53-69
6-12 years	95.9 - 99	70 -110	14-22	80-120/57-71

Assessment of Growth and Development

The period between one month and 12 years of age is a period of rapid change. The AAP recommends screening to determine if infants and children are developing normally and to screen for developmental delays or disabilities (Lipkin et al., 2020). Infants and children should be routinely assessed to determine if they are growing normally, and a periodic evaluation of physical, emotional, and social development is one of this patient population's most important healthcare needs. These assessments are performed by comparing the patient to developmental milestones. Developmental milestones are defined as abilities and behaviors that are normal for a specific age group. Some of the following are examples of results when a developmental milestone assessment is done:

- Meets the standard and growth and development are normal.
- Fails to meet the standard, but the assessment parameter is not considered critically important, or the patient's development is otherwise normal. Each infant and child will develop at their own pace, and a failure to meet a developmental standard may reflect that child's rate of growth and development.
- Failure to meet the standard; this is a warning sign of a serious problem in the patient's growth and development.

Several examples of developmental milestones for different age groups are provided here (CDC, 2023b). Notice that in infants and very young children, cognitive abilities, language abilities, motor abilities, and hand/finger motor abilities are assessed, but visual (aside from neonate screening) and hearing abilities are not. Visual and hearing assessments can begin when the child cooperates with and performs the screening tests (Trietz et al., 2022).

Infants at 2-4 Months

Movement and physical abilities: An infant 2-4 months of age should be able to raise their head while lying on the stomach, briefly open their hands, move both arms and both legs (two months), hold their head steady without support, hold an object in their hand, shake their arms

at an object in their field of vision, push up on their elbows when they are lying prone, and bring their hands to their mouth (four months).

Perceptual ability: An infant 2-4 months of age should be able to follow a moving object with their eyes, respond to a voice, and turn their head towards the direction of a sound.

Social/emotional development: An infant 2-4 months of age will begin to smile in response to people, smile or make movements to attract attention, and turn their head in response to your voice.

Warnings signs of a possible serious growth and development issue in this age group include, but are not limited to, failure to respond to loud noises or voices, inability to hold onto and move an object, failure to follow a moving object with the eyes, and failing to smile at people (AAP, 2024).

Children at 3-4 Years

The developmental milestones described here for this age group are from the CDC (CDC, 2023b).

Children from the ages of 3-4 should be able to use a fork, put on a coat or a jacket, catch a large ball, unbutton some buttons, and hold a crayon between their fingers and thumb, not in a fist.

The social and emotional development behaviors that are considered normal for this age group include copying adult behavior, noticing other children and joining in their play, changing their behavior depending on the environment and the situation, and comforting hurt or upset people.

The cognitive and language abilities of the 3-4-year-old child should include saying a sentence with ≥ four words, answering simple questions, asking who, why, and what, avoiding dangerous situations after they have been warned, and telling someone what comes next in a story the child knows well.

The warning signs of a possible serious growth and development issue in this age group include but are not limited to the following (Zapata, 2023):

- Cannot speak in two-word sentences
- Doesn't imitate actions or words
- Doesn't follow simple instructions
- Falls frequently or has difficulty climbing stairs
- Poor eye contact
- Uninterested in other children
- Difficulty manipulating small objects
- Has little interest in toys

Infants and children should also be assessed for their elimination habits, sleep patterns (Reynolds et al., 2022), emotional, relationship, or behavioral disorders (Kelsay et al., 2022), social activities, and sibling and parental relationships (BrightFutures/AAP, 2024; Willis et al., 2022).

Assessment and Examination Processes in Infants and Children

The assessment and examination process of an infant or a child must be adapted to the patient's behavioral, emotional, and intellectual development.

Infant and Toddlers

Approach an infant or toddler calmly, gently, and in a slow manner. Have the caregiver hold the patient during assessment and treatment. Let the parent stay nearby if the child must lie down (Trietz et al., 2022). Use warm instruments and hands; if it's safe to do so, allow the child to handle equipment like an otoscope or stethoscope. Some children find this reassuring. Assess the respiratory rate and status when an infant is quiet. Explain to the caregiver that the child may cry when a procedure is begun but that an infant does not connect the stimulus and pain. With toddlers, make an assessment or a treatment like a game to reduce their fear: Use storybooks, dolls, or puppets. Provide reassurance during the assessment/procedure. Praise the child for doing well.

Preschoolers (4-5)

Preschoolers are very active. Motor skills are improving. Mentally, they begin using symbols and improving their memory. They have vivid imaginations, which may cause unseen fears. The preschooler is starting to develop independence and sensitivity to others' feelings.

Speak at the language level the child can understand. Explain to the child just before a procedure what will be done, using sensory terms when possible. Use games and imagination to gain cooperation. Allow the child to handle the equipment if possible. Enlist the child's help and allow them to express their feelings. Preschoolers need praise, rewards, and easy-to-understand rules.

School-Aged Children (6-12)

School-aged children grow slowly until puberty. Mentally, they are active and eager learners who can understand cause and effect. Building self-esteem is an important task during this period. The school-age child is developing a greater sense of self-independence, and they want to fit in with their peers. The school-aged child begins to make lifestyle choices and may act with poor judgment. Peer pressure, alcohol, sex, drugs, and smoking need to be discussed with this age group, starting at age 11 (Bright Futures/APA, 2024).

Because of these issues, the school-aged should be allowed to make decisions when feasible and within reasonable bounds. Provide privacy during assessment or treatment and explain all procedures at the child's level of understanding (Bright Futures/AAP, 2024). Be prepared to listen and be honest. Tell the child how they can be involved in their care, and have children assist you in their care, if possible. Reassure the child that they did nothing wrong. They need to know that the injury or illness is not a punishment.

Preventive Care and Health Screening

Infants, children, and all age groups should be vaccinated. Vaccination schedules are age-group-specific. Current recommendations for vaccinating patients aged 0 to 18 years can be found on the CDC website (CDC, 2023c). The schedules can be found here. Recommendations for the correct needle length and injection sites for administering vaccinations to neonates, infants, and children can be viewed here.

Health screening for infants and children should be universal and targeted. All infants and children should be screened for the presence of certain diseases, and specific individuals and populations should be screened for diseases from which they are likely to suffer.

Examples:

- Infant universal screening for congenital hypothyroidism (Jones et al., 2018) and phenylketonuria (PKU). PKU screening is mandated in all 50 states and the District of Columbia (David, 2022).
- City and state agencies typically generate recommendations for screening infants and children for lead poisoning. This screening is targeted at at-risk individuals and populations, e.g., infants and children who live in areas with a high concentration of houses built before 1978 or in areas where a certain percentage of children have elevated blood lead levels.

Organizations like AAP, the CDC, and the USPSTF have recommendations for universal and targeted population-specific screening. City, school board, state, and federal mandates and regulations for pediatric health screening also exist. There is some disagreement among these sources regarding who should be screened, for what, and when. Table 2 lists the recommendations of the AAP (Bright Futures/AAP, 2024).

Table 2: Health Screening for Infants, Children, and Adolescents

Screening	Recommendation	Additional Resources
Alcohol, drug, and tobacco use	**Starting age 11**	Patients should be assessed for the risk of use and screened if necessary.
Anemia	**4 months** – Risk assessment **12 months** – Measurement **After 12 months** – Risk assessment, 12 months to 21 years.	Screen as necessary. The American Academy of Pediatrics. Pediatric Nutrition, 8th ed. Chapter 19: Iron.
Autism	**18 and 24 months** - Screening	AAP
Bilirubin	**Newborns**	
Blood Pressure	**All patients ages 3-21**	Before 3 – a risk assessment should be done. Guideline for Screening and Management in Children and Adolescents can be viewed here.
Body Mass Index (BMI)	**24 months to age 21**	
Critical Congenital Heart Defect	**All newborns** using pulse oximetry	Pulse oximetry screening in neonates for critical congenital heart disease is standard practice (Smith, 2022).
Depression	**Starting at age 12**	The USPSTF recommends screening for depression in all patients 12 to 18 years old, and resources should be in place for follow-up and treatment if

Screening	Recommendation	Additional Resources
		needed. This is covered in the section on adolescents.
Developmental screening	**9, 18, and 30 months**	The Medical Home: An Algorithm for Developmental Surveillance and Screening can be viewed here.
Developmental surveillance	**Annual for all patients, newborn to 21 years**	
Dyslipidemia	**Ages 24 months, 4 years, 6 years, and 8 years to 21 years**– Assess for risk	Follow up if needed. For more information, see the recommendations of the National Heart, Lung, and Blood Institute, Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents. These can be viewed here.
Hearing screen	**All newborns and at 3–5 days old**. It should be confirmed that the initial screen was done, and the results of this screen should be verified. **4 months to 3 years**. Assess for risk and follow up as needed. **After 3 years**. Assess for risk and follow up as needed.	Screen all newborns and follow up as needed (Hecht, 2023). For screening recommendations for children 4 months of age and older, view here.
Height and weight	**All patients, newborn to age 21**	
Human immunodeficiency virus (HIV) infection	**Starting at age 11** – Screening	Assess for risk and screen as necessary. The CDC recommends HIV testing in all adolescents who have contact with the healthcare system unless the patient opts out.
Lead	**Age 6 months and 9 months** – Assess for risk **Age 12 months, 24 months** – Measure blood lead or assess for risk **Age 3, 4, 5, 6 years** – Assess for risk	Screen as needed. To determine what kids are at risk, visit Prevention of Childhood Lead Toxicity.

Screening	Recommendation	Additional Resources
Physical Examination	**Annual for all patients**	
Psychosocial behavioral assessment	**Annual for all patients**	
Newborn blood panel	**Age 3 or 5 days** – blood sample of uniform screening panels	The uniform screening panel tests for genetic disorders, e.g., PKU and sickle cell disease. Details about the screening can be viewed here.
STIs	**Starting age 11** – Risk assessment	Assess for the risk of STIs and screen as necessary. This is discussed in the section on adolescents. See the AAP's Red Book: Report of the Committee on Infectious Diseases for guidelines on risk assessment.
Skin cancer	**Start at 6 Months**, educate and counsel	USPSTF recommends parents of children 6 months of age and older who have fair skin be counseled about minimizing exposure to ultraviolet radiation as a way of reducing skin cancer. This is discussed in the next section.
Tuberculosis	**Ages 1 month, 6 months, 12 months, and 24 months, then every year from 3 years of age and up** – Assess for risk	Screen as necessary. Use the AAP Red Book for guidance.
Vaccinations	**Follow current CDC recommendations**	The CDC-recommended vaccination schedule for adolescents 18 years of age and younger can be viewed here. Vaccination for preventing infection with the human papillomavirus (HPV) is discussed later in this section of the module.
Vision Screen	**Newborn and up to 30 months** – Assess for risk **Age 3 and beyond** – Annual vision testing; some years, assess for risk, e.g., age 7 to	Screen as necessary. See the visual system assessment by pediatricians in infants, children, and young adults.

Screening	Recommendation	Additional Resources
	10, alternate testing and risk assessment.	

Nutrition and Eating

Infants and children have specific nutrition and eating issues: Caloric, macronutrient, and micronutrient requirements, eating habits/patterns, food safety, and food insecurity. Note: Macronutrients are carbohydrates, fats, proteins, and water. Micronutrients are minerals and vitamins, e.g., calcium and iron, vitamin A and vitamin C.

The daily intakes listed below are summarized/compiled based on recommendations from the United States Department of Agriculture (USDA, 2020). The USDA has a Dietary Reference Intake Calculator that can be used to determine caloric, macronutrient, and micronutrient dietary reference intakes. The calculator is available here.

- Carbohydrates: These should be 45-65% of the daily caloric intake in all children.
- Fats: Fat intake should not be restricted in children 0-2 years of age. From age 2-3, fat intake should be 30-35% of daily caloric intake; from age 4-18, fat intake should be 25-35%.
- Protein: From age 2-3, protein should be 5-20% of daily caloric intake. From age 4-18, protein should be 10-30% of daily caloric intake.

Infants should not drink cow milk before 12 months of age (USDA, 2020). Cow milk does not have the nutrients that infants need, and it is difficult for infants to digest because it has a high protein content. This also makes it difficult for an infant's kidneys to process (USDA, 2020). Infants can be given yogurt and cheese (USDA, 2020).

The daily recommended intake for micronutrients is age-specific. Still, supplementation to ensure adequate micronutrients is not needed if the infant/child gets a varied diet and sufficient exposure to sunshine.

