

**Preface**

Since the last revision of the *APA/COMSEP General Pediatric Clerkship Curriculum* revision in 2002, medical student educators have had to respond to a variety of external and internal forces. The first was the ubiquitous implementation of the Accreditation Council Graduate Medical Education (ACGME) Outcomes Project. This document specified that graduate medical education should be grouped around six core competencies; patient care, medical knowledge, practice-based learning and improvement, interpersonal and communication skills, professionalism, and systems-based practice. A major effect of the Outcomes Project is that most curricula are now specifically organized around competencies. The second major external influence has been the updating and revision of the Liaison Committee on Medical Education (LCME) Standard number 2 (ED-2). This standard clearly states that each clerkship must identify the types and numbers of patients that must be seen during the clerkship, the level of student involvement in the care of those patients, and the setting in which the care occurs. Moreover, each clerkship must have in place a system to monitor whether students are able to see the required number and types of patients and be able to make corrections during the clerkship experience. This has had an enormous impact on clerkships, as clerkship directors can no longer assume that students will have a broad clinical experience. Finally, many have recognized for some time that the Core Curriculum is quite extensive. The curriculum was originally intended to guide the pediatric curriculum during the entire medical school experience. Nonetheless, clerkship directors have struggled with what competencies to address during their clerkships.

To address these issues a great number of COMSEP members have participated in the revision of the Curriculum. The COMSEP Curriculum and Evaluation Task Forces and the APA Medical Student Education Special Interest Group worked together for over two years to finish the current revision. The Clerkship Directors are deeply indebted to the enormous time and energy these individuals dedicated to the project. A listing of the participants can be found in the Appendix.

The 2005 Curriculum differs from the previous curriculum in several important ways. First, the curriculum has been organized explicitly as a competency based curriculum. While the original chapter heading have been retained, the content has been assigned to knowledge or skills-based competencies. Secondly, each competency in the curriculum has been designated as either a universal (U), core pediatric (CP), or mastery (M) level competency. Competencies designated as universal are not unique to Pediatrics but are generally important throughout the medical school curriculum. For example, many professionalism competencies are universal. Core pediatric competencies are those that are essential and or unique to the Pediatric Clerkship experience and should be emphasized during the pediatric clerkship. Students should be able to demonstrate these competencies by the conclusion of the pediatric clerkship experience. Mastery level competencies are those that might be achieved by students interested in entering the field of Pediatrics by the end of the medical school experience but probably not by the end of the clerkship experience. The third major change is that each chapter may include a section titled process, that is, the type of patient or patients that a medical student should encounter during the Pediatric Clerkship experience. The process section has been included to help clerkship directors design a clinical roadmap and meet the requirement of LCME ED-2. These recommendations have been summarized in “Clinical Encounter Table” which can be found in the appendix. This table specifically addresses not only the types of patients to be seen but also the number, setting, and level of student involvement. Use of this table should help ensure that clerkships meet the standards for ED-2.

As the Curriculum is a long, sprawling document some changes have been made to the layout to facilitate its use. The rationale section has been shortened. The prerequisites sections have been streamlined. The original multiple layers of formatting have been removed and is now standardized

using Microsoft Word for Windows. Finally, several appendices have been provided. The appendices include a table of the competencies organized according to the ACGME guidelines and a Clinical Encounter Table of core clinical conditions that should be seen during the clerkship so that Clerkship Directors will have a template to help meet the requirements for LCME ED-2. The appendix also includes a list of core common pediatric symptoms, signs, or laboratory values and their differential diagnosis as well as a list of all the diagnosis in the Curriculum that are labeled as core pediatric or universal.

Consistent with the 1995 Curriculum, the 2005 curriculum is not meant to be prescriptive; rather, it attempts to define a central body pediatric knowledge, skills and attitudes which are the fundamental for a general physician, and to provide clerkship directors with a resource for their teaching. The curriculum content can be expanded or modified for institutions with longer or shorter core clerkships.

The goals of this core curriculum in Pediatrics remain the same; that is to foster:

- Acquisition of basic knowledge of growth and development (physical, physiologic and psychosocial) and of its clinical application from birth through adolescence.
- Acquisition of the knowledge necessary for the diagnosis and initial management of common pediatric acute and chronic illnesses.
- An understanding of the approach of pediatricians to the health care of children and adolescents.
- An understanding of the influence of family, community and society on the child in health and disease.
- Development of communication skills that will facilitate the clinical interaction with children, adolescents and their families and thus ensure that complete, accurate data are obtained.
- Development of competency in the physical examination of infants, children and adolescents.
- Development of clinical problem-solving skills.
- Development of strategies for health promotion as well as disease and injury prevention.
- Development of the attitudes and professional behaviors appropriate for clinical practice.

Definition of terms used in the document:

Rationale: This section outlines the reasons that a specific topic or clinical issue is included in the curriculum.

Prerequisites: Knowledge of the material in this section is assumed. A student should have acquired the knowledge and developed the skills and attitudes listed in this section before the beginning of the pediatric clerkship

Competencies: The knowledge, skills, or attitudes that students should be able to demonstrate.

Universal (U): a skill, attitude, or behavior not specific to pediatrics that is essential to all aspects of clinical medicine

Core Pediatric (CP): a skill, attitude, or behavior specific to pediatrics and expected of students by the end of the clerkship experience

Mastery (M): a skill, attitude, or behavior specific to pediatrics that is expected of students with advanced training in pediatrics not necessarily during the clerkship experience.

Processes: the types of patients, real or simulated, that a student should see during the clerkship experience

## PROFESSIONAL CONDUCT AND ATTITUDES

### **Rationale**

Knowledge, skills, clinical reasoning, and informed decision making while crucial to a physician's practice of medicine, are insufficient to guarantee successful clinical interactions. A physician must have well-developed interpersonal skills that facilitate communication, and must also demonstrate attitudes, behaviors and beliefs that serve to promote the patient's best interest. Students can learn to be professional, at least to a certain degree, in the abstract, but will acquire professional characteristics most effectively through contact with physicians chosen to serve as role models. In order to be effective role models, however, faculty must undergo training in order to be able to explain their behaviors explicitly, to foster professionalism and humanism. Clerkship Directors should assure that faculty development occurs in this area. Ethical principles, likewise, while learned in the abstract, must be applied clinically; the importance of suitable role models cannot be overemphasized.

In particular, each student must recognize that pediatrics poses unique challenges to professional conduct and attitudes. The patient constantly changes as growth and development proceed. The patient's ability to participate actively in the clinical interaction progresses, as does his or her knowledge, experience and concerns. The adolescent presents specific challenges, including such issues as privacy, risk-taking behaviors, confidentiality and personal involvement with health. The role of parents in the clinical interaction, and their knowledge, experience, and concerns also develop and change as an individual child grows and as subsequent children are born. The way a physician communicates can have a lasting effect in how parents, children and adolescents handle situations and interact with the physician.

Cultural, ethnic and socioeconomic factors also affect personal and family traits and behaviors, with varying effects on child rearing practices. Recognition of and respect for difference are important, yet the student must be alert for the child or adolescent at risk in different family environments, given that the physician's primary obligation is to promote the best interest of the patient.

Professional conduct extends to the educational process: Students have a personal responsibility for their own education and for development of life-long learning skills. They must interact with all staff, including their peers and their teachers, in a manner that demonstrates respect for each individual and that promotes personal and group learning.

### **Prerequisites**

Well-developed data gathering skills, knowledge of ethical principles, and a basic understanding of health law issues are essential foundations for the student. Students should have completed an introductory course on medical ethics providing a basic understanding of ethical principles (autonomy, beneficence, nonmaleficence, and justice) and their application in clinical medicine

### **Competencies**

#### A. Humanism and Professionalism in Patient and Family Encounters:

##### *Knowledge*

1. Describe and demonstrate behaviors that respect the patient's modesty, privacy, and confidentiality. (U)
2. Describe the practical applications of the major ethical principles (i.e. justice, beneficence, non-maleficence and respect for autonomy) (U)

##### *Skills*

1. Demonstrate communication skills with patients and families that convey respect, integrity, flexibility, sensitivity, and compassion. (U)
2. Demonstrate respect for patient, parent, and family attitudes, behaviors and lifestyles, paying particular attention to cultural, ethnic, and socioeconomic influences to include actively seeking to elicit and incorporate the patient's, parent's and family's attitudes into the health care plan. (U)
3. Demonstrate behaviors and attitudes that promote the best interest of patients and families, including showing flexibility to meet the needs of the patient and family. (U)

#### B. Professionalism with Members of the Health Care Team

##### *Knowledge*

1. Describe the characteristics of the impaired physician and reflect on your responsibilities to identify and report concerning behavior (M)

##### *Skills*

1. Demonstrate collegiality and respect for all members of the health care team. (U)

#### C. Professionalism in the Learner Role

##### *Skills*

1. Demonstrate a positive attitude and regard for education by demonstrating intellectual curiosity, initiative, honesty, responsibility, dedication to being prepared, maturity in soliciting, accepting, and acting on feedback, flexibility when differences of opinion arise, and reliability (including completing all assignments with honesty). (U)
2. Identify and explore personal strengths, weaknesses, and goals – in general and within specific patient encounters. (U)
3. Describe the impact of stress, fatigue, and personality differences on learning and performance. (U)

#### D. Professionalism and Society

##### *Knowledge*

1. Describe a pediatrician's role and responsibility in advocating for the needs of patients (individual and populations) within society. (M)

##### *Skills*

1. Demonstrate behaviors that enhance the experience of the entire group of learners. (M)

## SKILLS

### Rationale

An essential skill for success as a clinician and lifelong learner is clinical problem solving. The process of going from a patient's chief complaint to the creation of an appropriate differential diagnosis and the formulation of a diagnostic therapeutic plan is the core of clinical medicine. Skills essential for competent medical care include the ability to conduct an interview, perform a physical examination, manage medical data, communicate written and oral information, integrate basic science knowledge, search and read the literature critically, and teach. The care of individual patients requires the application of all of these skills.

