

Health, Illness and Disease Overall Learning Objectives	WCM Core Competencies	Assessment Method(s)
1. Explain the normal structure, histology, and physiology of each organ system	K1	quizzes, small group assessments, TJE
2. Describe the major diseases affecting each organ system (cardiovascular, pulmonary, gastrointestinal, renal, endocrine, reproduction, hematology/oncology, and dermatology)	K2	quizzes, small group assessments, TJE
3. Discuss the indication for and interpretation of key diagnostic and imaging tests used in the identification and management of disease.	K2,K3,K4	quizzes, small group assessments, TJE
4. Explain primary and secondary prevention of common diseases	K3	quizzes, written assignments
5. List common infectious organisms and recognize their disease syndromes for each organ and for the body as a whole	K2	quizzes, small group assessments, TJE
6. Outline core treatment options for common diseases of the organ systems Outline core treatments for common disease including mechanisms of drug action and important pharmacokinetic characteristics.	K4	small group assessments, TJE
Describe the basic features of the US healthcare and reimbursement system	HCS1	quizzes, small group assessments
7. Apply principles of ethics in medical care and research	P2	quizzes, small group assessments, written
8. Describe fundamental principles of the life cycle, from conception to death, and how they affect function, pathology, and treatment	K1	quizzes, small group assessments, TJE
Perform a focused history and physical examination for each organ system	PC1	direct observation, OSCE
9. Conduct a comprehensive history and physical examination	PC1	direct observation, OSCE
10. Interpret major symptoms and signs in clinical evaluation	K2	quizzes, small group assessments, TJE
11. Perform a basic differential diagnosis for problems affecting each organ system	K2	quizzes, small group assessments, TJE
12. Demonstrate clinical reasoning	K2	quizzes, small group assessments, TJE
13. Critically appraise scientific and clinical research and apply principles of evidence-based medicine	S1, PBL11, PBLI2, PBLI3	quizzes, small group assessments, written
14. Respect the views and rights of students and faculty in small and large group settings	P1	small group assessments
15. Exemplify professional attributes, such as altruism, patient confidentiality, personal responsibility, and accountability to others, while continuing the transition to becoming a physician	P1, P2, P3	small group assessments
16. Demonstrate clinical skills necessary for starting clerkships	PC1, PC2, PC3	direct observation

HID 1 and HID 2 Unit Introduction

Cardiology Unit

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 Clinical Case Discussion (CCD) 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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Heart	HID Learning Objective	WCMC Learning Objective
1. 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	1	K1
2. Compare and contrast the action potential in ventricular cells with cells with intrinsic “pacemaker” ability	1	K1
3. Identify the elements of a sarcomere and describe the mechanisms underlying excitation-contraction coupling in cardiac myocytes	1	K1
4. Describe the normal sequence of events in the electrical depolarization and repolarization of the heart and identify their representation on an electrocardiographic lead	1,3	K1
5. Recognize tachy- and bradyarrhythmias and differentiate between them based upon clinical, electrocardiographic, and mechanistic differences.	2,3	K2
6. Describe the factors that determine cardiac output as well as the elements involved in regulating blood pressure	1	K1

7. 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	1	K1
8. 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	2,3,6,13	K2,K4
9. Compare and contrast different forms of valvular heart disease and cardiomyopathies, including their pathologic features, hemodynamic effects on the heart, and their natural history	2,13	K2,K4
10. 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	1	K1
11. 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	2	K2
12. 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	6	K4
13. Describe the normal embryologic development of the heart and the pathophysiologic and pathologic findings of various forms of congenital heart disease	2,9	K1,K2
14. Describe the salient features of infective endocarditis including diagnostic criteria, microorganisms typically involved, and pathologic findings, as well as the possible effects on various aspects of the heart including the conduction system, valves, and hemodynamics	2,5	K2
15. Recognize the risks and benefits of surgical or percutaneous interventions for patients with valvular heart disease and coronary artery disease	6	K4

16. Analyze a 12-lead electrocardiogram to determine the elements of rate, axis, intervals, and rhythm and assemble a basic interpretation	3,10,12	K1,K2,PC1
17. 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	3,10,12	K1,K2,PC1
18. Refine interviewing skills to be able to conduct focused interviews on patients with arrhythmias, ischemic heart disease, valvular heart disease, and heart failure	10	PC1
19. Demonstrate professionalism by completing the required online modules in a timely fashion to better understand core concepts and enhance the shared learning experience opportunities	17	P1
20. 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	15	PBLI3
21. Recognize the limitations of medical care in the treatment of advanced heart failure and the importance of addressing palliative care in appropriate cases	8	K4,P2
22. Respect the views, time, and participatory rights of classmates and faculty in small and large group teaching sessions	16	P1,ICS2

Lung Unit

Welcome to the **Lung** unit of the *Health, Illness and Disease* segment of the 1st year curriculum. We will explore the normal physiology and function of the respiratory system and the pathologic diseases that can affect the system. The respiratory system is made up of more than the lungs, and you will obtain a solid physiologic foundation and understand the structure of the respiratory system and the main function of respiration. You will discuss how pulmonary mechanics make ventilation possible, how oxygen and carbon dioxide diffuse between alveoli and the blood, how gases are transported in the body to and from cells, and how ventilation is regulated. We will build on the basic physiology as well as lung development and early origins of lung disease and study pharmacology and pathophysiology and pathology in a variety of disease states. Some of the diseases we will study include obstructive diseases, restrictive diseases, vascular disease, infection, and lung cancer. Obtaining a firm background in physiology will make you understand how things can go wrong, how to diagnose and examine patients, and the different modalities including pulmonary function testing, arterial blood gases, imaging, and stress testing we can use to evaluate the respiratory system.

