31 Assessing Children and Adolescents

Structure and Function

SKIN, HAIR, AND NAILS

During early childhood, the skin develops a tighter bond with the dermis, making it more resistant to infection, irritation, and fluid loss. Skin color appears pink and evenly distributed and may include normal variations such as freckles. The texture is smooth because the skin has not had years of exposure to the environment and because the hair is less coarse than in adulthood. The sebaceous glands and eccrine glands are minimally active with the eccrine glands producing little sweat.

During the toddler years, scalp hair grows coarser, thicker, and darker and usually loses curliness. Fine hair becomes visible on the distal portions of the upper and lower extremities.

As the child ages, skin structure and function remain stable until puberty, when adrenarche (adrenocortical maturation) signals the onset of increased sebum production from the sebaceous glands, a process that continues until late adolescence. Sebum is involved in the development of acne. The apocrine glands also respond more to emotional stimulation and heat, with the end result being body odor.

HEAD AND NECK

During infancy, body growth predominates and the head grows proportionately to body size, reaching 90% of its full adult size by age 6 years. Facial bone growth is variable, especially for the nasal and jaw bones. During the toddler years, the nasal bridge is low and the mandible and maxilla are small, making the face seem small compared with the whole skull. During the school-age years, the face grows proportionately faster than the rest of the cranium, and secondary teeth appear too large for the face. In adolescence, the nose and thyroid cartilage enlarge in boys. Lymph tissue is well developed at birth and continues to grow rapidly until age 10 or 11 years, exceeding adult size before puberty, after which the tissue atrophies and stabilizes to adult dimensions by the end of adolescence.

EYES

During childhood, the eyes are less spherical than adult eyes. In addition, children remain farsighted until age 6 or 7 years, when they achieve a visual acuity of 20/20.

EARS

As the child grows, the inner ear matures. In older children, the eustachian tube lengthens but it may become occluded from growth of lymphatic tissue, specifically the adenoids. The canal shortens and straightens as the child ages, and the pinna can be pulled up and back as in the adult.

MOUTH, NOSE, THROAT AND SINUSES

Children have 20 deciduous teeth, which are lost between the ages of 6 and 12 years. Permanent teeth begin forming in the jaw by age 6 months and begin to replace temporary teeth at age 6 years, usually starting with the central incisors. Permanent teeth appear earlier in African Americans than in Caucasians and in girls before boys.

Nasal cartilage grows during adolescence with the secondary sex characteristics. Growth starts at age 12 or 13 years and reaches full size by 16 years in girls and 18 years in boys. The maxillary and ethmoid sinuses are present at birth, but they are small and cannot be examined until they develop, when the child is much older. The frontal sinuses develop around age 7 to 8 years, and the sphenoid sinuses develop after puberty.

The tonsils and adenoids rapidly grow, reaching maximum development by age 10 to 12 years. At this point, they may be about twice their adult size. However, as with other lymphoid tissue, they atrophy to stable adult dimensions by the end of adolescence.

THORAX AND LUNGS

The lungs continue to develop after birth and new alveoli form until about 8 years of age. Thus, in a child with pulmonary damage or disease at birth, pulmonary tissue may regenerate and the lungs can eventually attain normal respiratory function. The child will have 300 million alveoli by adolescence.

The chest wall is thin with very little musculature. The ribs are soft and pliable with the xiphoid process movable. The airways of children are also smaller and narrower than in adults; therefore, children are at risk for airway obstruction from edema and infections in the lungs. A child's respiratory rate is much faster than an adult's rate: children younger than 7 years old tend to be abdominal breathers. In children between 8 and 10 years old, respiratory rates lower and breathing becomes thoracic like the adult's.

BREASTS

In girls, breast growth is stimulated by estrogen at the onset of puberty. Between 8 and 13 years of age, thelarche may occur and breasts continue to develop in stages (Table 31-1). Breasts enlarge primarily as a result of fat deposits. However, the duct system also grows and branches, and masses of small cells develop at the duct endings. These masses are potential alveoli. Tenderness and asymmetric development are common, and anticipatory guidance and reassurance are needed. Gynecomastia, enlargement of breast tissue in boys, may be noted in some male adolescents. This is related to pubertal changes and is usually temporary. However, use of marijuana and anabolic steroids are two of several external causes of gynecomastia.

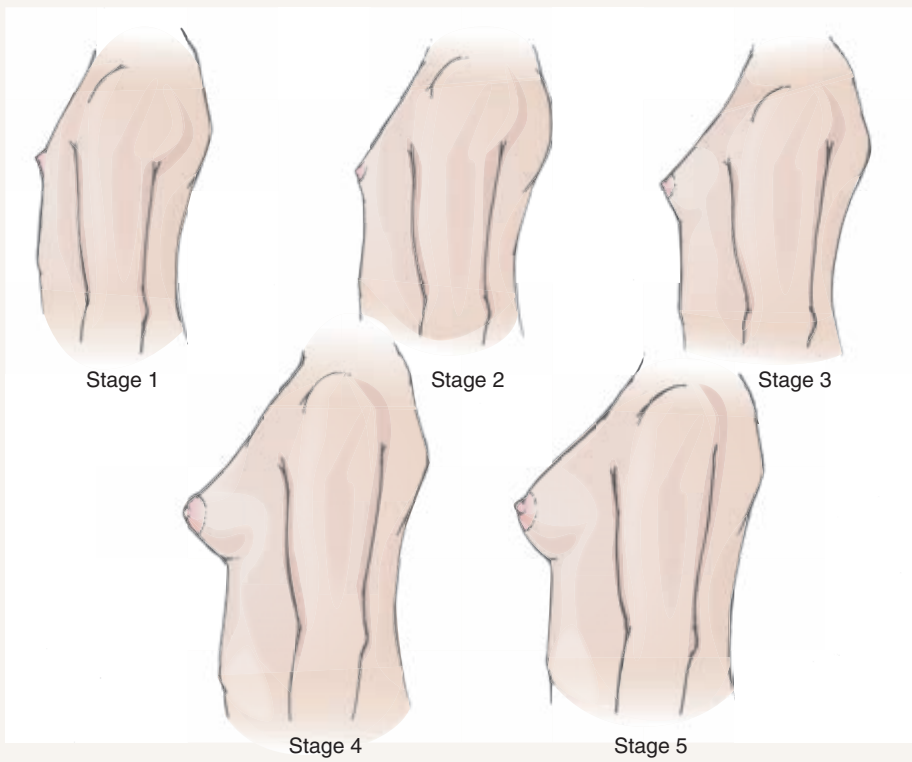
HEART

In children, the heart is positioned more horizontally in the chest. The apical impulse is felt at the fourth intercostal space left of the midclavicular line in young children. By the time the child is 7 years old, the apical pulse reaches the fifth intercostal space and the midclavicular line. Heart sounds are louder, higher pitched, and of shorter duration in children. Physiologic splitting of the second sound, which widens with inspiration, may be heard in the second left intercostal space. A third heart sound (S_3) may be heard at the apex and is present in one-third of all children. Sinus arrhythmia is normal and reaches its greatest degree during adolescence. Some children may have physiologic murmurs that do not indicate disease. The heart rate decreases as the child gets older, usually dropping to about 85 beats/min by 8 years of age. Athletic adolescents may have even lower heart rates.

ABDOMEN

The abdomen of small children is cylindrical, prominent in the standing position, and flat when supine. The abdomen of toddlers appears prominent and gives the child what is popularly called a pot-belly appearance. The contours of the abdomen change to adult shapes during adolescence. Peristaltic waves

Table 31-1 Tanner's Sexual Maturity Rating: Female Breast Development

Developmental Stage		Illustration
Stage 1	Prepubertal: Elevation of nipple only	
Stage 2	Breast bud stage; elevation of breast and nipple as small mound, enlargement of areolar diameter	
Stage 3	Enlargement of the breasts and areola with no separation of contours	
Stage 4	Projection of areola and nipple to form secondary mound above level of breast	
Stage 5	Adult configuration; projection of nipple only, areola receded into contour of breast	

Tanner, J. M. (1962). Growth at adolesence (2nd ed.). Oxford: Blackwell Scientific Publications.

may be visible in thin children; they may also be indicative of a disease or disorder.

The tip of the right kidney may be felt in young children, especially during inspiration.

In small children, the liver is palpable at 1 to 2 cm below the right costal margin. The spleen may be palpable below the left costal margin at 1 to 2 cm. Often in older children, these structures are not palpable.

GENITALIA

Male genitalia generally develop over a 2 to 5 year period, beginning from preadolescence to adulthood. In the adolescent male enlargement of the testes is an early sign of puberty, occurring between the ages of 9.5 and 13.5 years. Pubic hair signifies the onset of puberty in boys. Pubic hair development and penile enlargement are concurrent with testicular growth (Table 31-2). Axillary hair development occurs late in puberty. It follows definitive penile and testicular enlargement in boys. Facial hair in boys also develops at this time. The onset of spontaneous nocturnal emission of seminal fluid is a sign of puberty similar to menarche in females. During puberty, the prostate gland grows rapidly to twice its prepubertal size under the influence of androgens.

In female adolescents puberty is the time that estrogen stimulates the development of the reproductive tract and secondary sex characteristics. The external genitalia increase in size and sensitivity, whereas the internal reproductive organs increase in weight and mass. Pubic hair begins growing early in puberty (2 to 6 months after thelarche [breast development]) and follows a distinct pattern (Table 31-3). Axillary hair development precedes menarche (first menstrual period) in girls. Menarche takes place in the latter half of puberty after breast and pubic hair begin to develop. Menarche typically begins 2.5 years after the onset of puberty. The menstrual cycle is usually irregular during the first 2 years because of physiologic anovulation.

ANUS AND RECTUM

The anus and rectum appear and function like those in the adult.

MUSCULOSKELETAL SYSTEM

The skeleton of small children is made chiefly of cartilage, accounting for the relative softness and malleability of the bones and the relative ease with which certain deformities can be corrected. Bone formation occurs by ossification, beginning during the gestational period and continuing throughout childhood. Bones grow rapidly during infancy. As children grow into adolescence, they will experience a skeletal growth spurt, usually seen in correlation with Tanner's stage 2 for girls and Tanner's stage 3 for boys. Skeletal growth continues throughout Tanner's stage 5 for both sexes.

Bone growth occurs in two dimensions: diameter and length. Growth in diameter takes place predominantly in children and adolescents and slows as the person ages because of the predominance of bone breakdown over bone formation. Growth in length takes place at the epiphyseal plates, vascular areas of active cell division. Bones increase in circumference and length under the influence of hormones, primarily pituitary growth hormone and thyroid hormone.

Muscle growth is related to growth of the underlying bone. Individual fibers, ligaments, and tendons grow throughout childhood. Bone and muscle development is influenced by use of the extremities. If extremities are not used, minimal growth of the muscle will occur. Walking and weight-bearing activities stimulate bone and muscle growth.

The anterior curve in the lumbar region of the vertebral column develops between ages 12 and 18 months, when the toddler starts to stand erect and walk.

Muscle growth contributes significantly to weight gain in the child. Individual fibers grow throughout childhood, and growth is considerable during the adolescent growth spurt, which usually peaks at 12 years in girls and 14 years in boys.

NEUROLOGIC SYSTEM

Motor control develops in a head-to-neck to trunk-to-extremities sequence. Development takes place in an orderly progression, but each child develops at his or her own pace. The norms demonstrate wide variation among individuals as well as within a single individual under different circumstances.

Health Assessment

COLLECTING SUBJECTIVE DATA: THE NURSING HEALTH HISTORY

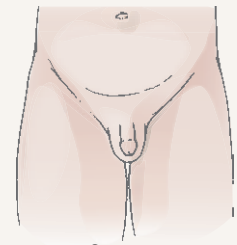
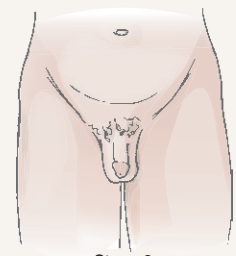
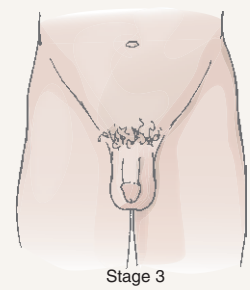
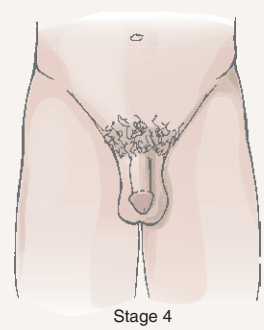
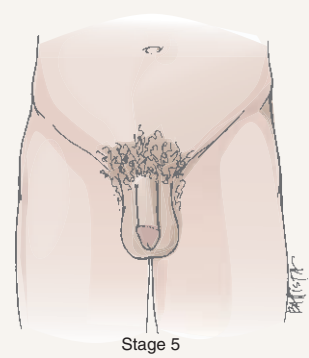
The complete pediatric nursing history is one of the most crucial components of child health care. Many of the materials and questions are unique to this population. The nursing history interview usually provides an opportunity to observe the caregiver—or parent—child interaction and to participate in early detection of health problems and prevention of future difficulties.

Nurses must have the communication skills needed to elicit data about the child and family within a framework that incorporates biographic data, current health status, past history, family history, a review of each body system, knowledge of growth and development, and lifestyle and health practices–related information. It is important to keep in mind that data collected in one category may have relevance to another category. For example, data collected about the condition of the child's skin, hair, and nails may indicate a problem in the area of nutrition.

Because infants and children are uniquely different from adults, a separate subjective assessment that focuses on questions suited for this population is vital. Subjective assessment of children encompasses interviewing and compiling a complete nursing history. General interviewing techniques used for the adult are used in the pediatric setting. However, in pediatrics, someone other than the client, usually the parent, gives the history. Thus, the interview becomes the onset of a relational triad between the nurse, the child or adolescent, and the parents. Nurses establish a comfortable, yet professional, rapport that forms the foundation for the ongoing therapeutic relationship. Nurses accomplish this by developing communication and interviewing skills that incorporate the needs of both the parent and child or adolescent, treating both as equal partners.

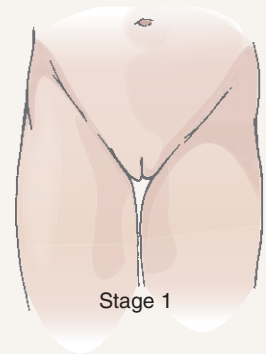
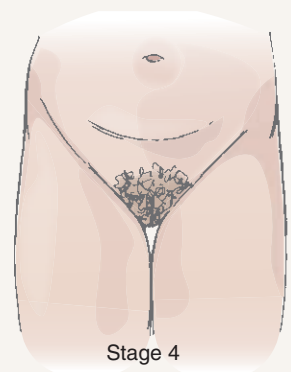
(text continues on page 692)

Table 31-2 Tanner's Sexual Maturity Rating: Male Genitalia and Pubic Hair

Developmental Stage		Illustration
Stage 1	Genitalia: Prepubertal Pubic Hair: Prepubertal: No pubic hair; fine vellus hair	 Stage 1
Stage 2	Genitalia: Initial enlargement of scrotum and testes with rugation and reddening of the scrotum Pubic Hair: Sparse, long, straight, downy hair	 Stage 2
Stage 3	Genitalia: Elongation of the penis; testes and scrotum further enlarge Pubic Hair: Darker, coarser, curly; sparse over entire pubis	 Stage 3
Stage 4	Genitalia: Increase in size and width of penis and the development of the glans; scrotum darkens Pubic Hair: Dark, curly, and abundant in pubic area; no growth on thighs or up toward umbilicus	 Stage 4
Stage 5	Genitalia: Adult configuration Pubic Hair: Adult pattern (growth up toward umbilicus may not be seen); growth continues until mid-20s	 Stage 5

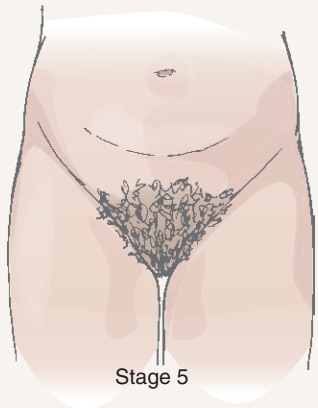
Tanner, J. M. (1962). Growth at adolesence (2nd ed.). Oxford: Blackwell Scientific Publications.

Table 31-3 Tanner's Sexual Maturity Rating: Female Pubic Hair

Developmental Stage		Illustration
Stage 1	Prepubertal: No pubic hair; fine vellus hair	 Stage 1
Stage 2	Sparse, long, straight, downy hair	 Stage 2
Stage 3	Darker, coarser, curly; sparse over mons pubis	 Stage 3
Stage 4	Dark, curly, and abundant on mons pubis; no growth on medial thighs	 Stage 4

continued on page 692

Table 31-3 Tanner's Sexual Maturity Rating: Female Pubic Hair *Continued*

Developmental Stage		Illustration
Stage 5	Adult pattern of inverse triangle; growth on medial thighs	 Stage 5

Tanner, J. M. (1962). Growth at adolesence (2nd ed.). Oxford: Blackwell Scientific Publications.

Interviewing

Interviewing Parents

The parental interview entails more than just fact gathering. The tone of future contacts is established as parents begin to develop a trusting relationship with the nurse (Fig. 31-1). Parents expect health professionals to be sources of information and education, and they assess professional competence during the initial contact. Therefore, it is important that the nurse use a friendly, nonjudgmental approach while demonstrating proficiency as a practitioner. Rarely is the interview just data gathering; it is also a forum for rapport building, explaining, and health teaching.

INTRODUCTORY STAGE

As with all clients, the nurse—parent relationship begins with the introduction, when nurses explain their roles and the purpose of the interview. Clarification and consistency are crucial from the start because parents may be anxious about the child's condition or uncomfortable about their roles, especially if the setting is a hospital. Anxiety may be overt or masked, even demonstrated by negative behaviors such as hostility.

Figure 31-1 Developing a trusting relationship with the parent(s) is an essential aspect of the interview process.

Cultural variations may also affect parental reactions and response. Active listening facilitates the use of leads and better enables nurses to keep the interview focused on specific concerns. It also allows nurses to uncover clues that further the interview, to seek validation of perceptions and responses that may have alternate meanings, and to provide reassurance for both the expressed and hidden concerns that parents may be experiencing.

ENCOURAGING TALK

By encouraging parents to talk, you can identify information that affects all aspects of a child's life. Some parents take the lead without prompting (e.g., "He's been pulling up his legs like he's in pain"). Others offer vague concerns (e.g., ". . . she's just not acting right") and need more direction. However, all have significant information about their child. You can further encourage verbalization through communication techniques such as open-ended questioning ("How does Sarah behave when she isn't acting just right?") and focus directing ("When does Darryl have the pain?"). Communication skills allow nurses to elicit information in all patient groups, even in the most difficult situations.

The atmosphere should create an exchange of information rather than one directed solely by the nurse. Nurses use problem solving, collaboration, and anticipatory guidance. For example, ask the parent, "What do you see as the problem?" Once the problem is identified, lead the parent through the problem-solving process to arrive at a solution. Parents should also be asked what they found to be effective or ineffective in managing their child's problems. Anticipatory guidance promotes an exchange because parents can better participate in discussions of their child's future developmental trends.

Be aware of the barriers to effective nurse—parent communication. These include time constraints, frequent interruptions,

lack of privacy, and language differences as well as provider callousness and cultural insensitivity. Make every effort possible to avoid these barriers. Allow adequate time and privacy for every interview and keep interruptions at a minimum. Interpreters can assist when language differences are present.

Nurses should always display a warm, professional manner when interacting with clients and families, and they should be sensitive to cultural differences displayed in values, beliefs, and customs.

Interviewing Children and Adolescents

As noted earlier, the child or adolescent and parent are treated as equal partners in the health care triad. Include the child in the introductory stage of the interview and observe for signs of readiness to evaluate the level of participation. Readiness evaluation includes questioning the parents about how the child copes with stressful situations and what the child has been told about this particular health encounter.

COMMUNICATION TECHNIQUES

Direct communication, such as open-ended and closed-ended questions, age-appropriate humor, and dialogue strategies, is usually more beneficial when used with indirect communication techniques including sentence completion, mutual story telling, and using drawings, play (the universal language of children), and magic.

Play as Communication

Nurses should talk to the child at eye level (be aware of cultural variations in eye contact) and actively engage children through play and verbalization. Play is one of the most valuable communication techniques when working with children; it allows for the discovery of important cues to children's development and illness behaviors. Rushing creates anxiety; therefore, time should be taken to listen and to allow children to feel comfortable. Privacy and confidentiality are important in pediatric nursing, especially when assessing the adolescent. Children or adolescents may be anxious, fearful, or embarrassed. Their emotions should be respected.

The interview process and assessment procedures should be explained in clear and honest terms. Directions should be stated in a positive manner, and choices should be offered only when available and appropriate. Honest praise is used to reinforce positive behaviors; gratuitous praise is quickly recognized by children and may decrease the child's trust in the nurse.

Touch

Touch is a powerful communication tool. However, the child may find touch intrusive if the nurse has not yet begun to formulate a relationship with the child. Cultural taboos may also prohibit touch. Therefore, it is prudent to communicate with the child at a "safe distance" until the relationship begins to form.

DEVELOPMENTAL CONSIDERATIONS

Nurses should also be familiar with developmentally oriented approaches to interviewing children. Display 31-1 presents specific developmentally oriented approaches that may be used in interviewing children and adolescents.

These approaches are important to know because barriers can exist when communicating with children. For example, some nurses overestimate the understanding abilities of young children and underestimate those of older children and adolescents. This creates frustration for all involved. Nurses need to be habitually aware of children's cognitive status when interacting with them. Another barrier develops when the child is excluded altogether. Children and adolescents can be eager participants and should be treated as such.

Finally, although many children are eager participants, others need encouragement, especially toddlers and preschoolers who may react with crying and lack of cooperation.

Nurses should avoid power struggles and instead rely on empathy, developmental strategies, parental assistance, and a good sense of humor.

ADOLESCENT CONCERNS

Adolescents are neither children nor adults and, therefore, should be treated accordingly. Privacy is essential as are respect and confidentiality. General health issues may or may not be discussed with the parent present. However, sensitive issues, such as sex, sexuality, drugs, and alcohol, are best handled without parental presence. Trust and genuineness are important; nurses should not "talk down" to adolescents or mimic their language style. The approach should be as a professional, not as a peer, parent, or big sister or brother (Fig. 31-2). Use open-ended and specific questions to avoid "yes/no" answers; use silence sparingly because it may be viewed as threatening to this age group. Be aware of your own nonverbal and facial expressions. Delicate issues should be approached with sensitivity and a nonjudgmental, matter-of-fact manner to keep them from appearing to be focal points. History taking provides an excellent opportunity for health teaching with adolescents, who are eager to learn about their ever-changing bodies. Questions should be encouraged and answered throughout the history.

Biographic Data

Gathering this type of information is a good way to begin the health history. It consists of general, easy-to-answer information that puts the parent and child at ease. It also can provide the

Figure 31-2 Handle sensitive issues with adolescents by establishing trust and genuineness (© B. Proud).

DISPLAY 31-1 Age-Specific Interview Techniques

Each child responds differently during the assessment interview according to his or her developmental status, severity and perception of illness, experience with health care, intrusiveness of procedures, and the child's own uniqueness. The following are some guidelines for adapting the interview techniques to the child's status.

Toddlers: Sensorimotor to Preoperational Stages

Trial and error experimentation and relentless exploration are typical in the early toddler stage; later, the toddler uses representational thought in intellectual development. Children under 5 years of age are egocentric. Toddler's attention span ranges between 5 and 10 minutes.

- Encourage parental presence.
- Provide careful and simple explanations just before procedure.
- Use play as a communication technique.
- Tell child it is okay to cry.
- Encourage expression through toys.
- Use simple terminology; child's receptive language is more advanced than his or her expressive language.
- Allow child to be close to parent—be alert for separation anxiety.
- Acknowledge child's favorite toy or a unique characteristic about the child.

