



Edward Via College of Osteopathic Medicine

MED 8070/MED 8075
Clinical Pediatrics and Pediatric Modules
Academic Year 2024 - 2025

ROTATION SYLLABUS



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I. Rotation Description

Pediatrics is the medical specialty focused on the health and care of children from infancy to adolescence. Pediatrics embraces preventive health including careful observation of the growth and development of a child, anticipatory guidance about safety specific to each age, and acute and chronic care for neonates, infants, children and adolescents in all areas of medical specialties. Pediatricians are passionate advocates for their patients and are intimately involved in the care of the entire family by facilitating and coordinating services for the child. Pediatricians are a diverse group of physicians working in a variety of practice settings, medical subspecialties and geographical regions. The practice of pediatric medicine occurs in the outpatient office setting, in the inpatient setting caring for both acute and chronic illnesses,

in the delivery room and newborn nursery caring for neonates in the first days of life and in the emergency room. Students should review their [specific site instructions](#) for a more detailed description of their specific practice setting and be prepared to have a schedule that may include overnight call, early mornings, late evenings and some weekend responsibilities.

The Department of Pediatrics wishes to provide an exciting unique experience for the clinical student while developing competent and compassionate student physicians capable of caring for this extraordinary group of patients.

During the third-year pediatrics rotation, students expand their knowledge of Pediatric Medicine and gain the ability to apply this knowledge in the clinical setting. The curriculum is delivered through on-line case modules and one-on-one student-preceptor experience in caring for patients in the clinical setting. Students are expected to complete their assignments for both pediatric medicine and the longitudinal OMM course.

II. Course Goals and Objectives

A. Goals of the Course

1. Demonstrate an ability to provide age-appropriate anticipatory guidance about nutrition, behavior, immunizations, injury prevention, pubertal development, sexuality and substance use and abuse.
2. Learn to measure and assess growth including height/length, weight, head circumference and body mass index using standard growth charts in the context of well child examination or a child with a known disorder.
3. Demonstrate ability to assess psychosocial, language, physical maturation, and motor development in pediatric patients.
4. Be able to provide nutrition advice to families with neonates, infants, toddlers, school age children and adolescents.
5. Interview and conduct a physical exam on an adolescent demonstrating respect for privacy, asking sensitive questions about lifestyle choices and giving appropriate counseling.
6. Perform a complete physical examination of the newborn infant.
7. Become familiar with both common genetic and non-genetic congenital disorders and genetic disorders presenting later in childhood.
8. Learn to consider the age, physical growth, developmental stage and family environment when assessing a pediatric patient with an acute illness and constructing a differential diagnosis and therapeutic plan for each problem identified.
9. Understand the long-term medical needs, implications and complications of a pediatric patient with a chronic illness or disability.
10. Demonstrate skills necessary to calculate a drug dose, write a medication prescription, and calculate intravenous fluid requirements for a pediatric patient.

B. Clinical Performance Objectives

While the end-of-rotation exam is derived from the didactic curriculum and objectives described above in the “Clinical Modules – Required Curriculum” section, the end-of-rotation evaluation completed by your preceptor is based on clinical core competencies. These core competencies reflect student performance in 6 key areas: communication, problem solving, clinical skills, medical knowledge, osteopathic medicine and professional and ethical considerations. Your end-of-rotation evaluation from your preceptor will be based directly on your performance in these 6 core competencies as described below.

1. **Communication** - the student should demonstrate the following clinical communication skills:
 - a. Effective listening to patient, family, peers, and healthcare team
 - b. Demonstrates compassion and respect in patient communications
 - c. Effective investigation of chief complaint, medical and psychosocial history specific to the rotation
 - d. Considers whole patient: social, spiritual & cultural concerns
 - e. Efficiently prioritizes essential from non-essential information
 - f. Assures patient understands instructions, consents & medications
 - g. Presents cases in an accurate, concise, well organized manner
2. **Problem Solving** – the student should demonstrate the following problem-solving skills:
 - a. Identify important questions and separate data in organized fashion organizing positives & negatives
 - b. Discern major from minor patient problems
 - c. Formulate a differential while identifying the most common diagnoses
 - d. Identify indications for & apply findings from the most common radiographic and diagnostic tests
 - e. Identify correct management plan considering contraindications & interaction
3. **Clinical Skills** - the student should demonstrate the following problem-solving skills:
 - a. Assesses vital signs & triage patient according to degree of illness
 - b. Perform good auscultatory, palpatory & visual skills
 - c. Perform a thorough physical exam pertinent to the rotation
4. **Osteopathic Manipulative Medicine** - the student should demonstrate the following skills in regards to osteopathic manipulative medicine
 - a. Apply osteopathic manipulative medicine successfully when appropriate
 - b. Perform and document a thorough musculoskeletal exam
 - c. Utilize palpatory skills to accurately discern physical changes that occur with various clinical disorders
 - d. Apply osteopathic manipulative treatments successfully
5. **Medical Knowledge** – the student should demonstrate the following in regards to medical knowledge
 - a. Identify & correlate anatomy, pathology and pathophysiology related to most disease processes
 - b. Demonstrate characteristics of a self-motivated learner including demonstrating interest and enthusiasm about patient cases and research of the literature
 - c. Are thorough & knowledgeable in researching evidence-based literature
 - d. Actively seek feedback from preceptor on areas for improvement
 - e. Correlate symptoms & signs with most common disease
6. **Professional and Ethical Behaviors** - the student should demonstrate the following professional and ethical behaviors and skills:
 - a. Is dutiful, arrives on time & stays until all tasks are complete
 - b. Consistently follows through on patient care responsibilities
 - c. Accepts & readily responds to feedback, is not resistant to advice
 - d. Assures professionalism in relationships with patients, staff, & peers
 - e. Displays integrity & honesty in medical ability and documentation
 - f. Acknowledges errors, seeks to correct errors appropriately
 - g. Is well prepared for and seeks to provide high quality patient care
 - h. Identifies the importance to care for underserved populations in a non-judgmental & altruistic manner

III. Rotation Design

A. Educational Modules

Educational modules using lectures, cases, and other forms of delivery are used for third year curriculum. Each student must complete a post-rotation exam to assure that the expected basic content or medical knowledge has been acquired during the rotation. In addition to the experiences received in the clinical training sites, students are expected to read the content of the assigned textbooks and online materials in order to complete the entire curriculum assigned for the clinical module.

B. Formative Evaluation

Student competency-based rating forms are used by the preceptor to evaluate each student's clinical skills and the application of medical knowledge in the clinical setting. These forms are only completed by the clinical faculty member or preceptor. Performance on rotations will be evaluated by the primary clinical faculty member precepting the student. VCOM uses a competency-based evaluation form which includes the osteopathic core competencies. These competencies evaluated include:

- a. Medical knowledge;
- b. Communication;
- c. Physical exam skills;
- d. Problem solving and clinical decision making;
- e. Professionalism and ethics;
- f. Osteopathic specific competencies; and
- g. Additional VCOM values.

Student competency is judged on clinical skill performance. Each skill is rated as to how often the student performs the skill appropriately (i.e. unacceptable, below expectation, meets expectation, above expectation, exceptional).

C. Logging Patient Encounters and Procedures

During the clinical years students need to develop the clinical competencies required for graduation and post-graduate training. These competencies are evaluated in many different ways: by faculty observation during rotations, by examinations, by the COMLEX Level 2 CE examination, and VCOM's OMS 3 summative examinations. In order to develop many of these competencies and meet the objectives required for graduation, VCOM needs to ensure that each student sees enough patients and an appropriate mix of patients during their clinical years. For these reasons, as well as others discussed below and to meet accreditation standards, VCOM has developed requirements to log patient encounters and procedures.

Each day, students are required to log all patient type/clinical conditions and procedures/skills that they encounter that day into the VLMS application.

- Within the daily log, the clinical discipline chairs have also identified a specific set of patient presentations and procedures that each student is expected to see/do during the course of the rotation that should be logged in VLMS as you experience it. Students should be familiar with this list and should actively work to see these patients or be involved in these procedures. The list serves as a guide for the types of patients the clinical faculty think students should encounter during the rotation. The list does not include every possible diagnosis or even every diagnostic entity students must learn. The list reflects the common and typical clinical entities that the faculty feels VCOM students should experience. The list can be found in VLMS or CANVAS.
- Students must learn more than they will experience during clinical rotations. The log does not reflect the totality of the educational objectives during the rotation. Clinical experience is an

important part, but only a part, of your rotation requirement. Students may discover they have not seen some of the presentations/procedures on the list during the rotation; however, they should arrange to see these problems in the fourth year or learn about them in other ways through the other course materials provided. Students need to commit themselves to extensive reading and studying during the clinical years. “Read about patients you see and read about patients you don’t see”.

One of the competencies students must develop during their clinical training involves documentation. Documentation is an essential and important feature of patient care and learning how and what to document is an important part of medical education. The seriousness and accuracy with which students maintain and update their patient logs are measures of professionalism. Students must review these logs with their preceptor prior to the end of the rotation period, as required by the final preceptor evaluation form. Students are encouraged to periodically review their VLMS entries with their preceptor during the rotation period.

