

**Patient, Doctor, and Society**

1. Grasp the content of the norms of medical professionalism, including the ways in which these are both contested and agreed-upon. (professionalism)
2. Begin to grasp ways in which the doctor-patient relationship can go wrong (or right) according to physician conduct of that relationship. (professionalism, communication skills, practice-based learning and improvement)
3. Understand considerations basic to conducting a medical interview with a patient, including the importance of communication skills. (communication skills, patient care)
4. Understand the implications of patient diversity for effective medical practice and, thus, the importance of cultural competence. (communication skills)
5. Be aware of health disparities between advantaged and less advantaged groups in American society and have some understanding of the range of thinking as to causal relationships resulting in said disparities.
6. Be familiar with some important characteristics of disparate patient populations including the dying, patients with AIDS, and the elderly. (communication skills, patient care)
7. Understand some of the challenges of confronting epidemic disease in the developing world. (medical knowledge, professionalism)
8. Understand basic approaches to medical ethics and the ways in which medical ethics and medical professionalism connect; (professionalism, communication skills)
9. Grasp the basic history and structure of our health care system and contrasting policy approaches to fixing it. (professionalism)
10. Understand some of the recent history of medicine in America including changes in ways of thinking about disease, in medical therapeutics, in the configuration of the medical profession, and in medical education. (professionalism)
11. Have some understanding of the nature of knowledge in medicine, including the importance of contemporary “evidence-based medicine”. Understand the basics of accessing the medical literature. (medical knowledge, practice based learning and improvement)
12. Understand the rudiments of patient safety and medical error, considered from both systems and individual physician actor standpoints. (professionalism, practice based learning and improvement).
13. Understand the character of the discipline of public health and how public health relates, or arguably should relate, to clinical medicine. (professionalism, patient care)
14. Be aware of physician and trainee vulnerability to stress and self-destructive behavior, of resources to aid in avoiding same, and of the importance of physician accountability to patients and the public for monitoring one another. (professionalism, practice based learning and improvement)

## **Fundamentals of Medicine**

### **Block 1**

1. Apply principles of thermodynamics and discuss the biochemical mechanisms of energy generation, utilization and conservation in the context of human physiology.
2. Understand the concept of energy homeostasis, and distinguish between anabolic and catabolic metabolic pathways.
3. Appreciate the diverse biological functions of biological building blocks (nucleotides, amino acids, lipids, carbohydrates) and explain the biosynthesis and degradation pathways of these molecules during physiologic and pathologic situations.
4. Explain the mechanisms of DNA replication, mutation, repair and recombination.
5. Describe the organization and structure of genes and explain the process of gene expression from transcription to translation, including transcriptional regulation, RNA processing and degradation, structure of tRNA and ribosomes, post-translational modifications, and protein turnover.

### **Block 2**

1. Recognize how genetic traits are transmitted in families and populations, and be able to calculate associated risks, and describe how genetic alternations manifest in a phenotype, and explanations for phenotypic variability.
2. Define the concept of genomic medicine, and understand the role of genetics in current and future health care.
3. Know the early events of embryogenesis, the generation of the three germ layers during gastrulation, and general body patterning that occurs during development.
4. Describe, compare and contrast the four basic tissues (epithelia, connective tissue, muscle tissue and nerve tissue) that make up organ systems of the body in terms of structure, function, and location.
5. Describe the specialized tissues of cartilage, bone, and blood, including associated cells and structures of these tissues.
6. Describe and identify characteristics of arteries, veins and capillaries at the microscopic level and understand the structure and function of the endothelium.
7. Know the general organization of the major arteries and veins in the human body.
8. Describe the organization of the peripheral nervous system including its distribution, signaling cascade and functions.
9. Describe the organization of the thoracic and abdominal cavities, in particular with respect to cross-sectional anatomy and medical imaging.

