

**University of Iowa Hospitals and Clinics
Infectious Diseases Fellowship Program
Curriculum**

2008-2009

Infectious Diseases Fellowship Program Curriculum

The Infectious Diseases Fellowship Program at the University of Iowa is ACGME accredited for two years, at the end of which the fellow will meet ABIM eligibility requirements. However, a third year is strongly encouraged for fellows interested in an academic career. This optional third year would be focused on research activity.

Core Curriculum Topics

Clinical topics

1. HIV – lecture block
2. Travel Medicine – lecture block (Tropical & Parasitic Diseases)
3. Clinical epidemiology and infection control – lecture block (includes device related infections)
4. Principles of prophylaxis: chemo and immunologic prophylaxis
5. Infections in the ICU
6. Infections in transplant recipients – solid organ, BMT
7. CNS infections: bacterial meningitis, aseptic and viral meningitis, encephalitis, brain abscess, spinal infections, infections of CSF shunts
8. Upper respiratory tract infections, including sinusitis and otitis
9. Community acquired pneumonia, Ventilator associated pneumonia, nosocomial pneumonia, Non-resolving pulmonary infiltrates
10. Viral hepatitis – diagnosis, treatment issues
11. Tuberculosis and atypical mycobacterial infections
12. Bone and joint infections: native and prosthetic joints, osteomyelitis, diabetic foot
13. Skin structure infections
14. Cardiovascular infections
15. Sexually transmitted diseases
16. Gastro-intestinal infections: biliary tract, infections after ERCP or post surgical, abdominal abscesses, and peritonitis (primary and secondary, and in peritoneal dialysis patients)
17. Trauma, burns, human and animal bites
18. Infections of eye structures
19. Infections of the urinary tract
20. Infections of reproductive tract

Organism specific topics

1. Staph aureus
2. Influenza
3. C. Difficile

Antimicrobial agents

1. Antimicrobial agents and resistance mechanisms
2. Pharmacodynamics and pharmacokinetics
3. Principles and interpretation of sensitivity testing

Diagnosis (Covered during Clinical Microbiology Rotation)

1. Culture diagnosis of infectious disease
2. Serologic diagnosis of infectious diseases
3. Molecular diagnosis of infectious diseases
4. Radiologic diagnosis of infectious diseases

Other topics

1. Review of updated guidelines as they are published
2. New diagnostic tests and procedures as they come up

Clinical Experience

Fellows will have clinical experience and demonstrate competence in the evaluation and management of infections in patients with major impairments of host defense:

1. patients who are neutropenic
2. patients with leukemia, lymphoma or other malignancies
3. patients following solid organ or bone marrow transplantation
4. patients with HIV/AIDS or patients immunocompromised by other diseases

Fellows will have clinical experience and demonstrate competence in the evaluation and management of patients with the following disorders:

1. pleuropulmonary infections
2. infections and other complications in patients with HIV/AIDS
3. cardiovascular infections
4. central nervous system infections
5. gastrointestinal and intra-abdominal infections
6. skin and soft tissue infections
7. bone and joint infections
8. infections of prosthetic devices
9. infections related to trauma
10. sepsis syndromes
11. nosocomial infections
12. urinary tract infections

First Year

Description of Rotation/Educational Experience

FIRST YEAR - Clinical training is concentrated in the first year of the program. During the first year the fellow will receive an in-depth education in clinical infectious diseases. Clinical Rotations occur at the University of Iowa Hospitals and Clinics (UIHC) and at the VA Medical Center (VAMC, which is located across the street from the UIHC). The fellow will have HIV and ID COC clinics weekly and attend Travel clinic. The fellow will participate in ID conferences, journal club, ID Grand Rounds, core curriculum, research conference and combined fellows' conference.

Team 1

- Inpatient UIHC Consults. On average, this service handles at least 100 new consults per month.
- Approximately 5 months of the first year will be spent on Team 1 inpatient consult service.

Goals and Objectives: During this rotation, the first year fellow is expected to:

- Develop medical knowledge base of infections commonly encountered in a variety of hosts and in variety of organ systems
- Develop a logical approach to differential diagnosis of various infections, develop a diagnostic and treatment plan that is appropriate and feasible
- Become proficient in obtaining a complete history and physical examination of a variety of infectious diseases
- Provide appropriate inpatient follow up, and arrange for adequate outpatient follow up
- Develop skills to effectively and appropriately supervise internal medicine residents and students rotating on the consult service as well as further his/her skills as an effective teacher
- Develop communication skills that will lead to effective relations with referring services
- Be able to perform a literature search of various medical questions, and interpret such literature in context of clinical case
- Develop understanding of various methods of providing parenteral antimicrobials after patient's discharge, and financial limitations of IV or oral treatments
- Acquire leadership skills in orchestrating the consult team which includes staff, residents, and students

Teaching Methods:

- Daily inpatient rounds with the ID attending: This includes review of the fellows' presentation, clinical bedside examination, review of all laboratory data and radiology tests. The fellow's assessment of the problems and plans are evaluated along with antibiotic management and written consult notes. Rounds generally last 6 hours per day.
- Weekly – ID Grand Rounds, core curriculum lectures, microbiology rounds

- Monthly – Journal club, immunology lecture, common fellows’ curriculum

Mix of Clinical Topics:

The inpatient consult service completes at least 100 new consults each month. Services are provided to all medical and surgical services and include both immunocompetent and immunosuppressed hosts. Patients with diseases in all categories listed in the curriculum above are seen.

Patient Characteristics and types of clinical encounters, procedures and services:

- Adult inpatients from a variety of socioeconomic levels, ethnic background and immunocompetence states are evaluated
- Patients and diseases as above
- Lumbar puncture
- Wound assessment and exploration
- Gram Stain

Reading Lists

- Principles and Practice of Infectious disease, 5th edition. Mandell’s text
- Core curriculum conference
- ID Grand Rounds
- Journal club
- Up-to-Date
- Online access to numerous journals, MD Consult and textbooks through Hardin Library
- For the first year, free subscriptions to Journal of Infectious Diseases and Clinical Infectious Diseases

Evaluation:

Immediate feedback is given on each patient presentation. Written evaluations by the ID attendings on service are given at the end of the rotation. The fellow also provides evaluations of the rotation to the Department.