Throughout the year, data is reviewed by Clinical Affairs, the curriculum committees, and administration to ensure the clinical experiences meet the objectives of the rotation and to assess the comparability of experiences at various sites. The logs serve to:

- Demonstrate student exposure to patients with medical problems that support course objectives.
- Demonstrate level of student involvement in the care of patients.
- Demonstrate student exposure to, and participation in, targeted clinical procedures.
- Demonstrate student exposure to patient populations in both inpatient and outpatient settings.
- Demonstrate comparability of experiences at various clinical sites.
- Quantify for students the nature and scope of their clinical education and highlight educational needs for self-directed learning.

Students will receive a report at the end of the OMS 3 year that outlines the patient encounters the student was involved in throughout their rotations. These individual log reports can be shared during interviews/audition rotations/future credentialing to demonstrate the scope of their clinical experiences.

IV. Credits

MED 8070: 4 credit hours

MED 8075: 1 credit hour

V. Course Texts and Reference Materials

A. Required Textbooks

- Marc dante, K.J., Kliegman, R.M., Schuh, A.M.. *Nelson Essentials of Pediatrics*, 9th ed. Philadelphia, PA: Elsevier, 2023. ISBN: 978-0-323775625 (retail price \$89.99) – Available in VCOM’s eLibrary in Clinical Key
- American Osteopathic Association, & Chila, A. *Foundations of Osteopathic Medicine*, 3rd ed. Baltimore, MD: Lippincott Williams & Wilkins, 2010. ISBN: 978-0781766715
- Kuchera, Michael, Kuchera, William. *Osteopathic Considerations in Systemic Dysfunction*, Revised 2nd ed., Greyden Press, Dayton, OH: 1994. ISBN: 978-1570741548 (retail price \$55.00)
- Maxwell, Robert. *Maxwell Quick Medical Reference*, 7th ed. Minneapolis, MN: Maxwell Publishing Company, 2024. ISBN: 978-0964519169 (retail price \$9.95)
- Nicholas, Alexander, and Evan Nicholas. *Atlas of Osteopathic Techniques*, 4th ed. Baltimore, MD: Lippincott, Williams & Wilkins, 2023. ISBN: 978-1975127480/978-1451193411 (retail price \$179.99) – Available in VCOM’s eLibrary in LWW Osteopathic Medicine Collection

- Seffinger, Michael. *Foundations of Osteopathic Medicine*, 4th ed. Philadelphia, PA: Wolters Kluwer Health, 2019. ISBN: 978-1496368324 (retail price \$142.99) – Available in VCOM's eLibrary in LWW Osteopathic Medicine Collection

B. Recommended Textbooks

- Zitelli, B.J., McIntire, S.C., Garrison, J., & Nowalk, A.J. *Zitelli and Davis' Atlas of Pediatric Physical Diagnosis*, 8th ed. Philadelphia, PA: Elsevier, 2021 ISBN: 978-0323393034 (retail price \$179.99) – Available in VCOM's eLibrary in Clinical Key

VI. Course Grading and Requirements for Successful Completion

A. Requirements

- Attendance according to VCOM and preceptor requirements as defined in the [College Catalog and Student Handbook](#).
- Review of the syllabus topics, learning objectives, and reading assignments:
 - In addition to the learning experience in the clinical site, the clinical curriculum consists of the reading assignments and learning objectives that are included in this syllabus, as well as clinical case modules and Aquifer Radiology cases that are derived from some, but not all, of the learning objectives. A student's success as a physician will depend upon the learning skills they develop during this core rotation, as guided by this syllabus and clinical case modules. National boards, residency in-training examinations, and specialty board examinations require ever increasing sophistication in student's ability to apply and manipulate medical knowledge to the clinical context.
- Completion and submission of a minimum of 8 of the 17 clinical case modules:
 - The clinical case modules were developed by VCOM Discipline Chairs and are intended to provide an OMS 3 student with a clinical, patient-centered approach to the learning content of this rotation. The modules should not be approached as rote learning, but should provide structured, clinically focused learning from the evidence base for this rotation. The same module may be included under multiple topics in the syllabus to show its relevance to the topic, but students only need to complete the module once. The clinical case modules must be submitted in Canvas **by no later than 5 PM on the day of your end of rotation exam** at: <https://canvas.vcom.edu>. **Failure to do so will result in a deduction of 5 points from your end-of-rotation exam score.**
 - [Newborn Exam and Newborn Care](#)
 - [Prevention, Health Promotion, Nutrition, and Health Maintenance](#)
 - [Developmental, Dysmorphology & Genetics](#)
 - [Neurological Disorders, Seizures, and Epilepsy](#)
 - [Ophthalmology, ENT, and Common Minor Infections](#)
 - [Asthma and Other Respiratory Disorders](#)
 - [Congenital Heart Disease](#)
 - [Gastrointestinal Disorders](#)
 - [Fluid and Electrolyte Management](#)
 - [Nephrology and Urology](#)
 - [Endocrinology](#)
 - [Hematology and Oncology](#)
 - [Pediatric Musculoskeletal Disorders](#)
 - [Pediatric Dermatology](#)
 - [Pediatric Allergy, Immunology, & Rheumatology](#)
 - [Child Abuse, Neglect, Child Placement](#)
 - [Pediatric Emergencies](#)

- Completion of 2 Aquifer Radiology cases:
 - Aquifer Radiology is a case-based virtual course that provides realistic case scenarios that demonstrate best-practices, helping students develop clinical reasoning skills that bridge the gap from content to practice. Upon completion of the cases, students should have a basic understanding of the principles and applications of medical imaging and be able to interpret common radiological studies in the context of presenting patient conditions. In addition, students should be able to recognize common osteopathic structural and viscero-somatic/somato-somatic changes that correlate to specific radiographic findings.
 - In order to receive credit for the radiology cases and meet the requirements for passing the rotation, students must complete the case, including all associated components of the online program such as the knowledge assessment questions associated with the cases. The same case may be included under multiple topics in the syllabus to show its relevance to the topic, but students only need to complete the case once. Progress will be reviewed by the online administrator to ensure completion of these requirements. Students must successfully complete the case and knowledge assessment questions **by no later than 5 PM on the day of your end of rotation exam.**
 - [Aquifer Radiology Case 11: 8-week-old male- Pediatrics A](#)
 - [Aquifer Radiology Case 12: 2-month-old female- Pediatrics B](#)
 - To get full credit for each case completed, please be sure to click forward to the page at the end of the case that states “Summary of Your Case Session” in the upper left-hand corner.
 - Register for the Aquifer cases at: <https://www.aquifer.org>
 Your email has been pre-loaded into Aquifer, and you should have received an email about how to set up your account.
 - If you are a first-time user:
 - Click “Sign in” in the top right corner.
 - Enter your institutional email address in the email box. Then click on the “Register” button at the bottom of the page.
 - You will be sent an email with a link to complete registration. Upon receipt of the registration email, click on the link “Click Here”. You will then be brought to the profile setup page. An email will be sent to you. Follow the instructions in the email to set up your account.
 - You will be asked to fill in your profile information and set up a password (8 character minimum). Once you have completed your user profile and created a password, you will receive a welcome email with links to useful information and guides. You would also be logged into the Aqueduct learning management system.
 - Once your profile is completed successfully, you will be brought to your institution’s Course page.
 - You will also receive a “Thank you for registering with Aquifer” email with links to tools, resources, and Aquifer news.
 - If you are a returning user:
 - Click “Sign in” in the top right corner.
 - Please log in with your institutional email and account password and click “Sign In”.
- Logging patient encounters and procedures in VLMS:
 - **Students are required to log daily** - Students are **required to log all patient type/clinical conditions and procedures/skills that they encounter that day** into the VLMS application at: <https://vlms.app/login.html>
 - Within the daily log, the clinical discipline chairs have also identified a specific set of patient presentations and procedures that each student is expected to

see/do during the course of the rotation that should be logged in VLMS as you experience it. Students should be familiar with this list and should actively work to see these patients or be involved in these procedures. The list serves as a guide for the types of patients the clinical faculty think students should encounter during the rotation. The list does not include every possible diagnosis or even every diagnostic entity students must learn. The list reflects the common and typical clinical entities that the faculty feels VCOM students should experience. The list can be found in VLMS or CANVAS.