Preschoolers: Preoperational Stage

Preschoolers progress from making simple classifications and associating one event with a simultaneous one to classifying and quantifying and exhibiting intuitive thought processes. A preschooler's attention span ranges between 10 and 15 minutes. Preschoolers use magical thinking.

- Explain why things are as they are, simply.
- Validate child's perceptions.
- Avoid threatening words.
- Use simple visual aids.
- Involve child in teaching by doing something (handling equipment).
- Allow child to ask questions.
- Use child's toys for expression; use miniature equipment on toys.
- Avoid using words that have double meaning.
- Explain sensations that the child will experience.
- Answer "why" questions with simple explanations.
- Be direct and concrete; do not use analogies, abstractions, or words with more than one meaning; avoid slang (such as "laugh your head off"—preschoolers interpret literally).
- Ask simple questions.
- Allow child to manipulate equipment.
- Use the child's active imagination—use toys, puppets, and play.

School-Age Children: Operational Stage

Egocentric thinking progresses to objective thinking in school-age children who begin using inductive reasoning, logical operations, and reversible concrete thought. A school-age child's attention span ranges between 30 and 45 minutes. Use books and other visual aids to advance the assessment interview.

- Remember to remain concrete (ie, avoid abstractions).
- Use group discussion to educate children among their peers; also use games.
- Provide health teaching; perform demonstrations.
- Give more responsibility to child.
- School-age children like explanations and need assistance in vocalizing their needs.
- Allow children to engage in discussions.

Adolescents: Formal Operations Stage

Abstract thought develops, as does thinking beyond the present and forming theories about everything.

- Give adolescents control whenever possible.
- Use scientific explanations and make expectations clear.
- Explore expected parental level of involvement before initiating it.
- Involve adolescents in planning.
- Clearly explain how body will be affected.
- Anticipate feelings of anger and grief.
- Use peers with common situation to help with teaching.
- Encourage expression of ideas and feelings.
- Maintain confidentiality; facilitate trust.
- Give adolescents your undivided attention.
- Make expectations clear.
- Ask to speak to adolescent alone.
- Encourage open and honest communication.
- Be nonjudgmental; respect views, differences, and feelings.
- Ask open-ended questions.

nurse with important clues that can benefit the rest of the subjective examination. For example, discovering that a 5-year-old child lives in the city with his 40-year-old professional parents and no brothers or sisters may give the nurse clues about his developmental level, activity, relationships, and socioeconomic status. However, the nurse must be careful not to make quick assumptions based on demographic or biographic data.

These types of questions are often asked on a form that the parent fills out before the assessment. However, the nurse should go over the form with the parent and child (if feasible) at the beginning of the assessment. Typical data include the following:

(text continues on page 709)

BIOGRAPHICAL DATA

Question	Rationale
What is the child's name? Nickname? What are the parents' or caregivers' names?	Knowing personal information about the child and caregivers helps to establish rapport with child and family.
Who is the child's primary health care provider, and when was the child's last well-child care appointment? (Table 31-4 provides guidelines for primary health care provider visits developed by the Committee on Practice and Ambulatory Medicine and the American Academy of Pediatrics [AAP]).	This determines the child's access to health care. It tells the nurse where to find the client's previous medical information/record.
Where does the child live? (Address) Do the parents and child live in the same residence? Who else lives in this residence? Are the child's parents married, single, divorced, homosexual? What are the parents' ages?	This provides insight into living conditions and family dynamics, which contribute to the child's health.
What is the child's age? What is the child's date of birth?	This provides a reference for assessing the child's developmental level.
Is the child adopted, foster, natural?	Certain health problems run in families. It is helpful to know the child's genetic relationship with the parents.
What is the child's ethic origin? Religion?	This information helps the nurse to examine special needs and beliefs that may affect the client or family's health care.
What do the child's parents do for a living?	This provides insight into the economic status of the family.

HISTORY OF PRESENT HEALTH CONCERN/CURRENT HEALTH STATUS

As with adults, it is important to obtain information regarding the child's current status of health. Nurses should ask the parent, and child if possible, to describe the child's general state of health and compare it with how it was 1 and 5 years ago (if age appropriate). If the answer is "good," ask what "good" means to them. "Good" could mean "only one cold this year" for a generally healthy child or "only two hospitalizations this year" for a child with a chronic illness such as cystic fibrosis.

Current health status also includes information regarding chronic illnesses and allergies. Chronic illness, such as asthma, or disability, such as cerebral palsy, must be established early in the history to allow for better assessment and teaching strategies. Allergies are very common during childhood. Nurses need to ask what the specific allergen is and how the child reacts to it. Some parents consider medication side effects to be allergic responses (e.g., diarrhea that is common after antibiotic use) and need information to differentiate side effects from actual allergies.

Finally nurses must ask for complete medication and treatment information. This includes prescription and over-the-counter medications, devices and treatments (e.g., hot/cold compresses, respiratory therapy, assistive devices, such as orthopedic braces), and home or folk remedies. The child may be taking a combination of medications that are incompatible or a folk remedy that is harmful (e.g., azaron, used in Mexico for digestive problems, contains lead). As with adults, children's medication information should include the name of the drug, dosage, frequency, and the reason why the medication is administered.

The purpose of asking about the child's current health status is to determine why the child was brought in for an examination. For some examinations, the child and parents may have no symptoms to report. In this case, the parent and child should be asked to describe the general state of the child's health.

If there is a perceived problem with the child's health or if the child or parent notices symptoms, the same focus questions that are asked for each body system for the adult client are used for the child (e.g., location, intensity, duration). However, for the child, it is important to ask both the parent and the child (if possible) to get the most accurate information. Conflicting information may clue

continued on page 698

Table 31-4 Recommendations for Preventive Pediatric Health Care

Each child and family is unique; therefore, these **Recommendations for Preventive Pediatric Health Care** are designed for the care of children who are receiving competent parenting, have no manifestations of any important health problems, and are growing and developing in satisfactory fashion. **Additional visits may become necessary** if circumstances suggest variations from normal.

		Infancy							Early Childhood						
Age[a]	**Prenatal**[b]	**Newborn**[c]	**3–5 d**[d]	**By 1 mo**	**2 mo**	**4 mo**	**6 mo**	**9 mo**	**12 m**	**15 mo**	**18 mo**	**24 mo**	**30 mo**	**3 y**	**4 y**
HISTORY															
Initial/interval	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
MEASUREMENTS															
Length/height and weight		•	•	•	•	•	•	•	•	•	•	•	•	•	•
Head circumference		•	•	•	•	•	•	•	•	•	•	•			
Weight for length		•	•	•	•	•	•	•	•	•	•				
Body mass index												•	•	•	•
Blood pressure[e]		★	★	★	★	★	★	★	★	★	★	★	★	•	•
SENSORY SCREENING															
Vision		★	★	★	★	★	★	★	★	★	★	★	★	•	•
Hearing		•[g]	★	★	★	★	★	★	★	★	★	★	★	★	•
DEVELOPMENTAL/ BEHAVIORAL ASSESSMENT															
Developmental screening[h]								•			•		•		
Autism screening[i]											•	•			
Developmental surveillance[h]		•	•	•	•	•	•		•	•		•		•	•
Psychosocial/behavioral assessment		•	•	•	•	•	•	•	•	•	•	•	•	•	•
Alcohol and drug use assessment															
PHYSICAL EXAMINATION[j]		•	•	•	•	•	•	•	•	•	•	•	•	•	•
PROCEDURES[k]															
Newborn metabolic/hemoglobin screening[l]		←	•	→											
Immunization[m]		•	•	•	•	•	•	•	•	•	•	•	•	•	•
Hematocrit or hemoglobin[n]						★			•		★	★		★	★
Lead screening[o]							★	★	•or★[p]		★	•or★[p]		★	★
Tuberculin test[q]				★			★		★		★	★		★	★
Dyslipidemia screening[r]												★			★
STI screening[s]															
Cervical dysplasia screening[t]															
ORAL HEALTH[u]							★	★	•or★[u]		•or★[u]	•or★[u]	•or★[u]	•[v]	
ANTICIPATORY GUIDANCE[w]	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

[a] If a child comes under care for the first time at any point on the schedule, or if any items are not accomplished at the suggested age, the schedule should be brought up to date at the earliest possible time.

[b] A prenatal visit is recommended for parents who are at high risk, for first-time parents, and for those who request a conference. The prenatal visit should include anticipatory guidance, pertinent medical history, and a discussion of benefits of breastfeeding and planned method of feeding per AAP statement "The Prenatal Visit" (2001) [URL: http://aappolicy.aappublications.org/cgi/content/full/pediatrics;107/6/1456].

[c] Every infant should have a newborn evaluation after birth, breastfeeding encouraged, and instruction and support offered.

[d] Every infant should have an evaluation within 3 to 5 days of birth and within 48 to 72 hours after discharge from the hospital, to include evaluation for feeding and jaundice. Breastfeeding infants should receive formal breastfeeding evaluation, encouragement, and instruction as recommended in AAP statement "Breastfeeding and the Use of Human Milk" (2005) [URL: http://aappolicy.aappublications.org/cgi/content/full/pediatrics;115/2/496]. For newborns discharged in less than 48 hours after delivery, the infant must be examined within 48 hours of discharge per AAP statement "Hospital Stay for Healthy Term Newborns" (2004) [URL: http://aappolicy.aappublications.org/cgi/content/full/pediatrics;113/5/1434].

[e] Blood pressure measurement in infants and children with specific risk conditions should be performed at visits before age 3 years.

[f] If the patient is uncooperative, rescreen within 6 months per AAP statement "Eye Examination and Vision Screening in Infants, Children, and Young Adults" (1996) [URL: http://aappolicy.aappublications.org/cgi/reprint/pediatrics;98/1/153.pdf].

[g] All newborns should be screened per AAP statement "Year 2000 Position Statement: Principles and Guidelines for Early Hearing Detection and Intervention Programs" (2000) [URL: http://aappolicy.aappublications.org/cgi/content/full/pediatrics;106/4/798]. Joint Committee on Infant Hearing. Year 2007 position statement: principles and guide-lines for early hearing detection and intervention programs. *Pediatrics.* 2007;120:898–921.

[h] AAP Council on Children With Disabilities, AAP Section on Developmental Behavioral Pediatrics, AAP Bright Futures Steering Committee, AAP Medical Home Initiatives for Children With Special Needs Project Advisory Committee. Identifying infants and young children with developmental disorders in the medical home: analgorithm for developmental surveillance and screening. *Pediatrics.* 2006;118:405–420 [URL: http://aappolicy.aappublications.org/cgi/content/full/pediatrics;118/1/405].

[i] Gupta VB, Hyman SL, Johnson CP, et al. Identifying children with autism early? *Pediatrics.* 2007;119:152–153 [URL: http://pediatrics.aappublications.org/cgi/content/full/119/1/152].

[j] At each visit, age-appropriate physical examination is essential, with infant totally unclothed, older child undressed and suitably draped.

[k] These may be modified, depending on entry point into schedule and individual need.

[l] Newborn metabolic and hemoglobinopathy screening should be done according to state law. Results should be reviewed at visits and appropriate retesting or referral done as needed.

• = to be performed ★ = risk assessment to be performed, with appropriate action to follow,

Developmental, psychosocial, and chronic disease issues for children and adolescents may require frequent counseling and treatment visits separate from preventive care visits.

These guidelines represent a consensus by the American Academy of Pediatrics (AAP) and Bright Futures. The AAP continues to emphasize the great importance of **continuity of care** in comprehensive health supervision and the need to avoid **fragmentation of care**.

	Middle Childhood						Adolescence										
	5 y	6 y	7 y	8 y	9 y	10 y	11 y	12 y	13 y	14 y	15 y	16 y	17 y	18 y	19 y	20 y	21 y
	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	•	•	•	•	•	•	•	•	•	•	•	•	•	•		•	•
	•	•	★	•	★	•	★	•	★	★	•	★	★	•	★	★	★
	•	•	★	•	★	•	★	★	★	★	★	★	★	★	★	★	★
	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
							★	★	★	★	★	★	★	★	★	★	★
	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
	★	★															
	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★	★
		★		★		★	★	★	★	★	★	★	★	←———	———	•	———→
							★	★	★	★	★	★	★	★	★	★	★
							★	★	★	★	★	★	★	★	★	★	★
		•[v]															
	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•

[m] Schedules per the Committee on Infectious Diseases, published annually in the January issue of *Pediatrics*. Every visit should be an opportunity to update and complete a child's immunizations.

[n] See AAP *Pediatric Nutrition Handbook*, 5th Edition (2003) for a discussion of universal and selective screening options. See also Recommendations to prevent and control iron deficiency in the United States. *MMWR Recomm Rep.* 1998;47(RR-3):1–36.

[o] For children at risk of lead exposure, consult the AAP statement "Lead Exposure in Children: Prevention, Detection, and Management" (2005) [URL: http://aappolicy.aappublications.org/cgi/content/full/pediatrics;116/4/1036]. Additionally, screening should be done in accordance with state law where applicable.

[p] Perform risk assessments or screens as appropriate, based on universal screening requirements for patients with Medicaid or high prevalence areas.

[q] Tuberculosis testing per recommendations of the Committee on Infectious Diseases, published in the current edition of *Red Book: Report of the Committee on Infectious Diseases*. Testing should be done on recognition of high-risk factors.

[r] "Third Report of the National Cholesterol Education Program (NCEP) Expert Panel on Detection, Evaluation, and Treatment of High Blood Cholesterol in Adults (Adult Treatment Panel III) Final Report" (2002) [URL: http://circ.ahajournals.org/cgi/content/full/106/25/3143] and "The Expert Committee Recommendations on the Assessment, Prevention, and Treatment of Child and Adolescent Overweight and Obesity." Supplement to *Pediatrics*. In press.

[s] All sexually active patients should be screened for sexually transmitted infections (STIs).

[t] All sexually active girls should have screening for cervical dysplasia as part of a pelvic examination beginning within 3 years of onset of sexual activity or age 21 (whichever comes first).

[u] Referral to dental home, if available. Otherwise, administer oral health risk assessment. If the primary water source is deficient in fluoride, consider oral fluoride supplementation.

[v] At the visits for 3 years and 6 years of age, it should be determined whether the patient has a dental home. If the patient does not have a dental home, a referral should be made to one. If the primary water source is deficient in fluoride, consider oral fluoride supplementation.

[w] Refer to the specific guidance by age as listed in Bright Futures Guidelines. (Hagan JF, Shaw JS, Duncan PM, eds. *Bright Futures: Guidelines for Health Supervision of Infants, Children, and Adolescents.* 3rd ed. Elk Grove Village, IL: American Academy of Pediatrics; 2008.)

if positive ←——— • ———→ = range during which a service may be provided, with the symbol indicating the preferred age

HISTORY OF PRESENT HEALTH CONCERN/CURRENT HEALTH STATUS *Continued*

the nurse in to other areas that may need to be assessed. When asking the child about symptoms, the following techniques are usually helpful:

- Ask the child to point with one finger to where the pain or symptom is located.
- Use a pain scale developed for children such as the FACES Pain Rating Scale characters ranging from a happy face signifying no pain to a tearful face signifying the worst pain); the Oucher scale (six photographs of children's faces ranging from "no hurt" to "biggest hurt you could ever have;" also comes with scale from 0 to 100); or a numeric scale (straight line with numbers from 0 to 10 representing no pain to worst pain). Figure 31-3 illustrates the FACES and numeric pain-rating scales.

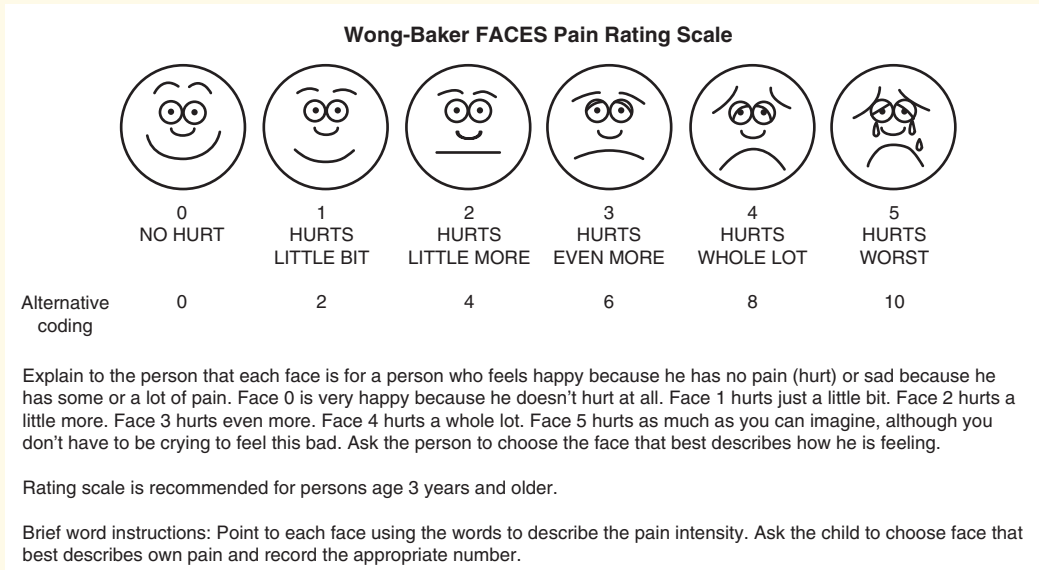


Figure 31-3 Pain rating scales: Numerical scale and FACES pain rating scale. (From Hockenberry M. J., Wilson D. (2009). *Wong's essentials of pediatric nursing.* (8th ed.). St. Louis: Mosby. Used with permission. Copyright Mosby.)

continued

COLDSPA Example

Use the **COLDSPA** mnemonic as a guideline to collect needed information for each symptom the client shares. In addition, the following questions help elicit important information.

Assessment of a 9-year-old child.

Mnemonic	*Question*	*Client Response Example*
Character	Describe the sign or symptom (feeling, appearance, sound, smell, or taste if applicable).	"My ear hurts."
Onset	When did it begin?	"Yesterday."
Location	Where is it? Does it radiate? Does it occur anywhere else?	"Inside my right ear and down to my jaw."
Duration	How long does it last? Does it recur?	"It hurts all the time."
Severity	How bad is it? or How much does it bother you?	"Really bad." Client gives the pain a rating of 8 on a scale of 1–10.
Pattern	What makes it better or worse?	"Tylenol and heat made it a little better."
Associated factors/How it **A**ffects the client	What other symptoms occur with it? How does it affect you?	"My head hurts and my nose is stuffy. I keep coughing. I can't sleep and I can't think in school either because I feel bad all over."

Question	Rationale
Describe the child's general state of health.	Obtaining baseline information about the client helps to identify important areas of assessment.
Does the child have a chronic illness?	Chronic illnesses may explain or affect assessment findings.
Does the child have any allergies? If so, what is the specific allergen? How does the child react to it?	This identifies allergens and helps the nurse plan to prevent exposure.
What prescriptions, over-the-counter medications, devices, and treatments, and home or folk remedies is the child taking? Please provide the name of the drug, dosage, frequency, and reason it is administered.	It is always important to know what medications a client is taking, especially young clients.

PAST HEALTH HISTORY

Past history is important information to collect when assessing children. Certain problems and conditions can be associated with a difficult birth experience, whether the child was immunized, genetic conditions acquired from parents, and the like. Obviously, most of this information must come from the birth parent. If the child is a foster child or adopted, some of the information may be obtained from hospital records.

Question	Rationale
Sample nursing history questions include	
Was this child's pregnancy planned? How did you feel when you found out you were pregnant?	The caregiver's answer may provide insight into her feelings about the child.
When did you first receive prenatal care? How was your general health during pregnancy?	Prenatal information helps to identify potential health problems for the child.
Did you have any problems with your pregnancy?	Certain medications should not be taken during pregnancy and may be harmful to the child.
Did you have any accidents during this pregnancy?	Smoking, alcohol, and drug use may cause complications or anomalies with the fetus.
Did you take any medications during pregnancy?	
Did you use any tobacco, alcohol, or drugs during this pregnancy?	
Ask about delivery of the child: Where was the child born? What type of delivery did you have? Were there any problems during the delivery? Did you have any vaginal infections at time of delivery? What was the child's Apgar score? What were the child's weight, height, and head circumference? Did the child have any problems after birth (e.g., feeding, jaundice)?	Delivery details and complications are pertinent for assessing fetal injury and potential risk for infection.
Ask about past illnesses or injuries: Has the child ever been hospitalized? Has the child ever had any major illnesses? Has the child ever experienced any major injuries?	Previous illnesses and hospitalizations may affect the present examination.
What immunizations has the child received thus far (Tables 31-5, 31-6, and 31-7)? Has your child had any reactions to immunizations?	This helps to identify risk for infection and/or potential reactions to immunizations.

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Table 31-5 Recommended Immunization Schedule for Persons Aged 0–6 Years—United States—2008

For those who fall behind or start late, see the catch-up schedule

Vaccine ▼ Age ▶	Birth	1 month	2 months	4 months	6 months	12 months	15 months	18 months	19–23 months	2–3 years	4–6 years
Hepatitis B[1]	HepB	HepB		*see footnote1*	HepB						
Rotavirus[2]			Rota	Rota	Rota						
Diphtheria, Tetanus, Pertussis[3]			DTaP	DTaP	DTaP	*see footnote3*	DTaP				DTaP
***Haemophilus influenzae* type b**[4]			Hib	Hib	*Hib*[4]	Hib					
Pneumococcal[5]			PCV	PCV	PCV	PCV				PPV	
Inactivated Poliovirus			IPV	IPV		IPV					IPV
Influenza[6]						Influenza (Yearly)					
Measles, Mumps, Rubella[7]						MMR					MMR
Varicella[8]						Varicella					Varicella
Hepatitis A[9]						HepA (2 doses)				HepA Series	
Meningococcal[10]										MCV4	

Range of recommended ages

Certain high-risk groups

This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2007, for children aged 0 through 6 years. Additional information is available at www.cdc.gov/vaccines/recs/schedules. Any dose not administered at the recommended age should be administered at any subsequent visit, when indicated and feasible. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and other components of the vaccine are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the respective Advisory Committee on Immunization Practices statement for detailed recommendations, including for **high-risk conditions:** http://www.cdc.gov/vaccines/pubs/ACIP-list.htm. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at www.vaers.hhs.gov or by telephone, 800-822-7967.

1. Hepatitis B vaccine (HepB). *(Minimum age: birth)*

At birth:

- Administer monovalent HepB to all newborns prior to hospital discharge.
- If mother is hepatitis B surface antigen (HBsAg) positive, administer HepB and 0.5 mL of hepatitis B immune globulin (HBIG) within 12 hours of birth.
- If mother's HBsAg status is unknown, administer HepB within 12 hours of birth. Determine the HBsAg status as soon as possible and if HBsAg positive, administer HBIG (no later than age 1 week).
- If mother is HBsAg negative, the birth dose can be delayed, in rare cases, with a provider's order and a copy of the mother's negative HBsAg laboratory report in the infant's medical record.

After the birth dose:

- The HepB series should be completed with either monovalent HepB or a combination vaccine containing HepB. The second dose should be administered at age 1–2 months. The final dose should be administered no earlier than age 24 weeks. Infants born to HBsAg-positive mothers should be tested for HBsAg and antibody to HBsAg after completion of at least 3 doses of a licensed HepB series, at age 9–18 months (generally at the next well-child visit).

4-month dose:

- It is permissible to administer 4 doses of HepB when combination vaccines are administered after the birth dose. If monovalent HepB is used for doses after the birth dose, a dose at age 4 months is not needed.

2. Rotavirus vaccine (Rota). *(Minimum age: 6 weeks)*

- Administer the first dose at age 6–12 weeks.
- Do not start the series later than age 12 weeks.
- Administer the final dose in the series by age 32 weeks. Do not administer any dose later than age 32 weeks.
- Data on safety and efficacy outside of these age ranges are insufficient.

3. Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP). *(Minimum age: 6 weeks)*

- The fourth dose of DTaP may be administered as early as age 12 months, provided 6 months have elapsed since the third dose.
- Administer the final dose in the series at age 4–6 years.

4. *Haemophilus influenzae* type b conjugate vaccine (Hib). *(Minimum age: 6 weeks)*

- If PRP-OMP (PedvaxHIB® or ComVax® [Merck]) is administered at ages 2 and 4 months, a dose at age 6 months is not required.
- TriHIBit® (DTaP/Hib) combination products should not be used for primary immunization but can be used as boosters following any Hib vaccine in children age 12 months or older.

5. Pneumococcal vaccine. *(Minimum age: 6 weeks for pneumococcal conjugate vaccine [PCV]; 2 years for pneumococcal polysaccharide vaccine [PPV])*

- Administer one dose of PCV to all healthy children aged 24–59 months having any incomplete schedule.
- Administer PPV to children aged 2 years and older with underlying medical conditions.

6. Influenza vaccine. *(Minimum age: 6 months for trivalent inactivated influenza vaccine [TIV]; 2 years for live, attenuated influenza vaccine [LAIV])*

- Administer annually to children aged 6–59 months and to all eligible close contacts of children aged 0–59 months.
- Administer annually to children 5 years of age and older with certain risk factors, to other persons (including household members) in close contact with persons in groups at higher risk, and to any child whose parents request vaccination.
- For healthy persons (those who do not have underlying medical conditions that predispose them to influenza complications) ages 2–49 years, either LAIV or TIV may be used.
- Children receiving TIV should receive 0.25 mL if age 6–35 months or 0.5 mL if age 3 years or older.
- Administer 2 doses (separated by 4 weeks or longer) to children younger than 9 years who are receiving influenza vaccine for the first time or who were vaccinated for the first time last season but only received one dose.

7. Measles, mumps, and rubella vaccine (MMR). (*Minimum age: 12 months*)

- Administer the second dose of MMR at age 4–6 years. MMR may be administered before age 4–6 years, provided 4 weeks or more have elapsed since the first dose.

8. Varicella vaccine. (*Minimum age: 12 months*)

- Administer second dose at age 4–6 years; may be administered 3 months or more after first dose.
- Do not repeat second dose if administered 28 days or more after first dose.

9. Hepatitis A vaccine (HepA). (*Minimum age: 12 months*)

- Administer to all children aged 1 year (i.e., aged 12–23 months). Administer the 2 doses in the series at least 6 months apart.
- Children not fully vaccinated by age 2 years can be vaccinated at subsequent visits.
- HepA is recommended for certain other groups of children, including in areas where vaccination programs target older children.

10. Meningococcal vaccine. *(Minimum age: 2 years for meningococcal conjugate vaccine (MCV4) and for meningococcal polysaccharide vaccine (MPSV4))*

- Administer MCV4 to children aged 2–10 years with terminal complement deficiencies or anatomic or functional asplenia and certain other high-risk groups. MPSV4 is also acceptable.
- Administer MCV4 to persons who received MPSV4 3 or more years previously and remain at increased risk for meningococcal disease.

The Recommended Immunization Schedules for Persons Aged 0–18 Years are approved by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/recs/acip), the American Academy of Pediatrics (http://www.aap.org), and the American Academy of Family Physicians (http://www.aafp.org).

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Table 31-6 Recommended Immunization Schedule for Persons Aged 7–18 Years—United States—2008

For those who fall behind or start late, see the green bars and the catch-up schedule

Vaccine ▼ Age ▶	7–10 years	11–12 years	13–18 years
Diphtheria, Tetanus, Pertussis[1]	*see footnote 1*	Tdap	Tdap
Human Papillomavirus[2]	*see footnote 2*	HPV (3 doses)	HPV Series
Meningococcal[3]	MCV4	MCV4	MCV4
Pneumococcal[4]	PPV		
Influenza[5]	Influenza (Yearly)		
Hepatitis A[6]	HepA Series		
Hepatitis B[7]	HepB Series		
Inactivated Poliovirus[8]	IPV Series		
Measles, Mumps, Rubella[9]	MMR Series		
Varicella[10]	Varicella Series		

Range of recommended ages

Catch-up immunization

Certain high-risk groups

This schedule indicates the recommended ages for routine administration of currently licensed childhood vaccines, as of December 1, 2007, for children aged 7–18 years. Additional information is available at www.cdc.gov/vaccines/recs/schedules. Any dose not administered at the recommended age should be administered at any subsequent visit, when indicated and feasible. Additional vaccines may be licensed and recommended during the year. Licensed combination vaccines may be used whenever any components of the combination are indicated and other components of the vaccine are not contraindicated and if approved by the Food and Drug Administration for that dose of the series. Providers should consult the respective Advisory Committee on Immunization Practices statement for detailed recommendations, including for **high risk conditions:** http://www.cdc.gov/vaccines/pubs/ACIP-list.htm. Clinically significant adverse events that follow immunization should be reported to the Vaccine Adverse Event Reporting System (VAERS). Guidance about how to obtain and complete a VAERS form is available at www.vaers.hhs.gov or by telephone, 800-822-7967.

1. Tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap). *(Minimum age: 10 years for BOOSTRIX® and 11 years for ADACEL™)*
- Administer at age 11–12 years for those who have completed the recommended childhood DTP/DTaP vaccination series and have not received a tetanus and diphtheria toxoids (Td) booster dose.
- 13–18-year-olds who missed the 11–12 year Tdap or received Td only are encouraged to receive one dose of Tdap 5 years after the last Td/DTaP dose.

2. Human papillomavirus vaccine (HPV). *(Minimum age: 9 years)*
- Administer the first dose of the HPV vaccine series to females at age 11–12 years.
- Administer the second dose 2 months after the first dose and the third dose 6 months after the first dose.
- Administer the HPV vaccine series to females at age 13–18 years if not previously vaccinated.

3. Meningococcal vaccine.
- Administer MCV4 at age 11–12 years and at age 13–18 years if not previously vaccinated. MPSV4 is an acceptable alternative.
- Administer MCV4 to previously unvaccinated college freshmen living in dormitories.
- MCV4 is recommended for children aged 2–10 years with terminal complement deficiencies or anatomic or functional asplenia and certain other high-risk groups.
- Persons who received MPSV4 3 or more years previously and remain at increased risk for meningococcal disease should be vaccinated with MCV4.

4. Pneumococcal polysaccharide vaccine (PPV).
- Administer PPV to certain high-risk groups.

5. Influenza vaccine.
- Administer annually to all close contacts of children aged 0–59 months.
- Administer annually to persons with certain risk factors, health-care workers, and other persons (including household members) in close contact with persons in groups at higher risk.
- Administer 2 doses (separated by 4 weeks or longer) to children younger than 9 years who are receiving influenza vaccine for the first time or who were vaccinated for the first time last season but only received one dose.
- For healthy nonpregnant persons (those who do not have underlying medical conditions that predispose them to influenza complications) ages 2–49 years, either LAIV or TIV may be used.

6. Hepatitis A vaccine (HepA).
- Administer the 2 doses in the series at least 6 months apart.
- HepA is recommended for certain other groups of children, including in areas where vaccination programs target older children.

7. Hepatitis B vaccine (HepB).
- Administer the 3-dose series to those who were not previously vaccinated.
- A 2-dose series of Recombivax HB® is licensed for children aged 11–15 years.

8. Inactivated poliovirus vaccine (IPV).
- For children who received an all-IPV or all-oral poliovirus (OPV) series, a fourth dose is not necessary if the third dose was administered at age 4 years or older.
- If both OPV and IPV were administered as part of a series, a total of 4 doses should be administered, regardless of the child's current age.

9. Measles, mumps, and rubella vaccine (MMR).
- If not previously vaccinated, administer 2 doses of MMR during any visit, with 4 or more weeks between the doses.

10. Varicella vaccine.
- Administer 2 doses of varicella vaccine to persons younger than 13 years of age at least 3 months apart. Do not repeat the second dose if administered 28 or more days following the first dose.
- Administer 2 doses of varicella vaccine to persons aged 13 years or older at least 4 weeks apart.

The Recommended Immunization Schedules for Persons Aged 0–18 Years are approved by the Advisory Committee on Immunization Practices (www.cdc.gov/vaccines/recs/acip), the American Academy of Pediatrics (http://www.aap.org), and the American Academy of Family Physicians (http://www.aafp.org).

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Table 31-7 Catch-Up Immunization Schedule for Persons Aged 4 Months–18 Years Who Start Late or Who Are More than 1 Month Behind—United States—2008

The table below provides catch-up schedules and minimum intervals between doses for children whose vaccinations have been delayed. A vaccine series does not need to be restarted, regardless of the time that has elapsed between doses. Use the section appropriate for the child's age.

CATCH-UP SCHEDULE FOR PERSONS AGED 4 MONTHS–6 YEARS

Vaccine	Minimum Age for Dose 1	Minimum Interval Between Doses			
		Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Dose 4	Dose 4 to Dose 5
Hepatitis B[1]	Birth	4 weeks	8 weeks (and 16 weeks after first dose)		
Rotavirus[2]	6 wks	4 weeks	4 weeks		
Diphtheria, Tetanus, Pertussis[3]	6 wks	4 weeks	4 weeks	6 months	6 months[3]
***Haemophilus influenzae* type b**[4]	6 wks	4 weeks: if first dose administered at younger than 12 months of age 8 weeks (as final dose): if first dose administered at age 12–14 months No further doses needed if first dose administered at 15 months of age or older	4 weeks[4]: if current age is younger than 12 months 8 weeks (as final dose)[4]: if current age is 12 months or older and second dose administered at younger than 15 months of age No further doses needed if previous dose administered at age 15 months or older	8 weeks (as final dose): This dose only necessary for children aged 12 months–5 years who received 3 doses before age 12 months	
Pneumococcal[5]	6 wks	4 weeks: if first dose administered at younger than 12 months of age 8 weeks (as final dose): if first dose administered at age 12 months or older or current age 24–59 months No further doses needed for healthy children if first dose administered at age 24 months or older	4 weeks: if current age is younger than 12 months 8 weeks (as final dose): if current age is 12 months or older No further doses needed for healthy children if previous dose administered at age 24 months or older	8 weeks (as final dose): This dose only necessary for children aged 12 months–5 years who received 3 doses before age 12 months	
Inactivated Poliovirus[6]	6 wks	4 weeks	4 weeks	4 weeks[6]	
Measles, Mumps, Rubella[7]	12 mos	4 weeks			
Varicella[8]	12 mos	3 months			
Hepatitis A[9]	12 mos	6 months			

CATCH-UP SCHEDULE FOR PERSONS AGED 7–18 YEARS

Tetanus, Diphtheria/ Tetanus, Diphtheria, Pertussis[10]	7 yrs[10]	4 weeks	4 weeks: if first dose administered at younger than 12 months of age	6 months: if first dose administered at younger than 12 months of age	

continued

Table 31-7 Catch-Up Immunization Schedule for Persons Aged 4 Months–18 Years Who Start Late or Who Are More than 1 Month Behind—United States—2008 *Continued*

CATCH-UP SCHEDULE FOR PERSONS AGED 7–18 YEARS

Vaccine	Minimum Age for Dose 1	Minimum Interval Between Doses			
		Dose 1 to Dose 2	Dose 2 to Dose 3	Dose 3 to Dose 4	Dose 4 to Dose 5
			6 months: if first dose administered at age 12 months or older		
Human Papillomavirus[11]	9 yrs	4 weeks	12 weeks (and 24 weeks after the first dose)		
Hepatitis A[9]	12 mos	6 months			
Hepatitis B[1]	Birth	4 weeks	8 weeks (and 16 weeks after first dose)		
Inactivated Poliovirus[6]	6 wks	4 weeks	4 weeks	4 weeks[6]	
Measles, Mumps, Rubella[7]	12 mos	4 weeks			
Varicella[8]	12 mos	4 weeks: if first dose administered at age 13 years or older 3 months: if first dose administered at younger than 13 years of age			

1. Hepatitis B vaccine (HepB).
- Administer the 3-dose series to those who were not previously vaccinated.
- A 2-dose series of Recombivax HB® is licensed for children aged 11–15 years.

2. Rotavirus vaccine (Rota).
- Do not start the series later than age 12 weeks.
- Administer the final dose in the series by age 32 weeks.
- Do not administer a dose later than age 32 weeks.
- Data on safety and efficacy outside of these age ranges are insufficient.

3. Diphtheria and tetanus toxoids and acellular pertussis vaccine (DTaP).
- The fifth dose is not necessary if the fourth dose was administered at age 4 years or older.
- DTaP is not indicated for persons aged 7 years or older.

4. *Haemophilus influenzae* type b conjugate vaccine (Hib).
- Vaccine is not generally recommended for children aged 5 years or older.
- If current age is younger than 12 months and the first 2 doses were PRP-OMP (PedvaxHIB® or ComVax® [Merck]), the third (and final) dose should be administered at age 12–15 months and at least 8 weeks after the second dose.
- If first dose was administered at age 7–11 months, administer 2 doses separated by 4 weeks plus a booster at age 12–15 months.

5. Pneumococcal conjugate vaccine (PCV).
- Administer one dose of PCV to all healthy children aged 24–59 months having any incomplete schedule.
- For children with underlying medical conditions, administer 2 doses of PCV at least 8 weeks apart if previously received less than 3 doses, or 1 dose of PCV if previously received 3 doses.

6. Inactivated poliovirus vaccine (IPV).
- For children who received an all-IPV or all-oral poliovirus (OPV) series, a fourth dose is not necessary if third dose was administered at age 4 years or older.
- If both OPV and IPV were administered as part of a series, a total of 4 doses should be administered, regardless of the child's current age.
- IPV is not routinely recommended for persons aged 18 years and older.

7. Measles, mumps, and rubella vaccine (MMR).
- The second dose of MMR is recommended routinely at age 4–6 years but may be administered earlier if desired.
- If not previously vaccinated, administer 2 doses of MMR during any visit with 4 or more weeks between the doses.

8. Varicella vaccine.
- The second dose of varicella vaccine is recommended routinely at age 4–6 years but may be administered earlier if desired.
- Do not repeat the second dose in persons younger than 13 years of age if administered 28 or more days after the first dose.

9. Hepatitis A vaccine (HepA).
- HepA is recommended for certain groups of children, including in areas where vaccination programs target older children. See *MMWR* 2006;55(No. RR-7):1–23.

10. Tetanus and diphtheria toxoids vaccine (Td) and tetanus and diphtheria toxoids and acellular pertussis vaccine (Tdap).
- Tdap should be substituted for a single dose of Td in the primary catch-up series or as a booster if age appropriate; use Td for other doses.
- A 5-year interval from the last Td dose is encouraged when Tdap is used as a booster dose. A booster (fourth) dose is needed if any of the previous doses were administered at younger than 12 months of age. Refer to ACIP recommendations for further information. See *MMWR* 2006;55(No. RR-3).

11. Human papillomavirus vaccine (HPV).
- Administer the HPV vaccine series to females at age 13–18 years if not previously vaccinated.

Information about reporting reactions after immunization is available online at http://www.vaers.hhs.gov or by telephone via the 24-hour national toll-free information line 800-822-7967. Suspected cases of vaccine-preventable diseases should be reported to the state or local health department. Additional information, including precautions and contraindications for immunization, is available from the National Center for Immunization and Respiratory Diseases at http://www.cdc.gov/vaccines or telephone, 800-CDC-INFO (800-232-4636).

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FAMILY HISTORY

The questions asked about family history for the child are basically the same types of questions that are asked of the adult client (e.g., whether certain diseases/conditions run in the family, the age and cause of death for blood relatives, and family members with communicable diseases). This is an area of the subjective assessment in which the nurse focuses primarily on the parent for the necessary information. An exception might be if the child is older and knows a great deal about his or her family history. As with the past history information, if the child is adopted or a foster child, family history information may not be known. An important reason for collecting these data is to implement preventive teaching at a young age.

Question	Rationale
Do certain diseases/conditions run in the family?	Certain conditions tend to run in families and increase the client's risk for such condition.
Please list the ages and causes of death for blood relatives.	This helps to identify risk factors.
Does the child have family members with communicable diseases?	This also helps to identify risk factors.

Review of Systems

It is essential that pertinent subjective data be collected for each body system. Many of the questions for each body system asked of the adult are asked of the parent or child.

The additional nursing history questions listed in the following sections for each system are of special concern in children.

Skin, Hair, Nails

Has your child had any changes in hair texture?	Changes may indicate an underlying problem.
Does your child complain of scalp itching?	Itching may indicate lice, seborrhea, allergies, or ringworm.
Have you noticed any changes in your child's nails? Color? Cracking? Shape? Lines?	Changes may indicate an underlying problem.
Has your child been exposed to any contagious disease such as measles, chickenpox, lice, ringworm, scabies and the like?	These communicable diseases are common in childhood.
Has your child ever had any rashes or sores? Acne?	Rashes may represent a number of diseases/disorders. Acne is a common problem for adolescents. They often have a hard time talking about it but they want treatment.
Has your child had any excessive bruising or burns?	This helps to assess for child abuse. Excessive bruising or burns suggest abuse.
Does your child use any cosmetics? Have tattoos? Have any pierced body parts?	This provides insight into personal habits.
Does your child have any birthmarks?	This helps to identify any lesions and lets the examiner know to assess areas for changes.

continued

FAMILY HISTORY *Continued*

Question	Rationale
Head and Neck	
Has your child ever had a head injury?	Head injuries may cause neurological problems.
Does your child experience headaches? How frequently?	Many neurologic disorders cause headaches.
Has your child ever had swollen neck glands for any significant length of time?	This may indicate an underlying disorder.
Has your child ever experienced any neck stiffness?	Stiffness may indicate disorders such as meningitis.
Eyes	
Does your child excessively cross eyes?	Eye crossing may indicate visual or neurologic problems.
Does your child frequently rub his or her eyes or blink repeatedly?	This could indicate visual problems.
Does your child strain/squint to see distant objects?	These suggest visual problems.
Has your child's vision been tested?	Children require regular vision screening.
Does your child wear glasses or contact lenses? Does she wear them when needed? Do the glasses help your child to see better?	This helps to gauge usage and if the prescription needs to be reassessed.
Ears	
Does your child appear to be paying attention when you speak?	Children should respond. A child who often appears to not be paying attention may have a hearing deficit or neurological disorder.
Does your child speak? At what age did talking start?	It is important to assess developmental milestones.
Does your child or adolescent listen to loud music?	This is common behavior among adolescents and usually does not indicate hearing deficit. However, it can lead to a hearing deficit. Preventative education may be needed.
Does your child use a hearing aid? If so, has it improved the child's ability to interact and understand others.	This helps to evaluate the effectiveness of the hearing aid.
Has your child had frequent ear infections? Tubes in ears?	Frequent ear infections may contribute to hearing loss.
How frequently does your child have his or her hearing tested?	Screening for hearing deficits should be done regularly.
Mouth, Throat, Nose, and Sinuses	
Has your child ever had any difficulty swallowing or chewing?	Difficulty may indicate a mechanical/neurological disorder.
Has your child ever had strep throat, tonsillitis, or any other mouth or throat infections? Does your child get frequent oral lesions?	Past infections may affect current condition.
When did your child's teeth erupt? When did the child lose her baby teeth? When did adult teeth erupt?	See Chapter 30 for a schedule for teeth eruption.

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FAMILY HISTORY *Continued*

Question	Rationale
Does your child have any dental problems? Does he visit the dentist regularly? Does he wear any dental appliances?	Children should visit the dentist twice a year. If child has frequent dental problems, provide education about dental care and preventive care.
Does your child experience nosebleeds?	Nosebleeds may occur with allergies, trauma, nose-picking, or foreign bodies.
Does your child have any sinus problems?	Sinus pain may indicate allergies or infection.
Thorax and Lungs	
Has your child ever had cough, wheezing, shortness or breath, nocturnal dyspnea; if so, when does it occur?	Many respiratory problems, such as asthma and bronchitis, are frequently seen in children. They may affect current health status.
Has your child received the influenza vaccine?	American Academy of Pediatrics (AAP) recommends children who are 6 months old and older with high risk health conditions receive influenza immunization annually (AAP, 2008).
Does your child smoke? When did the child start smoking? How much does he smoke?	Smoking increases the risk for many diseases, including lung cancer. Provide appropriate client teaching.
Is your child exposed to second-hand smoke? (Adolescents and older school-age children should be asked about smoking, including smokeless tobacco, in private.)	Respiratory infections are more common in children exposed to second-hand smoke.
Breasts and Lymphatics	
Has your daughter started developing breasts (thelarche)? If so, when did development start?	This helps to determine the child's sexual development stage.
Have you noticed any abnormal breast development in your son or young daughter?	Gynecomastia is enlargement of breast tissue in males. It is a normal finding during puberty.
Heart and Neck Vessels	
Has your child ever experienced chest pain, heart murmurs, congenital heart disease, or hypertension?	All of these symptoms indicate possible cardiac problems.
Has your child ever complained of fatigue? Does your child have difficulty keeping up with peers when running or exercising?	Fatigue may result from decreased cardiac output. Heart problems may impede the child's ability to perform physical activities.
Has your child ever fainted?	Children who faint should be screened for cardiac problems.
Has your child ever turned "blue" during activity?	This may suggest cardiac arrhythmia.
Do you believe that your child is meeting the normal growth requirements for his or her age?	Children with congenital heart disease may grow and develop more slowly than other children.
Peripheral Vascular System	
Does your child ever experience bluing of the extremities? Do our child's hands and/or feet get unusually cold?	Cyanosis and/or coldness in the extremities suggests vascular problems.
Has your child ever had problems with blood clots?	A history of blood clots increases the risk of recurrence.

continued

FAMILY HISTORY *Continued*

Question	Rationale
Abdomen	
Has your child ever had any excessive vomiting? Abdominal pain? Please describe.	Excessive vomiting may be associated with gastrointestinal problems. Abdominal pain may accompany many disorders/problems.
Does your child have any digestive problems (i.e., irritable bowel, constipation)?	Bowel problems should be explored further.
Has your child ever experienced any trauma to the abdomen?	Trauma may result in injuries or contribute to disorders.
Does your child have any hernias?	
Genitalia and Sexuality	
How often does your child urinate? How many wet diapers do you change per day?	This helps to determine nutritional habits, e.g., is the child receiving enough fluids?
At what age was your child toilet (bladder) trained? Night?	This helps to determine whether and when child reaches developmental milestones.
Does your child ever wet his or her pants?	If there is a history of enuresis, obtain routine that family follows to deal with problem.
Is there any history of frequency, burning, pain during urination?	These genitourinary problems should be further explored.
Do you have any concerns about your child related to masturbation, asking/answering questions about sex, not respecting other's privacy, or wanting too much privacy?	This helps to assess the child's sexual development.
Has anyone ever touched your child in a way that made him or her feel uncomfortable? (Make sure to ask the parent and child this question.)	It is important to screen for sexual abuse.
Has child started puberty, thelarche, menarche?	See Tables 31-1, 31-2, and 31-3 for Tanner's stages of sexual development.
Has the child started having wet dreams (nocturnal emissions)?	Pubescent clients should be reassured that nocturnal emissions are normal.
Who is/are the source(s) of sex/AIDS education? Questions to the adolescent about sexuality and reproductive issues should be asked privately. Gynecologists recommend that the first visit to the gynecologist be between the ages of 13 to 15 years for health screening, guidance and preventive services (ACOG, 2004).	This helps to determine the child's need for sexual education.
Do you know how to perform breast self-examination or testicular self-examination?	Self-examination is an important screening tool and should be taught.
Ask about menstruation: How old were you when you started menstruating? When was your last menstrual period? What is your menstrual cycle schedule? Has it always been this way?	This assesses the client's development and gynecological needs.