### **Block 3**

#### **Pharmacology**

1. Understand basic pharmacodynamic terms including receptor agonists, antagonists, partial agonist, inverse agonist, competitive inhibition, noncompetitive inhibition, allosteric inhibition,  $K_d$ , therapeutic index,  $EC_{50}$  and  $ED_{50}$ .
2. Explain concepts of Absorption, Distribution, Metabolism and Excretion, and calculate various pharmacokinetic parameters relevant to dosing medications.

3. Describe the organization of the autonomic nervous system, the neurotransmitters and receptors associated with the ANS, and pharmacological agents used to mimic or inhibit ANS activities.

#### Cell Biology and Physiology

4. Define homeostasis, give examples of positive and negative feedback and feed-forward mechanisms in the context of physiology and distinguish between the concepts of steady-state and equilibrium.
5. Describe the major fluid compartments of the body and calculate volumes of the intracellular and extracellular compartments and the total body water.
6. List the factors that influence diffusion of a small molecule: a) in solution and b) across a membrane and distinguish between diffusion and flux.
7. Compare and contrast osmotic and hydrostatic pressure, distinguish between osmolarity, osmolality and tonicity, calculate approximate osmotic strengths and predict the effect of solutions of differing osmotic strengths on cell volume.
8. Distinguish between penetrating and non-penetrating solutes.
9. Describe different fluid replacement solutions and give examples of situations in which these might be used.
10. Describe how the principles of diffusion apply to charged solutes, compare and contrast diffusion potentials and reversal potentials and calculate the reversal potentials for ions using the Nernst equation.
11. Describe the role of the  $\text{Na}^+/\text{K}^+$  ATPase in the generation of the membrane potential and in the maintenance of cell volume.
12. Distinguish between channels and pores, passive and facilitated diffusion and primary and secondary active transport and give examples of each.
13. Compare and contrast the pathways and fates of cytosolic proteins versus proteins synthesized at the endoplasmic reticulum and destined for the secretory pathway.
14. Describe processing, sorting and trafficking of proteins as they progress through the secretory pathway and explain how a cell recognizes proteins that are destined for degradation.
15. Describe the organization and function of cytoskeletal elements.
16. Describe apical and basolateral specializations, including location and function of each.
17. Describe the specialized junctions involved in cell communication, cell-to-cell adhesion and cell-to-matrix interactions.
18. Explain how various signals are transmitted, regulated, and terminated via biochemical machinery and become familiar with major signaling pathways.
19. Explain the components and mechanisms of the cell cycle, including checkpoints and regulation of progression through the stages, and recognize the components and regulation of apoptosis.
20. Describe the movement of ions during an action potential.

**Block 4**

1. Integrate general pathology, immunology, and pharmacology principles.
2. Build a repository of knowledge scientifically and clinically relevant to medical practice.
3. Obtain knowledge, skills, and experiences necessary for your future success as a health professional.
4. Develop and strengthen critical thinking and problem solving skills.
5. Promote the development of self-directed learning, group learning, and life-long learning skills.

**Block 5**

1. Integrate principles of microbial structure, physiology, genetics, pathogenesis, host response to infection, epidemiology of infectious diseases, diagnostic microbiology, vaccines, pharmacology of antimicrobial agents, and antimicrobial resistance. Microbes that will be studied include bacteria, viruses, fungi, and eukaryotic parasites.
2. Build a repository of knowledge scientifically and clinically relevant to medical practice
3. Obtain knowledge, skills, and experiences necessary for your future success as a health professional
4. Develop and strengthen critical thinking and problem solving skills
5. Promote the development of self-directed learning, group learning, and life-long learning skills

**Cardiovascular**

1. Describe the anatomy of the cardiovascular system and understand the function of the various components.
2. Draw or trace the normal transit of blood through the cardiovascular system, labeling typical pressures at each point.
3. Draw the normal conduction pathway of the heart and correlate that conduction with the ECG waveform.
4. Describe the factors that control the cardiovascular system's response to changes in demand.
5. Recognize the common imaging modalities used in cardiovascular medicine and list the uses, benefits and limitations of each.
6. For each major disease state discussed, describe the epidemiology and typical presenting features of that disease or condition.
7. Link the pathophysiologic features of a disease state with the treatments discussed (e.g. why are ACE inhibitors beneficial in heart failure?).
8. Identify common pathologic conditions from either specimens or imaging studies demonstrating the pathology.
9. List the common risk factors for atherosclerotic disease and describe appropriate therapies or lifestyle changes to deal with each.