- Students should log only an encounter with or exposure to a real patient.
 - Simulated patients, case presentations, videos, grand rounds, written clinical vignettes, etc. should not be logged even though they are all important ways to learn clinical medicine. Many of these educational experiences, along with self-directed reading, are necessary preparation for COMLEX Level 2 and postgraduate training. This log, however, focuses on a unique and critical component of clinical training, namely, involvement with “real” patients.
 - Longitudinal care of a patient that results in a new diagnosis or secondary diagnosis should be entered as a new entry instead of editing the original entry.
 - Multiple encounters with the same patient that do not result in a new diagnosis or procedure should not be logged. However, if multiple encounters result in a new diagnosis or a new procedure is performed, these should be entered as a new entry.
 - Student involvement with patients can occur in various ways with different levels of student responsibility. The most “meaningful” learning experience involves the student in the initial history and physical exam and participation in diagnostic decision making and management. A less involved but still meaningful encounter can be seeing a patient presented by someone else at the bedside. Although the level of responsibility in this latter case is less, students should log the diagnoses seen in these clinical encounters. Patient experiences in the operating or delivery room should also be logged.
- All students must review these logs with their preceptors prior to the end of the rotation period, as required by the final preceptor evaluation form. Students are encouraged to periodically review their VLMS entries with their preceptor during the rotation period. These reviews should stimulate discussions about cases and learning objectives, as well as identify curriculum areas the student may still need to complete.
- Failure to log daily results in the following:
 - First notification: Email warning outlining consequences
 - Second notification: Meeting with the Associate Dean
 - Third notification: Behavioral contract
 - Fourth notification: Students will receive an IP “In-Progress” grade for the rotation until logging for the rotation is completed.
 - Fifth notification: Referral to PESB/Honor Code (whichever is most appropriate), which could lead to sanctions and/or permanent record in the student file or MSPE.
- Rotation evaluations:
 - Student Site Evaluation: Students must complete and submit at the end of rotation. See the VCOM website at: <https://intranet.vcom.edu/clinical> to access the evaluation form.
 - Third-Year Preceptor Evaluation: It is the student's responsibility to ensure that all clinical evaluation forms are completed and submitted online or turned into the Site Coordinator or the Clinical Affairs Office at the completion of each rotation. Students

should inform the Clinical Affairs Office of any difficulty in obtaining an evaluation by the preceptor at the end of that rotation. See the VCOM website at: <https://www.vcom.edu/academics/clinical-education-third-year/forms> to access the evaluation form.

- Mid-Rotation Evaluation: The mid-rotation evaluation form is not required but highly recommended. See the VCOM website at: <https://www.vcom.edu/academics/clinical-education-third-year/forms> to access the mid-rotation evaluation form. Successful completion of the end-of-rotation written exam. The end-of-rotation exam questions will be derived directly from the specific objectives presented in each of the below modules.

- Successful completion of the end-of-rotation written exam:
The content of the end-of-rotation exams will be based upon the learning objectives and reading assignments, including OMM, in this syllabus, the clinical case modules, and the Aquifer Radiology cases and their associated references.

B. Grading

Students must pass both the "module" and "rotation" portions of the course. All rotations have a clinical rotation grade and clinical modules/exam grade. Failure to submit all of the case module files using the Canvas link provided above and the Aquifer Radiology cases **by no later than 5 PM on the day of your end of rotation exam will result in a deduction of 5 points from your end-of-rotation exam score. VLMS logs are due no later than 5 PM on the day of your end of rotation exam.**

Clinical Grading Scale and GPAs						
OMS 3 End-of-Rotation Exam Grades			OMS 3 AND OMS 4 Clinical Rotation Grades		Other Grades	
A	90-100	4.0	H	Honors	IP	In Progress
B+	85-89	3.5	HP	High Pass	INC	Incomplete
B	80-84	3.0	P	Pass	CP	Conditional Pass
C+	75-79	2.5	F	Fail	R	Repeat
C	70-74	2.0			Au	Audit
F	<70	0.0				

C. Remediation

Students who fail a clinical rotation, fail an end-of-rotation exam twice, or who have more than one first attempt failure on end-of-rotation exams within an academic year (even if the student has successfully remediated the prior end-of-rotation exam on the second attempt) will be referred to the Promotion Board. If a student fails, the professionalism and ethics portion of the evaluation he or she may be removed from the rotation and referred to the Professional and Ethical Standards Board. No grade will be changed unless the Office of Clinical Affairs certifies to the Registrar, in writing, that an error occurred or that the remediation results in a grade change.

- **Failure of an End-of-Rotation Exam**

Students must pass each end of rotation exam with a C (70%) or better to receive a passing grade for the clinical medical knowledge module. Students who fail an end of rotation exam but pass the clinical rotation evaluation component have a second opportunity to pass the exam within 28 days of notification. If the student passes the remediation exam, the remediated exam grade will be the grade recorded on the transcript and be GPA accountable.

If the student fails the end of rotation exam a second time, the student will receive an "F" grade for the rotation and will be brought before the Promotion Board. If the student is allowed to

repeat the rotation, all components of the rotation must be repeated, and the repeated rotation must be with a different preceptor than the one from the original rotation that the student failed. Once repeated, the transcript will show both the initial clinical medical knowledge module course and the initial clinical rotation competency evaluation course, as well as the repeated clinical medical knowledge module course and the repeated clinical rotation competency evaluation course. The repeated courses will have the letter “R” at the end of the course number to reflect that they are repeated. Both the grade earned for the initial courses and the repeated courses will be recorded on the transcript, but only the repeated courses will be GPA accountable, regardless of whether the initial or repeated course grade is higher.

- **Failure of a Rotation**

If a student fails the clinical rotation evaluation the student will receive an “F” grade for the rotation and will be brought before the Promotion Board. If the student is allowed to repeat the rotation, all components of the rotation must be repeated, and the repeated rotation must be with a different preceptor than the one from the original rotation that the student failed. Once repeated, the transcript will show both the initial clinical medical knowledge module course and the initial clinical rotation competency evaluation course, as well as the repeated clinical medical knowledge module course and the repeated clinical rotation competency evaluation course. The repeated courses will have the letter “R” at the end of the course number to reflect that they are repeated. Both the grade earned for the initial courses and the repeated courses will be recorded on the transcript, but only the repeated courses will be GPA accountable, regardless of whether the initial or repeated course grade is higher.

- **Failure to Make Academic Progress**

In general, students should show a progression of improvement in clinical performance throughout rotations. Repeated poor or failing performance in a specific competency area on the evaluation form across more than one rotation may also be a reason for a required remediation at the discretion of the Associate Dean for Clinical Affairs in consultation with the clinical chair, the preceptor, and the Promotion Board. Those students who receive a mere “Pass” on multiple rotations will be counseled about overall performance and may be required to complete an additional rotation at the end of the year. Any additional curriculum or required remediation will be based on the performance measure. Those students who continually score in the "unsatisfactory" category or repeated "performs some of the time, but needs improvement" consistently and do not improve over time or who fail one or more rotations may be deemed as not making academic progress and, as a result, may be referred to the Promotion Board and be required to complete additional curriculum. Multiple rotation failures may result in dismissal.

Poor ratings on the clinical rotation evaluation in the professional and ethical areas of the assessment are addressed by the Associate Dean for Clinical Affairs. The Associate Dean may design a remediation appropriate to correct the behavior or if needed, may refer the student to the Professional and Ethical Standards Board. In the case of repeated concerns in a professional and/or ethical area, the Associate Dean for Clinical Affairs may refer the student to the Campus Dean for a referral to the Professional and Ethical Standards Board or Promotion Board. The Campus Dean will act upon this referral depending on the severity and the area of the performance measure. Poor ratings in this area will include comments as to the exact nature of the rating.

VII. Academic Expectations

Grading policies, academic progress, and graduation requirements may be found in the [College Catalog and Student Handbook](#).

A. Attendance

Attendance for all clinical rotation days is mandatory. The clinical site will determine the assigned days and hours to be worked within the rotation period. Students are required to attend any orientation the clinical site sets as mandatory prior to any rotation or the clinical year. The orientation sessions vary by site and are required to maintain assignment to the site. Although the clinical site determines the assigned days and hours to be worked, VCOM has established the following guidelines:

- 4-week rotations may not be less than 20, eight-hour days for a total of a minimum of 160 hours and often average 180 hours or greater.
 - Students may be required to work up to 24 days in a 4-week period or 25 days in a 1- month rotation, including call and weekends at the discretion of the clinical site.
 - If the clinical site requires longer daily hours or shift work, the student may complete the required hours in less than 20 days with the following specifications:
 - Students should not work greater than an average of 12 out of every 14 days.
 - Students should not work more than 12 hours daily, exclusive of on-call assignments.
 - If on-call hours are required, the student should not be on duty for greater than 30 continuous hours.
 - Students may be required to work weekends but in general should have 2 weekends per month free and an average of 2 of 7 days per week free.

It should be noted that preceptors will have final determination of the distribution of hours, which may vary from this policy but should not in general be less than 160 hours for a 4-week rotation. The institution's DSME and assigned clinical faculty determine clinical duty hours. Students are responsible to the assigned clinical faculty and are expected to comply with the general rules and regulations established by the assigned clinical faculty, and/or the core hospital(s), or facility associated with the rotation.

The average student clinical day begins at 7 am and ends at 7 pm. Students are expected to work if their assigned clinical faculty is working. Some rotations assign students to shifts and in such cases the student may be required to work evening or night hours. If on-call hours are required, the student must take the call; however, the student should not be on duty for greater than 30 continuous hours.

