

Program Curriculum

Infectious Disease Fellowship Training Program
Division of Infectious Disease
Department of Medicine

Author: Wendy Armstrong, MD, Emory University

IDSA and the ID Training Program Directors' Committee

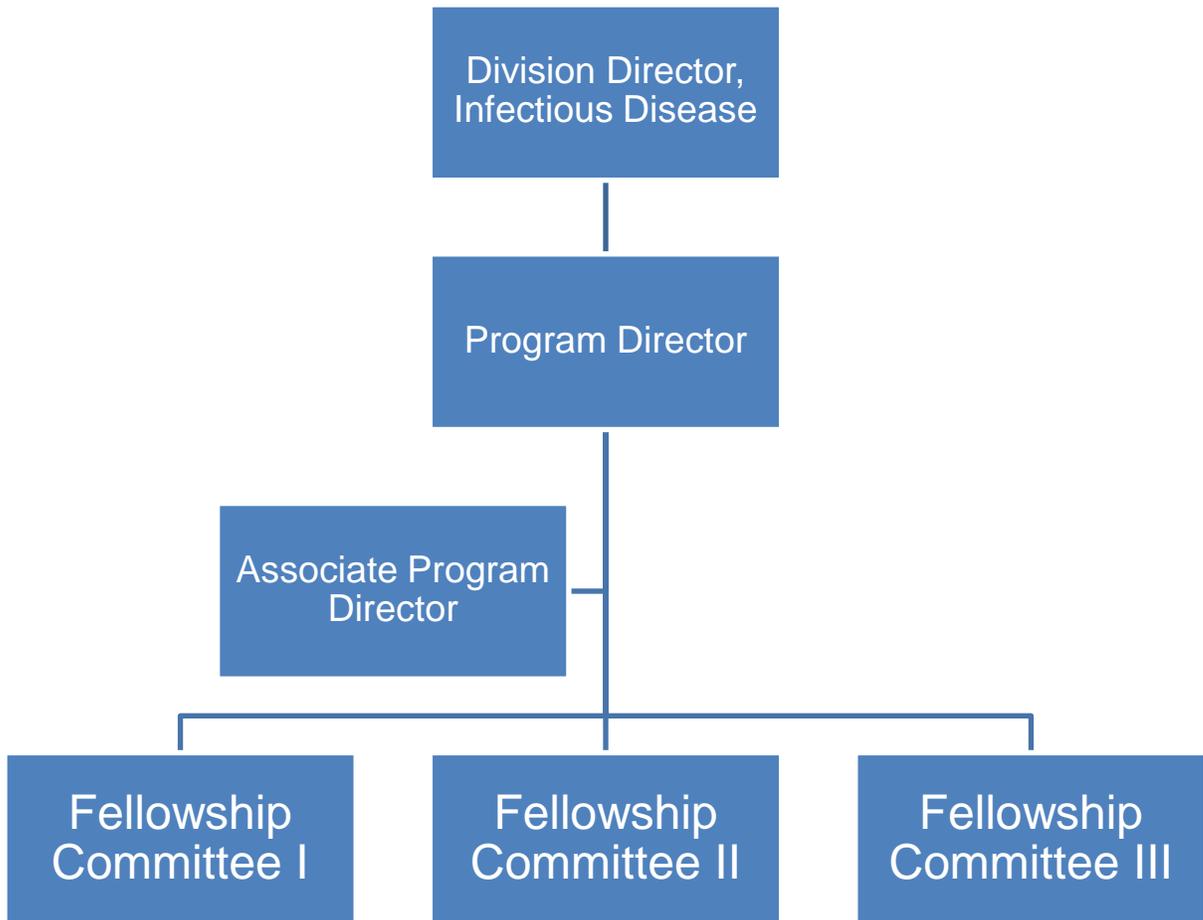
Table of Contents

Key Clinical Faculty	
Program Structure	
Fellowship Committee Membership	
Introduction and Overview	
Educational Program	
Facilities and Resources	
Program Components	
Clinical Experiences	
Specific Program Content	
Conferences, Educational Programs and Teaching Experiences	
Scholarship and Research Activities	
Evaluation of ID Fellows	
Faculty and Program Evaluation	
Bibliography	
ID Fellowship Training Program Goals and Objectives	
General Principles of the ID Training Program including Position Descriptions	
Clinical Experiences: Goals and Objectives	
Inpatient Rotations	
General ID consult service	
Clinical Microbiology	
Transplant ID consult service	
HIV Inpatient Service	
Infection Control Rotation	
Outpatient Continuity Clinics and Subspecialty Clinics	
Continuity Clinics	
HIV Clinic	
General ID Clinic	
Subspecialty Clinics	
Travel Clinic	
Transplant ID	
Tuberculosis	
Research Rotation	
Conferences	
Core Curriculum	
ID Research Seminar	
Case of the Week Conference	
HIV Conference	
Journal Club	

Key Clinical Faculty Infectious Disease Fellowship Program

XXXXX, MD Program Director

ID Fellowship Program Structure



Fellowship Committee Membership

List committees and members

I. Introduction and Overview:

A. Educational Program

The [Institution] Division of Infectious Diseases Fellowship training program in infectious diseases is organized to provide training and supervised experience at a sufficient level for the ID fellow to acquire the competency of a specialist in the field of infectious diseases. The [Institution] ID training program is a minimum of 2 years in duration. All RRC and ABIM requirements are met in the first two years of training. *A third year of ID subspecialty training (primarily for research training) is strongly encouraged for those ID fellows pursuing a career in academic medicine, clinical investigation, or public health.* During their training, the ID fellows participate in a formal didactic experience, a wide variety of direct patient care rotations and learning experiences designed to teach all six competencies.

B. Facilities and Resources

Modern facilities to accomplish the overall educational program are available at [Training sites affiliated with the fellowship program]. All of these institutions have access to a laboratory for clinical microbiology, including diagnostic bacteriology, immunology, mycology, parasitology, and virology. Facilities for the isolation of patients with infectious diseases are available at all of these institutions. The ID training program is conducted in a setting in which training programs in surgery, obstetrics, gynecology, pediatrics, and other medical and surgical specialties and subspecialties are available. All ID fellows spend a minimum of one month on the Clinical Microbiology Laboratory rotation.

C. Program Components

1. Clinical Experience

The clinical experiences afforded to ID fellow trainees include opportunities to observe and manage adult patients with a wide variety of infectious diseases on both an inpatient and an ambulatory basis. The program requires a minimum of 12 months of supervised clinical rotations.

Inpatient Rotations: Inpatient rotations are performed at [sites]. These include:[list of rotations]. At the completion of the required 12 months of

clinical time, the Infectious Disease fellow will have provided consultative services for an average of [number] inpatients.

Ambulatory Care: In addition, all trainees have an Infectious Diseases continuity clinic at [location]. The outpatient clinic provides longitudinal continuity care for patients with HIV/AIDS or other infectious diseases, and allows fellows to observe the course of illness and the effects of therapy. This experience extends for a minimum of 24 months and includes HIV-infected patients followed longitudinally.

