Infectious Disease (ID) Rotation – Curriculum Goals & Objectives

Inpatient and Outpatient Infectious Disease for Internal Medicine Residents

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Levels of Learner: PGY-1 elective, mandatory in PGY-2, Elective in PGY-3 (objectives stratified below)

Lines of Responsibility

The Internal Medicine Resident functions as a key member of the medical team whose primary objective is to provide compassionate and evidence-based care for patients with infections. The team comprises an attending physician (Infectious Disease), medical residents, and medical students, and is led by the attending, who bears final responsibility for patient management and recommendations. The IM Resident works closely with the attending and gradually assumes more autonomous decision-making in a graded fashion appropriate to training level. The Resident is also expected to teach junior residents and medical students, to communicate with other specialty providers involved in the patient's care, and to help deliver care in a multidisciplinary environment.

Educational Purpose & General Goals

During the ID rotation, the Resident is responsible for the care of both outpatient and inpatient patients with infectious diseases across the inpatient consult and ambulatory settings. By the end of the rotation, Residents are expected to be proficient—at a level appropriate to their year of training—in the evaluation and management of patients with active infections. Overarching objectives of the rotation are to:

- Practice evidence-based medicine in the diagnosis and treatment of infectious diseases.
- Work effectively as part of a multidisciplinary team (pharmacy, microbiology, infection prevention, primary and surgical services).
- Apply systems-based practice and a structured approach to the work-up of infection-related cases, including antimicrobial stewardship.
- Strengthen interpersonal and communication skills with patients, families, and colleagues.
- Develop competence in serving the diverse populations of the service area.
- Evolve as teachers to students, co-residents, nurses, patients and families, and the community.

The objectives that follow are organized under the six ACGME Core Competencies—patient care, medical knowledge, practice-based learning and improvement, systems-based practice, interpersonal and communication skills, and professionalism—and are stratified by level of learner (PGY-1, PGY-2, PGY-3) to reflect expected progression in autonomy and responsibility. Residents and attendings should review the level-appropriate objectives at the beginning and end of the rotation.

Levels of Supervision

Residents are supervised by an attending physician for every patient encounter. Levels of supervision include:

1. Direct Supervision – the supervising physician is physically present with the resident and patient.
2. Indirect Supervision, with direct supervision immediately available – the supervising physician is physically within the hospital or site of care and immediately available to provide direct supervision.

3. Indirect Supervision, with direct supervision available – the supervising physician is not on site but is immediately available by telephone or electronic means and can provide direct supervision.
4. Oversight – the supervising physician reviews care after it is delivered and provides feedback. For selected aspects of care, the supervising physician may be a more advanced resident or fellow.

In general, PGY-1 objectives are performed under direct or immediately-available indirect supervision; PGY-2 objectives progress toward indirect supervision with graded independence; and PGY-3 objectives approach independent practice with supervision available and a supervisory/teaching role for junior learners.

Assessment / Entrustment Scale

For the objectives listed in this document, the basic evaluation unit is one of entrustment. Attendings determine the level at which they trust the resident to perform each skill:

1. Cannot perform the skill even with assistance (critical deficiency).
2. Can perform the skill under proactive, ongoing, full supervision.
3. Can perform the skill with reactive supervision (supervision readily available upon request).
4. Can perform the skill independently.
5. Can act as a supervisor and instructor for the skill.

As a general expectation, most PGY-1 residents begin at level 2 and progress toward level 3 on most measures by the end of the year; most PGY-2 and PGY-3 residents begin at level 3 and progress toward level 4–5 by the end of residency. These expectations frame the level-based objectives below and their assessment.

ACGME Core Competencies – Objectives by Level of Learner

1. Patient Care

Residents will provide patient care that is compassionate, appropriate, and effective for the treatment of infection and the promotion of health.

PGY-1 *— develops foundational skills; direct or immediately-available supervision*

- Perform complete and problem-focused histories and physical examinations for patients with suspected infection (fever, leukocytosis, localizing symptoms) in a time-efficient manner.
- Interpret basic microbiologic and laboratory data (Gram stain, urinalysis, complete blood count, basic cultures) with supervision.
- Formulate an initial differential diagnosis and basic empiric management plan for common infections (skin and soft-tissue infection, uncomplicated UTI, community-acquired pneumonia) with attending oversight.
- Initiate the work-up of fever, obtaining appropriate cultures prior to antimicrobials when clinically feasible.
- Recognize the septic or clinically deteriorating patient and promptly notify the supervising physician.
- Provide ID-relevant preventive care: verify age-appropriate immunizations and identify post-exposure prophylaxis needs.
- Document accurate, infection-focused notes and perform antimicrobial medication reconciliation in the EMR.