Breast milk does not have enough vitamin D to supply an infant's needs (Golden et al., 2014); children who are breastfed and or who are breastfed and formula-fed should be given 400 international units (IU) of vitamin D every day (CDC, 2021d; USDA, 2020). Children who are at risk for vitamin D deficiency should be screened (Davis et al., 2019). However, aside from malabsorption syndromes and the use of certain medications, there is no universal agreement on risk factors for vitamin D deficiency in children (Davis et al., 2019). The daily recommended intake for micronutrients is age-specific. A dietary reference intake calculator that can be used to determine age and gender-specific caloric intake needs and macronutrient and micronutrient requirements is available at the USDA website. Other sites that have useful information on dietary needs and requirements are the National Institutes of Health Office of Dietary Supplements and the National Institutes of Health; Dietary Reference Intakes and the Daily Values can also be used.

They are both available at the National Institutes of Health website using these links:

- Nutrient Recommendations: Dietary Reference Intakes
- Daily Values

The eating patterns and habits of infants and children are quite different from those of adolescents, adults, and older adults. Infants and children need to eat quite frequently, up to

seven times a day or more, and frequent snacks are necessary. Food disinterest and food fussiness are eating patterns that most children exhibit at some time.

Food Safety

Food safety for infants and children is concerned with choking hazards and foodborne infections. Choking is a common cause of death in infants and children (Mayorathan et al., 2022) and occurs because:

- They do not/may not have full dentition (Committee on Injury, Violence, and Poison Prevention, 2010).
- They may not have learned how to chew foods thoroughly (Lorenzoni et al., 2019; Committee on Injury, Violence, and Poison Prevention, 2010).
- They can be easily distracted while eating.
- They may be given foods of a certain size that cannot be chewed or are likely to be swallowed and aspirated, such as nuts and seeds (Lorenzoni et al., 2019). Also, food items that cause choking in children often have a consistency or size that makes them difficult for children to chew, increasing the risk of choking (Lorenzoni et al., 2019).
- Children have small airways that can easily be obstructed (Committee on Injury, Violence, and Poison Prevention, 2010).

Foodborne infections are particularly dangerous for children because their immune systems have not fully matured (Pires & Devleesschauwer, 2021), and they are more likely to become dehydrated from diarrhea and vomiting, which are common complications of food poisoning (National Institutes of Health. National Institute of Diabetes and Digestive and Kidney Diseases, 2019).

Food insecurity is a commonly used term. The USDA uses the term low food security, and this is defined as ". . . food intake of household members is reduced, and their normal eating patterns are disrupted because the household lacks money and other resources for food" (USDA, 2023a). The USDA estimated that in 2020, 12.8 percent of American households were food insecure at some time during the year (USDA, 2023b). Food insecurity is not a problem specific to infants and children. However, the potential effects of food insecurity are worse for this age group because of rapid growth and development at this stage of life.

Medications

Medication age-related issues for infants and children include pharmacokinetics, medication errors, dosing, and administration.

Medications have traditionally not been tested in children (Chitty et al., 2018), and pediatricians have had to prescribe doses and dosing schedules with information using/extrapolating from adult doses/dosing. It is often said that when it comes to drugs, children are not small adults, and this has often been proven true. For example, in 2017, the Food and Drug Administration (FDA) issued a warning stating that codeine and tramadol should not be used in children < 12 years old. Adverse reactions to these drugs, some quite serious, were reported in this patient population and may have been caused by a difference in the activity of the CYP2D6 enzyme that metabolizes these drugs, resulting in high serum drug levels (Rodieux et al., 2018).

Pharmacokinetics refers to how a drug is absorbed, distributed, metabolized, and excreted (Watanabe et al., 2024). These processes, in large part, determine the actions and effectiveness of a drug. Pharmacokinetics are influenced by the age of the patient, the absorption,

distribution, metabolism, and excretion of drugs in infants and children, and children can be quite different from that of adults.

- **Absorption**: Drug absorption refers to how a drug reaches tissues and blood after it is administered (Watanabe et al., 2024). Many factors, like gastric pH, the presence and activity of drug-metabolizing enzymes and transporters in the gut, and intestinal motility, influence absorption. These are different and not yet mature in children (Watanabe et al., 2024). Transdermal absorption of drugs can be increased in neonates and infants, compared to adults, because their skin is thinner (Jones, 2022). They also have a relatively higher skin surface-to-body weight ratio than older children and adults.
- **Distribution**: Distribution is the process of transporting an absorbed drug to tissues, fat, and organs (Watanabe et al., 2024). Children have a higher percentage of their body weight as water, and this changes as they age: A premature infant's body weight might be 80% water, and a 1-year-old child might be 60% (Watanabe et al., 2024). The higher percentage and the percentage change mean that water-soluble drugs must be prescribed at lower doses for children, and doses must be adjusted for age. Drug distribution also depends on protein binding and albumin. Total protein levels are relatively low from birth to age one, and the activity of these proteins is decreased in young children.
- **Metabolism**: Metabolism is the breakdown of a drug into an inactive form or a pharmacologically active metabolite by the liver and other organs (Watanabe et al., 2024). Children's metabolism of drugs is not the same as in adults because the ability of the liver to metabolize drugs has not matured and is changing. For example, the activity of the cytochrome P-450 enzyme system, a group of enzymes that is very important for metabolizing drugs, can be very different in neonates, infants, and children than in adults (Watanabe et al., 2024; Jones, 2022), and this can influence drug activity in these age groups.
- **Excretion**: The kidneys are an important pathway for drug excretion. Kidney function in children differs from adults (Watanabe et al., 2024). Renal function changes and matures during the first few years of life, and renal function must be considered when using certain drugs that are primarily eliminated by glomerular filtration. For example, gentamicin is dosed in children at 2-2.5 milligrams per kilogram (mg/kg) intravenously (IV) every eight hours; the adult dose is 3-5 mg/kg IV every eight hours.

Medication Errors

Medication errors are common in pediatric care (D'Errico et al., 2022; Alghamdi et al., 2019). They appear to happen more often in pediatric care than in adult care (D'Errico et al., 2022), and they are associated with an increased risk of harm (D'Errico et al., 2022). The incidence and prevalence of medication errors in pediatric care are unknown, but they appear to be high. Alghamdi et al. (2019) found an occurrence of 14.6 errors per 100 medication orders, a review by D'Errico et al. found a 5-31% rate of medication errors involving pediatric patients, and Satir et al. (2023) found that there were 25.1 errors per 100 prescriptions.

Medication errors in pediatric patients are caused by underdosing, overdosing (Satir et al., 2023), using adult formulations, dosing errors, calculation errors (D'Errico et al., 2022), and other factors. Given that doses used for infants and children can be quite small and involve decimal points, there is obvious potential for 10-fold and 100-fold errors. In addition, many medications prescribed for infants and children are used unlicensed or off-label, which creates obvious risks (Alghamdi et al., 2019).

Dosing

Drug dosing in children is different from in adults because it is often weight-based or body surface area-based. Because of pharmacokinetic differences, it is not safe to assume that a 10 kg child should be given 1/10th of the dose given to a 100 kg adult. Dosing is also, in some ways, imprecise. Most drugs used for children have not been tested on children (Chitty et al., 2018). The dosing guidelines have been developed from adult guidelines and/or research. There is minimal pharmacokinetic information about specific drugs and children in many cases. The result of these issues has been dosing guidelines that vary significantly. Therefore, underdosing and overdosing in children are ever-present risks (Chitty et al., 2018).

Administration

Medication administration can be traumatic for children, time-consuming, and difficult for parents and healthcare professionals. For infants, draw the liquid medication into a plastic dropper or disposable syringe. After elevating the infant's head and shoulders, slowly drop the medication in the middle of the tongue. You may need to depress the chin with the thumb to open the mouth. If a toddler does not drink their medication, you can place a syringe without a needle between the cheek and gum and slowly give the medication.

The small size and underdeveloped musculature of neonates, infants, and young children increase the risk of hitting nerves and/or blood vessels with an intramuscular (IM) injection. Recommended IM injection sites and needle lengths for vaccinating these age groups are listed below (CDC, 2023a).

- Newborns and infants < 1 month of age: Anterolateral thigh muscle; the needle should be 5/8 inch/16 millimeters (mm) long.
- Term infants 1-12 months: Anterolateral thigh muscle: the needle should be 1 inch/25 mm long.
- For toddlers 1- 3 years old, the needle should be 1 to 1.25 inches/25-32 mm in length, and the anterolateral thigh muscle is the preferred site.
- For children 3 – 10 years old, the needle should be 5/8 to 1 inch/16-25 mm for injection into the deltoid. The needle should be 1-1.25 inches/25-32 mm for injection into the anterolateral thigh.
- For children/adolescents 11 to 18 years old, the needle should be 5/8 to 1 inch/16-25 mm for injection into the deltoid. The needle should be 1-1.5 inches/25-38 mm for injection into the anterolateral thigh.

Safety Issues

The primary safety issues of infancy and childhood are child abuse, accidents, and poisonings.

Child Abuse

Child abuse is a very common social issue with serious short-term and long-term consequences (CDC, 2020). The CDC estimated that one in seven children in any year is abused (CDC, 2020). In 2019, 1840 children died from abuse (Ford et al., 2022), and it has been estimated that 2-10% of children brought to an ED have been abused or neglected (Colbourne & Clarke, 2022). Data from the US Department of Health & Humans Services 2022 Child Maltreatment Report showed that 74.3% of the victims of child abuse were neglected, 17.0% were physically abused, 10.6% were sexually abused, and 6.8% were psychologically maltreated (HHS, 2023).

Child abuse is very common, but the prevalence is likely to be much higher as underreporting of child abuse is common and significant (Prettyman, 2024; Piersiak et al., 2023). One possible reason for underreporting is that when an abused child is seen by a provider, the child's injuries have healed (Rapp et al., 2021). Also, child abuse statistics can be deceiving because a child who

is abused would be considered one case. Still, that child is likely to be abused many, many times.

Child abuse can be emotional, physical, psychological, and sexual (Colbourne & Clark, 2022; Ford et al., 2022), and it can take the forms of neglect and medical neglect (Ford et al., 2022). Child abuse can also be medical abuse, also known as Munchausen's by proxy (Colbourne & Clarke, 2022; Ford et al., 2022) or caregiver-fabricated illness (Ford et al., 2022). In this type of child abuse, the caregiver causes injuries or illnesses to a child, often repeatedly, but hides this behavior from the healthcare team (Colbourne & Clarke, 2022; Ford et al., 2022).

Risk factors for child abuse include these behaviors and conditions:

- Characteristics of the child more likely to be abused (CDC, 2022a):
  - Children under the age of four
  - Children who have special needs
- Parental/caregiver factors (CDC, 2022a):
  - Parent/caregiver was abused
  - Parent/caregiver who abuses alcohol or drugs
  - Parent/caregiver has substance abuse problems
  - Parent/caregiver with mental illness
  - No biological relation to the child
  - Parent/caretaker is very young, single, or has many children
  - Parent/caregiver does not understand children's needs and development
  - Low educational level or low income
  - Parent/caregiver has a high level of parenting stress or economic stress
  - Spanking and/or other types of corporal punishment are used
  - Parent/caregiver accepts and/or justifies aggression and violence
- Environmental/social factors (CDC, 2022a):
  - Domestic violence
  - Poverty
  - Social isolation

There are many characteristic signs, symptoms, and patterns of injury associated with child abuse, like bruises, burns, fractures, and head trauma, all of which are indicators of child abuse (Colbourne & Clarke, 2022; Ford et al., 2022). Other features of physical abuse include delay in seeking treatment for a child's injuries or illness, discrepancies, inconsistencies, or constant changing of the parental report of how the injuries occurred, no history of how the injuries occurred, or the parents reporting of how the injury occurred cannot possibly be a cause for the injuries (Colbourne & Clarke, 2022; Ford et al. 2022). Most children who have been sexually abused will not have any physical signs of the abuse (Ford et al., 2022). This seems counter-intuitive, but there may be a ". . . delay in disclosure by the child, abuse that may not cause physical trauma (e.g., fondling, oral-genital contact, or exploitation by pornographic photography), or rapid healing of minor injuries such as labial, hymenal, or anal abrasions, contusions, or lacerations" (Ford et al., 2022). An STI in a pre-pubertal child is a very strong indication of child sexual abuse (Ford et al., 2022).

For screening and detection purposes, clinicians should also keep in mind that the emotional and psychological condition of the child and the history surrounding possible incidents of child abuse are important. When considering the possibility of child abuse, consider these three issues.

- Child-caregiver interaction: Is the child agitated, fearful, or otherwise emotionally and/or psychologically upset with the caregiver? What are the caregiver's attitudes and behaviors

towards the child – attentive and concerned or cold, disinterested, and harsh?
- History of the injury: Does the caregiver's story of how and why the injury occurred make sense? Did the caregiver delay in getting help for an injured child? Has the child had previous injuries or had the same injury before? Are the injuries increasing in frequency and severity? Does the child have an injury or a medical condition that could not happen to a child, like genital trauma, a sexually transmitted disease, or physical trauma that could not happen to a child, given their age, body weight, and level of physical activity? Does the child have bruises or fractures that are days, weeks, or months old, but the caregiver claims that the child was just injured?
- Condition of the child: Is the child well nourished? Do they have frequent illnesses or injuries? Is the child withdrawn, apathetic, or fearful?