Integration with Pediatric Infectious Disease: *The pediatric infectious disease faculty and fellows are integrated into the conferences. Adult ID fellows attend Pediatric Immunology clinic and may elect to take an inpatient pediatric ID rotation.*

2. Specific Program Content

a. Medical Knowledge

ID subspecialty residents (ID fellows) have clinical experiences or formal instruction (e.g., didactic course, clinical and research conferences) in the prevention, evaluation, and management of the following disorders:

1. The febrile patient; specifically presenting in association with rash or as fever of unknown origin
2. Upper respiratory tract infections
3. Pleuropulmonary and bronchial infections
4. Urinary tract infections
5. Peritonitis and other intra-abdominal infections
6. Cardiovascular infections
7. Central nervous system infections
8. Skin and soft tissue infections
9. Infections related to trauma, including burns and animal and human bites
10. Gastrointestinal infections and food poisoning
11. Bone and joint infections
12. Infections of the reproductive organs
13. Sexually transmitted diseases
14. Infections of the eye
15. Viral hepatitis
16. Sepsis syndromes
17. Nosocomial infections
18. HIV infection and acquired immunodeficiency syndrome
19. Infections in the immunocompromised or neutropenic host
20. Infections in patients with acute leukemia and lymphomas

21. Infections in transplant recipients
22. Infections in solid organ transplant recipients
23. Infections in geriatric patients
24. Infections in travelers
25. Infections in parenteral drug abusers

b. Technical and Other Skills

The ID training program provides practical experience or instruction in the cognitive aspects of the following:

1. Mechanisms of action and adverse reactions of antimicrobial agents; the conduct of pharmacologic studies to determine absorption and excretion of antimicrobial agents; methods of determining antimicrobial activity of a drug; techniques to determine concentration of antimicrobial agents in the blood and other body fluids; the appropriate use and management of antimicrobial agents in a variety of clinical settings, including the hospital, ambulatory practice, and the home
2. The utility of procedures for specimen collection relevant to infectious disease, including but not limited to bronchoscopy, thoracentesis, arthrocentesis, lumbar puncture, and aspiration of abscess cavities, including soft-tissue infections. The utility of diagnostics tests including traditional microbiologic tests as well as molecular diagnostic tests.
3. Principles and practice of hospital infection control and healthcare epidemiology [through lectures in the didactic, attendance at hospital infection control meetings and/or the SHEA Conference]
4. Principles of chemoprophylaxis and immunoprophylaxis to enhance resistance.
5. Mechanisms of action of biological products, including monoclonal antibodies, cytokines, interferons, interleukins, and colony-stimulating factors, and their applications in the treatments of infectious diseases or their role in enhancing the immune response
6. Interpretation of Gram's stains, other special stains, blood culture methodology, methods of determining susceptibility testing, and

basic principles of molecular biology as it relates to services offered by the clinical microbiology laboratory

c. Additional Formal Instruction

Additional specific content areas that are included in the formal training program (through the didactic course, clinical and research conferences, and seminars) include:

1. the factors that determine the outcome between host and parasite, including microbial virulence factors and host defense mechanisms.
2. basic concepts of immunology.
3. the epidemiology, clinical course, manifestations, diagnosis, treatment, and prevention of major infectious agents including viruses, chlamydiae, mycoplasma and ureaplasma, rickettsioses, and bacteria including spirochetes and mycobacteria, mycoses, protozoa, and helminths.
4. bioterrorism and emerging infectious diseases
5. health outcomes, quality assurance and improvement and cost containment in the clinical practice of infectious diseases.
6. critical assessment of the medical literature, medical informatics, clinical epidemiology and biostatistics and research methodology
7. hospital epidemiology and infection control .

3. Conferences, Educational Programs and Teaching Experiences

The ID training program provides the opportunity for ID subspecialty residents (ID fellows) to teach general internal medicine residents and other subspecialty residents as well as interact with a wide variety of residents in Departments outside of the Division of Infectious Diseases

A wide array of conferences and educational programs are also available. The Division of Infectious Diseases sponsors several conferences; these include:

- **Clinical Case Conference** – *Details to follow: example - In this weekly clinical conference, fellows present two clinical cases followed by a*

review of medical literature pertaining to specific questions raised by the case. A third case is presented each week by a faculty member. The conference is held on x day from 4 pm to 5:30 pm at location.

- **Infectious Diseases Research Seminar** - This conference is held on a weekly basis. *Details – who presents, what is presented, where, when (frequency).*
- **Journal Club** - *Details – who presents, what is presented, where, when (frequency).*
- **Core Curriculum** - *Details – who presents, what is presented, where, when (frequency).*
- *Add any additional conferences*

Support is provided for trainees to attend a scientific meeting (typically IDSA/ ICAAC and another conference of their choice) during their fellowship. Attendance at additional meetings is encouraged and supported financially when feasible, especially for those who are making presentations.

4. Scholarship and Research Activities

Research Activities

Research activities are a critical component of the ID training program. *All ID subspecialty residents will devote 11 to 12 months (for a 2-year ID subspecialty training program [fellowship]) and up to 21 to 24 months (for those who have a 3-year training program) to research activities.*

Scholarly Activities

Scholarship is an important component of ID faculty and subspecialty resident activities and duties. The Division of Infectious Diseases is dedicated to maintaining an environment of inquiry and an active research component is an integral part of the ID training program. Scholarship is defined as one of the following:

- a. The scholarship of discovery, as evidenced by peer-reviewed funding or publication of original research in peer-reviewed journals.
- b. The scholarship of dissemination, as evidenced by review articles or chapters in textbooks.
- c. The scholarship of application, as evidenced by the publication or presentation at local, regional, or national professional and scientific society meetings, for example, case reports or clinical series.

d. Active participation of the teaching staff in clinical discussions, rounds, journal club, and research conferences in a manner that promotes a spirit of inquiry and scholarship; offering of guidance and technical support, e.g., research design, statistical analysis, for ID subspecialty residents (fellows) involved in research; and provision of support for ID subspecialty resident participation as appropriate in scholarly activities.

Opportunities for Research

All trainees participate in a major clinical, epidemiologic, and/or laboratory research project during their fellowship. After beginning the program, all fellows will identify a faculty mentor under whose guidance they will carry out their research project. The fellow-faculty mentor relationship is crucial to a successful research program. The ID program provides an environment suited to developing expertise in many disciplines within infectious diseases. Clinical rotations are scheduled in blocks (i.e., 1st year of training) so that extended periods are available for concentrated research efforts (i.e., 2nd and additional years of training).

To take advantage of the broad range of possible experiences, some fellows participate in 1 to 2 smaller research efforts in addition to their primary project which may be basic laboratory research or clinical (or epidemiologic) research. Fellows have generated one or more publications as a result of their research activities.

Two research tracks are available for trainees – a **clinical investigator track** (for fellows interested in clinical, translational, or epidemiologic research) and a **basic investigator track**. A third year and in some cases subsequent years of training are designed for individuals with a goal of a career in academic infectious diseases emphasizing clinical, translational, or basic investigation. The trainee spends these years largely in research activities under the supervision of the faculty mentor and with careful oversight by the Program Director and research committee members. *Funding support is provided through a variety of sources (e.g., NIH training grants, CDC funded research, Divisional funding, competitive fellowships, and VA Career Development Program support).*

Understanding the basic science underlying infectious diseases and related disciplines is encouraged throughout the fellowship. This is accomplished through trainee presentations at research seminars, review at Journal Club of basic research articles and attendance at basic research seminars in the Division of Infectious Diseases, the Department of Medicine, the Department of Microbiology and Immunology and **[others]**.

5. Evaluation of Infectious Disease Fellows

Infectious Disease fellows are evaluated using multiple different tools and techniques. These include:

- Multisource (360) evaluations from nurses, patients, clinical office staff and program staff
- Global assessments of performance on consult rotations and in outpatient clinic
- Self-reflection
- Direct observation of full clinical examinations
- Infectious Disease In-training examination
- Journal Club evaluation
- Home Health care evaluation
- Case of the Week presentation evaluations
- Case Logs
- Semi-annual evaluations

The components of the evaluations are shared with the fellows at the beginning of the year. These evaluations are collected in the fellow's portfolios where they can be reviewed at any time and are reviewed with the Program Director semi-annually. Other performance measures are recorded in the portfolios as well, including duty logs and meeting attendance.

6. Faculty and Program Evaluation

Annually, the Program Director distributes aggregated fellow evaluations of faculty and distributes individual summaries to each member of the teaching faculty. Only those faculty members who have been evaluated by more than one fellow receive summary reports in order to maintain the anonymity of the evaluators. These annual teaching evaluations include mean scores and a summary of written comments. All aggregated reports are reviewed by the Division Director and the Program Director. These data are used to influence the assignment of faculty to teaching rotations and can lead to changes in teaching assignments or enrollment in faculty development courses to improve teaching skills. The Division Director meets annually with all members of the faculty, and these evaluations are reviewed and discussed with him. Additionally, summary comments are given to the entire faculty identifying areas of potential improved effort as a whole.

