

**University of Michigan Health System
Internal Medicine Residency
Infectious Diseases Curriculum:
University Hospital ID Consultation Service
Ann Arbor VA Hospital ID Consultation Service**

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Rotation Goals and Educational Purpose

Infectious disease medicine requires an understanding of the microbiology, prevention, and management of disorders caused by viral, bacterial, fungal, and parasitic infections, including appropriate use of antimicrobial agents, vaccines, and other immunobiologic agents. Important elements include the environmental, occupational, and host factors that predispose to infection, as well as basic principles of epidemiology and transmission of infection.

The general internist should be able to provide appropriate preventive (including immunization and chemoprophylaxis), diagnostic, and therapeutic care for most infections. He or she should also be able to evaluate symptoms that may be caused by a wide range of infectious disorders. General internists should also learn about diagnostic and general management approaches to patients with early and advanced HIV infection.

This rotation is elective for all residents.

Rotation Competency Objectives

In supplement to the University of Michigan Longitudinal Learning Objectives, the following provide an overview of the knowledge, skills, and behaviors promoted in this rotation.

- I. Medical Knowledge
 - a. By completion of the rotation, HO1 residents should reflect understanding of the basic pathophysiology and natural course of:
 - i. The sepsis syndrome
 - ii. upper and Lower respiratory tract infections
 - iii. Urinary tract infection
 - iv. Skin and soft tissue infection
 - v. Bone and joint infection
 - vi. Intravascular infection (including cardiovascular infection)

- vii. CNS infection
- viii. Gastrointestinal infection (food poisoning, hepatitis, and colitis)
- ix. Intra-abdominal infection (including peritonitis)
- x. Systemic and opportunistic infections, including fungal and viral (EBV, CMV) pathogens
- b. HO2-3 residents should additionally reflect knowledge of
 - i. Medical microbiological diagnostic procedures, including gram stain and culture methods
- c. All residents may additionally be expected to learn case-based content including
 - i. Infection of the reproductive tract (including STDs)
 - ii. Infections of the eye

II. Patient Care

- a. Medical history- By completion of the rotation, all residents should be able to:
 - i. Recognize and explain the importance of lifestyle and life events in the risk for specific infections, including intravenous drug use, sexual orientation or behavior, socioeconomic status, travel, animal exposure, and environmental exposure.
 - ii. Recognize the role of the following in predisposing or altering the presentation of infectious diseases: advanced age, diabetes mellitus, malnutrition, renal failure, COPD, organ and stem cell transplantation, and congenital or acquired immunodeficiency (including HIV).
 - iii. Take a thorough exposure history for infectious diseases.
 - iv. Construct chronologies of symptoms (e.g., fever), possible exposures, risk factors, and prior treatments.
 - v. Make use of multiple sources of information to assemble a patient database, including previous records, medication administration records, flow charts, and on-line reports.
- b. Physical and radiologic diagnosis
 - i. By completion of the rotation, HO1 residents should be able to
 - 1. Assess appearance of infected and non-infected skin lesions.
 - 2. Recognize physical signs of intravascular infections (e.g., endocarditis).
 - 3. Recognize signs of infected medical devices.
 - ii. HO2 residents should additionally be able to
 - 1. Distinguish common rashes associated with infections and with antibiotic allergy.
 - 2. Interpret the appearance of respiratory secretions and other potentially infected body fluids.
 - 3. Recognize the psychological context of certain chronic infectious diseases (e.g., AIDS, viral hepatitis) and distinguish psychiatric morbidity from organic consequences of disease.
 - 4. Select radiologic diagnostic tools to diagnose infectious conditions and their common complications.
- c. Management of infectious conditions
 - i. By completion of the rotation, HO1 residents are expected to
 - 1. Demonstrate knowledge sufficient for initial diagnostic suspicion and management of common urgent infectious conditions, detect “red flags”

for potentially unstable conditions, and ensure provision of urgent care within a medically appropriate time frame. They should be able to suspect, form an initial diagnostic plan, and initially manage the following conditions with minimal supervision by the end of the rotation:

- a. CNS infection
 - b. Sepsis syndrome
2. Suggest a differential diagnosis for fever in association with symptoms such as headache, altered mental status, cough, diarrhea, abdominal pain, dysuria, back pain, joint pain or swelling, rash, or new neurologic abnormality.
 3. Suggest a logical differential diagnosis and diagnostic plan for fever of unknown origin.
 4. Select antimicrobial therapy, balancing individual needs of patients with the good of the community and the hospital environment; demonstrate knowledge of antimicrobial choices, understanding local antimicrobial resistance patterns as well as risks and benefits of specific antimicrobials.
- ii. HO2 residents should additionally, by completion of the rotation, be able to discuss initial diagnostic and therapeutic evaluations of specific infectious conditions. They must provide care consistent with national guidelines (e.g. IDSA, CDC, USPHS) and prioritize both diagnostic and therapeutic plans.
 - iii. HO3 residents should additionally demonstrate knowledge of the scientific evidence base for management of common infectious conditions.

