Health, Illness, and Disease Overall Learning Objectives

By the end of the segment, the student will be able to:

Leaning Objectives	**WCM Core Competencies**	**Assessment Method(s)**
Explain the normal structure, histology, and physiology of each organ system.	K-1	quiz, TJE, faculty/resident rating
Describe the major diseases affecting each organ system.	K-2	quiz, TJE, faculty/resident rating
Outline the indications for and interpretation of key diagnostic and imaging tests used in the identification and management of disease.	K-2; K-3; K-4	quiz, TJE, faculty/resident rating
Explain primary and secondary prevention of common diseases.	K-3	quiz, paper/essay
List common infectious organisms and recognize their disease syndromes.	K-2; K-3	quiz, TJE, faculty/resident rating
Outline core treatment options for common diseases.	K-4	quiz, TJE, faculty/resident rating
Describe the basic features of the US healthcare and reimbursement system.	HCS-1	quiz, faculty/resident rating
Practice principles of ethics in medical care and research.	P-2	quiz, paper/essay, faculty/resident rating
Describe fundamental principles of the life cycle and how they affect function, pathology, and treatment.	K-1	quiz
Perform a focused history and physical examination for each organ system.	PC-1	faculty/resident rating, OSCE
Conduct a comprehensive history and physical examination.	PC-1	faculty/resident rating, OSCE
Interpret major symptoms and signs in clinical evaluation.	K-2	quiz, TJE, faculty/resident rating
Perform a basic differential diagnosis for problems affecting each organ system.	K-2	quiz, TJE, faculty/resident rating
Demonstrate clinical reasoning.	K-2	quiz, TJE, faculty/resident rating
Critically appraise scientific and clinical research and apply principles of evidence-based medicine.	PBLI-1; PBLI-2; PBLI-3; PBLI-4; S-1	quiz, paper/essay, faculty/resident rating
Define "healthcare quality" and "patient safety" and discuss their relationship to healthcare delivery, medical error, and improvement.	HCS-1; HCS-2	quiz
Respect the diverse views and rights of students and faculty in small groups/teams.	P-1	faculty/resident rating
Exemplify professional attributes, such as altruism, patient confidentiality, personal responsibility, and accountability to others.	ICS-2; P-1	faculty/resident rating

Demonstrate clinical skills necessary for starting clerkships.	PC-1; PC-2; PC-3	clinical procedure assessment
Partner with patients to provide a clinical experience that will complement and enrich learning in foundational sciences, clinical medicine, and healthcare systems.	ICS-1; ICS-2; P-1; PBLI-4	oral presentation, case write-up
Demonstrate humanistic and culturally sensitive medical care.	P-2; P-3	faculty/resident rating
Manage continuity of care and longitudinal healthcare.	P-1; P-2; P-3	faculty/resident rating

Cardiovascular System

The first month of Health, Illness, and Disease focuses on the cardiovascular system and explores the normal physiology and functioning of the heart and vascular system and the pathologic diseases that can affect them. You will learn about the electrical activity of the heart, the coupling of this activity to contraction of the heart, and the blood supply and valves that keep this pump working effectively. You will learn how the heart is studied through different imaging modalities, as well as the basic skills of interpreting core elements of a 12-lead electrocardiogram. In PBL sessions, small groups, and labs, you will discuss the elements of a cardiac examination and explore how to diagnose patients with arrhythmias, ischemic heart disease, valvular heart disease, and congestive heart failure. The development of the heart and surgical and interventional techniques that treat various forms of cardiovascular disease will also be discussed.

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Textbook:
L. Lilly, *Pathophysiology of Heart Disease*, 5th ed., Lippincott, Williams & Wilkins (Required)

Schedule

Cardiovascular Unit Leaning Objectives	**WCM Core Competencies**
Identify the four phases of the action potential, the actions of ion channels during each phase, and the effects of different pharmacologic agents on the action potential	K1
Compare and contrast the action potential in ventricular cells with cells with intrinsic "pacemaker" ability	K1
Identify the elements of a sarcomere and describe the mechanisms underlying excitation-contraction coupling in cardiac myocytes	K1
Describe the normal sequence of events in the electrical depolarization and repolarization of the heart and identify their representation on an electrocardiographic lead	K1
Recognize tachy- and bradyarrhythmias and differentiate between them based upon clinical, electrocardiographic, and mechanistic differences	K2
Describe the factors that determine cardiac output as well as the elements involved in regulating blood pressure	K1
Identify the microanatomic features of cardiac muscle, arteries, veins and lymphatic vessels and compare and contrast these to diseased states such as atherosclerosis and ischemic heart disease	K1
Compare and contrast the clinical and pathophysiologic features of different forms of ischemic heart disease, including acute coronary syndromes and understand the mechanisms of action behind pharmacologic and mechanical treatments for these diseases	K2, K4