Healthcare professionals must report child abuse: Reporting abuse is mandatory in all 50 states and the District of Columbia (Colbourne & Clarke, 2022; Ford et al., 2022). If a clinician suspects that abuse or neglect has occurred or that a child is at risk for abuse or neglect, a report must be submitted to the local or state agency that investigates these incidents; typically, this is Child Protective Services, aka CPS (Colbourne & Clarke, 2022; Ford et al., 2022). The clinician does not have to be certain; they only need to have a reasonable suspicion that an incident occurred or that a child is at risk (Colbourne & Clarke, 2022).

The reporting responsibility is outlined in nurse practice acts, professional ethics codes, the standards of healthcare facilities, and state and local statutes. The Federal Child Abuse Prevention and Treatment Act requires every state to have procedures that detail who is required to report child abuse. Almost every state designates which professions are included. See Mandatory Reporters of Child Abuse and Neglect, published by the US Department of Health and Human Services and available online using this link.

The CDC's publication Preventing Child Abuse and Neglect: A Technical Package for Policy, Norm, and Programmatic Activities, 2016, provides guidelines, plans, and resources for preventing child abuse. The publication can be accessed using this link.

Accidents and Poisonings

Accidental injuries like burns, drowning, falls, and automobile accidents are the number one cause of death in children one to four years of age (CDC, 2023d).

Poisonings are a significant source of injury to children, as well. Most poisonings and exposures to potentially harmful substances happen in children, and every year in the US, hundreds of thousands of children are poisoned or exposed to a potentially toxic substance (Gummin et al., 2022).

Children are naturally curious, and exploring the environment is part of the growth process. They are likely to use hand-to-mouth behavior to determine the nature of an object, and they also lack the caution of older children. Serious harm and death caused by pediatric exploratory behavior and the ingestion of a drug or a substance are unusual. However, children are especially vulnerable to the effects of medications and hazardous substances because of body weight and even one dose of certain medications or a small amount of certain substances can cause serious harm or death in a child (Hines & Fine, 2019).

Table 3: Medications and Substances That Can Cause Serious Harm/Death in One Dose or a Taste Amount

- Beta-agonists, sustained release

- Benzocaine
- Caffeine, powdered
- Calcium channel blockers, sustained release
- Camphor
- Caustics (sodium hydroxide)
- Clonidine
- Cyclic antidepressants
- Cycloplegics (ophthalmic)
- Diphenoxylate and atropine (Lomotil)
- Ethylene glycol
- Imidazolines (nasal sprays)
- Methanol
- Methyl salicylate (oil of wintergreen)
- Nicotine (liquids)
- Opioids
- Pesticides (organophosphates, carbamates, phosphides, tetramine)
- Phenothiazines
- Quinine

(Hines & Fine, 2019)

Poisoning prevention during childhood is often a matter of simple, common-sense interventions like making sure that children cannot have access to medications and hazardous substances.

Adolescence

Adolescence is often defined as ages 10 to 19 (Sass & Richards, 2020), and adolescence is a time of significant cognitive, emotional, physical, and social changes (Sass & Richards, 2020).

Adolescence is a time of dramatic changes in brain structure and function: The adolescent brain is immature and malleable (Alderman et al., 2019; Casey et al., 2019; Volkow et al., 2018), and this accounts in some part for decision-making, heightened emotional responses, impulsivity, and risk-taking in adolescents (Kwon et al., 2021; Alderman et al., 2019; Volkow et al., 2018).

Adolescents grow in spurts, they mature physically, and they can reproduce. Mentally, they become more abstract thinkers, consider many options, choose their values, and challenge authority. Socially and emotionally, adolescents develop their own identities and build close relationships. Together, these processes during adolescence are termed puberty.

Assessment of Growth and Development

Height and weight gain, the onset of sexual maturity, and cognitive, emotional, and social maturation are adolescents' biggest growth and development changes. Each adolescent should be examined to ensure that they are growing as expected, sexual maturation is developing as expected, and cognitive, emotional, and social maturation are proceeding normally.

Height and weight should be assessed in all adolescents periodically. Approximately 17–18% of adult height is gained during puberty, and the growth spurt typically occurs earlier in girls than in boys. Puberty is also when body weight and lean body mass increase. Bone growth and bone density increase, and adolescence is an important time for bone health. For girls, one half of

total body calcium is in place during puberty and up to two-thirds in boys, making this a time of life that can affect the future health of the bones (Biro & Chan, 2024). A teenager's weight almost doubles during adolescence (Sass & Richards, 2020), and body mass index (BMI), height, and weight should be measured at each visit to a primary care physician (Bright Futures/APA, 2024). The USPSTF recommends that "clinicians screen for obesity in children six years and older and adolescents and offer or refer them to comprehensive, intensive behavioral interventions to promote improvements in weight status" (USPSTF, 2017). This is the most up-to-date USPSTF recommendation; it is currently being revised. The USPSTF and other experts do not recommend screening adolescents for eating disorders unless the patient has signs and symptoms of an eating disorder or has been diagnosed with an eating disorder (Jin, 2022; USPSTF, 2022b) as the balance of the benefits and risks of this screening can't be adequately determined at this time (USPSTF, 2022b).

Sexual maturation for the adolescent is assessed by the development of sexual characteristics, breast development in females, development of pubic hair in females and males, and increased testicular volume and penis length (Sass & Richards, 2020). Sexual development of an adolescent can be assessed by using Sexual Maturity Rating (SMR) staging: SMR staging includes age-specific ranges of development and descriptions of breast development in girls, penis and testis development, and descriptions of the development of pubic hair (Sass & Richards, 2020).

Assessment of an adolescent's cognitive, emotional, and social maturation should focus on their development in those areas and how their development in these areas affects their adjustment at home, in school, and society.

Assessment and Examination Process

Three important issues of the adolescent assessment and examination process are confidentiality, consent, and autonomy (Sass & Richards, 2020).

Confidentiality, consent, and the adolescent patient are complex issues, and confidentiality and consent laws regarding adolescents vary – sometimes considerably – from state to state (English & Ford, 2022; Sharko et al., 2022). Every state has laws that determine when an adolescent can give consent for treatment, and the laws differ from state to state. For STIs, the states differ in terms of the age at which an adolescent can give consent, what type of STIs are covered, and if the adolescent's confidentiality and privacy will be maintained (Sharko et al., 2022).

Immunizations are an example of the differing confidentiality and consent laws: Connecticut and Colorado will not allow adolescents to give consent for their immunizations, and New York will, but only for HPV immunization (Sharko et al., 2022). Some states will permit a caregiver or a parent access to an adolescent's personal health information (Sharko et al., 2022).

Autonomy is defined as the quality of being free and independent. The establishment of autonomy is one of the significant developmental challenges of adolescence (Romero et al., 2020). Encouraging autonomy for an adolescent during the assessment and examination process is highly recommended. This can be done by including the adolescent, to an appropriate degree, in all parts of the assessment and examination process by providing the patient with information and asking the patient about their health concerns. Encouraging autonomy is important for several reasons. It encourages the adolescent to view health as their responsibility and health as a part of their life that can be positively or negatively influenced by their actions. It also gives an adolescent decision-making and planning experience. Including

the adolescent in the assessment and examination process is far more likely to increase compliance with treatment, and it encourages the patient to seek help if needed.

Table 4: Health Screening for Infants, Children, and Adolescents

Screening	Recommendation	Additional Resources
Alcohol, drug, and tobacco use	**Starting age 11**	Patients should be assessed for the risk of use and screened if necessary.
Anemia	**4 months** – assess for the risk **12 months** – screen **After 12 months** – assess for risk	Screen as necessary. The current edition of the American Academy of Pediatrics' Pediatric Nutrition: Policy of the American Academy of Pediatrics, chapter on iron.
Autism	**18 and 24 months**	AAP
Bilirubin	**Newborns**	
Blood Pressure	**All patients ages 3-21**	Before 3 – A risk assessment should be done. Guideline for Screening and Management in Children and Adolescents. These guidelines can be viewed here.
Body Mass Index (BMI)	**24 months to age 21**	
Critical Congenital Heart Defect	**All newborns** using pulse oximetry	For more details, see Endorsement of Human and Health Services recommendation for pulse oximetry screening for critical congenital heart defect.
Depression	**Starting at age 12**	The USPSTF recommends screening for depression in all patients 12 to 18 years old, and resources should be in place for follow-up and treatment if needed.
Developmental screening	**9, 18, and 30 months**	The Medical Home: An Algorithm for Developmental Surveillance and Screening can be viewed here.
Developmental surveillance	**Annual for all patients**	
Dyslipidemia	**Ages 24 months, 4 years, 6 years, and 9 years to 21 years**- Assess for risk	Follow up if needed. For more information, see the recommendations of the National Heart,

Screening	Recommendation	Additional Resources
		Lung, and Blood Institute, Integrated Guidelines for Cardiovascular Health and Risk Reduction in Children and Adolescents. These can be viewed here.
Hearing screen	**All newborns and 3–5 days old**. It should be confirmed that the initial screen was done, and the results of this screen should be verified. **4 months to 3 years** – assess for risk **After 3 years** – assess for risk	Screen and follow up as needed. See these guidelines for more information: • 2007 Position Statement: Principles and Guidelines for Early Hearing Detection and Intervention Programs. View here.
Height and weight	**All patients, newborn to age 21**	
HIV infection	**Starting age 15**	Assess for risk and screen as necessary. The CDC recommends HIV testing in all adolescents who have contact with the healthcare system unless the patient opts out.
Lead	**Age 6 months and 9 months** – assess for risk **Age 12 months, 24 months** – measure blood lead or assess for risk **Age 3, 4, 5, 6 years** – assess for risk	Screen as needed. To determine what kids are at risk, visit Prevention of Childhood Lead Toxicity.
Physical Examination	**Annual for all patients**	
Psychosocial behavioral assessment	**Annual for all patients**	
Newborn blood panel	**Age 3 or 5 days** – blood sample of uniform screening panels	The uniform screening panel tests for genetic disorders, e.g., PKU and sickle cell disease. Details about the screening can be viewed here.
Sexually transmitted Infections	**Starting age 11**	Assess for the risk of STIs and screen as necessary. See the AAP's Red Book: Report of the Committee on Infectious Diseases for guidelines on risk assessment.

Screening	Recommendation	Additional Resources
Skin cancer	**Start at 6 Months**- educate and counsel	USPSTF recommends that parents of children 6 months of age and older who have fair skin be counseled about minimizing exposure to ultraviolet radiation to reduce skin cancer (USPSTF, 2018d). Adolescents should receive this counseling, as well.
Tuberculosis	**Ages 1 month, 6 months, 12 months, and every year from 2 years of age and up** – assess for risk	Screen as necessary. Use the AAP Red Book for guidance.
Vaccinations	**Follow current CDC recommendations**	The CDC-recommended vaccination schedule for adolescents 18 years of age and younger can be viewed here. Vaccination for preventing infection with HPV is discussed later in this section of the module.
Vision Screen	**Newborn and up to 30 months** - assess for risk **Age 3 and beyond** – annual vision testing	Screen as necessary. See visual system assessment in infants, children, and young adults by pediatricians.

Nutrition

The energy requirements of an adolescent, especially a physically active adolescent, are higher than that of a child and somewhat different than those of an adult or an older adult. However, aside from certain nutrients, the dietary requirements of adolescents are not significantly different. Two specific nutrition issues of adolescence and specific nutrition recommendations for adolescents are listed below. Readers can go to the Office of Dietary Supplements, a section of the National Institutes of Health website. There are Fact Sheets for Professionals on all the vitamins and minerals, including recommended dietary allowances. The website link is here.

Calcium: Adolescence is a critical time for bone growth, and the recommended daily calcium intake for adolescents aged 13-18, male and female, is 1300 mg a day compared to 1000 mg a day for adults and children (National Institutes of Health, 2024).

Iron: Iron needs increase during adolescence as blood volume and muscle mass increase (Kleinman & Greer, 2020), and females have the onset of menarche, which increases their need for iron. The recommended daily intake of iron for adolescent females aged 14 to 18 is 15 mg; for boys aged 14 to 18, the recommended daily intake is 11 mg. The recommended daily intake for adolescents at 19 years of age is 8 mg for males and 15 mg for females (National Institutes of Health, 2023a).

There are no universal recommendations for screening adolescents for iron deficiency anemia (Weyand et al., 2023). However, adolescent girls and adolescents of low socio-economic status

are at risk for iron deficiency anemia (Larsen et al., 2023; Weyand et al., 2023), and screening adolescent females and adolescents with a low socioeconomic status would be prudent.

