**Well-Child and Adolescent Health Issues**

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**Learning Objectives**

1. Recognize the key predictors of normal pediatric development
2. Identify the examination and care of the routine well child
3. Recognize the demographic of the adolescent age group and the unique medical and psychosocial health problems seen in this group
4. Identify the diagnostic and therapeutic approaches that are appropriate for disorders in adolescents

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**The Well-Child Visit**

- History from parents
- Parental guidance: sleeping, feeding, behavior, safety, health, parenting
- Growth and Development (milestones)
- Physical exam
  - Vision and fundoscopic exams
  - Hearing
  - Heart—especially murmurs
  - Genital exam—testicles and Tanner staging
  - Young female genital exam: knee chest on exam table (< 2 yr—supine on mother’s lap)
- Other health screenings (lead, fluoride)
- Immunizations

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**Parental Guidance**

- **2–4 wk:**
  - Issues: sleep (position), feeding, crying, response, growth
  - Safety: car seats, exposure to smoking, shaking baby
- **2 mo:**
  - Issues: sleep (position), feeding, growth
  - Safety: burns, sun exposure, smoking, car seats, shaking baby
- **4 mo:**
  - Issues: introducing food, sleep, talking to baby
  - Safety: falling, car seats
- **6 mo:**
  - Issues: lead screening, food
  - Safety: child-proofing house, poisons, walkers, car seats
- **9 mo:**
  - Issues: table food, using cup, teeth
  - Safety: drowning, burns, car seats

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1. Mother brings her 9-month-old daughter in for routine care. Which of the following should be addressed at this visit?

   - A. Starting table food
   - B. Sleeping on back
   - C. Dental visit
   - D. Toilet training

   - 62% A. Starting table food
   - 9% B. Sleeping on back
   - 24% C. Dental visit
   - 5% D. Toilet training
**Parental Guidance**

- **12 mo**
  - Issues: weaning, brushing teeth, daycare, playing with baby
  - Safety: child-proofing house, choking, car seats
- **15 mo**
  - Issues: nutrition, feeding self, development
  - Safety: falls, car seat
- **18 mo**
  - Issues: nutrition, TV, toilet-training, language development
  - Safety: guns, life jackets, traffic, poisons, matches
- **24 mo**
  - Issues: talking with child, toilet training, TV, games, language
  - Safety: guns, life jackets, traffic, poisons, matches
- **36 mo**
  - Issues: nutrition, hand-washing, talking, TV, peers, dentist
  - Safety: home safety, car seat, helmets

**Sleep**

- **6 mo**: majority sleep through the night
- **Sleep better if they self-quiet in crib**
- Nightmares occur during the second half of the night
- Sleepwalking, night terrors, confusional arousals occur during the first half
  - During deep sleep so usually do not remember
- Benign nocturnal limb pain within hours of falling asleep
  - Ages 4-6 in knees, shins, calves (sometimes thighs)
- Normal exam, reassurance
- Sleeplessness in a child can be a major indication of stressors such as difficulties with parent/parent and parent/child interactions

**Accident Prevention**

- Walkers: most common severe injury from walkers going down stairs (now wider than 36 in)
- MVA: car seats (vary by state)
  - Backward facing until 2 years AND 20 lb
  - Forward facing until 4 years or 40 lb
  - Booster seat until 8 years or 60-80 lb
- Burns: curling irons, stoves, hot liquids
- Bikes, roller sports: helmets
- Poisoning: no ipecac
- Drowning: #1 cause of accidental death < 5 yr
- Guns

2. 6-month-old infant is brought to your clinic. Which of the following would be a cause for alarm?

A. Does not sit without support
B. Cannot form any words
C. Keeps hands continually clenched
D. Still has occasional head lag

**Development**

- **1 mo**:
  - Looks at face
  - Responds to voice
  - Moves extremities equally
  - Lifts head
- **2 mo**:
  - Vocalizes
  - Smiles
  - Follows past midline
  - Responds to sounds
- **4 mo**:
  - Holds head at 90°
  - Laughs
  - Follows past midline
  - No persistent fist clenching*
- **6 mo**:
  - No head lag
  - Bears weight on legs
  - Rolls over
  - Turns toward voice
  - Transfers hand to hand

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### Development

- **9 mo:**
  - Sits without support
  - Stands holding on
  - Cruises
  - Imitates speech
  - Thumb finger grasp
  - Dada, Mama
  - Peek a boo

