Instruction in medicine is provided during all four years of the medical curriculum, beginning with Practice of Medicine I (Medicine 507) during the first year. Teaching during the second year has two main objectives: (1) the correlation of the basic sciences with clinical aspects of disease; and (2) training in the technical methods of physical examination and laboratory diagnosis. By the beginning of the third year, the student is ready for the supervised clinical study of individual patients. A clinical clerkship of 12 weeks, divided into three four-week periods, is served by third-year students on the medical services of the department. During the final year, students may select a sub-internship in general medicine and a series of elective courses in the medical specialties.

Website: https://internalmedicine.wustl.edu

Faculty

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Master of Business Administration, Southern Illinois University (Duplicate of Southern Illinois University Carbondale), 1985
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Main Campus, 1959
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Bachelor of Science, University of Nebraska, 1972
Doctor of Medicine, University of Nebraska at Omaha, 1976

**David J Tucker, M.D.**
Assistant Professor of Clinical Medicine
Bachelor of Science, University of Notre Dame, 1977
Doctor of Medicine, Saint Louis University, 1981

**Peter G Tuteur, M.D.**
Associate Professor Emeritus of Medicine
Bachelor of Arts, Johns Hopkins University Medical (Duplicate of Johns Hopkins University), 1962
Champaign), 1966

**Robert C. Uchiyama, M.D.**
Instructor in Clinical Medicine
Bachelor of Science, Stanford University, 1976
Doctor of Medicine, Saint Louis University, 1980

**Gil M Vardi, M.D.**
Assistant Professor of Clinical Medicine
Aviv University (Duplicate of Tel Aviv University), 1988

**Emmanuel A Venkatesan, MBBS**
Associate Professor of Clinical Medicine
Foreign MD equivalent, CMC, Vellore, India, 1990

**Dennis T Villareal, M.D.**
Adjunct Associate Professor of Medicine
Bachelor of Science, University of San Carlos, 1978
Doctor of Medicine, CEBU Doctor's College of Med (Duplicate of Cebu Doctors' University (Cebu Doctors' College)), 1982

**Benjamin Allen Voss, M.D.**
Assistant Professor of Clinical Medicine
Bachelor of Arts, Saint Louis University, 2003
Doctor of Medicine, Creighton University, 2007

**Stanley G Vriezelaar, M.D.**
Instructor in Clinical Medicine
Bachelor of Arts, Simpson College, 1977
Doctor of Medicine, University of Iowa, 1981

**Harry Lee Wadsworth, M.D.**
Instructor in Clinical Medicine
Bachelor of Science, Texas Tech University, 1978
Doctor of Medicine, Texas Tech University, 1983

**Stanley M Wald, M.D.**
Associate Professor of Clinical Medicine
Bachelor of Science, University of Illinois at Chicago, 1946
Doctor of Medicine, Washington University in St Louis, 1994

**David A Walls, M.D.**
Instructor in Clinical Medicine
Bachelor of Arts, Southern Illinois University (Duplicate of Southern Illinois University Carbondale), 1979
Doctor of Medicine, Southern Illinois University (Duplicate of Southern Illinois University Carbondale), 1982

**Corinna Hendrell Warren, M.D.**
Instructor in Clinical Medicine
Bachelor of Science, Southern Illinois University Edwardsville, 1990
Doctor of Medicine, University of Illinois at Chicago, 1994

**Scott P Wasserstrom, M.A., M.D.**
Instructor in Clinical Medicine
Bachelor of Science, University of Illinois, 1990
Master of Arts, Washington University in St Louis, 1995
Doctor of Medicine, Washington University in St Louis, 1995

**Kevin D Weikart, M.D.**
Instructor in Clinical Medicine

Doctor of Medicine, American University of the Caribbean, 1979

Leonard B Weinstock, M.D.
Associate Professor of Clinical Medicine
Assistant Professor of Clinical Surgery (General Surgery)
Bachelor of Arts, University of Vermont, 1977
Doctor of Medicine, University of Rochester, 1981

Peter Douglas Weiss, M.D.
Instructor in Clinical Medicine
Bachelor of Arts, Harvard University, 1975
Doctor of Medicine, Case Western Reserve University, 1980

Lynn Ellis Welling, M.D.
Adjunct Associate Professor of Medicine
Doctor of Medicine, Uniformed Services University of the Health Sciences, 1989

Alvin S Wenneker, M.D.
Professor of Clinical Medicine
Bachelor of Arts, Washington University in St Louis, 1949
Doctor of Medicine, Washington University in St Louis, 1953

Jennifer Marie Wessels, M.D.
Instructor in Clinical Medicine
Doctor of Medicine, Saint Louis University, 2009

John F Wiedner, M.D.
Instructor in Clinical Medicine
Bachelor of Arts, Knox College, 1982
Doctor of Medicine, School Not Listed, 1985

Deborah A Wienski, M.D.
Instructor in Clinical Medicine
Bachelor of Arts, Smith College, 1979
Doctor of Medicine, Tufts University, 1983

George A Williams, M.A., M.D.
Assistant Professor of Clinical Medicine
Bachelor of Arts, University of Notre Dame, 1967
Master of Arts, Columbia University, 1968
Doctor of Medicine, University of Wisconsin Madison, 1972

Nancy J Williams, M.D.
Instructor in Clinical Medicine
Bachelor of Arts, Dartmouth College, 1982
Doctor of Medicine, University of Kansas, 1987

R. Jerome Williams, M.D.
Associate Professor of Clinical Medicine
Bachelor of Arts, Harvard University, 1973
Doctor of Medicine, Duke University, 1977

Patrick H Win
Instructor in Clinical Medicine

Gerald Wolff, M.D.
Assistant Professor of Clinical Medicine
Bachelor of Arts, Harvard University, 1955
Doctor of Medicine, Washington University in St Louis, 1961

John A Wood, M.D.
Associate Professor of Clinical Medicine
Doctor of Medicine, University of Oklahoma, 1968

Jeffrey M Wright, M.D.
Assistant Professor of Clinical Medicine
Assistant Professor of Clinical Pediatrics
Bachelor of Science, Vanderbilt University, 1975
Doctor of Medicine, Washington University in St Louis, 1979

Simon Yu, M.D.
Instructor in Clinical Medicine
Doctor of Medicine, University of Missouri Columbia, 1984

John F Zalewski, M.D.
Instructor in Clinical Medicine
Bachelor of Science, Clarkson University, 1973
Doctor of Medicine, State University of New York at Buffalo, 1980

Jian Zhu, Ph.D.
Instructor in Medicine
Doctor of Philosophy, Oklahoma State University, 2004

Research Electives

Medicine Research Electives

During the fourth year, opportunities exist for many varieties of advanced clinical or research experiences.

For information about Primary Care Summer Preceptorships (p. 22), please refer to the information at the bottom of this section.

John P. Atkinson, MD
Clinical Sciences Research Building, 10th Floor
Phone: 314-362-8391

A clinical research elective is offered in the evaluation of patients with complement deficiency or overactivity states and with undiagnosed rheumatic disease syndromes.

Roberto Civitelli, MD
BJC Institute of Health, 11th Floor, Musculoskeletal Research Center
Phone: 314-454-8408

Biology of cell-cell interactions and communication in bone via gap junctions and cell adhesion molecules; function of connexins and cadherins in transcriptional control of osteoblast differentiation, osteoclastogenesis, and mechanotransduction; modulation of mesenchymal lineage allocation and osteogenic differentiation by cadherins and beta-catenin signaling.
occupational diseases. Other activities can include worksite visits by working on a mutually agreed-on topic of interest related to use epidemiologic methods to investigate disease processes in medicine epidemiology research, students will learn how to working populations. During an elective in occupational and to improve healthy diet and physical activity among workplace intervention studies to prevent injuries and illnesses for occupational diseases and work-related exposures. We are also doing epidemiology methods to characterize associations between diseases and work-related exposures. We are also doing workplace intervention studies to prevent injuries and illnesses and to improve healthy diet and physical activity among working populations. During an elective in occupational medicine epidemiology research, students will learn how to use epidemiologic methods to investigate disease processes by working on a mutually agreed-on topic of interest related to occupational diseases. Other activities can include worksite visits and intervention projects as well as involvement with worksite health promotion and policy making. Elective length is variable, depending on individual circumstances. Please contact Dr. Evanoff to discuss this research.