Students may be required to work weekends, but in general should have two weekends per month free and two of seven days per week free. Student holidays are determined by the clinical site and follow those of other students and/or residents from the clinical site. Students must be prompt and on time for the clinical rotation.

Students are expected to arrive on time for all clinical rotations. If a student is late, he or she must notify the site coordinator and the preceptor prior to or at the time they are scheduled to arrive. Students must have a reason for being late such as illness or vehicle issues and it is not anticipated that this would occur more than one occasion AND it is important the student call in prior to being late. Repeated tardiness is considered as unprofessional behavior and is a reason for dismissal from a rotation. Students with repeated tardiness will be referred to the PESB. Tardiness is defined as more than 5 minutes after the scheduled time the preceptor designates as the expected arrival time.

The Office of Clinical Affairs requires that the medical student complete and submit an Excused Absence Clinical Rotations Approval form for any time "away" from clinical rotations. Forms are available at: <https://www.vcom.edu/academics/clinical-education-third-year/forms>. The student must have this form signed by their preceptor and others designated on the form to obtain an excused absence and must be provided to the DSME and the Office of Clinical Affairs through the site coordinator. The form must be completed prior to the beginning of the leave. If an emergency does not allow the student to submit this prior to the absence, the "Excused Absence Clinical Rotations Approval" form must be submitted as soon as the student is physically able to complete the form. In addition to completion of the form, students must contact the Department of Clinical Affairs, the Site Coordinator, and the preceptor's office by 8:30 AM on the day they will be absent due to an illness or emergency. No excused absence will be granted after the fact, except in emergencies as verified by the Associate Dean for Clinical Affairs.

Regardless of an excused absence, students must still complete a minimum of 160 hours for a 4-week rotation in order to pass the rotation. Any time missed must be remediated during the course of the rotation for credit to be issued. Students may remediate up to four missed days or 48 hours missed during any rotation period by working on normal days off. OMS 3 students who have any unexcused absences will be referred to the PESB.

B. Prohibited Use of External Accelerators

At times, there may be lectures on VCOMTV where completion will be documented as part of passing the course (these will be clearly indicated in the course syllabus). For these lectures, the use of an external accelerator is prohibited, as VCOMTV is unable to track completion through these programs. If a student uses an external accelerator for these assignments, they will be required to re-watch the lecture(s) in VCOMTV within the required timeline. Failure to document a student's completion of these assignments within the required timeline due to use of an external accelerator may result in failure of the course.

VIII. Professionalism and Ethics

It is advised that students review and adhere to all behavioral policies including attendance, plagiarism, dress code, and other aspects of professionalism. Behavioral policies may be found in the [College Catalog and Student Handbook](#).

A. VCOM Honor Code

The VCOM Honor Code is based on the fundamental belief that every student is worthy of trust and that trusting a student is an integral component in making them worthy of trust. Consistent with honor code policy, by beginning this exam, I certify that I have neither given nor received any unauthorized assistance on this assignment, where "unauthorized assistance" is as defined by the Honor Code Committee. By beginning and submitting this exam, I am confirming adherence to the VCOM Honor Code. A full description of the VCOM Honor Code can be found in the [College Catalog and Student Handbook](#).

IX. Syllabus and Rotation Schedule

Please use this syllabus as a guide, paying particular attention to the learning objectives as an outline of what you are expected to know for each topic/module. Refer to the rotation calendar for specific dates of exams.

The faculty of the course will make every effort to adhere to the syllabus and rotation schedule; however, the Office of Clinical Affairs reserves the right to make changes to the syllabus; including changes to examinations, quizzes, modules, homework or other assignments; and/or the schedule with as much advance notice as possible. These changes will be communicated to the students in writing via Canvas or email.

X. Clinical Curriculum

In addition to the topics below with reading references and learning objectives, students must also complete the assigned clinical cases and the assigned Aquifer Radiology cases. The content of the end-of-rotation exams will be based upon the learning objectives and reading assignments, including OMM, in this syllabus, the clinical case modules, and the Aquifer Radiology cases and their associated references. The clinical case modules must be submitted in Canvas at: <https://canvas.vcom.edu>

1. Newborn Exam (male and female) and Newborn Care; Newborn Nutrition, Disorders in the Newborn

Reading Assignment: Nelson Essentials of Pediatrics, 9th Edition, Chapters, 58-66

Module: [Newborn Exam and Newborn Care](#)

Learning Objectives:

- A. Recall the effects of maternal health, medications, and substances abuse on the fetus and child:
 - I. Maternal age
 - II. Diabetes
 - III. Hypertension
 - IV. Alcohol consumption
 - V. Smoking
 - VI. Illicit drug use
 - VII. Prescription medication use (phenytoin, valproate, retinoic acid)
 - VIII. Previous history of stillbirth, fetal loss, or early neonatal death
- B. Recall the factors in the perinatal and newborn history that may put a neonate at risk for medical problems:
 - I. Fetal conditions
 - a. Prematurity
 - b. Postmaturity
 - c. Congenital anomalies
 - d. Intrauterine growth restriction
 - e. Multiple gestations
 - II. Antepartum complications
 - a. Placental anomalies
 - i. Previa
 - ii. Abruptio
 - b. Abnormal amniotic fluid levels
 - i. Oligohydramnios
 - ii. Polyhydramnios
 - III. Delivery complications
 - a. Transverse lie or breech presentation
 - b. Chorioamnionitis
 - c. Meconium-stained amniotic fluid
 - d. Antenatal asphyxia with abnormal fetal heart rate pattern
 - e. Maternal administration of a narcotic within four hours of birth
 - f. Deliveries that require instruments such as vacuum or forceps
 - g. Cesarean delivery for maternal or fetal compromise
- C. Explain the transition from the intrauterine to the extrauterine environment:
 - I. Temperature regulation
 - II. Cardiovascular and respiratory systems
 - III. Glucose regulation
 - IV. Initiation of feeding
- D. Apply the APGAR scoring system to newborn care and need for resuscitation.
- E. Explain the key concepts used in the clinical evaluation of gestational age (Ballard score).
- F. Recall how gestational age and weight affect risks of morbidity or mortality in the

- newborn period:
- I. Need for respiratory assistance/lung disease
 - II. Temperature regulation
 - III. Ability to feed and glucose homeostasis
- G. Explain the key components of the routine newborn exam.
- H. Explain the underlying pathology and management of the following exam findings:
- I. Absence of the red reflex
 - II. Ear pit and/or tag
 - III. Epstein Pearl
 - IV. Heart murmur (Patent ductus arteriosus)
 - V. Hemangioma
 - VI. Scalp swelling
 - VII. Newborn rash
 - VIII. Positive Ortolani and/or Barlow
 - IV. Sacral dimple
 - V. Slate grey patch
- I. Explain the pathophysiology, differential diagnosis, screening, and management for the following newborn concerns:
- I. Prematurity
 - II. Small for gestational age
 - III. Large for gestational age
 - IV. Respiratory distress
 - V. Poor feeding
 - VI. Hypoglycemia
 - VII. Hyperbilirubinemia
 - VIII. Sepsis
 - IX. Neonatal TORCH infections
 - X. Drug exposure and neonatal abstinence syndrome.
- J. Explain the key components of routine newborn care.
- I. Recall the routine newborn medications and rationale for these medications:
 - a. Vitamin K
 - b. Eye prophylaxis
 - c. Hepatitis B vaccination
 - II. Recall the standard components of newborn screening and the purpose of each test:
 - a. Newborn screening
 - b. Hearing screening
 - c. Pulse oximetry
 - III. Recall the common medical and metabolic disorders detected through the blood spot newborn screening test and explain their management.
 - a. Congenital Adrenal Hyperplasia
 - b. Cystic Fibrosis
 - c. Galactosemia
 - d. Hemoglobinopathies
 - e. Hypothyroidis
 - f. Phenylketonuria
 - g. Sickle Cell Disease
 - IV. Explain anticipatory guidance specific to the newborn.
 - a. Breastfeeding
 - i. Recall the advantages of breastfeeding for both mother and baby.
 - ii. Recall the common difficulties experienced by breastfeeding mothers.
 - iii. List the recognized contraindications of breastfeeding in the United States.

