I. Rotation Description

As clinicians, teachers, and researchers, our internal medicine faculty members are committed to the college's mission to provide medical education and research that prepares globally minded, community-focused physicians and to improve the health of those most in need.

Over 300 strong and growing, the Internal Medicine clinical faculty are practicing in affiliated teaching hospitals for VCOM. The Internal Medicine faculty are passionate about medicine and medical education. The Internal Medicine faculty include those practicing primary care internal medicine, hospital medicine, and those who practice in the full range of sub-specialties. Sharing the college's mission, and leading by
example, members of our faculty provide volunteer care for the under-served in regional free clinics, and on international medical missions.

During the third year internal medicine rotations, students expand their knowledge of adult health and wellness, preventative, primary, secondary and tertiary care. They learn about the treatment of acute and chronic medical conditions, palliative and end of life care and gain the ability to apply this knowledge in the clinical setting. The curriculum is taught through on-line interactive SIMPLE cases, assigned readings, bedside and clinic teaching, journal clubs, tumor boards, grand rounds, and through one-on-one student-preceptor experience in caring for patients in the clinical setting.

Students are expected to complete their assignments for both internal medicine and the longitudinal OMM course. The Core Internal Medicine rotations include inpatient and outpatient exposure, as well as general internal medicine and medical sub-specialty exposure. The practice of internal medicine occurs in the private, public and governmental clinic settings, in long-term care facilities, in inpatient institutional settings and in the emergency departments of hospitals and institutions. Due to the variety of practice opportunities and formats in internal medicine rotations, students should review their specific site instructions for a more detailed description of their specific practice setting.

II. Course Goals and Objectives

A. Goals of the Course

- To acquire the knowledge, skills and competencies that are required to evaluate and treat patients with acute and chronic medical conditions commonly found in the adult at a level consistent with a graduating generalist medical student.
- To develop the physical examination and clinical skills required of a graduate medical student in general internal medicine practice, including the ability interpret information relative to normal and abnormal structure, function and physiology.
- To apply historical and clinical information for problems solving to advance the health of the patient.
- To develop the psycho-social and communication skills and competencies that are required to communicate with, and treat a wide diversity of patients in acute, outpatient and institutional settings.
- To develop the ability to research medical literature and scientific resources for information that affects the patient’s condition, treatment and outcomes and the ability to evaluate and apply scientifically valid information to maximize the outcome of the patient.
- To develop knowledge, skill application and understanding of the indications, contraindications and application of medical procedures and therapies common to the specialty, including but not limited to ordering and interpretation of diagnostic studies, utilization of pharmacological agents, psychological and nutritional therapies, incorporation of osteopathic principles and practices into the patient’s care, and clinical procedures such as central line placement, lumbar punctures, intubation, management of ventilators, etc.

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 family medicine 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 above.
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 auscultory, 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
Students are required to maintain a log to identify the procedures performed and the number of essential patient encounters in the CREDO application. 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 CREDO entries with their preceptor during the rotation period.

IV. Credits
5 credit hours

V. Course Texts
A. Required Textbooks
  Electronic format is available only if purchased or if hard copy of text is purchased.
  Available in electronic format on the VCOM Library – on LWW Osteopathic Medicine Collection
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.
- Completion of all Clinical Modules in the required curriculum.
  - Completion of a minimum of 10 Aquifer Internal Medicine cases from the Required Curriculum. Ten (10) cases must be completed during the IM 1 rotation (the Introductory case does not count as one of your cases). Please note: To get full credit for each case you complete, please be sure to click 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:
    ➢ Go to https://www.aquifer.org
  - 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 setup 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 CREDO:
  - Students are required to log all patient encounters and procedures into the CREDO application. 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 CREDO 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. CREDO can be accessed at: https://credo.education/

- Rotation Evaluations:
  - Student Site Evaluation: Students must complete and submit at the end of rotation. See the VCOM website at: http://intranet.vcom.edu/clinical/Login/index.cfm?fuseaction=LoginInfo&LoginPage=ViewStudentSchedule 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 in to 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: www.vcom.edu/academics/clinical-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: www.vcom.edu/academics/clinical-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.

### 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. The clinical rotation grade uses the Honors, High Pass, Pass, Fail system; these grades are not calculated in the GPA. The rotation modules are assigned an exam grade.