Team 2

- Inpatient VAMC consults, outpatient consults at UIHC and VAMC, and outside phone calls.
- Approximately 5 months of the first year will be Team 2 outpatient consult service.

Goals and Objectives: During this rotation, the first year fellow is expected to:

- Develop medical knowledge base of infections commonly encountered in a variety of hosts and in variety of organ systems
- Develop a logical approach to differential diagnosis of various infections, develop a diagnostic and treatment plan that is appropriate and feasible
- Provide appropriate inpatient follow up and arrange for adequate outpatient follow up

- Develop skills to effectively and appropriately communicate with the referring services or outside referral entities, both verbally and in writing
- Be able to perform a literature search of various medical questions, and interpret such literature in context of clinical case
- Develop understanding of various methods of providing parenteral antimicrobials, financial limitations of IV or oral treatments, and monitoring for various adverse reactions

Teaching Methods:

Each patient is reviewed with the attending and history and physical exam are confirmed. Assessment, plans and dictated notes are reviewed. The fellow also interacts with the clinic nurses, social workers, pharmacist and ARNPs. An ID attending is present in the clinic for all patient encounters.

Mix of Clinical Topics:

Services are provided at both at the UIHC (outpatient only) and at the VA (inpatient and outpatient). Patients with a broad range of illnesses are seen both for initial and follow up evaluations. There are on average 30 outpatient consults at the UIHC, 15-20 outpatient and 20 new inpatients consults at the VA.

Patient Characteristics and types of clinical encounters, procedures and services:

- Adult patients from a variety of socioeconomic levels, ethnic background and immunocompetence states are evaluated
- Patients and diseases as above
- Lumbar puncture
- Wound assessment and exploration
- Gram Stain

Reading Lists

- Principles and Practice of Infectious disease, 5th edition. Mandell's text
- Core curriculum conference
- ID Grand Rounds
- Journal club
- Up-to-Date
- Online access to numerous journals, MD Consult and textbooks through Hardin Library

Evaluation:

Immediate feedback is given on each patient presentation. The ID attending provides a written evaluation at the end of the rotation. The entire care team (nurses, pharmacists, social workers) provides bi-annual evaluations. The fellow provides evaluations of the rotation to the Department.

Transplant Infectious Disease – UIHC/VAMC Solid Organ Transplantation

- One month will be spent on the ID solid organ transplant service

Goals and Objectives: By the end of this rotation, the fellow is expected to:

- Establish an appropriate and logical work up of suspected infections in this immunocompromised population
- Understand the net state of immunosuppression and its impact on patient predisposition to infectious complications over time
- Understand the principles of and indications for immuno-prophylaxis and chemo-prophylaxis in this population
- Understand the drug interactions, toxicities, and mechanisms of action of immunosuppressive agents
- Perform an appropriate pre-transplant infectious diseases assessment
- Demonstrate appropriate inpatient follow up care for this patient population
- Communicate effectively with the transplant service, both verbally and in the medical record

Teaching Methods:

Daily inpatient rounds with the ID Transplant attending: This includes review of the fellow's work up, case presentation, clinical bedside examination, and review of all laboratory data and radiology tests. The fellow's assessment of the problems and plans are critiqued with feedback on written documentation.

Mix of Clinical Topics:

There are on average about 15 inpatient and 3 outpatient consults per month. These include consults from internal medicine, surgery, and outside referring physicians.

Patient Characteristics and types of clinical encounters, procedures and services:

- Adult inpatients from a variety of socioeconomic levels and ethnic background are evaluated
- Patients and diseases as above
- Lumbar puncture
- Wound assessment and exploration
- Gram Stain

Reading Lists

- Transplant Infectious Diseases Clinical Practice Guidelines, *Am J Transplantation* 4 (suppl 10):1-66, 2004
- Principles and Practice of Infectious disease, 5th edition. Mandell's text
- ID Grand Rounds
- Journal club
- Up-to-Date

- Online access to numerous journals, MD Consult and textbooks through Hardin Library

Evaluation:

Immediate feedback is given on each patient presentation. Written evaluation by the ID attending on service is given at the end of the rotation. The fellow provides evaluations of the rotation and attending physician to the Department.

Clinical microbiology – UIHC

- One month will be spent in the clinical microbiology laboratory with intensive instruction and hands-on experience with a clinical microbiologist

Goals and Objectives: By the end of this rotation, the fellow is expected to:

- Understand and recommend various methods of appropriately collecting and transporting various specimen
- Be competent in microscopic examination of specimen
- Understand various staining and culturing techniques for a variety of bacterial, mycobacterial, fungal, and viral pathogens, and the principles and appropriateness of molecular diagnostic techniques
- Be able to interpret susceptibility data, and limitations of testing
- Understand mechanisms of antimicrobial resistance

Teaching Methods:

- Daily plate rounds with the Clinical Microbiology Lab: Complete bench rotations on checklist. Work with pathology resident on service to contact infectious disease fellow every week regarding particular patient slides and cultures the ID team would like to see and have available for ID lab rounds.
- Microbiology lecture block, monthly micro conference

Mix of Clinical Topics:

There are a wide variety of bacterial, mycobacterial, fungal and viral culture techniques and interpretation of susceptibility testing and interpretation of clinical significance. Variety of molecular diagnostic procedures reviewed and interpreted. Review malaria and other parasite exams with pathology resident and faculty. Review consults (slide interpretation) from anatomic pathology faculty with pathology resident and microbiology faculty.

Characteristics and types of clinical encounters, procedures and services:

- Variety of organism stains
- Services covered during this rotation are: bacteriology, infection control, TB/mycology, virology, parasitology and microscopy

Reading Lists

- “Clinician and the Microbiology Laboratory” in Mandell’s text
- “Manual of Clinical Microbiology”, reference text from ASM
- Review procedure manual
- ID Grand Rounds
- Reference books and manuals

Evaluation:

Immediate feedback is given on each presentation. Written evaluations by the attendings are given at the end of the rotation.

