



# Edward Via College of Osteopathic Medicine

4<sup>th</sup> Year Clinical Rotation: Hematology/Oncology  
MED 8210: Medical Selective Clinical Rotation II

## COURSE SYLLABUS

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### I. Rotation Description

Students will expand their knowledge of common adult malignancies and hematologic disorders. They learn about the treatment of acute and chronic medical conditions, including anemia, solid tumors, leukemia, lymphomas and polycythemia vera. The student is challenged to acquire the ability to apply this knowledge in diverse clinical settings with the majority being in an outpatient consultative service. The curriculum is taught through assigned readings, bedside and clinic teaching, journal clubs, grand rounds and through one-on-one student-preceptor experience in caring for patients in the clinical setting.

### II. Rotation Goals

- a. To acquire the knowledge, skills and competencies that are required to evaluate and treat patients with hematologic and oncologic conditions commonly found in the adult
- b. 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
- c. To develop the psycho-social and communication skills and competencies that are required to communicate with, and treat a wide diversity of patients
- d. 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
- e. 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, incorporation of osteopathic principles and practices into the patient's care, and clinical procedures such as central line placement, lumbar punctures, intubation, etc.

### III. Rotation Design

The majority of the Hematology/Oncology rotation occurs in the clinic setting as a consulting service. A portion of the experience may also be hospital-based including training on acute hematologic/oncological conditions. Students should also be encouraged to experience various related fields to hematology/oncology including: pathology, nutrition, social work, radiation oncology, pharmacy and palliative care.

### IV. Credits

4 week course = 4 credit hours

### V. Suggested Textbook and References

- a. The Washington Manual Subspecialty Consult Series. Hematology and Oncology Subspecialty Consult, 3e. Editors: Amanda Cashen and Brian A. Van Tine
- b. American Society of Hematology Teaching Cases for Medical Students.  
<http://teachingcases.hematology.org/>
- c. American Society of Hematology Image Bank. <http://imagebank.hematology.org/>
- d. The MD Anderson Manual of Medical Oncology, 2e. Available on VCOM's electronic library
- e. William's Hematology, 8e. Available on Access Medicine on VCOM's electronic library.

### VI. Course Grading/Requirements for Successful Completion of the Hematology/Oncology Rotation

- a. Attendance according to VCOM and preceptor requirements
- b. Preceptor Evaluation at end-of-rotation

Grading policies, academic progress, and graduation requirements may be found in the *College Catalog and Student Handbook* at: <http://www.vcom.vt.edu/catalog/>.

### VII. Clinical Performance Objectives

The end-of-rotation evaluation for this rotation will be completed by your preceptor and 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.

- a. Communication - the student should demonstrate the following clinical communication skills:
  1. Effective listening to patient, family, peers, and healthcare team
  2. Demonstrates compassion and respect in patient communications
  3. Effective investigation of chief complaint, medical and psychosocial history specific to the rotation
  4. Considers whole patient: social, spiritual & cultural concerns
  5. Efficiently prioritizes essential from non-essential information
  6. Assures patient understands instructions, consents & medications
  7. Presents cases in an accurate, concise, well organized manner

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

Students must be familiar with the OMM didactic and workshop requirements for their OMS-4 year as described in the Osteopathic Manipulative Medicine website.

## VIII. Curriculum

The Hematology/Oncology curriculum is delivered through the assigned readings that affect the clinical conditions most commonly encountered in the care of the adult patient. Each of these topics has specific learning objectives and is accompanied by assigned readings in the texts.

### *Hematology*

#### a. White blood cell disorders

##### 1. Reading Assignment:

- i. Washington Manual: Chapter 2: White blood cell disorders: Leukopenia and Lymphocytosis
- ii. American Society of Hematology Teaching Cases
  - Lymphocytosis
  - Macrocytosis

##### 2. Objectives:

- i. Understand the clinical presentation, differential diagnosis, common causes, and basic treatment principles of various white blood cell disorders including
  - Neutropenia
  - Leukocytosis
  - Eosinophilia
  - Lymphocytosis

#### b. Red blood cell disorders

##### 1. Reading Assignment:

- i. American Society of Hematology Teaching Cases
  - Anemia
  - Polycythemia
  - Thrombosis and Anemia
- ii. Washington Manual: Chapter 3: Red Blood Cell Disorders and 11: Sickle Cell Disease