Safety Issues

Safety issues of particular concern with adolescents are STIs, alcohol, drug, and tobacco abuse/use, depression and suicide, accidents and unintentional injuries, especially automobile accidents, and interpersonal and sexual violence.

Sexually Transmitted Infections

STIs are a major health issue in adolescents. In 2022, almost half (49.8%) of reported cases of chlamydia, gonorrhea, and syphilis were in adolescents and young adults aged 15 to 24 (CDC, 2024a), and while this age group is thought to be 25% of the sexually active population, half of the reported STIs occur in this age group (Smith et al., 2022).

The USPSTF recommendations for screening adolescents for STIs are listed below.

- STIs – Behavioral Counseling: The USPSTF recommends behavioral counseling for all sexually active adolescents and adolescents who have an increased risk for STIs (USPSTF, 2020d).
- Chlamydia and gonorrhea: The USPSTF recommends that all sexually active women who are 24 years of age or younger should be screened for chlamydia and gonorrhea (USPSTF, 2021b).
- Hepatitis B: The USPSTF recommends screening adolescents for hepatitis B infection if they are at a high risk for contracting hepatitis B infection (USPSTF, 2020b).
- Hepatitis C: The USPSTF recommends that all adults 18 years of age and older should be screened for hepatitis C infection (USPSTF, 2020c).
- HIV: The USPSTF recommends screening for HIV for all pregnant persons, all people 15 years of age to 65, and all people who have a high risk of contracting an HIV infection (USPSTF, 2019d).
- Syphilis: The USPSTF recommends screening adolescents for syphilis if they have been sexually active and/or if they have a high risk of contracting syphilis (USPSTF, 2022d).

Factors that increase the risk of adolescents contracting an STI include an early age of sexual activity, not using condoms, multiple partners, partners who have an STI, and sex with a partner who is ≥ three years older (Smith et al., 2022). Factors that increase the risk of contracting an STI, regardless of age, include (but are not limited to) IV drug use, unprotected sex, unprotected sex with multiple partners, and use of recreational drugs (Garcia et al., 2023).

HPV infection is a very common STI. Approximately 85% of people will have an HPV infection sometime during their life (CDC, 2022c). HPV infection is the most common STI in the US (CDC, 2022c). The CDC estimated that in 2018, there were 18 million HPV infections, and many of these infections were in people in their late teens or early 20s (CDC, 2022c).

The ACS does not recommend screening for HPV infection in asymptomatic females < 21 years of age who are not immunocompromised (Fontham et al., 2020).

Many HPV infections will not cause harm, but an HPV infection can cause genital warts and cervical cancer (CDC, 2022b). HPV vaccination has been proven to decrease HPV infections in women and men dramatically, and it has decreased the number of cases of genital warts and cervical pre-cancers (CDC, 2021c). ACOG recommends that boys and girls, starting at ages 11 to 12, should be given the HPV vaccine; vaccination can also be started at age 9 (ACOG, 2020). The

HPV vaccination schedule can be viewed here. More detailed information about the dosing schedule can be viewed here.

The CDC recommends HPV vaccination as early as nine years old (CDC, 2021c).

- A two-dose vaccination schedule is recommended for people getting the first dose before age 15. The second dose should be given 6-12 months after the first. The minimum time between the first and second doses should be five months. If the second dose is given sooner, a third dose should be given at a minimum of 5 months after the first dose and a minimum of 12 weeks after the second dose.
- If the first dose of the HPV vaccine is given after the 15th birthday or the patient has certain immunocompromising conditions/diseases, a 3-dose schedule is recommended. The second dose is given one to two months after the first dose, and the third dose is given six months after the second. The minimum intervals are four weeks between the first and second doses, 12 weeks between the second and third doses, and five months between the first and third doses. If a vaccine dose is administered after a shorter interval, it should be re-administered after another minimum interval has elapsed since the most recent dose. If the vaccination schedule is interrupted, vaccine doses do not need to be repeated (no maximum interval).

Alcohol, Drug Use, and Tobacco

The use and abuse of alcohol, drugs, and tobacco use are significant problems in adolescents. The statistics listed below are from the 2022 National Survey on Drug Use and Health (SAMHSA, 2023).

- Alcohol: In 2022, > 4.3 million adolescents aged 12 to 17 had used alcohol in the past year, and > 1.7 million had used alcohol in the previous month.
- Illicit: In 2022, almost 4.3 million adolescents aged 12 to 17 had used an illicit drug like cocaine, heroin, and methamphetamine in the past year, and > 1.8 million had used an illicit drug in the prior month.
- Tobacco and vaping: In 2022, > 3.8 million adolescents aged 12 to 17 had used a tobacco product or had vaped, and almost 1.9 million had used a tobacco product or had vaped in the prior month.

Factors that increase the risk of high-risk drug use, e.g., use of cocaine, heroin, or inhalants, IV drug use, include (but are not limited to) poor academic achievement, childhood sexual abuse, family or parenteral substance abuse, and mental health problems (CDC, 2022d).

Starting at age 11, patients should be assessed for the risk of alcohol, drug, and tobacco use and screened if necessary (Bright Futures/APA, 2024). The Bright Futures guidelines recommend using the CRAFFT (Car, Relax, Alone, Forget, Friends, Trouble) screening tool. This tool can be downloaded from this link here.

First, the patient is asked these questions.

During the past 12 months, on how many days did you:

1. Drink more than a few sips of beer, wine, or any drink containing alcohol.
2. Use any marijuana (pot, weed, hash, or in foods) or any synthetic marijuana, like K2 or spice.
3. Use anything else to get high, like other illegal drugs, prescription drugs, over-the-counter drugs, and things that you've huffed or sniffed.

If the patient answers yes to any of these questions, ask all 6 CRAFFT questions. If the patient answered no to all the questions, stop the assessment.

Table 4: The CRAFFT Screen

- **C**ar - Have you ever ridden in a car driven by someone (including yourself) who was "high" or had been using alcohol or drugs?
- **R**elax - Do you ever use alcohol or drugs to relax, feel better about yourself, or fit in?
- **A**lone - Do you ever use alcohol or drugs while you are by yourself?
- **F**orget - Do you ever forget things you did while using alcohol or drugs?
- **F**riends - Do your family or friends ever tell you that you should cut down on your drinking or drug use?
- **T**rouble - Have you ever gotten into trouble while you were using alcohol or drugs?

(CRAFFT, 2021)

One point is given for each yes answer. If the score is ≥ 2, then there is a problem with alcohol/drug use, and adverse consequences and dependency are likely.

The USPSTF recommends that adults 18 years and older be screened for unhealthy drug use (USPSTF, 2020f). Still, there is insufficient evidence to determine the benefit-harm ratio of screening and counseling in patients aged 12 to 17 (USPSTF, 2018f).

The National Institute on Drug Abuse (NIDA) recommends several research-based programs to prevent drug use (NIDA, 2023).

1. Principles of Substance Abuse Prevention for Early Childhood.
2. Preventing Drug Use among Children and Adolescents: A Research-Based Guide for Parents, Educators, and Community Leaders.

The CRAFFT 2.1+N Interview can be used to screen for tobacco use. It can be viewed here.

Multiple interventions and approaches have been used to prevent adolescent smoking initiation, and behavioral interventions may reduce smoking initiation in adolescents (Selph et al., 2020). The USPSTF recommends that primary care clinicians provide adolescents with counseling and education that is designed to discourage smoking initiation (USPSTF, 2020e). The USPSTF concluded that there was insufficient evidence to determine the benefits and harms of primary care provider interventions for smoking cessation in children and adolescents (USPSTF, 2020e).

Depression and Suicide

Depression is the most common psychiatric disorder in adolescents (Boylan et al., 2020), and in the US, in 2019, the prevalence of depression in adolescents was reported to be 15.8% (Wilson & Dumornay, 2022). Depressive symptoms that are not identified can be potentially dangerous because depression is highly associated with suicide (Shorey et al., 2022). The AAP (Bright Futures/AAP, 2024) and the USPSTF (USPSTF, 2022a) recommend screening adolescents aged 12 to 18 for major depressive disorder, and the AAP recommends that these adolescents be screened for suicide risk (Bright Futures/AAP, 2024). The AAP and the USPSTF do not recommend a specific screening tool. The Patient Health Questionnaire-9 (PHQ-9) and the Patient Health-Questionnaire-2 (PHQ-2) are validated screening tools that have been used to screen adolescents for depression (Pitts et al., 2023): In adolescents, the PHQ-9 has been used

more often than the PHQ-2 (Pitts et al., 2023). Other screening tools can be used, and information about them can be found in the GLAD-C toolkit here.

Patient Health Questionnaire-9

Over the past two weeks, how often have you been bothered by any of the following problems:

- Little interest or pleasure in doing things.
- Feeling down, depressed, or hopeless.
- Trouble falling or staying asleep or sleeping too much.
- Feeling tired or having little energy.
- Poor appetite or overeating.
- Feeling bad about yourself, feeling that you are a failure, or have let yourself or your family down.
- Moving or speaking so slowly that other people have noticed. Or the opposite, feeling so fidgety or restless that you have been moving around a lot more than usual.
- Thoughts that you would be better off dead or hurting yourself in some way.

Suicide is one of the leading causes of death in adolescents (Moselli et al., 2023), and suicidal behaviors and ideation are at their maximum incidence during adolescence (Moselli et al., 2023). In 2021, the suicide rate in people aged 10-14 was approximately 2.9 per 100,000; in people aged 15 to 19, it was approximately 11.8 per 100,000 (Curtin & Garnett, 2023). Risk factors for suicide include (but are not limited to) depression, ethnicity (American Indian adolescents have the highest suicide rate), self-injury behavior, and substance abuse (Kelsay et al., 2022).

Accidents and Unintentional Injuries

Accidents and unintentional injuries are the number one cause of death in adolescents (CDC, 2021a). Risky behavior is common during adolescence. The Youth Risk Behavior Surveillance in 2021 reported that 39% of high school-aged adolescents did not always wear a seatbelt while in a car, 14.1% had ridden in a car driven by someone who had been drinking, 3.1% had carried a weapon while on school property, and 13.7% did not use any contraceptive method while having intercourse (CDC, 2023e).

Interpersonal and Sexual Violence

The Youth Risk Behavior Surveillance in 2021 reported that 6.6% of high school-aged adolescents had been threatened with a weapon or injured with a weapon while at school, and 18.3% had been in a physical fight (CDC, 2023e). Regarding sexual violence, 8.5% of students had been forced to have sexual intercourse, and 9.7% had been forced to perform sexual activity by someone they had been dating (CDC, 2023e).

The CDC's program, STOP SV: A Technical Package to Prevent Sexual Violence, is not designed explicitly for adolescents, but it provides basic information on the topic (CDC, 2016). The STOP SV program can be accessed by using this link here.

Adults: 21-64 Years

Adults are sexually and physically mature. Their nutritional needs are for maintenance, not growth. Chronic illnesses are either evident at this time of life or have yet to develop. Adults face the threat of illness or death from the impact of unhealthy lifestyles. Mentally, they learn

new skills and information to solve problems. They are very concerned about affiliation, love, and intimacy. Major stress factors occur as adults establish a career and family. Their fears include losing their jobs and status in established social relationships. The young adult chooses a lifestyle and career to fulfill goals, seeks closeness with others, and may commit to starting a family and becoming an active member of their community.

The middle-aged adult develops physical changes and (possibly) chronic health problems. Women go through menopause. Mentally, they use experience to learn, create, and solve problems. People of this age are concerned about staying productive. They hope to contribute to future generations and strive to balance dreams with reality. They start planning for retirement and may take care of their parents or children.

Health Assessment of the Adult

A health assessment of the adult is, in some ways, less complex than a health assessment of other age groups. Physical, emotional, and social development do continue. Still, these have stabilized to a degree, and the health assessment of an adult should focus on:

1. maintaining a healthy lifestyle,
2. identifying lifestyle behaviors that may contribute to poor health, and
3. management of disease states/chronic illnesses that have developed.

Preventive care, health education, and encouragement of healthy behaviors are key issues for the health assessment of this age group.

Health Screening and Preventive Care

Health screening is one of the primary ways illnesses can be prevented. In infancy, childhood, adolescence, and the aging adult, the specific health screenings that are needed are determined by the physiological, emotional, and social stages of development particular to these age groups. However, as previously mentioned, profound changes in these areas of a person's life are not as marked in adults as in infancy, childhood, adolescence, and old age. Because of those issues, health screening for adults is broader and more specific. The important questions of health screening are:

1. who should be screened,
2. when should screening be done,
3. what screening tests should be done,
4. how to interpret results,
5. cost-effectiveness, and
6. benefits and risks of screening. Health screening is complex and cannot be completely discussed in this module.