Nicholas O. Davidson, MD
910 Clinical Sciences Research Building, North Tower
Phone: 314-362-2027
Our focus is on the genetic pathways of nonalcoholic fatty liver disease (NAFLD) and colorectal cancer development. We have two major areas of research interest. Our laboratory is interested, first, in the molecular mechanisms of hepatic steatosis and the pathogenesis of NAFLD. This is the most prevalent liver disease in the United States, likely affecting a quarter of the population. We have generated genetically manipulated mouse strains that offer insights into the mechanisms of hepatic steatosis. The student would work as part of a team, designing and conducting experiments that will test hypotheses concerning the mechanisms and consequences of hepatic steatosis. These studies will primarily involve mouse genetics, examining the expression of candidate genes under a variety of nutritional and pharmacologic settings that modulate hepatic lipid metabolism. In addition, we are using microarrays to study the spectrum of genetic changes that may predict the extent of hepatic lipid accumulation in patients with steatohepatitis. Our goal is to test hypotheses using mouse genetics and to extend these studies to examine the same pathways in humans with NAFLD. Our second area of interest concerns the genetic pathways involved in colorectal cancer, the second leading cause of cancer-related deaths. We have developed a novel strain of mice in which the dominant effects of mutations in the APC tumor suppressor gene have been abrogated through deletion of an RNA binding protein, apobec-1. This deletion has a major effect on the expression of cox-2, abrogating the increase in expression seen in human colonic adenomas and wild-type mouse intestinal adenomas. These findings suggest that apobec-1 is a genetic modifier of colon cancer development. We will study the importance of apobec-1 expression in human colon cancer specimens and continue our murine genetic studies of this novel pathway for modulating colon cancer development and progression.

Bradley Evanoff, MD, MPH
Phone: 314-454-8638
Our primary interest is on occupational medicine epidemiology and intervention research. Our research involves the use of epidemiology methods to characterize associations between diseases and work-related exposures. We are also doing workplace intervention studies to prevent injuries and illnesses and to improve healthy diet and physical activity among working populations. During an elective in occupational medicine epidemiology research, students will learn how to use epidemiologic methods to investigate disease processes by working on a mutually agreed-on topic of interest related to occupational diseases. Other activities can include worksite visits and intervention projects as well as involvement with worksite health promotion and policy making. Elective length is variable, depending on individual circumstances. Please contact Dr. Evanoff to discuss this research.

Gregory I. Goldberg, PhD
Wohl Clinic, 4th Floor
Phone: 314-362-8172
Role of secreted extracellular matrix metalloproteases in tissue remodeling; structure and function of the metalloproteases.

Richard W. Gross, MD, PhD
4525 Scott Avenue, East Building
Phone: 314-362-2690
Lipid mediators of signal transduction in the cardiovascular system; characterization of regulatory mechanisms responsible for the liberation of lipid second messengers during cellular activation; roles of phospholipases in mediating the metabolic syndrome and end-organ tissue damage.

Stacey House, MD, PhD
Phone: 314-362-8070
houses@wustl.edu
Our focus is on the genetic pathways of nonalcoholic fatty liver disease (NAFLD) and colorectal cancer development. We have two major areas of research interest. Our laboratory is interested, first, in the molecular mechanisms of hepatic steatosis and the pathogenesis of NAFLD. This is the most prevalent liver disease in the United States, likely affecting a quarter of the population. We have generated genetically manipulated mouse strains that offer insights into the mechanisms of hepatic steatosis. The student would work as part of a team, designing and conducting experiments that will test hypotheses concerning the mechanisms and consequences of hepatic steatosis. These studies will primarily involve mouse genetics, examining the expression of candidate genes under a variety of nutritional and pharmacologic settings that modulate hepatic lipid metabolism. In addition, we are using microarrays to study the spectrum of genetic changes that may predict the extent of hepatic lipid accumulation in patients with steatohepatitis. Our goal is to test hypotheses using mouse genetics and to extend these studies to examine the same pathways in humans with NAFLD. Our second area of interest concerns the genetic pathways involved in colorectal cancer, the second leading cause of cancer-related deaths. We have developed a novel strain of mice in which the dominant effects of mutations in the APC tumor suppressor gene have been abrogated through deletion of an RNA binding protein, apobec-1. This deletion has a major effect on the expression of cox-2, abrogating the increase in expression seen in human colonic adenomas and wild-type mouse intestinal adenomas. These findings suggest that apobec-1 is a genetic modifier of colon cancer development. We will study the importance of apobec-1 expression in human colon cancer specimens and continue our murine genetic studies of this novel pathway for modulating colon cancer development and progression.

Lisa Hayes
Phone: 314-362-4362
hayesl@wustl.edu
Emergency medicine clinical research is the primary focus of this lab. This type of research involves the gamut of research designs, from retrospective cohort studies (“The Use of B Hydroxy Butyrate Point-of-Care Testing in Diabetic Ketoacidosis”) to prospective clinical trials (“Biomarkers in Traumatic Brain Injury”) to the evaluation of health care systems and emergency department processes (“Effects of a Triage Process Conversion on the Triage of High Risk Presentations”) to the analysis of health policy issues (“Rate of Follow-up to a Primary Care Clinic and Subsequent Emergency Department Utilization among an Urban ED Population”). Students will learn the basic clinical research designs and will be able to articulate the benefits and drawbacks of each. They will be involved in hypothesis generation and study design for projects that are at that stage. For ongoing projects, they will learn about the informed consent process and be involved in screening for study subjects and subject selection and enrollment. They will be allowed to consent for studies judged to be of minimal risk. Students will be taught important rules regarding data acquisition and entry, particularly as these relate to standards that have been set forth in the medical literature. They will learn about bias and inter-rater reliability. Students will participate in data entry, data analysis, and subsequent abstract/manuscript preparation based on their level of interest and time commitment. Students will meet weekly with one of the course directors to discuss study
progress and to identify any roadblocks to study completion. These meetings will also serve as a forum for one-on-one education of the student regarding study methodology, ethical issues in research, and various resources available to the clinical researcher at Washington University.

Sandor J. Kovacs, MD, PhD
9965 Clinical Sciences Research Building
Phone: 314-362-8901

This experience is geared toward students with math, physics and engineering backgrounds. The cardiovascular biophysics research elective concentrates on physiologic modeling and the comparison of model predictions to in vivo human data. The minimum elective time is eight weeks.

Marc S. Levin, MD, and Deborah C. Rubin, MD
922/924 Clinical Sciences Research Building
Phone: 314-362-8933 or 314-362-8935

Students will be members of a collaborative research team headed by Drs. Levin and Rubin (Department of Medicine) investigating the mechanisms underlying the intestinal adaptive response that occurs to compensate for the loss of functional small intestine. A second project focuses on epithelial-mesenchymal interactions and their role in regulating gut epithelial proliferation carcinogenesis and the normal and cancer stem cell niche. Specific mechanisms under investigation include the function of an immediate early gene Tis7 on gut adaptation after resection or injury. The role of myofibroblast protein epimorphin in regulating cell proliferation and colon carcinogenesis is being explored. The student will have the opportunity to learn basic molecular biology and physiology as they relate to small intestinal growth and function. Examples of techniques that are used in these studies include small animal surgery and colitis and cancer models (mice and rats), molecular biological techniques including PCR, Northern blotting, vector construction for the production of transgenic and knockout mouse models, in situ hybridization and immunohistochemistry.

Jason C. Mills, MD, PhD
Clinical Sciences Research Building, North Tower, Room 1030
Phone: 314-362-4213

We investigate the differentiation of epithelial stem cells in the upper gastrointestinal tract. We study how genes regulate differentiation in mouse models and in vitro in tissue culture, and we correlate our findings with human tissue specimens. Specific projects include the following: (1) understanding how inflammation leads to aberrant differentiation (metaplasia), which is a precursor for cancer; (2) elucidating how master regulatory transcription factors like Xbp1 and Mist1 coordinate the massive cytoskeletal and organelar expansion of specialized secretory cells as they differentiate from stem cells; and (3) understanding the mechanisms that regulate how differentiated cells can be reprogrammed into stem cells in gastrointestinal organs like the stomach and the pancreas.

Richard E. Ostlund, MD
8804 Wohl Hospital
Phone: 314-362-8266

Our laboratory focuses on the prevention and treatment of coronary heart disease by studying cholesterol absorption, detoxification and elimination from the body. Direct patient studies that use new stable isotopic cholesterol tracers and mass spectrometry techniques complement in vitro work on the biochemistry of cholesterol transport in cultured cells.

