



Achieving New Heights in Medical Education

Pediatrics Core Clerkship Curriculum

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RVUCOM Pediatrics Core Clerkship Curriculum

Introduction to the Pediatric Core Clerkship

The Pediatric Core Clerkship consists of one month of pediatrics which will include exposure to several different patients ranging from infant to adolescent age. A major difference between pediatrics and adult medicine is that children are minors and, in most jurisdictions, cannot make decisions for themselves. The issues of guardianship, privacy, legal responsibility and informed consent must always be considered in every pediatric procedure. 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. A student must demonstrate communication skills with patients and families that convey respect, integrity, flexibility, sensitivity, and compassion.

Goals of the Pediatric Core Clerkship

- Acquisition of basic knowledge of growth and development (physical, physiological and psychological) 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.
- Gain an understanding of the approach of pediatrics to the health care of children and adolescents.
- Gain an understanding of the influences of family, community and society on the child in health and disease.
- Development of communication skills that will facilitate 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 the ability to generate an age-appropriate differential diagnosis, problem list, and plan based on the interview and physical examination.
- 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.

Course Resources

1. The Johns Hopkins Hospital, Hughes, H. K., & Kahl, L. K. (Eds.). (2018). [*The Harriet Lane Handbook*](#) (21st ed.). Philadelphia, PA: Elsevier.
2. Kliegman, R. M., St. Geme, J. W., Blum, N. J., Shah, S. S., Tasker, R. C. & Wilson, K. M. (Eds.). (2020). [*Nelson textbook of pediatrics*](#) (21st ed.). Philadelphia, PA: Elsevier.
3. American Academy of Pediatrics & Baker, C. J. (Eds.). (2023). [*Red book atlas of pediatric infectious diseases \(5th ed.\)*](#). Elk Grove Village, IL: American Academy of Pediatrics.
4. Course Guide for Pediatrics (Available in New Innovations.)

Pediatric Clinical Objectives

1. Interviewing Skills: Demonstrate an ability to obtain the following information in an age-appropriate and sensitive manner from a child and or the accompanying adult:
 - a. Past history:
 - i. Neonatal history including: birth weight and approximant gestational age; maternal complications, problems experienced such as prematurity, respiratory distress, jaundice or infections.
 - ii. Immunizations
 - iii. Growth and Development
 - iv. Previous hospitalizations
 - v. Medications
 - b. Family History:
 - i. Construct a family pedigree by use of family history
 - ii. Health of family members including any chronic illnesses
 - iii. Drug and alcohol abuse of patient and/or family member
 - c. Social History:
 - i. Environmental and Personal Safety Assessment: seat belts and car seats; bicycle helmets, firearms in the home, lead exposure, home safety
 - ii. HEADSS assessment
 - d. Behavior
 - i. Identify normal patterns of behaviors
 1. Newborn infants: Development and evolution of social skills
 2. Toddler: Autonomy
 3. School age: Independence
 4. Adolescence: Abstract thinking

- ii. Distinguish between age-appropriate behaviors, inappropriate or abnormal behavior.
 - iii. Describe the types of situation where pathology in the family contributes to the childhood behavior problems.
- 2. Conduct a pediatric physical examination appropriate to the nature of the visit or complaint of patient/parent and to the age of the patient. Being able to observe the nature of the child's illness.
 - a. Appearance
 - i. General appearance including size, morphologic features, development, behaviors and interactions of child with parent
 - ii. Identify signs of acute and chronic illnesses based on skin color, respiration, hydration, mental status, cry, and social interaction.
 - b. Vital Signs
 - i. Measure vital signs by use of appropriate materials (e.g. appropriate blood pressure cuff size)
 - ii. Knowing a normal variation in a child's temperature based on how it was taken (oral, rectal, axillary, or tympanic).
 - c. Growth
 - i. Be able to measure and assess the growth of a child including height, weight, head circumference, and body mass index by the use of standard growth charts.
 - d. Development
 - i. Be able to assess psychosocial, language, physical maturation, and motor development in patients using appropriate resources
 - ii. Note the disappearance of primitive reflexes; changes in tone and posture; cephalocaudal progression of motor milestones during the first year, and stranger anxiety.
 - iii. Note separation and autonomy in 2-3 year olds; sequence of language development; and concept of school readiness.
 - iv. Note sequence of physical maturation, cognitive development, and psychosocial and emotional development in adolescents.
 - e. HEENT
 - i. Observe, measure, and describe head size and shape, facial features, and ear position
 - ii. Identify sutures and fontanelles in neonates; be able to interpret the findings
 - iii. Identify red reflex and discuss how it is used to detect corneal opacities and intraocular masses
 - iv. Assess hydration of the mucous membranes
 - v. Detect corneal light reflection and discuss how it is used to identify strabismus