## **Pulmonary**

1. Students will be able to identify normal histologic structures at various levels of the respiratory system from the upper airway down to the alveolar spaces.
2. Students will be able to identify anatomic structures of the respiratory system, their relationships to each other, and functional deficits associated with abnormalities of these structures.
3. Students will be able to identify key components of the history in patients with respiratory symptoms and explain the meaning of abnormal signs from the physical exam in order to develop differential diagnoses and to explain the underlying pathophysiology of the disease process(es).
4. Students will develop a clear understanding of normal respiratory physiology including the seven key difficult concepts. The students will then be able to apply their knowledge of basic physiology to understand the pathophysiologic mechanisms of disease states of the respiratory system.
5. Students will be able to identify disease states from examining gross anatomic sections, as well as, histologic/microbiologic slides. Students should be able to:
  - a. Define the entity or process
  - b. Understand the histologic hallmark of the disease
  - c. Identify the functional deficit created by the entity or process
  - d. Predict the temporal profile (timeline) this process will have
6. Students will understand various disease processes of the respiratory system: (obstructive lung diseases, restrictive lung diseases, vascular diseases, sleep disorders, pleural diseases, neoplastic diseases, and infectious diseases). Students should be able to:
  - a. Identify typical symptoms associated with each pathologic process
  - b. Identify typical signs of the process on physical exam
  - c. Be able to identify basic radiographic findings for the disease state
  - d. Explain the underlying pathophysiology/pathology of the disease
  - e. Formulate initial diagnostic/treatment plans for the disease
7. Students will be able to interpret the various diagnostic tests used in Pulmonary Medicine including:
  - a. Pulmonary function tests
  - b. Chest radiography
  - c. Arterial blood gases for analysis of acid/base status & alveolar-arterial oxygen
8. Students will be able to integrate information from prior course modules (Fundamentals, Cardiovascular Module) and the ongoing Introduction to Clinical Medicine course with respiratory medicine to critically assess clinical case presentations

9. Students will demonstrate professional behavior, interprofessional collaboration, history and physical exam techniques, patient and family education skills during a simulated patient experience.
10. Students will understand the importance and gain knowledge in preventive health care regarding smoking cessation.

### **Gastrointestinal**

1. Describe in your own words the normal function of each part of the GI tract at the tissue, cellular and molecular levels.
2. Explain causes and identify symptoms associated with the GI pathologies discussed during the module or covered in non-classroom assignments.
3. Compare and contrast pathological states with normal gut function.
4. Analyze and interpret laboratory test results and diagnostic images of the gut.
5. Explain how GI related conditions impact whole body homeostasis and functioning of other organ systems.
6. Propose strategies for diagnosing and treating GI related conditions in patients at all stages of life.
7. Identify and discuss nutritional, psychosocial and economic factors that influence and impinge upon GI related health care at all stages of life.

### **Renal**

1. Identify the functional anatomy and structure of the urinary system and to apply the knowledge in understanding physiology and pathology
2. Recall the embryology and development of the urinary system and to apply the knowledge in understanding associated developmental defects
3. Explain important histological features of the kidney, especially as they apply to function
4. Analyze core content in understanding normal and abnormal urinary system function particularly in the areas of genetics, cell biology, physiology, pharmacology, and immunology
5. Assess body fluid homeostasis and to analyze associated disturbances
6. Correlate the fundamentals of kidney physiology with the regulation of fluid, electrolyte, acid-base, and blood pressure homeostasis in an integrative fashion with other organ systems
7. Assess and integrate clinical history and physical examination data for the diagnosis and treatment of water, electrolyte, and acid-base homeostasis disorders
8. Assess and integrate histology, clinical history, and physical examination data for the diagnosis and treatment of urinary system pathologies
9. Identify abnormal urinary system processes associated with changes in life style (e.g., diet and environment) or life cycle (e.g., aging and pregnancy)
10. Appraise the epidemiology of kidney disease