The ID Fellowship Program is formally evaluated annually by both the fellows and the faculty. This includes a review of program resource utilization, contribution of clinical teaching opportunities at each participating institution, financial and administrative program support, patient diversity and volume, teaching effectiveness, faculty member performance and quality of faculty supervision, mentoring and research training. Each fellow evaluates the

program in two different ways: 1) fellows complete a written evaluation (anonymous evaluation form with standardized questions and opportunities for additional comments) and 2) fellows also meet as a group and discuss the program including strengths, weaknesses and recommendations for improvement. One of the outgoing third year fellows presents a summary report to the entire ID faculty at a faculty meeting. The written evaluations are given to the Program Director, and the results are aggregated. Summary numeric data is distributed to the full faculty as well. The fellows' assessment is taken very seriously and has led to a number of new initiatives in the program curriculum.

ID faculty members are also asked to complete a program evaluation. The results are collated and distributed to the faculty at a faculty meeting. The final program evaluation is presented at the annual ID Faculty Retreat where there is additional discussion. Finally, the fellows' and faculty reports are presented again at the Program Subcommittees where additional action plans are generated to address any perceived program weaknesses and to act on new ideas to improve the program.

7. Bibliography

Reference Textbooks:

- 1) Mandell, Douglas and Bennett's *Principles and Practice of Infectious Disease*
- 2) Cohen and Powderly's *Infectious Diseases*
- 3) Guerrant, Walker and Weller's *Tropical Infectious Diseases*
- 4) Dolin, Masur and Saag's *AIDS Therapy*

Journals (suggested for regular reading):

Clinical Infectious Diseases
Journal of Infectious Diseases
New England Journal of Medicine
Lancet ID

Other:

Reading Lists with Core References

II. ID Fellowship Training Program – Goals and Objectives

The [Institution] Division of Infectious Diseases Training Program has the following overall educational goals for ID fellows aligned with competencies in the areas of patient care, medical knowledge of infectious diseases, practice-based learning and improvement, interpersonal and communication skills, professionalism and systems-based practice. These educational goals, followed the competencies addressed by each goal, are as follows:

- A.** Maintain an academic environment in which the trainee can develop clinical and research skills in infectious diseases and acquire the competency of a specialist in the field of infectious diseases. *Patient Care, Medical Knowledge, Systems Based Practice, Practice Based Learning and Improvement*
- B.** Provide an emphasis on appropriate training and experience that will provide a solid foundation for successful careers in academic medicine, an ID related public health career, or clinical practice. *Professionalism, Interpersonal and Communication Skills, Medical Knowledge, Systems Based Practice, Practice Based Learning and Improvement*
- C.** Provide an environment that allows for development of competency in compassionate clinical care of patients with infectious diseases, both in the inpatient and outpatient settings. *Professionalism, Interpersonal and Communication Skills, Medical Knowledge, Patient Care*
- D.** Provide a curriculum that allows the trainee to develop an understanding of ethical, socioeconomic and medical/legal issues which impact patient care and research., *Medical Knowledge, Systems Based Practice, Practice Based Learning and Improvement*
- E.** Provide the opportunity to gain experience in clinical or basic investigation of infectious diseases. *Medical Knowledge, Systems Based Practice, Practice Based Learning and Improvement*
- F.** Provide an environment that allows the trainee to develop the skills to collaborate and communicate with other health care professionals to provide individual patient-centered care and to develop systems to facilitate provision of patient-centered care. *Professionalism, Interpersonal and Communication Skills, Systems Based Practice*

III. General Principles of the Training Program for Fellows in Infectious Diseases at Emory University including Position Descriptions by level of training

1. The housestaff physician meets the qualifications for resident eligibility outlined in the Essentials of Accredited Residencies in Graduate Medical Education in the AMA Graduate Medical Education Directory.
2. The position of housestaff physician involves a combination of clinical care, research and teaching. The competency of the housestaff physician is evaluated on a regular basis and the program maintains a confidential record of the evaluation. Evaluation of performance includes assessment in six areas or competencies. These include patient care, medical knowledge, practice based learning and improvement, interpersonal and communication skills, professionalism, and system based practice. Evaluation includes a written evaluation after each clinical rotation as well a written evaluation each quarter addressing performance in research training. ABIM evaluations are also completed on an annual basis and at the end of the training program. ID subspecialty residents (fellows) will also meet every 6 months with the Program Director to receive structured feedback and counseling. A written evaluation will be done by the Program Director every 6 months and at the completion of the ID fellowship training. The ID fellow also has an opportunity to review the training program and provide feedback in the form of written evaluations after each clinical rotation and by a written program evaluation done annually.
3. The position of housestaff physician (i.e., ID fellow) entails provision of care commensurate with the housestaff physician's level of training and competence, under the supervision of an attending staff physician. This includes:
 - participation in safe, effective, and compassionate patient care.
 - developing an understanding of ethical, socioeconomic and medical/legal issues that affect graduate medical education and an understanding of how to apply cost containment measures in the provision of patient care.
 - participation in the educational activities of the training program, assumption of responsibility for teaching and supervision other residents and students, and participation in institutional orientation, education programs and other activities involving the clinical staff.
 - participation in institutional committees to which the housestaff physician is appointed or invited.
 - developing competencies in each of the six areas noted above

- developing sufficient competence to enter practice without direct supervision
- performance of these duties in accordance with the established practices, procedures and policies of: 1) the primary institution including its clinical departments and other university programs; 2) other institutions to which the housestaff physician is assigned; 3) state licensure requirements for physicians in training.

Position Descriptions for Resident Physicians Specific to Level:

1. 1st Year Fellows

a. The 1st year Fellow in Infectious Diseases spends approximately **x months on the General ID Consult services**. There is a one month rotation in the clinical microbiology laboratory. *Description of services in year 1*. A total of **12 months of clinical training and 12 months of research training are carried out during the first two years of ID fellowship training**.

b. On the clinical rotations, the 1st year Fellow participates in the care of patients with a wide variety of infectious diseases. While on the clinical rotation, the 1st year Fellow also has a major role in the supervision and teaching of student and residents. On all rotations, there is a faculty attending who oversees the 1st year Fellow and is ultimately responsible for patient care.

c. The 1st year Fellow maintains a ½ day per week outpatient continuity clinic. There is a faculty preceptor in clinic who oversees the 1st year fellow and is ultimately responsible for patient care.

d. The 1st year Fellow has formal teaching responsibilities in addition to the informal teaching done on clinical rotations. Over the course of the year, the resident will conduct case presentations and discussions at **3 to 5 Clinical Case conferences**. *The resident will also lead the critical discussion of a journal article at 2 to 4 "Journal Clubs"*. The resident will also participate in other teaching activities as directed.

e. The 1st year Fellow will participate in the Division's **weekly core curriculum conference**. The curriculum for this conference series includes specific clinical and basic science topics listed in the ACGME requirements for instruction in Infectious Diseases. In addition, there is a basic science component to the weekly didactic sessions.

f. The lines of responsibility, curriculum, and goals and objectives, and Division policies, and methods of evaluation will be discussed and the

subspecialty resident will receive a copy of these Division materials at orientation; the goals/objectives will be discussed at the beginning of each rotation as well.

g. By the end of the 1st year of fellowship, the subspecialty resident will pick a faculty mentor and begin one or more research projects.

2. 2nd year Fellow

a. The 2nd year Fellow in Infectious Diseases spends approximately xx months per year on research training and xx months on clinical rotations (*the total number of months in the first two years will include 12-14 months of clinical training rotations and 10-12 months of research training; the distribution between the first and second years of ID fellowship training may differ based on needs of the trainee*).

b. The 2nd year Fellow is expected to take a more central role in developing the diagnostic work-up and plan of care for patients on the consult service than was done by the 1st year Fellow. Specifically, the 2nd year Fellow should lead clinical rounds and should take a prominent teaching role with the attending physician present for oversight. The 2nd year Fellow should provide supervision and feedback to the residents and students with the attending playing the role of mentor to the 2nd year Fellow. The attending physician remains ultimately responsible for patient care and for also must evaluate the 2nd year Fellow, other medical residents and medical students.

c. The 2nd year Fellow maintains his or her outpatient continuity clinic through the year (1/2 day per week).

d. In addition to the teaching responsibilities listed for the 1st year Fellow, the 2nd year Fellow will present his/her research work-in-progress in the spring if staying for a third year, or if completing the fellowship in two years, will give an hour long presentation at ID Research Seminar.

e. Participation in the weekly core curriculum conference series and attendance at the ID Research Seminar series will continue during the 2nd year of fellowship.

f. By the end of fellowship training, the ID fellow will submit an abstract based on his or her efforts to one of several regional or national meetings. In addition to the fellow's major research project, the ID fellow is expected to be involved in one or more small focused projects and or case reports. It is anticipated that all ID fellows completing the training program will also submit at least one manuscript to a peer reviewed journal.

g. The 2nd year Fellow will be expected to share research progress semi-annually with a research committee and with the first and third year fellows.

h. The evaluation methods described above for the 1st year Fellow and described in the curriculum also apply to 2nd year Fellows.