However, several points about health screening tools deserve mention (Givler & Givler, 2023), and these apply to the use of screening tools for all populations.

- The test should screen for a disease that is prevalent in the population that will be tested.
- The disease should be characterized by an asymptomatic period, and treating a patient during the asymptomatic period is more effective in reducing morbidity and mortality than waiting for signs and symptoms to occur.
- The sensitivity and specificity of the screening tool are very important considerations, and they should be evaluated.
- Simplicity and cost: Screening tools should ideally be simple and inexpensive.

- Safety: Do no harm is a guiding principle of all health care and applies to screening tests. Risk cannot be eliminated, but prevention of illness/injury is the primary use of a screening tool: A screening test should prevent, not create problems.
- False-positive and false-negative consequences.
- Will the screening tests result in over-diagnosis and overtreatment?
- Acceptability to the patient.
- Treatment: The screening test should identify a problem or potential problem for which practical, effective steps can be taken.

There is no universal agreement on adult health screening. However, the recommendations in Table 5 are from the CDC, the USPSTF, and professional health organizations like the American Heart Association (AHA). The recommendations listed in Table 5 are the ones for which screening is advised for the general population without risk factors for a specific disease. However, the risk factors associated with some diseases are themselves so prevalent that screening is reasonable for some diseases, e.g., diabetes and lung cancer.

Table 5: Health Screening and Preventive Care for Adults

Screening	Recommendation

Screening	Recommendation
Alcohol and drug screening	The USPSTF recommends that adults 18 years of age and older, including pregnant women, should be screened for unhealthy alcohol use (USPSTF, 2020f). The USPSTF recommends using 1 to 3-question screening tools, specifically the Alcohol Use Disorders Identification Test-Consumption (AUDIT-C) or the Single Alcohol Screening Question (SASQ). Audit-C: 1. How often do you have a drink containing alcohol? 2. How many standard drinks containing alcohol do you have on a typical day? 3. How often do you have six or more drinks on one occasion? The answers are scored from 0 to 4; the total score indicates the risk for problematic alcohol consumption. SASQ: How many times in the past year have you had 4 or more drinks in a day (women), 5 or more drinks in a day (men)? The Tobacco, Alcohol, Prescription medication, and other Substance Use Tool (TAPS) is a screening tool that has been validated for use in primary care settings (National Institute on Drug Abuse, 2023; Carter et al., 2022). For assessment/screening of drug misuse/abuse, the TAPS screen asks questions about abuse/misuse of prescription drugs and/or illicit drugs. Examples: 1. In the past 12 months, how often have you used any prescription medications just for the feeling, more than prescribed, or that were not prescribed for you? 2. In the past 12 months, how often have you used any drugs including marijuana, cocaine or crack, heroin, methamphetamine (crystal meth), hallucinogens, ecstasy/MDMA? 3. In the past 3 months, have you used heroin? After the patient has completed the screening questions, the provider follows up with the patient and provides the appropriate care.
Diabetes	The USPSTF recommends that adults aged 35-70 who are overweight or obese be screened for prediabetes and type 2 diabetes mellitus (USPSTF, 2021f). The American Diabetes Association (ADA) recommends that anyone with one or more risk factors for type 2 diabetes, e.g., hypertension (HTN), hypercholesterolemia, ethnic risk factors, obesity/overweight, first-degree relative who has diabetes, be tested for prediabetes and type 2 diabetes. The ADA recommends all adults 35 years of age or older should be screened for prediabetes and type 2 diabetes (ADA, 2023b). Screening is done by an assessment of risk factors or with a validated risk calculator (ADA. 2024a). Screening, detection, and implementation of lifestyle changes have been shown to significantly reduce the incidence of type 2 diabetes and the progression from prediabetes to type 2 diabetes (Elsayed et al., 2023a).
Breast cancer	The USPSTF recommends that women aged 50 to 74 should have biennial mammography screening (USPSTF, 2016). The decision to have screening

Screening	Recommendation
	mammography before age 50 should be made by the patient (USPSTF, 2016). The USPSTF recommends that women who have a family or personal history of breast, peritoneal, ovarian, or tubal cancer or who have ancestry associated with breast cancer susceptibility (BRCA 1 and 2 gene mutations) be screened with an appropriate family risk assessment tool. If the result is positive, patients should receive genetic counseling and, if needed, genetic testing. (USPSTF, 2019b). The ACS recommendations for breast cancer screening in women who have an average risk for the disease are: 1. Aged 40 to 44, the patient should be offered the option of yearly screening via mammography, 2. Aged 45 to 54, yearly mammography screening, 3. 55 years of age and older- yearly or biennial mammography, and 4. Screening should continue as long as a woman is in good health and is expected to live at least 10 more years (ACS, 2023b). For women who have a high risk for breast cancer, e.g., the patient or a first-degree relative has BRCA 1 or 2 mutations, the ACS recommends a breast MRI and yearly mammogram, the latter beginning at age 30. The ACS does not recommend regular breast self-examinations or clinical breast exams, but for high-risk women, a provider may offer breast examinations (ACS, 2023b). The American Society of Breast Surgeons recommends: 1. Women age > 25 should undergo formal risk assessment for breast cancer, 2. Women with an average risk of breast cancer should start yearly screening mammography at age 40, 3. Women with a higher-than-average risk of breast cancer should have yearly screening mammography and be offered yearly supplemental imaging; this screening should be initiated at a risk-based age and 4. Screening mammography should not be done if a patient's life expectancy is < 10 years (American Society of Breast Surgeons, 2019).
BRCA mutation	The BReast CAncer genes 1 and 2, BRCA1 and BRCA2, are genes that produce proteins that help repair damaged deoxyribonucleic acid or DNA (National Cancer Institute, 2020). Sometimes, they are referred to as tumor suppressor genes. BRCA1 and BRCA2 mutations increase the risk of developing breast cancer, ovarian cancer, and several other cancers as well (National Cancer Institute, 2020). Inheriting a BRCA1 or BRCA2 gene mutation significantly increases a woman's risk of developing breast cancer (National Cancer Institute, 2020).
Cardiovascular risk assessment	Cardiovascular disease (CVD) is a group of diseases that affect the heart and the blood vessels, including (but not limited to) atherosclerosis, arrhythmias, cerebrovascular accident (CVA, aka stroke), congestive heart failure, coronary artery disease, HTN, and myocardial infarction. CVD is very common and the leading cause of death in the US (CDC, 2023e). Risk

Screening	Recommendation
	factors for heart disease are very common in US adults, and these include diabetes, excessive alcohol use, hypercholesterolemia, HTN, physical inactivity, obesity, and smoking (CDC, 2023e; Gaziano & Gaziano, 2022). Determining a patient's baseline risk of developing atherosclerotic cardiovascular disease (ASCVD) is the foundation of prevention against ASCVD (Wong et al., 2022; Arnett et al., 2019). Multiple risk factor assessment tools include the American College of Cardiology ASCVD Risk Estimator plus, the AHA Predicting Risk of Cardiovascular EVENTS (PREVENT™), and the Pooled Cohort Risk Estimator Plus. No risk calculator can be used for all patient populations (Arnett et al., 2019). Still, the currently used risk assessment tools use some combination of the known risk factors for ASCVD, e.g., age, blood pressure measurement, diabetes, high-density lipoprotein (HDL) and low-density lipoprotein (LDL) cholesterol levels, obesity, and smoking.
Cervical cancer	In the US in 2020, there were 11,542 new cases of cervical cancer, 4,272 women died of this disease, and there were 7 new cases for every 100,00 women (CDC, 2023k). Regular screening, done with a Papanicolaou (Pap) smear, can detect and prevent cervical cancer and improve the chances that treatment for cervical cancer will be successful (ACS, 2023b). HPV vaccination has been proven to reduce the incidence of cervical pre-cancer, and data suggest it reduces the incidence of cervical cancer (Rahangdale et al., 2022). Persistent HPV infection is the central cause of cervical cancer and the leading cause of cancer death among women worldwide. The ACS's Guidelines for the Prevention and Detection of Cervical Cancer (ACS, 2021) recommend: • Cervical cancer screening should begin at age 25. • Women aged 25 to 65 should have a primary HPV test every 5 years. If this is not available, screening can be done with a co-test of an HPV test and a Pap test every 5 years *or* a Pap test every 3 years. • Women over 65 who have had regular screening for the past 10 years - and the test results were normal – and there is no history of CIN2 or a more serious diagnosis within the past 25 years should stop being screened. Once screening has been stopped, it should not be restarted. (CIN2 refers to a specific level of severity of cervical dysplasia. Cervical dysplasia is a pre-cancerous condition, and CIN2 means that one-third to two-thirds of the cervical epithelium has abnormal cells). • Women who have had a total hysterectomy should not be screened unless the hysterectomy was done as a treatment for cervical cancer or pre-cancer. If the uterus was removed but the cervix was not, use the previously described guidelines. • Women who have been vaccinated against HPV should follow the screening recommendations for their age group.

Screening	Recommendation
Colorectal Cancer	Colorectal cancer is, excluding skin cancers, the third most common cancer in the US (ACS, 2024b), and it is the fourth most common cause of death from cancer (CDC, 2023k). Colorectal cancer screening has been shown to reduce mortality from colorectal cancer, and it may reduce the incidence of the disease (National Cancer Institute, 2023). The ACS's recommendations for colorectal cancer screening are outlined below. (ACS, 2024a). For people who have an average risk of colorectal cancer: The ACS recommends colorectal cancer screening starting at age 45. The screening can be done with a test that detects blood in the stool or a visual inspection of the lower gastrointestinal (GI) tract with an instrument, e.g., a colonoscopy. A person in good health and who has a life expectancy of > 10 years should continue to be screened until they are 75. For people aged 76 to 85, the decision to do colorectal cancer screening is made based on life expectancy, overall condition/health, personal preference, and prior screening history. People over age 85 should not get colorectal cancer screening. Average risk is defined as someone who does not have: 1. A family history of colorectal cancer, 2. A personal history of colorectal cancer or certain types of polyps, 3. A personal history of inflammatory bowel disease, 4. Confirmed or suspected colorectal cancer syndrome, and 5. A personal history of abdominal or pelvic exposure to therapeutic radiation to treat a prior cancer. For people at increased risk or high risk for colorectal cancer, screening may need to be started before age 45, screening may need to be done more frequently, or a specific test may be needed. The ACS does not have guidelines for colorectal cancer screening for people at increased or high risk.
Depression	The USPSTF recommends screening for depression in the adult population, including pregnant and postpartum women (USPSTF, 2023a). The conclusions of the USPSTF were that screening improves the detection and identification of depression; depression screening combined with treatment improves outcomes, and screening has a moderate net benefit, and there is inadequate evidence to determine the harm from screening (USPSTF, 2023a). The optimal timing and intervals for depression screening have not been established. The USPSTF does not recommend a specific screening tool. Still, it mentions that the various forms of the Patient Health Questionnaire (PHQ), the Edinburgh Postnatal Depression Scale, and the Geriatric Depression Scale are commonly used. Pregnant and postpartum women who are at risk for perinatal depression should be referred for counseling.

Screening	Recommendation
Dyslipidemia	Dyslipidemia refers to disorders of lipid metabolism (Arvantis & Lowenstein, 2023). The lipids that are usually measured are total cholesterol, LDL, HDL, triglycerides, and lipoprotein (a) or Lp(a) (Arvantis & Lowenstein, 2023). Dyslipidemia is a risk factor for the development of ASCVD, and treating dyslipidemia has been shown to prevent the development of ASCVD and reduce the morbidity and mortality associated with ASCVD (Reamy, 2020). The recommendations of the American College of Cardiology and the AHA for dyslipidemia screening are outlined below (Arvantis & Lowenstein, 2023). People aged 40 to 75 should be screened for dyslipidemia every 4-6 years. The test can be done fasting or non-fasting. If the non-fasting triglyceride level is > 400 mg/deciliter (dL), a fasting lipid profile should be done. The test should be a lipid profile, e.g., HDL and LDL cholesterol, and triglycerides. Apolipoprotein B (apoB) should be measured in people who have hypertriglyceridemia. Lp(a) should be measured in persons who have a family history of premature ASCVD.
Hepatitis B	Adults who do not have risk factors for hepatitis B should be tested for hepatitis B surface antigen (HBsAg), hepatitis B surface antibody (anti-HBs), and total hepatitis B core antigen (anti-HBc) (CDC, 2023j). Adults ages 18 to 59 years should receive hepatitis B vaccination (CDC, 2023j). The testing and vaccination recommendations are different for people who have risk factors for hepatitis B. These recommendations are lengthy. They can be viewed here.
Intimate partner violence	Intimate partner violence (IPV) is a common and significant public health issue. The CDC estimates that 41% of women and 26% of men during their lifetime have experienced some type of IPV, like sexual and/or physical violence. IPV often results in injuries, and it can result in death. In addition, survivors of IPV can develop physical, psychological, and social harm and disorders (CDC, 2020). The USPSTF recommends that clinicians screen women of reproductive age for IPV (USPSTF, 2018a). No recommendation was made for a specific screening instrument. There are many available ones like the Humiliation, Afraid, Rape, Kick (HARK), Partner Violence Screen (PVS), Stress, Afraid, Friend, Emergency plan (SAFE), and the Women Abuse Screening Tool (WAST): These are all short screening tools that can be practically used in a clinician's office. Example: The Hurt, Insulted, Threaten, and Scream (HITS) screen has 4 questions: How often does your partner: 1. Hurt you physically? 2. Insult you or talk down to you? 3. Threaten you with harm? 4. Scream or curse at you?