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Lung	HID Learning Objective	WCMC Learning Objective
1. Summarize the normal function of the pulmonary system	1	K1
2. 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	1,2,9	K1,K2
3. Discuss the impact of infectious disease pathology on the function of the lung	2,5	K2
4. Explain the pathophysiology of major diseases and abnormal conditions that affect the lung.	2	K2
5. Discuss how the prevalence and incidence of disease vary among diverse populations.	2	K3
6. Identify treatments and medications that ameliorate the disease process.	6	K/4
7. Generate a wide differential diagnosis based on data from the history and physical examination as presented in case histories.	10	K2

8. Select pertinent diagnostic tests that would be useful to define the pathophysiology of the presumptive disease.	3,12	K2
9. Interpret diagnostic test results and laboratory data with respect to the pathophysiological process.	3,12,14	K2
10. Search, retrieve, and critically analyze medical information from various evidence-based sources.	15	PBLI1,PBLI2,PBLI3
11. 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	3,4	ICS2, PBLI1,PBLI2,PBLI3
12. Demonstrate enhanced communication and interpersonal skills with patients and with colleagues in a small group setting.	16,17	ICS1,ICS2, P1
13. Respect the views, time, and participatory rights of classmates and faculty in small and large group teaching settings.	16	ICS2, P1

G.I. Unit

Welcome to the **Gastrointestinal** unit of the *Health, Illness and Disease* segment of the 1st year curriculum. In this unit we will cover basic aspects of GI structure function, particularly the digestion and absorption of food; the important disease processes that interfere with these functions; and the major ways in which these diseases can be diagnosed and treated. Disciplines represented will be histology, physiology, pathology, pathophysiology, and pharmacology.

The unit is organized around a series of 8 clinical cases, which will be studied in small groups. These case discussions will be augmented by focused lectures, laboratories and patient presentations.

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GI	HID Learning Objective	WCMC Learning Objective
1. Explain the basic anatomy of the gastrointestinal system (i.e., esophagus, stomach, small intestine, colon, liver, gallbladder, and pancreas)	1,9	K1
2. Describe the normal histology of the gastrointestinal system (i.e., esophagus, stomach, small intestine, colon, liver, gallbladder, and pancreas)	1	K1
3. Explain the normal physiological function of the gastrointestinal system, specifically exocrine and endocrine functions, digestion and absorption, motility, and immunology	1	K1
4. Describe the pathophysiology of diseases and disorders that affect the GI system, including genetic abnormalities, infection, autoimmunity, inflammation, ischemia, dysmotility, obstruction, and malignancy	2,5	K2
5. Describe the clinical presentation of diseases and disorders that affect the GI system, including genetic abnormalities, infection, autoimmunity, inflammation, ischemia, dysmotility, obstruction, and malignancy	2,12	K2
6. Identify and describe the evaluation of gastrointestinal diseases, including laboratory, imaging/radiologic, endoscopic, and surgical evaluation	2,3	K2
7. List and describe the therapeutic options for both common and rare gastrointestinal diseases, including medication-based, endoscopic, surgical, and microbiologic	6	K4

8. Conduct a workup and treatment of a gastrointestinal disorder based on a clinical case presentation	11,13,14	PC-1,PC-2
9. Apply histopathological data into the diagnosis of a clinical presentation	3,13,14	K2,PC-1

Kidney Unit

Welcome to the **Kidney** unit of the *Health, Illness and Disease* segment of the 1st year curriculum. Within the unit, the teaching is shared by a number of basic science departments, including Microbiology, Physiology, and Pharmacology and clinical departments, including Medicine, Pathology, Radiology, Pediatrics, and Urology. The course content includes material contained within traditional Physiology, Pathophysiology and Pathology courses, and required and recommended texts have been selected from just such sources. The course organization has been designed to enable examination of problems that cut across traditional disciplines, and thus more closely approximate clinical problem solving.

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Kidney	HID Learning Objective	WCMC Learning Objective
1. Describe normal kidney structure, function, and development.	1,9	K1
2. Describe important abnormalities involving the kidney. This includes anatomical abnormalities, genetic abnormalities, and various pathological processes such as ischemia, inflammation, cancer, autoimmunity, and infection.	2,5	K2
3. Describe the impact of kidney pathology on kidney function, i.e. pathophysiology	2	K2
4. Be able to describe the various modalities of kidney replacement therapy such as dialysis and transplantation.	6	K4
5. Delineate functional abnormalities of the kidney from common clinical data.	2,12,13	K2,PC1
6. Identify diagnostic tests, for a given functional abnormality, to define the pathophysiology, and eventually identify the underlying pathological process.	3,13,14	K2,PC1
7. Identify treatments and medications, which could ameliorate the disease process	6	K4
8. Articulate ethical issues, which arise in the care of patients with end stage kidney disease.	7,8	P2,PBLI3