Compare and contrast different forms of valvular heart disease and cardiomyopathies, including their pathologic features, hemodynamic effects on the heart, and their natural history	K2, K4
Analyze the elements of a pressure volume loop and compare and contrast the effects of adjusting preload, afterload, contractility, and compliance on the pressure volume loop	K1
Describe the pathologic, pathophysiologic, and clinical features of heart failure and be able to compare and contrast the different disease states that can lead to heart failure	K2
Describe the different pharmacologic and device-based therapies available to treat heart failure and identify their mechanisms of action and the appropriate patients in whom these treatments are warranted	K4
Describe the normal embryologic development of the heart and the pathophysiologic and pathologic findings of various forms of congenital heart disease	K1, K2
Describe the salient features of infective endocarditis including diagnostic criteria, micro-organisms typically involved, and pathologic findings, as well as the possible effects on various aspects of the heart including the conduction system, valves, and hemodynamics	K2
Recognize the risks and benefits of surgical or percutaneous interventions for patients with valvular heart disease and coronary artery disease	K4
Analyze a 12-lead electrocardiogram to determine the elements of rate, axis, intervals, and rhythm and assemble a basic interpretation	K1, K2
Recognize the origins of normal and abnormal heart sounds (including clicks, rubs, gallops, snaps, and murmurs) and recall the elements of a comprehensive examination of the cardiovascular system	K1, K2
Practice obtaining blood pressure and a 12 lead electrocardiogram	PC2
Refine interviewing skills to be able to conduct focused interviews on patients with arrhythmias, ischemic heart disease, valvular heart disease, and heart failure	PC1
Assess the quality of a systematic review by analyzing it according to appropriate validity criteria to determine whether the results are valid	PC1
Demonstrate professionalism by completing the required online modules in a timely fashion to better understand core concepts and enhance the shared learning experience opportunities	P1
Recognize the uncertainty involved in diagnostic testing for coronary artery disease and how this can affect the interpretation of the results and the consequences for the patient	PBLI3
Recognize the limitations of medical care in the treatment of advanced heart failure and the importance of addressing palliative care in appropriate cases	K4, P2
Respect the views, time, and participatory rights of classmates and faculty in small and large group teaching sessions	ICS2

Pulmonary System

The second unit of *Health Illness and Disease* is The Pulmonary system, which focuses on the structure and function of the lung in health and disease. The section begins with the basic physiology of the lung, including development and early origins of lung disease, and builds on this foundation to study the pharmacology and lung pathology in obstructive diseases, interstitial lung diseases, vascular diseases, pneumonia, and lung cancer.

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Textbook:
J. West, *Pulmonary Pathophysiology*, 8th ed., Lippincott, Williams & Wilkins (Required)

Schedule

Pulmonary Unit Learning Objectives	**WCM Core Competencies**
Summarize the normal function of the pulmonary system.	K1
Explain the development of the lungs, identify physiological functions and mechanisms with emphasis on homeostasis and structure-function relationships, and relate these functions to pathophysiological abnormalities in the lung.	K1, K2
Describe the pathological processes that can affect the pulmonary system, including genetic abnormalities, ischemia, inflammation, neoplasia, anatomical derangement, and autoimmune attack.	K1, K2
Discuss the impact of infectious disease pathology on the function of the lung.	K2
Explain the pathophysiology of major diseases and abnormal conditions that affect the lung.	K2
Discuss how the prevalence and incidence of disease vary among diverse populations.	K3
Identify treatments and medications that ameliorate the disease process.	K4
Generate a wide differential diagnosis based on data from the history and physical examination as presented in case histories.	K2
Select pertinent diagnostic tests that would be useful to define the pathophysiology of the presumptive disease.	K2
Interpret diagnostic test results and laboratory data with respect to the pathophysiological process.	K2
Search, retrieve, and critically analyze medical information from various evidence-based sources.	PBLI1, PBLI2, PBLI3
Analyze, distill, and synthesize clinical and scientific information collaboratively as a team – from generating a hypothesis about a medical problem, exploring these problems, and reaching a reasoned conclusion.	PBLI1, PBLI2, PBLI3, P1, ISC2, K2

Demonstrate enhanced communication and interpersonal skills with patients and with colleagues in a small group setting.	P1, ISC1
Respect the views, time, and participatory rights of classmates and faculty in small and large group teaching settings	P1

Gastrointestinal System

The Gastrointestinal unit of the *Health, Illness and Disease* segment will cover the normal structure and function of the GI system, as well as its major disease states and pathologies. The unit is built around nine clinical cases, each of which emphasizes one aspect of gastroenterology. These cases serve as a scaffold for discussions of physiology, histology, pathophysiology, pathology, and pharmacology of the relevant organs. We will also illustrate pertinent imaging modalities and introduce the abdominal examination. Social and ethical issues will also be discussed in relation to the unit.