## **Neurosciences**

1. Identify the basic cellular and molecular processes of neurons and glia.
2. Describe the functional organization of the pathways in the nervous system that mediate sensory input, central integration and decision making, and motor output.
3. Form an integrated understanding of normal and abnormal behavior based on molecular, cellular and systems neuroscience.
4. Recognize the genetic and environmental mechanisms that control the normal development of the nervous system and regulate the response of the nervous system to injury or disease.
5. Identify the anatomical site and physiological deficit based on a set of signs and symptoms. Predict the functional deficit(s) given a specific neuroanatomical lesion.
6. Describe the behavioral manifestations of psychiatric disorders and understand their anatomical and neurochemical basis.
7. Perform a differential diagnosis of neurological and psychiatric disorders and plan intervention / treatment strategies (including pharmacological approaches).
8. Describe the three dimensional anatomy of the neck, cranial cavity, face and orbit. Identify key anatomical features of each.
9. Describe the pharmacology of drugs used in the treatment of diseases of the nervous system, including their major mechanism, major adverse effects, and key drug interactions.
10. Identify and describe brain pathology as it relates to damage and disease.
11. Understand how the scientific method is used to evaluate and treat nervous system diseases and to solve research questions.
12. Foster and develop individual and team-based problem-solving, information assimilation and presentation skills.
13. Describe the behavioral stages of human development.
14. Understand the cultural and societal influences and impact on disease.

## **Musculoskeletal and Skin**

1. Identify the muscular, ligamentous and osseous structures governing movement and stability of the spine and extremities.
2. Understand basic skin structure, microanatomy, and physiology
3. Understand the biochemical and physiologic mechanisms regulating the normal contraction and relaxation of skeletal muscle.
4. Identify the underlying disease mechanisms and clinical presentations of patients with inherited and acquired metabolic disorders impacting skeletal muscle, joint disease, and integrity of bone.
5. Understand the biochemical and physiologic basis of bone development, remodeling, and the response to fracture and the disorders associated with abnormal bone remodeling, mineralization, and growth.

6. Recognize abnormal ranges of peripheral and axial joint motion and understand the mechanisms whereby inflammatory and degenerative disorders affect joint function.
7. Develop a systematic approach to describing skin eruptions and communicate skin examination findings using appropriate dermatologic terms
8. Differentiate infectious, nutritional, phototoxic, inflammatory and neoplastic skin conditions.
9. Understand the mechanisms whereby altered regulation of immunologic function results in systemic inflammatory and vascular disorders associated with musculoskeletal and skin disease.
10. Understand the mechanisms of action and toxicities of medications employed in the management of patients with musculoskeletal, articular, and cutaneous disorders

### **Endocrine**

1. The students will have acquired knowledge of the principles and mechanisms of neuroendocrine and endocrine structure and function.
2. The students will develop an integrative approach to learning that addresses
  - (a) endocrine glands and their hormones
  - (b) the hormones' sites of biosynthesis, action, and metabolism
  - (c) their impact on overall body physiology and metabolism; and
  - (d) disease states resulting from various endocrinopathies.
3. The students will have an understanding of physiology and pathophysiology of the endocrine system as it affects development, growth, metabolism and reproduction.
4. The students will have acquired the skills to utilize the knowledge of basic physiology to explain normal and abnormal neuroendocrine and endocrine function and to apply this information to recognizing, understanding, and addressing clinical endocrine disorders.

### **Reproductive**

1. Identify the anatomy of the male and female pelvis and correlate anatomic structures with corresponding radiologic images. Be able to identify anatomic landmarks and organs/structures in a dissected pelvis.
2. Describe normal and abnormal histology of the male and female reproductive organs.
3. Describe normal male and female development, causes of abnormal development, and the implications of abnormal development.
4. Identify benign and malignant lesions of the following organs:  
Female reproductive organs:
  - a. Uterus
  - b. Cervix
  - c. Vagina
  - d. Ovary
  - e. Fallopian tube

Male reproductive organs:

- a. Testis
- b. Epididymis
- c. Prostate
- d. Penis

Explain the differential diagnosis based on the clinical symptoms of a patient with diseases that affect one of the listed organs. Discuss the treatment and prognosis of these diseases.