III. Interpersonal and Communication Skills

- a. Throughout the rotation, HO1 residents are expected to
 - i. Adapt history-taking skills to the mental status and psychosocial presentation of the patient and family.
 - ii. Respectfully communicate with Microbiology Laboratory personnel to obtain timely information about microorganisms detected in patient samples.
- b. HO2/3 residents should additionally be able to
 - i. Effectively communicate with patients and other professionals regarding risks and benefits of diagnostic evaluation and testing, incorporating indications and contraindications for interventions.
 - ii. Understand the essential elements of a thoughtful consultation report in order to be useful to the consulting physician and the patient.

IV. Professionalism

- a. HO1 residents are expected to:
 - i. Recognize potential problems that may impact on the treatment of infectious diseases and their complications, including personal economic factors, complexities of family care at home, and other factors affecting adherence with medical therapy.
 - ii. Appreciate how personal and cultural characteristics impact efforts to prevent the spread of communicable diseases.

- iii. Reflect understanding of appropriate indications to discuss DNR status and end-of-life issues with patients and families, as they pertain to the treatment of opportunistic and hospital-acquired infections.
 - b. HO2/3 residents additionally are expected to
 - i. Understand ethical issues relating to transmission of an infectious agent and the responsibility of the physician to protect uninfected individuals and the public.
 - ii. Understand the ethical conflict between the care of the individual and the good of the community as it affects antimicrobial therapy, preventive measures, and vaccination.
- V. Practice-Based Learning and Improvement
- a. All residents must constructively respond to and internalize feedback from faculty, nursing, and allied healthcare providers. They must demonstrate willingness to change identified behaviors.
- VI. Systems-Based Practice
- a. By completion of the rotation, HO1 residents are expected to be able to
 - i. Direct cost-effective diagnostic and treatment plans for common infections, prioritizing cost effective interventions.
 - ii. Effectively access and mobilize emergent care services. Recognize when the urgency of an infectious disease requires ongoing monitoring of or direct action within the health care system in order to assure timely management of potentially life-threatening infections.
 - b. HO 2 residents will additionally
 - i. Identify psychosocial support/hospice care options for patients with terminal infections.
 - ii. Know roles of MD/radiology/surgery/social work/nursing /anesthesiology in the team management of patients.
 - iii. Reflect familiarity with the system for initiating and managing intravenous antibiotic therapy in the outpatient setting.
 - iv. Implement appropriate infection control systems and actions consistent with public health and institutional policies.
 - c. HO 2 residents will additionally
 - i. Generate documentation reflecting requirements for billing compliance in consultative care.

Teaching Methods

- I. Supervised Patient Care
- a. The emphasis of the rotation is on experiential learning through consultative management of hospitalized patients. Residents are assigned to either the University Hospital or to the Ann Arbor Veterans Administration Hospital, and are under the full supervision of a faculty infectious disease specialist. Patient-centered, case-based faculty discussions review each patient during integrated teaching and management rounds. Case-based reviews of literature are integrated with rounding discussions.
 - b. Patients present from a broad age range and socioeconomic backgrounds, with a spectrum of local to quaternary care needs.

- c. Residents analyze gram stains, special stains, and microbial cultures under the supervision of faculty physicians and microbiology laboratory personnel
- d. Residents interact with microbiology laboratory personnel, ID fellows, infection control specialists, and a full spectrum of medical and non-medical specialists while providing patient care; residents should consider all such interactions as opportunities for education.

II. Structured Didactics and Small Group Learning

- a. Infectious Diseases Grand Rounds weekly: *Mandatory*. 12 – 1 PM each Wednesday. [B1206]
- b. Microbiology Rounds: *Mandatory*. Daily during the week.
- c. Weekly Chief's rounds (ID case conference): *Mandatory*. 8-9 AM each Wednesday morning. [B1 C111 UH]

III. Independent study: Residents are expected to actively read core content regarding their patient-based experiences and the common conditions as noted above under the learning objectives.