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Textbook:

M. Feldman, *Sleisenger & Fordtran's Gastrointestinal and Liver Disease*, 9th ed., Saunders/Elsevier (Recommended)

Schedule

Gastrointestinal Unit Learning Objective	**WCM Core Competencies**
Explain the basic anatomy of the gastrointestinal system (i.e., esophagus, stomach, small intestine, colon, liver, gallbladder, and pancreas)	K1
Describe the normal histology of the gastrointestinal system (i.e., esophagus, stomach, small intestine, colon, liver, gallbladder, and pancreas)	K1
Explain the normal physiological function of the gastrointestinal system, specifically exocrine and endocrine functions, digestion and absorption, motility, and immunology	K1
Describe the pathophysiology of diseases and disorders that affect the GI system, including genetic abnormalities, infection, autoimmunity, inflammation, ischemia, dysmotility, obstruction, and malignancy	K2
Describe the clinical presentation of diseases and disorders that affect the GI system, including genetic abnormalities, infection, autoimmunity, inflammation, ischemia, dysmotility, obstruction, and malignancy	K2
Identify and describe the evaluation of gastrointestinal diseases, including laboratory, imaging/radiologic, endoscopic, and surgical evaluation	K2
List and describe the therapeutic options for both common and rare gastrointestinal diseases, including medication-based, endoscopic, surgical, and microbiologic	K4
Conduct a workup and treatment of a gastrointestinal disorder based on a clinical case presentation	PC-1, PC-3
Apply histopathological data into the diagnosis of a clinical presentation	K2, PC-1

Kidney

The Kidney unit is divided into three sections, partitioned roughly into the three weeks of the course. The first section is heavily anatomical, including urology, urinary tract infections, renal pathology (including glomerular pathology and renal tumors), and disorders of glomerular function (proteinuria and acute renal failure). The second section is anchored to kidney transport processes (normal and abnormal): Na+ (as it relates to hypertension and edema), K+, acid-base (including the interplay of respiratory and metabolic disturbances), water metabolism, and renal calcium handling (specifically kidney stone formation). This section will introduce the clinical approach to diagnosis and treatment of fluid and electrolyte disorders. The third section will include renal development and pediatric nephrology, but the major focus will be the failing kidney and manifestations and treatment of chronic renal failure (dialysis and transplant). In this context, sessions will be devoted to examining ethical issues inherent in kidney donation, and in the decision to start or terminate dialysis.

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Textbook:
B. Denker & H. Rennke, *Renal Pathophysiology: The Essentials*, 4th ed., Lippincott, Williams & Wilkins (Required)

Schedule

Kidney Unit Learning Objective	**WCM Core Competencies**
Describe normal kidney structure and function.	K1
Describe important pathological processes... genetic abnormalities, ischemia, inflammation, neoplasia, anatomical derangement, autoimmune attack, and infection.	K2
Describe the impact of organ pathology on organ function, i.e. pathophysiology.	K2
Starting from common clinical data, delineate functional abnormalities that may have led to those results.	K2, PBLI3
For a given a functional abnormality, identify diagnostic tests to define the pathophysiology and ultimately identify the underlying pathological process.	K2
Identify treatments and medications, which could ameliorate the disease process.	K4
Articulate ethical issues that arise in the care of patients with end-stage renal disease	PBLI3

Endocrine

Endocrinology is the study of hormones, the glands that secrete them, and their actions throughout the body. In the Endocrine Unit of HID, we will focus on the normal structure and function of the various glands, including thyroid, pituitary, adrenal, and parathyroids, as well as disease states arising from abnormal glandular function, including diabetes mellitus and metabolic bone disease. Students will become comfortable with the evaluation and management of various endocrine diseases. Teaching modalities will include lectures, small group case discussions, patient panels, and laboratories.