5. Discuss the risk factors, pathophysiology, diagnostic methods, and treatments for the sexually transmitted diseases (STD).
6. Describe the anatomy and lymphatic drainage of the breast. Discuss the common benign and malignant breast diseases. Be able to correlate radiologic images of the breast with the disease. Discuss the treatment and prognosis.
7. Describe the normal menstrual cycle and the causes of menstrual disorders and amenorrhea. Be able to discuss the differential diagnosis and to review therapeutic options.
8. Discuss physiological changes across the menopausal transition and their treatment.
9. Describe normal sexual function and the major causes of sexual dysfunction in both the male and female.
10. Discuss the mechanism of action, failure rate, and contraindications of the different types of contraception.
11. Discuss the physiology and pathophysiology of pregnancy, labor and delivery, and lactation.
12. Discuss the ethical issues associated with abortion.
13. Discuss the causes, diagnostic methods, and the treatment of early pregnancy failure.
14. Describe normal and abnormal development of the placenta and of placental tumors.
15. Describe the process of normal labor and delivery.
16. Discuss maternal physiological changes and common complications of pregnancy and delivery.

### **Hematology/Oncology**

1. Form an integrated understanding of the physiology, biochemistry of hematopoiesis and production/function of hematopoietic cells (erythrocytes, leukocytes, and platelets)
2. Recognize peripheral blood and bone marrow cellular morphology.
3. Describe the production and function of the coagulation and fibrinolytic processes.
4. Understand nutritional factors effecting hematopoiesis
5. Understand the pathophysiologic basis of pediatric / adult benign and malignant hematologic disorders and be able to create a differential diagnosis and plan intervention / treatment strategies.
6. Understand basic principles of chemotherapy, radiation, tumor board consultation, anticoagulants and pharmacogenomics.
7. Understand basic imaging modalities in diagnosis of hematopoietic tumors.

8. Understand basic nutritional factors in cancer prevention and support.
9. Describe cancer survivorship, late effects and supportive care of older cancer patients.
10. Understand and describe ethical issues and supportive care of cancer patients.

### **ICM-1**

1. Demonstrate effective communication skills with patients and colleagues
2. Demonstrate comfort with patient interactions
3. Perform a patient interview and a basic physical examination following the expected format
4. Perform an oral case presentation and create a patient write-up following the standard format
5. Demonstrate the application of clinical reasoning skills and basic science knowledge to evaluating actual patients
6. Demonstrate the professional behavior expected of physicians
7. Demonstrate self-directed learning and self-assessment

### **ACTIVITIES DESIGNED TO ACHIEVE LEARNING OBJECTIVES**

#### **Professionalism**

- Participated in activities designed to promote self reflection and improvement (MEDMap reflections)
- Participated in activities designed to enhance your ability to function as a member of a team (Small Group Meetings, Kaizen quiz game)
- Developed knowledge of the professional behavior expected of physicians (MEDMap reflections)
- Exhibited professional behavior

#### **Communication Skills**

- Demonstrated patient centered interviewing and communication (Preceptor led SGMs, Lecture, OSCE)
- Developed and refined your communication skills sufficient to engage patients, gather relevant information and establish and maintain effective rapport (Preceptor led SGMs)
- Learned about and described challenges and techniques for communicating with culturally diverse patients (Preceptor led SGMs)
- Learned about and practiced higher order interviewing skills such as dealing with anger and emotions and inquiring about sensitive personal information (Preceptor led SGMs)
- Learned about and practiced the basic skills of oral case presentation and written communication (Preceptor led SGMs, Lecture)
- Demonstrated proper communication and collaboration with others in all professional settings (Preceptor led SGMs, OSCE, HTPs, Kaizen quiz game)
- Enhanced and refined your communication skills with colleagues sufficient to engage them, share relevant information and provide valuable constructive criticism (Preceptor led SGMs)