The following resources are suggested:

- a. Textbooks (available on line via the Taubman e-Library)
 - i. Cohen & Powderly: Infectious Diseases, most recent edition - Mosby, An Imprint of Elsevier
 - ii. Mandell, Bennett, & Dolin: Principles and Practice of Infectious Diseases, most recent edition - Churchill Livingstone, An Imprint of Elsevier
- b. Manuals
 - i. CDC. Health Information for International Travel, latest edition. U.S. Depart. Of Health and Human Services, Atlanta, GA. Available online at <http://wwwn.cdc.gov/travel/default.aspx>
 - ii. Gilbert, D.N., Moellering, R.C., Sande, M.A. The Sanford Guide to Antimicrobial Therapy, current edition. Published annually by Antimicrobial Therapy, Inc.
 - iii. Panel of Clinical Practices for the Treatment of HIV Infection. Guidelines for the Use of Antiretroviral Agents in HIV-Infected Adults and Adolescents. Dept. of Health and Human Resources. (Available on-line at: <http://www.hivatis.org>).
 - iv. Red Book (latest edition); Report of the Committee on Infectious Diseases. American Academy of Pediatrics, Elk Grove Village, IL. Available online at: <http://aapredbook.aappublications.org/>
 - v. University of Michigan Hospitals and Health Centers Guidelines for Antimicrobial Use. (available on all hospital computers).
- c. Infectious Diseases Society of America clinical guidelines as posted at <http://www.idsociety.org/Content.aspx?id=9088>
 - 1. Antimicrobial Agent Use
 - 2. Infections by Organ System
 - Cardiovascular
 - Central Nervous System (CNS)
 - Gastrointestinal (GI)
 - Genitourinary (GU)
 - Intra-Abdominal
 - Lower/Upper Respiratory

- Skin & Soft Tissue
- 3. Infections by Organism
 - Bacteria
 - Fungi
 - Viruses, HIV/AIDS
- 4. Other Guidelines
 - Management of Catheter-related Infections
 - Immunization
 - Travel Medicine
- d. Sources of on-line news about infectious diseases
 - i. Emerging Infections Network (IDSA)
<http://www.idsociety.org./infections/reports.html>
 - ii. Morbidity and Mortality Weekly Report (CDC) <http://www.cdc.gov/mmwr/>

Evaluation Methods

Learning goals are established with each resident by the attending at the beginning of the month. Formative face-to-face feedback to residents by attendings occurs at mid-month. Each month, attendings complete online competency-based evaluations of each resident. The evaluation is shared with the resident, is available for on-line review by the resident at his/her convenience, and is sent to the residency office for internal review. The evaluation is part of the resident file and is incorporated into semiannual performance reviews for directed resident feedback.

Residents complete a service evaluation of the rotation faculty monthly.

Rotation Schedule

First Day protocol: Page the fellow prior to your start date to determine a meeting plan/location.

Administrative Lead: Residency program office

Call duty: no overnight call

Weekend duty: up to one day of duty per weekend

University Hospital:

	Monday	Tuesday	Wednesday	Thursday	Friday	Sa/Su
AM	8:00 Rounds with Fellow 10:30 Morning Report	8:00 Rounds with Fellow 10:30 Morning Report	8:00 Chief's Rounds (ID Case conference) 10:30 Morning Report	8:00 Rounds with Fellow 10:30 Morning Report	8:00 Rounds with Fellow 10:30 Morning Report	Clinical duties up to one day per weekend
PM	12:00 Noon Conference 1:00 Micro Lab rounds 1:30 Faculty Teaching Rounds	12:30 Intern Report 1:00 Micro Lab rounds (*interns excused) 1:30 Faculty Teaching Rounds	12:00 Noon Conference 1:00 Micro Lab rounds 1:30 Faculty Teaching Rounds	12:00 Noon ID Grand Rounds or JC 1:00 Micro Lab rounds 1:30 Faculty Teaching Rounds	12:00 Noon Grand Rounds 1:00 Micro Lab rounds 1:30 Faculty Teaching Rounds	

Ann Arbor VA Hospital:

	Monday	Tuesday	Wednesday	Thursday	Friday	Sa/Su
AM	8:00 Rounds with Fellow 10:30 Morning Report	8:00 Rounds with Fellow 10:30 Morning Report	8:00 Rounds with Fellow 10:30 Morning Report	8:00 Rounds with Fellow 10:30 Morning Report	8:00 Rounds with Fellow 10:30 Morning Report	Clinical duties up to one day per weekend
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