- vi. Identify the structures of the oropharynx and recognize signs of the pathology
 - f. Neck
 - i. Demonstrate maneuvers that test for nuchal rigidity
 - ii. Palpate the thyroid and lymph nodes
 - g. Cardiovascular
 - i. Identify pulses in the upper and low extremities through palpations
 - ii. Identify central versus peripheral cyanosis
 - iii. Describe cardiac rhythm, rate, and quality of heart sounds and murmurs
 - h. Abdomen
 - i. Palpate the liver, spleen, and kidneys, and interpret the findings based on age
 - ii. Determine the need for a rectal exam
 - iii. Assess the abdomen for masses or tenderness
 - i. Genitalia
 - i. Know the difference in appearance of male and female genitalia based on age and different developmental stages
 - ii. Palpate the testes
 - iii. Identify genital abnormalities in males including cryptorchidism
 - iv. Recognize genital abnormalities in females including signs of virilization
 - j. Extremities
 - i. Examine the hips of a newborn for developmental dysplasia of hip using Ortolani and Barlow maneuvers
 - ii. Observe and describe the gait of children at different ages
 - iii. Recognize pathology of joint effusions, signs of trauma, and inflammation
 - k. Back
 - i. Perform a screening for scoliosis and be able to interpret the findings
 - ii. Examine back for midline tufts of hair, pits, sacral dimples, or masses
 - l. Neurological examination
 - i. Elicit the primitive reflexes that are present at birth and describe how they change as the child develops
 - ii. Assess major developmental milestones of newborns, infants, toddlers, school aged, children, and adolescents
 - m. Skin
 - i. Describe and assess turgor, perfusion, color, hypo and hyperpigmented lesions, and rashes through observation and palpation
 - ii. Identify jaundice, petechiae, purpura, bruising, vesicles, and urticaria
- 3. Patient communication skills
 - a. Conduct an interview with effective verbal and non-verbal communication skills with the child and parents
 - i. Take into account the patients age and developmental stage

4. Nutrition
 - a. Obtain a dietary history in children that range from infants to adolescents
 - i. Infants: type, amount, and frequency of breast or formula feeding, solid foods, and dietary supplement (vitamins, iron, fluoride)
 - ii. Toddler/school aged children: milk, juice, soda, fast food, and meal patterns
 - iii. Adolescent: meal patterns, nutritional supplements, milk, juice, soda, alcohol, snacking, and fad diets
 - b. Determine calorie adequacy of an infant's diet
 - c. Provide nutrition information to the family regarding:
 - i. Breast feeding versus formula feeding
 - ii. Adding solid food to an infant's diet
 - iii. Introduction of cow milk to an infant
 - iv. Healthy food selections for children and adolescents
 - v. Obesity in children and making choices between exercise and TV
5. Health Supervision
 - a. Demonstrate an ability to provide age-appropriate anticipatory guidance about nutrition, behavior, immunizations, injury prevention, pubertal development, sexuality, and substance use and abuse.
6. Issues Unique to Adolescence
 - a. Obtaining background about home and environment, education and employment, activities, drugs, sexuality, and suicide/depression in an appropriate manner (HEADSS)
 - b. When giving a physical examination having respect for privacy and modesty
7. Issues Unique to the Newborn
 - a. Perform complete physical examination
 - b. Give parents advice about breast feeding (benefits for child and mother), normal bowel and urinary patterns, normal sleep patterns, screening for metabolic and infectious conditions, and hearing loss, appropriate car seat usage; prevention of SIDS; immunizations; mediations if needed; and role of circumcision.
8. Common Acute Pediatric Illness
 - a. Perform age appropriate history and physical examination based on presented complaint of patient
 - b. Based on the symptoms, physical examination findings, or laboratory findings, create an age appropriate differential diagnosis, initial diagnosis, and therapeutic plan
 - i. Symptoms:
 1. Abdominal pain
 2. Cough and/or wheeze
 3. Diarrhea
 4. Fever and rash
 5. Fever without a source