### Prerequisites

- Introductory course in physical diagnosis which includes general physical examination techniques and the use of diagnostic instruments.
- Basic competency in patient interviewing to include an understanding of different styles of questions used in the medical review, such as open-ended, directed, follow-up, and summary questions.
- Awareness of the affects of personal and cultural differences in the provision of care.

### General Competencies (all skills are CP unless specifically designated U or M)

1. Demonstrate sensitivity to confidentiality, privacy, and modesty, during the medical interview and physical examination (U) (see professionalism)
2. Demonstrate an ability to perform an age-appropriate history and physical examination in children of all ages (CP)

### Specific Skills:

#### A. Interviewing Skills

1. Demonstrate an ability to obtain the following information in an age-appropriate and sensitive manner from a child and or the accompanying adult: (CP)

#### *Past History*

- Neonatal history, including:
  - Birth weight and approximate gestational age
  - Maternal complications, such as extent of prenatal care, infections, exposure to drugs, alcohol or medications
  - Problems in the newborn period, such as prematurity, respiratory distress, jaundice and infections
- Immunizations
- Previous hospitalizations (U)
- Surgeries (U)
- Medications and medication allergies (U)

- Chronic medical conditions (U)
- Growth and development
- Nutrition (U)

*Family History:*

- Age and health of family members to include acute and chronic medical conditions (U)
- Drug and alcohol abuse (U)
- Construct a family pedigree

*Social History:*

- Household composition and socioeconomic status (U)
- School, caregiver, and peer relationships (U)
- HEADSS assessment
- Environmental and Personal Safety Assessment:
  - Seat belts and car seats
  - Bicycle helmets
  - Firearms in the home
  - Smoking (U)
  - Lead exposure
  - Home safety for infants and toddlers

B. Physical Examination Skills

1. Demonstrate the role of patient observation in determining the nature of a child's illness and developmental stage (CP)
2. Conduct a pediatric physical examination appropriate to the nature of the visit or complaint (complete vs. focused) (U) and the age of the patient (CP)
3. Demonstrate an ability to perform the following examination skills (CP)

*Appearance*

- Interpret the general appearance of the child, including size, morphologic features, development, behaviors and interaction of the child with the parent and examiner.
- Identify signs of acute and chronic illness in a neonate, infant, toddler, school aged child, and adolescents as evidenced by skin color, respiration, hydration, mental status, cry and social interaction.

*Vital signs*

- Measure vital signs, demonstrating knowledge of the appropriate blood pressure cuff size and normal variation in temperature depending on the route of measurement (oral, rectal, axillary or tympanic)
- Identify variations in vital signs based on age of the patient, the presence or absence of disease, and testing modalities (e.g. blood pressure cuff size).

*Growth* (See section on Growth)

- Accurately graph and interpret height (length), weight, and head circumference
- Calculate, plot, and interpret BMI (U)
- Describe the usefulness of longitudinal data in assessing growth

*Development* (See section on Development)

- Accurately identify and interpret major developmental milestones of the neonate, infant, toddler, school-aged child, and adolescent.

*HEENT*

- Observe, measure, and describe head size and shape, symmetry, facial features, and ear position as part of the examination for dysmorphic features
- Identify sutures and fontanelles in neonates and interpret the findings.
- Identify the red reflex and discuss how it is used to detect corneal opacities and intraocular masses.
- Detect the corneal light reflection and discuss how it is used to identify strabismus
- Assess hydration of the mucous membranes.
- Assess dentition (U)
- Observe the tympanic membrane using an otoscope and an insufflator
- Identify the structures of the oropharynx (e.g. uvula, tonsils, palate, tongue) and recognize signs of pathology (U)

*Neck*

- Palpate lymph nodes and describe what anatomic areas they drain (U)
- Demonstrate maneuvers that test for nuchal rigidity
- Palpate the thyroid and any neck masses (U)

*Chest*

- Observe, measure and interpret the rate, pattern and effort of breathing (U)
- Identify normal variations of respiration and signs of respiratory distress e.g. grunting, flaring, and retraction (U)

- Identify normal breath sounds and findings consistent with respiratory pathology such as stridor, wheezing, crackles and asymmetric breath sounds (U)
- Identify transmitted upper airway sounds (U)
- Observe and describe breast tissue according to developmental stage (e.g. Tanner scale) (CP) and palpate breast tissue (M)

#### *Cardiovascular*

- Identify the pulses in the upper and lower extremities through palpation.
- Observe and palpate precordial activity (U).
- Describe cardiac rhythm, rate, and quality (such as intensity, pitch, and location) of the heart sounds and murmurs and variation with maneuvers through auscultation. (U)
- Assess peripheral perfusion, using a test for capillary refill. (U)
- Identify central versus peripheral cyanosis

#### *Abdomen*

- Palpate the liver, spleen and kidneys, and interpret the finding based on the age of the patient.
- Assess the abdomen for distention, tenderness, and masses through observation, auscultation, and palpation (U)
- Determine the need for a rectal examination, (CP) and demonstrate the age-appropriate technique (M).

#### *Genitalia*

- Describe the difference in appearance of male and female genitalia at different ages and developmental (e.g. Tanner) stages.
- Palpate the testes (CP) and identify genital abnormalities in males, including cryptorchidism (CP), hypospadias, phimosis, hernia, hydrocele and testicular mass (M).
- Recognize genital abnormalities in females including signs of virilization (CP) imperforate hymen, labial adhesions and signs of injury.(M)

#### *Extremities*

- Examine the hips of a newborn for developmental dysplasia of the hip using the Ortolani and Barlow maneuvers
- Observe and describe the gait of children at different ages.
- Identify age-related variations in the examination of the extremities, such as tibial torsion, genu valgus, flat feet, etc. (M)

- Recognize pathology, such as joint effusions, signs of trauma, and inflammation(CP) and restricted or excessive joint mobility (M)

#### *Back*

- Perform and interpret a screening test for scoliosis.
- Examine the back for midline tufts of hair, pits, sacral dimples, or masses.

#### *Neurologic examination*

- Elicit the primitive reflexes that are present at birth and describe how they change as the child develops.
- Assess the quality and symmetry of tone, strength and reflexes, using age-appropriate techniques. (M)
- Assess the major developmental milestones of newborns, infants, toddlers, school aged, children, and adolescents.

#### *Skin*

- Describe and assess turgor, perfusion, color, hypo and hyperpigmented lesions, and rashes through observation and palpation (U)
- Identify jaundice, petechiae, purpura, bruising, vesicles, and urticaria. (U)

### C. Patient Communication Skills

1. Conduct an effective interview by adapting the interview to the visit (e.g., first visit, acute care, health supervision), or chief complaint, (U)
2. Demonstrate effective verbal and non-verbal communications skills with children and their parents or families that include:
  - Establishment of rapport taking into account the patient’s age and development stage (CP)
  - Use of communication techniques that enable development of a therapeutic alliance being sensitive to the unique social condition and cultural background of the family (U)
  - Identification of the primary concerns of the patient and/or family (U).
  - Discussion of medical information in terms understandable to patients and families avoidance of medical jargon (U)
3. Correctly identify the need for an interpreter in specific patient-physician interactions. (U)
4. Effectively communicate information about the diagnosis, diagnostic plan, and treatment to the patient and family and assess the patient and families understanding (M).
5. Describe the important role of patient education in treatment of acute and chronic illness, and prevention of disease. (M)
6. Observe and reflect on the communication of “bad news” to parents, children and adolescents. (M)

### D. Peer Communication Skills

1. Demonstrate effective oral and written communication with the health care team avoiding jargon and vague terms (e.g. clear and normal). (U).