Travel Clinic- held twice weekly at UIHC, fellows rotate as per schedule

- Each fellow will have a ½ day Travel clinic by rotation as assigned

Goals and Objectives: During this rotation, the first year fellow is expected to:

- Become proficient in obtaining appropriate history of previous exposures and vaccinations
- Become proficient in predicting possible exposures based on patient’s itinerary and travel plans
- Become proficient in recommending immunoprophylaxis and chemoprophylaxis appropriately, and in a manner individualized to the traveler’s medical and social needs
- Provide advice as to general principles of avoiding a variety of environmental exposures
- Provide appropriate follow up if problems arise for returning travelers.
- Develop understanding of and comply with various governmental requirements for travel

Teaching Methods:

An ID attending is present for each patient encounter, reviews the relevant history and travel plans, and helps decide on the recommendations and counseling given to patients. Assessment, plans and dictated notes are reviewed.

Mix of Clinical Topics:

There are on average about 60 new patient travel clinic visits per month at UIHC. Patients traveling to countries all over the world are seen for recommendations.

Patient Characteristics and types of clinical encounters, procedures and services:

- Patients from a variety of socioeconomic levels and ethnic background are evaluated

Reading Lists

- CDC Yellow Book
- Travax Web site
- Principles and Practice of Infectious disease, 5th edition. Mandell’s text

- Core curriculum conference on parasitology

Evaluation:

Immediate feedback is given on each patient presentation. Written evaluations by the Travel clinic attendings are given biannually.

Continuity of care clinic –weekly for the duration of fellowship - UIHC

- Each fellow will have a ½ day ID COC clinic weekly.

Goals and Objectives: During this rotation, the first year fellow is expected to:

- Maintain appropriate follow up for non-HIV infected outpatients with a variety of infectious disease conditions
- Become proficient in obtaining a complete history and physical examination of a variety of infectious diseases
- Develop an efficient diagnostic and therapeutic plan for a variety of infectious diseases
- Develop understanding of various methods of administering antimicrobials at home
- Modify practice based on new knowledge, or patient’s social and financial needs
- Develop communication skills that will lead to effective relations with the patient and the clinic personnel
- Develop understanding and adhere to ‘routine’ practices of health maintenance, especially recommended immunizations
- Maintain appropriately complete medical records
- Develop understanding of issues of confidentiality
- Develop understanding of basic principles of billing and documentation

Teaching Methods:

An ID attending is present for each patient encounter. The attending reviews with the fellow the history, physical, assessment, plans and dictated notes. The fellow also interacts with the clinic nurses, social workers, and pharmacist.

Mix of Clinical Topics:

Each fellow has a weekly ID COC clinic at UIHC. Patient with diseases in all categories listed in the curriculum above are seen. More than ¾ of patients seen are follow-ups from their inpatient stay and the disease mix reflects that of inpatient rotation.

Patient Characteristics and types of clinical encounters, procedures and services:

- Adult patients from a variety of socioeconomic levels, ethnic background and immunocompetence states are evaluated
- Patients and diseases as above
- Lumbar puncture
- Wound assessment and exploration

Reading Lists

- Principles and Practice of Infectious disease, 5th edition. Mandell's text
- Core curriculum conference
- ID Grand Rounds
- Journal club
- Up-to-Date
- Online access to numerous journals, MD Consult and textbooks through Hardin Library

Evaluation:

Immediate feedback is given on each patient presentation. The ID attending provides a written evaluation biannually. The entire care team also provides bi-annual evaluations. The fellow provides evaluations of the rotation to the Department.

HIV continuity of care clinic – UIHC or VA – weekly for duration of fellowship

- Each fellow will have a ½ day HIV COC clinic weekly.

Goals and Objectives: During this rotation, the first year fellow is expected to:

- Develop understanding of principles of testing, and lab monitoring, and transmission of HIV infection
- Develop understanding of the pathophysiology and natural history of HIV infection
- Develop understanding of principles of antiretroviral therapy, apply published guidelines for treatment of HIV infection, and principles of antiretroviral resistance
- Begin to recognize, prevent and treat various infectious complications of HIV infection
- Become proficient in applying various methods of monitoring disease progression
- Develop understanding of and apply resistance testing
- Develop understanding of and recognize medication adverse reactions, and drug interactions
- Develop understanding of issues of confidentiality
- Take into consideration specific social and financial issues related to HIV infected individual
- Develop understanding of and treat metabolic complications of HIV infection/treatment
- Develop understanding of, prevent and treat various psychiatric complications and impact on treatment

Teaching Methods:

An ID attending is present for each patient encounter. The attending reviews with the fellow the history, physical, assessment, plans and dictated notes. The fellow also interacts with the clinic nurses, social workers, pharmacist and ARNPs. Fellows are also

to attend HIV sessions during the core curriculum conferences. There will be article reviews and protocol or guideline updates.

Mix of Clinical Topics:

Each fellow has a weekly HIV COC clinic either at UIHC or the VA. Their patients are followed throughout their fellowship.

Patient Characteristics and types of clinical encounters, procedures and services:

- Adult patients from a variety of socioeconomic levels, ethnic background and immunocompetence states are evaluated

Reading Lists

- Principles and Practice of Infectious disease, 5th edition. Mandell's text
- Core curriculum conference
- ID Grand Rounds
- Journal club
- Up-to-Date
- HIVMA guidelines
- AAHIVM HIV Medicine Self-Directed Study Guide

Evaluation:

Immediate feedback is given on each patient presentation. The ID attending provides a written evaluation biannually. The entire care team (nurses, pharmacists, social workers) also provides bi-annual evaluations. The fellow provides evaluations of the rotation to the Department.

Research Year at UIHC or VA

- Two months of the first year are not assigned to clinical rotations. Part of this time is vacation. During the remaining time, the fellow is expected to meet with each faculty member to be introduced to the faculty's research activities. At the end of that time, the fellow selects a faculty member to be his/her research mentor during the second year of fellowship.

Goals and Objectives:

During the first year the fellow develops a research project. The fellow is introduced to the basics of hypothesis development, design, protocol development, statistical analysis, and data collection. The project can be clinically or basic science oriented.

Teaching Environment:

- One on one mentoring with ID attendings or basic science researcher
- Research conference
- Research seminars

Evaluation:

Feedback on day to day progress on the project. Written evaluation by the research mentor. The fellow presents his/her research ideas and findings at Research Conference. The fellow will provide written evaluations of the rotation to the fellowship director.

Hospital Epidemiology Course

Goals and Objectives: The goal of the course is to give the fellows basic training about infection control and epidemiology. The fellow will be introduced to concepts relating to identification of health care associated infections, antimicrobial resistant organisms, epidemiologically important organisms; review of epidemiology of these organisms; infection control practices and antibiotic management strategies; impact of these infections on patient safety. The fellows also receive instruction to epidemiology at the beginning of their first year.