Screening	Recommendation
Latent tuberculosis	Latent tuberculosis (TB) infection is an infection with the TB bacterium, but the immune system has contained the pathogen (USPSTF, 2023d). A person who has latent TB is asymptomatic and not contagious, but if they are not treated, they can develop active TB (USPSTF, 2023d). The CDC estimates that 13 million people in the US have latent TB (CDC, 2022e). The USPSTF recommends screening for latent TB in adult populations who are at risk for the disease (USPSTF, 2023d). At-risk persons include: • Those who were born in an area or formerly resided in an area with a high prevalence of TB. • People who live in close proximity to others, e.g., residents of homeless shelters or people who are incarcerated. • Immunosuppressed people. • Anyone who has contact with someone who has active TB. • People who are receiving immunosuppressive treatment like chemotherapy or immunosuppressive drugs that are given post-organ transplant. There are two screening tests: the tuberculin skin tests and interferon-gamma release assays. There does not appear to be a risk of harm from these tests. The optimal timing interval for latent TB screening has not been determined; people should be screened on a case-by-case basis. The USPSTF concluded that there is a moderate net benefit from screening for latent TB in terms of preventing active TB (USPSTF, 2023d).
Osteoporosis	Osteoporosis is the most common bone disease (CDC, 2021b). The National Health and Nutrition Examination Survey (2021) found that in 2017-2018, the age-adjusted prevalence of osteoporosis at the femur neck, the lumbar spine, or both in adults ≥ age 50 was 12.6%, 19.6% in women, and 4.4% in men (CDC, 2021b). The USPSTF recommends that to prevent osteoporotic fractures, women ≥ 65 years of age should be screened with bone measurement tests (USPSTF, 2018b). For women < 65 years of age, post-menopausal, and at an increased risk for osteoporosis, the USPSTF recommends bone measurement testing to prevent osteoporotic fractures. (Note: There are several osteoporosis risk assessment calculators.) There is insufficient evidence to determine the benefit-harm ratio of osteoporosis screening in men. The most commonly used bone measurement screening test is the central dual-energy X-ray absorptiometry (DXA), which measures bone density at the hip and the lumbar spine (USPSTF, 2018b). The USPSTF does not have recommendations for screening intervals.
Pregnancy	The USPSTF and the ACOG recommend that pregnant women be screened for the following diseases and conditions. Chlamydia and gonorrhea: Sexually active women, including pregnant women who are 24 years of age or younger or if they are 25 years of age and have a high risk for infection, should be screened for chlamydia (USPSTF, 2021b). Sexually active women, including pregnant women who are 24 years of age or younger or if they are 25 years of age and have a high risk

Screening	Recommendation
	for infection, should be screened for gonorrhea (USPSTF, 2021b). Syphilis: All pregnant women should be screened for syphilis as soon as possible in their pregnancy (USPSTF, 2018e). HIV: All pregnant women, including women who are in labor and whose HIV status is not known, should be screened for HIV infection (USPSTF, 2019d). Hepatitis B: All pregnant women should be screened for hepatitis B virus during the first prenatal visit (USPSTF, 2019c). Hepatitis C: The ACOG recommends screening all pregnant women for hepatitis C (ACOG, 2023a). Gestational diabetes: Asymptomatic pregnant women should be screened for gestational diabetes at 24 weeks gestation or after (USPSTF, 2021c). Hypertensive disorders: A pregnant person should be screened for hypertensive disorders throughout their pregnancy (USPSTF, 2023c). These hypertensive disorders are eclampsia, gestational HTN, and preeclampsia (USPSTF, 2023c). Laboratory tests: The ACOG recommends that these tests be done for all pregnant women: CBC, urinalysis, blood type, group B streptococcus, Rh factor, rubella, and TB (high-risk persons) (ACOG, 2023b). Clinicians should assess for the possibility of birth defects (ACOG, 2023b). Anxiety and depression: The ACOG recommends that pregnant women be screened for anxiety and depression (ACOG, 2023c).
Prostate cancer	Prostate cancer, after skin cancer, is the most common cancer in men (CDC, 2023i), and screening for prostate cancer with the prostate-specific antigen (PSA) test is effective at detecting the disease and preventing death from prostate cancer (Pinsky & Parnes, 2023). The ACS (2023a) and the USPSTF (2018e) have essentially the same recommendations for prostate cancer screening. Clinicians should discuss prostate screening with men, and the ages when this should be done are outlined below (ACS, 2023a). After the discussion, a decision can be made about whether the screening will be done. Screening should be done with the PSA blood test. A digital rectal examination can also be done (ACS, 2023a). Recommendations are for: • Men aged 50 who have an average risk for prostate cancer and are expected to live at least 10 more years. • Men aged 45, high risk for developing prostate cancer: African American men who have a first-degree relative who was diagnosed with prostate cancer at an early age, < 65 years of age. • Men aged 40 with a high risk for developing prostate cancer because more than one first-degree relative had prostate cancer at an early age. The USPSTF recommends that clinicians discuss prostate cancer screening with men aged 55 to 69, and the decision to have prostate cancer screening should be an individual decision. If a patient does not want to be screened, the clinician should not order screening to be done (USPSTF, 2018c). The

Screening	Recommendation
	test itself is safe, but screening may result in false positive results and unneeded treatments (USPSTF, 2018c).
Sexually transmitted diseases	Chlamydia: The CDC and USPSTF recommendations for chlamydia screening are for (USPSTF, 2021b) : • All sexually active women < 24 years of age. • Sexually active women ≥ 25 years of age if they have risk factors for infection, e.g., more than 1 sex partner or sex with someone who has an STI. • The USPSTF has concluded that there was insufficient evidence to recommend routine screening for chlamydia in men. The CDC recommends that men who have sex with men or who are bisexual should be tested for chlamydia once a year and more frequently if they have anonymous or multiple sex partners (CDC, 2021e). Gonorrhea: The CDC and USPSTF recommendations for gonorrhea screening are for: • Sexually active women < 24 years of age (USPSTF, 2021b). • Sexually active women ≥ 25 years of age if they have risk factors for infection, e.g., more than 1 sex partner or sex with someone who has an STI (USPSTF, 2021b). • Men who have sex with men should be tested at least once a year and more frequently if they have anonymous or multiple sex partners (CDC,2021f). Patients should be tested at the sites of contact, e.g., rectum and urethra, even if condoms have been used (CDC, 2024b). Herpes: • The CDC and the USPSTF do not recommend routine screening for herpes (CDC, 2022c; USPSTF, 2023b). Serologic testing should be considered for people who have genital symptoms of herpes (CDC, 2020). Syphilis: • Women and men who are asymptomatic should be tested if they have a high risk of syphilis infection (CDC, 2024b). • All pregnant women should be screened for syphilis at their first prenatal visit. Women should be retested at 28 weeks gestation and at the time of delivery if they have a high risk of syphilis infection (CDC, 2024b). High-risk factors include (but are not limited to) multiple sex partners and an STI during pregnancy. • Men who have sex with men should be tested annually and more often (every 3-6 months) if they have a high risk of developing syphilis infection (CDC, 2024b). Risk factors for developing syphilis infection include (but are not limited to) incarceration and transactional sex work. • People who have an HIV infection should be screened annually (CDC, 2024b). Trichomonas:

Screening	Recommendation
	• Screening for trichomonas should be considered if the patient has a high risk for infection or is receiving care in a high-prevalence setting like an STD clinic or a correctional facility (CDC, 2024b). • Women who are infected with HIV and are sexually active should be tested at the time of entry to care and, after that, at least once a year (CDC, 2024b).
Skin cancer	Skin cancer is the most common cancer in the US (USPSTF, 2023f). The USPSTF concluded that there is no benefit for skin cancer screening in asymptomatic adolescents and adults who do not have a history of premalignant or malignant skin lesions (USPSTF et al., 2023). The USPSTF recommends that clinicians counsel adults (up to age 24) with fair skin to minimize exposure to UV radiation and reduce their risk of developing skin cancer (USPSTF, 2018d). No professional organizations in the US currently recommend visual examination skin cancer screening (USPSTF et al., 2023).
Smoking	The USPSTF recommends that clinicians ask all their adult patients about their tobacco use patterns, advise them to stop using tobacco, and provide behavioral interventions and FDA-approved pharmacotherapy (for non-pregnant patients) for smoking cessation, as needed (USPSTF, 2021g). Clinicians should ask all pregnant patients about their tobacco use patterns, advise them to stop smoking, and provide them with behavioral interventions to help them stop (USPSTF, 2021g). The available evidence can't be used to determine the benefit-harm ratio of pharmacotherapy for smoking cessation in pregnant persons (USPSTF, 2021g).
Statins and prevention of CVD disease	Statins are one of the most common therapies for primary and secondary prevention of ASCVD (Frank et al., 2023; Grundy et al., 2019). The USPSTF concluded that statins prevent CVD events and reduce all-cause mortality in people who do not have ASCVD but have one or more risk factors for CVD and who have a 10-year CVD event risk of $\geq$ 10% (USPSTF, 2022c). Recommendations for prescribing statins for primary prevention and secondary prevention against ASCVD depend on the patient's age, family history, cholesterol level, the presence of risk factors for ASCVD, the patient's lipid levels, and the need for moderate-intensity or high-intensity statin therapy (Grundy et al., 2019). The American College of Cardiology's ASCVD Risk calculator can be used to calculate a patient's 10-year risk, and it can be viewed here.
Immunizations	The adult immunization schedule recommended by the CDC can be viewed here.
Vision screening	Approximately 11.6% of the US population has diabetes mellitus (CDC, 2023f). Diabetic retinopathy (DR) is a common complication of diabetes mellitus (Jotte et al., 2023) and a leading cause of blindness (Jotte et al., 2023). Routine vision examinations can prevent diabetes-related vision

Screening	Recommendation
	loss (Jotte et al., 2023). The American Academy of Ophthalmology recommends that all diabetic patients have a yearly dilated eye examination (Jotte et al., 2023).

The Aging Adult: 65 and Older

The later years are significant physical and physiological changes for adults 65 years and older. These physical and physiological changes, the increased prevalence of and risk for acute and chronic diseases, and the emotional, psychological, and social issues particular to aging adults require assessment and screening specific to this age group.

The physiological, physical, and cognitive changes associated with aging are of particular interest. Some physiological and physical aging-related changes are listed below (Kane et al., 2018).

- Cardiovascular: Atherosclerosis, decreased baroreceptor sensitivity, increased systolic blood pressure. Arrhythmias, increased blood pressure, decreased exercise tolerance, decreased ability to adapt to position changes.
- Endocrinological: Decreased febrile response, decreased basal metabolic rate, decreased production of testosterone, decreased thermoregulation ability, decreased insulin response, decreased ability to sweat and to shiver, low baseline temperature.
- Gastrointestinal: Atrophy and fibrosis of the salivary glands, decreased absorption of calcium, decreased bowel muscle tone, decreased liver size, constipation, decreased ability to metabolize drugs, decreased appetite.
- Integumentary: Atrophy of sweat glands, decreased dermal and epidermal thickness, decreased vascularity, loss of subcutaneous fat, dry and wrinkled skin, and decreased ability to sweat.
- Musculoskeletal: Decreased bone mass, decreased muscle mass, deterioration and drying of joint cartilage, decreased strength, joint pain, and stiffness.
- Neurological: Atrophy of the brain, a decline in nerve fibers, decreased number of neurons, increased risk for neurologic problems.
- Respiratory: Decreased lung elasticity and respiratory muscle strength, decreased ventilatory response to hypercapnia and hypoxia, increased risk of aspiration.
- Sensory: Loss of auditory neurons, decreased low-frequency and high-frequency hearing, increased intraocular pressure, decreased visual acuity, decreased adaptation to light and dark, decrease in the number of olfactory nerve fibers, decreased sensation and ability to detect heat and cold.
- Urologic: Loss of glomeruli and decreased number of functioning nephrons, increased blood urea nitrogen (BUN), and decreased glomerular filtration rate (GFR).