2. Present a complete, well-organized verbal summary of the patient's history and physical examination findings, including an assessment and plan modifying the presentation to fit the time constraints and educational goals of the situation. (U)
3. Document the history, physical examination, and assessment and plan using a format appropriate to the clinical situation (e.g., inpatient admission, progress note, office or clinic visit, acute illness, health supervision visit, and interval care visits). (U)
4. Write admission and daily orders for a hospitalized patient (U)
5. Write a prescription (see Therapeutics section) (U) specific for a child's weight (CP)

E. Problem solving skills

1. Demonstrate an ability to generate an age-appropriate differential diagnosis and problem list based on the interview and physical examination. (CP)
2. Outline a diagnostic plan based on the differential diagnosis, and justify the diagnostic tests and procedures taking into account the test's sensitivity, specificity, and predictive value, as well as its invasiveness, risks, benefits, limitations, and costs. (MU)
3. Interpret the results of diagnostic tests or procedures, recognizing the age-appropriate values for commonly used laboratory tests, such as the CBC, urinalysis, and serum electrolytes. (M)
4. Formulate a therapeutic plan appropriate to the working diagnosis (MU)
5. Formulate an educational plan to inform the health care team and family of your thought process and decisions. (MU)
6. Search for relevant information using electronic (or other) data bases and critically appraise the information obtained to make evidence based decisions. (U)

## HEALTH SUPERVISION

### Rationale

Health supervision which includes assessment of growth and development, prevention of disease by immunization, prevention of injury by education, screening for treatable conditions and promotion of a healthy environment and a healthy lifestyle is essential to pediatric practice and primary care.

### Prerequisites

- Introductory data gathering skills.
- Knowledge of metabolic processes in the body including the respective roles of dietary fats, carbohydrates, and protein, and the need for vitamins and minerals
- Knowledge of normal immune responses, mechanisms of immunization, and modes of transmission of communicable diseases.
- Knowledge of clinical epidemiologic concepts and the appropriate uses of screening in clinical medicine and the characteristics of a good screening test (i.e. sensitivity, specificity, positive and negative predictive values).

### Competencies

#### *Knowledge*

1. List the most common preventable morbidities in childhood and describe strategies for prevention. (CP)
2. Describe the components of a health supervision visit including health promotion and disease and injury prevention, the appropriate use of screening tools, and immunizations for newborns, infants, toddlers, school aged children, and adolescents. (CP)
3. Describe the rationale for childhood immunizations. (See Prevention). (CP)
4. Discuss the rationale for screening tests (such as environmental lead questionnaire, domestic violence screening, CBC, urinalysis, blood lead level, and PPD). (CP)
5. Describe the indications (CP), appropriate use (CP), interpretation (M), and limitations (M) of the following screening tests:
  - Neonatal screening
  - Developmental screening
  - Hearing and vision screening
  - Lead screening
  - Anemia screening
  - Tuberculosis testing
6. Define anticipatory guidance and describe how it changes based on the age of the child. (CP)

#### *Skills*

1. Demonstrate an ability to provide age-appropriate anticipatory guidance about nutrition (CP), behavior (CP), immunizations (CP), injury prevention (CP), pubertal development (CP), sexuality (M), and substance use and abuse (M).

### Processes

All students should see during the course of the Pediatric Clerkship should see an infant, toddler, school aged, and adolescent child for a health care supervision visit.

## GROWTH

### **Rationale**

Growth is a defining feature of childhood. Genetic and environmental factors influence the rate of growth and the final stature and body habitus the child attains. Regular monitoring of growth provides the clinician with one of the best indicators of the underlying health of the child.

### **Prerequisites**

Knowledge of the genetic, endocrine, nutritional, and psychosocial influences on growth.

### **Competencies**

#### *Knowledge*

1. Describe variants of normal growth in healthy children, (e.g. familial short stature and constitutional delay). (CP)
2. Identify and describe abnormal growth patterns based on the family growth history and the child's previous growth e.g. microcephaly, macrocephaly, short stature, obesity, growth abnormalities related to specific physical findings. (CP)
3. Identify failure to thrive and overweight/obesity in a child or adolescent using BMI and other growth measures and outline the differential diagnosis and initial evaluation. (CP)

#### *Skills*

1. Demonstrate ability to measure and assess growth including height/length, weight, and head circumference and body mass index in patient encounters using standard growth charts. (CP)

### **Processes:**

All students on the Pediatric Clerkship should see a patient with a patient with real or possible (e. g. parental concern) issues related to growth (e.g. failure to thrive, obesity, short stature, macrocephaly, microcephaly, constitutional delay, small for gestation age). This can be in the context of a well child examination or a child with a known disorder.

## DEVELOPMENT

### **Rationale**

The physical maturation and intellectual, social and motor development of the child follow predictable patterns, and provide the physician with a good indicator of the child's health and neurological function. The clinician must be familiar with normal patterns of development in order to detect deviations that might be the first sign of a medical or psychosocial problem.

### **Prerequisites**

Preclinical coursework in the scientific underpinning of neurology and neurobiologic development.

### **Competencies**

#### *Knowledge*

1. Describe the four developmental domains of childhood as defined by the Denver Developmental exam (e.g. gross motor, fine motor, language, and social development). (CP)
2. Describe how abnormal findings on the development screening tools would suggest a diagnosis of developmental delay (CP), autism (M), pervasive developmental delay (M), and mental retardation. (M)
3. Describe the initial evaluation and need to refer a patient with evidence of developmental delay or abnormality. (M)

#### *Skills*

1. Demonstrate an ability to assess psychosocial, language, physical maturation, and motor development in pediatric patients using appropriate resources (e.g. Bright Futures, the Denver Developmental Standard Test 2, and HEADSS). (CP) Key features might include the following:
  - Newborn/Infant –Disappearance of primitive reflexes; changes in tone and posture; cephalocaudal progression of motor milestones during the first year; stranger anxiety.
  - Toddler/child - Separation and autonomy in two to three-year olds; sequence of language development; concept of school readiness
  - Adolescent - Sequence of physical maturation (e.g. Tanner scales), cognitive development, and assessment of psychosocial and emotional development (e.g. HEADSS).

### **Processes:**

All students on the Pediatric Clerkship should see a patient with a patient with real or possible (e.g. parental concerns) issues related to development (e.g. delayed or possibly delayed language, motor, fine motor, or social adaptive skills)

## BEHAVIOR

### **Rationale:**

Providing anticipatory guidance especially in the areas of normative or expected behaviors and identification of abnormal behavior is critical to pediatric practice. Knowledge of age-appropriate behavior allows the physician to recognize deviant behaviors and facilitates earlier intervention.

### **Prerequisites:**

- Recognition that the developmental tasks of infancy, childhood and adolescence differ.
- Knowledge of the genetic and environmental influences on behavior and behavioral patterns.

### **Competencies:**

#### *Knowledge*

1. Identify normal pattern of behaviors in the developing child such as (CP):
  - newborn infants: development and evolution of social skills
  - toddler: autonomy
  - school age: independence
  - adolescence: abstract thinking
2. Describe the typical presentation of common behavioral problems and issues in different age groups such as: (CP)
  - Newborn/infants: sleep problems, colic
  - toddler: temper tantrums, toilet training, feeding problems
  - school age: enuresis, attention deficit, encopresis (M), autism (M)
  - adolescence: eating disorders (CP), risk-taking behavior (CP), conduct disorders (M)
3. Describe the emotional disturbances or medical conditions that may manifest as alterations in school performance and peer or family relationships. (CP)
4. Distinguish between age-appropriate behavior, inappropriate or abnormal behavior, and those that suggest severe psychiatric or development illness in children of different ages (for example head banging, threatening gestures, suicidal) (M)
5. Describe how somatic complaints may represent psychosocial problems (e.g. recurrent abdominal pain, headache, fatigue, and neurologic complaints) (U)
6. Describe the types of situations where pathology in the family (e.g. alcoholism, domestic violence, depression) contributes to childhood behavior problems (U)

#### *Skills*

1. Identify behavioral and psychosocial problems of childhood using the medical history and physical examination. (CP)
2. Counsel parents and children about the management of common behavioral concerns such as discipline, toilet training, and eating disorders. (M)

### **Processes:**

All students on the Pediatric Clerkship should see a patient or patients with an individual or parental concern over a specified behavior or group of behaviors (e.g. sleep problems, colic, temper tantrums, toilet training, feeding problems, enuresis, attention deficit, encopresis, autism, eating disorders, conduct disorders, head banging, poor school performance).

## NUTRITION

### Rationale

Proper nutrition promotes growth and helps maintain health. Some degree of assessment of nutrition is a component of almost every pediatric medical visit. In patients presenting with abnormal growth, nutritional assessment is central to diagnosis and treatment.