**Physical Examination Skills**

- Learned and practiced the basic physical exam techniques that are relevant to each organ system (Lectures, Demo/Practice sessions, recorded physical examinations by Dr. Stan Massie, PEPs, Preceptor led SGMs)
- Learned to properly report (oral presentations) and document (write-ups) both normal and abnormal physical findings, following a standard format

**Application of Clinical Skills and Knowledge**

- Answered weekly questions on key concepts related to clinical skills from assigned readings and small group meetings (Kaizen quiz game)
- Practiced interviewing skills on real patients while being observed directly by your preceptor and peers (Preceptor led SGMs)
- Integrated basic science knowledge with knowledge of clinical skills and apply them to evaluating real patients (Preceptor led SGMs)
- Learned and practiced a systematic approach to investigating common symptoms for each organ system. (CSTA led Symptom Based History Taking SGMs)

**Clinical Reasoning**

- Learned and practiced the basics of clinical reasoning and begun to apply them to the evaluation of patients (Preceptor led SGMs, Kaizen quiz game)
- Demonstrated the application of clinical reasoning skills in the evaluation of real patients by following a standard format for the analysis section of patient write-ups (Preceptor led SGMs)
- Progressively developed clinical reasoning skills in the context of analysis of patient evaluations, presentations and write-ups (Preceptor led SGMs)
- Pursued clinical questions or perceived knowledge gaps related to clinical encounters (Topic Reviews), encouraging students' acquisition of skills necessary for lifelong learning. (Preceptor led SGMs)

**ICM-2**

1. Demonstrate effective communication skills with patients and colleagues
2. Demonstrate comfort with patient interactions and effective techniques to establish and maintain rapport
3. Perform a patient interview and a basic physical examination following the expected format
4. Perform an oral case presentation and create a patient write-up following the standard format
5. Demonstrate the application of clinical reasoning skills and basic science knowledge to evaluating actual patients
6. Demonstrate the professional behavior expected of physicians
7. Demonstrate self-directed learning and self-assessment

**ACTIVITIES DESIGNED TO ACHIEVE LEARNING OBJECTIVES****Professionalism**

- Participated in activities designed to promote self-reflection and improvement (MEDMap reflections)
- Participated in activities designed to enhance your ability to function as a member of a team (Small Group Meetings, Kaizen quiz game)
- Developed knowledge of the professional behavior expected of physicians (MEDMap reflection)
- Exhibited professional behavior (all)

**Communication Skills**

- Enhanced and refined your communication skills sufficient to engage patients, gather relevant information and establish and maintain effective rapport (Preceptor led SGMs, OSCE)
- Learned about and described challenges and techniques for communicating with culturally diverse patients (Preceptor led SGMs)
- Learned about and practiced higher order interviewing skills such as dealing with anger and emotions and inquiring about sensitive personal information (Preceptor led SGMs)
- Enhanced and refined your skills of oral case presentation and written communication/patient write-ups (Preceptor led SGMs)
- Demonstrated proper communication and collaboration with others in all professional settings (Preceptor led SGMs, OSCE, Kaizen quiz game)
- Enhanced and refined your communication skills with colleagues sufficient to engage them, share relevant information and teach them about clinical skills techniques or topics of interest to your group (Topic Reviews, Student Teaching portion of SGMs)

**Physical Examination**

- Learned and practiced the basic physical exam techniques that are relevant to each of the following organ systems
  - Musculoskeletal and Neurologic (Lectures, Demo/Practice sessions, PEPs, Preceptor led SGMs)
  - Male GU, Prostate and Rectal exams (PEPs)
  - Female Breast and Pelvic exams (PEPs)
- Learned to integrate the physical exam for each organ system into a comprehensive PE (Preceptor led SGMs)
- Practiced and refined the ability to perform a comprehensive physical exam, including an organized flow of the exam, proper positioning of the patient and proper techniques (Preceptor led SGMs, Guided H&P)
- Begun to interpret physical findings by distinguishing between normal and abnormal findings (Preceptor led SGMs)