Teaching Environment: Each fellow is enrolled in the Infectious Diseases of America (IDSA)/Society for Healthcare Epidemiology of America (SHEA) online infection control fellows' course. The IDSA course is a self study module taken online. The course is presented as a series of lectures in audio form with accompanying power point slides. The fellow can finish the course according to his/her own pace.

Fellows may also fulfill this requirement by taking: 1) a semester-long hospital epidemiology course offered by Dr. Herwaldt every other spring semester through the UI College of Public Health; 2) a week long course offered by the Program of Hospital Epidemiology every spring; 3) the course offered by SHEA/CDC every spring and every fall; or 4) John Hopkins Annual Fellows Course in Hospital Epidemiology and Infection Control.

Evaluation: Pre- and post-tests are administered at the beginning and end of the course, respectively. A certificate of completion will be issued upon completion of the course.

Core Curriculum Lecture Series – weekly for duration of fellowship

This is a weekly lecture series conducted by the ID faculty reviewing key infectious disease topics.

Goals and Objectives: To discuss various topics relevant to the practice of infectious diseases and to increase the fellows' knowledge base in General Infectious Diseases.

Topics include:

- HIV medicine
- Travel medicine
- Epidemiology and infection control
- Diagnostic testing

- Basics of immunology
- Pharmacology of antimicrobials
- Clinical syndromes recognition, diagnosis and treatment
- Organism – specific topics

Frequency: 1 hour weekly

Format: Can either be a formal lecture, discussion on assigned readings, practice tests, or other teaching modalities deemed appropriate by the attending assigned.

Supervision: Faculty is assigned to conduct each session, faculty attend

Evaluation: As part of the monthly written evaluation. Each presentation is evaluated and feedback is given to the presenter.

ID Grand Rounds – weekly for duration of fellowship

This is a weekly conference attended by all ID faculty and fellows, microbiology staff, pathology staff, residents and medical students. Presenters include the fellows and ID attendings. Fellows are expected to discuss case selection and discussion points prior to the conference with the attending. Once a month a clinical faculty presents a case and a fellow (or grad student) is expected to discuss the relevant basic science for that case. This is a course entitled “Integrated Topics in Infectious Diseases”.

Goals and Objectives: To discuss selected clinical cases. Diagnostic and management approaches are solicited from the attendees. Fellows should:

- become proficient in the presentation of clinical ID cases
- become proficient in the critical reading of clinical literature
- present summary of clinical literature
- apply literature information to practical clinical management

Frequency: 1 hour weekly

Format: Fellows present clinical cases as unknowns and a faculty member is selected to discuss his/her diagnostic and management approach. Specific issue pertaining to the case are then discussed and relevant literature reviewed.

Supervision: All faculty attend the discussion.

Evaluation: As part of their monthly written evaluation.

Case Discussion during Rounds

Goals and Objectives: To discuss cases seen by the fellows and attendings and to outline management issues on each of the cases and solicit approaches to the issues at hand from the attendees.

Frequency: Daily

Format: Fellows and attendings present cases from the inpatient setting. The cases in mind will have specific questions that will be addressed and the attendees will offer their approaches to the issues at hand.

Supervision: Attending supervises the discussion.

Evaluation: As part of their monthly written evaluation.

Research Conference – weekly for duration of fellowship

Goal and objectives: Review of ID research projects, other ID related research in the College of Medicine and assess progress on fellow's research project. Outside speakers are brought in three to four times a year.

- To review ongoing research activities of the ID division
- Introduce the fellow to research hypothesis, design, data collection and analysis
- Critique new projects
- Prepare for national meeting presentations
- Review ID related research from other units and departments

Frequency: 1 hour weekly

Format: Each one hour conference will have a formal presentation of a research project of the fellow or other ID personnel including design, data collection and outcomes. Guest lectures will present current research topics or summary lectures concerning research techniques.

Supervision: Faculty, fellows and ID lab personnel attend.

Evaluation: For the fellow presenting his/her research, written evaluation is performed monthly by his/her research mentor.

Journal Club – monthly for duration of fellowship

Goals and Objectives: To critically review current infectious diseases articles and to assess

- research design
- data analysis
- correlation with previous literature
- discussion and outcomes

Frequency: Once monthly

Format: Articles will be reviewed by the fellows and faculty

Supervision: All faculty can attend the conference

Evaluation: For the fellow presenting, written evaluation is performed by all attending faculty. Also, as part of their monthly written evaluation

M-4 student clinical lectures

Goals and Objectives: To teach various ID topics to M-4 students on the ID Team I rotation. Fellows should:

- become effective teachers of ID topics
- become proficient in the reading and assembly of clinical ID lecture material.
- correlation with previous literature
- discussion and outcomes

Frequency: Two to three times monthly when M-4s are on rotation.

Format: Articles and various information will be reviewed by the fellows and they will prepare the lecture

Supervision: All faculty can attend the conference

Evaluation: Evaluation forms are completed by M-4 students and sent on to the program and divisional directors

Core Competencies

Goals and Objectives: To help the fellow become well rounded in patient care and clinical practice issues. Issues are discussed at hospital-wide orientation and on-line lessons will be given concerning:

- Principles of Professionalism
- Cultural diversity

- Compliance
- Conflicts of interest
- Managing Stress
- Safety and Infection Control
- HIPAA Training
- Bloodborne Pathogens
- Mandatory Reporter

Format and Frequency: This is a self-study module on-line that should be completed at the beginning of fellowship. Once a month the Internal Medicine Department holds a Common Curriculum lecture which can include:

- Medical genetics
- Ethics and end of life decisions
- Patient safety and risk assessment
- Physician impairment and recovery
- Clinical ethics

Specific knowledge, skills, behaviors and attitudes required for Core Competencies are listed below

CORE COMPETENCIES

Medical knowledge

Goals and objectives– the fellows are expected to demonstrate knowledge of established and evolving biomedical, clinical and social sciences and demonstrate the application of their knowledge to patient care and education of others.