### Prerequisites

- The appropriate balance of food groups (e.g., the food pyramid of the United States Department of Agriculture/Department of Health and Human Services).
- Basic science course work on body metabolism, the respective roles of dietary fats, carbohydrates, and protein, and the need for vitamins and minerals.
- The role of nutrition in preventive health (e.g., the National Cholesterol Education Program guidelines for adults).

### Competencies

#### *Knowledge*

1. Describe the advantages of breastfeeding and describe common difficulties experienced by breastfeeding mothers. (CP)
2. Describe the signs and symptoms of common nutritional deficiencies in infants and children (e.g. iron, vitamin D, fluoride, and inappropriate caloric volume) and how to prevent them. (CP)
3. Identify children with specific or special nutritional needs (e.g. patients with chronic illness, prematurity, abnormal growth patterns, failure to thrive, obesity, or when family risk factors suggest the possibility that nutritional modification will be needed). (CP)
4. Describe nutritional factors that contribute to the development of childhood obesity and to failure to thrive. (CP)
5. Discuss risk factors for the development of cardiac disease and diabetes with families. (U)
6. Describe the endocrine, cardiovascular, and orthopedic consequences of childhood obesity. (M)

#### *Skills*

1. Obtain a dietary history in children of different ages that includes the following: (CP):
  - Infants: type, amount and frequency of breast or formula feeding, solid foods, and dietary supplements (vitamins, iron, fluoride).
  - Toddler/school age child: milk, juice, soda, fast foods, and meal patterns
  - Adolescents: meal patterns, nutritional supplements, milk, juice, soda, alcohol, snacking, and fad diets
2. Determine the caloric adequacy of an infant's diet. (CP)
3. Provide nutritional advice to families regarding the following: (CP)
  - Breastfeeding vs. formula feeding
  - Addition of solids to an infant's diet
  - Introduction of cow's milk to an infant's diet
  - Healthy food choices for children and adolescents
  - Exercise and TV or video viewing and their effect on obesity

**Processes**

All students on the Pediatric Clerkship should see a patient or patients with self or parental concerns or questions about appropriate nutrition (e.g. failure to thrive, questions about breast vs. bottle feeding, questions about switching to formula, when to add solids). This can be in the context of a routine health care supervision visit.

## PREVENTION

### **Rationale**

Physicians routinely incorporate strategies for prevention of illness and injury into routine health supervision. Immunizations have resulted in a drastic reduction in the rates of certain infectious diseases. Injuries cause the majority of deaths in childhood and adolescence. Illness and injury prevention must be a prominent and recurrent theme during health maintenance and other health care visits. The American Academy of Pediatrics most medical groups no longer use the term "accident" as most childhood injuries are believed to be predictable and preventable.

Note: There is a significant amount of overlap with the Health Supervision portion of the curriculum. Poisoning is covered in a separate section. Domestic violence is also addressed in the sections on Behavior, Issues Unique to Adolescence, and Child Abuse.

### **Prerequisites**

- Knowledge of clinical epidemiologic concepts as they pertain to estimation of health risk and prevention of illness and injury.
- Understanding of the impact that culture, socioeconomic status and environment have on illness and injury prevalence and patterns.
- An understanding of childhood development in order to better understand risk and provide age appropriate prevention strategies.

### **Competencies**

#### *Knowledge*

1. Describe how risk of illness and injury change during growth and development and give examples of the age-and development-related illnesses and injuries. (CP)
2. List the immunizations currently recommended from birth through adolescence and identify patients whose immunizations are delayed. (CP)
3. Describe the rationale, and general indications and contraindications of immunizations. (CP)  
Explain how screening for family violence may serve as an important preventive health practice. (CP)
4. Describe the key components of a pre participation sports physical. (M)  
Describe infection control precautions that help limit the spread of infectious diseases in patients and health care providers (e.g. handwashing, masks, and N-95 masks in patients with tuberculosis). (U)

#### *Skills*

Provide age-appropriate anticipatory guidance for the following: motor vehicle safety, infant sleeping position, falls, burns, poisoning, fire safety, choking, water safety, bike safety, sexually transmitted diseases, firearms and weapons. (CP)

## ISSUES UNIQUE TO ADOLESCENCE

### **Rationale**

Adolescence represents the stage of human growth and development between childhood and adulthood. During this time, significant physical, cognitive, and psychosocial changes occur.

### **Prerequisites**

- Introductory communication and interviewing skills
- Knowledge of the anatomy, physiology, and endocrinology related to growth and reproduction
- A framework for understanding childhood development

### **Competencies**

#### *Knowledge*

1. Describe the unique features of the physician-patient relationship during adolescence including confidentiality and consent. (CP)
2. Identify and describe the sequence of the physical changes of puberty (e.g. Tanner scale). (CP)
3. List the components of health supervision for an adolescent, such as personal habits, pubertal development, immunizations, acne, scoliosis, sports participation, and indications for pelvic exam. (CP)
4. Describe the common risk-taking behaviors of adolescents, such as alcohol and other drug use, sexual activity and violence (CP)
5. Describe the contributions of unintentional injuries (CP), homicide (CP), suicide (CP) and HIV/AIDS (M) to the morbidity and mortality of adolescents.
6. Describe the features of common mental health problems in adolescence, including school failure, attention deficit, body image, eating disorders, depression and suicide. (CP)
7. Describe an approach to counseling an adolescent regarding sexual activity, substance abuse, and personal safety. (M)
8. Describe the unique difficulties encountered by adolescents with chronic diseases, including adherence and issues of autonomy vs. dependence. (M)
9. Discuss the characteristics of early, mid and late adolescence in the terms of cognitive and psychosocial development. (M)

#### *Skills*

1. Interview an adolescent patient, using the HEADSS method, to ask sensitive questions about lifestyle choices that affect health and safety (e.g. sexuality, drug, tobacco and alcohol use) (CP) and give appropriate counseling (M)
2. Conduct a physical examination of an adolescent that demonstrates respect for privacy and modesty, employing a chaperone when appropriate. (CP)
3. Conduct a pre-participation sports examination and demonstrate the key components of that examination necessary to clear an individual for participation in strenuous exercise (special senses, cardiac, pulmonary, neurological, and musculo-skeletal). (M)
4. Conduct a health supervision visit for a healthy adolescent, incorporating a psychosocial interview, developmental assessment and appropriate screening and preventive measures. (M)

### **Processes**

All students on the Pediatric Clerkship should see an adolescent patient or patients.

## ISSUES UNIQUE TO THE NEWBORN

### **Rationale**

The transition from intrauterine life to extrauterine independent existence is a major event: physiologically for the baby, emotionally for the family, and medically for the health care team. Physicians must have an appreciation for the physiologic changes a newborn experiences. The newborn has unique needs and vulnerabilities that are distinct from other periods of infancy. Most of the information covered in this section is pertinent in the first few hours and days of life. However, the newborn period extends through to the first month of life.

### **Prerequisites**

- Embryology
- Fetal physiology
- Knowledge of the basics of antepartum and intrapartum care, particularly maternal screening tests and common maternal complications that can affect the newborn.

### **Competencies**

#### *Knowledge*

1. Describe the transition from the intrauterine to the extrauterine environment, including temperature regulation, cardiovascular/respiratory adjustment, glucose regulation, and initiation of feeding. (CP)
2. List the information from the history of pregnancy, labor, and delivery obtained from the parents or medical record that has implications for the health of the newborn. (CP)
4. Describe how gestational age can be assessed with an instrument such as the Ballard scale and identify key indications of gestational maturity. (CP)
5. Describe the challenges for parents adjusting to a new infant in the home. (CP)
6. List the differential diagnosis and complications for the following common problems that may occur in the newborn
  - jaundice (CP)
  - respiratory distress (CP)
  - poor feeding (CP)
  - large and small for gestation infants (e.g. congenital infection) (CP)
  - “state” abnormalities which includes tremulousness, irritability, lethargy from causes such as drug withdrawal, hypoglycemia, sepsis (CP)
  - prematurity (M)
7. Describe how gestational age affects risks of morbidity or mortality in the newborn period (for example lung disease, hypothermia, and glucose homeostasis) (M)

#### *Skills*

1. Perform a complete physical examination of the newborn infant. (CP)
2. Give parents of a newborn anticipatory guidance for the following issues: (CP)
  - the benefits of breast-feeding vs. formula for the newborn and mother
  - normal bowel and urinary elimination patterns

- normal neonatal sleep patterns
- newborn screening tests to include screens for metabolic and infectious conditions and hearing loss
- appropriate car seat use
- prevention of SIDS (“back to sleep”):
- immunizations (e.g. HBV)
- medications (e.g. eye prophylaxis and vitamin K)
- the role of circumcision

**Processes:**

All students on the Pediatric Clerkship should see one or more newborns and a newborn with jaundice.