Hematology-Oncology Unit

Welcome to the **Hematology-Oncology** unit of the *Health, Illness and Disease* segment of the 1st year curriculum. The three week unit is divided into 2 sections covering benign and malignant hematology. Benign hematology will focus on hematopoiesis, coagulation, and the function of mature blood elements, including erythrocytes, leukocytes, and platelets. You will learn the normal physiology of blood, the pathophysiologies and clinical manifestations of anemias, thrombocytopenias, hemoglobinopathies, abnormal bleeding and thrombosis. You will also learn the pharmacologic basis of appropriate therapeutic agents and be introduced to transfusion medicine. Malignant hematology will focus on cancers of the hematologic and lymphoid systems. You will be introduced to disorders of myeloid stem cells, (acute myeloid leukemia, chronic myeloid leukemia, myelodysplastic syndrome, myeloproliferative diseases), lymphoid stem cells (acute lymphoid leukemia), and mature lymphocytes (lymphoma, chronic lymphoid leukemia, multiple myeloma). You will learn the cellular and genetic causes of these diseases, their clinical manifestations, appropriate diagnostic approaches (laboratory, pathology, radiology) and available therapeutic interventions (radiation, chemotherapy, immunotherapy, and stem cell transplantation).

Unit Leaders:

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Hematology-Oncology	HID Learning Objective	WCMC Learning Objective
1. Discuss the embryonic origins of the hematopoietic system.	1,9	K1
Discuss the cell biology, differentiation programs, and cytokine networks involved in hematopoiesis.	1	K1
2. Understand the production and function of erythrocytes, including the structure, function and physiology of hemoglobin. Discuss the causes and clinical features of anemia.	1,2,12	K1,K2
3. Understand myeloid and lymphoid differentiation and function. Discuss the causes and clinical features leukopenia.	1,2,12	K1,K2
4. Understand the production and function of platelets. Discuss the causes and clinical features of thrombocytopenia, thrombophilia and disorders of platelet function.	1,2,12	K1,K2
5. Discuss the physiology of coagulation and conditions that result in abnormal bleeding or thrombosis.	1,2,12	K1,K2

6. Discuss the important pathological processes that affect the hematologic system or result in malignant transformations, including genetic abnormalities, disturbed immunity, metabolism, autoimmune attack, and infection.	2	K2
7. Discuss the pathologic and clinical features of the leukemias, myelodysplastic syndromes, myeloproliferative syndromes, lymphomas and plasma cell disorders.	2	K2
8. Compare adult and pediatric malignancies	2,9	K2
9. Discuss the familial cancer syndromes.	2,12	K2
10. Describe the impact of hematological pathology and of malignant cell pathology on organ function, i.e., pathophysiology.	2	K2
11. Identify the pertinent diagnostic tests that would be useful to define hematological and malignancy pathology.	3	K2
12. Discuss medications and treatments, including immunotherapies, radiation therapy, and stem cell transplantation, that can be used to ameliorate or cure hematological malignancies.	6	K4/
13. Interpret standard laboratory test results, including CBC with differential and coagulation studies.	3,12	K2
14. Recognize normal and abnormal cellular morphology on peripheral blood smear and bone marrow aspirate.	3,12	K2
15. Identify the morphologic appearance of acute and chronic leukemias, Hodgkin's and non-Hodgkin's lymphomas, and multiple myeloma.	3	K2
16. Interpret radiographic images of hematopoietic malignancies.	3,12	K2
17. Generate an appropriate differential diagnosis based on history, physical, laboratory data.	3,13,14	K2
18. Demonstrate professionalism through attendance and active participation	16	ICS2
19. Demonstrate professionalism by completing the required online modules in a timely fashion to better understand core concepts and enhance the shared learning experience.	16	ICS2

20. Recognize the limitations of medical care in the treatment of hematologic malignancies and the importance of addressing palliative care in appropriate cases.	6,14,17	P2
21. Recognize the balance between therapy with “intent to cure” versus “palliative care”.	6,14,17	P2
22. Recognize the trade-off between increased chances of survival versus decreased quality of life.	6,14,17	P2
23. Respect the views, time, and participatory rights of classmates and faculty in small and large group teaching sessions.	16	ICS2

Endocrinology Unit

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.

Unit Leaders:

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Endocrinology	HID Learning Objective	WCMC Learning Objective
1. Describe the physiology of normal glucose metabolism.	1	K1
2. Explain the pathophysiology and management of Type 1 diabetes.	2,6	K2,K4
3. Explain the pathophysiology and management of Type 2 diabetes	2,6	K2,K3,K4
4. Discuss the medical complications related to diabetes mellitus.	2	K2
5. Explain the physiology of normal and abnormal thyroid function.	1,2	K1,K2
6. Distinguish between normal thyroid histology and thyroid pathology (including thyroid cancer).	2,3	K1,K2
7. Explain the evaluation and management of hypothyroid and hyperthyroid conditions.	2,6,12	K2,K4
8. Discuss the hypothalamic-pituitary-end organ axes and corresponding hormonal feedback loops.	1	K1
9. Describe the evaluation and management of diseases of the anterior and posterior pituitary.	2,3,6,12	K2,K4
10. Explain the physiology of normal and abnormal adrenal function	1	K1
11. Recognize normal adrenal histology and adrenal pathology.	1,2	K1,K2
12. Explain the evaluation and management of adrenal insufficiency and hypercortisolism.	2,6	K2,K4