PGY-2 *— progressive independence; indirect supervision; begins to supervise juniors*

- Independently perform focused histories and physical exams and synthesize secondary-source data (prior records, cultures, imaging) into complete infection histories.
- Develop and adjust empiric and pathogen-directed antimicrobial regimens for moderately complex infections (complicated UTI/pyelonephritis, healthcare-associated and aspiration pneumonia, diabetic-foot and other soft-tissue infections, infectious colitis).
- Direct the initial work-up and therapy of endocarditis and suspected meningitis; select initial type, dose, and duration for osteomyelitis and post-operative infections.
- Select antimicrobial therapy and duration for organisms with antimicrobial resistance and for bacteremia, incorporating source control.
- Recognize and initiate resuscitation of sepsis and septic shock, escalating the level of care as needed.
- Begin to supervise and teach PGY-1 residents and students in infection work-up and antimicrobial selection.

PGY-3 *— approaching independent practice; consultative and supervisory role*

- Independently manage complex and critically ill ID patients (complicated endocarditis, CNS infections, prosthetic-device and hardware infections, invasive fungal infection, febrile neutropenia, post-transplant and other immunocompromised hosts).
- Function as the IM/ID consulting resident: frame the consult question, deliver clear specialty-based recommendations, and coordinate multidisciplinary care (surgery, microbiology, pharmacy, OPAT).
- Formulate and independently execute antimicrobial de-escalation, IV-to-oral transition, and outpatient parenteral antimicrobial therapy (OPAT) plans.
- Manage HIV/AIDS and opportunistic infections, initiate or continue antiretroviral therapy with attention to drug–drug interactions, and evaluate travel-related, tropical, and sexually transmitted presentations.
- Role-model, supervise, and independently oversee the patient-care activities of students and junior residents while seeking assistance appropriately.

2. Medical Knowledge

Residents will demonstrate knowledge of established and evolving biomedical and clinical science related to infectious diseases and apply it to patient care.

PGY-1 *— acquires foundational knowledge*

- Demonstrate foundational knowledge of microbiology (bacterial, viral, fungal, parasitic) and the pathophysiology of common infections (skin and soft-tissue, urinary tract, pneumonia).

- Understand basic antimicrobial pharmacology—spectrum, mechanism of action, and common toxicities—and the principles of empiric therapy.
- Know the indications for and interpretation of common diagnostic studies (Gram stain, cultures, urinalysis, chest imaging).

PGY-2 *— expands and applies knowledge to complex conditions*

- Apply expanding knowledge to healthcare-associated and catheter-related infections, endocarditis, CNS infections, gastrointestinal and surgical infections, and sexually transmitted infections.
- Demonstrate understanding of antimicrobial pharmacokinetics and pharmacodynamics, therapeutic drug monitoring, mechanisms of resistance, and the principles of antimicrobial stewardship.
- Interpret advanced microbiologic data (susceptibility panels, rapid molecular diagnostics, serologies).

PGY-3 *— demonstrates mastery and teaches*

- Demonstrate mastery of the diagnosis and management of complex ID problems: HIV/AIDS-related and opportunistic infections, febrile neutropenia, immunocompromised and post-transplant infections, invasive fungal disease, travel-related and tropical diseases, and biothreat/bioterrorism agents.
- Integrate current IDSA and other guidelines and primary literature into evidence-based management, and critically appraise studies of diagnostic and therapeutic effectiveness.
- Teach microbiology, antimicrobial pharmacology, and stewardship principles to junior learners.

3. Practice-Based Learning and Improvement

Residents will investigate and evaluate their patient-care practices, appraise and assimilate scientific evidence, and improve their care.

PGY-1 *— identifies gaps and uses resources*

- Identify personal knowledge gaps arising from patient encounters and use point-of-care resources (UpToDate, IDSA guidelines, Clinical Key) to answer clinical questions.
- Accept and incorporate feedback; acknowledge and learn from errors.

PGY-2 *— appraises evidence and reflects on practice*

- Perform focused literature searches on rotation cases and apply findings to patient care; appraise the strength of guideline recommendations.
- Reflect on personal antimicrobial-prescribing patterns and participate in stewardship and quality feedback.

PGY-3 *— leads appraisal and drives improvement*

- Lead evidence appraisal on rounds and apply knowledge of study design and biostatistics to the ID literature.
- Drive practice improvement (e.g., antibiogram- or stewardship-guided prescribing) and facilitate the learning of co-residents and other health professionals.

4. Systems-Based Practice

Residents will demonstrate awareness of and responsiveness to the larger system of health care and effectively call on system resources to provide high-value care.

PGY-1 *— uses core systems and cost-conscious care*

- Use the EMR effectively for documentation, order entry, and care coordination.
- Order diagnostic tests and antimicrobials in a cost-conscious manner.
- Recognize healthcare disparities that affect patients with infectious disease.

PGY-2 *— navigates system constraints and coordinates care*

- Navigate prior authorizations, insurance and formulary constraints, and the logistics of IV-to-oral transition and OPAT.
- Coordinate with pharmacy, microbiology, infection prevention, and case management; apply cost-effective, value-based antimicrobial strategies.
- Apply infection-prevention and isolation practices and participate in the reporting of notifiable diseases.