## MEDICAL GENETICS AND DYSMORPHOLOGY

### Rationale

A physician should be able to distinguish between congenital disorders (disorders present at birth) that are genetic from those that are non-genetic, as well as recognize common genetic diseases presenting later in childhood. Genetic abnormalities may produce congenital malformations, metabolic disturbances, specific organ dysfunction, abnormal growth patterns, and abnormalities of sexual differentiation. New technology and knowledge of genetics have raised ethical questions that physicians and society will need to address.

### Prerequisites

- Knowledge of gene structure, regulation and function
- Basic knowledge of the Human Genome Project and the role of genetic inheritance in multifactorial diseases, such as cancer, heart disease and diabetes
- Basic mechanisms of Mendelian inheritance, multifactorial inheritance, the “carrier” state, incomplete penetrance, variable expression, and spontaneous mutations.
- Basic embryology and teratology
- Introductory history taking and physical examination skills

### Competencies

#### *Knowledge*

1. Describe the genetic basis and clinical manifestations of the following syndromes, malformations, and associations:

- Common chromosomal abnormalities, (e.g. Trisomy 21 (CP), Turner syndrome (CP), Klinefelter syndrome (M))
- Syndromes due to teratogens (e.g. fetal alcohol syndrome) (CP)
- Other common genetic disorders (e.g. cystic fibrosis, sickle cell disease, hemophilia) (CP)
- Single malformations with multifactorial etiology (e.g. spina bifida, congenital heart disease, cleft lip and palate)(M)

2. List common medical and metabolic disorders (e.g. hearing loss, hypothyroidism, PKU, hemoglobinopathies) detected through newborn screening programs. (CP)

3. Discuss the effects of maternal health and potentially teratogenic agents on the fetus and child, including maternal diabetes and age (CP), alcohol use (CP) illicit drug use (CP), and prescribed medications such as phenytoin, valproate, and retinoic acid (M)

4. List common prenatal diagnostic assessments (e.g. maternal serum screening, amniocentesis, and ultrasonography) and understand their use (M)

5. Describe the use of chromosome studies in the diagnosis of genetic disorders (M)

6. Discuss the role of genetics in common multifactorial conditions (e.g. inflammatory bowel disease, pyloric stenosis, congenital heart disease, cleft lip, diabetes and cancer) (M)

#### *Skills*

1. Use a family history to construct a pedigree (e.g., for the evaluation of a possible genetic disorder). (CP)

## COMMON ACUTE PEDIATRIC ILLNESSES

### Rationale

Patients often come to medical attention because of a specific problem or complaint. The physician must solve the problems posed by the patient using information obtained from the history, the physical examination and, when appropriate, laboratory tests and/or imaging studies. In the problem-solving process, the physician typically develops differential diagnoses for each of the problems identified. The diagnostic process demands knowledge of disease etiology, pathophysiology and epidemiology and of the patient's gender, ethnicity, environment and prior health status.

When the patient is an infant, child, or adolescent, the physician must also consider the effects of age, physical growth, developmental stage and family environment. Commonly occurring illnesses are first considered, but other, less common disorders may need to be included in the evaluation of various clinical problems.

### Prerequisites

- Pathophysiology of common diseases.
- Fundamentals of epidemiology.
- Principles of pharmacology including pharmacokinetics and pharmacodynamics, and indications for drugs.
- Basic clinical data gathering skills.

### Competencies

#### *Knowledge*

2. List the age appropriate differential diagnosis for pediatric patients presenting with each of the following symptoms. (CP) (See appendix for CP and M level differential diagnosis)

- Abdominal pain
- Cough and/or wheeze
- Diarrhea
- Fever and rash
- Fever without a source
- Headache
- Lethargy or irritability
- Limp or extremity pain
- Otagia
- Rash
- Rhinorrhea
- Seizures

- Sore throat
- Vomiting

3. List the age appropriate differential diagnosis for pediatric patients presenting with each of the following physical findings. (CP) (See appendix for CP and M level differential diagnosis)

- Abdominal mass
- Bruising
- Heart murmur
- Hepatomegaly
- Lymphadenopathy
- Splenomegaly
- Petechiae and/or purpura
- Red or wandering eye
- White pupillary reflex

4. List the age appropriate differential diagnosis for pediatric patients presenting with each of the following laboratory findings. (CP) (See appendix for CP and M level differential diagnosis)

- Anemia
- Hematuria
- Proteinuria
- Positive Mantoux skin test (PPD)

5. Describe the epidemiology, clinical, laboratory, and radiographic findings, of each of the core pediatric level conditions listed for each presenting complaint. (CP)

6. Explain how the physical manifestations of disease (CP) and the evaluation (CP) and management (M) may vary with the age of the patient. Be able to give specific examples.

7. Discuss the characteristics of the patient and the illness that must be considered when making the decision to manage the patient in the hospital or in the outpatient setting. (M)

8. Describe the epidemiology, clinical, laboratory, and radiographic finding for each of the mastery level conditions listed for each presenting complaint. (M)

### *Skills*

1 Perform an age-appropriate history and physical examination pertinent to the presenting complaint of the child (see also Skills).

2. Generate an age appropriate differential diagnosis and initial diagnostic and therapeutic plan for each patient presenting with one of the following symptoms, physical examination findings, or laboratory findings (see also Clinical Reasoning). (CP)

### Symptoms

- Abdominal pain

- Cough and/or wheeze
- Diarrhea
- Fever and rash
- Fever without a source
- Headache
- Lethargy or irritability
- Limp or extremity pain
- Otagia
- Rash
- Rhinorrhea
- Seizures
- Sore throat
- Vomiting

Physical examination findings

- Abdominal mass
- Bruising
- Heart murmur
- Hepatomegaly
- Lymphadenopathy
- Petechiae and/or purpura
- Splenomegaly
- Red or wandering eye
- White pupillary reflex

Laboratory tests

- Anemia
- Hematuria
- Proteinuria

- Positive Mantoux skin test (PPD)

**Processes:**

All students on the Pediatric Clerkship should see a patient or patients with the following system or symptom based complaints: (see appendix)

- Upper respiratory tract complaint e.g. sore throat, difficulty swallowing, otalgia
- Lower respiratory tract complaint e.g. cough, wheeze, shortness of breath
- Gastrointestinal tract complaint e.g. nausea, vomiting, diarrhea, abdominal pain
- Skin or mucous membrane complaint e.g. rash, pallor
- Central nervous system complaint e.g. headache, lethargy, irritability, fussiness
- Fever without localizing findings

## COMMON CHRONIC ILLNESS AND DISABILITY

### Rationale

Pediatricians are more frequently being asked to care for children with chronic medical conditions and exacerbations of their chronic illness. Physicians will need to understand the long term medical needs, implications and complications of the disorder for the patient as well as the family.

### Prerequisites

An understanding of the pathophysiology and epidemiology of the following chronic illnesses: allergies, asthma, sensory impairment, cerebral palsy disability, cystic fibrosis, sickle cell disease, seizure disorder, diabetes mellitus, childhood malignancy, AIDS.

### Competencies

#### *Knowledge*

1. Describe the clinical features of chronic medical conditions seen in children such as: (CP)
  - asthma
  - atopic dermatitis
  - cerebral palsy
  - cystic fibrosis
  - diabetes mellitus
  - epilepsy
  - malignancy (e.g. acute lymphocytic leukemia and Wilms tumor)
  - obesity
  - seasonal allergies
  - sickle cell disease
  - HIV/AIDS (M)
  - sensory impairment (M)
2. Describe how chronic illness can influence a child's growth and development, educational achievement, and psychosocial functioning. (CP)
3. Describe the impact that chronic illness has on the family's emotional, economic and psychosocial functioning. (U)
4. Describe the impact of a patient's culture on the understanding, reaction to, and management of a chronic illness (U)
5. Describe the contributions of each member of a multidisciplinary health care team in caring for children with a chronic illness. (M)
6. Identify the key components of delivering "Bad News" in relation to chronic illness. (MU)
7. Explain the management strategies for common chronic illnesses seen in children such as asthma, seasonal allergies, diabetes, and atopic dermatitis (M)

#### *Skills*

1. Perform a medical interview and a physical examination in a child with a chronic illness that includes the (CP)
  - effects of the chronic illness on growth and development,
  - emotional, economic and psychosocial functioning of the patient and family, the
  - treatments used, including "complementary and alternative therapies."

**Processes:** Students on the clerkship should see one or more patients with one of the chronic medical conditions listed above. This can be in the context of an acute or routine visit.

## THERAPEUTICS

### Rationale

Appropriate and successful treatment requires choice of the correct medication, the appropriate dose, and both a dosage form and a dosing regimen that will maximize compliance. The pharmacokinetics (absorption, metabolism, distribution and elimination) of medications change under the influence of growth and physiologic maturation. Child behavior and psychomotor development influence the form of medication dispensed and the expectation for compliance.