13. Describe the physiology of parathyroid and calcium metabolism	1	K1
14. Discuss the evaluation and management of metabolic bone disease, including osteoporosis.	2,6,12	K2,K4
15. Demonstrate the ability to manage diabetes mellitus with oral agents and/or insulin.	3,6	K4
16. Interpret thyroid function tests.	12,13,14	K2
17. Demonstrate the work-up of a thyroid nodule	12,13,14	K2
18. Demonstrate the work-up of an adrenal nodule.	12,13,14	K2
19. Utilize various imaging modalities to identify the radiologic manifestations of endocrine disease.	3	K2
20. Participate in diabetes and adrenal patient panel discussions.	16,17	ICS1,ICS2,P1
21. Appreciate the impact of living with a chronic condition, such as diabetes.	6	ICS1,P1
22. Prepare for and actively participate in small group case discussions.	16	ICS2,P1

Reproduction Unit

In the HID **Reproduction** unit, students will acquire a deep understanding of the anatomy, physiology, and pathophysiology of the male and female reproductive systems.

We have crafted the course to logically follow the time-line of male and female development. The course will begin 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 will be presented, along with male and female disorders of sexual development.

The first two days of the course are dedicated to the male reproductive system. Students will delve into male reproductive physiology, with a focus on spermatogenesis and the hypothalamic-pituitary-testicular axis. Students will gain an understanding of male sexual functioning and pharmacologic agents affecting male reproductive functioning. Benign and malignant disorders of the prostate will then be examined, together with other oncologic conditions in the male reproductive organs. Histologic and pathologic sections of male GU organs will be presented in lecture and small group sessions.

In the second half of the course, focus is on the female reproductive system. Students will 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 will be punctuated by a detailed overview of menopause and the physiologic processes underlying the menopausal transition. Fertility and infertility will be discussed in the context of an update on assisted reproductive technology. The ethical considerations of the latter will be explored as well. Pregnancy will obviously follow fertility. A detailed discussion of healthy pregnancy and disorders unique to pregnancy will ensue. Pharmaceuticals commonly employed and/or avoided in pregnancy will be examined. Histologic sections of the female reproductive tissues in health and disease will be presented, and be put in context by presentation of the most common cancers in the female reproductive system. Moreover, benign gynecologic conditions including tumors and infections, sexually transmitted diseases including, will be discussed.

To complete the learning objectives of the course, benign and malignant diseases of the breast will be taught in a lecture and small group formats. Various radiologic imaging modalities specific to the pelvis will be presented. Last but not least, a Problem Based Learning (PBL) case will draw students close to faculties in a two-session small group discussion.

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Reproduction	HID Learning Objective	WCMC Learning Objective
1. Explain the differential embryonic origins of the male and female internal/external genitalia	1,9	K1
2. 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	1	K1
3. Discuss the physiologic functioning of the prostate and delineate the pathophysiology underlying malignancies of the prostate.	1,2	K1,K2
4. Elaborate on male sexual functioning as it relates to parasympathetic and sympathetic input.	1	K1
5. Recognize histologic sections of male GU structures in health and disease	1,2	K1,K2
6. List the normal steps of puberty in boys and girls and be able to elaborate on the somatic and central signals governing onset of the pubertal transition	1,9	K1
7. Explain the etiology of the various disorders of sexual development and understand the mechanisms underlying under and over-virilization	2,9	K2
8. Illustrate the hypothalamic and pituitary inputs governing the menstrual cycle and be able to demonstrate how the hormonal inputs from the brain are coordinated with follicular development, ovulation, and luteal functioning within the ovary	1	K1
9. Discuss the most common causes of secondary amenorrhea and be able to differentiate between the mechanisms and treatment of PCOS and hypothalamic amenorrhea	2,12,13	K2,K3,K4
10. Describe the hormonal dynamics of the menopausal transition and elaborate on the risks and benefits of hormone replacement therapy	1,6,9	K1,K4
11. Elaborate on the steroid precursors of sex steroid hormones and the site-specific differential enzymatic functioning of granulosa and theca cells of the ovary.	1	K1
12. Illustrate the specific contraceptive sites of action and mechanisms of contraceptive functioning for the most common male and female contraceptives.	1,4,6	K4

13. Appreciate the various pregnancy milestones as they relate to radiologic imaging of the fetus	1,3	K1
14. List the most common teratogenic agents that should be avoided in pregnancy and the adverse effects seen if these agents are administered	2,4	K2
15. Discuss the basic workup for infertility as it relates to male and female couple and elaborate on the disease specific treatments employed for tubal factor, male factor, and anovulatory infertility.	2,12,13,14	K2,K4
16. Identify histologic sections of female reproductive tissues in health and disease	1,2	K1,K2
17. Describe current screening methods for female reproductive cancers and indicate the populations most suitable for screening.	2,4	K2,K3
18. Delineate the physiology of lactation and the corresponding breast anatomy involved in lactation	1	K1
19. Recognize the most common modalities for radiologic imaging of the male and female pelvis and identify the advantages/disadvantages of each methodology	3	K1,K4
20. Explain the most common presentation of gestational trophoblastic disease and the embryonic origins of the disorder.	2,9	K2

Patient Care/Physicianship Unit

Welcome to the **Patient Care / Physicianship (PC/P)** Unit of Health, Illness and Disease-1 (HID-1). The overarching goal of the PC/P unit is to help you develop fundamental knowledge, skills and attitudes related to the care of patients and the role of the physician.