- **1 yr:**
  - Stands alone
  - Walks with help
  - Specific Dada Mama
  - Responds to “no”
  - Pincer grasp
  - Waves “bye-bye”
  - Bangs 2 blocks together
  - Imitates speech
  - Thumb finger grasp
  - Dada, Mama
  - Peek a boo

- **18 mo:**
  - Walks backward
  - 2 body parts
  - Drinks from cup
  - Imitates household chores
  - Uses 20 words
  - Scribbles
  - Stacks 2 blocks
  - Understands simple commands

- **2 yr:**
  - Kicks ball
  - Takes off clothes
  - 2 words together
  - Knows 50 words
  - Understands 2-part command
  - Uses own name
  - Stacks 4 blocks
  - 6 body parts

- **3 yr:**
  - Washes hands
  - Draws vertical line
  - Understands “tired, hungry”
  - Throws ball
  - Pedal tricycle
  - Asks “Why?”

- **4 yr:**
  - Dresses self
  - Plays games (tag)
  - Says what to do when tired, hungry, cold
  - First and last name
  - Up and down stairs alternating feet
  - Balances each foot 2 sec
  - Draws a circle

### Vision

- **Visual acuity yearly at age 3 (SOR: C):** Refer for:
  - Visual acuity < 20/50 age 3, < 20/30 age 5
  - Asymmetry at any age
  - Strabismus > 3-6 mo
  - Any abnormal red reflex

  Amblyopia due to strabismus is the leading cause of monocular vision loss in children
  - The USPSTF recommends vision screening for all children at least once between the ages of 3 and 5 years, to detect the presence of amblyopia or its risk factors. Grade: B Recommendation

### Dental

- **Tooth eruption:**
  - 12 mo: 4 teeth
  - Then one tooth a month until 20 teeth at 28 months

- **Teething:**
  - Does not cause fever, diarrhea, or other infections

- **Treat with acetaminophen, teething ring**

- **USPSTF recommends:**
  - Primary care clinicians prescribe oral fluoride at currently recommended doses for preschool children older than 6 mo. old whose primary water source is deficient in fluoride (B rec.)
  - www.ahrq.gov/clinic/uspsft/uspsdnc.html

### Lead Poisoning

- **Screening usually done at 9-12 mo (SOR: C):** repeat for exposure or high risk

- **Children at higher risk:**
  - Live in or spend time in house built before 1950
  - Live in or spend time in house built before 1978 and being renovated
  - Family member with increased lead level
  - Adult in family exposed to lead at work
  - Live near industry likely to release lead

- **Lead levels:**
  - 10-20 µg/dl: repeat and follow
  - 20-45 µg/dl: health dept check house
  - > 45 µg/dl: drug chelation (> 70 µg/dl: 2 drugs)

- **USPSTF recommends AGAINST screening asymptomatic children at average risk (D recommendation)**
Shaken Baby Syndrome

- Retinal hemorrhages are usually diagnostic
  - Intraocular hemorrhages
  - Subconjunctival hemorrhages
  - Eyelid ecchymosis
  - Retinal detachment

3. Mother of a 4-month-old is worried about West Nile Virus, because the family camps often. She asks if she can use DEET on her infant. What do you tell her?

   A. DEET is not recommended below 1 year of age
   B. DEET at a concentration of 50% is most effective
   C. DEET at a concentration of 10-30% would be safe for her baby
   D. DEET should never be used in children less than 5 years of age

   46% A. DEET is not recommended below 1 year of age
   4% B. DEET at a concentration of 50% is most effective
   19% C. DEET at a concentration of 10-30% would be safe for her baby
   31% D. DEET should never be used in children less than 5 years of age

DEET

- Can be used over 2 months of age
- Efficacy peaks at 30%
- Stronger formulas are no more effective

Phases of Adolescence

- Adolescence is a period of intense physical, emotional, and spiritual change beginning and ending in the second decade of life.
  - Early (8-13 yr): concrete thinkers; unable to clearly understand how actions relate to health
  - Middle (14-17 yr): able to think more abstractly and capable of complex, logical thinking; experimentation with risky behaviors
  - Late (18-19 yr): more longitudinal understanding of how behaviors can affect their health; further counseling on substance abuse, violence, sexual behaviors, etc.
Demographics

- Growing in size, but decreasing slowly as a percentage of the population
- Increasingly racially and ethnically diverse
- 15% live in poverty
- Increasing number of single-parent homes
- Usually rely on ambulatory care
- Most common reasons for hospitalization:
  - Pregnancy-related disorders
  - Injury
  - Mental health diagnoses