Russell Pachynski, MD
BJC Institute of Health, 7th Floor
Phone: 314-286-2341

Our lab focuses on several aspects of tumor immunology and translational immunotherapy. We utilize mouse tumor models, human tissues and samples, and advanced molecular and immunologic techniques to study leukocyte trafficking in the setting of tumor development and progression. We also have projects focusing on developing novel immunotherapeutics aimed at augmenting the recruitment of beneficial leukocyte subsets into the tumor microenvironment in order to suppress tumor growth. We are utilizing several approaches, such as nanoparticles, fusion proteins and viruses.

Katherine Ponder, MD
8818 Cancer Science Research Building
Phone: 314-362-5188
kponder@wustl.edu

The focus of this lab is on gene therapy for lysosomal storage diseases such as mucopolysaccharidosis (MPS). We have developed a retroviral vector that can be efficiently delivered to the liver of mice and dogs and that results in expression sufficient to reduce many of the clinical manifestations of these genetic diseases. Current studies focus on assessing the therapeutic effect of gene therapy on sites that are affected in MPS (e.g., heart, aorta, bones, joints) and on developing vectors that might be translated into human patients. In addition, we are evaluating the pathogenesis of disease in MPS, which appears to involve the upregulation of destructive proteases in the aorta and possibly other sites. A better understanding of the pathogenesis of disease might result in additional therapies for MPS.

Clay F. Semenkovich, MD
Southwest Tower, 8th Floor
Phone: 314-362-4454
Fatty acid metabolism and its role in atherosclerosis, diabetes, hypertension and obesity; modulation of respiratory uncoupling for the treatment of aging, obesity and vascular disease.

Phyllis K. Stein, PhD
Northwest Tower, Room 13116
Phone: 314-286-1350
pstein@wustl.edu

This lab’s main focus is on the clinical significance of heart rate variability and ECG-derived waveform parameters obtained from continuous ambulatory monitoring. This elective affords the student the opportunity to perform research in heart rate variability or in other measurements, like QT variability or T-wave alternans that can be derived from continuous ECG monitoring from Holter recordings or polysomnography recordings in the sleep lab. One area of active research is the identification of heart rate patterns associated with obstructive and central sleep apneas and hypopneas and the relationship of previously unappreciated cycling heart rate patterns and outcomes. Data are also available from mice. Many possible projects are available using our many large existing datasets, using the thousands of stored studies in the sleep lab, or using de novo data collection in a clinical or animal population and in infants. Also, many possible directions for this research are available, from applying traditional and nonlinear HRV to different populations to developing methods to quantify ultradian heart rate variability patterns to developing novel ECG analysis techniques, among others. Also, we are involved with the Cardiovascular Health Study (CHS), a large population-based longitudinal study of risk factors for heart disease and stroke among community-dwelling people more than 65 years old. There is a subset of this population who had Holter recordings (~1400 at baseline, ~800 of the same people five years later, and ~370 minority subjects recorded at the same time as the second CHS recording). These recordings have already been analyzed by us, so there is a large amount of heart rate variability and heart rate pattern data available. There are also subsets of patients from the CHS and from another study (EPHESUS) who are known to have died suddenly, and we have developed a matched control group in order to examine ECG-based differences in those who died suddenly. We also have electronic sleep studies at two time points for about 300 of the CHS Holter participants who also participated in the Sleep Heart Health Study. We have analyzed an additional ~1500 sleep studies from CHS participants who did not have Holter recordings. Thus, there is also an opportunity in the CHS dataset for studies of the relationship of heart rate variability with changes in heart rate variability over time and with a huge number of clinical and demographic factors among the elderly. We also have data on the relationship of Holter-based HRV and sleep apnea patterns to the development of atrial fibrillation after cardiac surgery as well as data from a study of the treatment of depression in treatment-resistant depressed post-MI patients, a study of sickle cell patients, and a study of heart rate variability and echo parameters in elderly African Americans. Currently, we are also analyzing HRV in premature infants as they mature and HRV as a predictor of response to treatment in babies in the NICU and PICU, using stored 24-hour bedside ECGs.

Heart rate variability and clinical outcomes: The student will be learning about HRV methods and will investigate the relationship of HRV and outcomes in one of our datasets. Because we have clinical and demographic data for about 20,000 subjects for whom continuous ECGs from Holter recordings, sleep studies, and ICU studies are available, as well as some mouse data, the student will be able to choose a project that may lead to a publishable result in an area of interest. The HRV Lab has enough computers and software to accommodate the needs of any interested students.

John Turk, MD, PhD
Southwest Tower, 8th Floor
Phone: 314-362-8190

Phospholipid signaling mechanisms in pancreatic islets is the main focus of this lab. Experience with the mass spectrometric analysis of complex lipids is available.

H.J. Wedner, MD
5002 Steinberg Pavilion, Barnes-Jewish Hospital, North Campus
Phone: 314-454-7937 or 314-454-7377

Asthma care in the inner city: Students will participate in ongoing studies of the delivery of asthma care to inner-city children and adults. The emphasis will be on direct contact between the asthmatic patients and the student, along with an asthma counselor.

Biology of pollen and fungal allergens: Our laboratory has been characterizing the important allergenic proteins from molds and pollen. The allergens are identified using skin-test-sensitive individuals, and the proteins are isolated and characterized by a combination of physiochemical and molecular biological techniques. These studies should lead to better forms of allergy immunotherapy. Students will participate in the isolation, characterization and modification of major allergens from a number of molds, including Stachybotrys atra and Epicoccum nigrum, and from several pollens, including those from white oak and Parthenium hysterophoros, a newly recognized allergen.

Primary Care Summer Preceptorships

Since 1996, the School of Medicine has sponsored a primary care preceptorship program for medical students during the summer between their first and second years of classes. Students select a preceptor in internal medicine, pediatrics or
family practice and spend up to eight weeks observing that physician’s clinical practice. A stipend is provided to the student. Although many of the preceptors are in St. Louis, others — particularly alumni — are located in cities throughout the country.

Courses

Courses include the following:

- M25 Medicine (p. 23)
- M27 Emergency Medicine (p. 30)

M25 Medicine


M25 Medicine 507 Practice of Medicine I

POM I is a large course which spans all 3 blocks of the first year. It is composed of three content areas: 1. Clinical Skills 2. Patient, Physician, and Society 3. Clinical Knowledge Each of these three content areas has two or more sections, each run by a faculty section leader. POM I employs a variety of teaching techniques, instructors and venues. This includes lecture, small group discussions, panel sessions, one-on-one hospital interviews, standardized patient sessions, a patient home visit, and visits to both a primary care office and a city clinic. What are the educational goals of POM I? Students will learn to: 1. Perform a complete history and physical examination with thoroughness, accuracy, sensitivity and compassion. 2. Communicate effectively, efficiently and compassionately with patients, families and other health professionals. 3. Describe and analyze the statistical methodology of clinical studies and apply the results to individuals and groups of patients. 4. Identify and investigate ethical, cultural, socioeconomic and political factors relevant to medical interactions. 5. Examine and analyze personal and professional competencies, limitations and behaviors. How do we accomplish these goals? 1. Learning skills and techniques requires a cycle of steps: preparation, background reading, attempts at skill performance, analysis and reflection on performance, discussion of potential improvements and successive performance of the skill with advancement to a new level of expertise. 2. The focus is on learning skills. You practice each skill, such as interviewing, in a variety of venues and situations of varying complexity. This course is for learning about how to do things that you will use for taking care of patients and families. 3. You work in multiple learning environments. a. Academic environments: Small group sessions for discussion, small group practice sessions, peer learning, small group presentations, individual and group writing assignments, and reflections on experiences are the preferred learning locations. b. Clinical environments: Inpatient units with faculty and WUSM IV mentors, standardized patient experiences with videotape review, physicians’ offices, patients’ homes with and without home care professionals, and a city clinic. Credit 198.5 units.

M25 Medicine 605A Infectious Diseases

The Infectious Diseases course teaches both organism-specific and organ-specific approaches to disease caused by microbes. The course expands upon the material presented in the first year concerning bacteria, viruses, fungi and parasites and their involvement in causation of human disease. It explores the complex interaction between microbes and host in the individual patient, and at the broader public health level. The course introduces the recognition and initial management of common infectious diseases. Educational methods include lecture, interactive in-class case discussions and review sessions, and student-led clinical case discussions in small groups. Credit 51 units.