In HID-1 we will focus on interviewing and examining patients, reasoning clinically, considering various perspectives, scientific evidence, ethical and public health issues.

Unit Leaders:

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Patient Care/Physicianship	HID Learning Objective	WCMC Learning Objective
1. 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, including performing a focused history and physical examination of the cardiovascular system, pulmonary system, gastrointestinal system, kidney, hematology/oncology, endocrine, and genitourinary systems	10, 11	PC-1
2. Conduct a complete patient medical history and prepare an accurate and organized written record of that history, in a culturally competent fashion, as it relates to the cardiovascular system, pulmonary system, gastrointestinal system, kidney, hematology/oncology, endocrine, and genitourinary systems	10, 11	PC-1
3. Conduct a complete physical examination of a patient and prepare an accurate and organized written record of that examination as it relates to the cardiovascular system, pulmonary system, gastrointestinal system, kidney, hematology/oncology, endocrine, and genitourinary systems	10, 11	PC-1; PC-2
4. Analyze screening and diagnostic testing information and integrate that information into an accurate and organized written record of a patient encounter as it relates to the cardiovascular system, pulmonary system, gastrointestinal system, kidney, hematology/oncology, endocrine, and genitourinary systems	12, 14	PC-2; K-2

5. 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 as it relates to the cardiovascular system, pulmonary system, gastrointestinal system, kidney, hematology/oncology, endocrine, and genitourinary systems	13	K-1; K-2; PC-1
6. Analyze information obtained from history, physical examination, and diagnostic tests and then to formulate a further diagnostic and therapeutic plan as it relates to the cardiovascular system, pulmonary system, gastrointestinal system, kidney, hematology/oncology, endocrine, and genitourinary systems	12, 13, 14	K-1; K-2; PC-1
7. Describe the basic principles of patient-centered care and cultural competence and apply them in history taking, disease prevention, and counseling across the lifecycle	9, 18	K-1; ICS-1; ICS-2; P-2; P-3
8. Integrate medical concepts and professionalism through early establishment of longitudinal partnerships with patients	2, 17	K-2; K-4
9. Discuss the impact of psycho-socio-cultural factors on care	14	K-2; PC-1; ICS-1; P-3
10. Identify challenges patients encounter navigating the healthcare system and adhering to medical advice, and describe how healthcare professionals can advocate for patients	7, 17	HCS-1
11. Develop a professional identity within the healthcare system, with an appreciation for various healthcare professionals and patients	17	P-1; P-2; P-3
12. Describe environmental and global perspectives on health, noting medical consequences of some major societal problems	4	K-3; K-4; HCS-1
13. Describe approaches physicians can take to address health of populations	4	K-3; K-4; HCS-1

14. Recognize ethically challenging situations and apply principles of ethics in conducting research and medical care, specifically in the context of informed consent, surrogate decision making, and issues in pediatrics and reproductive health	8	S-1; P-2; P-3
15. Describe methods for conducting and analyzing clinical research	15	PLBI-2; S-1
16. Interpret basic statistics commonly found in the medical literature	15	PBLI-2; S-1
17. Critically analyze medical literature and apply principles of evidence based medicine	15	S-1; S-2; PBLI-2
18. Demonstrate self-directed learning by identifying and formulating clinical questions derived from patient encounters, devising a strategy for searching the literature for an answer to those questions, and critically analyzing the evidence obtained	15	K-1; S-1; S-2; PBLI-1; PBLI-2; PBLI-3; PBLI-4
19. Integrate medical concepts and professionalism through early establishment of longitudinal partnerships with patients	2, 17	K-2; K-4
20. Discuss the impact of psycho-socio-cultural factors on care	14	K-2; PC-1; ICS-1; P-3
21. Identify challenges patients encounter navigating the healthcare system and adhering to medical advice, and describe how healthcare professionals can advocate for patients	7, 17	HCS-1
22. Develop a professional identity within the healthcare system, with an appreciation for various healthcare professionals and patients	17	P-1; P-2; P-3
23. Describe environmental and global perspectives on health, noting medical consequences of some major societal problems	4	K-3; K-4; HCS-1
24. Describe approaches physicians can take to address health of populations	4	K-3; K-4; HCS-1
25. Recognize ethically challenging situations and apply principles of ethics in conducting research and medical care, specifically in the context of informed consent, surrogate decision making, and issues in pediatrics and reproductive health	8	S-1; P-2; P-3
26. Describe methods for conducting and analyzing clinical research	15	PLBI-2; S-1

27. Interpret basic statistics commonly found in the medical literature	15	PBLI-2; S-1
28. Critically analyze medical literature and apply principles of evidence based medicine	15	S-1; S-2; PBLI-2
29. Demonstrate self-directed learning by identifying and formulating clinical questions derived from patient encounters, devising a strategy for searching the literature for an answer to those questions, and critically analyzing the evidence obtained	15	K-1; S-1; S-2; PBLI-1; PBLI-2; PBLI-3; PBLI-4

Brain & Behavior Unit

Brain and Behavior is an integrated learning unit that ranges from basic neuroscience and functional anatomy of the central nervous system to neurological diagnosis and psychopathology. Over 100 faculty members from many different departments are involved in teaching the unit, with the core faculty drawn from the Departments of Cell Biology, Neurology & Neuroscience, Pathology, Pharmacology, Physiology & Biophysics, Psychiatry, and Radiology.