### Prerequisites

- Knowledge of general pharmacokinetics and pharmacodynamics
  
- Knowledge of the physiologic and behavioral changes that occur during childhood

### Competencies

#### *Knowledge:*

1. Describe how to assess whether a drug is excreted in the breastmilk and safe to use by a breast-feeding mother. (CP)
2. List medications such as aspirin, tetracycline, and oral retinoic acid that are contraindicated or must be used with extreme caution in specific pediatric populations. (CP)
3. Describe the appropriate use of the following common medications in the outpatient setting, including when it is NOT appropriate to treat with a medication: (U)
  - Analgesics / antipyretics
  - Antibiotics
  - Bronchodilators
  - Corticosteroids
  - Cough and cold preparations
  - Ophthalmic preparations
  - Otic preparations
  - Vitamin / mineral supplements
- 4 Select generally accepted pharmacologic therapy for common or life-threatening conditions in pediatric patients. (CP) These conditions could include:
  - Common conditions seen in ambulatory settings:
    - Acne
    - Acute otitis media
    - Allergic rhinitis
    - Asthma
    - Atopic dermatitis
    - Candida dermatitis
    - Fever
    - Impetigo
    - Streptococcal pharyngitis
  
  - Common conditions seen in hospitalized patients
    - Bronchiolitis
  
  - Life threatening conditions
    - Sepsis/ meningitis
    - Status epilepticus (M)
5. Describe the ways medication errors are systemically prevented. (U)

*Skills:*

1. Calculate a drug dose for a child based on body weight. (CP)
2. Write a prescription e.g. for a common medication such as an antibiotic. (U)
3. Negotiate a therapeutic plan with the patient and family to maximize adherence with the agreed upon treatment regimens and assess the family's understanding of the plan. (MU)

## FLUID AND ELECTROLYTE MANAGEMENT

### **Rationale**

All human beings need an uninterrupted supply of water, electrolytes, and energy. Excessive or diminished fluid intake or losses may lead to severe physiologic derangements, with significant morbidity and even mortality.

### **Prerequisites:**

Knowledge of the following:

- Water and electrolyte distribution in body compartments.
- The relationship between basal metabolic rate and daily water requirements.
- Daily glucose requirements.
- The role of the adrenal gland and antidiuretic hormone (ADH) in maintaining serum sodium and body water balance.
- Pathophysiology of hypernatremic and hyponatremic dehydration.

### **Competencies:**

#### *Knowledge:*

1. Describe the conditions in which fluid administration may need to be restricted (such as the syndrome of inappropriate ADH secretion, congestive heart failure, or renal failure) or increased (e.g. fever). (U)
2. Describe the physical findings in hypovolemic shock and the approach to restoration of circulating fluid volume (i.e. “rescue” fluid infusion) (U)
3. Describe the causes and consequences of fluid imbalances and electrolyte disturbances leading to dehydration and such conditions as hypernatremia, hyponatremia, hyperkalemia, hypokalemia, and severe acidosis. (U)

#### *Skills:*

1. Obtain historical and physical finding information necessary to assess the hydration status of a child. (CP)
2. Calculate and write orders for intravenous maintenance fluids for a child considering daily water and electrolyte requirements. (CP)
3. Calculate and write orders for the fluid therapy for a child with severe dehydration caused by gastroenteritis to include “rescue” fluid to replenish circulating volume, deficit fluid, and ongoing maintenance. (CP)
4. Explain to parents how to use oral rehydration therapy for mild to moderate dehydration. (CP)

## POISONING

### Rationale

Poisonings and ingestions are major preventable causes of childhood morbidity and mortality. Poisoning control centers across the U.S. receive more than millions calls a year regarding accidental and non-accidental ingestions and exposures to toxic materials.

### Prerequisites:

- Knowledge of the routes of absorption of toxins including the gastrointestinal tract, the skin, and lungs.
- An understanding that a relationship exists between the mechanism of injury, the child and the environment
- The concept of therapeutic index

### Competencies

#### *Knowledge*

1. Describe the developmental vulnerability for poisoning and accidental ingestions in infants, toddlers, children, and adolescents. (CP)
2. List the ages at which prevalence of unintentional and intentional poisonings is highest and the passive and active interventions that decrease the incidence of childhood ingestions (e.g. locks or safety caps). (CP)
3. Describe the emotions of guilt and anxiety that may be present in the parent, caregiver or child at the time of ingestion. (CP)
4. Describe the environmental sources of lead, the clinical and social importance of lead poisoning, and screening tools to identify children at risk for lead poisoning. (CP)
5. Describe the acute signs and symptoms of accidental or intentional ingestion of acetaminophen (CP), iron (CP), alcohol (CP), narcotics (CP) PCP (M), tricyclic antidepressants (M), volatile hydrocarbons (M), and caustics (M).
6. Describe the immediate emergency management of children with toxic ingestions e.g. acetaminophen (CP), iron (CP), hydrocarbons (M), and strong alkali (M).
7. Describe the role of the Poison Control Center (1-800-222-1222) and other information resources in the management of the patient with an accidental or intentional ingestion. (CP)
8. Describe the agents and acute signs and symptoms of intentional chemical (e.g. cholinergic) or biologic agents. (M)

#### *Skills:*

1. Provide anticipatory guidance regarding home safety and appropriate techniques to prevent accidental ingestions (see also Prevention) (CP)
2. Elicit a complete history when evaluating an unintentional ingestion or exposure to a toxic substance (including the substance, the route of exposure, the quantity, timing, and general preventive measures in the household) (U)
3. Elicit a complete history surrounding the intentional ingestion of a toxic substance (including the substance, route of exposure, amount, timing, antecedent events, and stressors). (M)

## PEDIATRIC EMERGENCIES

### Rationale

All health care providers must be able to identify the infant, child, or adolescent with a medical emergency. A systemic and thorough approach to the seriously ill child may significantly reduce morbidity and mortality.

### Prerequisites

- Knowledge of the cardiopulmonary responses to decreased or relatively decreased intravascular volume.
- Certification in basic cardiopulmonary resuscitation.

### Competencies

#### *Knowledge*

1. List the symptoms of and describe the initial emergency management of shock, respiratory distress, lethargy, apnea, and status epilepticus in pediatric patients. (CP)
2. Describe the age-appropriate differential diagnosis and the key clinical findings that would suggest a diagnosis for each of the emergent clinical problems in the table below.
3. Describe the clinical findings for each of the diagnosis to consider in the table below.

Pediatric Emergencies Table

Emergent Clinical Problem	Diagnoses to Consider (Core pediatric level)	Diagnoses to Consider (mastery pediatric level)
Airway Obstruction / Respiratory distress	Croup, bronchiolitis, asthma, pneumonia, foreign body aspiration, anaphylaxis	peritonsillar or retropharyngeal abscess
Altered mental status (Delirium/lethargy)	Head injury, increased ICP, substance abuse, infection (encephalitis, meningitis), diabetic ketoacidosis, hypoglycemia, abuse, shock, hypoxemia.	intussusception
Apnea	acute life-threatening event (ALTE), seizures, and respiratory infections (RSV and pertussis), GERD, sepsis	cardiac dysrhythmias, breath holding spells
Ataxia		ingestion, infection, and tumor
Gastrointestinal bleeding	Meckel's diverticulum, fissure, intussusception	inflammatory bowel disease, allergic colitis, peptic ulcer disease
Injuries and accidents	Animal bites, minor head injury, nursemaids elbow	sprains and fractures, burns, near drowning, lacerations
Proptosis		tumor and orbital cellulitis
Seizures	Infection (i.e., meningitis or encephalitis), status epilepticus, febrile, ingestion, hypoxemia, shock, electrolyte disturbances	tumor
Shock	Sepsis, severe dehydration, diabetic ketoacidosis, anaphylaxis, congestive heart failure and ingestion.	Burns, neurogenic shock, ductal dependent heart lesions, and adrenal insufficiency
Suicidal Ideation	Depression (U)	

*Skills*

1. Demonstrate the appropriate anticipatory guidance to prevent life-threatening conditions (e.g. infant positioning for sudden infant death syndrome (SIDS), locks to prevent poisoning, and the use of car seats and bicycle helmets) (see also Prevention). (CP)
2. Demonstrate the “ABC” assessment as a means for identifying who requires immediate medical attention and intervention. (U)

**Processes:**

All students on the pediatric clerkship should see a patient or patients, real or simulated, with respiratory distress

## CHILD ABUSE

### **Rationale**

Abuse may include physical, sexual and/or emotional trauma or may occur in the form of neglect when caregivers fail to provide basic physical, psychological or medical needs. Recognition of abuse or neglect can dramatically affect a child's life. Students and other health care providers need to understand the medical, legal, and social implications of suspected abuse and recognize the role of the physician in preventing child abuse and family violence, through routine assessment of family dynamics, early identification of children at risk, and cooperation with community services that support families.

### **Prerequisites**

- Basic clinical data-gathering and communication skills with families and professionals.
  
- Knowledge of the epidemiology of domestic violence including those factors that increase the risk of domestic violence.