M25 Medicine 605A Rheumatology

A major focus of the course is teaching "how to think like a rheumatologist", emphasizing the concept of clinical diagnosis: the history and physical generate a clinical hypothesis, which is supported by laboratory tests. Inflammatory arthritis (rheumatoid arthritis, spondyloarthropathies, crystalline disorders, and infectious arthritis), classic "autoimmune diseases" (lupus, inflammatory myopathy, and scleroderma), and vasculitic syndromes are presented. A team based learning exercise on rheumatology lab tests gives students a chance to teach one another the details. Two separate sessions with four unknown patients gives students a chance to interview patients and try to make a diagnosis. Credit 17 units.

M25 Medicine 607 Practice of Medicine II

The goal of The Practice of Medicine (POM) course is to provide students with the knowledge, skills and attitudes essential to patient care regardless of specialty. POM II is a continuation of POM I and will continue to address various interfaces between patients, physicians and society and will also introduce the advanced physical exam and approaches to clinical thinking and decision-making. The sections of POM II include Clinical Skills, Case Development, Communication Skills, Ophthalmology, Radiology, Community and Public Health, Ethics and Health Policy Humanities, and Scientific Methods. The learning objectives for each section of POM II emphasize topics and skills used in all fields of medicine, and the majority of the course work will be taught in small groups or through clinical experiences. Credit 89 units.

M25 Medicine 611B Cardiovascular Disease

Cardiovascular disease remains the number one cause of death within the United States, although steady advances in the field have greatly reduced both its associated morbidity and mortality. This course provides a foundation for understanding the pathophysiologies, diagnosis, and management of cardiovascular conditions commonly encountered in clinical practice, including hypertension, ischemic heart disease, heart failure, arrhythmias, valvular heart disease, pericardial diseases, aortic diseases, peripheral arterial disease, and venous disorders. An emphasis is placed on describing the current state of knowledge in cardiology while also including some of the exciting new developments that are revolutionizing patient care. The course includes lecture overviews of each topic along with small group and team-based learning sessions to solidify and apply knowledge of the material to patient case scenarios. In addition, “EKGs of the Week” allow students to practice a structured approach to the interpretation of EKGs. Credit 30 units.

M25 Medicine 612B Pulmonary Diseases

The pulmonary pathophysiologies course is designed to familiarize medical students with the pathophysiological mechanisms underlying diseases of the pulmonary system. The course begins with a brief review of pertinent pulmonary physiology and
pulmonary function, and then explores how pathologic disorders alter normal lung physiology resulting in the clinical presentation of disease. Major categories of clinical pulmonary diseases discussed include obstructive lung diseases, restrictive lung diseases, pulmonary vascular diseases and pleural disease. Educational methods include lectures, team based learning and review sessions. Credit 22.5 units.

M25 Medicine 613B Renal & Genitourinary Diseases
This course focuses upon the wide variety of renal diseases. It will begin with a brief review of pertinent renal physiology, and then will explore disorders of fluids/electrolytes (abnormalities in plasma water/solute balance), patterns of acute and chronic kidney injury (including nephritic/nephrotic syndromes and renal involvement in systemic disorders), and finally the options available when end stage kidney disease is reached (hemodialysis, peritoneal dialysis, transplantation). The course contains a mixture of lecture, small group, team based learning, case-based presentations, and patient presentation. Credit 38 units.

M25 Medicine 614 Dermatology
The dermatology second-year course is designed to provide medical students with a foundation in dermatology that will support future learning and improve diagnostic skills in general medicine and a wide variety of specialties. Medical students will learn how to describe skin lesions and the pathophysiologic basis and clinical characteristics of major dermatologic diseases. Major categories of clinical skin diseases and their most prominent constituents will be discussed, including papulosquamous diseases, blistering diseases, infectious diseases, and benign and malignant neoplasms. Credit 8 units.

M25 Medicine 615A Endocrinology and Metabolism
The endocrine pathophysiology course aims to provide an understanding of the pathophysiology and clinical manifestations of common endocrine disorders. Emphasis is placed upon relevant clinical history and physical examination as well as the interpretation of investigations for endocrine disorders. Basic principles of treatment of endocrine disorders will also be discussed. Lectures are supplemented by organ-specific clinical case discussions. Credit 31 units.

M25 Medicine 620A Gastroint. and Liver Diseases/Nutrition
This course discusses the pathophysiological mechanisms underlying diseases of the gastrointestinal tract including esophagus, stomach, small and large intestines, liver, gall bladder and pancreas. A series of lectures related to nutrition and the impact of nutritional disorders on health and disease are also included. Lectures are supplemented by group seminars that include discussion of clinical case presentations. Credit 32 units.

M25 Medicine 625A Hematology and Oncology
The hematology pathophysiology course exposes students to common hematologic disorders and hematologic malignancies. The course utilizes lectures, clinical case discussions and practical sessions involving microscopy. Credit 39 units.

M25 Medicine 705 WUMSCare

M25 Medicine 707 Practice of Medicine III
Objectives: 1. To review challenges and dilemmas relevant to the practice of clinical medicine. 2. To examine clinical experiences from a variety of perspectives. In this course, themes and topics relevant to students in their clinical stage of training are discussed. Session formats include lecture, panel discussion and/or small group. As students exchange problematic scenarios and questions, the group develops potential solutions and management schemes. *Topics in the past have included: 1) Diversity 2) Training 2) Business of medicine 3) Individualized Learning Objectives in clinical scenario 4) PSQI 5) Mock Deposition, Risk Management, and Adverse Patient Outcomes 6) Compassion Fatigue, Resilience, and Burnout Part 1 7) Compassion Fatigue, Resilience, and Burnout Part 2 8) Caring for Incendiary Patients 9) Diagnostic Error and Transitions of Care 10) Strategies for Effective Teaching and Mentoring Attendance at 8 out of 10 POM III sessions is required to pass this course. Students may use 2 absences for any reason and are recommended to save them for their ACES rotation, Labor & Deliver rotation, or an emergency.

M25 Medicine 710 Medicine Clerkship
The Medicine clerkship provides supervised study of patients in both inpatient and ambulatory settings. For the inpatient rotations, students are assigned as clinical clerks to patients admitted to the general medical teaching services of Barnes-Jewish Hospital and Veterans Administration Medical Center. For the outpatient rotations, students learn primary care in internal medicine and family medicine clinics at Barnes-Jewish hospital or community-based practices. Teaching is provided by the Chief of Service, attending Physicians, House Officers, consultants, Chief Residents and regularly scheduled conferences. Formal instruction is given regarding core internal medicine topics during the clerkship. A minimum of 8 weeks is required: 2 consecutive 4-week rotations. Credit 308 units.

M25 Medicine 714 Ambulatory Clerkship: Emergency Medicine
The Urgent Care area (UCA) serves as our site for the WUSM III Ambulatory Care Rotation. Three students at a time are assigned to this 4 week rotation. Students will spend their first day in an orientation session learning suturing, ECG interpretation and airway management (including intubation skills) in hands-on laboratories. They will also review pelvic examinations and view an education video on domestic violence. On day two, they begin primarily evaluating non-emergent patients in Urgent Care and report directly to an Emergency Medicine attending. There are 4 hours of conferences per week (8:00 - 10:00 AM on Tuesday and Wednesday mornings) - attendance is mandatory. Discussions are currently underway to allow students to participate in helicopter ride-alongs with ARCH Airmedical Services. Students can expect to gain a wide range of skills in evaluating uncomplicated upper respiratory infections, urinary tract infections, sexually transmitted diseases, lacerations, eye problems, rashes, simple extremity trauma--in general, “bread and butter” medical/surgical problems. Students do a case presentation (15 min) at the close of the block. Credit 154 units.
M25 Medicine 740 Dermatology Clerkship
The goal of the dermatology clerkship is to provide a guide for the student to appreciate dermatology within the broader perspectives of medicine and biology. The student will develop familiarity with dermatologic vocabulary, learn to recognize and initiate therapy of common dermatologic disorders and become cognizant of uncommon or complicated dermatologic problems that require specialty care. Emphasis will be placed on careful history taking and physical examination. Students will always work under the direction of the resident physician and the attending physicians in the clinic setting.
Credit 77 units.