6. Headache
 7. Lethargy or irritability
 8. Limp or extremity pain
 9. Otagia
 10. Rash
 11. Rhinorrhea
 12. Seizures
 13. Sore throat
 14. Vomiting
 - ii. Physical examination findings
 1. Abdominal mass
 2. Bruising
 3. Heart murmur
 4. Hepatomegaly
 5. Lymphadenopathy
 6. Petechiae and/or purpura
 7. Splenomegaly
 8. Red or wandering eye
 9. White pupillary reflex
 - iii. Laboratory tests
 1. Anemia
 2. Hematuria
 3. Proteinuria
 4. Positive Mantoux skin test (PPD)
9. Common Chronic Pediatric Illness
- a. Describe how chronic illness can influence a child's growth and development, educational achievement, and psychosocial functioning
 - b. Describe the impact that chronic illness has on the family's emotional, economic and psychosocial functioning
 - c. Explain the management strategies for common chronic illnesses seen in children.
 - d. Common Chronic Illnesses:
 - i. Asthma
 - ii. Atopic Dermatitis
 - iii. Cerebral Palsy
 - iv. Cystic Fibrosis
 - v. Diabetes Mellitus
 - vi. Epilepsy
 - vii. Malignancy
 - viii. Obesity
 - ix. Seasonal Allergies
 - x. Sickle Cell Disease
 - xi. HIV/AIDS

xii. Sensory Impairment

10. Therapeutics

- a. Determine drug dosage for child based on his or her body weight.

11. Fluid and Electrolyte Management

- a. Obtain the child's hydration status
- b. Calculate and write orders for intravenous maintenance fluids for a child considering daily water and electrolyte requirements
- c. Calculate and write orders for a child with severe dehydration caused by gastroenteritis to include "rescue" fluid to replenish circulating volume, deficit fluid, and ongoing maintenance.
- d. Able to explain to parents how to rehydrate their child properly if he or she is mildly dehydrated.

Appendix 1. Common Pediatric Illnesses

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

Cough and/or wheeze	Asthma
	Bronchiolitis
	Community acquired pneumonia
	Croup
	Viral upper respiratory tract infection
Fever without a focus	Bacteremia/sepsis
	Meningitis
	Occult bacteremia
	Urinary tract infection
	Viral illnesses
Sore Throat	Group a streptococcal pharyngitis
	Mononucleosis
	Postnasal drip
	Viral upper respiratory tract infection
Otalgia	Otitis media, Acute and Recurrent
	Otitis media with effusion
	Otitis externa
Rhinorrhea	Allergic rhinitis
	Sinusitis
	Viral URI.
Fever and rash	Group A streptococcal infection
	Kawasaki disease
	meningococemia
	viral exanthem
Abdominal pain	Appendicitis
	Constipation/encopresis
	Gastroenteritis
	HSP
	intussusception
	Pelvic inflammatory disease
	Urinary tract infection/pyelonephritis
Diarrhea	Gastroenteritis
Vomiting	Gastroenteritis
	Gastroesophageal reflux