- b. Normal sleep patterns
- c. Appropriate car seat use
- d. Prevention of SIDS and SUID
- e. The role of circumcision

2. Prevention, Health Promotion, Nutrition, and Health Maintenance Visits

Reading Assignment: Nelson Essentials of Pediatrics, 9th Edition, Chapters 5-21, 23-24, 27-31, 41, 67-70

Optional Resources:

- www.cdc.gov/vaccines/schedules/hcp/child-adolescent.html#printable
- <https://agesandstages.com/>
- <https://www.healthychildren.org/English/safety-prevention/on-the-go/Pages/Car-Safety-Seats-Information-for-Families.aspx>

Online Case: [Aquifer Radiology Case 11: 8-week-old male- Pediatrics A](#)

Module: [Prevention, Health Promotion, Nutrition, and Health Maintenance](#)

Learning Objectives:

- A. Recall the components of a health supervision visit for newborns, infants, toddlers, school aged children, and adolescents:
 - I. Growth
 - a. Understand the use of growth charts in assessing and determining patterns of growth.
 - b. Explain normal growth patterns in neonates, infants, children, and adolescents.
 - c. Distinguish variants of normal growth in healthy children.
 - i. Constitutional delay
 - ii. Familial short stature
 - d. Identify abnormal patterns of growth.
 - i. Failure to thrive.
 - a) Define Failure to Thrive (FTT) and distinguish between the inorganic and organic causes of FTT.
 - b) Explain the nutritional factors that contribute to failure to thrive.
 - ii. Identify the clinical presentation and medical management of Kwashiorkor and Marasmus.
 - iii. Identify the clinical presentation, medical management and associated morbidities with eating disorders:
 - a) Anorexia
 - b) Bulimia
 - iv. Understand the underlying physiology and analyze the electrolyte derangement noted with refeeding syndrome.
 - v. Overweight/obesity
 - a) Explain the nutritional factors that contribute.
 - b) Recall the endocrine, cardiovascular and orthopedic consequences.
 - c) Explain the risk factors for the development of cardiovascular disease and diabetes in children.
 - B. Nutrition
 - I. Explain the AAP guidelines for the following supplements for neonates and children:
 - a. Vitamin D
 - b. Fluoride
 - II. Know the prevention, signs, symptoms, and medical management of common

nutritional deficiencies in infants and children:

- a. Fluoride
- b. Iron
- c. Vitamin B
- d. Vitamin B12
- e. Vitamin C
- f. Vitamin D
- g. Niacin
- h. Zinc

C. Disease and injury prevention

I. Recall the most common preventable morbidities in childhood and explain strategies for prevention:

- a. Accidental discharge of a firearm
- b. Bicycle accidents
- c. Burns
- d. Drowning
- e. Firework injuries
- f. House fire
- g. Ingestions
- h. Motor vehicle collisions
- i. Pedestrian injuries
- j. Recreational vehicle accidents
- k. Trampoline related injuries
- l. Skating and skateboarding
- m. Boating

II. Recall how risk of illness and injury changes during growth and development and identify examples of the age-and development-related illnesses and injuries.

III. Radiation exposure

- a. Discuss the risks of radiation exposure in the pediatric population and the implications of the current increase in pediatric imaging.
- b. Demonstrate awareness of strategies to decrease radiation dose to pediatric patients.
- c. Recognize the radiographic signs of common complications of tube and line placements in pediatric patients.

D. Recall the indications, appropriate use, interpretation, and limitations of the following screening tools and tests:

I. Anemia screening/CBC

II. Developmental screening

- a. ASQ
- b. Denver
- c. MCHAT

III. Environmental lead questionnaire and blood lead level

IV. Hearing screening

V. Tuberculosis testing

VI. Urinalysis

VII. Vision Screening

E. Immunizations

- I. Explain the rationale for childhood immunizations.
- II. Explain the limited contraindications to childhood immunizations.
- III. Recall the immunizations currently recommended from birth through adolescence.
- IV. Distinguish a child with delayed immunization and explain catch-up immunization.

F. Define anticipatory guidance and explain how it changes based on the age of the child.

- G. Recall the common mental health and behavioral problems in different age groups, explain the necessary evaluation, treatment options, and anticipatory guidance relevant to the topic.
- I. Newborns/Infant
 - a. Colic
 - b. Sleep problems
 - II. Toddler
 - a. Autism spectrum disorders
 - b. Temper tantrums
 - c. Toilet training
 - d. Picky eating
 - e. Speech delay
 - III. School age
 - a. Anxiety
 - b. Attention Deficit Hyperactivity Disorder
 - c. Conduct Disorder
 - d. Encopresis
 - e. Enuresis
 - f. Learning Disabilities
 - g. Oppositional Defiant Disorder
 - h. Tic Disorder
 - IV. Adolescents
 - a. Body image and disordered eating
 - b. Depression and suicide
 - c. Mood disorders
 - d. Risk taking behaviors
 - e. School failure
 - f. Substance abuse
- H. Adolescent health maintenance:
- I. Explain the unique features of the physician-patient relationship during adolescence including confidentiality and consent.
 - II. Explain the characteristics of early, mid, and late adolescents in terms of cognitive and psychosocial development.
 - III. Explain methods to obtain a thorough social history in an adolescent (HEADSS).
 - IV. Anticipatory guidance and health promotion
 - a. Recall the common risk-taking behaviors of adolescents and explain the consequences of these activities:
 - i. Substance abuse
 - ii. Sexual activity
 - iii. Violence
 - b. Explain the contributions of unintentional injuries, homicide and suicide to the morbidity and mortality of adolescents.
- I. Specify the key components of a pre-participation sports physical.
- J. Recall the developmental stages associated with emerging gender identity and sexual orientation.
- K. Identify issues faced by the LGBTQ youth.
- I. Explain ways health care providers can promote acceptance and respect of all patients regardless of their gender identity and/or sexual orientation.
- L. Common chronic illnesses and disabilities:
- I. Identify the unique difficulties encountered by pediatric patients with chronic diseases, including adherence, and issues of autonomy vs dependence.
 - II. Identify unique features of children with chronic medical conditions and special needs that should be addressed during health supervision visits.
 - a. Access to adequate child restraints for motor vehicles.

- b. Ability to perform activities of daily living and need for specialized equipment or services:
 - i. Educational services
 - ii. Feeding supplies
 - iii. Mobility aids
 - iv. Toileting needs
 - v. Therapy services
 - vi. Multidisciplinary approach

3. Developmental, Dysmorphology & Genetics

Reading Assignment: Nelson Essentials of Pediatrics, 9th Edition, Chapters 7, 8, & 47-50

Optional Resources: Zitelli and Davis' Atlas of Pediatric Physical Diagnosis, Pages 13-17, 30, & 369

Module: [Developmental, Dysmorphology & Genetics](#)

Learning Objectives:

- A. Recall and define the five developmental domains of childhood as per the Ages and Stages Questionnaire:
 - I. Gross motor
 - II. Fine motor
 - III. Language
 - IV. Personal-social development
 - V. Problem solving
- B. Recall the critical developmental milestones in infants, toddlers and school age children.
- C. Explain normal patterns of behavior in the developing child.
 - I. Birth - 2 years
 - a. Sensorimotor stage
 - b. Development of social skills
 - c. Object permanence and function
 - d. Representational play
 - e. Newborn dependence to toddler autonomy
 - II. 2 -7 years
 - a. Preoperational stage
 - b. Independence
 - c. Imagination
 - d. Symbolic Play
 - III. 7-11 years
 - a. Concrete operational stage
 - b. Logical thinking
 - IV. >11 years
 - a. Formal operational stage
 - b. Abstract thinking
 - V. List the appropriate interventions needed for developmental delays identified during routine well child visits.
 - VI. Recall the genetic basis, clinical manifestations, morbidities and long term sequelae of the following disorders:
 - a. Angelman Syndrome
 - b. Autosomal trisomy (trisomy 21, trisomy 18, trisomy 13)
 - c. Chromosome 22Q11 Deletion Syndrome
 - d. Fetal Alcohol Syndrome
 - e. Fragile X
 - f. Klinefelter Syndrome
 - g. Pierre Robin Sequence
 - h. Prader-Willi Syndrome

- i. Treacher Collins Syndrome
- j. Turner Syndrome
- k. Williams Syndrome
- l. Beckwith-Wiedemann Syndrome

4. Neurological Disorders, Seizures, and Epilepsy

Reading Assignment: Nelson Essentials of Pediatrics, 9th Editions, Chapters 179-187

Online Case: [Aquifer Radiology Case 12: 2-month-old female- Pediatrics B](#)

Module: [Neurological Disorders, Seizures, and Epilepsy](#)

Learning Objectives:

- A. Recall the differential diagnosis and clinical approach for the following symptoms and exam findings in children/neonates:
 - I. Headache
 - II. Lethargy/irritability
 - III. First onset seizure
- B. Explain the evaluation, workup and treatment of a febrile seizure.
- C. Recall the classification of seizures as per the ILEA guidelines, clinical presentations, and classic EEG findings of each:
 - I. Level 1: Seizures based on Seizure Type
 - a. Generalized
 - i. Motor (tonic, clonic, myoclonic, atonic, or epileptic spasms)
 - ii. Non-Motor (absence)
 - b. Focal
 - i. Impaired Awareness
 - ii. Retained Awareness
 - iii. Motor onset:
 - a) Automatism
 - b) Atonic
 - c) Clonic
 - d) Epileptic spasms
 - e) Hyperkinetic
 - f) Myoclonic
 - g) Tonic
 - iv. Non-Motor onset:
 - a) Autonomic
 - b) behavior arrest
 - c) Cognitive
 - d) Emotional
 - e) Sensory
 - v. Focal to bilateral tonic-clonic
 - II. Level 2: Seizures based on Seizure Onset
 - a. Generalized onset
 - b. Focal onset
 - c. Unknown onset
 - d. Unclassified
 - III. Level 3: Epilepsy Syndromes
 - a. West Syndrome (Infantile Spasms)
 - b. Benign epilepsy with centrotemporal spikes (Benign Rolandic Epilepsy)
 - c. Lennox-Gastaut Syndrome
 - d. Childhood absence epilepsy
 - e. Juvenile myoclonic epilepsy (Janz syndrome)
 - f. Temporal lobe epilepsy