Cognitive changes in aging adults are universal, and their abilities are different when compared to younger people (see below). A cognitive decline that is noticeable and problematic is not an inevitable consequence of aging (Galvin & Marrero, 2022; Kane et al., 2018). However, cognitive ability does change with aging (Sink & Yaffe, 2022; Kane et al., 2018). Some of the cognitive changes are listed below, and clinicians would do well to remember these when assessing an older patient.

- The memory of recent events may not be as good.
- Divided attention, the so-called multi-tasking, is less easily done by older adults.

- Verbal ability is preserved, but an older adult may take more time to recall a word or a name.
- Problem-solving that requires a new and unfamiliar approach may take longer.
- Information processing slows down with age.

Health Assessment

The health assessment of an aging adult should focus on the issues that are specific to this age group. It should also focus on how the physical and physiological changes caused by aging have affected older adults. The assessment of an aging adult should include:

1. The traditional parts of a patient assessment, i.e., a physical examination and a medical history,
2. An assessment of the patient's functional status and prognosis, and
3. A clinician-patient discussion of the patient's goals (Bui et al., 2022).

Numbers 2 and 3 are important because of the aging adult patient's stage of life and special needs.

- Functional status: Many aging patients have difficulty performing or cannot perform activities of daily living (ADLs) and instrumental activities of daily living (IADLs) (Alibierti & Covinsky, 2022). The clinician should assess or determine the patient's ability to perform ADLs like bathing and toileting and IADLs, activities like cooking, driving, arranging finances, and taking medications (Bui et al., 2022). During the assessment, the clinician should be looking for cognitive, environmental, physical, and social reasons why a patient cannot perform ADLs and IADLs (Bui et al., 2022). Many assessment tools are used to determine the functional abilities of aging patients. A discussion of these tools is beyond the scope of this module.
- Prognosis: The assessment of a patient's prognosis helps determine what interventions should be done (Bui et al., 2022).
- Goals: The patient's goals in terms of life quality and what they value (Bui et al., 2022).

Fall risk, assessment, and screening will be discussed in the section Safety Issues in the Aging Adult; medication review will be discussed in the section Medications and the Aging Adult; nutritional status will be discussed in the section Nutrition and the Aging Adult; and assessment and screening of cognitive abilities emotional status, and vision and hearing will be briefly mentioned in the section Health Screening and Preventive Care for the Aging Adult. There are multiple screening and assessment tools for evaluating the performance of ADLs.

Process of Examination

Assessment and examination are processes of information gathering and information exchange, and clinicians should adjust these processes to accommodate the aging adult. A family member may well accompany the aging adult, and evidence indicates that this improves patient satisfaction with the assessment and examination and improves the amount and quality of information retained by the patient.

Health Screening and Preventive Care

As with other age groups, health screening and preventive care for aging adults should be universal and patient-based. Given the prevalence of certain diseases in the general population

(e.g., cardiovascular disease) and the physical and physiological changes, screening all aging adults for certain conditions is advisable. See Table 6 for more information.

Table 6: Health Screening and Preventive Care for the Aging Adult

Screening	Recommendation
Abdominal aortic aneurysm	The prevalence of abdominal aortic aneurysm (AAA) has been reported to be 0.92% (Song et al., 2023), and male gender and smoking are risk factors for AAA (Song et al., 2023). The USPSTF recommends that men aged 65 to 75 who have ever smoked have a one-time screening for AAA using ultrasonography (USPSTF, 2019a). Men aged 65 to 75 who have never smoked can be selectively screened for AAA. Women who have never smoked and who do not have a family history of AAA should not be screened, and there is not enough evidence to determine the benefit-harm ratio of screening for women who have ever smoked or have a family history of AAA (USPSTF, 2019a).
Bone density	The USPSTF recommends that to prevent osteoporotic fractures, women ≥ 65 years of age should be screened with bone measurement tests. There is insufficient evidence to determine the benefit-harm ratio of osteoporosis screening in men. The most commonly used bone measurement screening test is the central dual-energy X-ray absorptiometry (DXA), which measures bone density at the hip and the lumbar spine (USPSTF, 2018b). The USPSTF does not have recommendations for screening intervals.
Breast cancer	The USPSTF concluded that there is insufficient evidence to recommend breast cancer screening in women 75 years of age and older (USPSTF, 2016). The ACS notes that breast cancer screening in women aged 40 to 69 has been associated with a decrease in deaths from breast cancer. Women who are ≥ 55 years of age can have a yearly mammogram or can switch to having a mammogram every other year as long as their life expectancy is ≥ 10 years (ACS, 2023a).
Carotid disease	Carotid artery stenosis is a significant cause of stroke (Morris et al., 2023). The prevalence of carotid artery stenosis has been reported to be 1.5%, and the prevalence increases with age (Song et al., 2020). Routine screening for carotid artery stenosis is not recommended (Poorthuis et al., 2023; USPSTF, 2021a).
Cervical cancer screening	The ACS's recommendations for cervical cancer screening, specific to women 25 to 65 and > 65, are listed below (ACS, 2021). • Women aged 25 to 65 should have a primary HPV test every 5 years. If this is not available, screening can be done with a co-test of an HPV test and a Pap test every five years or a Pap test every three years. • Women over 65 who have had regular screening for the past 10 years - and the test results were normal - and there is no history of CIN2 or a more serious diagnosis within the past 25 years should stop being screened. Once screening has been stopped, it should not be restarted.

Screening	Recommendation
	(CIN2 refers to a specific level of severity of cervical dysplasia. Cervical dysplasia is a pre-cancerous condition, and CIN2 means that one-third to two-thirds of the cervical epithelium has abnormal cells). • Women who have had a total hysterectomy should not be screened unless the hysterectomy was done as a treatment for cervical cancer or pre-cancer. If the uterus was removed but the cervix was not, use the previously described guidelines.
Colorectal cancer	The ACS recommends that patients who are in good health and who have a life expectancy of > 10 years should continue to be screened for colorectal cancer until they are 75 (ACS, 2024a). For people aged 76 to 85, the decision to do colorectal cancer screening is made based on life expectancy, overall condition/health, personal preference, and prior screening history (ACS, 2024a). People over age 85 should not get colorectal cancer screening (ACS, 2024a).
Cognitive impairment and dementia	The USPSTF does not recommend routine screening for cognitive impairment in older adults as there is insufficient evidence about benefits and harm (USPSTF, 2020a).
Depression	The global prevalence of depression in older adults has been reported to be 35.1% (Cai et al., 2023). The USPSTF recommends screening older adults for depression (USPSTF, 2023a).
Hearing impairment	Increasing age is the most common risk factor for hearing loss (USPSTF, 2021d), and hearing loss is a common problem in older adults. Approximately 31.1% of US adults > 65 years of age and 40.3% of US adults > 75 have hearing loss (National Council on Aging, 2023). The USPSTF does not recommend routine screening of older adults for hearing loss: The available evidence is insufficient to determine the benefit-harm ratio (USPSTF, (2021f).
Lung cancer	Lung cancer is the third-most common cancer in the US and the most common cause of death from cancer (CDC, 2023g). The USPSTF recommends annual lung cancer screening in all adults aged 50 to 80 years of age who have: 1. A 20 pack-year smoking history, 2. Who currently smoke, or 3. Or who have quit in the last 15 years (USPSTF, 2021e). Stop screening if the patient quits smoking for > 15 years or develops a condition/disease that will significantly decrease their life expectancy or if they are unwilling. The screening test should be a low-dose CT scan (USPSTF, 2021e).
Prostate cancer	Recommendations for and against screening for prostate cancer in men ages 50–69 are controversial, and there is no universal agreement on the topic. The USPSTF notes that PSA-based screening in men aged 55 to 69 “. . . may

Screening	Recommendation
	prevent approximately 1.3 deaths from prostate cancer over 13 years per 1000 men screened." (USPSTF, 2018c).
Statins and prevention of CVD disease	The USPSTF recommends prescribing a statin for aged 40–75 years of age who have one or more risk factors for CVD like dyslipidemia, diabetes, HTN, obesity, or smoking or have a calculated 10-year risk of developing CVD that is ≥ 10% (USPSFT, 2022d). Patients aged 40 to 75 years of age who have a 10-year risk of developing CVD of 7.5% to < 10% and one or more risk factors for CVD should be prescribed a statin on a case-by-case basis (USPSTF, 2022c). There is insufficient evidence to determine the balance of benefits versus risks for starting statin therapy in adults ≥ 76 years old to prevent CVD (USPSTF, 2022c).
Vision screening	Approximately 11.6% of the US population has diabetes mellitus (CDC, 2023d), and the percentage increases with age: Approximately 29.2% of US adults ≥ age 65 have diabetes mellitus (CDC, 2023d). Diabetic retinopathy (DR) is a common complication (Jotte et al., 2023) and a leading cause of blindness. Routine vision examinations can prevent diabetes-related vision loss (Jotte et al., 2023). The American Academy of Ophthalmology recommends all diabetic patients have a yearly dilated eye examination (Jotte et al., 2023).

Preventive Care: Healthy Lifestyle

Older adults should be encouraged to follow a healthy lifestyle. Exercise can improve strength and quality of life (Khodadad Kashi et al., 2023), prevent falls (Sato et al., 2024), and reduce depression (Khodadad Kashi et al., 2023).

It has been estimated that 41.5% of US adults ≥ 65 years of age are obese (CDC, 2022f). Weight loss has beneficial effects for people who have CVD, diabetes, osteoarthritis, and impaired exercise tolerance (ADA, 2023b; Chen & Armamento-Villareal, 2024; Coppock et al., 2023), diseases that are common in older adults. For example, there is good evidence that weight loss delays the progression of pre-diabetes to diabetes, reduces A1C, and reduces the need for anti-diabetic drugs (ADA, 2023b).

Patients who smoke should be offered behavioral and pharmacological smoking interventions. The health benefits of smoking cessation are evident and important, even for long-term elderly smokers (National Institute on Aging, 2019).

Alcohol use disorder (AUD) has been estimated to affect 1% to 3% of older adults (Fagbemi, 2021). Still, AUD in this population is likely to be underdiagnosed (Rodríguez & Saitz, 2022), and the prevalence is likely to be much higher (Fagbemi, 2021). In addition, high-risk drinking and binge drinking are relatively common in adults > 65 years of age (Rodríguez & Saitz, 2022). The USPSTF recommends that all adults 18 years of age and older be screened for unhealthy alcohol use, and short 1 to 3-question screening tools, like the AUDIT-C and the SASQ, are preferred (USPSTF, 2018f).

Nutrition: Evaluation and Specific Needs

Evaluation of the aging adult's nutritional status should include weight measurement, a record of the patient's nutritional intake, and a physical exam focused on signs and symptoms indicative of poor nutrition and micronutrient deficiency (Norman et al., 2021). Weight loss is clinically significant if there has been > 5% weight loss in the past six months or > a 10-pound weight loss at six months (Norman et al., 2021).

Nutritional needs and issues specific to and important in aging adults are vitamin B12 deficiency (Mouchaileh, 2023; Vincente et al., 2021), vitamin D deficiency (Giustina et al., 2023; Chalcraft et al., 2020), and malnutrition (Dent et al., 2023; Norman et al., 2021).

Vitamin B12 Deficiency

Vitamin B12 deficiency is common in older adults (Mouchaileh, 2023; Vincente et al., 2021; Sobczyńska-Malefora et al., 2021). The prevalence of B12 deficiency in people over 60 years of age has been estimated to be 20% and, in some studies, as high as 40% (Mouchaileh, 2023), but the prevalence depends on age, ethnicity, how B12 deficiency is defined, and other factors (Sobczyńska-Malefora et al., 2021). Vitamin B12 deficiency increases with age (Mouchaileh, 2023; Vincente et al., 2021; Sobczyńska-Malefora et al., 2021). Other factors that cause B12 deficiency are medications like metformin and proton pump inhibitors, decreased absorption, poor intake, gastric diseases, and gastric surgeries (Mouchaileh, 2023; Vincente et al., 2021; Sobczyńska-Malefora et al., 2021; USDA, 2020). Vitamin B12 deficiency can cause hematologic, neurologic, and psychiatric disorders like anemia, peripheral neuropathy, and memory impairments (Sullivan et al., 2022; Sobczyńska-Malefora et al., 2021).

The recommended dietary allowance (RDA) for vitamin B12 is: Aged 51 and older, females and males, 2.4 micrograms (mcg)/day (National Institutes of Health, 2023b). There is no universal recommendation to screen older adults for B12 deficiency.