PGY-3 — *leads system-level care and stewardship*

- Lead multidisciplinary discharge and OPAT planning and anticipate transitions-of-care risks.
- Contribute to system-level antimicrobial stewardship and infection-prevention efforts and advocate for patients within system constraints.
- Model inter-professional teamwork to enhance patient safety and value.

5. Interpersonal and Communication Skills

Residents will demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, families, and colleagues.

PGY-1 — *communicates clearly and presents effectively*

- Communicate clearly and empathetically with patients and families and educate them on the diagnosis and treatment plan.
- Give organized oral case presentations and write timely, legible notes.
- Interact respectfully with the primary team and consultants.

PGY-2 — *communicates consultative recommendations and difficult topics*

- Deliver clear consult recommendations, verbally and in writing, to referring services.
- Conduct sensitive conversations (HIV/STI disclosure, prognosis) with support and use motivational interviewing and behavior-change counseling.
- Communicate complex antimicrobial plans to patients and the care team.

PGY-3 — *leads communication and teaches it*

- Lead family meetings and difficult conversations independently and serve as an effective consultant communicator.
- Role-model communication in challenging and conflict situations across the multidisciplinary team.
- Teach communication and presentation skills to junior learners.

6. Professionalism

Residents will demonstrate a commitment to professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population.

PGY-1 — *reliable, respectful, accountable*

- Demonstrate respect, compassion, and cultural humility, and maintain patient confidentiality in accordance with HIPAA.
- Be reliable, punctual, and accountable, and admit mistakes freely.

PGY-2 — *manages competing duties and ethical issues*

- Manage competing responsibilities and emerging ethical issues (e.g., adherence, isolation, end-of-life care in infection) with developing independence.
- Demonstrate sensitivity to the diverse populations of the service area.

PGY-3 — *models professionalism and mentors*

- Consistently model professional behavior and ethical decision-making, including provision or withholding of care and informed consent.
- Mentor junior learners in professionalism and manage difficult ethical and interpersonal situations independently.

Topics & Clinical Experiences

Across the rotation, and with depth appropriate to level of training, Residents should encounter the pathophysiology, evaluation, and management of:

- Common microbiological diseases—bacterial, viral, fungal, and parasitic (e.g., skin and soft-tissue infection, urinary tract infection, endocarditis, pneumonia).
- HIV and AIDS-related infections.
- Catheter-related and other healthcare-associated infections.
- Central nervous system infections.
- Gastrointestinal infections.
- Surgical and post-operative infections.
- Sepsis and the critically ill patient.
- Febrile neutropenia and infections in immunocompromised hosts (post-chemotherapy, post-transplant, hematologic/oncologic).
- Sexually transmitted diseases.
- Travel-related diseases and vaccination.
- Bioterrorism and biothreat agents.
- Pharmacodynamics and pharmacokinetics of antimicrobial agents and principles of antimicrobial stewardship.

Teaching Methods

I. Supervised patient care (inpatient and outpatient)

- Residents are initially directly observed with patients to build excellent history-taking and physical-examination skills.
- As Residents become more proficient, they interact independently with patients and present cases to faculty.
- Initial emphasis is on diagnosis and basic management; as skills are mastered, focus shifts to medical decision-making, with Residents working with supervising physicians to finalize the care plan.

II. Conferences

- Specialty-specific didactics.

III. Independent study

- IDSA guidelines.
- Journal and textbook reading—Harrison's Principles of Internal Medicine and additional readings assigned by the ID team.
- Online educational resources and medical journals via OPTI-West (https://www.westernu.edu/library/services/opti-west/).
- UpToDate and Clinical Key.

Evaluation

1. Verbal mid-rotation individual feedback, reviewing level-appropriate objectives and entrustment expectations.
2. Attending written evaluation of the Resident at the end of the rotation based on observations and chart review, mapped to the ACGME competencies and level-based objectives above.
3. Assessment is anchored to the entrustment scale, with expected progression by PGY level as described.

Rotation Structure

1. The residency office contacts the supervising physician with the rotation dates.
2. Residents should contact the supervising Infectious Disease physician one week prior to determine start time and location.

3. Residents work with the ID physician to achieve the educational goals above, participating in patient presentation, generation of a differential diagnosis, development of a treatment plan, and patient follow-up. When possible, Residents should follow the same patients throughout the rotation.
4. Case-based learning is emphasized; nightly reading and study should be based on patients seen during the day. For ID consults, Residents should understand the specialty-based consultative approach.
5. Residents may be asked to perform focused literature searches or presentations during the rotation.
6. Call and weekend responsibilities are determined by the attending physician. Hours worked must be consistent with ACGME requirements and are subject to approval by the Program Director.
7. Residents have noon conferences and Friday afternoon didactics (1:30–4:00 pm) and should be excused in a timely fashion to attend.