3. 3rd Year Fellow

a. The third year of fellowship training is an optional year and is not required for board eligibility in infectious diseases. All program requirements are met during the first two years of ID fellowship training.

b. The third year is primarily focused on research training and is highly recommend for subspecialty residents interested in a career in academic medicine or public health. The ID fellow will spend 9-12 months on research training and 0-3 months on clinical rotations.

c. Clinical and teaching duties while on the clinical rotations are similar to those of the 2nd year Fellows. Third year fellows will also participate in teaching conferences such as the clinical case conference, journal club, Grand Rounds; they may also attend the core curriculum course and are encouraged to do so. The final year fellow presents their research findings at ID Grand Rounds at the end of the academic year.

d. The third year Fellow may continue their outpatient continuity clinic through the year (1/2 day per week) and may also attend additional subspecialty clinics.

f. The 3rd year Fellow will be expected to share research progress with the ID Fellowship Research Committee and with the first and second year fellows.

g. By the end of fellowship training, the subspecialty resident will submit an abstract based on his or her efforts to one of several regional or national meetings. In addition to the resident's major research project, the resident is expected to be involved in one or more small focused projects and or case reports. It is anticipated that all ID fellows completing the training program will also submit at least one manuscript to a peer reviewed journal.

h. The evaluation methods described above for the 1st year Fellows and described in the curriculum also apply to third year fellows.

IV. Clinical Experiences: Goals and Objectives

A. Inpatient Rotations

1. General ID Consult Service

Fellows rotate on the General ID Consult service in one month blocks on average xx months in the first year. The general consult attendings include Drs. X, y and z. *The patient mix includes the entire spectrum of adult patients including those in the intensive care unit (neurology, cardiothoracic, surgical, medical), those who are immunocompromised (including HIV-infected patients and those taking immunosuppressive medications) and those with post-surgical complications.* Teaching takes place at daily attending rounds. The fellows are expected to attend all the required divisional conferences and clinical microbiology rounds held daily in the microbiology laboratory. The team typically includes residents and medical students. All care is supervised by the attending physician assigned to the ID consult service.

Rotational Goals:

- 1) The ID fellow will evaluate patients with acute and chronic infectious diseases across the entire spectrum of the specialty.
- 2) The ID fellow will learn the diagnostic and therapeutic approach to these patients.
- 3) The fellow will learn to communicate recommendations with other health care providers in both written and oral form.
- 4) The ID fellow will learn to facilitate the provision of care within the health care system and will learn to recognize system problems and methods to improve health care delivery.

Patient Care: *Fellows will provide patient care that is competent, compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

Competencies: Fellows are expected to gain a broad experience in the evaluation and management of hospitalized adult patients with a comprehensive array of acute and chronic infectious diseases problems. This rotation will enhance the ability of the trainee to develop competency in the compassionate care of patients with a wide variety of infectious diseases related problems including patients with complex medical problems being managed at a tertiary care referral center.

Objectives:

- 1) The ID fellow will be able to formulate a basic approach to the evaluation of acutely ill patients with potential infectious diseases including pertinent history and physical exam, appropriate utilization and interpretation of diagnostic tests (including molecular diagnostic tests), and development of a prioritized differential diagnosis based upon history, exam and diagnostic studies.
- 2) The ID fellow will obtain a comprehensive and accurate medical history using all available sources.
- 3) The ID fellow will perform a comprehensive and accurate physical examination with added elements pertinent to the individual's differential diagnosis.

- 4) The ID fellow will review ancillary materials including radiology, pathology, laboratory data, and microbiology data with appropriate consultation of experts in these areas.
- 5) The ID fellow will communicate the findings and recommendations both verbally and in written format clearly and appropriately to the patient and other members of the health care team.
- 6) The ID fellow will follow the patient's hospital course and will adjust the management plan accordingly.
- 7) 2nd year ID fellows, in addition to the above, will create more independent diagnostic and therapeutic plans and will revise those plans as the patient's course evolves.

Medical Knowledge: *Fellows will demonstrate knowledge about established and evolving pathophysiological, biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care.*

Competencies: Fellows are expected to develop an increased understanding of the pathophysiology of common infectious diseases in hospitalized adult patients and in the epidemiology and evolution of infectious diseases. The fellow is expected to learn how known and evolving data influences and informs clinical practice.

Objectives:

- 1) The ID fellow will recognize and treat common infectious disease problems requiring hospitalization including pneumonia, osteomyelitis, skin/soft tissue infections, endovascular infections, osteomyelitis/septic arthritis, central nervous system infections, intraabdominal and genitourinary infections. In addition, they will acquire additional competency and expertise in the care of patients with post-surgical infectious diseases related complications as well as the care of immunocompromised patients with infectious diseases related problems.
- 2) The ID fellow will continue to develop expertise and competency in the care of patients requiring ICU care, including those with hospital acquired infections.
- 3) The ID fellow will recognize indications, side effects and drug interactions of diverse classes of antimicrobials utilized to treat hospitalized adult patients.
- 4) The ID fellow will understand the relevance of evolving infectious disease epidemiology and be able to apply that to the evaluation of the patient in real time.
- 5) The ID fellow will understand the influence that socio-behavioral factors have in the development of and treatment of infectious diseases.
- 6) 2nd year ID fellows, in addition to the above, will be aware of the latest literature about the pathophysiology, epidemiology, diagnosis and therapy of infectious processes they are evaluating and will develop a broader differential diagnosis, incorporating less common infectious etiologies of disease.

Professionalism: *Fellows will demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population and staff.*

Competencies: The fellow is expected to demonstrate 1) compassion, integrity and respect for others, 2) respect for patient privacy and autonomy and 3) sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in age, gender, culture, race, religion, disabilities and sexual orientation.

Objectives:

- 1) In conjunction with and under the guidance of the ID attending, the fellow is responsible for meeting with the ID team and setting expectations at the beginning of the rotation (e.g., residents and medical students on the rotation).
- 2) The ID fellow will demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients, their families and society that supercedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development.
- 3) The ID fellow will demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities both in their interactions with patients and discussion about patients with the team. The ID fellow will respect the patient's privacy by adhering to HIPAA rules.
- 4) The ID fellow will respect patient autonomy and will discuss potential diagnostic and therapeutic approaches with the patient before recommending a definitive approach to care.
- 5) The ID fellow will serve as a role model to house officers (residents) and medical students in display of professionalism, including timeliness, appropriate communication skills and responsible, ethical, comprehensive care.
- 6) The ID fellow will demonstrate professionalism in sensitive areas of the patient history, including sexual history, previous drug abuse and specific risk factors for infectious diseases.

Interpersonal and Communication Skills: *Fellows must demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, patients' families, and professional associates and trainees.*

Competencies: The ID fellow is expected to 1) communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds, 2) communicate effectively with physicians, other health professionals and health related agencies, 3) act in a consultative role to other physicians and health professionals and 4) maintain comprehensive, timely and legible medical records.

Objectives:

- 1) The ID fellow will work with the requesting physician to appropriately formulate a focused question for the basis of an infectious disease consult
- 2) The ID fellow will effectively interview the patient, family members and staff to obtain a comprehensive assessment of the important clinical issues to be addressed.