The unit synthesizes basic science and clinical information about the nervous system to promote both the acquisition of fundamental knowledge and the development of diagnostic skills. The teaching modalities that are utilized emphasize active student participation. Important features are the problem-based analysis of classical neurological and psychiatric disorders, and the opportunity to examine individual patients in clinic settings. Information on key topics is provided in the form of lectures, patient presentations and small-group tutorials, as well as laboratory sessions on neuroanatomy and cognitive neuroscience. 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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Brain and Behavior	HID Learning Objective	WCMC Learning Objective
1. Explain gross brain morphology (including the brain's developmental configuration and its blood supply) and dynamics of CSF.	1	K1
2. 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).	1,2	K1, K2
3. 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.	1,2,10	K1, PC1, K2

4. State the neuropathology of important clinical entities, including neoplasms, degenerative disorders, infections, vascular disease, and autoimmune disease.	2	K2
5. 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.	6	K4
6. Explain the use of brain imaging (i.e., CT, MRI, PET, SPECT, angiography) for clinical and experimental purposes.	2,3	K2, K3, K4
7. 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.	2,3,6	K2, K3, K4
8. 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.	2,3,6	K2, K3, K4
9. Relate introductory information on current practice of neurological surgery.	6	K4
10. List basic principles of the neurological examination.	10	K2, PC1
11. Recognize various important ophthalmological diseases and their treatment.	2,4,6	K2, K3, K4
12. 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).	10,12,13,14	PC1
13. Perform a complete mental status examination in psychiatric and neurological patients.	10	PC1

14. Perform a complete neurological examination and demonstrate use of the ophthalmoscope.	10	PC1
15. Present oral and written history, physical findings, and diagnostic formulation of patients with neurological and psychiatric disorders.	3,10	K2, PC1, PC2, PC3
16. Solve clinical problems in a team setting using critical thinking and decision-making.	13,14	K2, PC1, ICS2
17. 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.	14,15	S1, PBLI1, PBLI2, PBLI3,PBLI4
18. Demonstrate enhanced communication and interpersonal skills with patients and with colleagues in a small group setting.	16,17	ICS2, P1, P2, P3
19. Demonstrate sensitivity to patients' psychiatric and neurological needs.	17	P1, P2, P3
20. Respect the views, time, and participatory rights of classmates and faculty in small and large group teaching settings.	16	P1

Dermatology Unit

Welcome to the **Dermatology** unit of the *Health, Illness and Disease* segment of the year curriculum. This unit will introduce both normal dermatology and general dermatologic pathology. In this regard, the PBL cases and small groups will introduce clinical scenarios, which will include topics from the core science disciplines. These topics will be developed and expanded upon in lectures and small group discussions. The major goal of the Dermatology unit is to provide you with a core understanding of skin disease and the tools necessary to apply dermatologic science to the greater scope of medicine. Following most days of instruction we will provide you with the optional opportunity to have self-assessment on the previous day's material, have questions about the material answered, and gain additional points towards the final quiz.

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Dermatology	HID Learning Objective	WCMC Learning Objective
1. Explain the normal function of the skin.	1	K1
2. Explain the relationship between clinical (visual) pathology and microscopic pathology.	1,2,3	K1,K2, PC-1
3. Describe the spectrum of cutaneous diseases (autoimmune, neoplastic, infectious, and inherited).	2,3,5	K2,K3
4. Identify the pathophysiology of some common and important cutaneous diseases.	2,3	K2,K3
5. Discuss the role of biological and targeted therapy in dermatologic diseases.	2,6	K2,K4
6. Discuss the diagnosis and therapy of some skin diseases.	2,6,13,14	K2,K4 PBL1-3
7. Identify important steps to identify and prevent skin cancer.	1,2,4	K1,K2,K3
8. Use the basic language of dermatology and dermatopathology.	1,2	K1,K2
9. Interpret the clinical manifestation of common and important skin diseases.	2,12	K2, PC1,3
10. Correlate clinical presentation of skin disease to pathology.	2,10,12	K2, PBLI-1, PBLI-2
11. Interpret dermatologic manifestations of internal disease.	2,12,14	K2

12. Interpret the pertinent diagnostic tests, including skin biopsies, that would be useful to define the pathophysiology and ultimately identify the pathological processes at work.	2,3	K2 , PBLI 1-4
13. Reflect on how the skin is a window to internal disease.	2,2,14	K2,K4
14. Appreciate how skin color and/or skin disease can have a psychological impact.	2,17	K3,K4; PC1,ICS1,P3