##### 2. Objectives:

- i. Understand the common clinical presentation and evaluation (including peripheral smear identification) of anemias including:
  - Iron-deficiency anemia
  - Sideroblastic anemia
  - Lead poisoning
  - Anemia of chronic disease (anemia of chronic inflammation)
  - Thalassemias
  - Vitamin B<sub>12</sub> deficiency
  - Folate deficiency
- ii. Recognize peripheral smear findings and work-up of
  - Hemolytic anemia
    - i. Acquired Immune Hemolytic Anemia
    - ii. Acquired non-immune hemolytic anemia
  - Sickle cell anemia
  - Glucose-6-Phosphate Dehydrogenase Deficiency
- iii. Understand the common clinical presentation, work-up, differential diagnosis and treatment of polycythemia vera
- iv. Understand the pathophysiology, treatment and complications of sickle cell disease

c. Platelet disorders

1. Reading Assignment:

- i. Washington Manual: Chapter 4. Platelets: Thrombocytopenia and Thrombocytosis
- ii. American Society of Hematology Cases
  - Anemia and Thrombocytopenia
  - Thrombocytopenia
  - Surgical Bleeding

2. Objectives:

- i. Recognize etiologies of thrombocytopenia
  - Decreased platelet production
  - Increased platelet destruction
- ii. Understand the pentad presentation of thrombotic thrombocytopenia purpura and its diagnosis and treatment
- iii. Understand the pathophysiology, risk factors, diagnosis and treatment of disseminated intravascular coagulation
- iv. Recognize the pathophysiology and presentation with treatment considerations for heparin-induced thrombocytopenia
- v. Understand the diagnosis and treatment of immune thrombocytopenia

d. Thrombosis and Coagulopathy

1. Reading Assignment:

- i. Washington Manual: Chapters 5, 6, 7
- ii. American Society of Hematology Teaching Cases
  - GI Bleeding
  - Thrombosis

2. Objectives:

- i. Understand utility of various coagulation tests including: aPTT, PT/INR, Factor assays, mixing studies, PFA-100
- ii. Utilize a clinical evaluation for thrombophilia and its common disorders including
  - Antiphospholipid syndrome
  - Factor V Leiden
  - Prothrombin gene mutation
  - Antithrombin deficiency
  - Protein C or S deficiency
  - Elevated factor VIII levels
- iii. Understand the common presentations, diagnosis (V/Q scan, CTA, and Duplex), and treatment for venous thromboembolic diseases such as pulmonary embolus and deep venous thrombosis
- iv. Recognize the indications and contraindications for IVC filters
- v. Understand the genetics, clinical evaluation, treatment and complications of hemophilia A and B
- vi. Understand the common presentation, laboratory evaluation and treatment of von Willebrand disease

e. Transfusion medicine

1. Reading Assignment: Washington Manual Chapter 10: Transfusion Medicine

2. Objectives:

- i. Recognize indications for various blood product transfusions
- ii. Recognize when modification of blood products is indicated
- iii. Understand various transfusion complication presentations, workup and treatment

f. Hematologic Malignancies

1. Reading Assignment:

- i. Washington Manual: Chapters 13, 29, 30
- ii. American Society of Hematology Teaching Cases
  - Fever, Cough, Back Pain and Fatigue
  - Fever, Night Sweats, and Weight Loss
  - Lymphocytosis
  - Myeloproliferative Disorder
  - Pancytopenia

2. Objectives:

- i. Understand basic pathophysiology, epidemiology, clinical presentation, diagnosis and treatment principles of common hematologic malignancies including:
  - Acute myelogenous leukemia
  - Acute lymphocytic leukemia
  - Chronic myelogenous leukemia
  - Chronic lymphocytic leukemia
  - Hodgkin lymphoma
  - Non-Hodgkin lymphoma
- ii. Recognize clinical presentation and diagnostic evaluation for multiple myeloma

g. Lymphadenopathy

1. Reading Assignment: American Society of Hematology Teaching Case: Lymphadenopathy

***Oncology***

a. Chemotherapy

- i. Reading Assignment: Washington Manual Chapter 16: Chemotherapy
- ii. Objectives:
  1. Categorize chemotherapy by mode of action and understand basic side effects based on the drug's mode of action including:
    - a. Mucositis
    - b. Myelosuppression
    - c. Alopecia
    - d. GI upset
    - e. Cardio and pulmonary toxicity
    - f. Neuropathy

b. Solid tumor malignancies

- i. Reading Assignment: Washington Manual Chapters 18, 19, 20, 22, 26, 28
- ii. Objectives:
  1. Understand basic principles, including screening, clinical presentation, diagnosis and treatment for common solid tumor malignancies including:
    - a. Breast
    - b. Colon
    - c. Lung
    - d. Prostate
    - e. Skin

f. Brain

c. Oncologic emergencies

i. Reading assignment: Washington Manual Chapter 35

ii. Objectives:

1. Learn the common presentation, diagnosis and emergent treatment for various oncological emergencies including:
  - a. SVC syndrome
  - b. Spinal cord compression
  - c. Tumor lysis syndrome
  - d. Hypercalcemia
  - e. Febrile Neutropenia