- 3) The ID fellow will communicate concisely with team members in formal and informal daily follow-up of the patients.
- 4) The ID fellow will update patients on the status of their health and their test results in a compassionate and clear manner that is appropriate to the patient's level of medical understanding.
- 5) Written and verbal communication with the requesting physician and team will include subjective and objective information pertinent to the ID problems being addressed.
- 6) The ID fellow will demonstrate closure of patient care through written and verbal communication that facilitates appropriate follow up and includes plan for future contacts should additional questions or problems arise.
- 7) The ID fellow will communicate with colleagues to ensure appropriate hand-off of the patient and patient care issues when there is a change in the infectious disease team.
- 8) 2nd year fellows will lead rounds and take a prominent role teaching other learners including residents and medical students on their team.

System-Based Practice: *Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.*

Competencies: The fellow is expected to 1) work effectively in the health care delivery setting and system, 2) coordinate patient care within the health care system, 3) participate in identifying systems errors and in implementing potential system solutions.

Objectives:

- 1) The ID fellow will demonstrate competence in interacting with multidisciplinary team members including social services, nursing, pharmacy, hospital epidemiology, and nutrition services.
- 2) The ID fellow is responsible for hospital referral for home antibiotics, evaluation from home health nurse regarding appropriateness of referral, completeness of form (follow-up labs, appointment, allergies, duration of therapy listed, etc.)
- 3) The ID fellow is expected to complete a discharge note on the day of discharge including diagnoses and recommendations for antibiotics. This helps ensure appropriate hand off of care to the physicians following up in the outpatient clinic and to clarify patient care issues in the event of readmission.
- 4) The ID fellow will work closely with team pharmacist to oversee appropriate antibiotic utilization and dosing.
- 5) The ID fellow will attend microbiology rounds at least three times weekly and will participate in discussions regarding systems issues for example, confusion and potential improvements in laboratory reporting systems.
- 6) 2nd year ID fellows will be more aware of and proactive in the infection control decision-making of individual cases and will bring issues to the attention of the appropriate entities to aid in correcting systems errors (including the microbiology personnel, infection control teams, and antibiotic utilization teams.)

Practice-Based Learning and Improvement: *Fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence,*

and improve their patient care practices based on constant self-evaluation and life long learning.

Competencies: Fellows are expected to develop skills and habits to be able to 1) locate, appraise and assimilate evidence for scientific studies related to their patients' health problems, 2) use information technology to optimize learning and 3) participate in the education of patients, families, students, residents and other health professionals as documented by evaluations of a fellow's teaching abilities by faculty.

Objectives:

- 1) The ID fellow will utilize an evidence-based approach to patient care when deciding on optimal treatment plans including appropriate and timely access to the medical literature.
- 2) The ID fellow will use information technology including the resources available through the library system online to provide pertinent literature to the ID team and the patient's requesting team.
- 3) The ID fellow will educate the patient and patient's family about the diagnosis or the approach to reach the diagnosis, the management plan and the expected clinical outcome in a way that is both culturally appropriate and accessible to the patient and his/her family.
- 4) The ID fellow will teach the students, residents and other health care professionals about the infectious disease issues including isolation procedures and will provide literature to the health care providers and the team regarding infectious disease issues that are relevant to the cases seen.
- 5) 2nd year ID fellows will take a more active role consulting the recent medical literature, interpreting it and applying it to patient care. They will actively educate the team and the patients about new data and its application in the care of the patient.

Teaching Methods

Teaching on this rotation is primarily through case-based learning. The supervising physician will spend 13-15 hours/week in teaching above and beyond the time required merely for the provision of patient care. This may include formal lectures, bedside teaching or both. In addition, 3-5 hours/week are spent on microbiology rounds, which is largely didactic regarding issues in diagnostic microbiology and systems-based practice issues.

Assessment

Ongoing informal feedback occurs on a daily basis during the rotation when the fellow presents cases to the attending physician. In addition, formal ongoing feedback by the Attending Physician is required. At mid-month and at the end of the month, the ID attending physician will give feedback to the ID fellow. This will be in the form of both verbal feedback and a written evaluation which will become part of the fellow's permanent file. The written evaluation is a global competency based assessment of the fellow's performance. Semi-annually, the Program director will review all rotation evaluations with the ID fellow. In addition, each fellow will have a directly observed examination by the attending physician at least once during the two

week attending physician rotation. The fellow will be observed taking the history, performing the clinical examination, communicating with the patient, and synthesizing material and forming a differential diagnosis and therapeutic or diagnostic plan. The encounter will be evaluated and will cover all competencies and immediate feedback will be given.

ID fellows will anonymously evaluate the faculty at the end of the rotation. The ID Program Director reviews these comments and summarizes the comments for the faculty on an annual basis. If there are immediate or serious problems, the ID fellow should immediately contact the ID Program Director. All rotations are evaluated yearly by the fellows in the formal annual program review as discussed in the beginning of this curriculum document.

Level of Supervision – The fellow is supervised on a daily basis by the ID attending physician assigned to the rotation. The attending is available by pager 24 hours/day, 7 days/week during the rotation if issues occur outside attending rounds. The attending physician evaluates the fellows in the competencies and objectives outlined above. In addition the attending physician role models appropriate behavior for all competencies.

Educational Resources – Please refer to the bibliography section of this document.

2. Clinical Microbiology Rotation

The training experience in clinical microbiology is a 1-month rotation that takes place in the clinical microbiology laboratory. The ID fellows are expected to be available from Monday through Friday, 8am to 5pm with exceptions for clinic assignments. During this time ID fellows participate in structured rotations at the different benches in the clinical microbiology laboratory including, primary plating, subculturing, susceptibility testing, blood cultures, respiratory, urines, miscellaneous, anaerobes, mycology, mycobacteriology, parasitology, virology, and molecular microbiology. They learn from the medical technologists the basic principles and practices in clinical microbiology and the capabilities of our laboratory. ID fellows are also expected to participate in daily microbiology laboratory rounds with the laboratory directors and pathology residents and fellows. Current problems, unusual findings, instructive examples are the basis for discussion of at laboratory rounds. Laboratory rounds also include a discussion of the integration of the microbiology laboratory into the health care system and the prevention of system errors. Fellows actively contribute to developing solutions and problem-solving in this arena. In addition, fellows should attend the weekly clinical pathology conference. This case-based conference integrates all areas of laboratory medicine. Dr. X directs this rotation.

Rotational Goals: The ID fellow will develop a better understanding of how the clinical microbiology laboratory operates and how to use it effectively to establish a specific etiological diagnosis, select the most effective antimicrobial therapy, and improve delivery of care within the health system.

Medical Knowledge: *Fellows will demonstrate knowledge about established and evolving pathophysiological, biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care.*

Competencies: The ID fellow is expected to learn the basic laboratory diagnostic techniques and enhance his/her knowledge of clinical microbiology.

Objectives:

- 1) The ID fellow will develop a competency in interpreting Gram's stains as well as familiarity with interpretation of other special stains (e.g., KOH, AFB) from clinical specimens.
- 2) The ID fellow will become familiar with the use of growth media employed in the evaluation of respiratory, urine, wound, genital and stool specimens
- 3) The ID fellow will understand methods used to cultivate fungal and acid fast organisms.
- 4) The ID fellow will recognize the appearance of common organisms on culture plates (beta hemolytic streptococci, *Streptococcus pneumoniae*, *Haemophilus* species, *Staphylococcus aureus*, *E. coli*, swarming *Proteus* species, *Pseudomonas aeruginosa*).
- 5) The ID fellow will become familiar with blood culture methodology.
- 6) The ID fellow will become familiar with such automated equipment used in the clinical microbiology laboratory such as the Microscan or Vitek diagnostic systems and the MALDI-TOF.
- 7) The ID fellow will understand methods used for Kirby-Bauer and Microdilution (MIC) susceptibility testing.
- 8) The ID fellow will become familiar with parasitology and virology.
- 9) The ID fellow will become familiar with flow cytometry studies (CD4 lymphocyte counts) and relevant immunology testing.
- 10) The ID fellow will understand aspects and basic principles of molecular biology as they pertain to services offered by a clinical microbiology laboratory (i.e., molecular diagnostic tests).