- g. Acquired epileptic aphasia (Landau-Kleffner syndrome)
 - h. Benign neonatal convulsions
- D. Identify the clinical presentation and recall the treatment of status epilepticus.
- E. Identify the clinical features of cerebral palsy.
- F. Hydrocephalus
 - I. Recall the classification of the types of hydrocephalus.
 - II. Identify the clinical presentation.
 - III. Select the appropriate imaging modality to evaluate suspected hydrocephalus in infants and young children.
- G. Recall the differential diagnosis, clinical presentation and management of the following conditions associated with hypotonia:
 - I. Acute Disseminating Encephalomyelitis
 - II. Botulism
 - III. Duchenne Muscular Dystrophy
 - IV. Guillian-Barré Syndrome
 - V. Myasthenia Gravis
 - VI. Spinal muscular atrophy
- H. Recall the etiology, clinical presentation, diagnostic tool and management of the following neurodegenerative disorders:
 - I. Krabbe Disease
 - II. Hunter Syndrome
 - III. Hurler Syndrome
 - IV. Rett Syndrome
 - V. Tay-Sachs Disease
- I. Recall the etiology, clinical presentation, diagnostic tool and management of the following neurocutaneous disorders:
 - I. Neurofibromatosis
 - II. Sturge Weber Syndrome
 - III. Tuberous sclerosis
- J. Describe the uses of transcranial ultrasound in neonates and infants.

5. Ophthalmology, ENT, and Common Minor Infections

Reading Assignment: Nelson Essentials of Pediatrics, 9th Edition, Chapters 93, 95-97, 102-110, 119

Online Case: [Aquifer Radiology Case 11: 8-week-old male- Pediatrics A](#)

Module: [Ophthalmology, ENT, and Common Minor Infections](#)

Learning Objectives:

- A. EENT
 - I. Recall the differential diagnosis for the following symptoms and exam findings:
 - a. Red eye
 - b. Wandering eye
 - c. White pupillary reflex
 - d. Rhinorrhea
 - e. Otagia
 - f. Sore throat
 - II. Otitis Media
 - a. Apply proper techniques and skills to differentiate between a normal tympanic membrane, acute otitis media (AOM) and otitis media with effusion (OME).
 - b. Explain management and treatment options for uncomplicated AOM.
 - c. Identify the recommended osteopathic treatments for acute otitis media.
 - i. Describe the relationship between the cranial base and Eustachian tube.

- ii. Demonstrate proficiency in the evaluation and appropriate direct and/or indirect osteopathic treatment for somatic dysfunctions found commonly in the pediatric patient.
- iii. Osteopathic techniques reviewed in lab may include any of the following techniques.
 - a) Direct techniques
 - 1) Direct myofascial release to horizontal diaphragms
 - 2) Soft tissue cervical lymphatic drainage
 - 3) Sinus effleurage
 - 4) Vomer rocking
 - 5) Sphenopalantine ganglion release
 - 6) Rib Raising
 - 7) Thoracic Pump
 - 8) Galbreath maneuver
 - 9) Auricular drainage
 - 10) Temporal Ear Pull
 - b) Indirect techniques
 - 1) Myofascial unwinding of chest wall
 - 2) Indirect myofascial release to horizontal diaphragms
 - 3) Seated Balanced Ligamentous Tension abdominal diaphragm

III. Pharyngitis

- a. Recall the clinical presentation, evaluation, management and the complications of Strep pharyngitis.
- b. Understand the clinical presentation, systematic diagnostic work up, treatment plan for pharyngitis.
- c. Understand the complications and potential sequelae of tonsillar hypertrophy.

IV. Recall the clinical presentation and management of viral versus bacterial conjunctivitis.

V. Identify the clinical presentation and management of nasal and otic foreignbody.

B. Respiratory infections

I. Understand the clinical presentation, systematic diagnostic work up, radiological findings, treatment plan, complications and potential sequelae of the following disorders:

- a. Bronchiolitis
- b. Pneumonia (viral versus bacterial)
- c. Pertussis

C. Define what is a fever and the differential diagnosis, management and work up for fever of unknown origin based on the age of the child.

I. Understand the clinical presentation, systematic diagnostic work up, treatment plan, complications and potential sequelae of the following disorders:

- a. Kawasaki's Disease
- b. Meningitis/Encephalitis
- c. Herpes Simplex Viral infections
- d. Hand Foot and Mouth Syndrome
- e. Erythema infectiosum
- f. Varicella
- g. Measles (Rubeola)
- h. Roseola (a.k.a Erythema Subitum, Roseola infantum)

- i. Rubella
- D. Discuss the potential benefits of using OMT treatment in a patient with a URI.
 - I. Recall the effects of the sympathetic and parasympathetic nervous system on congestion and nasal mucosa.
 - II. Identify specific areas of the body which may be treated with OMT to help in alleviating URI symptoms.
 - III. Describe the effect the cranial rhythmic impulse has on sinus drainage and which bones are most directly involved.

6. Asthma and other Respiratory Disorders

Reading Assignment: Nelson Essentials of Pediatrics, 9th Edition, Chapters 78, 107, 109, & 133-138

Module: [Asthma and Other Respiratory Disorders](#)

Learning Objectives:

- A. Recall the differential diagnosis for the following symptoms and exam findings:
 - I. Cough
 - II. Stridor
 - III. Wheezing
- B. Upper Airway Obstruction Disorders
 - I. Identify the underlying etiology, signs, symptoms, diagnostic approach, medical management and sequelae of the following disorders:
 - a. Croup
 - b. Epiglottitis
 - c. Laryngomalacia
 - d. Bacterial tracheitis
 - e. Subglottic stenosis
 - f. Vocal cord paralysis
 - g. Retropharyngeal and parapharyngeal abscesses
 - h. Peritonsillar abscess
 - i. Foreign body aspiration
 - j. Angioedema
 - k. Spasmodic cough
- C. Lower airway, parenchymal, and chest wall disorders
 - I. Asthma
 - a. Identify the classification and risk factors of asthma based on the history.
 - b. Choose the appropriate treatment modality based on the classification of asthma.
 - c. Compare and contrast the different diagnostic tools for asthma (peak flows, spirometry).
 - d. Interpret the pulmonary function tests of a normal and asthmatic patient.
 - e. Specify the appropriate treatment choice for an asthmatic patient based on clinical presentation.
 - f. Define status asthmaticus and the appropriate treatment and management approach.
 - g. Discuss the benefits of using OMT in a patient with asthma.
 - i. Recognize the specific areas of the musculoskeletal system which, if dysfunctional, may contribute to or exacerbate respiration.
 - ii. Identify OMM treatment approaches to the care of patients with acute and chronic asthma.
- D. Identify the underlying etiology, signs, symptoms, diagnostic approach, medical management and sequelae of the following disorders:
 - I. Cystic Fibrosis

- II. Tracheomalacia
- III. Bronchopulmonary Dysplasia (Chronic lung disease)
- IV. Tracheoesophageal fistula
- V. Primary Ciliary Dyskinesia
- VI. Pectus excavatum
- VII. Pectus carinatum

7. Congenital Heart Disease

Reading Assignment: Nelson Essentials of Pediatrics, 9th Edition, Chapters 139-147

Optional Resource: [Heart Sounds](#)

Module: [Congenital Heart Disease](#)

Learning Objectives:

- A. Recall the differential diagnosis and evaluation for the following symptoms and exam findings:
 - I. Syncope
 - II. Chest pain
 - III. Palpitations
 - IV. Heart murmur
- B. Identify the symptoms of congestive heart failure in an infant and explain the management.
- C. Recall the clinical presentation, management, and classic EKG findings of common pediatric dysrhythmias:
 - I. Premature atrial beats
 - II. Atrial flutter
 - III. Heart block
 - IV. Long QT Syndrome
 - V. Sinus arrhythmia
 - VI. Supraventricular tachycardia
 - VII. Ventricular premature beats
 - VIII. Ventricular tachycardia
 - IX. Ventricular fibrillation
 - X. Wolff-Parkinson-White Syndrome
- D. Congenital heart disease
 - I. Explain acyanotic and cyanotic heart disease.
 - II. Recall the pathophysiology and clinical presentation of the following congenital acyanotic heart lesions:
 - a. Patent ductus arteriosus
 - b. Atrial septal defect
 - c. Ventricular septal defect
 - d. Coarctation of the aorta
 - e. Endocardial cushion defect
 - III. Recall the pathophysiology and clinical presentation of the following congenital cyanotic heart lesions:
 - a. Truncus arteriosus (TA)
 - b. Transposition of the great vessels (TGA)
 - c. Tetralogy of Fallot (TOF)
 - d. Tricuspid atresia
 - e. Total anomalous pulmonary venous return (TAPVR)
 - f. Double outlet right ventricle (DORV)
 - g. Hypoplastic left heart syndrome (HLHS)
 - h. Ebstein's anomaly
 - i. Pulmonary atresia
 - j. Persistent pulmonary hypertension
 - IV. Recall the first steps in evaluation and treatment of congenital heart disease.