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FAMILY HISTORY *Continued*

Question	Rationale
What is your bleeding like? Light, moderate, heavy?	
Do you experience any cramps? Tell me about them?	
Do you experience any other physical or emotional discomfort associated with menstruation?	
Do you use tampons? How frequently do you change them?	
Assess sexual history:	A careful sexual history should be taken for all sexually active clients.
What was your age at first intercourse?	
Have you received information regarding the Human Papillomavirus vaccine that can reduce the incidence of cervical cancer? Have you received the vaccine?	All girls and women 9–25 years of age who have not previously been immunized should receive the 3 doses of the Quadrivalent Human Papillomavirus vaccine (HPV), administered intramuscular at 0, 2, and 6 months. HPV vaccine is not recommended during pregnancy (AAP, Committee on Infectious Diseases, 2007). The vaccine prevents development of the 4 types of HPV (6, 11, 16, and 18) that are responsible for 70% of cervical cancer (16 & 18) and 90% of genital warts (6 & 11). Prevention is most effective if the vaccine is administered between 9 and 15 years of age and prior to the first sexual intercourse (AAP, 2007).
Have you ever had a pap smear? Do you experience any discomfort/pain with intercourse?	The American Cancer Society recommends a first pap smear for cervical cancer should be performed no later than 3 years after their first intercourse or no later than 21 years of age (ACOG, 2004).
How many sexual partners do you have/have you had?	
What type of contraception do you use and how do you use it? Do you use condoms? How do you use them?	Contraceptive education (preventive education) should be provided.
Have you ever had a sexually transmitted disease?	
Were you ever pregnant? What was the result of that pregnancy?	
Have you had or considered having a gynecologic examination?	This examination should be performed for all sexually active adolescent girls and is suggested as a routine examination for those older than 21 years of age (ACOG, 2004).
Anus and Rectum	
How often does your child have bowel movement? What does it look like?	This helps to assess the child's nutritional intake and gastrointestinal function.
At what age was your child toilet trained (bowel)?	This helps to determine whether and when child reaches developmental milestones.
Does your child ever soil his or her pants?	With a history of encopresis, obtain the routine that the family follows to deal with problem.
Is there any history of bleeding, constipation, diarrhea, rectal itching, or hemorrhoids?	Hemorrhoids are very unusual in children, unless chronically constipated. They may indicate an intraabdominal mass or child abuse (sodomy).
Musculoskeletal System	
Has your child ever had limited range of motion, joint pain, stiffness, paralysis? Have you noticed any bone deformity?	A positive history of any of these requires further investigation.

continued

FAMILY HISTORY *Continued*

Question	*Rationale*
Has your child ever had any fractures?	Frequent fractures may suggest a disorder of the musculoskeletal system or child abuse.
Has your child ever used any corrective devices (orthopedic shoes, scoliosis brace)?	This should be noted as it may affect/explain findings during the physical examination.
Describe your child's posture?	Children, especially females, should be screened for scoliosis.
Is your child involved in any sports? What type of protective gear do they use?	Provide appropriate client teaching about safety and protective gear as needed.
Neurologic System	
Does your child have any learning disabilities? Does your child have any attention problems at home or at school?	Learning disabilities may hinder a child's performance at school and/or indicate a neurological disorder.
Has your child ever experienced any problems with memory?	Memory problems may indicate neurological disorders.
Has your child ever had a seizure?	Seizures may indicate a neurological or cardiovascular disorder.
Has your child ever had a head injury?	Head trauma may cause intracranial bleeding or other injuries.
Has your child ever experienced any problems with motor coordination?	Uncoordinated movements or difficulty with coordination may indicate neurological disorders.

Growth and Development

Nurses must possess a baseline knowledge of the fundamental principles of growth and development as well as strategies for assessment and client teaching. Several theories exist regarding the various stages and phases of development. It is suggested that nurses review the basic principles of the major theorists, such as Erikson and Piaget, to refresh their frames of reference. Information about these theorists is readily accessible in any basic or developmental psychology text. The Denver Developmental Screening Test is also available for guidance when assessing the child's motor, language, and social development at the particular age (see Chapter 30, Assessment Tool 30-1).

Growth Patterns

Appendix F includes pediatric growth charts.

TODDLERS

Height and weight increase in a steplike rather than a linear fashion, reflecting the growth spurts and lags characteristic of toddlerhood. The toddler's characteristic protruding abdomen results from underdeveloped abdominal muscles. Bowleggedness typically persists through toddlerhood because the leg muscles must bear the weight of the relatively large trunk. The height at age 2 years approximately equals one-half of the child's adult height. The child's birth weight quadruples by age 2.5 years. HC equals chest circumference by 1 to 2 years. Total increase in HC in the second year of life is 2.5 cm, and the rate then increases slowly at 0.5 inch per year until age 5 years. Primary dentition (20 deciduous teeth) is completed by 2.5 years.

PRESCHOOLERS

Preschoolers are generally slender, graceful, and agile. The average 4-year-old child is 101.25 cm tall and weighs 16.8 kg (37 lb).

SCHOOL-AGE CHILDREN

During the school-age period, girls often grow faster than boys and commonly surpass boys in height and weight. During preadolescence extending from about age 10 to 13, children commonly experience rapid and uneven growth compared with age mates. The average 6-year-old child is 112.5 cm tall and weighs 21 kg (46 lb), whereas the average 12-year-old child is 147.5 cm tall and weighs 40 kg (88 lb). Beginning around age 6, permanent teeth erupt and deciduous

teeth are gradually lost. Caries, malocclusion, and periodontal disease become evident.

ADOLESCENTS

From 20% to 25% of adult height is achieved in adolescence. Girls grow 5 to 20 cm until about age 16 or 17. Boys grow 10 to 30 cm until about 18 or 20 years of age. From 30% to 50% of adult weight is achieved during adolescence (see Appendix F). Adolescence encompasses puberty—the period during which primary and secondary sex characteristics begin to develop and reach maturity. In girls, puberty begins between the ages of 8 and 14 years and is completed within 3 years. In boys, puberty begins between the ages of 9 and 16 years and is completed by age 18 or 19. During adolescence, hormonal influence causes important developmental changes.

Body mass reaches adult size, sebaceous glands become active, and eccrine sweat glands become fully functional. Apocrine sweat glands develop, and hair grows in the axillae, areola of the breast, and genital and anal regions. Body hair assumes characteristic distribution patterns and texture changes (see Tables 31-1, 31-2, and 31-3).

During puberty, girls experience growth in height, weight, breast development, and pelvic girth with expansion of uterine tissue. Menarche typically occurs about 2.5 years after onset of puberty. Boys experience increases in height, weight, muscle mass, and penis and testicle size. Facial and body hair growth and voice deepening also occur. The onset of spontaneous nocturnal emissions of seminal fluid is an overt sign of puberty, analogous to menarche in girls. Sexual development is evaluated by noting the specific stages that take place in boys and girls.

Motor Development

TODDLERS

Motor development should be evaluated at well-child visits. Using the Denver Developmental Tool can assist the nurse in noting the developmental milestones of the child at the particular age.

The major gross motor skill is locomotion. At 15 months, toddlers walk without help (Fig. 31-4). At 18 months, they walk upstairs with one hand held. At 24 months, toddlers walk up and down stairs one step at a time. At 30 months, they jump with both feet.

Fifteen-month-old toddlers can build a two-block tower and scribble spontaneously. At 18 months, they can build a three- to four-block tower. Toddlers at 24 months imitate a vertical stroke; at 30 months, they build an eight-block tower and copy a cross.

Sample questions for toddlerhood include

- When did your child first walk?
- Can your toddler walk up and down steps?
- Can your toddler jump with both feet?
- Does your toddler spontaneously scribble?

Figure 31-4 The toddler is proud of her ability to stand and walk without help.

Figure 31-5 This preschooler enjoys riding a tricycle.

PRESCHOOLERS

At 3 years old, children can ride a tricycle (Fig. 31-5), go upstairs using alternate feet, stand on one foot for a few seconds, and broad jump. Four-year-old children can skip, hop on one foot, catch a ball, and go downstairs using alternate feet. At 5 years, children can skip on alternate feet, throw and catch a ball, jump rope, and balance on alternate feet with eyes closed.

Three-year-old children can build a tower of up to 10 blocks, build three-block bridges, copy a circle, and imitate a cross. At 4 years old, children can lace shoes, copy a square shape, trace a diamond shape, and add three parts to a stick figure. A five-year-old child can tie shoelaces, use scissors well, copy diamond and triangle shapes, add seven to nine parts to a

stick figure, and print a few letters and numbers and her or his first name.

Sample questions for preschoolers include

- Can your preschooler run, hop, and skip?
- Can your preschooler lace shoes?
- Can your preschooler write his or her first name?

SCHOOL-AGE CHILDREN

Skills acquired during the school years include bicycling, rollerskating, rollerblading, and skateboarding. Running and jumping improve progressively, and swimming is added to the child's repertoire.

Printing skills develop in the early school years; script skills in later years. School-age children also develop greater dexterity and competence for crafts (Fig. 31-6), video games, and computers.

Sample questions for school-age children include

- Can your school-age child ride a bicycle?
- Can your school-age child write script?

ADOLESCENTS

Gross motor skills have reached adult levels, and fine motor skills continue to be refined.

Sample questions for the adolescent include

- Does your adolescent have a job, hobby, or interest that involves hand skills? If so, how is his or her performance?
- Does you adolescent participate in sports?

Sensory Perception

TODDLERS

Toddlers' visual acuity and depth perception improve, and they are able to recall visual images. Toddlers begin learning the ability to listen and comprehend. As every parent knows, listening is different from hearing. This ability includes attending to what is heard, discriminating sound qualities, creating cognitive associations with previous learning, and remembering. The olfactory and gustatory senses are influenced by voluntary control and are associated with other sensory and motor areas. Therefore, toddlers refuse to eat anything that looks unpleasant to them. Children also begin to learn conditioned reactions to odors at this age.

Figure 31-6 This 6-year-old enjoys cutting shapes with safety scissors.

PRESCHOOLERS

Color and depth perception become fully developed. Preschoolers may be aware of visual difficulties. Hearing reaches its maximum level and listening further develops. Preschoolers usually enjoy vision and hearing testing.

SCHOOL-AGE CHILDREN

Visual capacity reaches adult level (20/20) by age 6 or 7 years. Hearing acuity is almost complete.

ADOLESCENTS

All senses have reached their mature capacity by adolescence.

Sample questions to assess for vision problems include

Does your child frequently rub his eyes?

Does your child become irritable with close work?

Does your child blink repeatedly?

Does your child ever appear cross-eyed?

Does your child strain to see distant objects or sit close to the TV?

Does your child reverse letters or numbers?

Does your child ever complain of headache?

Sample questions to assess for hearing deficits include:

Does your child respond to verbal commands? (Remember that we can only test hearing, not listening.)

Does your child sit too close to the TV?

Does your adolescent blast the stereo? (This may not indicate a hearing deficit, as it is typical behavior; however, it can lead to hearing deficit.)

Does your child have any speech difficulties?

Sample questions to assess sense of smell and taste include:

Does your child ever complain of having difficulty with his sense of smell?

Does your child experience difficulty with taste?

Cognitive and Language and Development

TODDLERS

The sensorimotor phase (between ages 12 and 24 months) involves two substages in toddlerhood: tertiary circular reactions (age 12 to 18 months) involving trial-and-error experimentation and relentless exploration and mental combinations (age 18 to 24 months) during which the toddler begins to devise

new means for accomplishing tasks through mental calculations. Toddlers go through a preconceptual substage of the preoperational phase typical of preschoolers. During this time, the child uses representational thought to recall the past, represent the present, and anticipate the future. As toddlers get older, they begin to enter the preoperational phase. This phase is described in the following section on preschoolers.

At 15 months, toddlers use expressive jargon. At 2 years, they say 300 words and use 2-to 3-word phrases and pronouns. At 2.5 years, toddlers give their first and last names and use plurals.

Sample nursing history questions for toddlers include

- Can your toddler name some body parts?
- Can your toddler state first and last name?
- Does your toddler imitate adults?
- Does your toddler put two words together to form sentence? (e.g., "me go")?

PRESCHOOLERS

This stage of preoperational thought (age 2 to 7 years) consists of two phases. In the preconceptual phase, extending from age 2 to 4, the child forms concepts that are not as complete or logical as an adult's; makes simple classifications; associates one event with a simultaneous one (transductive reasoning); and exhibits egocentric thinking.

In the intuitive phase extending from age 4 to 7, the child becomes capable of classifying, quantifying, and relating objects but remains unaware of the principles behind these operations; exhibits intuitive thought processes (is aware that something is right but cannot say why); is unable to see viewpoint of others; and uses many words appropriately but without a real knowledge of their meaning. Preschoolers exhibit magical thinking and believe that thoughts are all-powerful. They may feel guilty and responsible for bad thoughts, which, at times, may coincide with the occurrence of a wished event (e.g., wishing a sibling were dead and the sibling suddenly needs to be hospitalized.).

Three-year-old children can say 900 words, 3- to 4-word sentences, and can talk incessantly. Four-year-old children can say 1,500 words, tell exaggerated stories, and sing simple songs. This is also the peak age for "why" questions. Five-year-old children can say 2,100 words, and they know four or more colors, the names of the days of the week, and the months.

Sample questions for preschoolers include

- Does your preschooler tell fantasy stories or have an imaginary friend?
- Does your preschooler have an invisible friend?
- Can your preschooler make simple classifications? (e.g., dogs and cats)?
- Is your preschooler "chatty"? Does your preschooler frequently ask "why?"
- Can your preschooler name at least four colors?

SCHOOL-AGE CHILDREN

A child aged 7 to 11 years is in the stage of concrete operations marked by inductive reasoning, logical operations, and reversible concrete thought. Specific characteristics of this stage include movement from egocentric to objective thinking: seeing another's point of view; seeking validation and asking questions; focusing on immediate physical reality with inability to transcend the here and now; difficulty dealing with remote, future, or hypothetical matters; development of various mental classifying and ordering activities; and development of the principle of conservation of volume, weight, mass, and numbers. Typical activities of a child at this stage may include collecting and sorting objects (e.g., baseball cards, dolls, marbles); ordering items according to size, shape, weight, and other criteria; and considering options and variables when problem solving. Electronic games (X-Box, PlayStation) are popular with this age group.

Children develop formal adult articulation patterns by age 7 to 9. They learn that words can be arranged in terms of structure. The ability to read is one of the most significant skills learned during these years (Fig. 31-7).

Sample questions for school-age children include

- Can your school-age child see another's point of view?
- Does your school-age child collect things? (e.g., baseball cards, dolls)?
- Does your school-age child try to solve problems?
- How well does your school-age child do in school? Also ask school-age child and compare the answers.
- How well does your school-age child read?

ADOLESCENTS

In the development of formal operations, which commonly occurs from ages 11 to 15 years, the adolescent develops abstract

Figure 31-7 Reading is a milestone achievement for a school-age child.

reasoning. This period consists of three substages:

Substage 1: The adolescent sees relationships involving the inverse of the reciprocal.

Substage 2: The adolescent develops the ability to order triads of propositions or relationships.

Substage 3: The adolescent develops the capacity for true formal thought.

In true formal thought, the adolescent thinks beyond the present and forms theories about everything, delighting especially in considerations of "that which is not." However, adolescents in this age group do not have futuristic thoughts. They do not relate current events "here and now" to long-term results (2 years from now). An example of this includes teenagers who are sexually active and who may not consider the consequences of sexual activity (pregnancy and parenthood).

Sample nursing history questions for adolescents include

- Do you consider your adolescent to be a problem solver?
- How well does your adolescent do in school? Also ask the adolescent and compare the responses.

Moral Development (Kolberg)

TODDLER

A toddler is typically at the first substage of the preconventional stage involving punishment and obedience orientation in which he or she makes judgments on the basis of avoiding punishment or obtaining a reward. Discipline patterns affect a toddler's moral development. For example, physical punishment and withholding privileges tend to give the toddler a negative view of morals; withholding love and affection as punishment leads to feelings of guilt in the toddler. Appropriate disciplinary actions include providing simple explanations about why certain behaviors are unacceptable, praising appropriate behavior, and using distraction when the toddler is headed for danger.

PRESCHOOLER

A preschooler is in the preconventional stage of moral development, which extends to 10 years. In this phase, conscience emerges, and the emphasis is on external control. The child's moral standards are those of others, and he or she observes them either to avoid punishment or reap rewards.

SCHOOL-AGE CHILD

A child at the conventional level of the role conformity stage (generally age 10 to 13 years) has an increased desire to please others. The child observes and, to some extent, externalizes the standards of others. The child wants to be considered "good" by those people whose opinion matters to him or her.

ADOLESCENT

Development of the postconventional level of morality occurs at about age 13, marked by the development of an individual conscience and a defined set of moral values. For the first time, the adolescent can acknowledge a conflict between two socially accepted standards and try to decide between them. Control of conduct is now internal, both in standards observed and in reasoning about right or wrong.

Sample nursing history questions for toddlerhood through adolescence include

- Does your child understand the difference between right and wrong?
- Do you discuss family values with your child?
- Do you have family rules? How are they implemented?
- How are disciplinary measures handled?
- Has your child ever had any problems with lying, cheating, or stealing?
- Has your child ever required disciplinary action at school?
- Has your child ever violated the law?

Psychosocial Development (Erikson)

TODDLER

Erikson terms the psychosocial crises facing a child between ages 1 and 3 years *autonomy versus shame and doubt*. The psychosocial theme is "to hold on; to let go." The toddler has developed a sense of trust and is ready to give up dependence to assert his or her budding sense of control, independence, and autonomy (Fig. 31-8). The toddler begins to master the following:

- Individuation—differentiation of self from others
- Separation from parent(s)
- Control over bodily functions
- Communication with words
- Acquisition of socially acceptable behavior
- Egocentric interactions with others

The toddler has learned that his or her parents are predictable and reliable. The toddler begins to learn that his or her own behavior has a predictable, reliable effect on others. The toddler learns to wait longer for needs gratification. The toddler often uses "no" even when he or she means "yes." This is done to assert independence (negativistic behavior). A sense of shame and doubt can develop if the toddler is kept dependent in areas where he or she is capable of using newly acquired skills or if made to feel inadequate when attempting new skills. A toddler often continues to seek a familiar security object, such as a blanket, during times of stress.

Figure 31-8 Toddlers love to assert their sense of control, independence, and autonomy.

Sample questions for the toddler include

- Does your toddler try to do things for himself or herself (e.g., feed, dress)?
- Does your toddler have temper tantrums? How are they handled?
- Does your toddler frequently use the word "no"?
- At what age was your toddler completely toilet trained?
- Does your toddler actively explore the environment?

PRESCHOOLER

Between ages 3 and 6 years, a child faces a psychosocial crisis that Erikson terms *initiative versus guilt*. The child's significant other is the family. At this age, the child has normally mastered a sense of autonomy and moves on to master a sense of initiative. A preschooler is an energetic, enthusiastic, and intrusive learner with an active imagination. Conscience (an inner voice that warns and threatens) begins to develop. The child explores the physical world with all his or her senses and powers. Development of a sense of guilt occurs when the child is made to feel that his or her imagination and activities are unacceptable. Guilt, anxiety, and fear result when the child's thoughts and activities clash with parental expectations. A preschooler begins to use simple reasoning and can tolerate longer periods of delayed gratification.

Sample questions for the preschooler include

- Does your preschooler have an active imagination?
- Does your preschooler imitate adult activities?
- Does your preschooler engage in fantasy play?
- Does your preschooler frequently ask questions?
- Does your preschooler enjoy new activities?

SCHOOL-AGE CHILD

Erikson terms the psychosocial crisis faced by a child aged 6 to 12 years *industry versus inferiority*. During this period, the child's radius of significant others expands to include school and instructive adults. A school-age child normally has mastered the first three developmental tasks—trust, autonomy, and initiative—and now focuses on mastering industry. A child's sense of industry grows out of a desire for real achievement. The child engages in tasks and activities that he or she can carry through to completion. The child learns rules and how to compete with others and to cooperate to achieve goals. Social relationships with others become increasingly important sources of support. The child can develop a sense of inferiority stemming from unrealistic expectations or a sense of failing to meet standards set for him or her by others. Because the child feels inadequate, his or her self-esteem sags.

Sample questions for the school-age child include

- What are your school-age child's interests/hobbies?
- Does your school-age child interact well with teachers, peers?
- Does your school-age child enjoy accomplishments?
- Does your school-age child shame self for failures?
- What is your school-age child's favorite activity?

ADOLESCENT

Erikson terms the psychosocial crisis faced by adolescents (aged 13 to 18 years) *identity versus role diffusion*. For an adolescent, the radius of significant others is the peer group. To an adolescent, development of who he or she is and where he or she is going becomes a central focus. The adolescent continues to redefine his or her self-concept and the roles that he or she can play with certainty. As rapid physical changes occur, adolescents must reintegrate previous trust in their body, themselves, and how they appear to others. The inability to develop a sense of who he or she is and what he or she can become results in role diffusion and inability to solve core conflicts.

Sample questions for adolescents include

- Does your adolescent have a peer group?
- Does your adolescent have a best friend?
- Does your adolescent exhibit rebellious behavior at home?
- How does your adolescent see self as fitting in with peers?
- What does your adolescent want to do with her life?

Psychosexual Development (Freud)

It is suggested that children of all ages be questioned about sexual abuse. This may be elicited by asking, "Has anyone ever touched you where or when you did not want to be touched?"

TODDLER

In the *anal stage,* typically extending from age 8 months to 4 years, the erogenous zone is the anus and buttocks and sexual activity centers on the expulsion and retention of body waste. In this stage, the child's focus shifts from the mouth to the anal area with emphasis on bowel control as he or she gains neuromuscular control over the anal sphincter. The toddler experiences both satisfaction and frustration as he or she gains control over withholding and expelling, containing and releasing. The conflict between "holding on" and "letting go" gradually resolves as bowel training progresses; resolution occurs once control is firmly established. Toilet training is a major task of toddlerhood (Fig. 31-9). Readiness is not usual until 18 to 24 months of age. Bowel training occurs before bladder;

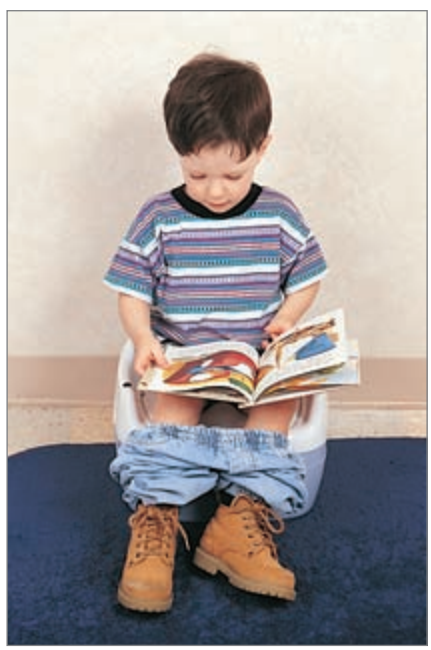

Figure 31-9 Toilet training is a major task of toddlerhood.

night bladder training usually does not occur until 3 to 5 years of age. Masturbation can occur from body exploration. Toddlers learn words associated with anatomy and elimination and can distinguish the sexes.

Sample questions for the toddler include

- Does your toddler have any problems with toilet training?
- Does your toddler masturbate?

PRESCHOOLER

In the *phallic stage* extending from about 3 to 7 years of age, the child's pleasure centers on the genitalia and masturbation. Many preschoolers masturbate for physiologic pleasure. The Oedipal stage occurs, marked by jealousy and rivalry toward the same-sex parent and love of the opposite-sex parent. The Oedipal stage typically resolves in the late preschool period with a strong identification with the same-sex parent. Sexual identity is developed during this time. Modesty may become a concern, and the preschooler may have fears of castration. Because preschoolers are keen observers but poor interpreters, the child may recognize but not understand sexual activity. Before answering a child's questions about sex, parents should clarify what the child is really asking and what the child already thinks about the specific subject. Questions about sex should be answered simply and honestly, providing only the information that the child requests; additional details can come later.

Sample questions for the preschooler include

- Does your preschooler masturbate?
- Does your preschooler know what sex he or she is?
- Has your preschooler asked questions about sex, childbirth, and the like?