- Understand the approach to patients with fever
- Understand and interpret various microbiologic tests
- Identify and treat various aspects of bacterial, fungal, viral, parasitic infections
- Understand and apply principles of antimicrobial resistance
- Understand and apply principles of pharmacokinetics and pharmacodynamics of antimicrobial agents
- Understand the pathogenesis of bacterial, viral, parasitic, and fungal infections
- Understand and treat infections of different organ systems

Methods of administration

- Direct daily interaction with supervising faculty on clinical rounds, case presentations and discussions, relevant article review
- Core curriculum lectures
- Board review tapes

- Provision of ID textbook
- Access to Numerous journals, Pub Med searches, MD consult, electronic books, Up-to-Date
- IDSA membership and IDSA sponsored journals subscription
- Preparation to present lectures to students, and presentation at conferences
- Clinical microbiology weekly ‘plate rounds’
- Direct interaction with clinical pharmacist proficient in infectious disease pharmaceuticals
- Attendance of various conferences (internal medicine grand rounds, other specialty conferences in interdisciplinary topics)
- Integrated case conference and subsequent discussion of articles
- Attendance of courses relevant to chosen field of research, including MPH

Methods of assessment

- Direct observation and supervision by faculty on daily clinical rounds
- Reports by residents, primary team members
- Ability to respond to questions when presenting in conferences
- IDSA Fellows’ In-Training Exam
- Board scores

Patient care

Goals and objectives - the fellows are expected to provide patient care that is compassionate, appropriate and effective for the promotion of health, prevention of illness, treatment of diseases and care at the end of life.

Methods of administration

- Daily interaction with faculty on inpatient rounds, and outpatient consults and follow up and outpatient clinic
- Demonstration of various aspects of physical exam, lab monitoring, and plan of care
- Clear expectations for interactions with referring physician, patient interaction and follow up

Methods of assessment

- Direct observation and supervision by faculty
- Feedback from referring physicians and patients
- Ability to formulate a plan of management that minimizes patient’s discomfort
- Ability to explain plan to patient
- Appropriate follow up of patients, lab results and procedures
- Completeness of patient workups
- Documentation, maintenance of log experience

Practice based learning and improvement

Goals and objectives - the fellows are expected to be able to use scientific methods and evidence to investigate, evaluate and improve their patient care practices.

Method of administration

- Daily interaction with faculty
- Interaction with other consulting teams
- Electronic access to medical journals, literature reviews, reference books
- Subscription to specialty journals, membership in IDSA
- Conferences, journal club

Method of assessment

- Direct observation
- Literature review, knowledge and use of resources whether human or electronic
- Use of conferences to modify clinical decision making process
- Use of Journal club to understand statistical methods and study design
- Proper use of diagnostic tests and limitations

Systems based learning

Goals and objectives - the fellow must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

Method of administration

- Daily interactions with faculty, ancillary services including clinic personnel, social workers, nurses, secretaries, computer support personnel, laboratory personnel, home health care agencies, etc

Method of assessment

- Direct observation
- Use of health care system resources, insurance, billing and reimbursement
- Proficiency in medical record computerized system

Professionalism

Goals and objectives - the fellows are expected to demonstrate behaviors that reflect a commitment to continuous professional development, ethical practice, an understanding and sensitivity to diversity and a responsible attitude toward their patients, profession and society.

Method of administration

- Daily interactions with faculty

Method of assessment

- Direct observation
- 360 evaluations
- Patient surveys
- Feedback from referring physicians, students, other faculty

- Conference presentations

Interpersonal and Communication skills

Goals and objectives - the fellows are expected to demonstrate interpersonal communication skills that enable them to establish and maintain professional relationships with patients, families, and other members of the healthcare team.

Method of administration

- Daily interaction with faculty
- Seminars

Method of assessment

- Daily observation
- Patient surveys
- 360 evaluations
- Presentation at conferences and Journal club
- Feedback from other faculty, students

Second Year Description of Rotation/Educational Experience

SECOND YEAR

The second year will focus on research. Research areas may be clinical; clinical microbiology or basic science research. The fellow will continue to have HIV and ID COC clinics weekly and if assigned, attend Travel clinic. Approximately two months will be spent on either the inpatient or outpatient consult service. The fellow will continue to participate in ID conferences, journal club, ID Grand Rounds, core curriculum, research conference and combined fellows' conference.

Team 1

- Inpatient UIHC Consults. On average, this service handles at least 100 new consults per month.
- 1 or 2 months of the second year will be spent on Team 1 inpatient consult service.

Goals and Objectives: During this rotation, the second year fellow is expected to:

- Continue to advance his/her medical knowledge base of infections commonly encountered in a variety of hosts and in variety of organ systems in an independent manner
- Refine the skills needed for the development of comprehensive differential diagnosis of various infections formulation of a diagnostic and treatment plan that is appropriate and feasible
- Show proficiency in medical history taking and physical examination of a variety of infectious diseases and be able to convey these skills to learners on the team
- Provide appropriate inpatient follow up, and arrange for adequate outpatient follow up
- Demonstrate appropriate supervision and teaching of the internal medicine residents and students rotating on the consult service
- Refine communication skills for effective relations with referring services
- Demonstrate independent literature search of various medical questions and ability to interpret such literature in context of clinical case
- Demonstrate understanding of various methods of providing parenteral antimicrobials after patient's discharge, and financial limitations of IV or oral treatments
- Take a leadership role in the management of the consult team under the guidance of the clinical staff

Teaching Methods:

- Daily inpatient rounds with the ID attending: This includes review of the fellows' presentation, clinical bedside examination, review of all laboratory data and radiology tests. The fellow's assessment of the problems and plans are evaluated along with

antibiotic management and written consult notes. Rounds generally last 6 hours per day.

- Weekly – ID Grand Rounds, core curriculum lectures, microbiology rounds
- Monthly – Journal club, immunology lecture, common fellows' curriculum

Mix of Clinical Topics:

The inpatient consult service completes at least 100 new consults each month. Services are provided to all medical and surgical services and include both immunocompetent and immunosuppressed hosts. Patients with diseases in all categories listed in the curriculum above are seen.