### **Competencies**

#### *Knowledge*

1. List characteristics of the history and physical examination that should trigger concern for possible physical, sexual, and psychological abuse and neglect e.g. such as inconsistency in the history, unexplained delays in seeking care, injuries with specific patterns or distributions on the body, or injuries incompatible with the child's development. (CP)
2. Describe the medical-legal importance of a full, detailed, carefully documented history and physical examination in the evaluation of child abuse. (CP)
3. Discuss the concurrence of domestic violence and child abuse and describe markers that suggest the occurrence of family violence. (U)
4. Describe the unique communication skills required to work with families around issues of maltreatment. (M)
5. Summarize the responsibilities of the "mandatory reporter" to identify and report suspected child abuse. Know to whom such a report should be made. (M)

## CHILD ADVOCACY

### **Rationale**

Physicians have a variety of roles in child health, including a public health role wherein they serve as patient and family advocates. Since children are unable to advocate for themselves and many of their families are not empowered, physicians must advocate for them at the individual, local, national and global level.

### **Prerequisites**

Understand the role of the physician as an advocate.

### **Competencies**

#### ***Knowledge***

1. Describe barriers that prevent children from gaining access to health care, including financial, cultural and geographic barriers. CP
2. Identify opportunities for advocacy during a health supervision visit. CP
3. Describe critical components of partnering with the community members to promote child health. (M)
4. Describe the types of problems that benefit more from a community approach rather than an individual approach. (M)
5. Identify a specific pediatric healthcare issue and outline a potential approach to advocacy. (M)

Appendix 1. Common Pediatric Illness Table.

For each presenting symptom, finding, or laboratory value the columns list the suggested differential diagnosis based on level of competence.

Presenting symptom, finding, or laboratory value	Core pediatric level	Mastery level
Cough and/or wheeze	Asthma	Allergic rhinitis
	Bronchiolitis	Chlamydia pneumonia
	Community acquired pneumonia	Cystic fibrosis
	Croup	Gastroesophageal reflux (GERD)
	Viral upper respiratory tract infection	Laryngomalacia and tracheomalacia
		Pertussis
		Tuberculosis
Fever without a focus	Bacteremia/sepsis	JRA
	Meningitis	malignancy
	Occult bacteremia	
	Urinary tract infection	
	Viral illnesses	
Sore Throat	Group a streptococcal pharyngitis	Peritonsillar abscess
	Mononucleosis	Retropharyngeal abscess
	Postnasal drip	
	Viral upper respiratory tract infection	
Otalgia	Otitis media, Acute and Recurrent	Dental caries
	Otitis media with effusion	Foreign body of the canal
	Otitis externa	Mastoiditis
		Pharyngitis
		TMJ syndrome
Rhinorrhea	Allergic rhinitis	Nasal foreign body
	Sinusitis	
	Viral URI.	

Fever and rash	Group A streptococcal infection	drug reaction
	Kawasaki disease	JRA
	meningococemia	Lyme disease
	viral exanthem	<i>Rickettsial</i> disease
		Toxic shock syndrome
Abdominal pain	Appendicitis	Bowel obstruction
	Constipation/encopresis	Cholecystitis
	Gastroenteritis	Dysmenorrhea
	HSP	Gastritis
	intussusception	Incarcerated hernia
	Pelvic inflammatory disease	Inflammatory bowel disease
	Urinary tract infection/pyelonephritis	Malignancy
		Malrotation and volvulus
		Ovarian or testicular torsion
		Pancreatitis
		Peptic ulcer disease
		pregnancy
Diarrhea	Gastroenteritis	Celiac Disease
		Clostridium difficile infection
		Encopresis
		Inflammatory Bowel Disease
		Malabsorption
		Toddlers diarrhea
Vomiting	Gastroenteritis	Bowel obstruction
	Gastroesophageal reflux	Congenital adrenal hyperplasia
	Pyloric stenosis	Diabetic Ketoacidosis
	UTI/pyelonephritis	Eating disorder
		Hepatitis
		Inborn errors of metabolism
		Inborn errors of metabolism
		Intracranial process (increased intracranial pressure)
		Meningitis
		poisoning
		Pregnancy
		Volvulus/malrotation

Rash	Atopic dermatitis	drug reaction
	Contact dermatitis	erythema toxicum
	cellulitis	molluscum contagiosum
	impetigo	warts
	lice	
	monilial infections	
	scabies	
	seborrhea	
	urticaria	
	viral enanthem	
	viral exanthem	
Limp or extremity pain	developmental dysplasia of the hip	Acute rheumatic fever
	fracture	Henoch Schönlein purpura
	Legg-Calve-Perthes disease	JRA
	Nursemaid elbow	Lyme disease
	Osgood Schlatter disease	malignancy
	Osteomyelitis	reactive arthritis
	Septic arthritis	sickle cell crisis
	Slipped capital femoral epiphysis	
	transient synovitis	
Headache	meningitis	Brain tumor
	tension headache	concussion
		hydrocephalus
		increased intracranial pressure
		metabolic disorders
Seizures	febrile seizures	idiopathic seizures
		meningitis
		post traumatic seizure
		toxic ingestions
Bruising	trauma	coagulopathy
		leukemia
Petechiae/purpura	ITP	leukemia

	sepsis	coagulopathy
	trauma	rickettsial infection
	vasculitis	
	viral infections	
Heart murmur	innocent murmur	anemia
		CHF
		myocarditis
		PDA
		valvular defects
Lymphadenopathy	Bacterial adenitis	Cat scratch disease
	Streptococcal pharyngitis	HIV
	Viral illnesses (general or specific such as EBV)	Kawasaki disease
		Malignancy
		Mycobacterial adenitis
Splenomegaly	Malignancy (e.g. leukemia)	Hemolytic anemia
	Mononucleosis	Sickle cell anemia (infancy)
		Systemic infectious diseases
Hepatomegaly	hepatitis	congestive heart failure
		inborn errors of metabolism
		systemic infectious diseases
Abdominal mass	hydronephrosis	
	malignancy	
	pregnancy	
	stool	
White pupillary reflex	cataracts	
	retinoblastoma	
Red or wandering eye	conjunctivitis	allergy
	strabismus	esotropia
		exotropia
		foreign body

		trauma
Anemia	iron deficiency anemia	anemia of chronic disease
	sickle cell anemia	bone marrow failure
	thalassemia	hemolytic anemia
		hemolytic uremic syndrome
		malignancy
Hematuria	glomerulonephritis	benign familial hematuria
	trauma	hemolytic uremic syndrome
	UTI	hypercalciuria
Proteinuria	nephrotic syndrome	transient proteinuria
	orthostatic proteinuria	glomerulonephritis
Positive Mantoux skin test	latent tuberculosis	non-tuberculosis mycobacterial infection
	active tuberculosis	

## Appendix 2.

The Clinical Encounter Table is designed to help Pediatric Clerkship Directors organize a clinical roadmap for their clerkships and help meet the requirements of LCME Standard ED-2.1 The table is meant to be used as a guide to help determine the types and numbers of patients and the settings in which patients should be seen during the clerkship experience. To make the process transparent, whenever possible, the language used in this Table is directly derived from the LCME document. Recognizing that most clerkships already have patient tracking tools, the table is not specifically designed as a tracking or documentation tool however it is designed so that it can easily be adapted to that purpose. For example, the column “Documentation” is included to facilitate tracking if so desired by an individual clerkship director. Importantly, the rows “monitored and verified” and “interim clinical learning plan given” are included to help meet the objectives of ED-2 if the requirement for monitoring is not addressed elsewhere.

Clerkship directors may add or alter the table based on local objectives or needs. The table is designed as a framework and is meant to be both expansive and flexible. In the rows, clinical conditions are grouped into key domains that represent the minimum number of different domains that a student is expected to encounter during the clerkship experience. Other than suggesting students should meet the requirement to “see” a well child check in children of different ages in the ambulatory setting, few other constraints are proposed. Clerkship directors may decide to require students to see additional or different types of patients. Individual Clerkship Directors must decide how many patients, the level of involvement, and the setting that medical students should see patients based on local resources and curricular objectives.

The Clinical Encounter Table in its current form reflects the consensus opinion of the Curriculum Task Force of COMSEP and the Ambulatory Pediatric Association Medical Student Education Special Interest Group. These two working groups feel that a student should see at least one patient in each of the domains (patient type or core conditions) listed. For each domain, a list of presenting symptoms or concerns and diagnoses that would support having seen a patient in that domain is listed. The domains are by nature broad, e.g. upper respiratory tract, which includes many common pediatric illnesses. Some are not easily categorized, e.g. fever without localizing findings. Some do not easily also support a presenting symptom, e.g. well child visit. Nonetheless, it is hoped that Clerkship Directors will be able to use the domain, symptoms, or diagnosis to help ensure that students see the necessary types of patients.