Professionalism: *Fellows will demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population and staff.*

Competencies: The ID fellow will demonstrate 1) compassion, integrity and respect for others, 2) accountability to patients, society and the profession.

Objectives:

- 1) ID fellow will demonstrate respect, compassion, and integrity in their interactions with laboratory staff, other physicians and other professionals.
- 2) The ID fellow will demonstrate a commitment to excellence and on-going professional development.
- 3) The ID fellow will serve as a role model to house officers (residents) and medical students in display of professionalism, including timeliness, appropriate communication skills and responsible and ethical behavior.
- 4) The ID fellow will be timely and will communicate with the director and laboratory staff when clinical commitments require his/her absence.

Interpersonal and Communication Skills: *Fellows must demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, patients' families, and professional associates and trainees.*

Competencies: The ID fellow will communicate effectively with physicians, other health professionals and health related agencies.

Objectives:

- 1) The ID fellow will work with the laboratory staff to communicate the clinical context of laboratory samples when needed.
- 2) The ID fellow will communicate with other physicians on microbiology rounds about laboratory results and the science behind the laboratory assays.

System-Based Practice: *Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value*

Competencies: The ID fellow will participate in identifying systems errors and in implementing potential systems solutions.

Objectives:

- 1) The ID fellows will participate in discussions on microbiology rounds about reporting and interpretation of laboratory results.
- 2) The ID fellow will actively contribute to finding solutions to prevent system errors.

Practice-Based Learning: *Fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices.*

Competencies: The ID fellow will identify strengths, deficiencies and limits in one's knowledge and expertise and 2) will identify and perform appropriate learning activities.

Objectives:

- 1) The ID fellow will indicate understanding of his strengths and weaknesses during bimonthly evaluations with the attending faculty.
- 2) The ID fellow will utilize an evidence-based approach to clinical microbiology including appropriate and timely access to the medical literature.
- 3) The ID fellow will provide pertinent literature to the ID team.

Teaching Methods

The ID fellow will rotate through the various laboratory areas (e.g. blood culture, respiratory specimens, mycology, etc.) and will learn techniques taught by the laboratory technologists in each area. In addition, the ID fellow will participate in daily microbiology rounds with the laboratory and the ID consult teams which incorporate didactic sessions.

Assessment

The Clinical Microbiology training director evaluates the progress of the ID fellows at the end of the rotation with input from the co-director and the medical technologists who assisted in providing training. Verbal feedback is provided mid-month and verbal feedback and a written evaluation are provided at the end of the month. The goals and objectives are reviewed at the beginning of the rotation.

ID fellows will anonymously evaluate the faculty at the end of the rotation. The ID Program Director reviews these comments and summarizes the comments for the faculty on an annual basis. If there are immediate or serious problems, the ID fellow should immediately contact the ID Program Director. All rotations are evaluated yearly by the fellows in the formal annual program review as discussed in the beginning of this curriculum document.

Level of Supervision

The ID fellow is supervised at all times by the laboratory technologists with whom they are working, by the laboratory director and the clinical Microbiology training director.

Educational Resources

In addition to the resources listed in the bibliography section above, the laboratory has written resources available at all times. *In addition, the fellows review the GermWare software with reference material and tutorials on parasitology, mycology and bacteriology by Instructional Design Consultants.*

3. Transplant ID Consult Service

Fellows rotate on the Transplant ID Consult service in one month blocks for an average of one to two months in the first, second or additional years of ID

fellowship. The Transplant ID attendings include Drs. X, y, and z. *The patient mix includes patients status post solid organ transplantation, patients listed for consideration for solid organ transplantation, patients with leukemia or lymphoma undergoing chemotherapy, patients undergoing stem cell transplantation and patients with cystic fibrosis. Teaching takes place at daily attending rounds and includes a review of specified didactic topics.*

The fellow is expected to attend all the required divisional conferences and to attend daily microbiology rounds as often as possible. All care is supervised by the attending physician assigned to the Transplant ID consult service.

Rotational Goals: The ID fellow will gain experience in the evaluation and management of the transplant recipient, neutropenic patient, and patients with cystic fibrosis. The fellow will be aware of new controversies in the diagnosis and management of opportunistic infections and how immunomodulating medications affect risk of individual infections.

Patient Care: *Fellows will provide patient care that is competent, compassionate and appropriate.*

Competencies: ID fellows will be able to formulate a basic approach to the evaluation of immunocompromised patients including an evaluation and diagnostic and therapeutic plan.

Objectives:

- 1) The ID fellow will be able to formulate a basic approach to the evaluation of acutely ill transplant, pretransplant and neutropenic patients with potential infectious diseases including pertinent history and physical exam, appropriate utilization and interpretation of diagnostic tests (including molecular diagnostic tests), and development of a prioritized differential diagnosis based upon history, exam and diagnostic studies.
- 2) The ID fellow will obtain a comprehensive and accurate medical history using all available sources.
- 3) The ID fellow will perform a comprehensive and accurate physical examination with added elements pertinent to the individual's differential diagnosis.
- 4) The ID fellow will review ancillary materials including radiology, pathology, laboratory data, and microbiology data with appropriate consultation of experts in these areas.
- 5) The ID fellow will communicate the findings and recommendations both verbally and in written format clearly and appropriately to the patient and other members of the health care team.
- 6) The ID fellow will follow the patient's hospital course and will adjust the management plan accordingly.
- 7) 2nd year ID fellows, in addition to the above, will create more independent and sophisticated diagnostic and therapeutic plans and will revise those plans as the patient's course evolves.

Medical Knowledge: *Fellows will demonstrate knowledge about established and evolving pathophysiological, biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care.*

Competencies: The ID fellow is expected to develop an increased understanding of the pathophysiology of common infectious diseases in hospitalized transplant, pretransplant and neutropenic patients. The fellow is expected to learn how known and evolving data influences and informs clinical practice.

Objectives:

- 1) ID fellow on this rotation will demonstrate an understanding of the timeline of risk for various infections following transplantation.
- 2) ID fellow will develop an increased understanding of the pathophysiology of common infectious diseases in transplant patients. The emphasis is on case-based bedside teaching.
- 3) ID fellow will recognize indications, side effects and drug interactions of diverse classes of antimicrobials utilized to treat hospitalized adult patients, especially antifungal agents.
- 4) ID fellow will gain a working knowledge of immunosuppressive regimens in the transplant patient, including common side effects and drug interactions.
- 5) ID fellow will attend daily microbiology rounds conducted by the microbiology laboratory directors and staff and will contribute to the discussion of cases related to the transplant service.
- 6) The ID fellow will understand both prophylactic and preemptive approaches to preventing infection in the transplant recipient, especially as pertaining to CMV and fungal infections (Candida, PCP, aspergillus).
- 7) 2nd year fellows, in addition to the above, will be aware of the latest literature about the pathophysiology, epidemiology, diagnosis and therapy of infectious processes they are evaluating and will develop a broader differential diagnosis, incorporating less common infectious etiologies of disease.

Professionalism: *Fellows will demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population and staff.*

Competencies: The fellow is expected to demonstrate 1) compassion, integrity and respect for others, 2) respect for patient privacy and autonomy and 3) sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in age, gender, culture, race, religion, disabilities and sexual orientation.

Objectives:

- 1) The ID fellow will demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients, their families and society that supercedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development.
- 2) The ID fellow will demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities both in their interactions with patients and discussion about patients with the team. The ID fellow will respect the patient's privacy by adhering to HIPAA rules.
- 3) The ID fellow will respect patient autonomy and will discuss potential diagnostic and therapeutic approaches with the patient before recommending a definitive approach to care.
- 4) The ID fellow will demonstrate professionalism in sensitive areas of the patient history, including sexual history, previous drug abuse and specific risk factors for infectious diseases.

Interpersonal and Communication Skills: *Fellows must demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, patients' families, and professional associates and trainees.*

Competencies: The ID fellow is expected to 1) communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds, 2) communicate effectively with physicians, other health professionals and health related agencies, 3) act in a consultative role to other physicians and health professionals and 4) maintain comprehensive, timely and legible medical records.