Patient Characteristics and types of clinical encounters, procedures and services:

- Adult inpatients from a variety of socioeconomic levels, ethnic background and immunocompetence states are evaluated
- Patients and diseases as above
- Lumbar puncture
- Wound assessment and exploration
- Gram Stain

Reading Lists

- Principles and Practice of Infectious disease, 5th edition. Mandell's text
- Core curriculum conference
- ID Grand Rounds
- Journal club
- Up-to-Date
- Online access to numerous journals, MD Consult and textbooks through Hardin Library
- For the first year, free subscriptions to Journal of Infectious Diseases and Clinical Infectious Diseases

Evaluation:

Immediate feedback is given on each patient presentation. Written evaluations by the ID attendings on service are given at the end of the rotation. The fellow also provides evaluations of the rotation to the Department.

Team 2

- Inpatient VAMC consults, outpatient consults at UIHC and VAMC, and outside phone calls.
- 1 or 2 months of the second year will be spent on Team 2 outpatient consult service.

Goals and Objectives: During this rotation, the second year fellow is expected to:

- Continue to advance his/her medical knowledge base of infections commonly encountered in a variety of hosts and in variety of organ systems in an independent manner
- Refine the skills needed for development of comprehensive differential diagnosis of various infections and formulation of a diagnostic and treatment plan that is appropriate and feasible
- Provide appropriate inpatient follow up, and arrange for adequate outpatient follow up
- Refine communication skills for effective relations with referring services, both verbally and in writing
- Demonstrate independent literature search of various medical questions and ability to and interpret such literature in context of clinical case
- Demonstrate understanding of various methods of providing parenteral antimicrobials, financial limitations of IV or oral treatments, and monitoring for various adverse reactions

Teaching Methods:

Each patient is reviewed with the attending and history and physical exam are confirmed. Assessment, plans and dictated notes are reviewed. The fellow also interacts with the clinic nurses, social workers, pharmacist and ARNPs. An ID attending is present in the clinic for all patient encounters.

Mix of Clinical Topics:

Services are provided at both at the UIHC (outpatient only) and at the VA (inpatient and outpatient). Patients with a broad range of illnesses are seen both for initial and follow up evaluations. There are on average 30 outpatient consults at the UIHC, 15-20 outpatient and 20 new inpatients consults at the VA.

Patient Characteristics and types of clinical encounters, procedures and services:

- Adult patients from a variety of socioeconomic levels, ethnic background and immunocompetence states are evaluated
- Patients and diseases as above
- Lumbar puncture
- Wound assessment and exploration
- Gram Stain

Reading Lists

- Principles and Practice of Infectious disease, 5th edition. Mandell's text
- Core curriculum conference
- ID Grand Rounds
- Journal club
- Up-to-Date
- Online access to numerous journals, MD Consult and textbooks through Hardin Library

Evaluation:

Immediate feedback is given on each patient presentation. The ID attending provides a written evaluation at the end of the rotation. The entire care team (nurses, pharmacists, social workers) provides bi-annual evaluations. The fellow provides evaluations of the rotation to the Department.

***Transplant Infectious Disease –
UIHC/VAMC Solid Organ Transplantation***

During the second year, the ID Transplant one-month rotation is not required, unless the fellow did not participate during the first year. (See 1st year requirements)

Clinical microbiology – UIHC

During the second year, the Clinical Microbiology one-month rotation is not required, unless the fellow did not participate during the first year. (See 1st year requirements)

Travel Clinic- held twice weekly at UIHC, fellows rotate as per schedule

- Each fellow will have a ½ day Travel clinic by rotation.

Goals and Objectives: By the end of this rotation, the fellow is expected to:

- Show proficiency in obtaining appropriate history of previous exposures and vaccinations
- Show proficiency in predicting possible exposures based on patient's itinerary and travel plans
- Show proficiency in recommending immunoprophylaxis and chemoprophylaxis appropriately, and in a manner individualized to the traveler's medical and social needs
- Continue to provide advice as to general principles of avoiding a variety of environmental exposures
- Provide appropriate follow up if problems arise for returning travelers.
- Demonstrate understanding of and compliance with various governmental requirements for travel

Teaching Methods:

An ID attending is present for each patient encounter, reviews the relevant history and travel plans, and helps decide on the recommendations and counseling given to patients. Assessment, plans and dictated notes are reviewed.

Mix of Clinical Topics:

There are on average about 60 new patient travel clinic visits per month at UIHC. Patients traveling to countries all over the world are seen for recommendations.

Patient Characteristics and types of clinical encounters, procedures and services:

- Patients from a variety of socioeconomic levels and ethnic background are evaluated

Reading Lists

- CDC Yellow Book
- Travax Web site
- Principles and Practice of Infectious disease, 5th edition. Mandell's text
- Core curriculum conference on parasitology

Evaluation:

Immediate feedback is given on each patient presentation. Written evaluations by the Travel clinic attendings are given biannually.

Continuity of care clinic –weekly for the duration of fellowship - UIHC

- Each fellow will have a ½ day ID COC clinic weekly.

Goals and Objectives: By the end of this rotation, the fellow is expected to:

- Maintain appropriate follow up for non-HIV infected outpatients with a variety of infectious disease conditions
- Show proficiency in obtaining a complete history and physical examination of a variety of infectious diseases
- Demonstrate an efficient diagnostic and therapeutic plan for a variety of infectious diseases
- Demonstrate understanding of various methods of administering antimicrobials at home
- Continue to modify practice based on new knowledge, or patient's social and financial needs
- Refine communication skills for effective relations with the patient and the clinic personnel
- Demonstrate understanding of 'routine' practices of health maintenance, especially recommended immunizations
- Maintain appropriately complete medical records
- Demonstrate understanding of issues of confidentiality
- Demonstrate understanding of basic principles of billing and documentation

Teaching Methods:

An ID attending is present for each patient encounter. The attending reviews with the fellow the history, physical, assessment, plans and dictated notes. The fellow also interacts with the clinic nurses, social workers, and pharmacist.

Mix of Clinical Topics:

Each fellow has a weekly ID COC clinic at UIHC. Patient with diseases in all categories listed in the curriculum above are seen. More than $\frac{3}{4}$ of patients seen are follow-ups from their inpatient stay and the disease mix reflects that of inpatient rotation.