M25 Medicine 750 Geriatrics Clerkship
The primary goal of this rotation is for students to gain proficiency in the principles of geriatric evaluation and management, including the medical, psychological, social, and functional assessments of older adults. Students are expected to participate in the evaluation of three to five patients per week, in a variety of settings including the outpatient Geriatric Assessment Clinic, in-patient Geriatric Consult service, Parc Provence nursing home, and the Rehabilitation Institute of St. Louis (TRISL). Students will also have the opportunity to participate in hospice and home care visits, interdisciplinary team meetings, and observe an assessment at the WU Alzheimer's Disease Research Center. Students are expected to attend weekly conferences while on the rotation. The day normally begins at 8:30 a.m. and is usually finished by 5:30 p.m. There is no night or weekend call. Time is provided to read the detailed syllabus/bibliography. Many clinical activities are off-site from the medical campus. Students will be expected to give an oral presentation on a topic of their choice once during the rotation.
Credit 77 units.

M25 Medicine 801 General Medicine Subinternship - BJH
The purpose of the General Medicine Subinternship is the development of expertise in the care of hospitalized patients in a well-supervised teaching environment. Subinterns act as their patients’ interns under the supervision of residents and attending physicians. Subinterns have the same on-call and admitting schedules as the interns on their teams and are assigned up to two new patients on each admitting day. Subinterns are not required to spend call nights in the hospital. Except in emergencies, subinterns are the first individuals to evaluate patients admitted to medical service teams. A diagnostic and therapeutic approach to evaluating each patient is planned in consultation with the resident. Subinterns assume primary responsibility for the daily care of their patients, including evaluating each patient daily, presenting on morning rounds entering orders (discussed with and co-signed by the resident), interpreting results of diagnostic studies, calling consults, collaborating with nurses and social work, organizing post-discharge care, and communicating with patients and their families. Subinterns also attend weekly small group learning sessions during which they discuss, diagnose, and treat patients using example cases. By the end of the rotation, subinterns are expected to: - synthesize and succinctly present a patient’s history, exam, diagnostic data, assessment, and plan of care. - support differential diagnoses and proposed care plans with clinical reasoning and evidence. - demonstrate how to correctly order diagnostic tests and medications that further patient care. - analyze complex patient cases during interactive small group learning sessions. - integrate feedback from patients, residents, and attending physicians, and formulate a plan for ongoing improvement as a clinician.

M25 Medicine 810 Geriatric Medicine
The primary goal of this rotation is for students to gain proficiency in the principles of geriatric evaluation and management, including the medical, psychological, social, and functional assessments of older adults. Students are expected to participate in the evaluation of two to six patients per day, in a variety of settings including the outpatient Geriatric Assessment Clinics and Geriatric Medicine Primary Care clinics, inpatient Geriatric Medicine Consult service, Parc Provence Nursing Home, and The Rehabilitation Institute of St. Louis. Students will also have the opportunity to participate in hospice and home care visits, interdisciplinary team meetings, and observe assessments at the WU Memory Diagnostic Center (in Neurology). Students are expected to attend weekly conferences while on the rotation. The day normally begins at 8:30 a.m. and is usually finished by 5:30 p.m. There is no night or weekend call. Time is provided to read the detailed syllabus/bibliography. Many clinical activities are off-site from the medical campus; students will be required to coordinate transportation to and from such sites. Students will be expected to attend weekly educational conferences and give an oral presentation on a topic or journal article of their choice once during the rotation.
M25 Medicine 811 Hospitalist Subinternship
This course allows the student to work one-on-one with hospitalist physicians on a patient care team. The student acts as the intern under the direct supervision of the attending physician. Daily responsibilities include admission history and physicals, daily notes and discharge summaries for assigned patients. Students will also have the opportunity to perform indicated procedures on patients on this service. Students are encouraged to participate in Department of Medicine conferences.

M25 Medicine 811A Clinical Internal Medicine: Hospitalist
This course allows the student to work one-on-one with hospitalist physicians on a patient care team. Daily responsibilities include admission history and physicals, daily notes, and discharge summaries for assigned patients. Students will also have the opportunity to perform indicated procedures on patients on this service. Students are encouraged to participate in Department of Medicine conferences.

M25 Medicine 821 Inpatient Cardiology
Students will participate as members of the Barnes-Jewish Cardiology at Washington University Consultative Team. They will be part of a team composed of faculty members, fellows, residents, and nurse practitioners that sees a large population of cardiac patients and follows them through all aspects of their in-hospital care. Emphasis will be placed on physical examination and the interpretation of modern cardiac diagnostic tests, including electrocardiograms, echocardiograms and coronary angiograms and their role in clinical decision making.

M25 Medicine 822 Cardiology Subinternship
The structure and functioning of the Cardiology subinternship is very similar to the General Medicine Subinternship (M25 801 and M25 807). The basic purpose is to develop expertise in the care of hospitalized patients in a well-supervised teaching environment. The majority of patients admitted to the service will have a cardiology diagnosis as the main reason for admission. Some general medical problems will also be seen. All attendings on the service are cardiology subspecialists. Cardiology fellows act as the chief resident for the service on a monthly basis. Subinterns act as their patients’ interns under the supervision of residents and attending physicians. Subinterns have the same on-call and admitting schedules as the interns on their teams and are assigned up to two new patients on each admitting day. Subinterns are not required to spend call nights in the hospital. Except in emergencies, subinterns are the first individuals to evaluate patients admitted to medical service teams. A diagnostic and therapeutic approach to the patient is planned in consultation with the resident. Subinterns assume primary responsibility for the daily care of their patients, under the supervision of resident and attending physicians. This includes evaluation on daily rounds, scheduling and obtaining results of diagnostic studies, planning therapy, making arrangements for care after discharge and communicating with patients and their families. Subinterns attend the same conferences as the internal medicine house staff. There are also several conferences specific to the cardiology service designed to be flexible enough to accommodate a wide variety of course objectives but includes the opportunity to participate in 1–3 outpatient clinics per week, 1–4 weeks of inpatient intensive care, telemetry, or cardiology consultation rounds; and ECG, stress testing, nuclear imaging, or echocardiographic reading sessions, cardiac catheterization and electrophysiologic procedures. The emphasis will be on improvement of the ability to diagnose and treat cardiovascular disease on the basis of information obtained from a thorough history and physical examination that is integrated with data from appropriate highly targeted laboratory studies in a manner that optimizes patient outcome and minimizes risk and costs.

M25 Medicine 825 Cardiac Arrhythmias and Electrophysiology
Students will be members of the Cardiac Electrophysiology Consultation Team, which includes faculty members, fellows, residents, and nurse practitioners. The student will serve at the primary assessor for consultations and will, in concert with the rest of the team, complete the patient’s assessment and initiation recommendations and plan, as well as follow up. There is an emphasis on ECG evaluation and gaining familiarity with indications and details of arrhythmia therapeutics, including catheter ablation procedures, implantable device procedures, assessment, and programming, as well as antiarrhythmic drug therapy.

M25 Medicine 827 Heart Failure/Cardiac Transplantation
This rotation is intended to provide trainees with a comprehensive experience managing patients with advanced heart failure. In addition to daily inpatient rounds, trainees are invited to attend both heart failure and transplant clinics. Further, the curriculum is supplemented by a syllabus that contains the critical literature pertinent to this patient population. The trainees will also have experience with the evaluation of patients for operative heart failure therapies and will have the opportunity to observe these surgical procedures.

M25 Medicine 830 Dermatology
The aim of this elective is to provide a guide for students so they are able to appreciate dermatology within the broader perspectives of medicine and biology. Emphasis will be placed on the dermatologic variations encountered in a normal physical examination of the skin, the identification of common skin diseases, dermatologic clues to systemic disease, as well as those dermatologic conditions that are life-threatening. The student will participate in outpatient care in the Barnes-Jewish Hospital, VA, and affiliated clinics. Students will attend all clinical teaching rounds and conferences in addition to the basic science and cutaneous histopathology conferences.

M25 Medicine 831 Pediatric Dermatology
This clinical rotation will be available to students interested in dermatology, pediatrics or both. Students will follow the dermatology rotation (M25 830) with an emphasis on pediatric dermatology by attending pediatric dermatology clinics, seeing consults, etc.