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Textbook:
S. Melmed & K. Polonsky, *Williams Textbook of Endocrinology*, 12th ed., Elsevier (Recommended)

Schedule

Endocrine Unit Learning Objective	**WCM Core Competencies**
Describe the physiology of normal glucose metabolism.	K-1
Explain the pathophysiology and management of Type 1 diabetes.	K-2,4
Explain the pathophysiology and management of Type 2 diabetes.	K-2,3,4
Discuss the medical complications related to diabetes mellitus.	K-2
Explain the physiology of normal and abnormal thyroid function.	K-1,2
Distinguish between normal thyroid histology and thyroid pathology (including thyroid cancer).	K-1,2
Explain the evaluation and management of hypothyroid and hyperthyroid conditions.	K-2,4
Discuss the hypothalamic-pituitary-end organ axes and corresponding hormonal feedback loops.	K-1
Describe the evaluation and management of diseases of the anterior and posterior pituitary.	K-2,4
Explain the physiology of normal and abnormal adrenal function.	K-1
Recognize normal adrenal histology and adrenal pathology.	K-1,2
Explain the evaluation and management of adrenal insufficiency and hypercortisolism.	K-2,4
Describe the physiology of parathyroid and calcium metabolism.	K-1
Discuss the evaluation and management of metabolic bone disease, including osteoporosis.	K-2,4
Demonstrate the ability to manage diabetes mellitus with oral agents and/or insulin.	K-4
Effectively perform the physical examination of the thyroid gland.	PC-1
Interpret thyroid function tests.	K-2

Demonstrate the work-up of a thyroid nodule.	K-2
Demonstrate the work-up of an adrenal nodule.	K-2
Utilize various imaging modalities to identify the radiologic manifestations of endocrine disease.	K-2
Participate in diabetes and adrenal patient panel discussions.	ICS-1; P-1,2
Appreciate the impact of living with a chronic condition, such as diabetes.	P-1; ICS-1
Prepare for and actively participate in small group case discussions.	PBLI-1,3,4; K-1,2,4

Reproduction

In the HID Reproduction Unit, students will acquire a deep understanding of the anatomy, physiology, and pathophysiology of the male and female reproductive systems. The Unit logically follows the time-line of male and female development. It begins with an exploration of the differential embryonic origins of the male and female genital tracts. Male and female pubertal milestones and the underlying physiology and pathophysiology of the pubertal transition are presented, along with male and female disorders of sexual development. Students then delve into male reproductive physiology, with a focus on spermatogenesis and the hypothalamic-pituitary-testicular access. Students will gain an understanding of male sexual functioning and pharmacologic agents affecting male reproductive functioning. Benign and malignant disorders of the prostate are examined. Histologic and pathologic sections of male GU organs are presented in lecture and small group sessions.
The second half of the Unit focuses on the female reproductive system. Students gain an intricate knowledge of the female menstrual cycle and the nuances of the hypothalamic-pituitary-ovarian axis, along with reasons for HPO axis malfunction resulting in amenorrhea. This discussion is punctuated by a detailed overview of menopause and the physiologic processes underlying the menopausal transition. Fertility and infertility are examined, leading into a detailed discussion of healthy pregnancy and disorders unique to pregnancy. Pharmaceuticals commonly employed and/or avoided in pregnancy are also examined. Histologic sections of the female reproductive tissues in health and disease are presented and will be put in context by presentation of the most common female reproductive cancers. Moreover, the various radiologic imaging modalities specific to the pelvis are reviewed. Human reproduction, in all aspects, is a truly fascinating area of study, and we look forward to sharing our field with you.

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David Reichman, MD; der2005@med.cornell.edu; 646-962-7499

Textbook:
L. Speroff & M. Fritz, *Clinical Gynecologic Endocrinology and Infertility*, 8th ed., Lippincott, Williams & Wilkins (Required)

Schedule

Reproduction Unit Learning Objectives	**WCM Core Competencies**
Explain the differential embryonic origins of the male and female internal/external genitalia	K1
Describe the process of spermatogenesis in terms of the hypothalamic/pituitary inputs orchestrating gametogenesis and the cellular processes within the testicle governing differentiation and maturation of spermatozoa	K1
Discuss the physiologic functioning of the prostate and delineate the pathophysiology underlying malignancies of the prostate	K1, K2
Elaborate on male sexual functioning as it relates to parasympathetic and sympathetic input	K1, K2
Identify histologic sections of male GU structures in health and disease	K1, K2