Health Care in Adolescents

- Screening in adolescents
  - Yearly exams may not be cost-effective
  - Physicals in early, middle, and late adolescence
  - Access and confidentiality
- BIHEADS screening
  - Body Image
  - Home/health
  - Education/employment
  - Activities
  - Drugs/Depression
  - Safety/Sexuality
- Bullying—work with school officials

USPSTF Recommendations

A Recommendations (Strongly Recommended)

- Pap smears within 3 years of onset of sexual activity or at age 21 (whichever comes first)
- Sexually active females younger than 25 years for chlamydia infection
- HIV screening for adolescents at increased risk for HIV infection

B Recommendations (Recommended)

- Gonorrhea infection if at increased risk
- Counseling on sexually transmitted infections (STIs) for all sexually active adolescents at increased risk
- Screening of adolescents (12-18 years of age) for major depressive disorder (MDD)
- Obesity screening for children 6 years and over

I Recommendations (Insufficient Evidence)

- Lipid disorders
- Speech and language delay
- Physical abuse or neglect of children
- Proper use of motor vehicle occupant restraints
- Alcohol misuse or illicit drug use by adolescents
- Children (7-11 years of age) for depression
- Tobacco abuse
- Physical activity
- Nutrition
- Iron deficiency anemia in asymptomatic children

D Recommendations (Not Recommended)

- Testicular cancer screening in asymptomatic adolescent males
- Asymptomatic adolescents for idiopathic scoliosis
4. You are counseling a teen about risky behaviors. What will have the greatest immediate impact?

A. Convincing him to stop smoking
B. Convincing him to wear his seatbelt and to wear a helmet when biking/skating, etc
C. Convincing him to use condoms
D. Convincing him to exercise

Morbidity and Mortality

- Leading causes of death
  - Accidents
    - Primarily MVA
    - Majority involve alcohol
    - Use of seat belts in those 16-24 years of age is 69%
  - Homicide
    - Suicide (82 in white middle/upper class neighborhoods)
  - Morbidity related to risk-taking behaviors
    - Use of drugs, alcohol, and tobacco (remember smokeless)
    - Sexual behaviors
    - Poor nutrition and inadequate physical activity
  - The only group that has shown an increase in mortality rate over the past 25 years

5. Which of the following is true regarding suicide?

A. Women have a higher rate of completion than men
B. Men attempt suicide more frequently than women
C. Among men, African Americans have the highest suicide rate
D. 2/3 of suicide deaths occur on the first attempt

Suicide in Adolescents

- The USPSTF recommends screening of adolescents (12-18 years of age) for major depressive disorder (MDD) when systems are in place to ensure accurate diagnosis, psychotherapy (cognitive-behavioral or interpersonal), and follow-up... B recommendation
- There is little evidence that treating those at risk reduces attempts or mortality
- 75% of completed suicides are by white males
- Adolescents and the elderly are high risk
Suicide Risk Factors

- Psychiatric disorders
  - Mood disorders
  - Substance abuse
  - Eating disorders
  - Personality disorders
  - Psychoses
- Family history and genetics
- Social and environment
  - Family crisis
  - Physical abuse
  - Suicide in community
  - Trouble in school or with the law
- Often unexpected

6. A 17-year-old female presents to the emergency department. Which condition can you treat without the consent of her parents?

A. A broken arm
B. An exposure to a sexually transmitted disease
C. A 3 cm laceration on her leg
D. A severe headache

Consent

- Age of consent is 18-21 y.o. and state dependent
- Either parent can consent
- No parental consent usually required for:
  - Contraception, STDs, rape, incest
  - Drug and alcohol treatment
  - Emancipation, married, parent, living independently
  - Emergency where delay in treatment could cause harm
- Always encourage discussion with parents

7. You are seeing a young girl for her pre-high school physical. The form asks for Tanner stage. She has small but developed breasts and a small amount of dark, straight pubic hair. She is Tanner stage:

A. I
B. II
C. III
D. IV
E. V

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Tanner Staging

- Allows physicians to give anticipatory guidance
- Females
  - Development begins age 8-13 with breast buds
  - Growth spurt (~ 4 in) during stage 2
  - Menarche ~ age 12
  - Acne common during stages 3 and 4
- Males
  - Development begins ages 9-13 with scrotal enlargement
  - Growth spurt (~ 5-7 in) between stages 3 and 4
  - Ejaculations begin during stage 3
  - Strength peaks between stages 4 and 5