M25 Medicine 834A SNHC Clinical Mentoring
This elective is designed to develop the teaching and mentoring skills of our fourth-year medical students through clinic sessions at the Saturday Neighborhood Clinic. In addition, the elective will develop the ability of our fourth-year students to productively engage and present complex social issues
through the development of a one-hour lecture. Three mentoring sessions will also occur. Each fourth-year student will pair with a preclinical (first- or second-year) student each session and then supervise that student throughout the clinic day. The fourth-year student will supervise and assist as the preclinical students complete the patient history and physical, presents the exam results to the physician, and writes the visit notes for multiple patients. The preclinical student will complete one patient note without assistance, which the fourth-year student will then thoroughly review, edit, and return to the preclinical student, along with constructive feedback regarding the preclinical student's general performance. The attending present at the SNHC will verify that the fourth-year mentor fulfilled the specified mentoring requirements. Additional practice sessions to review exam skills, note writing, and communication are optional and can be individually arranged between teams so the fourth-year mentor can assist the first-year student with personalized skills. Reading: (1 presentation) The fourth-years taking this elective will break into groups of 3-4. Each group will be responsible for presenting a 1-hour presentation on a topic related to "social determinants of health". There should be a case component to the presentation as well as a broader discussion. The presentations will be based on thorough research and should engage the broader context of the topic including the epidemiology, social and health ramifications, economics, interventions, etc. The presentation should include descriptions of potential solutions and innovation, where applicable.

M25 Medicine 836 Clinical Gastroenterology and Hepatology
The GI Hepatology elective is integrated into a very active inpatient and endoscopy service at Barnes-Jewish Hospital. Students will participate in the evaluation of inpatients with a spectrum of gut and liver disorders, make patient rounds with the faculty and fellows, and have responsibility for patients on whom consultations have been requested. In addition, they will observe general endoscopic techniques and participate in GI conferences.

M25 Medicine 836A Treatment of Patients with Inflammatory Bowel Disease
This elective will allow students to spend an intensive period of time learning about all aspects of the care of patients with IBD (surgical, endoscopic, and medical management). Although a predetermined schedule has been developed, it can be modified based on the student's interest. Alternative options include: inpatient IBD care (Barnes-Jewish Hospital and Barnes West County), wound clinic/stoma care, specialized endoscopy (chromoendoscopy, ERCP), IBD/colorectal surgery, pathology.

M25 Medicine 838 Medicine Consult Service
The focus of the Consult Service elective is the evaluation and management of medically complex patients admitted to the hospital on non-medicine services. The issues involved with perioperative management are particularly stressed. The student will function as a member of the consult service team. Duties will include performing initial consultations and follow-up care under the supervision of a Hospital Medicine attending and a senior medical resident. Attendance at Department of Medicine and division conferences is encouraged.

M25 Medicine 844 Hematology and Hemostasis
Activities include work-up of patients at Barnes-Jewish Hospital under the supervision of the hematology fellows and faculty; attendance at daily clinical rounds for 1-1.5 hours per day. These are staffed by a senior faculty in the Division of Hematology. In addition to evaluation of patients with hematologic disorders, the student will gain additional analytic skills including: 1. Interpret and integrate laboratory data in the diagnosis of anemia and other cytopenias. 2. Review peripheral blood and bone marrow morphology. 3. Analyze laboratory data for the diagnosis of thrombophilia and bleeding. 4. Discern the principles of blood banking and pheresis. The students will have the opportunity to follow patients with sickle cell disease and understand the treatment of this disorder. The student is expected to attend and participate in the weekly hematology conference.

M25 Medicine 847 Bone and Mineral Diseases
The course is designed to acquaint the student with the clinical, radiological and pathological manifestations and treatment of disorders of bone and mineral metabolism, including osteoporosis, Paget's disease of bone, hyperparathyroidism, osteomalacia, and more rare disorders of bone development and homeostasis. The student will rotate through clinics of the Division of Bone and Mineral Diseases, and see patients at Barnes-Jewish Hospital, Barnes-Jewish West County Hospital and Shriners Hospital for Children. Acquired and heritable bone diseases will be studied in the context of derangements of mineral homeostasis with emphasis on vitamin D and peptide hormone metabolism and skeletal formation and remodeling. The role of non-invasive methods for measuring bone mass in the diagnosis and management of skeletal diseases also will be stressed. Faculty and medical students will present interesting cases for discussion or the students can present a pertinent topic related to bone metabolism they have researched during their rotation.

M25 Medicine 849 Sun Protection Outreach Teaching by Students (SPOTS)
Students will teach public and private middle school and/or high school students in the St. Louis area about skin cancer and sun protection. SPOTS courses are taught in 60- to 90-minute sessions. The program involves delivering a PowerPoint presentation with a prewritten script, interactive games, a video, and hands-on demonstrations. The elective is open to students who are new to this program, as well as students who previously participated in the SPOTS first-year selective. Students new to SPOTS are required to attend two evening training sessions (2.5 hours each) to learn the content of the program, as well as teaching strategies. For students who have taught SPOTS before, only one evening session is required. Training sessions for all enrolled students occur in the fall. A winter training session can be added if needed. Students will teach 4 SPOTS session per week of elective credit (8 sessions total). Students participating in the elective need to arrange for their own transportation to teaching sessions. Sessions are typically taught by students in pairs. Learning objectives: 1. Demonstrate knowledge of basic principles of skin cancer, including how to detect skin cancer and how to decrease risk with photoprotection. 2. Effectively communicate this knowledge to children/adolescents. COVID UPDATE: Many schools are not allowing in-person visits and we have sent them the recorded materials but have not had medical students visit. If we have more interest by students than sessions, we may have to engage the medical students in other ways.
M25 Medicine 853 Bone and Joint Infectious Diseases
Study of infectious diseases of the bones and joints, including infections in both native and prosthetic joints. The elective is designed to teach students the fundamentals of evaluating clinical orthopedic infections and formulating plans for workup and therapy. Students see consultations in infectious diseases in every part of Barnes-Jewish Hospital under the supervision of a faculty member who rounds with them every day. They work closely with the infectious diseases attending and nurse practitioner, follow their own patients and play an important role in their management. They are expected to read the literature about their patients and participate in clinical conferences. They attend teaching rounds and conferences and lectures in infectious diseases. They also learn appropriate use of antibiotics and antifungal agents. The role of surgical and medical management is discussed, and the students will interact with surgical staff in understanding the risks and outcomes of these common infections. Two weeks of General Inpatient Infectious Disease are a prerequisite to this course.

M25 Medicine 854 Transplant Infectious Diseases
Study of infectious diseases in patients who have had bone marrow or solid organ transplants, or who have a hematologic malignancy. The elective is designed to teach students the fundamentals of evaluating clinical infections in these complex and interesting patients and formulating plans for workup and therapy. Students see consultations in every part of Barnes-Jewish Hospital under the supervision of a faculty member who rounds with them every day. They work closely with infectious disease fellows, follow their own patients and play an important role in their management. They are expected to read the literature about their patients and participate in clinical conferences. They attend teaching rounds and conferences and lectures in infectious diseases. They also learn appropriate use of antibiotics, antifungal and antiviral agents in this highly immune suppressed population. A wide distribution of infectious diseases is covered including management of neutropenic fever, invasive fungal infections in the transplant population, acute and chronic infections, infection prophylaxis and monitoring and interactions between immunosuppressive agents and antibiotics.

M25 Medicine 858 Ambulatory Infectious Diseases
The elective is designed to teach students the fundamentals of evaluating clinical infections in the outpatient setting. Students see patients under the supervision of a faculty member and interact with ID fellows and internal medicine residents. Students will participate in the care of HIV-infected or otherwise immunosuppressed patients as well as general infectious disease patients. The clinic is the primary provider for many HIV-infected patients, and students will learn the pathogenesis of HIV, become familiar with most antiretroviral medications, and have the opportunity to learn about opportunistic infections and their prophylaxis. They will also have the opportunity to see patients with bone and joint infections, endovascular infections, endemic and opportunistic mycoses, mycobacterial infections, sexually transmitted diseases, and many other infections. Patients seen will have a wide range of acute and chronic infections, and will include indigent and insured patients across a wide range of ages. The students will play an important role in the management of these patients and will present their assessments and plans to the supervising attending. They are expected to write clinic notes, read the literature about their patients, and participate in clinical conferences.

M25 Medicine 859 General Inpatient Infectious Diseases
This elective allows students to participate in the management of patients with a wide variety of infections in the inpatient setting. The elective is designed to teach students the fundamentals of evaluating clinical problems in infection and formulating plans for diagnosis and management. Students see consultations in infectious diseases in every part of Barnes-Jewish Hospital under the supervision of a faculty member who rounds with them every day. They work closely with medical residents and infectious disease fellows, follow their own patients and play an important role in their management. They are expected to read the literature about their patients and participate in clinical conferences. They attend teaching rounds, conferences, and lectures in infectious diseases. They see a wide variety of infection diseases including community acquired acute and chronic infections, opportunistic infections in HIV-infected patients and other immunocompromised hosts, hospital-acquired infections, and basic infection control practices. They also learn appropriate use of antibiotics, antifungal and antiviral agents.