SCHOOL-AGE CHILD

The *latency period,* extending from about 5 to 12 years, represents a stage of relative sexual indifference before puberty and adolescence. During this period, development of self-esteem is closely linked with a developing sense of industry in gaining a concept of one's value and worth. Preadolescence begins near the end of the school-age years and discrepancies in growth and maturation between the sexes become apparent. A school age child has acquired much of his or her knowledge of and many of his or her attitudes toward sex at a very early age. During the school-age years, the child refines this knowledge and these attitudes. Questions about sex require honest answers based on the child's level of understanding.

Sample questions for the school age child include

- Does your school-age child interact with same-sex peers?
- What has your school-age child been told about puberty and sex?

ADOLESCENT

In the *genital stage,* which extends from about age 12 to 20 years, an adolescent focuses on the genitals as an erogenous zone and engages in masturbation and sexual relations with others. During this period of renewed sexual drive, an adolescent experiences conflict between his or her own needs for sexual satisfaction and society's expectations for control of sexual expression. Core concerns of adolescents include body image development and acceptance by the opposite sex. Relationships with the opposite sex are important (Fig. 31-10). Adolescents engage in sexual activity for pleasure, to satisfy drives and curiosity, as a conquest, for affection, and because of peer pressure. Teaching about sexual function, begun during the school years, should expand to cover more in-depth information on the physical, hormonal, and emotional changes of puberty. An adolescent needs accurate, complete information on sexuality and cultural and moral values. Information must include how pregnancy occurs; methods of preventing pregnancy stressing that male and female partners both are responsible for contraception; and transmission of and protection against sexually transmitted diseases, especially acquired immunodeficiency syndrome (AIDS) and hepatitis.

Figure 31-10 During adolescence, relationships with the opposite sex are important stepping stones to adulthood.

A full, confidential sexual/sexuality history should be obtained from adolescents. This history includes questioning previously noted in the reproductive review of systems as well as

- What is your sexual preference?
- How do you feel about becoming a man/woman?

Lifestyle and Health Practices

Normal Nutritional Requirements

Proper nutrition is necessary for childhood growth and development. Food and feeding are important parts of growing up with needs and desires changing as the child grows (Fig. 31-11). Table 31-8 provides several nutritional requirements for each age group.

General overviews for each phase of nutritional follow.

TODDLERS

Growth rate slows dramatically during the toddler years, thus decreasing the need for calories, protein, and fluid.

Figure 31-11 This toddler enjoys helping prepare his lunch.

Table 31-8 How Food Label Reference Values (DV) Compare to the Nutritional Recommendations for Children

		Nutrient Recommendations by Age (DRI)*				
Nutrient	**DV**	**2–3 years**	**4–8 years**	**9–13 years**	**14–18 yr girls**	**14–18 yr boys**
Protein (grams)	50	13	19	34	46	52
Iron (mg)	18	7	10	8	15	11
Calcium (mg)	1000	500	800	1300	1300	1300
Vitamin A (IU)	5000	1000	1333	2000	2333	3000
Vitamin C (mg)	60	15	25	45	65	75
Fiber (g)	23	14–19	19–23	23–28 (girls) 25–31 (boys)	23	31–34
Sodium (mg)	2400	1000–1500	1200–1900	1500–2200	1500–2300	1500–2300
Cholesterol (mg)	300	<300 for over age 2	<300	<300	<300	<300
Total Fat (g)**	65	33–54 (30–35% of calories)	39–62 (25–35% of calories)	62–85 (25–35% calories)	55–78 (25–35% calories)	61–95 (25–35% of calories)
Saturated Fat (g)**	20	12–16 (>age 2) (<10% calories)	16 to 18 (<10% calories)	girls: 18–22 boys: 20–24 (<10% calories)	22 (<10% calories)	24–27 (<10% calories)
Calories***	2000	1000–1400 (2–3 years)	1400–1600	girls: 1600–2000 boys: 1800–2200	2000	2200–2400

Baylor College of Medicine. (2007). How food label reference values (DV) compare to the nutritional recommendations for children. Available at http://www.bcm.edu.

Starting at about 12 months, most toddlers are eating the same foods as the rest of the family. At 18 months, many toddlers experience physiologic anorexia and become picky eaters. They experience food jags and eat large amounts one day and very little the next. They like to feed themselves and prefer small portions of appetizing foods. Frequent, nutritious snacks can replace a meal. Food should not be used as a reward or a punishment. Milk should be limited to no more than 1 quart per day to ensure intake and absorption of iron-enriched foods to prevent anemia. Recommendations for screening for anemia should be based on age, sex, and risk of anemia.

PRESCHOOLERS

Requirements are similar to those of the toddler. Three- and four-year-old children may still be unable to sit with family during meals. Four-year-old children are picky eaters. Five-year-old children are influenced by food habits of others. A 5-year-old child tends to be focused on the "social" aspects of eating: table conversation, manners, willingness to try new foods, and help with meal preparation and cleanup.

SCHOOL-AGE CHILDREN

A school-age child's daily caloric requirements diminish in relation to body size. Caregivers should continue to stress the need for a balanced diet from the food pyramid because resources are being stored for the increased growth needs of adolescence. The child is exposed to broader eating experiences in the school lunchroom; he or she may still be a "picky" eater but should be more willing to try new foods. Children may trade, sell, or throw away home-packed school lunches. At home, the child should eat what the family eats; the patterns that develop now stay with the child into adulthood.

ADOLESCENTS

An adolescent's daily intake should be balanced among the foods in the pyramid; average daily caloric intake requirements vary with sex and age, as noted in Table 31-8. Adolescents typically eat whatever they have at break activities; readily available nutritious snacks provide good insurance for a balanced diet. Milk (calcium) and protein are needed in quantity to aid in bone and muscle growth. Maintaining adequate quality and quantity of daily intake may be difficult because of factors such as busy schedule, influence of peers, and easy availability of fast foods. Family eating patterns established during the school years continue to influence an adolescent's food selection. Female adolescents are very prone to negative dieting behaviors. Common dietary deficiencies include iron, folate, and zinc.

Sample nursing history questions for toddlerhood to adolescence include

- What does your child eat in a typical day?
- Is your child on any special type of diet? If so, what for?
- What types of food does your child like/dislike most?
- Does your child have any feeding problems?
- Is your child allergic to any foods? If so, how does your child react to those foods?
- Does your child take any vitamin or mineral supplements?
- How much fluid does your child drink per day?
- Is your water fluorinated? If not, does your child take supplements?
- Has your child had any recent weight gain or loss?

These questions should be also asked directly of adolescents when parents are not present:

- Does your child have any concerns with body image?
- Has your child been on any self-imposed diet?
- How often does your child weigh himself or herself?
- Has your child ever used any of the following methods for weight loss: self-induced vomiting? Laxatives? Diuretics? Excessive exercise? Fasting?

Normal Activity and Exercise

Activity and exercise are important components of a child's life and, therefore, should be assessed when a complete subjective examination is being performed. Play, activity, and exercise patterns can give the nurse valuable clues about the overall health of a child. Display 31-2 describes play characteristics across childhood. This assessment also allows the examiner to provide health promotion teaching.

Sample nursing history questions for toddlerhood to adolescence include

- What is your child's activity like during a typical 24-hour day (including activities of daily living, play, and school)?
- What are your child's favorite activities and toys?
- How many hours of television or video games does your child watch per day? What is his or her favorite programs/movies? Do you discuss TV shows/movies with your child?
- Are there any restrictions on TV watching (content, hours, relationship to chores/homework)?
- What chores does your child do at home (school-age child/adolescent)?
- Does the older child/adolescent work outside the home? What does he or she do?
- How many hours does he or she work during the school year?
- Does the work interfere with school or social life?
- Why does the child work?
- Does your child have any problems that restrict physical activity?
- Does your child require any special devices to manage with activities of daily living/play?
- At what age did your child first walk?
- Can your child keep up with his or her peers?
- Does your child have any hobbies/interests (ages 6 and older)?
- What sports does your child participate in?

(text continues on page 719)

DISPLAY 31-2 Characteristics of Play Among Children

Toddlers

Toddlers engage in parallel play—they play alongside, not with, others. Imitation is one of the most common forms of play and locomotion skills can be enhanced with push-pull toys. Toddlers change toys frequently because of short attention spans.

Preschoolers

Typical preschool play is associative—interactive and cooperative with sharing. Preschoolers need contact with age mates. Activities, such as jumping, running and climbing, promote growth and motor skills. Preschoolers are at a typical age for imaginary playmates. Imitative, imaginative, and dramatic play are important. TV and video games should only be a part of the child's play and parents should monitor content and amount of time spent in use. Associative play materials include dress-up clothes and dolls, housekeeping toys, play tents, puppets, and doctor and nurse kits. Curious and active preschoolers need adult supervision, especially near bodies of water and gym sets.

School-Age Children

Play becomes more competitive and complex during the school-age period. Characteristic activities include joining team sports, secret clubs, and "gangs"; scouting or like activities; working complex puzzles, collecting, playing quiet board games, reading, and hero worshiping. Rules and rituals are important aspects of play and games.

Normal Sleep Requirements and Patterns

Sleep is an integral part of health assessment. Lack of sleep can affect all areas of health including cognitive, physical, and emotional health. Children require varying amounts of sleep based primarily on their age. They also have varying sleep habits that correlate with their developmental status.

TODDLERS

Total sleep requirements decrease during the second year and average about 12 hours per day. Most toddlers nap once a day until the end of the second or third year. Sleep problems are common and may be due to fears of separation. Bedtime rituals and transitional objects, such as a blanket or stuffed toy, are helpful.

PRESCHOOLERS

The average preschooler sleeps 11 to 13 hours per day. Preschoolers typically need an afternoon nap until age 5, when most begin kindergarten. Bedtime rituals persist and sleep problems are common. These include nightmares, night terrors, difficulty settling in after a busy day, and stretching bedtime rituals to delay sleep. Continuing reassuring bedtime rituals with relaxation time before bedtime should help the child settle in. The daytime nap may be eliminated if it seems to interfere with nighttime sleep. For many preschoolers, a security object and night light continue to help relieve anxiety/fears at bedtime (Fig. 31-12).

Figure 31-12 A security object, such as a favorite toy, can help a preschooler to sleep (© B. Proud).

SCHOOL-AGE CHILDREN

School-age children's individual sleep requirements vary but typically range from 8 to 9.5 h per night. Because the growth rate has slowed, children actually need less sleep now than during adolescence. The child's bedtime can be later than during the preschool period but should be firmly established and adhered to on school nights. Reading before bedtime may facilitate sleep and set up a positive bedtime pattern. Children may be unaware of fatigue, and, if allowed to remain up, they will be tired the next day.

ADOLESCENTS

During adolescence, rapid growth, overexertion in activities, and a tendency to stay up late commonly interfere with sleep and rest requirements. In an attempt to "catch up" on missed sleep, many adolescents sleep late at every opportunity. Each adolescent is unique in the number of sleep hours required to stay healthy and rested.

Sample nursing history questions for toddlerhood to adolescence include

- Where does child sleep; what type of bed?
- With whom does the child sleep?
- Does child use a sleep aid (blanket, toy, night light, medication, beverage)?
- Does the child have a bedtime ritual?
- What time does child go to bed at night?
- What time does child get up in the morning?
- Does child sleep through the night?
- Does child require feeding at night, and, if so, what and how is it administered (bottle caries)?
- What is child's nap schedule, and how long does child sleep for naps?
- Is the child's sleep restful or restless; any snoring or breathing problems?
- Does the child sleepwalk or -talk?
- Does the child have nightmares or night terrors?
- If the child has sleep problems, what do you do for them?

Socioeconomic Situation

A family's socioeconomic situation greatly affects all aspects of a child's life including development, nutrition, and overall health and functioning. Low socioeconomic status has the greatest adverse effect on health, and many children in this country live below the poverty level. Therefore, it is critical to obtain this assessment to initiate intervention strategies at the earliest opportunity.

Sample nursing history questions for infancy to adolescence include

- Does the child have health care insurance?
- Would you seek more medical assistance (e.g., in the way of preventive screenings, checkups, sick visits, medication requests, eyeglass prescriptions) for your child if you had the money to do so?
- Do you have any financial difficulties with which you need assistance?
- How would you describe the family's living conditions?

Relationship and Role Development

The development of relationships and a role within groups is a crucial aspect of childhood. The ability of children to establish high-quality relationships and form specific roles in the early years significantly determines their ability to form high-quality relationships and roles when adulthood is reached.

Culture is an important factor in a person's relationship and role development. Things to consider include whether the child's culture/ethnicity is a minority within the major cultural group; the traditional role of children in the particular child's culture; and whether there is male or female dominance in the particular culture. Another major influence on the child's development of relationships and roles is the structure of the family. Various family structures include two-parent families, single-parent families, blended families, homosexual parent families, families with an adopted child, or families with a foster child.

Early intervention in and early prevention of poor relationships between the child and his or her caregivers, siblings, peers, and influential adults outside the immediate family are vital. Therefore, assessment of this aspect of a child's life is extremely important. It is important to ask the parent or caregiver as well as the child questions because they may have differing views concerning the nature of the child's relationships.

Sample nursing history questions for toddlerhood to adolescence (specifically geared to parent or caregiver) include

- What is your family structure?
- With what culture or ethnic group does your family identify?
- How would you describe your family support system?
- Who is child's primary caretaker (especially for smaller children, not in school)?
- What is the child's role in the family?
- What are the family occupations and schedules?
- How much time do you spend with children and what activities do you participate in when you are together?
- Have there been any changes in family lately—divorce, birth, deaths, moves?
- How does child get along with parents, siblings, extended family, teachers, and peers?
- Discuss your child's circle of friends.
- What disciplinary measures do you use?

Sample nursing history questions for toddlerhood to adolescence (specifically geared to child and/or adolescent) include

- How do you get along with your parents? brothers? sisters?
- What activities does the family do together?
- What chores do you do around the house?
- What would you consider your role in the family?
- What are the names of your family members and friends?
- Do you have a best friend?
- What do you like best about family/friends?
- What do you dislike about family/friends?
- What do you do/share with your friends?
- Do your parents know your friends? Do they like them?
- Do you get along with the other kids at school?
- Do you get along with your teacher(s)?

Self-Esteem and Self-Concept Development

Childhood is the time when an individual develops the self-esteem and self-concept that shapes him or her in adult life (Table 31-9). Therefore, an assessment of this nature is crucial to provide health promotion teaching, prevent future problems, and intervene with current problems. This is a good time to ask questions regarding the child's values and beliefs because these areas tend greatly to influence a person's self-concept. This assessment requires that the same questions be asked of both the parent and the child, because their opinions may be significantly different. Reassure the parent and child that all answers discussed will be kept confidential.

Sample nursing history questions for toddler to adolescence include (also ask these questions directly to the child; these questions are given in italics)

- How would you describe your child? *How would you describe yourself?*
- What does your child do best? *What do you do best?*
- In what areas does your child need improvement? *In what areas do you think you need improvement?*
- Is your child ever overly concerned about his or her weight? *Do you like your present weight? What would you like to weigh?*
- Are culture and religion important factors in your home? *Are culture and religion important to you?*
- In what religion is the child being reared? *What religion are you?*
- How does your child define right and wrong? *How would you decide if something were right or wrong?*
- What are your family values? *What values are important to you?*
- What are the child's goals in life? *What are your goals in life?*

Coping and Stress Management

Childhood is full of stressors and fears, including the developmental crises of transition to each life stage and common childhood fears such as the dark and being left alone (Tables 31-10 and 31-11). The ways in which children cope with stress and fear can affect their development and how they will handle subsequent life events. Coping mechanisms vary depending on developmental level, resources, situation, style, and previous experience with stressful events (Table 31-12). The ability of a child to cope is often influenced by individual

Table 31-9 Self-Concept Development

Toddler/Preschoolers	Greater sense of independence
Schoolagers	More aware of differences, norms, and morals; sensitive to social pressures
Adolescents	Self-concept crystallizes in later adolescence when child focuses on physical and emotional changes and peer acceptance

Table 31-10 Stressors in Children

Young children	Change in daily structure New sibling Separation
Older children	Starting school Long vacations Moving Change in family structure (remarriage) Christmas
Adolescents	Pregnancy Peer loss Breakup with boy/girl friend
All children	Parental loss (divorce, death, jail)

Table 31-11 Common Childhood Fears

Infants	Loud noises; falling and sudden movements in the environment; stranger anxiety begins around age 6 months
Toddlers	Loss of parents—separation anxiety; stranger anxiety; loud noises; going to sleep; large animals; certain people (doctor, Santa Claus); certain places (doctor's office); large objects or machines
Preschoolers	The dark; being left alone, especially at bedtime; animals (particularly large dogs); ghosts and other supernatural beings; body mutilation; pain; objects and people associated with painful experiences
Schoolagers	Failure at school; bullies; intimidating teachers; supernatural beings; storms; staying alone; scary things in TV and movies; consequences related to unattractive appearance; death
Adolescents	Relationships with people of the opposite sex; homosexual tendencies; ability to assume adult roles; drugs; AIDS; divorce; gossip; public speaking; plane and car crashes; death

Table 31-12 Coping Mechanisms in Children

Infants	Restlessness, rocking, playing with toys, crying, thumb sucking, sleeping
Toddlers/Preschoolers	Asking questions, wanting order, holding favorite toy, learning by trial and error, tantrums, aggression, thumb sucking, withdrawal, regression
Schoolagers	Trying problem solving; communicating, fantasizing, acting out situations, quiet, denial, regression, reaction formation
Adolescents	Problem solving, philosophical discussions, conforming with peers, asserting control, acting out, using drugs/alcohol, denial, projection, rationalization, intellectualization

temperament. Temperament involves the child's style of emotional and behavioral responses across situations. Temperament is biologic in origin; however, it is influenced by environmental characteristics and patterned by the society. This is significant because short- and long-term psychosocial adjustments are shaped by the goodness of fit between the child's temperament and the social environment.

Sample nursing history questions for infancy to adolescence include (questions asked of a child appear in italic print)

- What does your child do when he or she gets angry/frustrated? *What do you do when you get angry or frustrated?*
- What does your child do when he or she gets tired? *What do you do when you get tired?*
- When your child has a tantrum, how do you handle it?
- What things make your child scared? *What things scare you?*
- What does he or she do when scared? *What do you do when you're scared?*
- What kinds of things does your child worry about? *What kinds of things do you worry about?*
- When your child has a problem, what does he or she do? *When you have a problem, what do you do?*
- Have there been any big problems or changes in your family lately? *Have there been any big problems or changes in your family lately?*
- Is there a problem with alcohol or drugs? *Do you use tobacco, alcohol, or drugs?*
- Has your child ever run away from home? *Have you ever run away from home?*
- How does your child react when needs are not met immediately, and what do you do about it? *What do you do when you are sad? What do you do when you are angry?*
- Is your child "accident prone," and why do you think he or she is? *Did you ever think about hurting yourself? Did you ever think about killing yourself?* (Display 31-3)

COLLECTING OBJECTIVE DATA: PHYSICAL EXAMINATION

Preparing the Client

In most cases, physical assessment involves a head-to-toe examination that encompasses each body system. When examining children, the sequence should be altered to accommodate the child's developmental needs. Less threatening and least intrusive procedures, such as general inspection and heart and lung auscultation, should be completed first to secure the child's trust. Explain what you will be doing and what the child can expect to feel; allow the child to manipulate the equipment before it is used. Try to perform examination in a comfortable, nonthreatening area. The temperature should be warm, the room well lit, and all threatening instruments out of the child's view. The room should contain age-appropriate diversions such as toys and cartoons for younger children and posters for adolescents. If the child is uncooperative, first assess the reason (usually fear) then intervene appropriately. If still unsuccessful, involve parents, use a firm approach, and complete the examination as quickly but completely as possible. Involve the child in the physical examination at all times unless it is stressful for him or her.

Equipment

- Denver Developmental Kit
- Ophthalmoscope
- Otoscope with nasal speculum
- Scale/stadiometer
- Snellen Eye Chart
- Stethoscope

Physical Assessment

- Recognize how techniques and demeanor for interviewing and examining children differ among the age groups and from those used for interviewing and examining adults. Display 31-4 gives developmental approaches to the physical examination.
- Evaluate growth and development patterns according to the different pediatric age groups and across body systems.
- Recognize children who are difficult to examine because of anxiety or fear.
- Develop forms of age-appropriate "play" to distract less cooperative children so physical examination can be completed.

DISPLAY 31-3 Suicide Assessment: Risks and Signs

Suicide is a leading killer of young people, particularly teenagers. The nurse can be instrumental in detecting signs of impending suicide and possibly, intervening to prevent it. During the nursing assessment, several interviewing methods and questions may help uncover a young client's suicidal thoughts.

- Ask if the child ever thought of hurting or killing self (hurting is different from killing).
- If the answer is "yes," ask the child when he or she thought of killing self.
- Ask how the child planned to do it.
- Ask if the child ever tried to kill himself or herself before and if any help was received after the incident.
- Ask if the child believes that there are any other options besides suicide to resolve problems.

Children and adolescents who verbalize planned, lethal means to commit suicide, and who feel that they do not have any other options, are at extremely high risk of carrying out their plan—especially if they have attempted suicide in the past. Some risk factors and warning signs of potential suicide include the following:

Risk Factors

- Previous attempt
- Suicide of family member or close friend
- History of abuse, neglect, or psychiatric hospitalization
- Persistent depression
- Mental disorder (voices tell child to kill self)
- Substance abuse
- Difficult home situation
- Incarceration
- Few social opportunities; isolated
- Firearms in the home

Warning Signs

- Seems preoccupied with death themes, as in books, music, art, films, or TV shows
- Gives away valued possessions
- Talks about death, especially own
- Acts recklessly or adopts antisocial behavior
- Experiences rapid change in school performance
- Has episode of sudden cheerfulness after being depressed
- Exhibits dramatic change in everyday behaviors, such as sleeping and eating
- Smokes continuously (chain smoking)
- Expresses sense of worthlessness or hopelessness

DISPLAY 31-4 Developmental Approaches to the Physical Assessment

Children in each age group respond differently to the hands-on physical assessment; however, the following guidelines should be kept in mind:

Toddlers

Allow toddler to sit on parent's lap; enlist parent's aid; use play; praise cooperation.

Preschoolers

Use story telling; use doll and puppet play; give choices when able.

Schoolagers

Maintain privacy; use gown; explain procedures and equipment; teach about their bodies.

Adolescents

Ensure privacy and confidentiality; provide option of having parent present or not; emphasize normality; provide health teaching.

Puppet or doll play is a great way to prepare a preschooler for physical examination. (© B. Proud.)