Musculoskeletal Unit

Welcome to the **Musculoskeletal and Rheumatology** unit of the *Health, Illness and Disease* segment of the curriculum. In this unit we will cover basic aspects of musculoskeletal structure function, particularly the formation, function and maintenance of bone, cartilage, muscle and the dynamics of growth and remodeling. You will understand how structure defines function and mechanics. We will explore multiple disease mechanisms that perturb the integrity of these systems, from local mechanical effects to systemic inflammatory and metabolic diseases. The impact of genetics will be emphasized. We will attempt to approach disease diagnosis based on these principles. Practice in the physical examination will correspond to disease entities. We will further explore how diseases affect general health, social wellbeing and activities of daily living. Disciplines represented will be histology, physiology, pathology, pathophysiology, anatomy, radiology, biomechanics, genetics, pediatrics, orthopedics, physical and rehabilitative medicine, rheumatology, immunology, infectious disease, sports medicine, geriatrics, pharmacology and ethics. The unit begins with exploration of bone, cartilage, muscle and joint normal and abnormal structure and function. Case discussions provide format and will be augmented by focused lectures, laboratories and patient presentations will augment discussion. New to the WCMC curriculum are areas in physical medicine, exercise, women’s health and disability.

Unit Leaders:

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Musculoskeletal	HID Learning Objective	WCMC Learning Objective
1. Explain the functional anatomy of the different types of joints.	1	K1
2. Describe the normal histology of bone, cartilage and muscle during development and growth.	1,9	K1
3. Explain how mechanical forces induce change in bone, cartilage and muscle.	1	K1
4. Describe the development of primary osteoarthritis (OA) and how other disease processes that secondarily result in OA	2	K2
5. Explain modalities of physical medicine that protect and improve the mechanics of the musculoskeletal system.	1,4	K1,K4
6. Recognize falling as a common result of disability and the systematic evaluation needed to decrease its occurrence.	2,4	K2,K3

7. Predict the effects of endocrine, metabolic and oncologic processes on musculoskeletal structure and function.	1,2	K1,K2
8. Describe the mechanism of action of NSAIDs and how they produce therapeutic and toxic effects.	2,6	K2
9. Differentiate important cytokines in development of disease and pharmacologic strategies to counter their effects	2,6	K2
10. Explain genetic mutations that cause abnormal bone and cartilage development.	2,9	K2
11. Recognize common causes of bone and cartilage tumors, genetic contributions, and the histopathologic and radiographic appearance.	2,3	K2
12. List the anatomy involved in common presentations of musculoskeletal complaints and describe the physical examination and imaging required to evaluate.	1,2,3	K1,K2
13. Explain the role of exercise in preventing and treating disease.	1,4	K1
14. Describe contributions to muscle fatigue and the consequences.	1	K1
15. Describe the roles and interactions of innate and acquired immunity in the pathogenesis of autoimmune and autoinflammatory diseases.	2	K2
16. Explain mechanisms of common organ-specific autoimmunity and association with systemic autoimmune diseases.	2	K2
17. Differentiate the joint findings of systemic and local inflammatory disease.	2,13	K2
18. List common infectious causes of systemic rheumatic diseases.	2,5	K2
19. Describe infections of bone and joints, common organisms, diagnosis and therapeutic interventions.	2,5,13,14	K2
20. Compare and contrast the collagen vascular diseases and the spondyloarthropathies.	2,12,13,14	K2
21. Explain known causes of autoinflammatory diseases and mechanisms which overlap with crystalline diseases.	2,12,13,14	K2
22. List the classes of idiopathic inflammatory arthropathy in children and predictors of morbidity.	2,9,12,13	K2

23. Initiate an appropriate history, physical examination and workup for common outpatient musculoskeletal presentations.	10	PC1
24. Choose appropriate imaging techniques for suspected anatomic or physiologic defects.	2,3	K2
25. Apply histopathological data in the diagnosis of a clinical presentation.	2,3,13	K2
26. Evaluate a patient and provide an appropriate exercise regimen.	4	K2,ICS1
27. Evaluate a patient for fall risk and prevention.	4	K2,ICS1
28. Acknowledge the importance of falling as a common cause of physical morbidity as well as psychological and social stress.	2,4	K2,ICS1
29. Reflect on the impact of disability on the individual, family, society and health care system.	7	K3
30. Appreciate the impact exercise on health and the barriers to initiate exercise in health maintenance and therapy.	4,7	K3
31. Acknowledge the roles of non-physician professionals in evaluating and treating, musculoskeletal disease and disability.	17	ICS2, P1
32. Choose appropriate imaging techniques for suspected anatomic or physiologic defects.	2,3	K4

Infectious Disease Unit

Welcome to the ***Infectious Disease*** unit of the *Health, Illness and Disease* segment of the curriculum. In this unit, we will cover 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. We will aid you in creating a differential of possible infectious agents that cause different clinical syndromes and to apply appropriate tests to make definitive diagnosis. Finally, we will introduce treatment (e.g., antimicrobial agents) and prevention (e.g., immunization) strategies for infectious diseases. Disciplines represented will be microbiology, histology, immunology, pathology, and pharmacology.