List the normal steps of puberty in boys and girls and discuss the somatic and central signals governing onset of the pubertal transition	K1
Explain the etiology of the various disorders of sexual development and identify the mechanisms underlying under and over-virilization	K2
Illustrate the hypothalamic and pituitary inputs governing the menstrual cycle and demonstrate how the hormonal inputs from the brain are coordinated with follicular development, ovulation, and luteal functioning within the ovary	K1
Discuss the most common causes of secondary amenorrhea and be able to differentiate between the mechanisms and treatment of PCOS and hypothalamic amenorrhea	K2, K3, K4
Describe the hormonal dynamics of the menopausal transition and elaborate on the risks and benefits of hormone replacement therapy	K1, K4
Discuss the steroid precursors of sex steroid hormones and the site-specific differential enzymatic functioning of granulosa and theca cells of the ovary	K1
Illustrate the specific contraceptive sites of action and mechanisms of contraceptive functioning for the most common male and female contraceptives	K4
List the various pregnancy milestones as they relate to radiologic imaging of the fetus	K1
Identify the most common teratogenic agents that should be avoided in pregnancy and the adverse effects seen if these agents are administered	K2
Discuss the basic workup for infertility as it relates to male and female couple and describe the disease-specific treatments employed for tubal factor, male factor, and anovulatory infertility	K2, K4
Identify histologic sections of female reproductive tissues in health and disease	K1, K2
Describe current screening methods for female reproductive cancers and indicate the populations most suitable for screening	K3, K4
Delineate the physiology of lactation and the corresponding breast anatomy involved in lactation	K1
Recognize the most common modalities for radiologic imaging of the male and female pelvis and identify the advantages/disadvantages of each methodology	K1, K4
Explain the most common presentation of gestational trophoblastic disease and the embryonic origins of the disorder	K2
Discuss the pros and cons of elective oocyte cryopreservation as it relates to elective fertility preservation for healthy women	K4
Explain how to correctly time intercourse according to the length of the female menstrual cycle	K1
Recognize when a patient could be at risk for ectopic pregnancy and when further workup is needed in the setting of first trimester bleeding	K2, K4
Employ appropriate screening tests for gynecologic cancers based on a patient's unique risk factors	K3, K4
Appreciate the myriad ethical dilemmas that arise in the practice of reproductive medicine	P2
Reflect on how to create an unbiased, gender-neutral approach to the medical interview of a patient	P3

Hematology-Oncology

This unit focuses on the hematological system, which includes bone marrow, blood, blood and lymphatic vasculature, spleen, and lymph nodes. Normal physiology, embryology, and metabolic functions will be explored, with an emphasis on red and white blood cells, bone marrow, hematological stem cells, and hemoglobin. Pathological processes affecting this organ system will be explained. The unit will be divided into two major sections: "Benign Hematology" and "Malignant Hematology," with separate quizzes for each section. Diagnostic criteria, examination procedures (e.g., the bone marrow exam), genetic tests, radiologic and scanning procedures, and other laboratory tests will be explained. Basic pharmacology of anti-neoplastic drugs will be included. Detailed clinical therapeutics are beyond the scope of this unit.

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Textbook:
V. Hoffbrand & P. Moss, *Essential Haematology*, 6th ed., Wiley-Blackwell (Required)

Schedule

Hematology-Oncology Unit Learning Objectives	**WCM Core Competencies**
Explain the normal functioning of red blood cells and hemoglobin; white blood cells and stem cells; platelets, the coagulation system; and lymph nodes, the spleen, and differentiation of lymphocytes	K1 PBL1
Identify cell differentiation in the bone marrow	PC2 PBL1
Discuss malignant transformation, hemoglobinopathies, and metabolic anemias	K2 PBL1
Identify benign platelet disorders, coagulopathies, and bleeding disorders	K2 PBL1
Explain pancytopenias, myelodysplastic syndromes, and leukemias	K2 PBL1
Describe myeloproliferative syndromes	K2 PBL1
Discuss the hematopathology of lymphomas and leukemias	K2 PBL1
Identify plasma cell disorders	K2 PBL1
Discuss stem cell transplantation and anti-neoplastic therapy	K4 PBL1
Explain the concept of immunotherapies for cancer	K4 PBL1
Discuss the basis of radiation oncology	K4 PBL1
Explain pediatric malignancies	K2 K3 PBL1
Discuss the familial cancer syndromes	K2 K3 PBL1
Describe the basic tests used for diagnosis in disorders of the hematological organ system	K3 PBL1
Discuss cancer staging and its utility	K2 K4 PBL1
List the basic groups of chemotherapeutic agents	K4 PBL1
Compare different modalities of cancer therapy (e.g., chemotherapy, radiotherapy, immunotherapy, stem cell transplantation)	K4 PBL1
Read a peripheral smear (hematopathology)	PC2 PBL1
Read a bone marrow aspirate and biopsy (hematopathology)	PC2 PBL1

Recognize some basic pathology on a bone marrow exam (aspirate and biopsy)	PC2 PBL1
Conduct a history and physical relevant to the hematological organ system	PC1
Demonstrate professionalism by attending the required sessions and completing the required assignments	P1
Demonstrate active participation to enhance shared learning experience	P1
Recognize the limitations of cancer therapy, the need for compassion and humane medicine, and the basics of terminal hospice care	P2 HCS2
Recognize the balance between therapy with "intent to cure" versus "palliative care"	P2 HCS2
Recognize the trade-off between increased chances of survival versus decreased quality of life	P2 HCS2
Respect the views, time, and participatory rights of classmates and faculty in small and large group teaching sessions	P1