PHYSICAL ASSESSMENT

Assessment Procedure	Normal Findings	Abnormal Findings
General Appearance and Behavior		
Note overall appearance. Observe hygiene, interaction with parents and yourself (and siblings if present). Note also facies (facial expressions), posture, nutritional status, speech, attention span, and level of cooperation. ➤ ***Clinical Tip*** • *Behavioral observation is one of the most important assessments to make with children because alterations usually signify health problems.*	*Child appears stated age, is clean, appears well nourished, and has no unusual body odor. Clothing is in good condition and appropriate for climate.* Child is alert, active, responds appropriately to stress of the situation, and maintains eye contact. Child is appropriately interactive for age, seeks comfort from parent; appears happy or appropriately anxious because of examination. Child is attentive and speech is appropriate for age, follows age-appropriate commands, and is reasonably cooperative. Toddler is lordotic when standing; preschooler is slightly bowlegged; older child demonstrates straight and well-balanced posture.	Lack of eye contact indicates many things including anxiety or significant psychosocial problems.  Lack of eye contact is normal for certain cultural groups such as Asians and Native Americans. Deviations from normal that can be discerned from a child's appearance or behavior are listed below. Certain facies may indicate fear, anxiety, anger, allergies, acute illness, pain, mental deficiency, or respiratory distress. A child's posture or movement may indicate pain, low self-esteem, rejection, depression, hostility or aggression. Hygiene gives insight into neglect, poverty, mental illness or retardation, knowledge deficit regarding hygiene (e.g., teen parent). Abnormal behavior may suggest neurologic problems (head trauma, cranial lesions), metabolic problems (diabetic ketoacidosis), psychiatric disorders, or psychosocial problems. Abnormal development (child does not appear stated age) may indicate mental retardation, abuse, neglect, or psychiatric disorders.
Developmental Assessment		
Screen for cognitive, language, social, and gross and fine motor developmental delays in the beginning of the physical assessment for preschoolers. Use a standardized assessment tool such as the Draw a Person, Revised Prescreening Developmental Questionnaire, or the Denver Developmental Screening Test II (DDST). In Chapter 30, Assessment Tool 30-1 presents the DDST II and directions for its use.	Child meets normal parameters for age. See information contained in subjective data section.	Child lags in earlier stages.

continued

PHYSICAL ASSESSMENT *Continued*

Assessment Procedure	Normal Findings	Abnormal Findings
Vital Signs		
Assess temperature. Use rectal, axillary, skin, or tympanic route when assessing the temperature. For children older than 4 years of age, the oral route can be used in addition to the other routes. To take a rectal temperature in a toddler, lay the child supine and lift lower legs up into the air, bending the legs at the hips. Insert lubricated rectal thermometer no more than 2 cm into rectum. Temperature registers in 3 to 5 min on a rectal thermometer. Lay a school-age child on the stomach on a table. Maintain firm hold on child's hips so child does not raise buttocks up during the procedure. Separate buttocks with thumb and forefinger of nondominant hand and insert thermometer. Axillary and/or tympanic temperature may also be used; however, these methods are less accurate and less reliable than the rectal temperature. See Chapter 7 for other temperature techniques.	Temperature is 98.6°F. ➤ ***Clinical Tip*** • *Use the rectal route only when absolutely necessary because of increased discomfort in older children. Rectal temperatures are also contraindicated in certain circumstances, such as perforated anus.*	Temperature may be altered by exercise, stress, crying, environment, diurnal variation (highest between 4 and 6 PM). Both hyperthermic and hypothermic conditions are noted in children.
Assess pulse rate. Count the pulse for a full minute. Children younger than 2 years should have apical pulse measured. Radial pulses may be taken in children over 2 years old (Fig. 31-13).	Awake and resting rates vary with the age of the child: 3 mo–2 y: 80–150 2–10 y: 70–110 10 y–adult: 55–90 Athletic adolescents tend to have lower pulse rates.	Pulse may be altered by apprehension or anxiety, medications, activity, and pain, as well as pathologic conditions.

Figure 31-13 Measuring radial pulse in child over 2 years (© B. Proud).

continued

Assessment Procedure	Normal Findings	Abnormal Findings
Assess respiratory rate. Monitor respirations in children older than 1 year the same as for adults.	Normal ranges are as follows: 6 mo–2 y: 20–30 3–10 y: 20–28 10–18 y: 12–20	Respiratory rate and character may be altered by medications, positioning, fever, activity, and anxiety or fear as well as pathologic conditions.
Evaluate blood pressure. Blood pressure should be measured annually in children 3 years and older, and in all ages when conditions warrant it. The appropriate cuff width is 50% to 75% of the upper arm (Fig. 31-14). The length should encircle the circumference without overlapping. A small diaphragm should be used for the stethoscope. If for some reason the arm cannot be used, a measurement can be taken on the thigh. If children younger than 3 years old require a blood pressure reading, a Doppler stethoscope should be used.	Normal ranges are as follows: *Systolic:* 1–7 years = age in years + 90 8–18 years = (2 × age in years) + 90 *Diastolic:* 1–5 years = 56 6–18 years = age in years + 52 (see also Table 31-13)	Systolic and diastolic BP above 95th percentiles for age and sex after three readings is considered high blood pressure. ➤ ***Clinical Tip*** • *If the blood pressure reading is too high for age, the cuff may be too small; it should cover two thirds of the child's upper arm. If the blood pressure reading is too low for age, the cuff may be too large. Chapter 7 explains how to take a blood pressure reading.*
Measurements		
Measure height. In a child younger than 2 years, determine height by measuring the recumbent length. Fully extend the body, holding the head in midline and gently grasping the knees and pushing them downward until the legs are fully extended and touching the table. If using a measuring board, place the head at the top of the board and the heels firmly at the bottom. Without a board, use paper	See the growth charts in Appendix F for normal findings. Asian children are smaller at all ages.	Significant deviation from normal in the growth charts would be considered abnormal.

Figure 31-14 Measuring the child's blood pressure requires a cuff that is appropriately sized (© B. Proud).

continued on page 728

Table 31-13 Blood Pressure Levels for the 90th and 95th Percentiles of Blood Pressure for Girls and Boys, Ages 1 to 17

		Systolic BP (mmHg), by Height Percentile from Standard Growth Curves							Diastolic BP (mmHg), by Height Percentile from Standard Growth Curves						
Age	BP Percentile[a]	5%	10%	25%	50%	75%	90%	95%	5%	10%	25%	50%	75%	90%	95%
Girls															
1	90th	97	98	99	100	102	103	104	53	53	53	54	55	56	56
	95th	101	102	103	104	105	107	107	57	57	57	58	59	60	60
2	90th	99	99	100	102	103	104	105	57	57	58	58	59	60	61
	95th	102	103	104	105	107	108	109	61	61	62	62	63	64	65
3	90th	100	100	102	103	104	105	106	61	61	61	62	63	63	64
	95th	104	104	105	107	108	109	110	65	65	65	66	67	67	68
4	90th	101	102	103	104	106	107	108	63	63	64	65	65	66	67
	95th	105	106	107	108	109	111	111	67	67	68	69	69	70	71
5	90th	103	103	104	106	107	108	109	65	66	66	67	68	68	69
	95th	107	107	108	110	111	112	113	69	70	70	71	72	72	73
6	90th	104	105	106	107	109	110	111	67	67	68	69	69	70	71
	95th	108	109	110	111	112	114	114	71	71	72	73	73	74	75
7	90th	106	107	108	109	110	112	112	69	69	69	70	71	72	72
	95th	110	110	112	113	114	115	116	73	73	73	74	75	76	76
8	90th	108	109	110	111	112	113	114	70	70	71	71	72	73	74
	95th	112	112	113	115	116	117	118	74	74	75	75	76	77	78
9	90th	110	110	112	113	114	115	116	71	72	72	73	74	74	75
	95th	114	114	115	117	118	119	120	75	76	76	77	78	78	79
10	90th	112	112	114	115	116	117	118	73	73	73	74	75	76	76
	95th	116	116	117	119	120	121	122	77	77	77	78	79	80	80
11	90th	114	114	116	117	118	119	120	74	74	75	75	76	77	77
	95th	118	118	119	121	122	123	124	78	78	79	79	80	81	81
12	90th	116	116	118	119	120	121	122	75	75	76	76	77	78	78
	95th	120	120	121	123	124	125	126	79	79	80	80	81	82	82
13	90th	118	118	119	121	122	123	124	76	76	77	78	78	79	80
	95th	121	122	123	125	126	127	128	80	80	81	82	82	83	84
14	90th	119	120	121	122	124	125	126	77	77	78	79	79	80	81
	95th	123	124	125	126	128	129	130	81	81	82	83	83	84	85
15	90th	121	121	122	124	125	126	127	78	78	79	79	80	81	82
	95th	124	125	126	128	129	130	131	82	82	83	83	84	85	86
16	90th	122	122	123	125	126	127	128	79	79	79	80	81	82	82
	95th	125	126	127	128	130	131	132	83	83	83	84	85	86	86
17	90th	122	123	124	125	126	128	128	79	79	79	80	81	82	82
	95th	126	126	127	129	130	131	132	83	83	83	84	85	86	86

continued

Table 31-13 Blood Pressure Levels for the 90th and 95th Percentiles of Blood Pressure for Girls and Boys, Ages 1 to 17 *Continued*

		Systolic BP (mmHg), by Height Percentile from Standard Growth Curves							Diastolic BP (mmHg), by Height Percentile from Standard Growth Curves						
Age	BP Percentile[a]	5%	10%	25%	50%	75%	90%	95%	5%	10%	25%	50%	75%	90%	95%
Boys															
1	90th	94	95	97	98	100	102	102	50	51	52	53	54	54	55
	95th	98	99	101	102	104	106	106	55	55	56	57	58	59	59
2	90th	98	99	100	102	104	105	106	55	55	56	57	58	59	59
	95th	101	102	104	106	108	109	110	59	59	60	61	62	63	63
3	90th	100	101	103	105	107	108	109	59	59	60	61	62	63	63
	95th	104	105	107	109	111	112	113	63	63	64	65	66	67	67
4	90th	102	103	105	107	109	110	111	62	62	63	64	65	66	66
	95th	106	107	109	111	113	114	115	66	67	67	68	69	70	71
5	90th	104	105	106	108	110	112	112	65	65	66	67	68	69	69
	95th	108	109	110	112	114	115	116	69	70	70	71	72	73	74
6	90th	105	106	108	110	111	113	114	67	68	69	70	70	71	72
	95th	109	110	112	114	115	117	117	72	72	73	74	75	76	76
7	90th	106	107	109	111	113	114	115	69	70	71	72	72	73	74
	95th	110	111	113	115	116	118	119	74	74	75	76	77	78	78
8	90th	107	108	110	112	114	115	116	71	71	72	73	74	75	75
	95th	111	112	114	116	118	119	120	75	76	76	77	78	79	80
9	90th	109	110	112	113	115	117	117	72	73	73	74	75	76	77
	95th	113	114	116	117	119	121	121	76	77	78	79	80	80	81
10	90th	110	112	113	115	117	118	119	73	74	74	75	76	77	78
	95th	114	115	117	119	121	122	123	77	78	79	80	80	81	82
11	90th	112	113	115	117	119	120	121	74	74	75	76	77	78	78
	95th	116	117	119	121	123	124	125	78	79	79	80	81	82	83
12	90th	115	116	117	119	121	123	123	75	75	76	77	78	78	79
	95th	119	120	121	123	125	126	127	79	79	80	81	82	83	83
13	90th	117	118	120	122	124	125	126	75	76	76	77	78	79	80
	95th	121	122	124	126	128	129	130	79	80	81	82	83	83	84
14	90th	120	121	123	125	126	128	128	76	76	77	78	79	80	80
	95th	124	125	127	128	130	132	132	80	81	81	82	83	84	85
15	90th	123	124	125	127	129	131	131	77	77	78	79	80	81	81
	95th	127	128	129	131	133	134	135	81	82	83	83	84	85	86
16	90th	125	126	128	130	132	133	134	79	79	80	81	82	82	83
	95th	129	130	132	134	136	137	138	83	83	84	85	86	87	87
17	90th	128	129	131	133	134	136	136	81	81	82	83	84	85	85
	95th	132	133	135	136	138	140	140	85	85	86	87	88	89	89

Source: Reprinted from National High Blood Pressure Education Program Working Group on Hypertension Control in Children and Adolescents. www.cdc.gov.

[a] Blood pressure percentile determined by a single measurement.

PHYSICAL ASSESSMENT *Continued*

Assessment Procedure	Normal Findings	Abnormal Findings
under the child and mark the paper at the top of the head and bottom of the heels. Then measure the distance between the two points. Determine an older child's height by having the shoeless child stand as straight as possible with head midline and vision line parallel between the ceiling and floor (Fig. 31-15). Child's back, buttocks, and back of heels should be against the wall; measure height with a stadiometer. Plot height measurement on an age- and gender-appropriate growth chart (birth to 36 months and 2 to 20 years).		
Measure weight on an appropriately sized beam scale with nondetectable weights. Weigh a small child lying or sitting on a scale that measures to the nearest 0.5 oz or 10 g. Weigh an older child standing on a scale that measures to the nearest 0.25 lb or 100 g. Weigh an older child in underpants or light gown to respect modesty. Plot weight measurement on age- and gender-appropriate growth chart (birth to 36 months and 2 to 20 years).	See Appendix F for normal findings.	Deviation from the wide range of normal weights is abnormal. See the growth charts in Appendix F and compare differences.
Measure head circumference (HC) or occipital frontal circumference (OFC) at every physical examination for toddlers younger than 2 years and older children when conditions warrant. Plot the measurement on standardized growth charts specific for gender.	HC (OFC) measurement should fall between the 5th and 95th percentiles and should be comparable to the child's height and weight percentiles.	HC (OFC) not within the normal percentiles may indicate pathology. Those greater than 95% may indicate macrocephaly. Those under the 5th percentile may indicate microcephaly. Increased HC (OFC) in children older than 3 years may indicate separation of cranial sutures due to increased intracranial pressure.

Figure 31-15 Measuring the height of a preschooler (© B. Proud).

continued

Assessment Procedure	Normal Findings	Abnormal Findings
Skin, Hair, and Nail		
Inspection and Palpation		
Observe skin color, odor, and lesions.	Skin color ranges from pale white with pink, yellow, brown, or olive tones to dark brown or black. No strong odor should be evident, and the skin should be lesion free. Normal skin variations (Common Variations 31-1) include • Port wine stains • Hemangiomas • Café-au-lait spots (are normal in small numbers)	Yellow skin may indicate jaundice or intake of too many yellow vegetables in infants (sclera is white in the latter). Blue skin suggests cyanosis, pallor suggests anemia, and redness suggests fever, irritation, or allergies. Body piercing may be cultural or a fad, but excessive piercing may indicate underlying self-abusive tendencies. If tattoos appear to be "homemade," consider the possibility of contamination with hepatitis B virus or HIV from infected needles. Urine odor suggests incontinence, dirty diaper, or uremia. Salty sweat may indicate cystic fibrosis (a parent may report that the child's skin tastes salty when the parent kisses the child). Ecchymoses in various stages or in unusual locations or circular burn areas suggest child abuse although bruising or burning may also be from cultural practices such as *cupping* or *coining*. Petechiae, lesions, or rashes may indicate serious disorders. Greater than six café-au-lait spots may indicate neurovascular disease.
Palpate for texture, temperature, moisture, turgor, and edema.	Skin should be soft, warm, slightly moist with good turgor and without edema.	Excessive dryness suggests poor nutrition, excessive bathing, or an endocrine disorder. Flaking or scaling suggests eczema or fungal infections. Poor skin turgor indicates dehydration or malnutrition, edema suggests renal or cardiac disorders; periorbital edema may indicate pathology but may also be due to recent crying, sleeping, or allergies. Russell's sign (abrasion or scarring on joints of index and middle finger) suggests self-induced vomiting. Bite marks may indicate child abuse or self-abusive behavior (psychiatric disorders, mental retardation).
Inspect and palpate hair. Observe for distribution, characteristics, infestation, and presence of any unusual hair on body.	Hair is normally lustrous, silky, strong, and elastic. Fine, downy hair covers the body. Adolescents may display a variety of hair styles to assert independence and group conformity.	Dirty, matted hair may indicate neglect. Dull, dry, brittle hair may indicate poor nutrition, hypothyroidism, excessive use of chemical hair products (teens).

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Common Variations 31-1 Common Skin Variations in Children

Port-Wine Stain

This birthmark consisting of capillaries is dark red or bluish and darkens with exertion or temperature exposure. It appears as a large, irregular, macular patch on the scalp or face. Unlike a hemangioma, this birthmark does not fade with time.

Café au Lait Spot

This birthmark is a light brown, round or oval patch. If there are more than six separate, large (>1.5 cm) patches, an inherited neurocutaneous disease may be present.

Hemangioma

This skin variation is caused by an increased amount of blood vessels in the dermis.

Assessment Procedure	Normal Findings	Abnormal Findings
	African-American children usually have hair that is curlier and coarser than white children.	Grayish, translucent flakes that adhere to hair shaft suggest lice (ova, nits). Grayish or brown oval bodies suggest ticks. Balding (alopecia) suggests neglect, trichotillomania (hair pulling), skin diseases, or chemotherapy. Tufts of hair over the spine may indicate spina bifida occulta. Coarse body hair in a prepubertal child or older girl may be from endocrine disorder. Pubic hair in child younger than 8 years may indicate precocious adrenarche or precocious puberty.
Inspect and palpate nails. Note color, texture, shape, and condition of nails.	Nails should be clean and groomed. Adolescents may color or pierce nails. Pink undertones should be seen. Dark-skinned children have deeper nail pigment.	Blue nailbeds indicate cyanosis. Yellow nailbeds suggest jaundice. Blue-black nailbeds are found with nailbed hemorrhage. White color suggests fungal infection. Scaly lesions also indicate fungal infections, especially in adolescents who use artificial nails. Short, ragged nails are common with nail biting; dirty, uncut nails suggest poor hygiene. Concave shape, "spoon nails" (koilonychia) indicate iron deficiency anemia. Clubbing indicates chronic cyanosis. Macerated thumb tip is found with thumb sucking. Inflammation at the nail base indicates paronychia.
Head, Neck, and Cervical Lymph Nodes		
Inspection and Palpation **Inspect and palpate the head.** Note shape and symmetry.	Head is normocephalic and symmetric.	Very large head is hydrocephalus. Oddly shaped head suggests premature closure of sutures (possibly genetic). Third fontanelle located between the anterior and posterior fontanelle indicates Down's syndrome.

continued

PHYSICAL ASSESSMENT *Continued*

Assessment Procedure	Normal Findings	Abnormal Findings
		Craniotabes—from osteoporosis of the outer skull bone. Palpating too firmly with the thumb or forefinger over the temporoparietal area will leave an indentation of the bone.
Test head control, head posture, and range of motion.	Full range of motion—up, down, and sideways—is normal.	Hyperextension suggests opisthotonos or significant meningeal irritation. Limited range of motion suggests torticollis (wryneck).
Inspect and palpate the face. Note appearance, symmetry, and movement (have child make faces). Palpate the parotid glands for swelling.	Face is normally proportionate and symmetric. Movements are equal bilaterally. Parotid glands are normal size. ➤ ***Clinical Tip*** • *Some adolescents may appear to have unusual skin tones or markings from applying makeup as a form of self-expression.*	Unusual proportions (short palpebral fissures, thin lips, and wide and flat philtrum, which is the groove above the upper lip) may be hereditary or they may indicate specific syndromes, such as Down's syndrome (Fig. 31-16) and fetal alcohol syndrome. Other findings may indicate the following: Unequal movement—facial nerve paralysis Enlarged parotid gland—mumps or bulimia Abnormal facies—chromosomal anomaly Crease across nose, shiners (dark circles under eyes), and mouth agape—allergies (allergic facies)

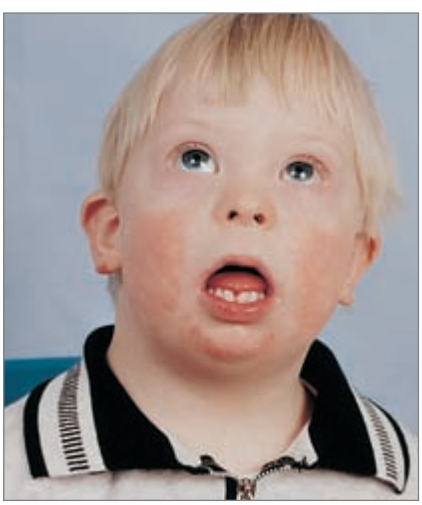


Figure 31-16 Down's syndrome results from a genetic abnormality (© B. Proud).

continued

Assessment Procedure	Normal Findings	Abnormal Findings
Inspect and palpate the neck. Palpate the thyroid gland and the trachea. Also inspect and palpate the cervical lymph nodes for swelling, mobility, temperature, and tenderness (Fig. 31-17).	The isthmus is the only portion of the thyroid that should be palpable. The trachea is midline. Lymph nodes are usually nonpalpable in adolescents. "Shotty" lymph nodes (small, nontender, mobile) are commonly palpated in children between the ages of 3 and 12 years.	Implications of some abnormal findings include the following: Short, webbed neck—anomalies or syndromes Distended neck veins—difficulty breathing Enlarged thyroid or palpable masses—pathologic processes Shift in tracheal position from midline—serious lung problem (e.g., foreign body or tumor) Enlarged firm lymph nodes—Hodgkin's disease or HIV infection Enlarged, warm, and tender lymph nodes—lymphadenitis or infection in the head and neck area that is drained by the affected node
Mouth, Throat, and Sinuses		
Inspection **Note the condition of the lips, palates, tongue, and buccal mucosa** (Fig. 31-18).	Lips, tongue and buccal mucosa appear pink and moist. No lesions are present.	Dry lips may indicate mouth breathing or dehydration. Stomatitis suggests infection or immunodeficiency. Koplik's spots (tiny white spots on red bases) on the buccal mucosa may be a prodromal sign of measles. Cleft lip and/or palate are congenital abnormalities (Fig. 31-19).

Figure 31-17 Palpating the cervical lymph nodes (© B. Proud).

continued

PHYSICAL ASSESSMENT *Continued*

Assessment Procedure	Normal Findings	Abnormal Findings
Observe the condition of the teeth and gums.	Deciduous teeth begin to develop between 4 and 6 months; all 20 erupt by 36 months; teeth begin to fall out around 6 years, when permanent tooth eruption begins and progresses until all 32 have erupted.	Dental caries may herald "bottle caries syndrome." Enamel erosion may indicate bulimia.
Note the condition of the throat and tonsils. Also observe the insertion and ending point of the frenulum.	Tonsils are are easily seen by age 6 when they increase to adult dimensions. They reach maximum size (about twice adult size) between ages 10 and 12. A trophy to stable adult dimensions usually occurs by the end of adolescence.	Tonsillar or pharyngeal inflammation suggests infection. Extension of the frenulum to the tip of tongue may interfere with extension of the tongue, which causes speech difficulties.
Inspect nose and sinuses. To inspect the nose and sinuses, avoid using the nasal speculum in young children. Instead, push up the tip of the nose and shine the light into each nostril. Observe the structure and patency of the nares, discharge, tenderness, and any color or swelling of the turbinates.	Nose is midline in face, septum is straight, and nares are patent. No discharge or tenderness is present. Turbinates are pink and free of edema.	Deviated septum may be congenital or caused by injury. Foul discharge from one nostril may indicate a foreign body. Pale, boggy nasal mucosa with or without possible polyps suggests allergic rhinitis. Nasal polyps are also seen in children with cystic fibrosis.
Palpation		
Palpate the sinuses in older children if sinusitis is suspected. The sinuses of young children are not palpable.	No tenderness palpated over sinuses.	Tender sinuses suggest sinusitis.

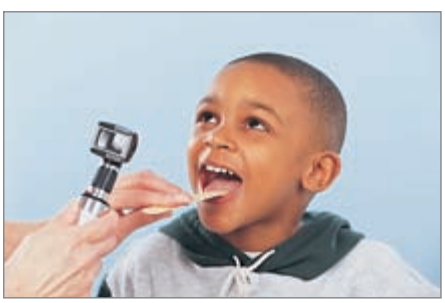


Figure 31-18 Inspecting the mouth (© B. Proud).