#### Clinical Grading Scale and GPAs

<table>
<thead>
<tr>
<th>OMS 3 End-of-Rotation Exam Grades</th>
<th>OMS 3 AND OMS 4 Clinical Rotation Grades</th>
<th>Other Grades</th>
</tr>
</thead>
<tbody>
<tr>
<td>A 90-100</td>
<td>H Honors</td>
<td>IP In Progress</td>
</tr>
<tr>
<td>B+ 85-89</td>
<td>HP High Pass</td>
<td>INC Incomplete</td>
</tr>
<tr>
<td>B 80-84</td>
<td>P Pass</td>
<td>CP Conditional Pass</td>
</tr>
<tr>
<td>C+ 75-79</td>
<td>F Fail</td>
<td>R Repeat</td>
</tr>
<tr>
<td>C 70-74</td>
<td></td>
<td>Au Audit</td>
</tr>
<tr>
<td>F &lt;70</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### B. Remediation

Students who fail one or more rotations or one or more end-of-rotation exams twice 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 Professionalism and Ethics 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. In this case, the “F” grade remains the permanent grade for the initial rotation and the student will receive a new grade for the repeated rotation. The grade will be recorded in a manner that designates that it is a repeated rotation (e.g. R-pass).

- **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. In this case, the “F” grade remains the permanent grade for the initial rotation and the student will receive a new grade for the
repeated rotation. The grade will be recorded in a manner that designates that it is a repeated rotation (eg. R-pass).

- **Failure to Make Academic Progress**
  Repeated poor a 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. In general, rotations should show a progression of improvement in clinical performance. Those students who receive a mere “Pass” on multiple rotations and/or maintain a “CP” on one or more rotations after final grades are received, 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. In general, rotations should show a progression of improvement in performance. 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 Professionalism and Ethics 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 Behavioral Board or Promotion Board hearing. 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. Repeated poor a 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 and the preceptor, and the Promotion Board. In general, rotations should show a progression of improvement in clinical performance.

VII. **Academic Expectations**
Grading policies, academic progress, and graduation requirements may be found in the College Catalog and Student Handbook at: [http://www.vcom.edu/handbooks/catalog/index.html](http://www.vcom.edu/handbooks/catalog/index.html)

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 12 out of every 14 days
    - Student 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 2 of 7 days per week free.

• 2 week rotations may not be less than 10, eight hour days for a total of a minimum of 80 hours and often average 100 hours or greater.
  o If the clinical site requires longer daily hours or shift work, the student may complete the required hours in less than 10 days with the following specifications:
    ➢ Students should not work greater than 12 out of every 14 days.
    ➢ Students should not work more than 12 hours daily, exclusive of on-call assignments, and may not complete the 2 week rotation in less than 1 week.
    ➢ 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 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 or less than 80 hours for a 2 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 to 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 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: www.vcom.edu/academics/clinical-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 of 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 and 80 hours for a 2 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 and OMS 4 students who have any unexcused absences will be referred to the PESB.

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 at: http://www.vcom.edu/handbooks/catalog/index.html

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 at: http://www.vcom.edu/handbooks/catalog/index.html

IX. Clinical Modules

1. Acute Coronary Syndrome
Reading Assignment:
   - IM Essentials Text
     - Chapter 1 (Cardiovascular Medicine: Approach to Chest Pain)
     - Chapter 3 (Cardiovascular Medicine: Acute Coronary Syndrome)
Online Case: Aquifer Internal Medicine Case 1
Learning Objectives:
   i. Identify etiologies of acute chest pain and narrow the differential based on specific physical exam and history findings.
   ii. Differentiate causes of acute chest pain utilizing imaging, EKG, and laboratory findings.
   iii. Define and correlate the pathogenesis, signs, and symptoms of the acute coronary syndromes.
   iv. Identify cardiovascular risk factors.
   v. Predict an appropriate diagnostic and treatment plan—including recommended lifestyle.