Dermatology

The Dermatology Unit of Health, Illness and Disease will explore the spectrum of dermatologic diseases. We will focus on the normal structure and function of the skin, as well as the pathophysiology of *inflammatory* conditions (e.g., atopic dermatitis, acne); *autoimmune* diseases (e.g., vitiligo); *neoplastic* diseases (e.g., melanoma); *infectious* diseases (e.g., herpes, syphilis); and *genetic* disorders (e.g., epidermolysis bullosa). The relationship between clinical morphology of skin disorders and dermatopathology will also be discussed. The skin is a marker and window to systemic disease, and students will begin to appreciate and study cutaneous manifestations of internal disease. Visual accessibility allows examination of the gross pathology of the skin without complex equipment, and students will master the approach to visual inspection of the skin.

Unit Leaders:
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Textbook:
J. Marks & J. Miller, *Principles of Dermatology*, 5th ed., Saunders/Elsevier (Required)

Schedule

Dermatology Unit Learning Objectives	**WCM Core Competencies**
Explain the normal function of the skin.	K1
Explain the relationship between clinical (visual) pathology and microscopic pathology.	K1,2, PC-2
Describe the spectrum of cutaneous diseases (autoimmune, neoplastic, infectious, and inherited).	K2,3,4
Identify the pathophysiology of some common and important cutaneous diseases.	K1,2,3
Discuss the role of biological and targeted therapy in dermatologic diseases.	K2,4
Discuss the diagnosis and therapy of some skin diseases.	K2,4 PBL1-3
Identify important steps to identify and prevent skin cancer.	K1,2,3
Use the basic language of dermatology and dermatopathology.	K1,2
Interpret the clinical manifestation of common and important skin diseases.	K2, PC1,3
Correlate clinical presentation of skin disease to pathology.	K1,2 PBLI-1, PBLI-2
Interpret dermatologic manifestations of internal disease.	K1,2
Interpret the pertinent diagnostic tests, including skin biopsies, that would be useful to define the pathophysiology and ultimately identify the pathological processes at work.	K1,2 , PBLI 1-4
Reflect on how the skin is a window to internal disease.	K2,4
Appreciate how skin color and/or skin disease can have a psychological impact.	K3,4; PC1,2,3; ICS-1

Patient Care & Physicianship

The Patient Care-Physicianship portion of Health, Illness and Disease continues the development of the core concepts in patient care and working as a physician that was initiated in the Essentials Principles of Medicine segment. Patient Care focuses on clinical evaluation skills, including the history and physical examination, communication, principles of clinical reasoning, epidemiology, biostatistics, evidence-based medicine, health-care delivery systems, and patient safety. Physicianship embraces the doctor-patient relationship, professionalism, leadership and teamwork, ethics, humanism, and reflective practice.

Unit Leaders:
Juliet Aizer, MD, MPH; aizerj@hss.edu

Textbooks:
JAMA: The Rational Clinical Examination (Required)

R.F. Fletcher & S.W. Fletcher, *Clinical Epidemiology: The Essentials* , 5th ed., Wolters Kluwer/Lippincott, Williams & Wilkins (Recommended)
B. Kestenbaum, *Epidemiology and Biostatistics: An Introduction to Clinical Research*, 1st ed., Springer (Recommended)
G. Guyatt, D. Rennie, M. Meade & D. Cook, *Users' Guides to the Medical Literature: A Manual for Evidence-Based Clinical Practice*, 2nd ed., McGraw-Hill (Required)
J. Coulehan & M. Block, *The Medical Interview: Mastering Skills for Clinical Practice*, 5th ed., F.A Davis Company (Required)
L. Bickley, *Bates Guide to Physical Examination and History Taking*, 11th ed., Wolters Kluwer Health (Required)
R. LeBlond, D. Brown & M. Suneja, *DeGowin's Diagnostic Examination* , 10th ed., McGraw Hill Medical (Recommended)

Schedule

Unit Learning Objective	**WCM Core Competencies**
Articulate the goals of a patient encounter, describe how those goals are to be achieved, and demonstrate a basic ability to tailor the patient encounter to the clinical situation.	PC1;PC2
Conduct a complete patient medical history and prepare an accurate and organized written record of that history.	PC1
Conduct a complete physical examination of a patient and prepare an accurate and organized written record of that examination.	PC1;PC2
Analyze diagnostic testing information and integrate that information into an accurate and organized written record of a patient encounter.	K-2
Use a systematic and logical approach to the development of a differential diagnosis for common clinical problems and effectively summarize findings into an organized written record of a patient encounter.	K-1,K2
Analyze information obtained from history, physical examination, and diagnostic tests and then to formulate a further diagnostic and therapeutic plan.	K-1,2