Vitamin D Deficiency

Vitamin D is a fat-soluble vitamin that is essential for many physiologic processes, e.g., the absorption of calcium, bone, and bone remodeling (National Institutes of Health, 2023c). Few foods contain vitamin D, and most of the vitamin D that is needed is synthesized in the skin by exposure to sunlight (National Institutes of Health, 2023c). The prevalence of vitamin D deficiency in older adults is likely to be quite common (USPSTF, 2021h; Chalcraft et al., 2020), and although vitamin D deficiency is common in many age groups (Tanaka et al., 2024; Chalcraft et al., 2020), some of the causes of vitamin D deficiency and the consequences of this deficiency are specific to older adults (Tanaka et al., 2024; Giustina et al, 2023; Chalcraft et al., 2020). The causes of vitamin D deficiency in older adults are:

1. Decreased production and metabolism that occur with age,
2. Decreased intake, and
3. Lifestyle factors that decrease someone's exposure to sunlight (Giustina et al., 2023; Chalcraft et al., 2020).

The consequences of vitamin D deficiency that are specific to older adults include (but are not limited to) an association between vitamin D deficiency and an increased risk for falls, osteoporosis, muscle weakness, and sarcopenia (Tanaka et al., 2024; Giustina et al., 2023). The treatments for vitamin D deficiency are sunlight, vitamin D supplementation, and fortifying (adding) vitamin D to foods (Tanaka et al., 2024). A common recommendation for the amount of sun exposure that is needed for adequate vitamin D synthesis is 5-30 minutes 2-3 times a week, with the arms, hands, and legs exposed and not covered with sunscreen (National Institutes of Health, 2023c; Chalcraft et al., 2020).

The RDA for vitamin D, males and females aged 51 to 70 years, is 600 IU/day. For females and males aged 71 years and older, 800 IU/day (National Institutes of Health, 2023c).

The USPSTF concluded that the available information is insufficient to determine the benefit-harm ratio of screening for vitamin D deficiency (USPSTF, 2021h).

Malnutrition

Malnutrition can and does occur in all age groups (van Zwienen-Pot et al., 2023), but it is especially prevalent in older adults (Dent et al., 2023; van Zwienen-Pot et al., 2023; Sheffrin & Yukawa, 2022). Malnutrition is typically thought of as undernutrition, with a low level of caloric intake and weight loss, but malnutrition also refers to caloric excess and obesity (WHO, 2024). Undernutrition and malnutrition are often used interchangeably (Dent et al., 2023), and malnutrition will be used here. Studies have reported that up to 65% of hospitalized geriatric patients are malnourished (Sheffrin & Yukawa, 2022) and that up to 16% of older adults presenting to an ED are malnourished (Lanctin et al., 2021). The true prevalence of malnutrition in older adults is not known, but it is likely to be underdiagnosed (Lanctin et al., 2021). Malnutrition in older adults can be caused by physical conditions/diseases like dysphagia, chronic obstructive pulmonary disease (COPD), poor dentition, stroke, financial or social issues, or neuropsychiatric conditions/diseases like cognitive decline and depression (Dent et al., 2023). The consequences of malnutrition include (but are not limited to) fatigue, frailty, decreased quality of life, increased mortality (Norman et al., 2021), functional decline, increased risk of infection, and poor wound healing (Sheffrin & Yukawa, 2022), osteoporosis, and muscle wasting (Dent et al., 2023). Malnutrition screening should be routine in older adults (Dent et al., 2023). The Mini Nutritional Assessment, either the short version or the full-length version, is a screening tool that is commonly used for this assessment (Dent et al., 2023; Sheffrin & Yukawa, 2022).

Medications

Age-related medication issues in aging adults are pharmacokinetics, adverse drug reactions, polypharmacy, the inappropriate use of medications, co-morbidities, and the need for a medication review.

Pharmacokinetics

Pharmacokinetics is the absorption, distribution, metabolism, and excretion of drugs (Ruscin & Linnebur, 2021), and these processes change with age (Ruscin & Linnebur, 2021; Steinman & Holmes, 2022). The metabolism of drugs by the liver is decreased, and the GFR decreases. With that, renal excretion of drugs decreases (Ruscin & Linnebur, 2021), the fat-to-lean body mass ratio is changed (more fat), serum albumin level is decreased, and total body water is decreased (Steinman & Holmes, 2022), all of which change drug distribution. These changes require an older patient to need a lower dose often, and they can increase the risk of adverse effects (Steinman & Holmes, 2022).

Adverse Drug Reactions

Adverse drug reactions (ADRs) are unwanted, uncomfortable, or dangerous effects caused by a drug (Smith Marsh, 2023). Older adults are susceptible to ADRs (Steiman & Holmes, 2022), and ADRs are common in this patient population (Doherty et al., 2023; Hoel et al., 2021). The higher the number of prescribed medications, the greater the frequency of ADRs (Hoel et al., 2021). Adverse drug reactions in older adults are caused by:

- Polypharmacy: Polypharmacy is often defined as the use of ≥ five medications (Doherty et al., 2023), but it can also indicate the use of multiple medications that are inappropriate for the patient (Soto & Meyer, 2023). Polypharmacy ". . . is the primary risk factor for adverse drug reactions . . ." (Doherty et al., 2023). Polypharmacy causes ADRs because of drug-drug interactions, drug toxicity, non-adherence to the medication regimen (Hoel et al., 2021), drug duplication, and prescribing of drugs that are inappropriate and/or unsafe for older adults (Soto & Meyer, 2023). Consequences of polypharmacy in older adults include falls, increased morbidity and mortality, and an increased need for hospitalization (Doherty et al., 2023; Soto & Meyer, 2023; Hoel et al., 2021).
- Inappropriate prescribing: Many drugs are considered unsafe and inappropriate for older adults because they can cause ADRs and serious harm (American Geriatrics Society, 2023), but some of these drugs, like antipsychotics, benzodiazepines, and opioids, are frequently prescribed for older adults (Candon et al., 2022). For example, the use of antipsychotics in older people is associated with an increased risk of stroke, a greater rate of cognitive decline, and mortality (American Geriatrics Society, 2023), and all antipsychotics have US Boxed Warning that states that elderly patients who have dementia-related psychosis and are treated with an antipsychotic have an increased risk of death.
- Non-Adherence: Non-adherence to a medication regimen can cause adverse effects (Hoel et al., 2021), and polypharmacy can cause non-adherence (Hoel et al., 2021).

Safety Issues: Abuse and Neglect

Elder abuse and neglect are common social problems (CDC, 2021f). It has been estimated that in the US, one in ten people 60 years of age and older who live at home are abused, exploited, and neglected (CDC, 2021f). The National Center for Injury Prevention and Violence Control defines elder abuse as: "An intentional act or failure to act by a caregiver or another person in a relationship involving an expectation of trust that causes or creates a risk of harm to an older adult" (Hall et al., 2016). Storey (2020) notes that elder abuse can be a single incident or multiple incidents, and elder abuse happens in a relationship of trust. Five types of elder abuse are listed and defined below (CDC, 2021f; Storey, 2020).

Physical Abuse: The older adult experiences distress, functional impairment, injury, pain, and sometimes death, and these are a result of physical force like hitting, kicking, or pushing.

Emotional/psychological abuse: The older adult experiences non-verbal and verbal behaviors that cause anguish, fear, and mental pain. These behaviors include disrespect, humiliation, isolation, and non-verbal and verbal threats. Isolation is also a type of abuse.

Financial neglect: The illegal, improper, or unauthorized use of an elder's financial resources and/or property.

Neglect: The older adult's basic needs for food, clothing, hygiene, nutrition, and healthcare are neglected and unmet.

Sexual: Forced and unwanted sexual interaction of any kind, physical and non-physical.

The consequences of elder abuse are physical, emotional, financial, and psychological and include injuries and, sometimes, death (CDC, 2021f). Older adults may suffer from more than one type of abuse (Storey, 2020), and the victims of elder abuse have been reported to have a mortality rate three times higher than that of non-victims (Storey, 2020).

Factors that increase the risk of elder abuse include (victim factors) poor physical health, functional impairment, psychiatric illnesses, particularly depression, dependence on others,

substance abuse, poor coping skills, and self-blame (Storey, 2020). Risk factors involving the perpetrator include mental illness, current or past substance abuse, witnessing abuse as a child, emotional and/or financial dependence on the victim, and social isolation (CDC, 2020). Elder abuse and neglect are common, but it is underreported (Fraga Dominguez et al., 2021; Mercier et al., 2020). Victims will not report abuse because of fear, cognitive impairment, isolation, shame, self-blame, cultural and family issues, and lack of knowledge of resources for help (Fraga Dominguez et al., 2021). Healthcare professionals may not report elder abuse because their contact with the victim is limited, the clinical presentation may not suggest abuse and/or neglect, they are not aware of the problem, or they do not know how to screen for elder abuse (Mercier et al., 2020). A study by Friedman et al. (2015) found that it took 10.5 one-hour visits by a home health nurse and an average of one visit a month to detect cases of elder abuse. Detection of elder abuse and neglect can be difficult for healthcare providers (Alqadiri et al., 2022; Mercier et al., 2020).

Signs and conditions that suggest elder abuse and neglect are occurring include unexplained injuries, repeated injuries, injuries that are unlikely to be caused by accident, or a delay between the occurrence of an injury or the onset of an illness and seeking medical care (Alqadiri et al., 2022). During the examination, look for signs of poor hygiene and bruises, observe the interaction between the older adult and their caretaker, and note the patient's affect, i.e., do they appear fearful or avoid eye contact (Alqadiri et. al, 2022)?. Also, determine if there is a history in the family or the patient of abusive behavior, substance abuse, and/or relationship stress (Alqadiri et al., 2022), as these are risk factors for elder abuse.

There are multiple screening tools for detecting elder abuse (Van Royen et al., 2020). Many of these tools, like the Brief Abuse Screen for the Elderly (BASE) and the Elder Abuse Suspicion Index (EASI), are short, with five or six questions (Alqadiri et al., 2022; Rosen et al., 2020), and they are quick and simple to use.

Safety Issues: Falls

Falls in older adults are very common. Over 14 million adults in the US aged 65 or older have a fall each year (CDC, 2023h); the risk of falling increases with age (Kado et al., 2022), and an older adult who falls are twice as likely to fall again (Kado et al., 2022). There is no universally accepted definition of a fall. The Joint Commission does not have an official definition of a fall, but it has a provisional one. "For consideration, a fall may be described as an unintentional change in position coming to rest on the ground, floor, or onto the next lower surface (e.g., onto a bed, chair, or bedside mat). The fall may be witnessed, reported by a patient or an observer, or identified when the patient is found on the floor or ground. Falls include any fall, whether at home, out in the community, in an acute hospital, or ambulatory setting" (Joint Commission, 2022).

Falls are a significant cause of injuries in older adults (Kado et al., 2022; CDC, 2023h). Approximately 50% of older adults who have a fall are injured (CDC, 2023h), and serious injuries like cervical fractures, head trauma, and hip fractures can occur (Kado et al., 2022). More than 90% of hip fractures are caused by a fall (Koda et al., 2022), and a hip fracture is associated with significant morbidity (Binder & Mears, 2022) and a doubling in the one-year mortality rate compared to people without a hip fracture (Kado et al., 2022).

There are many risk factors for falls (Kado et al., 2022). Some are modifiable, and others are not.

- Age > 80

- Arthritis
- Balance impairment
- Cognitive impairment
- Decreased strength
- Diabetes
- Orthostatic hypotension
- Pain
- Previous falls
- Sedating drugs
- Visual impairment

Most fall prevention guidelines recommend that clinicians use short screening tools with several questions, e.g., asking the patient if they have a fear of falling if they have recently fallen, and if the results indicate a problem, balance, and gait testing can be done (Montero-Odasso et al., 2021). Multiple fall prevention interventions exist (Kado et al., 2022). Exercise is the intervention that is the most strongly associated with reducing fall rates (Dautzenberg et al., 2021).

✔Take Test

Your approval agency or organization requires you to take the test.

Implicit Bias Statement

CEUFast, Inc. is committed to furthering diversity, equity, and inclusion (DEI). While reflecting on this course content, CEUFast, Inc. would like you to consider your individual perspective and question your own biases. Remember, implicit bias is a form of bias that impacts our practice as healthcare professionals. Implicit bias occurs when we have automatic prejudices, judgments, and/or a general attitude towards a person or a group of people based on associated stereotypes we have formed over time. These automatic thoughts occur without our conscious knowledge and without our intentional desire to discriminate. The concern with implicit bias is that this can impact our actions and decisions with our workplace leadership, colleagues, and even our patients. While it is our universal goal to treat everyone equally, our implicit biases can influence our interactions, assessments, communication, prioritization, and decision-making concerning patients, which can ultimately adversely impact health outcomes. It is important to keep this in mind in order to intentionally work to self-identify our own risk areas where our implicit biases might influence our behaviors. Together, we can cease perpetuating stereotypes and remind each other to remain mindful to help avoid reacting according to biases that are contrary to our conscious beliefs and values.

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