- V. Recall the pharmacology of maintaining an open ductus versus closing the ductus.
- VI. Compare the physiology, clinical presentation, and management of dilated, hypertrophic, and restrictive cardiomyopathies.
- VII. Recall the etiology, clinical presentation, investigation, and management of pericarditis.

8. Gastrointestinal Disorders

Reading Assignment: Nelson Essentials of Pediatrics, 9th Edition, Chapters 126-130

Online Cases:

- [Aquifer Radiology Case 11: 8-week-old male- Pediatrics A](#)
- [Aquifer Radiology Case 12: 2-month-old female- Pediatrics B](#)

Module: [Gastrointestinal Disorders](#)

Learning Objectives:

- A. Explain the clinical presentation, differential diagnosis, evaluation, expected radiological findings, and management of the following symptoms, exam findings, radiology, and laboratory results:
 - I. Abdominal pain
 - a. Acute
 - b. Chronic
 - c. List common age-dependent causes of acute abdominal pain in the pediatric patient.
 - II. Vomiting in children of different ages
 - a. Bilious
 - i. Small bowel obstruction
 - ii. Volvulus
 - a) Describe components of the LADD procedure and its prognostic implications.
 - b. Nonbilious
 - i. Acute gastroenteritis
 - ii. Increased intracranial pressure
 - iii. Gastro esophageal reflux
 - iv. Gastroesophageal reflux disease
 - v. Metabolic derangements
 - vi. Peptic Ulcer Disease
 - vii. Pyloric stenosis
 - III. Diarrhea
 - a. Infectious
 - b. Noninfectious
 - IV. Constipation/Encopresis
 - V. Gastrointestinal bleed
 - a. Upper
 - b. Lower
 - VI. Abdominal mass
 - VII. Hepatitis
 - VIII. Pancreatitis
- B. Explain how to examine a patient with abdominal pain.
- C. Recall critical findings ("red flags") that differentiate functional from pathological abdominal pain.
- D. Identify the clinical presentation, evaluation, and management for the following gastrointestinal processes:
 - I. Appendicitis
 - II. Celiac Disease

- III. Duodenal atresia
- IV. Food Protein-Induced Enterocolitis Syndrome
- V. Gastroschisis
- VI. Hirschsprung's Disease
- VII. Inflammatory Bowel Disease
- VIII. Intussusception
- IX. Malrotation
 - a. Describe the anatomic basis for malrotation and volvulus.
 - b. Discuss imaging findings differentiating midgut malrotation from volvulus.
- X. Meconium ileus
- XI. Omphalocele
- XII. Umbilical hernia

9. Fluid and Electrolyte Management

Reading Assignment: Nelson Essentials of Pediatrics, 9th Edition, Chapters 32-37

Module: [Fluid and Electrolyte Management](#)

Learning Objectives:

- A. Dehydration
 - I. Identify clinical manifestations of dehydration and classify it as mild, moderate, or severe based on history and physical exam findings.
 - II. List the types of dehydration.
 - III. Explain the appropriate rehydration method for each type of dehydration.
- B. Derive the following based on the child's weight:
 - I. Fluid bolus
 - II. Volume deficit
 - III. Daily maintenance needs
 - IV. Impact of ongoing losses
- C. Evaluate the causes, signs, and symptoms of the following electrolyte derangements:
 - I. Hypernatremia
 - II. Hyponatremia
 - III. Hyperkalemia
 - a. Identify classic EKG findings with hyperkalemia.
 - IV. Hypokalemia
- D. List the causes of metabolic acidosis.

10. Nephrology and Urology

Reading Assignment: Nelson Essentials of Pediatrics, 9th Edition, Chapters 161-169

Online Cases: [Aquifer Radiology Case 12: 2-month-old female- Pediatrics B](#)

Module: [Nephrology and Urology](#)

Learning Objectives:

- A. Recall the differential diagnosis for the following:
 - I. Dysuria
 - II. Hypertension
 - III. Hematuria
 - IV. Proteinuria
 - V. Edema
- B. Define acute kidney injury (a.k.a acute renal failure) and chronic renal failure, and discuss the associated clinical presentation and management of those conditions in a child.
- C. Describe the clinical presentation, diagnosis, and management of rhabdomyolysis in children.
- D. Describe the clinical presentation, diagnosis, and management of nephritic syndrome in children.
- E. Describe the clinical presentation, diagnosis, and management of hypertension in children.

- F. Describe the clinical presentation, diagnosis, and management of nephrotic syndrome in children.
- G. Understand the clinical presentation and organize a systematic clinical approach including treatment and management of Hemolytic Uremic Syndrome.
- H. Identify the clinical presentation, evaluation, and management of sexually transmitted diseases and pelvic inflammatory disease in adolescents.
- I. Determine the clinical presentation, diagnostic approach, findings on imaging, and management for the following genitourinary system anomalies:
 - I. Posterior urethral valves
 - II. Ureteropelvic junction obstruction
 - III. Ureterocele
 - IV. Vesicoureteral reflux
 - V. Hydronephrosis
 - VI. Hypospadias
 - VII. Recurrent urinary tract infections
 - VIII. Testicular torsion
 - IX. Phimosis, Paraphimosis
 - X. Cryptorchidism
 - XI. Inguinal hernia
 - XII. Labial adhesions
 - XIII. Imperforate hymen
- J. Select the appropriate imaging management of boys with scrotal pain.

11. Endocrinology

Reading Assignment: Nelson Essentials of Pediatrics, 9th Edition, Chapters 170-178

Module: [Endocrinology](#)

Learning Objectives:

- A. Recall the clinical presentation, evaluation, and management of thyroid disorders in infancy and childhood:
 - I. Hypothyroid
 - II. Hyperthyroid
- B. Compare the clinical presentation, lab findings and management of type I and type II DM.
- C. Puberty
 - I. Explain the sequence of the physical maturation process (Tanner Scales) in both males and females.
 - II. Recall the clinical presentation, systematic evaluation, and management of precocious puberty in childhood.
 - III. Recall the clinical presentation, systematic evaluation, and management of delayed puberty in childhood.
- D. Recall the clinical presentation, systematic evaluation, and management of the following endocrine disorders:
 - I. Adrenal disorders
 - a. Congenital Adrenal Hyperplasia (CAH)
 - b. Addison's Disease
 - c. Cushing's Syndrome
 - II. Syndrome of Inappropriate Antidiuretic Hormone Secretion (SIADH)
 - III. Diabetes Insipidus (DI)

12. Hematology and Oncology

Reading Assignment: Nelson Essentials of Pediatrics, 9th Edition, Chapters 149-160

Module: [Hematology and Oncology](#)

Learning Objectives:

A. Hematology

- I. Recall the differential diagnosis for the following symptoms, exam findings, and laboratory results:
 - a. Petechiae and/or Purpura
 - b. Anemia
 - i. Microcytic
 - ii. Normocytic
 - iii. Macrocytic
 - c. Leukopenia
 - d. Thrombocytopenia
- II. Understand the etiology, clinical presentation, sequelae, diagnostic approach, management and treatment for the following conditions:
 - a. Sickle Cell Disease
 - i. Sickle Cell Crises
 - ii. Acute chest syndrome
 - iii. Splenic sequestration
 - b. Anemia
 - c. Idiopathic Thrombocytopenic Purpura (ITP)
 - d. Thrombotic Thrombocytopenic Purpura (TTP)
 - e. Henoch Schönlein Purpura
 - f. Thalassemia
 - g. G6PD deficiency
 - h. Hereditary Spherocytosis
- III. Understand the coagulation pathway, clinical presentation, lab findings, and management for the following conditions:
 - a. Hemorrhagic disease of the newborn
 - b. Factor V Leiden deficiency
 - c. Protein C deficiency
 - d. Protein S deficiency
 - e. Hemophilia
 - f. Von Willebrand Disease
 - g. Bernard- Soulier Syndrome

B. Oncology

- I. Recall the differential diagnosis for the following common symptoms and exam findings:
 - a. Petechiae and/or Purpura
 - b. Abdominal mass
 - c. Hepatomegaly
 - d. Splenomegaly
 - e. Lymphadenopathy
- II. Identify the clinical presentation of the common pediatrics cancers, interpret the labs findings and determine best radiologic modality for each of these cancers:
 - a. Leukemia
 - b. Lymphoma
 - c. Neuroblastoma
 - d. Wilms tumor
 - e. Osteosarcoma
 - f. Retinoblastoma

- g. Germ Cell tumors
- III. Explain the evaluation of an abdominal mass in a child.
- IV. Recall the location and manifestations of primary CNS tumors in the pediatric population.
- V. Explain the principles of effectively breaking bad news to a child and to the child's family.