2. Ischemic Heart Disease
Reading Assignment: IM Essentials Text: Chapter 2 (Cardiovascular Medicine: Chronic Stable Angina)
Online Case: Aquifer Internal Medicine Case 2
Learning Objectives:
   i. Identify the symptoms and signs of chest pain characteristic of angina pectoris.
   ii. Categorize the patient’s symptoms as angina pectoris, atypical angina, or non-cardiac chest pain.
   iii. Distinguish stable versus unstable angina.
   iv. Interpret laboratory and diagnostic studies including patient demographics to determine a pre-test probability of the most likely etiologies of chest pain.
   v. Relate primary and secondary prevention of ischemic heart disease to the reduction of cardiovascular risk factors (e.g. controlling hypertension and dyslipidemia, aggressive diabetes management, avoiding tobacco, and aspirin prophylaxis).
   vi. Choose appropriate anti-anginal medications when indicated and identify potential side effects.
   vii. Identify complications of STEMI and non-STEMI, e.g. pericardial tamponade, papillary muscle rupture, etc.
3. Arrhythmias & Disorders of Cardiac Output

Reading Assignment:
- IM Essentials Text
  - Chapter 4 (Cardiovascular Medicine: Conduction Blocks and Bradyarrhythmias)
  - Chapter 5 (Cardiovascular Medicine: Supraventricular Arrhythmias)
  - Chapter 6 (Cardiovascular Medicine: Ventricular Arrhythmias)
  - Chapter 40 (General Intern Medicine: Approach to Syncope)

Online Case: Aquifer Internal Medicine Case 3

Learning Objectives:
1. Identify the common causes of syncope.
2. Identify the important aspects of the history and physical exam in a patient with syncope.
4. Identify supraventricular and ventricular arrhythmias on an electrocardiogram.
5. Identify the common causes of supraventricular and ventricular arrhythmias.
6. Evaluate a patient with atrial fibrillation (including stroke and bleeding risk scoring) to choose appropriate treatment.
7. Identify indications for permanent pacing.
8. Identify a bundle branch block on electrocardiogram.
9. Differentiate SA and AV nodal blocks based on pathophysiology electrocardiography findings.
10. Devise a management plan of a patient with a left bundle branch block.
11. Define Long QT syndrome and its risk factors including common drugs.
12. Predict treatment regimens for ventricular tachycardia (including torsades de pointes).

4. Congestive Heart Failure

Reading Assignment:
- IM Essentials Text
  - Chapter 7 (Cardiovascular Medicine: Heart Failure)
  - Chapter 8 (Cardiovascular Medicine: Valvular Heart Disease)
  - Chapter 90 (Pulmonary Medicine: Approach to Dyspnea)

Online Case: Aquifer Internal Medicine Case 4

Learning Objectives:
1. Interpret physical exam findings for a patient with suspected heart failure such as jugular venous distention (JVD), hepatojugularreflux, and peripheral edema.
2. Identify and interpret auscultatory findings of the heart including rate, rhythm, S3/S4, and murmurs.
3. Categorize the major pathologic states causing dyspnea and their clinical presentations.
4. Compare and contrast the differing etiologies and signs of systolic vs. diastolic heart failure.
5. Categorize a patient's heart failure utilizing the NYHA Functional Class status.
6. Identify risk factors for heart failure and its exacerbation and steps to mitigate risk.
7. Interpret B-type natriuretic peptide (BNP) results and recognize appropriate clinical situations for its use.
8. Relate pharmacologic management of heart failure based on NYHA Functional Class status.
9. Define grading of the intensity of cardiac murmurs.
10. Identify murmurs based on location, characteristics, and associated findings.
5. Diabetes Mellitus

Reading Assignment:
- IM Essentials Text
  - Chapter 13 (Endocrinology and Metabolism: Diabetes Mellitus)
  - Chapter 14 (Endocrinology and Metabolism: Diabetic Ketoacidosis and Hyperglycemic)

Online Case: Aquifer Internal Medicine Case 7

Learning Objectives:
i. Identify the American Diabetes Association (ADA) and the U.S. Preventive Task Force (USPTF) recommendations to screen for diabetes, including recognizing risk factors.
ii. Compare and contrast the pathogenesis of Type 1 and Type 2 diabetes.
iii. Diagnose type 2 diabetes mellitus using the four accepted criteria, as well as relate the diagnostic criteria for impaired fasting glucose and impaired glucose tolerance.
iv. Utilize anion gap, osmolar gap, and corrected sodium to distinguish Diabetic ketoacidosis and hyperosmolar hyperglycemic state.
v. Define hyperosmolar hyperglycemic state (HHS), including nonketotic coma.
vi. Recognize precipitants and presenting symptoms and signs of HHS and diabetic ketoacidosis (DKA), as well as relate the pathophysiology for the abnormal laboratory values of each.
vii. Distinguish the basic management of diabetic ketoacidosis and nonketotic hyperglycemic states, including the similarities and differences in insulin therapy and fluid and electrolyte replacement.
viii. Distinguish the ADA-recommended targets for glycemic control for adults.
ix. Relate the differences between types of insulin and the indications for their use.