M25 Medicine 867 Medical Intensive Care
The Medical Intensive Care Unit Elective is designed to introduce senior medical students to cognitive and procedural aspects of critical care medicine. Students will be expected to learn the basic pathophysiology and treatment approaches to respiratory failure, shock states and metabolic derangements. Participation in procedures will be encouraged as available. Dynamics of difficult conversations with patients and family members will also be modeled and discussed. Clinical responsibilities will occur as a part of a team and students will be expected to participate in admissions and daily follow-up on assigned patients. Teaching will occur via didactic lectures on weekdays and formal patient discussions on rounds.

M25 Medicine 869 Palliative Medicine
The Palliative Medicine elective will focus on the care of patients with life-threatening or debilitating illness throughout the course of their care. Skills in symptom management, communication, and interdisciplinary team-based care will be the focus. Students will spend the majority of their time on the BJH Palliative Care Service. Based on the individual student's interest, there may also be opportunities to work with the BJH Hospice Team and the St. Louis Children's Hospital Pediatric Advance Care Team. Students wishing to work with either team should contact the
Course Director and Administrative Contact, as well as the Instructors of the appropriate team, will discuss how trainee spots are very limited for both. While in the hospital, students will be responsible for seeing patients upon initial assessment as well as delivering follow-up care with the team. Patients will be seen for both end-of-life care as well as symptom management. Students will learn to assess and treat refractory symptoms and participate in complicated advanced care planning. Students will attend interdisciplinary team meetings, and may participate in conversations about goals of care and coping with bad news. They may also make home visits with hospice care providers, if desired. Emphasis will be placed on observing and understanding the psychosocial and spiritual needs of the patients, as well as the impact of the burden on caregivers. In addition, students will be expected to participate in bi-weekly presentations/group discussions on selected aspects of Palliative Medicine with the BJH Palliative Care team. Students will also be required to give a 20-minute presentation to the BJH Palliative Care team at the end of their rotation.

M25 Medicine 870 Endocrinology, Diabetes, and Metabolism
In general, the four-week rotation will be divided into two weeks of general endocrinology and two weeks of diabetes. Students taking this elective will perform consultations with fellows and faculty on the inpatient services at Barnes-Jewish Hospital and will also see patients with endocrine and metabolic diseases in the Outpatient Consultation. They will present these cases daily on teaching rounds. They will also participate in case conferences and seminars on a weekly basis. Extensive interaction with patients with diabetes and a diabetes education program are included, as is involvement with patients with thyroid, pituitary, adrenal, gonad, metabolic bone disease, and lipid disorders. Ample opportunities will be provided for discussions of patient problems with the members of the division. A variety of outpatient clinics are offered in the division and interested students should speak with the fellows and faculty members to customize the learning experience to match his or her career goals. At the end of the rotation, it is expected that students will have the ability to initiate inpatient and outpatient management of diabetes including insulin dosing and glucose monitoring, as well as evaluate and treat a variety of endocrine disorders including but not limited to thyroid, pituitary, and adrenal disease. Students will learn to perform effective inpatient and outpatient consultations.

M25 Medicine 871 Oncology - Outpatient
Students will gain experience in the initial treatment of newly-diagnosed malignancies and the outpatient management of oncology patients. Participation in multidisciplinary tumor conferences will stress a combined-modality approach to management, incorporating chemotherapy, radiotherapy and surgery. Students will see patients with a variety of malignancies, including lymphoma, myeloma, and tumors of the lung, breast, and colon. Management of hypercalcemia and other paraneoplastic syndromes, as well as cancer pain management, will be covered. Students will have the opportunity to see how most oncologists spend 90% of their weekday. They will observe different styles that oncologists use when presenting news about prognosis, treatment options, and other information to patients while they also learn about the molecular basis for cancer, the mechanisms of action for our therapies (particularly the newer agents which target specific molecular abnormalities), and the key studies that justify the use of therapies (e.g. randomized studies showing that after surgery, chemotherapy will reduce the risk of recurrence from a particular cancer with a particular regimen). By spending time with clinicians, students will learn how to identify hereditary syndromes, use drugs for symptom relief, and also learn how radiographic and laboratory tests allow oncologists to care for patients.

M25 Medicine 877 Intensive ECG Interpretation
During this two-week elective, students will read 20-25 ECGs obtained from the Barnes-Jewish Cardiac Diagnostic Laboratory, with an overview by an experienced electrocardiographer. There will also be didactic sessions covering infarction, ventricular hypertrophy, heart block, arrhythmias, and aberrant conduction.

M25 Medicine 879 Pulmonary Clinic for the Underserved
Clinical setting: Outpatient Clinic dedicated to providing pulmonary specialty care to patients who are predominantly uninsured or who rely upon public assistance such as Medicaid. Student role: Students independently interview and examine patients and present findings to the attending, tests and imaging are reviewed, and provider and attending develop plan. Common problems/diseases: Asthma, COPD, sarcoidosis, lung cancer, and obstructive sleep apnea are commonly seen. Also, patients are referred for evaluation of abnormal x-rays and for symptoms such as dyspnea. Primary learning objectives: - to understand and practice important history and exam skills in pulmonary medicine; symptoms, smoking history, work and environmental exposures, and important pulmonary physical exam findings. - to understand the basics of pulmonary function tests, chest imaging, and methods for tissue sampling. - to understand the basis of treatment of common pulmonary disorders. Conferences: There is no conference associated with this clinic, but students may attend the usual Thursday morning Medicine Grand Rounds at 8:00 am and the Pulmonary Grand Rounds at 11:00 am if the subject matter is appropriate.

M25 Medicine 880 Pulmonary Medicine - Barnes-Jewish Hospital
Students will acquire skills in the evaluation and management of patients with pulmonary diseases and in the interpretation of pulmonary function tests. They will gain experience in outpatient Lung Center and attend regular pulmonary and critical care medicine conferences.

M25 Medicine 884 Stem Cell Transplantation and Cellular Therapies
This elective is designed to introduce students to the general inpatient, intensive care, and outpatient management of patients with multiple hematologic malignancies including leukemia, lymphoma, marrow failure states and myeloma. These patients will be treated with chemotherapy, targeted therapies and cellular immunotherapies including chimeric receptor T cells (CART), natural killer cells, bispecific antibody treatments and stem cell transplant (both autologous and allogeneic). As the primary team, the BMT service is responsible for diagnosing and treating all medical problems including many critical care issues that may occur in these patients. These complex patients are often severely immunocompromised, coagulopathic, and at high-risk of multi-organ complications from both their disease and their therapy. Students work closely with residents, fellows, and faculty to develop treatment plans for patients. Students participate in daily rounds discussing general inpatient and intensive care BMT patients and attend outpatient clinic 1 day/wk to see how BMT physicians approach patients faced with difficult decisions to make regarding their care. In addition to multiple weekly conferences, students also attend daily teaching rounds
led by faculty to learn the basic science of hematopoiesis, the
genomics of leukemia, stem cell biology, gene therapy and cell
therapy, transplantation immunology, graft vs host disease
and infectious diseases seen in these immunocompromised
patients. The average medical student will contribute to the care
of inpatients (30-40 patients/day) and will be directly involved in
the assessment and care of selected outpatients as well.

__M25 Medicine 887 Clinical Cardiovascular Medicine__

This course involves clinical cardiology with some internal
medicine in a rural setting. Topics include inpatient and
outpatient care, diagnostic testing, device implants and follow-
up care, cardiac catheterization, and peripheral vascular
angiography and intervention.

__M25 Medicine 890 Clinical Nephrology__

Students rotate through inpatient and outpatient experiences to
gain exposure to all facets of nephrology. They will spend time
the majority of their time on an inpatient consult service, gaining
exposure to acute and chronic renal failure, glomerulonephritis,
and electrolyte disorders. During this time, they will serve
as a fully integrated member of the consult team, evaluating
underlying causes of kidney disease, performing diagnostic
procedures, formulating management plans, and engaging in
decision-making discussions with primary services and families.
In addition, students will have the opportunity to experience
ICU nephrology, transplant nephrology, the various CKD clinics,
and all modalities of dialysis, including in-center, home, and
peritoneal dialysis.