	Pyloric stenosis
	UTI/pyelonephritis
Rash	Atopic dermatitis
	Contact dermatitis
	cellulitis
	impetigo
	lice
	monilial infections
	scabies
	seborrhea
	urticaria
	viral enanthem
	viral exanthem
Limp or extremity pain	developmental dysplasia of the hip
	fracture
	Legg-Calve-Perthes disease
	Nursemaid elbow
	Osgood Schlatter disease
	Osteomyelitis
	Septic arthritis
	Slipped capital femoral epiphysis
	transient synovitis
Headache	meningitis
	tension headache
Seizures	febrile seizures
Bruising	trauma
Petechiae/purpura	ITP
	Malignancy (e.g. leukemia, neuroblastoma)
	sepsis
	trauma
	vasculitis
	viral infections
Heart murmur	innocent murmur
Lymphadenopathy	Bacterial adenitis
	Leukemia
	Streptococcal pharyngitis
	Viral illnesses (general or specific such as EBV)
Splenomegaly	Malignancy (e.g. leukemia)
	Mononucleosis
Hepatomegaly	hepatitis

Abdominal mass	hydronephrosis
	malignancy
	pregnancy
	stool
White pupillary reflex	cataracts
	retinoblastoma
Red eye	conjunctivitis
Wandering eye	strabismus
Anemia	iron deficiency anemia
	sickle cell anemia
	thalassemia
Hematuria	glomerulonephritis
	trauma
	UTI
Proteinuria	nephrotic syndrome
	orthostatic proteinuria
Positive Mantoux skin test	latent tuberculosis
	active tuberculosis

Appendix 2. Additional Reading List for Specific Findings

Presenting symptom, finding or laboratory finding	Reading Assignment
Cough and/or wheeze	<ul style="list-style-type: none"> • Link, H. W. (2014, July). Pediatric asthma in a nutshell. <i>PIR</i>, 35(7), 287-298. • Gereige, R. S. & Laufer, P. M. (2014, October). Pneumonia. <i>PIR</i>, 34(10), 438-456. • Messinger, A. I., Kupfer, O. Hurst, A. & Parker, S. (2017, September). Management of pediatric community acquired bacterial pneumonia. <i>PIR</i>, 38(9), 394-409. • Piedimonte, G. & Perez, M. K. (2014, December). Respiratory syncytial virus infection and bronchiolitis. <i>PIR</i>, 35(12), 519-530. • Vinci, A., Lee, P. J. & Krilov, L. R. (2018, December). Human metapneumovirus infection. <i>PIR</i>, 39(12), 623-624.
Fever without a focus	<ul style="list-style-type: none"> • Antoon, J. W., Potisek, N. M. & Lohr, J. A. (2015, September). Pediatric fever of unknown origin. <i>PIR</i>, 36(9), 380-391. • Mintegi S, Gomez B, Carro A, et al (2018, September). Is fever at presentation relevant in infants febrile at home. <i>AAP Grand Rounds</i>, 40(3), 28.
Sore Throat	<ul style="list-style-type: none"> • Norton, L. E., Lee, B. R., Harte, L., Mann, K., Newland, J. C., Grimes, R. A. & Myers, A. L. (2018, July). Improving guideline based streptococcal pharyngitis testing: A quality improvement initiative. <i>Pediatrics</i>, 142 (1), e20172033.
Otalgia	<ul style="list-style-type: none"> • Rosa-Olivares, J. Porro, A., Rodriguez-Varela, M. Riefkohl, G. & Niroomand-Rad, I. (2015, November). Otitis media: To treat, to refer, to do nothing. <i>PIR</i>, 36(11), 480-488. • Long, M. (2013, March). Otitis externa. <i>PIR</i>, 34(3), 143-144.
Rhinorrhea	<ul style="list-style-type: none"> • Mahr, T. A. & Sheth, K. (2005, August). Update on allergic rhinitis. <i>PIR</i>, 26(8), 284-289.
Fever and Rash	<ul style="list-style-type: none"> • Son, M. B. F. & Newburger, J. W. (2018, February). Kawasaki disease. <i>PIR</i>, 39(2).
Abdominal Pain	<ul style="list-style-type: none"> • Baker, R. D. (2018, March). Acute abdominal pain. <i>PIR</i>, 39(3), 130-139.
Diarrhea	<ul style="list-style-type: none"> • CaJacob, N. J. & Cohen, M. B. (2016, August). Update on diarrhea. <i>PIR</i>, 37(8), 313-322.
Vomiting	<ul style="list-style-type: none"> • Shields, T. M. & Lightdale, J. R. (2018, July). Vomiting in children, <i>PIR</i>, 39(7), 342-358.
Rash	<ul style="list-style-type: none"> • Ondusko, D. S. & Nolt, D. (2018, June). Staphylococcus aureus. <i>PIR</i>, 39(6), 287-298. • Gupta, A. K., MacLeod, M. A., Foley, K. A., Gupta, G. & Friedlander, S. F. (2017, January). Fungal skin infections, <i>PIR</i>, 38(1), 8-22.
Limp or Extremity Pain	<ul style="list-style-type: none"> • Coleman, N. (2019, June). Sports injuries. <i>PIR</i>, 40(6), 278-290.