Patient Characteristics and types of clinical encounters, procedures and services:

- Adult patients from a variety of socioeconomic levels, ethnic background and immunocompetence states are evaluated
- Patients and diseases as above
- Lumbar puncture
- Wound assessment and exploration

Reading Lists

- Principles and Practice of Infectious disease, 5th edition. Mandell's text
- Core curriculum conference
- ID Grand Rounds
- Journal club
- Up-to-Date
- Online access to numerous journals, MD Consult and textbooks through Hardin Library

Evaluation:

Immediate feedback is given on each patient presentation. The ID attending provides a written evaluation biannually. The entire care team also provides bi-annual evaluations. The fellow provides evaluations of the rotation to the Department.

HIV continuity of care clinic – UIHC or VA – weekly for duration of fellowship

- Each fellow will have a $\frac{1}{2}$ day HIV COC clinic weekly.

Goals and Objectives: By the end of this rotation, the fellow is expected to:

- Demonstrate understanding of principles of testing, and lab monitoring, and transmission of HIV infection
- Demonstrate understanding of the pathophysiology and natural history of HIV infection
- Continue to advance knowledge of principles of antiretroviral therapy, apply published guidelines for treatment of HIV infection, and principles of antiretroviral resistance
- Continue to recognize, prevent and treat various infectious complications of HIV infection
- Show proficiency in applying various methods of monitoring disease progression
- Demonstrate understanding of and apply resistance testing

- Demonstrate understanding of and recognize medication adverse reactions, and drug interactions
- Demonstrate understanding of issues of confidentiality
- Take into consideration specific social and financial issues related to HIV infected individual
- Demonstrate understanding of and treat metabolic complications of HIV infection/treatment
- Demonstrate understanding of, prevent and treat various psychiatric complications and impact on treatment

Teaching Methods:

An ID attending is present for each patient encounter. The attending reviews with the fellow the history, physical, assessment, plans and dictated notes. The fellow also interacts with the clinic nurses, social workers, pharmacist and ARNPs. Fellows are also to attend HIV sessions during the core curriculum conferences. There will be article reviews and protocol or guideline updates.

Mix of Clinical Topics:

Each fellow has a weekly HIV COC clinic either at UIHC or the VA. Their patients are followed throughout their fellowship.

Patient Characteristics and types of clinical encounters, procedures and services:

- Adult patients from a variety of socioeconomic levels, ethnic background and immunocompetence states are evaluated

Reading Lists

- Principles and Practice of Infectious disease, 5th edition. Mandell's text
- Core curriculum conference
- ID Grand Rounds
- Journal club
- Up-to-Date
- HIVMA guidelines
- AAHIVM HIV Medicine Self-Directed Study Guide

Evaluation:

Immediate feedback is given on each patient presentation. The ID attending provides a written evaluation biannually. The entire care team (nurses, pharmacists, social workers) also provides bi-annual evaluations. The fellow provides evaluations of the rotation to the Department.

Research Year at UIHC or VA

- The second year of the fellowship is dedicated to research. There will be approximately two months of clinical work. The fellow selected a faculty member during the first year. This mentor will guide his/her research activity and development during the second and subsequent years (if any).

Goals and Objectives:

During this year, the fellow is to develop, implement and complete a scientific research project to demonstrate that he/she has learnt the basics of hypothesis development, design, protocol development, statistical analysis, and data collection. The project can be clinically or basic science oriented. It is expected that the results will be submitted to national scientific meeting and/or journal.

Teaching Environment:

- One on one mentoring with ID attendings or basic science researcher
- Research conference
- Research seminars

Evaluation:

Feedback on day to day progress on the project. Written evaluation by the research mentor. The fellow presents his/her research findings at Research Conference. The fellow will provide written evaluations of the rotation to the fellowship director.

Hospital Epidemiology Course

During the second year, the Epidemiology rotation is not required, unless the fellow did not participate during the first year. (See 1st year requirements).

Core Curriculum Lecture Series – weekly for duration of fellowship

This is a weekly lecture series conducted by the ID faculty reviewing key infectious disease topics.

Goals and Objectives: To discuss various topics relevant to the practice of infectious diseases and to increase the fellows' knowledge base in General Infectious Diseases. Topics include:

- HIV medicine
- Travel medicine
- Epidemiology and infection control
- Diagnostic testing
- Basics of immunology
- Pharmacology of antimicrobials
- Clinical syndromes recognition, diagnosis and treatment
- Organism – specific topics

Frequency: 1 hour weekly

Format: Can either be a formal lecture, discussion on assigned readings, practice tests, or other teaching modalities deemed appropriate by the attending assigned.

Supervision: Faculty is assigned to conduct each session, faculty attend

Evaluation: As part of the monthly written evaluation. Each presentation is evaluated and feedback is given to the presenter.

ID Grand Rounds – weekly for duration of fellowship

This is a weekly conference attended by all ID faculty and fellows, microbiology staff, pathology staff, residents and medical students. Presenters include the fellows and ID attendings. Fellows are expected to discuss case selection and discussion points prior to the conference with the attending. Once a month a clinical faculty presents a case and a fellow (or grad student) is expected to discuss the relevant basic science for that case. This is a course entitled “Integrated Topics in Infectious Diseases”.

Goals and Objectives: To discuss selected clinical cases. Diagnostic and management approaches are solicited from the attendees. Fellows should:

- become proficient in the presentation of clinical ID cases
- become proficient in the critical reading of clinical literature
- present summary of clinical literature
- apply literature information to practical clinical management

Frequency: 1 hour weekly

Format: Fellows present clinical cases as unknowns and a faculty member is selected to discuss his/her diagnostic and management approach. Specific issues pertaining to the case are then discussed and relevant literature reviewed.

Supervision: All faculty attend the discussion.

Evaluation: As part of their monthly written evaluation.

Case Discussion during Rounds

Goals and Objectives: To discuss cases seen by the fellows and attendings and to outline management issues on each of the cases and solicit approaches to the issues at hand from the attendees.

Frequency: Daily

Format: Fellows and attendings present cases from the inpatient setting. The cases in mind will have specific questions that will be addressed and the attendees will offer their approaches to the issues at hand.

Supervision: Attending supervises the discussion.

Evaluation: As part of their monthly written evaluation.

Research Conference – weekly for duration of fellowship

Goal and objectives: Review of ID research projects, other ID related research in the College of Medicine and assess progress on fellow's research project. Outside speakers are brought in three to four times a year.