Figure 31-19 Cleft lip (© 1991 National Medical Slide Bank/CMSP).

continued

Assessment Procedure	Normal Findings	Abnormal Findings
Eyes		
Inspection		
Inspect the external eye. Note the position, slant, and epicanthal folds of the external eye.	Inner canthus distance approximately 2.5 cm, horizontal slant, no epicanthal folds. Outer canthus aligns with tips of the pinnas (Fig. 31-20). Epicanthal folds (excess of skin extending from roof of nose that partially or completely covers the inner canthus) are normal findings in Asian children, whose eyes also slant upward.	Wide-set position (hypertelorism), upward slant, and thick epicanthal folds suggest Down syndrome. "Sun-setting" appearance (upper lid covers part of the iris) suggests hydrocephalus.
Observe eyelid placement, swelling, discharge, and lesions.	No swelling, discharge, or lesions of eyelids.	Eyelid inflammation may result from blepharitis, hordeolum, or dacryocystis (inflammation or blockage of lacrimal sac or duct). Ptosis (drooping eyelids) suggests oculomotor nerve palsy, congenital syndrome, or a familial trait. A painful, edematous, erythematous area on eyelid may be a hordeolum (style). A nodular, nontender lesion on the eyelid may be a chalazion (cyst). Swelling, erythema, or purulent discharge may indicate infection or blocked tear ducts. Sunken area around eyelids may indicate dehydration. Periorbital edema suggests fluid retention.
Inspect the sclera and conjunctiva for color, discharge, lesions, redness, and lacerations.	Sclera and conjunctiva are clear and free of discharge, lesions, redness, or lacerations.	Yellow sclera suggests jaundice, blue sclera may indicate osteogenesis imperfecta ("brittle bone disease"), and redness may indicate conjunctivitis.
Observe the iris and the pupils.	Pupils are equal, round, and reactive to light and accommodation (PERRLA).	Brushfield's spots may indicate Down syndrome. Sluggish pupils indicate a neurologic problem. Miosis (constriction) indicates iritis or narcotic use or abuse. Mydriasis (pupillary dilation) indicates emotional factors (fear), trauma, or certain drug use.

Figure 31-20 Outer canthus is in alignment with the tip of the pinna (© B. Proud).

continued

PHYSICAL ASSESSMENT *Continued*

Assessment Procedure	Normal Findings	Abnormal Findings
Finally inspect the eyebrows and eyelashes.	Eyebrows should be symmetric in shape and movement. They should not meet midline. Eyelashes should be evenly distributed and curled outward.	Sparseness of eyebrows or lashes could indicate skin disease or deliberate pulling out of hairs (usually due to anxiety or habit). Corneal abrasions are common during childhood and may not be easily visible to the naked eye.
Perform visual acuity tests. Use the following diagnostic tools to perform visual acuity testing: Snellen letter chart Snellen symbol chart (E chart; used for preschoolers) Blackbird Preschool Vision Screening Test (uses modified E that resembles a bird and a story to engage children's attention) Faye symbol chart (uses pictures) ➤ ***Clinical Tip*** • *Fatigue, anxiety, hunger, and distractions interfere with vision testing. Testing should precede procedures that create discomfort.*	Normal visual acuity is as follows: 1 year—20/200 2 years—20/70 5 years—20/30 6 years—20/20 Children should be able to differentiate colors by age 5.	Children with a one-line difference between eyes should be referred. Children should also be referred for abnormal visual acuity or inability to distinguish colors. Visual impairment can indicate congenital defects (cataracts), malignant tumors, chronic disease (diabetes), drugs, trauma, enzyme deficiencies, or refractive errors (myopia, hyperopia, astigmatism).
Perform extraocular muscle tests.	In the cover test, the eyes remain focused.	Eye movement is present during the cover test; this may indicate strabismus.
Cover test: Have the child cover one eye and look at an interesting object (Fig. 31-21). Observe the uncovered eye for any movement. When the child is focused on the object, remove the cover and observe that eye for movement.	In the Hirschberg test, the light reflects symmetrically in the center of both pupils.	Unequal alignment of light on the pupils in the Hirschberg test signals strabismus.

Figure 31-21 Performing the cover test (© B. Proud).

continued

Assessment Procedure	Normal Findings	Abnormal Findings
Hirschberg test: Shine light directly at the cornea while the child looks straight ahead. ➤ ***Clinical Tip*** • *Use a toy, a puppet, and the parent to focus the child's eyes. Older children, including adolescents, focus better if they are given something to focus on instead of being told to "look straight ahead."*		
Inspect the internal eye. Perform ophthalmoscopic examination. The procedure is the same as for adults. Distraction is preferred over the use of restraint, which is likely to result in crying and closed eyes. Careful ophthalmoscopic examination of newborns is difficult without the use of mydriatic medications.	Red reflex is present. This reflex rules out most serious defects of the cornea, aqueous chamber, lens, and vitreous humor. When visualized, the optic disc appears similar to an adult's.	Absence of the red reflex indicates cataracts. Papilledema is unusual in children under 3 years of age owing to the ability of the fontanelles and sutures to open during increased intracranial pressure. Disc blurring and hemorrhages should be reported immediately.
Ears		
Inspect external ears. Note placement, discharge, or lesions of the ears.	Top of pinna should cross the eye-occiput line and be within a 10-degree angle of a perpendicular line drawn from the eye-occiput line to the lobe. No unusual structure or markings should appear on the pinna.	Low-set ears with an alignment greater than a 10-degree angle suggest mental retardation or congenital syndromes. Abnormal shape may suggest renal disease process, which may be hereditary. Preauricular skin tags or sinuses suggest other anomalies of ears or the renal system.
Inspect internal ear. The internal ear examination requires using an otoscope and, for toddlers, restraint by (1) having a parent hold the seated child in the lap while holding the child's hands with one hand and the child's head sideways against chest (as shown) or (2) laying the child supine, with the parent holding the child's arms up over head. Then the nurse can gently but firmly hold child's head to the side. Regardless of technique used, the nurse should always hold the otoscope in a manner that allows for rapid removal if the child moves. Because an infant's external canal is short and straight, pull the pinna down and back. Because an older child's canal shortens and becomes less straight, like the adult's, gently pull the pinna up and back.	No excessive cerumen, discharge, lesions, excoriations, or foreign body are in external canal. Tympanic membrane is pearly gray to light pink with normal landmarks. Tympanic membranes redden bilaterally when child is crying or febrile.	Presence of foreign bodies or cerumen impaction. Purulent discharge may indicate otitis externa or presence of foreign body. Purulent, serous discharge suggests otitis media. Bloody discharge suggests trauma, and clear discharge may indicate cerebrospinal fluid leak. Perforated tympanic membrane may also be noted.
Assess the mobility of the tympanic membrane by pneumatic otoscopy. This consists of creating pressure against the tympanic membrane using air. To do this, you need to create a seal in the	Tympanic membrane is mobile; moves inward with positive pressure (squeeze of bulb) and outward with negative pressure (release of bulb).	Immobility suggests chronic (serous) otitis media; decreased mobility may occur with acute otitis media.

continued

PHYSICAL ASSESSMENT *Continued*

Assessment Procedure	Normal Findings	Abnormal Findings
external canal and direct a puff of air against the tympanic membrane. Create the seal by using the largest speculum that will comfortably insert into the ear canal. Cover the tip with rubber for a better and more comfortable seal. Attach a pneumatic bulb to the otoscope and squeeze the bulb lightly to direct air against the tympanic membrane.		
Test hearing acuity. Test acuity initially by whispering questions from a distance of approximately 8 feet. If hearing deficit is suspected, complete audiometric testing should be performed. Audiometry measures the threshold of hearing for frequencies and loudness. In addition, all children should have audiometric testing performed before entering school.	Answers whispered questions. Audiometry results are within normal ranges.	Failure to respond to whispered questions may indicate hearing deficit. Audiometry results outside normal range suggest hearing deficit.
Thorax and Lungs		
Inspection		
Inspect the shape of the thorax.	By age 5 to 6 years, the thoracic diameter reaches the adult 1:2 or 5:7 ratio (anteroposterior to transverse).	Abnormal shapes of the thorax include pectus excavatum and pectus corinatum.
Children under 7 years old are abdominal breathers.	Respirations should be unlabored and regular in all ages. Respirations should be 2 years to 10 years: 20–28 breaths per minute 10 years to 18 years: 12–20 breaths per minute	Retractions (suprasternal, sternal, substernal, intercostal) and grunting suggest increased inspiratory effort, which may be due to asthma, atelectasis, pneumonia, or airway obstruction. Periods of apnea that last longer than 20 s and are accompanied by bradycardia may be a sign of a cardiovascular or CNS disease.
Percussion and Auscultation		
Percuss and auscultate the lungs. During percussion of the lungs, note tone elicited.	Hyperresonance is the normal tone elicited in young children because of thinness of the chest wall. This diminishes as the child ages and the chest wall develops.	A dull tone may indicate a mass, fluid, or consolidation.
Auscultate for breath sounds and adventitious sounds. If a toddler's lung sounds seem noisy, auscultate the upper nostrils. Toddlers with an upper respiratory infection may transmit noisy breathing from the upper nostrils to the upper lobes of the lungs. Encourage deep breathing in children; try one of the following techniques: blow out light on otoscope (Fig. 31-22), blow cotton ball in air, blow pinwheel, "race" paper off table.	Breath sounds may seem louder and harsher in young children because of their thin chest wall. No adventitious sounds should be heard, although transmitted upper airway sounds may be heard on auscultation of thorax.	Diminished breath sounds suggest respiratory disorders such as pneumonia or atelectasis. Stridor (inspiratory wheeze) is a high-pitched, piercing sound that indicates a narrowing of the upper tracheobronchial tree. Expiratory wheezes indicate narrowing in the lower tracheobronchial tree. Rhonchi and rales (crackles) may indicate a number of respiratory diseases such as pneumonia, bronchitis, or bronchiolitis.

continued

Assessment Procedure	Normal Findings	Abnormal Findings
Breasts		
Inspect and palpate breasts. Note shape, symmetry, color, tenderness, discharge, lesions, and masses.	Breasts are flat and symmetric in prepubertal children. Obese children may appear to have breast tissue.	Redness, edema, and tenderness indicate mastitis. Enlargement in adolescent boys suggests gynecomastia. Masses in the adolescent female breast usually indicate cysts or trauma.
Assess stage of breast/sexual development of girl client. Teach breast self-exam to adolescents.	See Tanner's sexual maturity rating in Table 31-1.	Breast development before age 8 may indicate precocious puberty or thelarche. Lack of breast development after age 13 may indicate delayed puberty and/or a pathologic process.
Heart		
Inspection and Palpation **Inspect and palpate the precordium.** Note lifts and heaves. Palpate apical impulse (Fig. 31-23).	The apical pulse is at the 4th intercostal space (ICS) until the age of 7 years, when it drops to the 5th. It is to the left of the midclavicular line (MCL) until age 4, at the MCL between ages 4 and 6, and to the right at age 7.	A systolic heave may indicate right ventricular enlargement. Apical impulse that is not in proper location for age may indicate cardiomyopathy, pneumothorax, or diaphragmatic hernia.

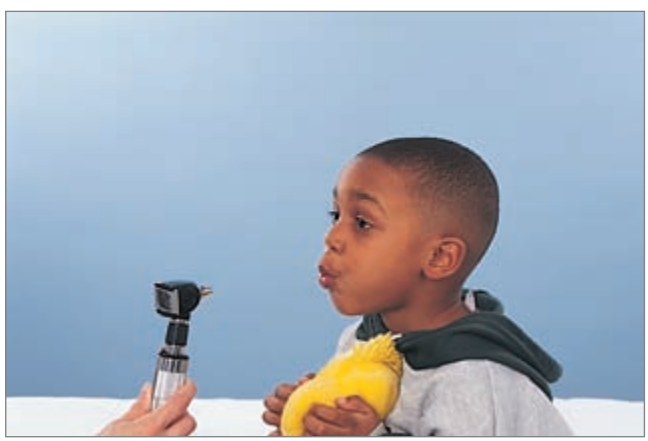


Figure 31-22 To encourage deep breathing, ask a child to blow out the light on an otoscope or a penlight (© B. Proud).

Figure 31-23 To palpate a preschooler's apical pulse, place your hand at the 4th intercostal space to the left of the midclavicular line (© B. Proud).

continued

PHYSICAL ASSESSMENT *Continued*

Assessment Procedure	Normal Findings	Abnormal Findings
Auscultation		
Auscultate heart sounds. Listen to the heart. Note rate and rhythm of apical impulse, S_1, S_2, extra heart sounds, and murmurs. ➤ ***Clinical Tip*** • *Keep in mind that sinus arrhythmia is normal in young children. Heart sounds are louder, higher pitched, and of shorter duration in children. A split S2 at the apex occurs normally in some children, and S3 is a normal heart sound in some children. A venous hum also may be normally heard in children.*	Normal heart rates are cited in the "Vital Signs" section above. Innocent murmurs, which are common throughout childhood, are classified as systolic; short duration; no transmission to other areas; grade III or less; loudest in pulmonic area (base of heart); low-pitched, musical, or groaning quality that varies in intensity in relation to position, respiration, activity, fever, and anemia. No other associated signs of heart disease.	Murmurs that do not fit the criteria for innocent murmurs may indicate a disease or disorder. Extra heart sounds and variations in pulse rate and rhythm also suggest pathologic processes.
Abdomen		
Inspection		
Inspect the shape of the abdomen.	In children up to 4 years of age, the abdomen is prominent in standing and supine positions. After age 4, the abdomen appears slightly prominent when standing, but flat when supine until puberty.	A scaphoid (boat-shaped; i.e, sunken with prominent rib cage) abdomen may result from malnutrition or dehydration.
Inspect umbilicus. Note color, discharge, evident herniation of the umbilicus.	Umbilicus is pink, no discharge, odor, redness or herniation.	Inflammation, discharge, and redness of umbilicus suggest infection. Diastasis recti (separation of the abdominal muscles) is seen as midline protrusion from the xiphoid to the umbilicus or pubis symphysis. This condition is secondary to immature musculature of abdominal muscles and usually has little significance. As the muscles strengthen, the separation resolves on its own. A bulge at the umbilicus suggests an umbilical hernia, which may be seen in newborns; many disappear by the age of 1 year, and most by 4 or 5 years of age.  Umbilical hernias are seen more frequently in African American children.

continued

Assessment Procedure	Normal Findings	Abnormal Findings
Auscultation		
Auscultate bowel sounds. Follow auscultation guidelines for adult clients provided in Chapter 22.	Normal bowel sounds occur every 10 to 30 s. They sound like clicks, gurgles, or growls.	Marked peristaltic waves almost always indicate a pathologic process such as pyloric stenosis.
Palpation		
Palpate for masses and tenderness. Palpate abdomen for softness or hardness. ➤ ***Clinical Tip*** • *To decrease ticklishness, have the child help by placing his or her hand under yours, using age-appropriate distraction techniques, and maintaining conversation focused on something other than the examination (Fig. 31-24).*	Abdomen is soft to palpation and without masses or tenderness.	A rigid abdomen is almost always an emergent problem. Masses or tenderness warrants further investigation.
Palpate liver. Palpate the liver the same as you would for adults (see Chapter 22).	Liver is usually palpable 1 to 2 cm below the right costal margin in young children.	An enlarged liver with a firm edge that is palpated more than 2 cm below the right costal margin usually indicates a pathologic process.
Palpate spleen. Palpate the spleen the same as you would for adults.	Spleen tip may be palpable during inspiration.	Enlarged spleen is usually indicative of a pathologic process.
Palpate kidneys. Palpate the kidneys the same as you would for adults.	The tip of the right kidney may be palpable during inspiration.	Enlarged kidneys are usually indicative of a pathologic process.
Palpate bladder. Palpate the bladder the same as you would for adults.	Bladder may be slightly palpable in small children.	An enlarged bladder is usually due to urinary retention but may be due to a mass.

Figure 31-24 Let a child help palpate his or her abdomen to decrease ticklishness (© B. Proud).

continued

PHYSICAL ASSESSMENT *Continued*

Male Genitalia

Inspect penis and urinary meatus. Inspect the genitalia observing size for age and any lesions. ➤ ***Clinical Tip*** • *Use distraction or teaching (such as testicular self-examination) when examining the genitalia in older children and adolescents to decrease embarrassment.*	Penis is normal size for age, and no lesions are seen. The foreskin is retractable in uncircumcised child. Urinary meatus is at tip of glans penis and has no discharge or redness. Penis may appear small in obese boys because of overlapping skin folds.	An unretractable foreskin in a child older than 3 months suggests phimosis. Paraphimosis is indicated when the foreskin is tightened around the glans penis in a retracted position. Hypospadias, urinary meatus on ventral surface of glans, and epispadias, urinary meatus on dorsal surface of glans, are congenital disorders (see Abnormal Findings 24-1). Discharge, redness, or lacerations may indicate abuse in young children but may occur from infections or foreign body. Discharge in adolescents may be due to sexually transmitted disease, infection, or irritation.
Inspect and palpate scrotum and testes. To rule out cryptorchidism, it is important to palpate for testes in the scrotum in infants and young boys. ➤ ***Clinical Tip*** • *When palpating the testicles in the infant and young boy, you must keep the cremasteric reflex in mind. This reflex pulls the testicles up into the inguinal canal and abdomen and is elicited in response to touch, cold, or emotional factors. Have young boys sit with knees flexed and abducted. This lessens the cremasteric reflex and enables you to examine the testicles.*	Scrotum is free of lesions. Testes are palpable in scrotum, with the left testicle usually lower than the right. Testes are equal in size, smooth, mobile, and free of masses. If a testicle is missing from the scrotal sac but the scrotal sac appears well developed, suspect physiologic cryptorchidism. The testis has originally descended into the scrotum but has moved back up into the inguinal canal because of the cremasteric reflex and the small size of the testis. You should be able to milk the testis down into the scrotum from the inguinal canal. This normal condition subsides at puberty.	Absent testicle(s) and atrophic scrotum suggest true cryptorchidism (undescended testicles; see Chapter 6). This suggests that the testicle(s) never descended. This condition occurs more frequently in preterm than term infants because testes descend at 8 months of gestation. It can lead to testicular atrophy and infertility, and increases the risk for testicular cancer. Hydroceles are common in infants. They are fluid-filled masses that can be transilluminated (see Abnormal Findings 24-2). They usually resolve spontaneously. A scrotal hernia is usually caused by an indirect inguinal hernia that has descended into the scrotum. It can usually be pushed back into the inguinal canal. This mass will not transilluminate. A painless nodule on the testis may indicate testicular cancer, which appears most frequently in males aged 15 to 34 years; therefore, testicular self-examination (TSE) should be taught to all boys 14 years old and older.
Inspect and palpate inguinal area for hernias. Observe for any bulge in the inguinal area. Ask the child to bear down or try to lift something heavy to elicit a possible hernia. Using your pinky finger, palpate up the inguinal canal to the external inguinal ring if a hernia is suspected.	No inguinal hernias are present.	A bulge in the inguinal area or palpation of a mass in the inguinal canal suggests an inguinal hernia. Indirect inguinal hernias occur most frequently in children (see Chapter 24).

continued

Assessment Procedure	Normal Findings	Abnormal Findings
Assess sexual development. Note public hair pattern, and size and development of penis and scrotum.	See Tanner's sexual maturity ratings in Table 31-2.	Pubic hair growth, enlargement of the penis to adolescent or adult size, and enlarged testes in a boy less than 8 years of age suggest precocious puberty.
Female Genitalia		
Inspect external genitalia. Note labia majora, labia minora, vaginal orifice, urinary meatus, and clitoris. ➤ ***Clinical Tip*** • *Have female children assist with genitalia examination by using their hands to spread the labia. This helps to decrease any stress and embarrassment.*	Labia majora and minora are pink and moist. Young girls have flattened majora, thin minora, small clitoris, and thin hymen. Starting at school age, the labia become fuller and the hymen thickens. This progresses until puberty when the genitalia develop adult characteristics. No discharge from vagina or meatus; no redness or edema present normally.	Partial or complete labia minora adhesions are sometimes seen in girls younger than 4 years of age. Referral is necessary to disintegrate the thin, membranous adhesion. An imperforate hymen (no central orifice) is sometimes seen and is not significant unless it persists until puberty and causes problems with menstruation. Discharge from vagina or urinary meatus, redness, edema, or lacerations may suggest abuse in the young child. However, infections or a foreign body in the vagina may cause these symptoms. Discharge in adolescents suggests sexually transmitted disease, infection, or irritation.
Inspect internal genitalia. An internal genitalia examination is not routinely performed in the child although it may be called for if infection, bleeding, a foreign body, disease, or sexual abuse is suspected. A pediatric specialist should perform the examination. An internal genital examination consisting of both the speculum and bimanual examinations is recommended for all sexually active adolescents and/or virgins starting at 18 years of age. In addition, an internal examination is indicated in the adolescent who has nonmenstrual bleeding or discharge. The procedure is the same as for the adult. Time and care must be taken for adequate teaching and reassurance.	See Chapter 23 for normal findings.	See Chapter 23 for abnormal findings.

continued

PHYSICAL ASSESSMENT *Continued*

Assessment Procedure	Normal Findings	Abnormal Findings
Assess sexual development. Note pubic hair pattern.	See Tanner's sexual maturity ratings in Table 31-2 and 31-3 for normal findings.	Growth of pubic hair in young girls (<8 years of age) suggests precocious puberty. Unusual pubic hair distribution in pubertal girls may indicate a disorder. For example, a male pattern of hair growth may suggest polycystic ovary disease.
Anus and Rectum		
Inspection and Palpation		
Inspect the anus. The anus should be inspected in children and adolescents. Perform quickly at the end of the genitalia examination to limit embarrassment in the older child and adolescent. Spread the buttocks with gloved hands, and note patency of anal opening, presence of any lesions and fissures, and condition and color of perianal skin.	The anal opening should be visible, moist, and hairless. No hemorrhoids or lesions. Perianal skin should be smooth and free of lesions. A mild diaper rash (red papules) may be seen in infants. Perianal skin tags may be noted.	Imperforate anus (no anal opening) should be referred. Hemorrhoids are unusual in children and could be due to chronic constipation, but may be caused by sexual abuse or abdominal pressure from lesion. Bleeding and pain often indicate tears or fissures in the anus, which often cause constipation because of pain of passing stool. Pustules may indicate secondary infection of diaper rash. A dark ring around the anus may indicate heavy metal poisoning. Lacerations, purulent discharge, or extreme apprehension during examination may indicate physical or sexual abuse. Diaper rashes with more than mild red/pink papules suggest problems such as seborrhea, diaper dermatitis, and monilial infection.
Palpate rectum. This internal examination is not routinely performed in children or adolescents. However, it should be performed if symptoms suggest a problem. The child should be in a supine position with the legs flexed. Provide reassurance throughout the examination. If the child is old enough, ask him or her to bear down. This helps to relax the sphincter. Slowly insert a gloved, lubricated finger (the pinky finger may be used for comfort, but the index finger is more sensitive) into the anal opening, aiming the finger toward the umbilicus.	Prostate gland is nonpalpable in young boys. Bimanual rectoabdominal exam in girls may reveal small midline mass (cervix).	If other masses are palpated, they are considered abnormal; no other structures are palpable until adolescence.
Musculoskeletal		
Inspection		
Assess feet and legs. Note symmetry, shape, movement, and positioning of the feet and legs. Perform neurovascular assessment.	Feet and legs are symmetric in size, shape, movement, and positioning (Fig. 31-25). Extremities should be warm, and mobile with adequate capillary refill. All	Short, broad extremities, hyperextensible joints, and palmar simian crease may indicate Down syndrome. Polydactyly (extra digits) and syndactyly (webbing)

continued

Assessment Procedure	Normal Findings	Abnormal Findings
	pulses (radial, brachial, femoral, popliteal, pedal) should be strong and equal bilaterally. A common finding in children (up to 2 or 3 years old) is metatarsus adductus deformity. This is an inward positioning of the forefoot with the heel in normal straight position, and it resolves spontaneously. Tibial torsion, also common in infants and toddlers, consists of twisting of the tibia inward or outward on its long axis, is usually caused by intrauterine positioning, and typically corrects itself by the time the child is 2 years old.	are sometimes found in children with mental retardation. Neurovascular deficit in children is usually secondary to trauma (e.g., fracture). Fixed-position (true) deformities do not return to normal position with manipulation. Metatarsus varus is inversion (a turning inward that elevates the medial margin) and adduction of the forefoot. Talipes varus is adduction of the forefoot and inversion of the entire foot. Talipes equinovarus (clubfoot) is indicated if foot is fixed in the following position: adduction of forefoot, inversion of entire foot, and equinus (pointing downward) position of entire foot (Fig. 31-26).
Assess spinal alignment. Observe spine and posture. Assess for scoliosis (Fig. 31-27).	By 12 to 18 months, the lumbar curve develops. Toddlers display lordotic posture. Findings in older children and adolescents are similar to those in adults.	Kyphosis may result from poor posture or from pathologic conditions. Scoliosis usually is idiopathic and is more common in adolescent girls. Abnormal posture suggests neuromuscular disorders such as cerebral palsy (Fig. 31-28). Extremities that are asymmetric in size, shape, and movement indicate scoliosis or hip disease.