__M25 Medicine 890A Kidney Transplant__

Students participating in this elective will gain exposure to
end-stage renal disease and the treatment options, examine
kidney transplantation as the most valuable option, learn about
immunosuppression, and gain exposure to infectious diseases
like CMV, BK, and adenovirus that are commonly seen in
patients who have had a kidney transplant (and not often seen
otherwise).

__M25 Medicine 893 Adult Allergy and Clinical Immunology__

Students will participate in the outpatient Allergy Clinics located
in Barnes Jewish Hospital Center for Advanced Medicine,
Barnes Jewish West County, and Center for Advanced Medicine
South County. Students will participate in allergy skin testing,
pulmonary function testing, and drug desensitization. They will
have the opportunity to see patients with allergic rhinitis, asthma,
hives, food allergy, immunodeficiency, eosinophilic esophagitis,
hereditary angioedema, mastocytosis, contact allergic dermatitis,
eczema, and more. They can attend allergy conferences on
Thursday morning. Students have the option to follow a fellow
and see inpatient consults at Barnes Jewish Hospital.

__M25 Medicine 897 Complex Primary Care (ComPACT)__

ComPACT is an intensive primary care clinic. We work with
veterans with multiple medical comorbidities and multiple
hospitalizations. Frequently, they also have many social barriers
to health care. Our goals are to reduce admissions and improve
overall health and wellness. Students will be responsible for
performing histories and physicals in the outpatient setting. In
addition, when appropriate, students will round on hospitalized
ComPACT patients with Drs. Rumora and McCarthy. Patient
interactions will be face-to-face and electronic (phone, video).
Students will gain experience with balancing the demands of
competing medical issues. Many of our vets have heart failure,
diabetes, kidney disease, COPD, and other conditions. Students
will also gain experience in identifying and working to mitigate
social barriers to health. We have weekly staff "huddles" that
we encourage students to attend. We also have a journal club
approximately monthly. If this occurs during the student's time
with us, we may ask them to present an appropriate paper.

__M25 Medicine 900 Research Elective - Internal Medicine__

Research opportunities may be available. If interested, please
contact the Department of Internal Medicine.

__M27 Emergency Medicine__

Visit online course listings to view offerings for M27 Emergency
Medicine (https://courses.wustl.edu/CourseInfo.aspx?
sch=M&dept=M27).

__M27 EMED 714 Ambulatory Clerkship: Emergency Medicine__

The Urgent Care area (UCA) serves as our site for the WUSM
III Ambulatory Care Rotation. Three students at a time are
assigned to this two-week rotation. Students will spend their
first day in an orientation session learning suturing, ECG
interpretation, and airway management (including intubation
skills) in hands-on laboratories. They will also review pelvic
examinations and view an education video about domestic
violence. On day two, they begin primarily evaluating non-
emergent patients in Urgent Care and report directly to an
Emergency Medicine attending. There are four hours of
conferences per week (8-10 a.m. on Tuesday and Wednesday
mornings), and attendance is mandatory. Discussions are
currently underway to allow students to participate in helicopter
ride-alongs with ARCH Airmedical Services. Students can
expect to gain a wide range of skills in evaluating uncomplicated
upper respiratory infections, urinary tract infections, sexually
transmitted diseases, lacerations, eye problems, rashes, simple
extremity trauma -- in general, the "bread and butter" medical/
surgical problems. Students do a 15-minute case presentation at
the close of the block.

Credit 77 units.

__M27 EMED 800 Reading Elective - Emergency Medicine__

__M27 EMED 801 Emergency Medicine Subinternship__

This rotation offers practical experience in the evaluation and
management of acutely sick and injured patients. Students
will function as subinterns, initially evaluating their assigned
patients, and developing a plan for further diagnostic studies
and therapy. They will report to a senior level resident or an
attending physician. The student can expect the opportunity to
perform or assist with a wide variety of procedural skills such
as suturing, splinting, peripheral and central venous access,
ultrasound, and cardiopulmonary resuscitation. Shifts will be
eight hours and students will rotate between day, evening,
and night shifts (including weekend shifts) to gain maximum
exposure to all types of emergencies. The majority of shifts
will occur at Barnes-Jewish Hospital; however, additional shifts
may be scheduled at Barnes-Jewish West County Hospital, a
community hospital approximately 14 miles away. If the student
does not have transportation, other arrangements can be made.
Students will also be expected to attend weekly grand rounds
and student lectures covering aspects of the core content of
Emergency Medicine as well as attend a departmental journal
club and student simulation session. Students will gain an
understanding of other disciplines closely associated with Emergency Medicine by doing rotations with either social work, nursing, physical therapy, or respiratory therapy. Students will also gain knowledge of the triage system during their time in the department. If schedules allow, students interested in EM will be doing 1:1 shifts with a single attending during their last two weeks of the rotation as well as having a teaching shift with the education resident and fellow. Students desiring a Standard Letter of Evaluation (SLOE) should take this WUMS-IV Emergency Medicine Subinternship. Students will be scheduled for required weekend and overnight shifts and changes will not be allowed to the schedule unless approved prior to the start of the rotation by the course coordinator. Please be advised that there is a limit of days off while on this rotation during interview season; otherwise, students should arrange to take the elective at a different time during the year. Days off during the rest of the year will conform to university policy. Days off should be requested from the Course Coordinator at least two weeks prior to the beginning of the rotation for scheduling purposes.

M27 EMED 810 Medical Toxicology
This rotation offers practical experience in the evaluation and management of the acutely ill, poisoned, or intoxicated patient. Students will function as subinterns and either report to the senior resident, fellow, or directly to the toxicology attending. Students will gain familiarity and experience evaluating and treating patients who have intentionally and unintentionally overdosed on medications or illicit drugs or have substance use disorders, been envenomed (such as by spiders, snakes, or other reptiles), or been exposed to toxic substances or chemicals. Students will also gain experience in administering antidotes and learning to properly decontaminate someone after an ingestion or exposure. There are no overnight or weekend shifts. While not required, students are welcome to come in off hours to see new consults and enhance their experience and learning. Daily activities start in the morning and are generally concluded by the early afternoon. A core content of lectures will be provided. The students will also be assigned small projects during their rotation that will enhance their experience particularly in environmental and occupational toxicology. Students will also be asked to complete SAMHSA approved training which will allow them to apply for DEA buprenorphine waivers upon obtaining their permanent medical license. Opportunities to increase their experience with occupational toxicology and addiction medicine also exist during this rotation; students will be able to rotate in the outpatient toxicology and addiction medicine clinic. Students will also have the opportunity to go to the Missouri Poison Center. Students desiring a letter of recommendation from one of the toxicology attendings (who are also Emergency Medicine attendings) or interested in Emergency Medicine or Medical Toxicology should take this elective. Also, students considering other specialties such as Pediatrics, Psychiatry, Neurology, or Internal Medicine should consider this rotation as they will be responsible for evaluating these patients as part of their inpatient or outpatient practice. Please be advised that there is a limit of days off while on this rotation during interview season; otherwise, students should arrange to take the elective at a different time during the year. Days off should be requested from the Course Coordinator at least two weeks prior to the beginning of the rotation for scheduling purposes.

M27 EMED 820 Emergency Ultrasound
Point-of-care ultrasound has became an integral diagnostic and procedural tool for nearly every clinical specialty. Ultrasound examination at the bedside is noninvasive, painless, and repeatable, unlike many other common diagnostic tests. However, like all procedures, developing ultrasound skills takes a significant amount of practice and experience. This rotation will focus on clinical ultrasound image acquisition and interpretation at the bedside. Students will participate in the performance of bedside ultrasound of patients in the Emergency Department. Common applications of emergency ultrasound include the FAST exam, pelvic ultrasound, abdominal aortic aneurysm (AAA), vascular access, renal, ocular, cardiac ultrasound, and DVT. Students will be involved in direct patient care during this rotation as part of the ultrasound team in the Emergency Department. In general, the student will be in the Emergency Department during weekdays to perform these exams. In addition, the student will meet with the elective instructor approximately once per week to review images or for direct hands-on instruction. At the end of the rotation, the student should be able to obtain images for basic point-of-care ultrasound examinations and to interpret those images for diagnostic purposes. Students may also have opportunity to practice ultrasound-guided procedures during the rotation.

M27 EMED 900 Emergency Medicine Research Elective