- To review ongoing research activities of the ID division
- Introduce the fellow to research hypothesis, design, data collection and analysis
- Critique new projects
- Prepare for national meeting presentations
- Review ID related research from other units and departments

Frequency: 1 hour weekly

Format: Each one hour conference will have a formal presentation of a research project of the fellow or other ID personnel including design, data collection and outcomes. Guest lectures will present current research topics or summary lectures concerning research techniques.

Supervision: Faculty, fellows and ID lab personnel attend.

Evaluation: For the fellow presenting his/her research, written evaluation is performed monthly by his/her research mentor.

Journal Club – monthly for duration of fellowship

Goals and Objectives: To critically review current infectious diseases articles and to assess

- research design
- data analysis
- correlation with previous literature
- discussion and outcomes

Frequency: Once monthly

Format: Articles will be reviewed by the fellows and faculty

Supervision: All faculty can attend the conference

Evaluation: For the fellow presenting, written evaluation is performed by all attending faculty. Also, as part of their monthly written evaluation

M-4 student clinical lectures

Goals and Objectives: To teach various ID topics to M-4 students on the ID Team I rotation. Fellows should:

- become effective teachers of ID topics
- become proficient in the reading and assembly of clinical ID lecture material.
- correlation with previous literature
- discussion and outcomes

Frequency: Two to three times monthly when M-4s are on rotation.

Format: Articles and various information will be reviewed by the fellows and they will prepare the lecture

Supervision: All faculty can attend the conference

Evaluation: Evaluation forms are completed by M-4 students and sent on to the program and divisional directors

Core Competencies

Goals and Objectives: To help the fellow become well rounded in patient care and clinical practice issues. Issues are discussed at hospital-wide orientation and on-line lessons will be given concerning:

- Principles of Professionalism
- Cultural diversity
- Compliance
- Conflicts of interest
- Managing Stress

- Safety and Infection Control
- HIPAA Training
- Bloodborne Pathogens
- Mandatory Reporter

Format and Frequency: This is a self-study module on-line that should be completed at the beginning of fellowship. Once a month the Internal Medicine Department holds a Common Curriculum lecture which can include:

- Medical genetics
- Ethics and end of life decisions
- Patient safety and risk assessment
- Physician impairment and recovery
- Clinical ethics

Specific knowledge, skills, behaviors and attitudes required for Core Competencies are listed below

CORE COMPETENCIES

Medical knowledge

Goals and objectives– the fellows are expected to demonstrate knowledge of established and evolving biomedical, clinical and social sciences and demonstrate the application of their knowledge to patient care and education of others.

- Understand the approach to patients with fever
- Understand and interpret various microbiologic tests
- Identify and treat various aspects of bacterial, fungal, viral, parasitic infections
- Understand and apply principles of antimicrobial resistance
- Understand and apply principles of pharmacokinetics and pharmacodynamics of antimicrobial agents
- Understand the pathogenesis of bacterial, viral, parasitic, and fungal infections
- Understand and treat infections of different organ systems

Methods of administration

- Direct daily interaction with supervising faculty on clinical rounds, case presentations and discussions, relevant article review
- Core curriculum lectures
- Board review tapes
- Provision of ID textbook
- Access to Numerous journals, Pub Med searches, MD consult, electronic books, Up-to-Date
- IDSA membership and IDSA sponsored journals subscription

- Preparation to present lectures to students, and presentation at conferences
- Clinical microbiology weekly ‘plate rounds’
- Direct interaction with clinical pharmacist proficient in infectious disease pharmaceuticals
- Attendance of various conferences (internal medicine grand rounds, other specialty conferences in interdisciplinary topics)
- Integrated case conference and subsequent discussion of articles
- Attendance of courses relevant to chosen field of research, including MPH

Methods of assessment

- Direct observation and supervision by faculty on daily clinical rounds
- Reports by residents, primary team members
- Ability to respond to questions when presenting in conferences
- IDSA Fellows’ In-Training Exam
- Board scores

Patient care

Goals and objectives - the fellows are expected to provide patient care that is compassionate, appropriate and effective for the promotion of health, prevention of illness, treatment of diseases and care at the end of life.

Methods of administration

- Daily interaction with faculty on inpatient rounds, and outpatient consults and follow up and outpatient clinic
- Demonstration of various aspects of physical exam, lab monitoring, and plan of care
- Clear expectations for interactions with referring physician, patient interaction and follow up

Methods of assessment

- Direct observation and supervision by faculty
- Feedback from referring physicians and patients
- Ability to formulate a plan of management that minimizes patient’s discomfort
- Ability to explain plan to patient
- Appropriate follow up of patients, lab results and procedures
- Completeness of patient workups
- Documentation, maintenance of log experience

Practice based learning and improvement

Goals and objectives - the fellows are expected to be able to use scientific methods and evidence to investigate, evaluate and improve their patient care practices.

Method of administration

- Daily interaction with faculty
- Interaction with other consulting teams

- Electronic access to medical journals, literature reviews, reference books
- Subscription to specialty journals, membership in IDSA
- Conferences, journal club

Method of assessment

- Direct observation
- Literature review, knowledge and use of resources whether human or electronic
- Use of conferences to modify clinical decision making process
- Use of Journal club to understand statistical methods and study design
- Proper use of diagnostic tests and limitations

Systems based learning

Goals and objectives - the fellow must demonstrate an awareness of and responsiveness to the larger context and system of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care.

Method of administration

- Daily interactions with faculty, ancillary services including clinic personnel, social workers, nurses, secretaries, computer support personnel, laboratory personnel, home health care agencies, etc

Method of assessment

- Direct observation
- Use of health care system resources, insurance, billing and reimbursement
- Proficiency in medical record computerized system

Professionalism

Goals and objectives - the fellows are expected to demonstrate behaviors that reflect a commitment to continuous professional development, ethical practice, an understanding and sensitivity to diversity and a responsible attitude toward their patients, profession and society.

Method of administration

- Daily interactions with faculty

Method of assessment

- Direct observation
- 360 evaluations
- Patient surveys
- Feedback from referring physicians, students, other faculty
- Conference presentations

Interpersonal and Communication skills

Goals and objectives - the fellows are expected to demonstrate interpersonal communication skills that enable them to establish and maintain professional relationships with patients, families, and other members of the healthcare team.

Method of administration

- Daily interaction with faculty
- Seminars

Method of assessment

- Daily observation
- Patient surveys
- 360 evaluations
- Presentation at conferences and Journal club
- Feedback from other faculty, students