6. GI Bleed

Reading Assignment:
- IM Essentials Text
  - Chapter 17 (Gastroenterology and Hepatology: Dyspepsia)
  - Chapter 18 (Gastroenterology and Hepatology: Gastroesophageal Reflux Disease)
  - Chapter 19 (Gastroenterology and Hepatology: Peptic Ulcer Disease)
  - Chapter 27 (Gastroenterology and Hepatology: Approach to Gastrointestinal Bleeding)
  - Chapter 42 (General Internal Medicine: Approach to Involuntary Weight Loss)
  - Chapter 54 (Hematology: Transfusion Medicine)

Online Cases: Aquifer Internal Medicine Emergency Case 10

Learning Objectives:

i. Identify the presentation of upper and lower gastrointestinal bleed.
ii. Define hematemesis, melena, and hematochezia.
iii. Identify the common causes of gastrointestinal bleeding such as Helicobacter pylori infection, non-steroidal anti-inflammatory drugs, alcohol, coagulopathies, and chronic liver disease.
iv. Identify physical exam findings in a patient with suspected GI bleed.
v. Interpret laboratory and diagnostic tests in the evaluation of GI bleeding.
vi. Recognize an appropriate evaluation and treatment plan for patients with a gastrointestinal bleed that includes:
   a. Establishing adequate venous access
   b. Administering crystalloid fluid resuscitation
   c. Ordering blood and blood product transfusion
   d. Determining when to obtain consultation from a gastroenterologist for upper endoscopy.

vii. Diagnose GERD utilize clinical history and appropriate diagnostic tests to distinguish treatment for GERD and indications for EGD.

viii. Diagnose and treat H. pylori.

ix. Identify the indications, contraindications, and complications of blood transfusions.
x. Identify and manage transfusion reactions.
xi. Differentiate between adverse events and medical errors.

7. Abdominal Pain

Reading Assignment:
- IM Essentials Text
  - Chapter 16 (Gastroenterology and Hepatology: Approach to Abdominal Pain)
  - Chapter 25 (Gastroenterology and Hepatology: Approach to Diarrhea)
  - Chapter 26 (Gastroenterology and Hepatology: Inflammatory Bowel Disease)

Online Case: Aquifer Internal Medicine Case 12

Learning Objectives:
- i. Identify symptoms and signs indicative of an acute/surgical abdomen.
- ii. Differentiate the most important and likely causes of a patient’s abdominal pain.
- iii. Recognize specific history, physical exam, and laboratory findings that distinguish between the various causes of abdominal pain.
- iv. Relate a basic management plan for diverticulitis.
- v. Define irritable bowel syndrome and relate its management.
- vi. Differentiate infectious and non-infectious diarrhea utilizing history and clinical presentation.
- vii. Utilize common diagnostic tests for diarrhea to determine a diagnosis.
- viii. Differentiate ulcerative colitis from Crohn’s disease.
- ix. Relate basic management of inflammatory bowel disease.

8. Liver Disease

Reading Assignment:
- IM Essentials Text
  - Chapter 20 (Gastroenterology and Hepatology: Approach to Liver Chemistry Tests)
  - Chapter 21 (Gastroenterology and Hepatology: Hepatitis)
  - Chapter 22 (Gastroenterology and Hepatology: Cirrhosis)

Online Cases: Aquifer Internal Medicine Case 36

Learning Objectives:
- i. Differentiate conjugated and unconjugated hyperbilirubinemia utilizing pathophysiology
- ii. Categorize the common types of liver diseases and their risk factors (including inherited and acquired).
- iii. Identify risk factors for viral hepatitis.
- iv. Evaluate liver disease utilizing laboratory and diagnostic imaging
- v. Identify indications for a liver biopsy
- vi. Identify the signs, symptoms, and complications of cirrhosis and portal hypertension.
- vii. Relate the clinical presentation of spontaneous bacterial peritonitis (SBP) and its diagnosis.
- viii. Identify physical exam maneuvers to evaluate for ascites.
- ix. Identify the indications for paracentesis and interpret ascitic fluid including the serum to ascites albumin gradient (SAAG).
- x. Identify indications for hepatic transplantation referral in end stage liver disease.
- xi. Diagnose causes of liver disease utilizing history and patterns in liver function tests.
- xii. Interpret hepatitis B serologies.
- xiii. Predict the general management of cirrhosis.
9. Pancreatic Disease
   Reading Assignment:
   - IM Essentials Text
     - Chapter 16 (Gastroenterology and Hepatology: Approach Abdominal Pain)
     - Chapter 20 (Gastroenterology and Hepatology: Approach to Liver Chemical Tests)
     - Chapter 23 (Gastroenterology and Hepatology: Diseases of the Gall Bladder and Bile Ducts)
     - Chapter 24 (Gastroenterology and Hepatology: Acute Pancreatitis)