- Learned to properly report (oral presentations) and document (write-ups) both normal and abnormal physical findings, following a standard format (Preceptor led SGMs)

### **Application of Clinical Skills and Knowledge**

- Answered weekly questions on key concepts related to clinical skills from assigned readings and small group meetings (Kaizen quiz game)
- Practiced interviewing and physical examination skills on real patients while being observed directly by your preceptor and peers (Preceptor led SGMs)
- Integrate basic science knowledge with knowledge of clinical skills and applied them to evaluating real patients (Preceptor led SGMs, write-ups and presentations)
- Learned and practiced a systematic approach to investigating common symptoms for the musculoskeletal and neurological organ systems (CSTA led Symptom Based History Taking sessions)

### **Clinical Reasoning**

- Learned and practiced the basics of clinical reasoning and begun to apply them to the evaluation of patients (Preceptor led SGMs, Kaizen quiz game)
- Demonstrated the application of clinical reasoning skills in the evaluation of real patients by following a standard format for the analysis section of patient write-ups (Preceptor led SGMs)
- Progressively developed clinical reasoning skills in the context of analysis of patient evaluations, presentations and write-ups (Preceptor led SGMs)
- Pursued clinical questions or perceived knowledge gaps related to clinical encounters (Topic Reviews), encouraging students' acquisition of skills necessary for lifelong learning. (Preceptor led SGMs)

### **Evidence-Based Medicine**

- Describe biases that can affect the results of observational, diagnostic, screening, and therapeutic studies,
- Understand basics of statistical hypothesis testing,
- Correctly interpret results of statistical testing,
- Choose among diagnostic tests based on the patient's pretest probability of disease and the operating characteristics of the tests,
- Understand the principles of screening and how it differs from diagnosis,
- Correctly calculate and interpret sensitivity, specificity, post-test probability, and likelihood ratios,
- Correctly calculate and interpret measures of benefit and harm of treatments and exposures, and
- Understand confounding and ways that it can be controlled and accounted for in the design and analysis phases of a study.

## **Learning Communities**

### **Wellness**

- Use self-awareness of knowledge, skills and emotional limitations to engage in appropriate help-seeking behaviors
- Demonstrate healthy coping mechanisms to respond to stress
- Manage conflict between personal and professional responsibilities
- Practice flexibility and maturity in adjusting to change with the capacity to alter behavior

### **Professionalism**

- Demonstrate trustworthiness that makes colleagues feel secure when one is responsible for the care of patients
- Provide leadership skills that enhance team functioning, the learning environment, and/or the health care delivery system
- Demonstrate self-confidence that puts patients, families, and members of the health care team at ease
- Recognize that ambiguity is part of clinical health care and respond by utilizing appropriate resources in dealing with uncertainty
- Demonstrate compassion, integrity, and respect for others
- Demonstrate responsiveness to patient needs that supersedes self-interest
- Demonstrate respect for patient privacy and autonomy
- Demonstrate accountability to patients, society and the profession
- Demonstrate sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation
- Identify strengths, deficiencies, and limits in one's knowledge and expertise
- Set learning and improvement goals
- Identify and perform learning activities that address one's gaps in knowledge, skills or attitudes
- Incorporate feedback into daily practice

### **Communication**

- Communicate effectively with patients, families, and the public, as appropriate, across a broad range of socioeconomic and cultural backgrounds
- Communicate effectively with colleagues within one's profession or specialty, other health professionals, and health related agencies
- Work effectively with others as a member or leader of a health care team or other professional group
- Demonstrate sensitivity, honesty, and compassion in difficult conversations
- Demonstrate insight and understanding about emotions and human responses to emotions that allow one to develop and manage interpersonal interactions

**Ethics**

- Describe basic principles of professionalism, autonomy, confidentiality, and end of life care
- Demonstrate a commitment to ethical principles pertaining to provision or withholding of care, confidentiality, informed consent, and business practices, including compliance with relevant laws, policies, and regulations