	<ul style="list-style-type: none"> • Herman, M. J. & Martinek, M. (2015, May). The limping child. <i>PIR</i>, 36(5), 184-197
Headache	<ul style="list-style-type: none"> • Blume, H. K. (2012, December). Pediatric headache: A review. <i>PIR</i>, 33(12), 562-576. • Swanson, D. (2015 December). Meningitis. <i>PIR</i>, 36(12), 514-526.
Seizures	<ul style="list-style-type: none"> • Sidhu, R. Velayudam, K. & Barnes, G. (2013, August). Pediatric seizures. <i>PIR</i>, 34(8), 333-342.
Bruising	<ul style="list-style-type: none"> • Sharathkumar, A. A. & Pipe, S. W. (2008, April). Bleeding disorders. <i>PIR</i>, 29(4), 121-130. • Zimmerman, B. & Valentino, L. A. (2013, July). Hemophilia in review. <i>PIR</i>, 34(7), 289-295. • Kaplan, J. (2019, July). Leukemia in children. <i>PIR</i>, 40(7), 319-331.
Petechiae/purpura	<ul style="list-style-type: none"> • Buchanan, G. R. (2005, November). Thrombocytopenia during childhood: What the pediatrician needs to know. <i>PIR</i>, 26(11), 401-409.
Heart Murmurs	<ul style="list-style-type: none"> • Menashe, V. (2007, April). Heart murmurs. <i>PIR</i>, 28(4), e19-e22.
Lymphadenopathy	<ul style="list-style-type: none"> • Sahai, S. (2103). Lymphadenopathy. <i>PIR</i>, 34(5), 216-227.
White papillary reflex / Red or wandering eye	<ul style="list-style-type: none"> • Tingley, D. H. (2007). Vision screening essentials: screening today for eye disorders in the pediatric patient-<i>PIR</i>, 28(2), 54-61.
Anemia	<ul style="list-style-type: none"> • Noronha, S. A. (2016, June). Acquired and congenital hemolytic anemia. <i>PIR</i>, 37(6), 235-246. • Cobelli Kett, J. (2012, April). Anemia in infancy. <i>PIR</i>, 33(4), 186-187. • McCavit, T. L. (2012). Sickle cell disease. <i>PIR</i>, 33(5), 195-206.
Hematuria and Proteinuria	<ul style="list-style-type: none"> • Viteri, B. (2018, December). Hematuria and proteinuria in children. <i>PIR</i>, 39(12), 573-587.