   Online Case: Aquifer Internal Medicine Case 9

   Learning Objectives:
   i. Classify the pathophysiology of abdominal pain: parietal, visceral, vascular, and referred.
   ii. Identify the indications and utility of hepatobiliary imaging studies including MRCP and ERCP.
   iii. Distinguish etiologies of cholestatic liver disease utilizing clinical history, laboratory and diagnostic testing.
   iv. Relate common etiologies of pancreatitis in the US.
   v. Predict general treatment plan for pancreatitis, including indications for imaging and antibiotics
   vi. Identify indications for surgical referral in pancreatic disease.
   vii. Diagnose pancreatic cancer utilizing clinical history such as painless jaundice, risk factors, and diagnostic imaging.

10. Substance Abuse
    Reading Assignment: IM Essentials Text: Chapter 38 (General Internal Medicine: Substance Abuse)
    Online Cases: Aquifer Internal Medicine Case 11

    Learning Objectives:
    i. Interpret the CAGE and AUDIT as screening tools for alcohol abuse.
    ii. Recognize USPSTF recommendations regarding screening and behavioral counseling.
    iii. Recognize the clinical presentations of substance abuse and distinguish treatment.
    iv. Apply diagnostic criteria for spectrum of alcohol abuse.
    v. Identify basic prevention and treatment for alcohol withdrawal.
    vi. Identify the “Five A’s” of behavioral change counseling.

11. Acute Renal Failure
    Reading Assignment: IM Essentials Text
    - Chapter 66 (Nephrology: Approach to Kidney Disease)
    - Chapter 70 (Nephrology: Acute Kidney Injury)

    Online Case: Aquifer Internal Medicine Case 33

    Learning Objectives:
    i. Compare the pathophysiology of major etiologies of acute renal failure including decreased renal perfusion (pre-renal), intrinsic renal disease, and acute renal obstruction (post renal).
    ii. Distinguish pre-renal, intrinsic renal disease, and postrenal failure utilizing the fractional excretion of sodium.
    iii. Determine likely etiology of acute renal failure utilizing common diagnostic tests, including UA and BMP.
    iv. Identify appropriate management plan for acute renal failure including volume management, dietary recommendations, drug dosage alterations, electrolyte monitoring, and indications for dialysis.
    v. Identify risk factors for contrast-induced nephropathy and recommend steps to prevent this complication.
    vi. Interpret a urinalysis, including microscopic examination for casts, red blood cells, white blood cells, and crystals.
    vii. Differentiate nephrotic syndrome and nephritic syndrome.
viii. Distinguish a differential diagnosis for acute kidney injury based on clinical history and basic diagnostic studies.

12. Chronic Kidney Disease

Reading Assignment:
- IM Essentials Text
  - Chapter 31 (General Internal Medicine: Hypertension)
  - Chapter 66 (Nephrology: Approach to Kidney Disease)
  - Chapter 68 (Nephrology: Calcium and Phosphorus Metabolism)
  - Chapter 71 (Nephrology: Chronic Kidney Disease)

Online Case: Aquifer Internal Medicine Case 23

Learning Objectives:
1. Identify the most common causes of chronic kidney disease (CKD).
2. Distinguish etiologies of chronic kidney disease utilizing clinical history and diagnostic testing.
3. Relate the pathophysiology and clinical signs of uremia.
4. Relate the pathophysiology of hyperkalemia, hypocalcemia, and hyperphosphatemia in the setting of CKD.
5. Identify indications for angiotensin converting enzyme (ACE)-inhibitors and angiotensin receptor blockers (ARBs) in the management of CKD.
6. Distinguish treatment with phosphate binders and calcium replacement in CKD.
7. Identify the staging of CKD based on glomerular filtration rate (GFR).
8. Define hypertension, hypertensive emergency, and hypertensive urgency, including the stages of hypertension.
9. Apply current guidelines for hypertension, including lifestyle modifications, drug treatment classes, and differences based on ethnicity and co-morbid disease states.
10. Recognize the indications for dialysis.