Objectives:

- 1) The ID fellow will work with the requesting physician to appropriately formulate a focused question for the basis of an infectious disease consult
- 2) The ID fellow will effectively interview the patient, family members and staff to obtain a comprehensive assessment of the important clinical issues to be addressed.
- 3) The ID fellow will communicate concisely with team members in formal and informal daily follow-up of the patients.
- 4) The ID fellow will update patients on the status of their health and their test results in a compassionate and clear manner that is appropriate to the patient's level of medical understanding.
- 5) Written and verbal communication with the requesting physician and team will include subjective and objective information pertinent to the ID problems being addressed.
- 6) The ID fellow will demonstrate closure of patient care through written and verbal communication that facilitates appropriate follow up and includes plan for future contacts should additional questions or problems arise.
- 7) The ID fellow will communicate with colleagues to ensure appropriate hand-off of the patient and patient care issues when there is a change in the infectious disease team.
- 8) 2nd year ID fellows will lead rounds and take a prominent role teaching other learners including residents and medical students on their team.

System-Based Practice: *Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.*

Competencies: The fellow is expected to 1) work effectively in the health care delivery setting and system, 2) coordinate patient care within the health care system, 3) participate in identifying systems errors and in implementing potential system solutions.

Objectives:

- 1) The ID fellow will demonstrate competence in interacting with multidisciplinary team members including social services, nursing, pharmacy, hospital epidemiology, and nutrition services.
- 2) The ID fellow is responsible for hospital referral for home antibiotics, evaluation from home health nurse regarding appropriateness of referral, completeness of form (follow-up labs, appointment, allergies, duration of therapy listed, etc.)
- 3) The ID fellow is expected to write a discharge/sign off note including diagnoses and recommendations for antibiotics. This helps ensure appropriate hand off of care to the physicians following up in the outpatient clinic and to clarify patient care issues in the event of readmission.
- 4) The ID fellow will work closely with transplant team pharmacist to oversee appropriate antibiotic utilization and dosing, with careful attention to interactions between antimicrobial agents and immunosuppressant therapy.
- 5) The ID fellow will attend microbiology rounds at least three times weekly and will participate in discussions regarding systems issues for example, confusion and potential improvements in laboratory reporting systems.
- 6) 2nd year ID fellows will be more aware of and proactive in the infection control decision-making of individual cases and will bring issues to the attention of the appropriate entities to aid in correcting systems errors (including the microbiology personnel, infection control teams, and antibiotic utilization teams.)

Practice-Based Learning and Improvement: *Fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices based on constant self-evaluation and life long learning.*

Competencies: Fellows are expected to develop skills and habits to be able to 1) locate, appraise and assimilate evidence for scientific studies related to their patients' health problems, 2) use information technology to optimize learning and 3) participate in the education of patients, families, students, residents and other health professionals as documented by evaluations of a fellow's teaching abilities by faculty.

Objectives:

- 1) The ID fellow will utilize an evidence-based approach to patient care when deciding on optimal treatment plans including appropriate and timely access to the medical literature.
- 2) The ID fellow will use information technology including the resources available through the university library system online to provide pertinent literature to the ID team and the patient's requesting team.
- 3) The ID fellow will educate the patient and patient's family about the diagnosis or the approach to reach the diagnosis, the management plan and the expected clinical outcome in a way that is both culturally appropriate and accessible to the patient and his/her family.
- 4) The ID fellow will teach the students, residents and other health care professionals about the infectious disease issues including isolation procedures and will provide literature to the health care providers and the team regarding infectious disease issues that are relevant to the cases seen.
- 5) 2nd year ID fellows will take a more active role consulting the recent medical literature, interpreting it and applying it to patient care. They will actively educate the team and the patients about new data and its application in the care of the patient.

Teaching Methods

Teaching on this rotation is through case-based learning and formal didactic sessions. The physicians on the rotation have established a guideline which standardizes topics taught during each week of the one month rotation. Additional teaching is performed via case-based learning at the bedside and in didactics stimulated by current patients followed on the service. In addition, 3-5 hours/week are spent on microbiology rounds where issues in diagnostic microbiology and systems issues are discussed.

Assessment

Formal ongoing feedback by the Attending Physician is required. ID fellows will receive a written evaluation every two weeks (global rating scale) and this will become part of the fellow's permanent file. The written evaluation is organized to address the categories above. At mid-month, the ID attending physician will give feedback to the ID fellow. The ID attending will also provide verbal feedback at the end of the rotation. Semi-annually, the Program director will review all rotation evaluations with the ID fellow.

ID fellows will anonymously evaluate the faculty at the end of the rotation. The ID Program Director reviews these comments and summarizes the comments for the faculty on an annual basis. If there are immediate or serious problems, the ID fellow should immediately contact the ID Program Director. All rotations are evaluated yearly by the fellows in the formal annual program review as discussed in the beginning of this curriculum document.

Level of Supervision – The fellow is supervised on a daily basis by the ID attending physician assigned to the rotation. The attending is available by pager 24 hours/day, 7 days/week during the rotation if issues occur outside attending rounds. The attending physician evaluates the fellows in the competencies and objectives outlined above. In addition the attending physician role models appropriate behavior for all competencies.

Educational Resources – Please refer to the bibliography section of this document.

3. Inpatient HIV Rotation

The ID fellow will rotate on the Inpatient HIV rotation for one month in the first year of the fellowship. The inpatient attending physicians include Drs. X, Y, and Z. All the patients on the service are infected with HIV and are admitted for complications related to HIV infection or HIV medications, opportunistic infections or any other acute medical issues.

ID fellows play a significant teaching role on this service. In conjunction with the supervising ID attending, the ID fellow is responsible for meeting with the team and setting expectations at the beginning of the rotation, assists in supervising the education of the PGY2/3 residents and medical students and facilitates daily work rounds. In addition, formal teaching rounds occur daily, five days/week and the ID fellow is expected to present teaching rounds twice/week.

The fellows are expected to attend all the required divisional conferences. The team typically includes residents, medical students, pharmacists and/or pharmacy students in addition to the fellow and the attending physician. All care is supervised by the attending physician assigned to the HIV Inpatient service.

Rotational goals: The ID fellow will gain a broad experience in the evaluation and management of hospitalized adult patients with HIV infection. This includes the diagnosis and management of opportunistic infections and other complications of HIV infection. This rotation will enhance the ability of the trainee to develop competency in the compassionate care of patients with a wide variety of infectious diseases related problems including patients with complex medical problems that are heavily influenced by social and economic circumstances of these patients.

Patient Care: *Fellows will provide patient care that is competent, compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

Competencies: Fellows are expected to gain a broad experience in the evaluation and management of hospitalized adult patients with a comprehensive array of acute and chronic infectious diseases problems. This rotation will enhance the ability of the trainee to develop competency in the compassionate care of patients with a wide variety of infectious diseases related problems including patients with complex medical problems being managed at a tertiary care referral center.

Objectives:

- 1) The ID fellow will learn to formulate a basic approach to the evaluation of acutely ill HIV-infected patients including pertinent history and physical exam, appropriate utilization and interpretation of diagnostic tests, and development of a prioritized differential diagnosis based upon history, exam and diagnostic studies.
- 2) The ID fellow will obtain a comprehensive and accurate medical history using all available sources.
- 3) The ID fellow will perform a comprehensive and accurate physical examination with added elements pertinent to the individual's differential diagnosis.
- 4) The ID fellow will review ancillary materials including radiology, pathology, laboratory data, and microbiology data with appropriate consultation of experts in these areas.
- 5) The ID fellow will communicate the findings and recommendations both verbally and in written format clearly and appropriately to the patient and other members of the health care team.
- 6) The ID fellow will follow the patient's hospital course and will adjust the management plan accordingly.

Medical Knowledge: Fellows will demonstrate knowledge about established and evolving pathophysiological, biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care.

Competencies: Fellows are expected to develop an increased understanding of the pathophysiology of common infectious diseases in hospitalized adult patients and in the epidemiology and evolution of infectious diseases. The fellow is expected to learn how known and evolving data influences and informs clinical practice.