### Table Key:

\*OB = Observation (CR only)

PP = Partial participation (Hx or PE)

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<sup>1</sup> <http://www.lcme.org/standard.htm#latestadditions>

ED-2: The objectives for clinical education must include quantified criteria for the types of patients (real or simulated), the level of student responsibility, and the appropriate clinical settings needed for the objectives to be met.

ANNOTATION (Page 10): Each course or clerkship that requires interaction with real or simulated patients should specify the numbers and kinds of patients that students must see in order to achieve the objectives of the learning experience. It is not sufficient simply to supply the number of patients students will work up in the inpatient and outpatient setting. The school should specify, for those courses and clerkships the major disease states/conditions that students are all expected to encounter. They should also specify the extent of student interaction with patients and the venue(s) in which the interactions will occur. A corollary requirement of this standard is that courses and clerkships will monitor and verify, by appropriate means, the number and variety of patient encounters in which students participate, so that adjustments can be made to ensure that all students have the desired clinical experiences.

FP = Full participation (Hx, PE and CR)

CR= Clinical reasoning

Hx = History taking/data gathering

PE = Physical examination

+O = Outpatient

I = Inpatient

E = Emergency

^Most alternate learning experiences are CLIPP cases. Several cases are being built and will be housed on the COMSEP web page. For example, computer case 1 will be an interactive case that involves linear growth failure

Appendix 2. Clinical Encounter Table. This table reflects the consensus on the types of patients a student should see, the setting, and level of student involvement during the clerkship experience.

Types of Patients to be Seen			Number required to be seen (real or simulated)	Level of student responsibility* (OB, PP, FP)	Clinical setting+ (O, I, E)	Alternative clinical learning experience^	Documentation (Date, signature, student initials)
Domain-patient type/core condition	Symptom, sign, or concern	Examples of diagnosis or issue addressed					
Health Maintenance	Well child care	Newborn (0-1 month)			O	CLIPP case 1	
	Well child care	Infant (1-12 months)			O	CLIPP case 2	
	Well child care	Toddler (12-60 months)			O	CLIPP case 3	
	Well child care	School aged (5-12 years)			O	CLIPP case 4	
	Well child care	Adolescent (13-19 years)			O	CLIPP case 5, 6	
Growth	Parental concerns or abnormalities related to the domain	FTT, poor weight gain, obesity, short stature, microcephaly, macrocephaly, constitutional delay, small for gestational age, large for gestational age				Computer case 1	
Nutrition	Parental concerns or abnormalities related to the domain	FTT, breast vs. formula feeding, questions about switching to formula, when to add solids, beginning cow's milk, diet					

Development	Parental concerns or abnormalities related to the domain	Delayed or possibly delayed language, gross motor, fine motor, or social adaptive skills				CLIPP case 28, 29	
Behavior	Parental concerns or abnormalities related to the domain	Sleep problems, colic, temper tantrums, toilet training, feeding problems, enuresis, ADHD, encopresis, autistic spectrum disorder, eating disorders, head banging, poor school performance				CLIPP case 4	
Upper Respiratory Tract	Sore throat, difficulty swallowing, otalgia	Pharyngitis, strep throat, viral URI, herpangina, peritonsillar abscess, common cold, allergic rhinitis, otitis media, sinusitis, otitis externa				CLIPP case 14	
Lower Respiratory Tract	Cough, wheeze, shortness of breath	bronchiolitis, bronchitis, pneumonia, aspiration, asthma, bronchiectasis,				CLIPP case 12, 13	
Gastrointestinal Tract	Nausea, vomiting, diarrhea, abdominal pain	gastroenteritis, giardiasis, pyloric stenosis, appendicitis, HSP, peptic ulcer disease, gastroesophageal reflux disease				CLIPP case 15, 27	

Dermatologic system	Rash, pallor	Viral rash, scarlatina, eczema, urticaria, contact dermatitis, toxic shock, thrush, atopic dermatitis, seborrheic dermatitis, acne, anemia				CLIPP case 3, 21	
Central nervous system	Lethargy, irritability, fussiness, headache	meningitis, concussion, seizures, ataxia, closed head injury, headache				CLIPP case 20, 24, 28	
Emergent Clinical Problem	Respiratory distress, shock, ataxia, seizures, airway obstruction, apnea, proptosis, suicidal ideation, trauma, cyanosis.	Meningitis, shock, testicular torsion, DKA, SIDS, acute life threatening event (ALTE), congestive heart failure, burns, status asthmaticus, status epilepticus, encephalitis, child abuse etc.				CLIPP cases: 23, 25	
Chronic medical problem		seasonal allergies, asthma, cerebral palsy, cystic fibrosis, diabetes mellitus, malignancy (e.g. acute lymphocytic leukemia or Wilms tumor), sickle cell disease, epilepsy, atopic dermatitis, obesity, sensory impairment, HIV/AIDS				CLIPP cases: 30, 31	
Unique condition: fever without localizing findings	fever	rule out sepsis; urinary tract infection, systemic viral infection (e.g. EBV), autoimmune diseases				CLIPP case 10	

Unique condition: neonatal jaundice	jaundice	jaundice				CLIPP case 8	
monitored and verified (date)							
interim clinical learning plan given							

Table Key:

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Appendix 3. This is a list of the diagnosis listed as either core pediatric (CP) or universal (U) in the curriculum. In many circumstances, the student only needs to know the context, e.g. that the newborn screen is useful in detecting PKU deficiency. For others, students should know the epidemiology, clinical manifestations, differential diagnosis, and initial therapeutic plan (e.g. bronchiolitis).

abdominal pain	eating disorder	Kawasaki disease
abnormal growth patterns	encephalitis	large for gestation infant (LGA)
acetaminophen overdose	encopresis	latent tuberculosis
acidosis (severe)	enuresis	Legg-Calve-Perthes disease
acne	epilepsy	lethargy
acute life-threatening event (ALTE)	failure to thrive	leukocoria
acute lymphocytic leukemia (ALL)	familial short stature	lice
acute otitis media	febrile seizure	limp
alcohol overdose	feeding problem	lymphadenopathy
allergic rhinitis	fever	macrocephaly
allergic rhinitis	fissure	Meckel's diverticulum
anaphylaxis	foreign body aspiration	meningitis
anemia	gastroenteritis	meningococemia
animal bite	gastroesophageal reflux disease	microcephaly
appendicitis	glomerulonephritis	minor head injury
asthma	head banging	monilia infections
atopic dermatitis	head injury	mononucleosis
attention deficit	headache	narcotic overdose
bacterial adenitis	hearing loss	neglect
bone fracture	heart murmur (innocent)	nephrotic syndrome
bronchiolitis	hematuria	nursemaid elbow
candida dermatitis	hemophilia	nursemaids elbow
cataracts	Henoch Schönlein Purpura	nutritional deficiencies
cellulitis	hepatitis	obesity
cerebral palsy	hepatomegaly	orthostatic proteinuria
child abuse	hydronephrosis	Osgood Schlatter disease
colic	hyperkalemia	osteomyelitis
congestive heart failure	hypernatremia	otalgia
conjunctivitis	hypoglycemia	otitis externa
constipation	hypokalemia	otitis media with effusion
constitutional growth delay	hyponatremia	otitis media, acute and recurrent
contact dermatitis	hypothyroidism	pelvic inflammatory disease
croup	hypoxemia	pertussis
cystic fibrosis	idiopathic thrombocytopenic purpura	petechiae
dehydration	impetigo	PKU deficiency
depression	impetigo	pneumonia
developmental delay	inappropriate ADH secretion	poor feeding
developmental dysplasia of the hip	increased intracranial pressure	positive Mantoux skin test (PPD)
diabetes mellitus	innocent murmur	postnasal drip
diabetic ketoacidosis	intussusception	prematurity
diarrhea	iron deficiency anemia	proteinuria
drug abuse	iron overdose	purpura
drug withdrawal	irritability	pyelonephritis
	jaundice	

pyloric stenosis  
pyloric stenosis  
renal failure  
respiratory distress  
retinoblastoma  
rhinorrhea  
risk-taking behavior  
scabies  
school failure  
seasonal allergies  
seborrhea  
seizures  
sepsis  
septic arthritis  
sexual abuse  
shock  
short stature  
sickle cell anemia  
sinusitis  
sleep problems  
slipped capital femoral  
epiphysis  
small for gestation infants  
(SGA)  
splenomegaly  
status epilepticus  
strabismus  
strabismus  
streptococcal pharyngitis  
substance abuse  
suicidal  
temper tantrums  
tension headache  
thalassemia  
transient synovitis  
tremulousness  
Trisomy 21  
tuberculosis  
Turner syndrome  
urinary tract infection  
urinary tract infection  
urticaria  
vasculitis  
viral exanthem  
viral infections  
viral upper respiratory tract  
infection  
vomiting  
wheeze  
Wilms tumor

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