Use basic counseling strategies for dealing with a variety of clinical situations, including delivering bad news, behavior modification, and palliative care.	K-2,4
Identify and formulate clinical questions derived from patient encounters, devise a strategy for searching the literature for an answer to those questions, and critically analyze the evidence obtained.	K-1

Brain & Behavior

Brain and Behavior, the first unit of Health, Illness and Disease Part II, is an integrated unit that ranges from basic neuroscience to neurological diagnosis and psychopathology. The faculty is drawn from the Departments of Neurology & Neuroscience, Pathology, Pharmacology, Physiology & Biophysics, Psychiatry, and Radiology. The course synthesizes basic science and clinical aspects of information about the central nervous system, utilizing a range of teaching techniques, with an emphasis on active student participation. In addition to attending lectures, laboratory sessions and tutorials, students engage in problem-based analysis of classical neurological and psychiatric disorders, and examine individual patients in clinic settings. The objective is both the acquisition of fundamental knowledge and the development of diagnostic skills. Acquaintance with contemporary research ideas and techniques is fostered by journal club sessions that review papers from the current literature. Computer-based educational and research tools enhance many of these activities.

Unit Leaders:
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Schedule

Brain & Behavior Unit Learning Objectives	**WCM Core Competencies**
Explain gross brain morphology (including the brain's developmental configuration and its blood supply) and dynamics of CSF.	K1
Identify functional properties of nervous tissue in the CNS, as a basis for understanding its normal structure and activity (including memory, attention, cognition, emotion, and sleep) and how these are disturbed by pathological processes (e.g., ischemia, infection, neurodegeneration, traumatic injury, and epilepsy).	K1, K2
Describe anatomy and function of motor and sensory pathways and their control centers in relation to the principles of neurological testing and localization of neurological lesions.	K1, PC1, K2
State the neuropathology of important clinical entities, including neoplasms, degenerative disorders, infections, vascular disease, and autoimmune disease.	K1, K2
Describe the pharmacology of clinically important drugs, including analgesics, anesthetics, anti-epileptics, anti-depressants, anti-psychotics, anxiolytics, drugs of abuse, cholinergic autonomic agents and ophthalmological medications.	K4

Explain the use of brain imaging (i.e., CT, MRI, PET, SPECT, angiography) for clinical and experimental purposes.	K2, K3, K4
Describe the epidemiology, etiology, clinical manifestations, diagnostic procedures, and treatment of common psychopathological syndromes, including schizophrenia, depression, bipolar disorder, suicide, anxiety, personality disorders, eating disorders, substance abuse, somatoform disorders, and childhood disorders.	K2, K3, K4
Discuss the epidemiology, etiology, clinical manifestations, diagnostic procedures, and treatment of common neurological disorders, including nerve compression, dementia, aphasia, pain syndromes, Parkinson's disease, multiple sclerosis, epilepsy, neoplasms, headache, paraplegia, Tourette's syndrome, neuropathies, and stroke.	K2, K3, K4
Relate introductory information on current practice of neurological surgery.	K4
List basic principles of the neurological examination.	K2, PC1
Recognize various important ophthalmological diseases and their treatment.	K2, K3, K4
Apply the essentials of history-taking and diagnosis in psychiatric and neurological patients (with particular emphasis on approach to interview skills in cognitively and psychiatrically impaired patients).	PC1
Perform a complete mental status examination in psychiatric and neurological patients.	PC1
Perform a complete neurological examination and demonstrate use of the ophthalmoscope. PC1 Present oral and written history, physical findings, and diagnostic formulation of patients with neurological and psychiatric disorders.	K2, PC1, PC2, PC3
Solve clinical problems in a team setting using critical thinking and decision-making.	K2, PC1
Search various electronic and other databases and resources for evidence-based studies so as to understand how basic science, clinical, and translational research are conducted and critically evaluate their usefulness and clinical relevance.	S1, PBLI1, PBLI2, PBLI3
Demonstrate enhanced communication and interpersonal skills with patients and with colleagues in a small group setting.	P1, P2, P3
Demonstrate sensitivity to patients' psychiatric and neurological needs.	P1, P2, P3
Respect the views, time, and participatory rights of classmates and faculty in small and large group teaching settings.	P1

Musculoskeletal & Rheumatology

The Musculoskeletal and Rheumatology unit in Health, Illness, and Disease will present the multifaceted relationship between the connective tissues of the body that are involved in mobility and the often-associated immune and inflammatory states involved in homeostasis. The development of the connective tissues and their structure-functional relationships will be explored. Skeletal remodeling and function of joints will be emphasized. The effects of the immune system in responding to pathogens and injury will be elucidated, including the interplay of the adaptive and innate systems. We will investigate the generation of autoimmunity and autoinflammatory states, including genetic factors, as well as environmental and microbial triggers. Understanding the complex cytokine milieu of inflammatory and immune homeostasis and disease can lead to appropriate targets for treatment.