13. Pediatric Musculoskeletal Disorders

Reading Assignment: Nelson Essentials of Pediatrics, 9th Edition, Chapters 197--204

Online Cases:

- [Aquifer Radiology Case 11: 8-week-old male- Pediatrics A](#)
- [Aquifer Radiology Case 12: 2-month-old female- Pediatrics B](#)

Module: [Pediatric Musculoskeletal Disorders](#)

Learning Objectives:

- A. Discuss the differential diagnosis of limp and choose the appropriate imaging evaluation for limp in young pediatric patients.
 - I. Developmental
 - II. Infectious
 - III. Inflammatory
 - IV. Metabolic
 - V. Neoplastic
 - VI. Trauma
- B. Explain the risk factors, clinical presentation, and management of developmental dysplasia of the hip.
 - I. Describe screening and further evaluation of suspected developmental dysplasia of the hip (DDH).
- C. Identify the typical history, physical exam, and treatment for nursemaid's elbow.
- D. Explain the process of maturation of the skeletal system and the impact this has on the differential diagnosis of musculoskeletal injuries.
- E. Explain the Salter Harris classification and the associated X-ray findings and explain its implications.
- F. Understand the common types of fractures noted in pediatric patients and be able to discuss their radiographic appearance:
 - I. Buckle Fracture
 - II. Greenstick Fracture
 - III. Complete Fracture
 - IV. Bowing fracture
- G. Recognize the various stages of fracture healing.
- H. Explain the impact of skeletal immaturity on certain sports such as weightlifting.
- I. Explain the clinical manifestation, diagnostic approach and management of the following orthopedic conditions:
 - I. Scoliosis
 - II. Kyphosis
 - III. Avascular necrosis of the femoral head
 - IV. Developmental dysplasia of the hip
 - V. Legg-Calvé-Perthes Disease
 - VI. Osgood Schlatter Disease
 - VII. Severs Disease
 - VIII. Slipped Capital Femoral Epiphysis
 - IX. Torticollis
 - X. Transient synovitis
 - XI. Septic joint

- J. Understand the clinical approach to evaluating a child with hypotonia.

14. Pediatric Dermatology

Reading Assignment: Nelson Essentials of Pediatrics, 9th Edition, Chapters 81, 84-85, 87, 188-196

Module: [Pediatric Dermatology](#)

Learning Objectives:

- A. Recall the clinical presentation, differential diagnosis, and management of diaper rash.
- B. Organize a systematic approach for these clinical signs: café au lait spots, melanocytic nevus, hemangiomas, port wine stains.
- C. Recall the key history and physical findings, and organize a systematic approach to treatment of the following common pediatric dermatologic conditions:
 - I. Atopic dermatitis/eczema
 - II. Contact dermatitis
 - III. Seborrheic dermatitis
 - IV. Pityriasis rosea
 - V. Scabies
 - VI. Superficial fungal infections (Skin vs scalp)
 - VII. Viral exanthems
 - VIII. Impetigo
 - IX. Staph Scalded Skin Syndrome
 - X. Steven Johnson Syndrome
 - XI. Erythema marginatum
 - XII. Erythema migrans
 - XIII. Erythema Nodosum
 - XIV. Erythema multiforme
 - XV. Molluscum contagiosum
 - XVI. Warts
 - XVII. Acne
- D. Explain the indications, general approach to selection of strength, and the common side effects associated with topical steroid use.
- E. List the causes, clinical presentation, and management for these neonatal rashes:
 - I. Erythema toxicum
 - II. Neonatal Pustulosis
 - III. Mongolian spots
 - IV. Hemangioma
 - V. Milia
 - VI. Neonatal acne

15. Pediatric Allergy, Immunology, & Rheumatology

Reading Assignment: Nelson Essentials of Pediatrics, 9th Edition, Chapters 72-75, 77, 79, 81-82, 84-85, & 88-91

Module: [Pediatric Allergy, Immunology, & Rheumatology](#)

Learning Objectives:

- A. Allergy
 - I. Identify the classification of the different hypersensitivity disorders:
 - a. Type I
 - b. Type II
 - c. Type III
 - d. Type IV
 - II. Determine the appropriate history, physical exam, diagnostic measures and treatment approaches for the following chief complaints:
 - a. Hives/Urticaria

- b. Rhinitis
 - c. Cough
 - B. Immunology
 - I. Understand the clinical presentation, systematic diagnostic work up, and management of each of the following vascular, autoimmune, and rheumatological disorders:
 - a. Kawasaki's Disease
 - b. Juvenile Dermatomyositis
 - c. Juvenile Idiopathic Arthritis
 - d. Scleroderma
 - e. Systemic Lupus Erythematosus
 - II. Understand the clinical presentation, systematic diagnostic work up, and management of each of the following immunodeficiencies:
 - a. Antibody Defects
 - i. IgA
 - ii. IgG
 - b. Transient Hypogammaglobulinemia of Infancy
 - c. Severe Combined Immunodeficiency
 - d. Common Variable Immunodeficiency
 - e. Leukocyte Adhesions Deficiency
 - f. Chediak-Higashi Syndrome

16. Child Abuse, Neglect, Child Placement

Reading Assignment: Nelson Essentials of Pediatrics, 9th Edition, Chapters 22, & 24-26

Online Case: [Aquifer Radiology Case 11: 8-week-old male- Pediatrics A](#)

Module: [Child Abuse, Neglect, Child Placement](#)

Learning Objectives:

- A. Recall the rationale for screening for social determinants of health (maternal/postpartum depression, poverty, domestic violence).
- B. Infer the types of situations where pathology in the family (alcoholism, domestic violence, depression) contributes to childhood health and behavioral disturbances.
- C. Recall examples of Adverse Childhood Experiences (ACEs) and explain how ACEs affect adulthood outcomes.
- D. Identify the different types of child abuse, associated clinical manifestations, morbidities, treatment and management of the following:
 - I. Neglect
 - II. Physical Abuse
 - a. Describe pediatric injuries that are highly associated with non-accidental trauma.
 - b. Outline clinician reporting responsibilities in cases of suspected non-accidental trauma.
 - III. Emotional Abuse
 - IV. Verbal Abuse
 - V. Sexual Abuse
- E. Understand the underlying premise of foster care and adoption policies within the United States.

17. Pediatric Emergencies

Reading Assignment: Nelson Essentials of Pediatrics, 9th Edition, Chapters 38-42, 44-45, & 135-136

Online Case: [Aquifer Radiology Case 11: 8-week-old male- Pediatrics A](#)

Module: [Pediatric Emergencies](#)

Learning Objectives:

- A. Identify the critically ill child based on history, vital signs, and physical exam findings.

- B. List the appropriate BLS and PALS intervention for a child in cardiopulmonary distress and failure.
- C. Recall the presentation and explain the age-appropriate steps in management for each of the following emergencies:
 - I. Respiratory Distress and Respiratory Failure
 - a. Anaphylaxis
 - b. Status Asthmaticus
 - c. Bronchiolitis
 - d. Foreign body aspiration
 - e. Croup
 - f. Pneumonia
 - g. Pneumothorax
 - h. Pleural effusion
 - II. Altered Mental Status
 - a. Child abuse/Violence
 - b. Diabetic Ketoacidosis (DKA) and Hyperosmolar Hyperglycemic Syndrome (HHS)
 - c. Head injury and intracranial bleeding
 - d. Hypoglycemia
 - e. Hypoxemia/Hypoxia
 - f. Increased intracranial pressure (ICP)
 - g. Shock/Systemic Inflammatory Response Syndrome (SIRS)
 - h. Substance abuse
 - i. Withdrawal
 - III. Apnea
 - a. Brief Resolved Unexplained Event (BRUE)
 - b. Gastroesophageal reflux disease (GERD)
 - c. Respiratory infection
 - d. Seizures/Status Epilepticus
 - e. Sepsis
 - IV. Gastrointestinal bleeding
 - a. Inflammatory Bowel Disease
 - b. Intussusception
 - c. Meckel's Diverticulum
 - d. Polyps
 - e. Rectal Prolapse
 - V. Injuries and accidents
 - a. Animal bites
 - b. Concussion
 - c. Minor head injury
 - VI. Shock
 - a. Cardiogenic
 - b. Distributive
 - c. Obstructive
 - d. Dissociative
 - e. Sepsis
 - f. Hypovolemic
- D. Recall the clinical presentation and management of poisoning and intoxications, including the most common toxidromes.
- E. Recognize the radiographic signs of common complications of tube and line placements in pediatric patients.

- F. Recall the developmental vulnerability for poisoning, accidental and intentional ingestions in infants, toddlers, children, and adolescents.
- G. Recall the presentation and management of toxidromes syndromes, common poisoning and intoxications in children and adolescents.