Nutrition and Exercise

- Obesity: ~ 30% of adolescents are overweight and ~ 15% are obese
- ~ 50% of adolescent girls perceive themselves as overweight
- Instruct on healthy diet
- Encourage 60 min of daily exercise
- Screen for diabetes if indicated
- Calcium intake of 1300 mg/day (in women 95% of total mineral content is achieved by age 19.3 years)

8. A 16-year-old is brought to you by her mother with concerns that she may have a body image problem. She denies any problems. She is normal weight but you note that the enamel on her teeth is thinned. What is the probable diagnosis?
   A. Addison’s disease
   B. Bulimia nervosa
   C. Anorexia nervosa
   D. Hyperthyroidism
8. A 16-year-old is brought to you by her mother with concerns that she may have a body image problem. She denies any problems. She is normal weight but you note that the enamel on her teeth is thinned. What is the probable diagnosis?

- A. Addison's disease (9%)
- B. Bulimia nervosa (99%)
- C. Anorexia nervosa (5%)
- D. Hyperthyroidism (0%)

Bulimia Nervosa

- Prevalence 1-19%
- Clinical features:
  - Effects of chronic vomiting, dehydration, electrolyte abnormalities, bloating, diarrhea, swelling of hands and feet, loss of tooth enamel
  - Chronic laxative use leads to hypokalemia (weakness and tingling), acute acidosis, chronic alkalosis, dehydration, constipation
- Diagnostic criteria:
  - Recurrent episodes of binge eating
  - Recurrent inappropriate compensatory behavior in order to prevent weight gain.
  - Binge eating and compensatory behaviors occur at least twice weekly for 3 months
  - Self-evaluation unduly influenced by body shape and weight

9. Anorexia nervosa, from a diagnostic standpoint, requires maintenance of body weight at what percentage below ideal body weight?

- A. 5%
- B. 10%
- C. 15%
- D. 20%
- E. 25%

Anorexia Nervosa

- Prevalence 0.3-3% in adolescents and young adults
- 90% white; 75% started in adolescence
- Most are middle to upper class
- Severe cases require hospitalization
- Counseling by someone trained in eating disorders
- Electrolyte disturbances

Anorexia: Diagnosis

- Clinical features:
  - Amenorrhea
  - Fluid/electrolyte imbalance
  - Metabolic alkalosis
  - Hypothermia
  - Bradycardia
  - Hypotension
  - Lanugo-type hair (face, shoulders, back)
  - Lethargy
- Diagnostic criteria:
  - Refusal to maintain body weight of 85% of expected*
  - Intense fear of gaining weight
  - Distorted body image
  - Absence of 3 consecutive periods
Abnormal Labs in Anorexia

- Elevated BUN from dehydration
- Leukopenia
- Normal or low LH and FSH
- Normal or low T4 and T3
- Elevated liver transaminases
- EKG: bradycardia, low-voltage changes
- Most common cause of sudden death is prolonged QT interval resulting in arrhythmia
- Criteria for admission: heart rate < 40 beats/min, blood pressure < 80/50 mm Hg, temperature <36°C

Eating Disorders

- Disordered body image
- Attempts to lose weight
- Irrational fear of fatness
- Abnormal medical functioning (especially of the reproductive hormones)
- Females > males; ages 11-20
- Family history of depression, obesity
- High-risk sports: ballet, wrestling, swimming, gymnastics, skating
- Social praise for weight loss
- Comorbidities: depression, anxiety, substance abuse, OCD
- Fluoxetine (Prozac) licensed by FDA for treatment of bulimia

Obesity

- Defined by BMI percentile for age and sex
- The USPSTF recommends that clinicians screen children aged 6 years and older for obesity and offer them or refer them to comprehensive, intensive behavioral interventions to promote improvement in weight status. (level B) USPSTF
- Eating family dinner was associated with healthful dietary intake patterns, including:
  - More fruits and vegetables
  - Less fried food, saturated and trans fats
  - Less soda
  - More fiber and micronutrients

Adolescent Malignancies

- Leukemia/lymphomas most common malignancies
- Osteosarcoma is most common malignant tumor
  - Bone pain—particularly at night and at rest
  - Mass/swelling, history of trauma
  - X-ray shows "moth eaten" appearance, cortical destruction, periosteal reaction
- Ewing's sarcoma
  - Pain and swelling, history of trauma
  - Femur is most common site
- Primary brain tumors: 2nd most common type of cancer in children and adolescents
- Testicular cancer

References