13. Acid-Base Disorders

Reading Assignment: IM Essentials Text: Chapter 69 (Nephrology: Acid-Base Disorders)

Online Case: Aquifer Internal Medicine Case 26

Learning Objectives:
1. Calculate anion gap, osmolar gap, and correct sodium to distinguish hyponatremia from pseudohyponatremia.
2. Relate the pathophysiology of simple and mixed acid-base disorders clinical scenarios.
3. Calculate the anion gap and relate its relevance to determining the cause of a metabolic acidosis.
4. Identify the differential of anion-gap metabolic acidosis.
5. Differentiate types of renal tubular acidosis based on laboratory findings.
6. Calculate urine anion gap to diagnose normal anion-gap metabolic acidosis.
7. Relate the pathophysiology of ethylene glycol toxicity to acid-base abnormalities.
8. Diagnose ethylene glycol toxicity utilizing laboratory studies including urinalysis.
9. Select treatment for ethylene glycol toxicity.
14. Pneumonia
Reading Assignment:
- IM Essentials Text
  - Chapter 35 (General Internal Medicine: Approach to Cough)
  - Chapter 65 (Infectious Disease Medicine: Health Care-Associated Infections)
  - Chapter 57 (Infectious Disease Medicine: Community-Acquired Pneumonia)
  - Chapter 90: (Pulmonary Medicine: Approach to Dyspnea)
Online Case: Aquifer Internal Medicine Case 22
Suggested Online Resource: Infectious Disease Society of American Community-Acquired Pneumonia and Hospital-Acquired Pneumonia Guidelines

Learning Objectives:
- Differentiate the common causes of acute dyspnea, their pathophysiology, symptoms, and signs.
- Differentiate etiologies of acute and chronic dyspnea utilizing clinical history, imaging and laboratory tests.
- Differentiate the common pneumonia pathogens (viral, bacterial, mycobacterial, and fungal) in community and healthcare associated clinical scenarios.
- Relate radiographic findings associated with specific pathogens.
- Relate physical exam findings, including bronchial breath sounds, rales (crackles), rhonchi, wheezes, tactile fremitus, egophany, and percussion to pulmonary pathologies such as pneumonia and effusions.
- Recognize the most common complications of pneumonia.
- Interpret diagnostic laboratory studies for pulmonary pathologies to determine treatment options.
- Select an appropriate empiric antibiotic regimen for community-acquired, nosocomial, immunocompromised-host, and aspiration pneumonia, taking into account pertinent patient features.
- Define healthcare-acquired and ventilator-associated pneumonia.
- Predict empiric antibiotic treatment for HAP and VAP.
- Identify prevention strategies HAP and VAP.
- Identify indications for CXR and CT scan imaging of the chest for pneumonia.

15. Chronic Lung Disease
Reading Assignment:
- IM Essentials Text
  - Chapter 81 (Oncology: Lung Cancer)
  - Chapter 89 (Pulmonary Medicine: Interpretation of Pulmonary Function Tests)
  - Chapter 90 (Pulmonary Medicine: Approach to Dyspnea)
  - Chapter 92 (Pulmonary Medicine: Asthma)
  - Chapter 93 (Pulmonary Medicine: Chronic Obstructive Pulmonary Disease)
  - Chapter 95 (Pulmonary Medicine: Diffuse Parenchymal Lung Diseases)
Online Case: Aquifer Internal Medicine Case 28
Learning Objectives:
- Interpret arterial blood gas.
- Interpret pulmonary function tests (PFT) to differentiate obstructive versus restrictive lung disease and relate results to appropriate therapy.
- Relate the utility of supplemental oxygen in chronic lung disease.
- Identify the indications for, benefits of, and side effects of therapies for chronic obstructive pulmonary disease (COPD) including: beta-agonists, anticholinergics, methylxanthines, and inhaled and systemic corticosteroids.
- Predict the diagnostic evaluation of suspected COPD exacerbation.
- Identify indications for influenza and pneumococcal vaccination in patients with COPD.
- Classify COPD by stages and predict treatment based on severity.
viii. Classify severity of asthma and predict treatment based on asthma severity.
ix. Identify treatment of an asthma exacerbation and identify high risk features of an exacerbation.
x. Identify paraneoplastic syndromes associated with lung cancer.
xi. Recognize basic treatment including surgical versus non-surgical management for lung cancer based on stage.
xii. Differentiate diffuse parenchymal lung diseases utilizing history and clinical examination.