Figure 31-25 Normally positioned feet and legs.

Figure 31-26 Talipes equinovarus, also called clubfoot (© 1995 Science Photo Library/CMSP).

continued

PHYSICAL ASSESSMENT *Continued*

Assessment Procedure	Normal Findings	Abnormal Findings
Assess gait. Observe gait initially when the child enters the exam room. This enables you to observe the child when he or she is unaware of being observed and gait is most natural. Later have the child walk to and from the parent (the child should be barefoot), and observe gait.	Toddlers have a wide-based gait and are usually bow-legged (genu varum). Children aged 2 to 7 are usually knock-kneed (genu valgum). (See Fig. 31-29.) Gait in older children is the same as in adults.	"Toeing in" or "toeing out" indicates problems such as tibial torsion or club-foot. Limping may indicate congenital hip dysplasia (toddlers); synovitis (preschoolers); Legg-Calvé-Perthes disease (school-age children); slipped capital femoral epiphysis, scoliosis (adolescents). When child is wearing shoes, limping usually suggests poorly fitting shoes or presence of a pebble. Many abnormal gaits are noted in cerebral palsy.
Assess joints. Note range of motion, swelling, redness, and tenderness.	Full range of motion and no swelling, redness, or tenderness.	Limited range of motion, swelling, redness, and tenderness indicate problems ranging from mild injuries to serious disorders, such as rheumatoid arthritis.
Assess muscles. Note size and strength.	Muscle size and strength should be adequate for the particular age and should be equal bilaterally.	Inadequate muscle size and strength for the particular age indicate neuromuscular disorders such as muscular dystrophy.

Figure 31-27 Assessing spinal curvature for scoliosis (© B. Proud).

Figure 31-28 Neuromuscular weakness is a hallmark of cerebral palsy.

continued

Assessment Procedure	Normal Findings	Abnormal Findings
Neurologic		
Inspection Much of the neurologic examination of children older than age 2 years is performed in much the same way as for adults. ➤ ***Clinical Tip*** • *As with adults, integrate the neurologic assessment into the overall assessment, observing the child first in the natural state, then purposefully. Playing games such as "Simon Says" can help elicit responses from young children.*		
Test cerebral function. Assess level of consciousness, behavior, adaptation, and speech.	The child should be alert and active, respond appropriately, and relate well to the parent and the nurse. Increased independence will be demonstrated with age. By age 3 years, speech should be easily understood.	Abnormal findings include altered level of consciousness and inappropriate responses. Maladaptation is displayed by an inability to relate well to parent and nurse, lack of independence with age, inappropriate responses to commands, hyperactivity, and poor attention span. Although physiologic dysfluency is normal in preschoolers, unintelligible speech by age 3 years, prolonged stuttering, slurring, and lisping indicate speech disorders or neurologic problems. Slurring may also be indicative of substance abuse, drug toxicity, or conditions such as diabetic ketoacidosis.

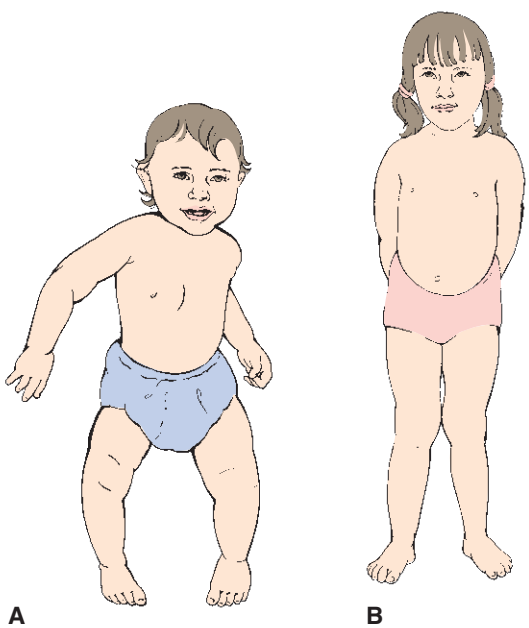


Figure 31-29 (A) Genu varum (bow legs); (B) genu valgum (knock knees).

continued

PHYSICAL ASSESSMENT *Continued*

Assessment Procedure	Normal Findings	Abnormal Findings
Test cranial nerve function. Test cranial nerve function in young people the same way as for adults when possible.	Normal findings are the same as for adults.	Alterations in cranial nerve function demonstrate problem or pathologic process.
Test deep tendon and superficial reflexes. Test deep tendon and superficial reflexes in young people the same way as for adults. Display 30-1 addresses reflex testing in newborns.	Normal findings are the same as for adults, except the Babinski response is normal in children younger than 2 years (this response usually disappears between 2 and 24 months), and triceps reflex is absent until age 6.	Absence or marked intensity of these reflexes, asymmetry, and presence of Babinski response after age 2 years may demonstrate pathology. Sustained (continuous) ankle clonus is abnormal and suggests CNS disease.
Test balance and coordination. Balance and coordination in a child are tested in much the same way as for an adult. Have the child hop, skip, and jump, when appropriate for developmental age.	School-age children and adolescents should be able to perform most balance and coordination tests.	Abnormal findings include unstable gait, lack of coordination of movements, and positive Romberg. These may indicate a number of problems, including CNS disease and neuromuscular disorders.
Test sensory function. Same as for adults, when possible.	Sensitivity to touch and discrimination should be present. The thresholds of touch, pain, and temperature are higher in older children.	Absent or decreased sensitivity to touch and two-point discrimination may indicate paresthesia.
Test motor function. Tests for motor function in children are similar to tests for adults. Also watch for hand preference.	Gross and fine motor skills should be appropriate for the child's developmental age. Hand preference is developed during the preschool years.	Gross and fine motor skills that are inappropriate for developmental age and lack of head control by age 6 months may indicate cerebral palsy. Hand preference that is not developed during preschool years may indicate paresis on opposite side.
Observe for "soft signs." Soft signs of neurologic problems are controversial, because these signs do not always indicate a pathologic process.	Soft signs disappear with age.	Soft signs include but are not limited to Short attention span Poor coordination of position Hypoactivity Impulsiveness Labile emotions Distractibility No demonstration of handedness Language and articulation problems Learning problems

VALIDATING AND DOCUMENTING FINDINGS

Documentation for children and adolescents is the same as that for adults. Nurses document what they observed, palpated, percussed, and auscultated. Descriptions should be objective, accurate, and concise, yet comprehensive. Terms such as *good, poor,* and *normal* should be avoided. Phrases and standardized abbreviations are preferable to full sentences, and a sequential manner should be followed.

Sample of Subjective Data

Caucasian female, age 13 months. Visiting for well-child care. Current health and illness status: Has been well since last health care visit at age 9 months; no current problems, health concerns, or medications. Past Health History: Birth FTNSVD (full-term, normal, spontaneous delivery), BW (birth weight) 7 lb; no problems. Otitis media at age 6 months. Allergies (and reaction to same): None. Immunization status: UTD (up to date).

Growth and developmental milestones: Sat at 6-1/2 months; walked at 11 months; first word ("dada") at 8 months. Habits: None.

ROS: *General: Well child, three "colds" in first year; Integument: No lesions, bruising; Head: No trauma, headaches; Eyes: Visual acuity, no problems by history; last eye exam (N/A [nonapplicable]); no drainage, infections; Ears: Hearing acuity, no problems by history; last hearing exam (N/A); no drainage; history of (h/o) otitis media at 6 months treated with amoxicillin); Nose: No bleeding, congestion, discharge; Mouth: No lesions, soreness; no tooth eruption, last dental exam (N/A); Throat: No sore throats, hoarseness, difficulty swallowing; Neck: No stiffness, tenderness; Chest: No pain, cough, wheezing, shortness of breath, asthma, infections; Breasts: No thelarche, lesions, discharge; Cardiovascular: No history of murmurs, exercise tolerance, dizziness, palpitations, congenital defects; Gastrointestinal: Appetite excellent; bowel habits (one soft, brown BM/day); no food intolerances, nausea, vomiting, pain, history of parasites; Genitourinary: No urgency, frequency, discharge, urinary tract infections; Gynecologic: No discharge; Musculoskeletal: No pain, swelling, fractures, mobility problems; Neurologic: No tremors, unusual movements, seizures; Lymphatic: No pain, swelling or tenderness, enlargement of spleen or liver; Endocrine/metabolic: Growth patterns follow 50%; no polyuria, polydipsia, polyphagia.*

Psychiatric history: No developmental disorder. Family history: Diabetes (maternal grandmother); hypertension (paternal grandfather). Nutritional history: Drinks three 8-oz bottles of whole milk/day; eats three meals consisting of mixture of baby and table foods. Likes finger foods; hates strained meats and string beans. No problems with feeding, feeds self with much assistance, uses spoon and cup. Takes multivitamin daily.

Determine the quantity and the types of food or formula ingested daily: use 24-h recall, food diary for 3 days (2 weekdays and 1 weekend day), or food frequency record.

Sleep history: Bedtime is 8 PM, awakens at 6 AM. Takes two brief naps/day. Sleeps with favorite blanket, "Kermie."

Psychosocial history: Lives with single mother, age 35 years. Mother is vice president at major company; mother completed graduate school. Cultural background is Italian/ Irish; religion, Protestant. Mother has no contact with child's father but does have strong network of friends and family members. No financial difficulties. Attends day care while mother works. Plays with dolls and push toys; mother very safety conscious of toys and uses car seat. Discipline: Mother uses distraction and reinforces word "no." No history of domestic violence; no guns in household

Developmental History: Cognitive: Likes to put things in her mouth to explore them; likes to feel different textures. Knows her name and can point to five body parts. Searches for hidden objects. Language: Knows 10 words, including "no." Gross motor: Walks without help, starting to climb. Fine motor: Right-handed, builds two-block tower

Sample of Objective Data

General appearance: Alert, active, well-developed, well-nourished 1-year-old girl, in no acute distress.

Vital signs: BP 90/50; P 100; T 98.6. Wt: 21 lb. (50%); Ht: 29 in (50%); HC 45 cm (50%).

Skin: Pink, moist, appropriate turgor, no lesions; hair curly with normal distribution; nails pink and hard

Head and neck: Normocephalic, fontanelles not palpable, neck supple, no lymph nodes palpable

Mouth, throat, nose, and sinus: Pharynx clear, no adenopathy, nares patent, turbinates pink with scant clear discharge

Eyes and ears: Sclera clear, pupils equally round, react to light and accommodation (PERRLA), external ear canal free of cerumen impaction, foreign body, discharge, tympanic membrane pink with regular rhythm, no murmurs auscultated

Abdomen: Soft, no masses or organomegaly

Genitalia and rectum: Tanner's 1, no discharge or lesions

Musculoskeletal: Spine straight, no tufts or dimples, FROM, adequate muscle strength and tone

Neurologic: Cranial nerves II to XII intact, deep tendon reflexes 2+, no Babinski, sensitive to touch, coordination, gross and fine motor movement appropriate for age.

Thorax and lungs: Thorax round and symmetric, hyperresonance percussed over lung fields

Heart: 100 beats/min

Analysis of Data

DIAGNOSTIC REASONING: POSSIBLE CONCLUSIONS

After collecting subjective and objective data pertaining to children and adolescents, identify abnormal findings and client's strengths. Then cluster the data to reveal any significant patterns or abnormalities. These data may then be used to make clinical judgments about the status of the child or adolescent.

Selected Nursing Diagnoses

Following is a listing of selected nursing diagnoses (wellness, risk, or actual) that you may identify when analyzing the cue clusters.

Wellness Diagnoses

- Readiness for enhanced knowledge of eye care during the growing years
- Readiness for enhanced nutritional metabolic pattern of child
- Readiness for enhanced sexual function

Risk Diagnoses

- Risk for Impaired Skin Integrity: "diaper rash" to parental knowledge deficit of skin care for diapered infant or child
- Risk for Injury related to open fontanelles
- Risk for Injury to teeth related to developmental age and play activities
- Risk for Injury related to insertion of foreign bodies into nasal cavity
- Risk for Injury related to attempts to insert foreign objects into ear
- Risk for Aspiration related to improper feeding and small size of stomach in newborns
- Risk for Impaired Urinary Elimination related to parental knowledge deficit of toilet-training techniques
- Risk for Injury related to premature physical developmental level
- Risk for Imbalanced Nutrition: Less Than Body Requirements

Actual Diagnoses

- Impaired Skin Integrity: Acne related to developmental changes
- Ineffective Health Maintenance related to lack of proper mouth care
- Ineffective Airway Clearance related to bronchospasm and increased pulmonary secretions
- Deficient Fluid Volume related to vomiting or diarrhea
- Imbalanced Nutrition: More Than Body Requirements

Selected Collaborative Problems

After grouping the data, it may become apparent that certain collaborative problems emerge. Remember that collaborative problems differ from nursing diagnoses in that they cannot be prevented with nursing interventions alone. However, these physiologic complications of medical conditions can be detected and monitored by the nurse. In addition, the nurse can use physician- and nurse-prescribed interventions to minimize the complications of these problems. The nurse may also have to refer the client in such situations for further treatment of the problem. Following is a list of collaborative problems seen more frequently in the pediatric client. However, other collaborative problems seen in the adult are also seen in pediatric clients. These problems are worded as Risk for Complications (or RC), followed by the problem.

- RC: Severe malnutrition/dehydration
- RC: Delayed growth
- RC: Failure to thrive
- RC: Respiratory distress
- RC: Permanently deformed femoral head
- RC: Hydrocephalus/shunt infections

Medical Problems

After grouping the data, the client's signs and symptoms may clearly require medical diagnosis and treatment. Referral to a primary care provider is necessary.

CASE STUDY

The case study demonstrates how to analyze children and adolescent assessment for a specific client. The critical thinking exercises included in the study guide/lab manual and interactive product that complement this text also offer opportunities to analyze assessment data.

Mrs. Carter brings 2½-year-old Michael to the pediatrician's office because he has "been irritable and feverish since last night." Further history reveals that Michael also had a runny nose and cough for 2 days and that his appetite and fluid intake have decreased since the fever started. Michael is otherwise healthy; this is his first episodic illness. His physical examination reveals slight, irritable, 2½-year-old boy, pulling at ears, temperature of 102°F; nasal congestion with clear discharge, tympanic membranes red and bulging bilaterally, pharynx slightly red without exudates, chest clear, abdomen soft without hepatosplenomegaly (HSM), and no meningeal signs.

The pediatrician diagnoses an upper respiratory infection (URI) and bilateral otitis media (BOM) and orders amoxicillin 250 mg tid for 10 days. You, the office nurse, are to

continued

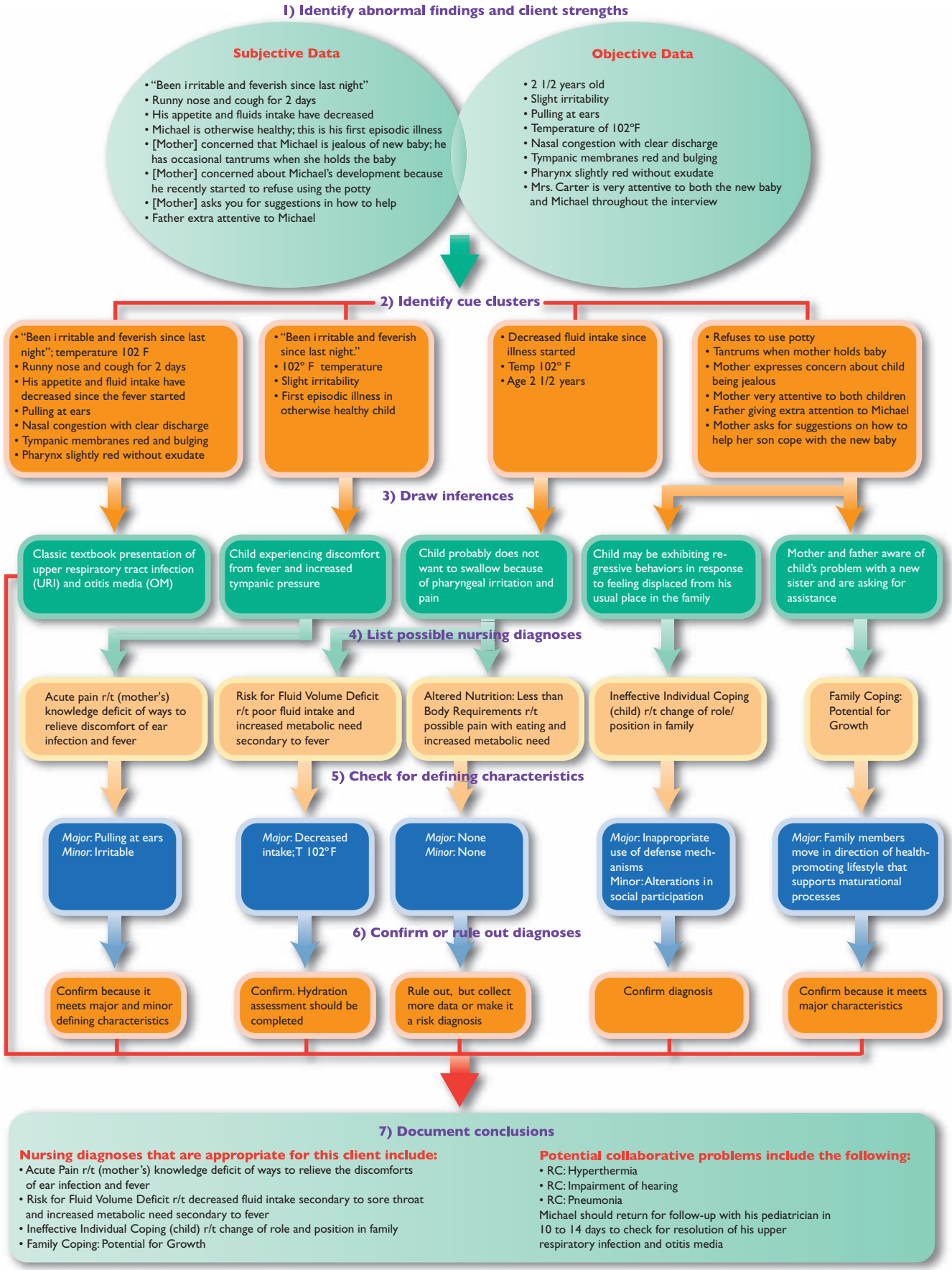
perform the parent teaching for Michael's home care. During your discussion with Mrs. Carter, she tells you that she is concerned that Michael is jealous of his new baby sister because he has occasional tantrums when she holds the baby. She is also concerned about Michael's development because he recently started to refuse using the potty, a skill that is newly acquired. Mrs. Carter is very attentive to both the new baby and Michael throughout the interview, and she asks you for suggestions in how to help Michael cope with the new arrival. While doing so, she points out that her husband has been extra attentive to Michael since his sister was born.

The following concept map illustrates the diagnostic reasoning process.

Applying COLDSPA

Applying **COLDSPA** for client symptoms: "Male 2½-year-old irritable and feverish."

Mnemonic	*Question*	*Data Provided*	*Missing Data*
Character	Describe the sign or symptom (feeling, appearance, sound, smell, or taste if applicable).	"Irritable and feverish."	"Describe the child's irritable behaviors. How high was the temperature? Did the child have chills?"
Onset	When did it begin?	"Last night."	
Location	Where is it? Does it radiate? Does it occur anywhere else?	Nasal congestion with clear discharge; red, bulging bilateral tympanic membranes.	
Duration	How long does it last? Does it recur?	Runny nose and cough for 2 days.	
Severity	How bad is it? or How much does it bother you?	Child pulling at ears and has temperature of 102ºF.	
Pattern	What makes it better or worse?	Father gives extra attention to child.	Has the child been given any medications? If so, what type, dose, frequency, and affects on fever and irritability? How long has the child's father been giving extra attention to his son? How does the child respond to this?
Associated factors/How it **A**ffects the client	What other symptoms occur with it? How does it affect you?	Child has had a poor appetite and decreased fluid intake since the onset of the fever; throws temper tantrums when mother holds his new baby sister; refuses to use the potty, a newly acquired skill.	"Describe the child's fluid and food intake during the last 2 days as compared to typical intake prior to irritability and fever. Have temper tantrums worsened since runny nose and cough began? How long has the child been introduced to the new potty?"


1) Identify abnormal findings and client strengths
Subjective Data
• "Been irritable and feverish since last night"
• Runny nose and cough for 2 days
• His appetite and fluids intake have decreased
• Michael is otherwise healthy; this is his first episodic illness
• [Mother] concerned that Michael is jealous of new baby; he has occasional tantrums when she holds the baby
• [Mother] concerned about Michael's development because he recently started to refuse using the potty
• [Mother] asks you for suggestions in how to help
• Father extra attentive to Michael
Objective Data
• 2 1/2 years old
• Slight irritability
• Pulling at ears
• Temperature of 102°F
• Nasal congestion with clear discharge
• Tympanic membranes red and bulging
• Pharynx slightly red without exudate
• Mrs. Carter is very attentive to both the new baby and Michael throughout the interview
2) Identify cue clusters
• "Been irritable and feverish since last night"; temperature 102 F
• Runny nose and cough for 2 days
• His appetite and fluid intake have decreased since the fever started
• Pulling at ears
• Nasal congestion with clear discharge
• Tympanic membranes red and bulging
• Pharynx slightly red without exudate
• "Been irritable and feverish since last night."
• 102° F temperature
• Slight irritability
• First episodic illness in otherwise healthy child
• Decreased fluid intake since illness started
• Temp 102° F
• Age 2 1/2 years
• Refuses to use potty
• Tantrums when mother holds baby
• Mother expresses concern about child being jealous
• Mother very attentive to both children
• Father giving extra attention to Michael
• Mother asks for suggestions on how to help her son cope with the new baby
3) Draw inferences
Classic textbook presentation of upper respiratory tract infection (URI) and otitis media (OM)
Child experiencing discomfort from fever and increased tympanic pressure
Child probably does not want to swallow because of pharyngeal irritation and pain
Child may be exhibiting regressive behaviors in response to feeling displaced from his usual place in the family
Mother and father aware of child's problem with a new sister and are asking for assistance
4) List possible nursing diagnoses
Acute pain r/t (mother's) knowledge deficit of ways to relieve discomfort of ear infection and fever
Risk for Fluid Volume Deficit r/t poor fluid intake and increased metabolic need secondary to fever
Altered Nutrition: Less than Body Requirements r/t possible pain with eating and increased metabolic need
Ineffective Individual Coping (child) r/t change of role/ position in family
Family Coping: Potential for Growth
5) Check for defining characteristics
Major: Pulling at ears
Minor: Irritable
Major: Decreased intake; T 102° F
Major: None
Minor: None
Major: Inappropriate use of defense mechanisms
Minor: Alterations in social participation
Major: Family members move in direction of health-promoting lifestyle that supports maturational processes
6) Confirm or rule out diagnoses
Confirm because it meets major and minor defining characteristics
Confirm. Hydration assessment should be completed
Rule out, but collect more data or make it a risk diagnosis
Confirm diagnosis
Confirm because it meets major characteristics
7) Document conclusions
Nursing diagnoses that are appropriate for this client include:
• Acute Pain r/t (mother's) knowledge deficit of ways to relieve the discomforts of ear infection and fever
• Risk for Fluid Volume Deficit r/t decreased fluid intake secondary to sore throat and increased metabolic need secondary to fever
• Ineffective Individual Coping (child) r/t change of role and position in family
• Family Coping: Potential for Growth
Potential collaborative problems include the following:
• RC: Hyperthermia
• RC: Impairment of hearing
• RC: Pneumonia
Michael should return for follow-up with his pediatrician in 10 to 14 days to check for resolution of his upper respiratory infection and otitis media

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