The unit is broken into four 1 week blocks. Week 1 will be an introduction and allow time for review of specific organisms. Week 2 will focus on common Infectious Diseases syndromes and antimicrobials. Week 3 will cover tropical infections, infections in returning traveler and expatriate, and those important to global health. It will also cover Pediatric infectious disease and viruses, plus introduce Immunocompromised Hosts. Week 4 will complete coverage of fungi and Immunocompromised Hosts. Your learning will include reading, lecture (live and podcasts), small group, plate rounds, PBL and board-style question sessions. For the most part you will be presented with clinical syndromes for which you will need to consider all types of organisms (e.g. bacteria, viruses, parasites) and occasionally non-infectious causes (e.g. rheumatologic, malignancy, drug reactions, etc).

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Infectious Disease	HID Learning Objective	WCMC Learning Objective
1. Explain the important immune system and host conditions that predispose to infection	1,2	K1,K2
2. Describe the pathophysiology, natural history, and diagnosis of the common or important clinical infectious disease syndromes	2,3	K2, K3
3. List systematically (by microorganism class) the differential of the possible infectious agents that cause these clinical syndromes	1,2,5,12	K1,K2
4. Discuss the structural, physiologic, and pathogenic features of microorganisms causing infectious diseases.	1,2,5,12	K1,K2
5. Discuss the strategies and diagnostic tests used in the identification of pathogens.	3	K2
6. Identify treatments and medications that can ameliorate infectious diseases	6	K4

7. Explain the mechanisms of action of the major classes of antibiotics, antivirals, and antifungals as well as the mechanisms of microbial resistance.	2,6	K2,K4
8. Review approaches to immunization and strategies for prevention of infectious diseases	4	K3
9. Explain the relationship between immune status in HIV/AIDS and development of opportunistic infections.	2,5,12	K2,K3
10. 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.	12,13,14	PC1
11. Analyze demographic, epidemiologic, and other characteristics such as travel and immunization history to individualize the differential diagnosis.	10,12	PC1
12. Utilize diagnostic microbiology, immunology, virology, mycology, and parasitology laboratory tests appropriately.	3,5	K2
13. Recognize common microorganisms, as depicted in stained clinical specimens or most other common methods of laboratory identification.	3,5	K2
14. Use an approach to normalize sexual history-taking to assess risk for sexually transmitted infections.	10,12	PC1
15. Critically read both classic and contemporary biomedical scientific literature to identify how basic science, clinical, and translational research are conducted and evaluated.	15	PBLI1, PBLI2, PBLI3, PBLI4
16. Respect the views, time, and participatory rights of classmates and faculty in small and large group teaching settings.	16	ICS1,P1
17. Demonstrate sensitivity to patients' medical and psychosocial needs with respect to illnesses that have historically been stigmatized.	17	P1, P3

Patient Care/Physicianship Unit

Welcome to the **Patient Care/Physicianship (PC/P)** Unit of Health, Illness and Disease-2 (HID-2). The overarching goal of the PC/P unit is to help you develop fundamental knowledge, skills and attitudes related to the care of patients and the role of the physician.

Unit Leaders:

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Patient Care/Physicianship	HID Learning Objective	WCMC Learning Objective
1. 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, including performing a focused history and neurologic, mental status, musculoskeletal, and dermatologic examination	10, 11	PC-1
2. Conduct a complete patient medical history and prepare an accurate and organized written record of that history	10, 11	PC-1
3. Conduct a complete physical examination of a patient and prepare an accurate and organized written record of that examination	10, 11	PC-1; PC-2
4. Analyze screening and diagnostic testing information and integrate that information into an accurate and organized written record of a patient encounter	12, 14	PC-2; K-2
5. 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	13	K-1; K-2; PC-1
6. Analyze information obtained from history, physical examination, and diagnostic tests and then to formulate a further diagnostic and therapeutic plan	12, 13, 14	K-1; K-2; PC-1
7. Describe the basic principles of patient-centered care and cultural competence and apply them in history taking, disease prevention, and counseling across the lifecycle	9, 18	K-1; ICS-1; ICS-2; P-2; P-3
8. Integrate medical concepts and professionalism through continued establishment of longitudinal partnerships with patients	2	K-2; K-4

9. Identify challenges patients encounter navigating the healthcare system, and describe how healthcare professionals can advocate for patients	7	HCS-1
10. Develop a professional identity within the healthcare system, with an appreciation for various healthcare professionals and patients	17	P-1; P-2; P-3
11. Use basic counseling strategies for dealing with a variety of clinical situations	18	K-2; K-4; ICS-1
12. Describe the basic organization and financing of the US healthcare system	7	HCS-1
13. Identify ways to address patient safety at the patient and system level	18	PC-1; PC-2; PC-3; HCS-2
14. Describe ways to address health disparities, including recognition of one's own biases in caring for patients	7, 4, 16, 17	HCS-1; HCS-2; K-3; P-1; P-2; P-3
15. Recognize ethically challenging situations and apply principles of ethics in medical care specifically when considering neuropsychiatric conditions, disabilities, and end of life care	8	S-1; P-2; P-3
16. Describe basic knowledge and attitudes for a successful transition to clinical clerkships, including the roles and expectations of medical students as members of the health care team, approaches to integration into the team, self-directed learning, time-management, and maintaining wellness.	18	PC-1; PC-2; PC-3; ICS-2; P-1; P-3; PBLI-1
17. Perform basic skills relevant to the role of medical students on a healthcare team, such as phlebotomy, navigation of the electronic medical record, inpatient note writing, and oral presentations.	18	PC-1; PC-2; ICS-2; PBLI-1