Unit Leader:
Edward Parrish, MD; ejp2001@med.cornell.edu; 212-606-1743
Juliet Aizer, MD, MPH; aizerj@hss.edu

Schedule

Rheumatology Unit Learning Objectives	**WCM Core Competencies**
Explain the development of the musculoskeletal system and connective tissues and how they provide for function.	K-1
Predict the expected consequences of disruption of normal anatomy of the musculoskeletal system.	K-1, K-2
Give examples of systemic autoimmune diseases and the different pathologic mechanisms for their generation and expression.	K-2
Elucidate the autoinflammatory states as expressions of cytokine-driven processes.	K-2
Classify the vasculitides based on triggers, vessel characteristics, pathophysiologies, and immune mechanisms.	K-2
Explain genetic factors that lead to normal and abnormal immune response and to expression of disease.	K-1,K-2,K-3
Cite examples of microbiological triggers and other environmental pertubations that lead to pathophysiology.	K-2
List the benefits of exercise in maintenance of health and in treatment of disease.	K-1, K-2
Interpret the results of imaging of the soft tissues and musculoskeletal system in health and disease.	K-1, K-2
Develop a schema for approach to a patient with monoarticular arthritis versus polyarticular arthritis	K-2, PC-1
Develop a schema for evaluation of a patient with complaint of "pain in limb"	K-2, PC-1
Interpret the results of laboratory data related to inflammatory and autoimmune disease	K-2
Demonstrate the appropriate physical examination for common musculoskeletal presentations as evaluated by a musculoskeletal OSCE	K-2, PC-1

Infectious Disease

The last few weeks of Health, Illness, and Disease focus on the study of infectious diseases. The students will have acquired knowledge about important pathogens associated with individual organ systems throughout the prior HID learning units. This dedicated ID unit will fill in the knowledge gaps and introduce particularly complicated pathogens that affect multiple organ systems and that cause systemic infections. The students will learn the characteristics of individual pathogens and the host immune system that enable the onset of infection and that are responsible for the pathogenesis and the clinical manifestations of diseases. They will also acquire the skill to list systemically the differential of possible infectious agents that cause different clinical syndromes and to apply appropriate tests to make definitive diagnosis. Finally, they will become familiar with treatment (e.g., antimicrobial agents) and prevention (e.g., immunization) strategies for infectious diseases.

Unit Leaders:
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Schedule

Knowledge:

1. Explain the important immune system and host conditions that predispose to infection
2. Describe the pathophysiology, natural history, and diagnosis of the common or important clinical infectious disease syndromes
3. List systematically (by microorganism class) the differential of the possible infectious agents that cause these clinical syndromes
4. Discuss the structural, physiologic, and pathogenic features of microorganisms causing infectious diseases.
5. Discuss the strategies and diagnostic tests used in the identification of pathogens.
6. Identify treatments and medications that can ameliorate infectious diseases
7. Explain the mechanisms of action of the major classes of antibiotics, antivirals, and antifungals as well as the mechanisms of microbial resistance.
8. Review approaches to immunization and strategies for prevention of infectious diseases.
9. Explain the relationship between immune status in HIV/AIDS and development of opportunistic infections.

Skills:

1. Recognize clinical syndromes and create a differential diagnosis of the causative organisms in infectious diseases in medical cases relevant to the material taught in the course.
2. Analyze demographic, epidemiologic, and other characteristics such as travel and immunization history to individualize the differential diagnosis.
3. Utilize diagnostic microbiology, immunology, virology, mycology, and parasitology laboratory tests appropriately.
4. Recognize common microorganisms, as depicted in stained clinical specimens or most other common methods of laboratory identification.
5. Use an approach to normalize sexual history-taking to assess risk for sexually transmitted infections.
6. Critically read both classic and contemporary biomedical scientific literature to identify how basic science, clinical, and translational research are conducted and evaluated.

Attitudes:

1. Respect the views, time, and participatory rights of classmates and faculty in small and large group teaching settings.
2. Demonstrate sensitivity to patients' medical and psychosocial needs with respect to illnesses that have historically been stigmatized.