16. Altered Mental Status
Reading Assignment:
- IM Essentials Text
  - Chapter 40 (General Internal Medicine: Approach to Syncope)
  - Chapter 67 (Nephrology: Fluid and Electrolyte Disorders)
  - Chapter 76 (Neurology: Altered Mental Status, Dementia, and Delirium)

Online Cases: Aquifer Internal Medicine Case 25

Learning Objectives:
i. Distinguish etiologies of altered mental status, including syncope, seizures, cerebrovascular disease, arrhythmias, etc.
ii. Categorize etiologies of altered mental status based on age and co-morbidities.
iii. Differentiate among delirium, dementia, and depression
iv. Identify the risk factors for developing altered mental status, including:
   a. Dementia
   b. Advanced age
   c. Substance abuse
   d. Comorbid physical problems such as sleep deprivation, immobility, dehydration, pain, and sensory impairment
   e. ICU admission
   f. Medications, supplements, and drug interactions.
v. Relate laboratory and diagnostic studies that may elucidate an underlying cause for delirium and dementia.
vi. Identify the treatment of the most common causes of dementia and delirium.

Online Cases: Aquifer Internal Medicine Cases 24

Recommended Reading: Surviving Sepsis Campaign Guidelines

Learning Objectives:
i. Interpret a urinalysis.
ii. Select appropriate empiric therapy for sepsis from a urinary source.
iii. Select types of patient isolation precautions and their indications.
iv. Distinguish indications, contraindications, and complications of lumbar puncture.
v. Interpret the analysis of cerebrospinal fluid.
vi. Differentiate etiologies of shock.
vii. Differentiate sepsis from septic shock.

viii. Predict treatment principles of sepsis including early recognition, measuring lactate aggressive fluid resuscitation, early broad-spectrum antibiotic administration and vasopressor administration.
ix. Recognize “red flag” headache signs.
x. Differentiate headaches based on clinical history and physical exam findings.
xii. Differentiate bacterial from viral meningitis based off typical cerebrospinal fluid findings.

18. Hospital Acquired Infections

Reading Assignment: IM Essentials Text: Chapter 65 (Infectious Disease Medicine: Health Care-Associated Infections)

Online Case: Aquifer Internal Medicine Case 24

Suggested Online Resource: Infectious Disease Society of America (IDSA) Guidelines on Prevention of Healthcare-Associated Infections in Acute Care Hospitals and Clostridium Difficile

Learning Objectives:
   i. Identify risk factors for and precautions against the acquisition of nosocomial infection.
   ii. Identify system-based practices to prevent health care-associated infections such as catheter-related bloodstream infections, urinary tract infections and ventilator-associated pneumonia.
   iii. Diagnose Clostridium difficile infection and predict treatment based on severity of the illness.

19. Venous Thromboembolism

Reading Assignment:
   • IM Essentials Text
     o Chapter 9 (Cardiovascular Medicine: Vascular Disease)
     o Chapter 53 (Hematology: Thrombophilia)

Online Case: Aquifer Internal Medicine Case 30

Learning Objectives:
   i. Identify indications for and contradictions for various methods of deep vein thrombosis prophylaxis.
   ii. Identify risk factors for the development of a deep vein thrombosis (DVT).
   iii. Recognize the signs and symptoms of DVT and pulmonary embolism (PE).
   iv. Calculate pre-test probability for DVT/PE with Wells Score and relate pre-test probability to diagnostic work-up.
   v. Interpret various diagnostic tests for DVT/PE.
   vi. Choose an appropriate management plan for DVT/PE, including appropriate use and monitoring of heparin, bridging therapy, and oral anticoagulants including warfarin and direct oral anticoagulants.
   vii. Diagnose congenital and acquired thrombophilia disorders utilizing clinical history and diagnostic testing.

Osteopathic Manipulative Medicine and the Osteopathic approach to clinical cases are covered in the monthly workshops and tested on the OMM end-of-rotation exams. Students are responsible for reviewing the OMM Syllabus and meeting the learning objectives covered in each month's workshop.