Objectives:

- 1) The ID fellow will understand the approach to antimicrobial therapy and the pharmacologic properties of antimicrobial treatment, especially among agents that are commonly used to treat patients with HIV-related opportunistic infections.
- 2) The ID fellow will understand the mechanisms of and the approach to antiretroviral therapy including indications, side effects, resistance and drug interactions
- 3) The ID fellow will develop an increased understanding of the pathophysiology of HIV infection and AIDS.

- 4) The ID fellow will learn appropriate diagnostic possibilities, laboratory testing, and treatment of infectious diseases among HIV infected inpatients.
- 5) The ID fellow will understand the pathophysiology of common opportunistic infections affecting those with infected with HIV.

Professionalism: *Fellows will demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population and staff.*

Competencies: The fellow is expected to demonstrate 1) compassion, integrity and respect for others, 2) respect for patient privacy and autonomy and 3) sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in age, gender, culture, race, religion, disabilities and sexual orientation.

Objectives:

- 1) In conjunction with and under the guidance of the ID attending, the fellow is responsible for meeting with the ID team and setting expectations at the beginning of the rotation (e.g., residents and medical students on the rotation).
- 2) The ID fellow will demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients, their families and society that supercedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development.
- 3) The ID fellow will demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities both in their interactions with patients and discussion about patients with the team. The ID fellow will respect the patient's privacy by adhering to HIPAA rules.
- 4) The ID fellow will respect patient autonomy and will discuss potential diagnostic and therapeutic approaches with the patient before choosing a definitive approach to care.
- 5) The ID fellow will serve as a role model to house officers (residents) and medical students in display of professionalism, including timeliness, appropriate communication skills and responsible, ethical, comprehensive care.
- 6) The ID fellow will demonstrate professionalism in sensitive areas of the patient history, including sexual history, previous drug abuse and specific risk factors for infectious diseases.

Interpersonal and Communication Skills: *Fellows must demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, patients' families, and professional associates and trainees.*

Competencies: The ID fellow is expected to 1) communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds, and 2) communicate effectively with physicians, other health professionals and health related agencies.

Objectives:

- 1) The ID fellow will discuss results with patients in a culturally appropriate manner.
- 2) The ID fellow will, in conjunction with the attending physician, lead the health care team and will communicate effectively with residents and other members of the health care team to provide quality care to patients
- 3) The ID fellow will teach the residents in a clear and effective manner to improve their ability to care for HIV-infected patients.

System-Based Practice: *Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.*

Competencies: The fellow is expected to 1) work effectively in the health care delivery setting **particularly relevant if a public hospital**, 2) coordinate patient care within the health care system and 3) advocate for quality patient care and optimal patient care systems.

Objectives:

- 1) The ID fellow will demonstrate competence in interacting with multidisciplinary team members including social services, nursing, pharmacy, hospital epidemiology, and nutrition services.
- 2) The ID fellow will work closely with team pharmacist to oversee appropriate antibiotic utilization and dosing.
- 3) The ID fellow will understand and manage questions of healthcare epidemiology and occupational safety including TB exposures and isolation policy, contact isolation guidelines, hand hygiene policy.
- 4) The ID fellow will develop an understanding of the local, state and federal resources available to help provide care and social resources for HIV-infected patients, including those provided as part of the Ryan White Care Act.

Practice-Based Learning and Improvement: *Fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices based on constant self-evaluation and life long learning.*

Competencies: Fellows are expected to develop skills and habits to be able to 1) locate, appraise and assimilate evidence for scientific studies related to their patients' health problems, 2) use information technology to optimize learning and 3) participate in the education of patients, families, students, residents and other health professionals as documented by evaluations of a fellow's teaching abilities by faculty..

Objectives:

- 1) The ID fellow will utilize an evidence-based approach to patient care when deciding on optimal treatment plans including appropriate and timely access to the medical literature.
- 2) The ID fellow will use information technology including the resources available through the library system online to provide pertinent literature to the ID team and the patient's requesting team.

- 3) The ID fellow will educate the patient and patient's family about the diagnosis or the approach to reach the diagnosis, the management plan and the expected clinical outcome in a way that is both culturally appropriate and accessible to the patient and his/her family.
- 4) The ID fellow will teach the students, residents and other health care professionals about the infectious disease issues including isolation procedures and will provide literature to the health care providers and the team regarding infectious disease issues that are relevant to the cases seen.

Teaching Methods

Teaching on this rotation is conducted primarily in patient care rounds and in formal daily didactic sessions. The ID fellow will attend these activities. In addition, the fellow is expected to give the daily didactic session 2-3 times/week which will require preparation and learning about an HIV-related topic.

Assessment

Formal ongoing feedback by the Attending Physician is required. At mid-month and at the end of the month, the ID attending physician will give feedback to the ID fellow. This will be in the form of both verbal feedback and a written evaluation which will become part of the fellow's permanent file. The written evaluation is a global competency-based assessment of the fellow's performance. This includes the fellow's teaching ability as evidenced by the formal teaching rounds and as assessed on rounds. Semi-annually, the Program director will review all rotation evaluations with the ID fellow.

ID fellows will also anonymously complete an end-of-month evaluation form. The ID Program Director reviews these comments and summarizes the comments for the faculty at least on an annual basis. If there are immediate or serious problems, the ID fellow should immediately contact the ID Program Director.

All rotations are evaluated yearly by the fellows in the formal annual program review as discussed in the beginning of this curriculum document.

Level of Supervision – The fellow is supervised on a daily basis by the ID attending physician assigned to the rotation. The attending is available by pager 24 hours/day, 7 days/week during the rotation if issues occur outside attending rounds. The attending physician evaluates the fellows in the competencies and objectives outlined above. In addition the attending physician role models appropriate behavior for all competencies.

Educational Resources – Please refer to the bibliography section of this document.

4. Infection Control Rotation

All Infectious Disease fellows participate in a longitudinal experience designed to introduce the fellow to the concepts of infection control and prevention and develop the analyze outbreaks and design interventions. Fellows are expected to attend infection control and antimicrobial stewardship committee meetings, attend didactic sessions on basic principles of infection control and prevention, participate in the SHEA course (either on line or in person) and participate in a quality improvement project. This rotation does not have direct patient care responsibilities.

Rotational Goals:

- 1) The ID fellow will learn the principles of hospital epidemiology and infection control and be able to apply them appropriately to patients under their care
- 2) The ID fellow will understand antimicrobial stewardship, approaches to changing practice and the consequences of ineffective stewardship.
- 3) The ID fellow will understand the roles and responsibilities of the infection control team and the role of the hospital epidemiologist in management of the effort.

Medical Knowledge: *Fellows will demonstrate knowledge about established and evolving pathophysiological, biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care.*

Competencies: Fellows are expected to develop an increased understanding of policies and procedures required to practice hospital epidemiology and infection control.

Objectives:

- 1) The ID fellow will develop an understanding of isolation policies, application to specific diseases, and the pathophysiology which drives the appropriate isolation technique.
- 2) The ID fellow will understand the common nosocomial infections that present in inpatients, the risk factors that can increase the likelihood of these complications, and the data supporting various prevention techniques.
- 3) The ID fellow will understand the various bioterrorism agents, the risks of transmission, and emergency preparedness programs.
- 3) 2nd year ID fellows will have a more sophisticated understanding of antimicrobial stewardship including cost data and will bring clinical correlation to the table in infection control and stewardship meetings.

Professionalism: *Fellows will demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population and staff.*

Competencies: The fellow is expected to demonstrate 1) interest and attention to principles of patient safety, 2) recognition of the role of the physician and indicate this by attending committee meetings and 3) appropriate interactions with colleagues and staff.

Objectives:

- 1) The ID fellow will demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients, their families and society that supercedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development.
- 2) The ID fellow will demonstrate a willingness to put patient welfare above their own when contributing to decisions about interventions and in reporting outbreaks

Interpersonal and Communication Skills: *Fellows must demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, patients' families, and professional associates and trainees.*

Competencies: The ID fellow is expected to 1) communicate effectively with physicians, other health professionals and health related agencies, and 2) work effectively as a member and leader of a health care team.

Objectives:

- 1) As part of the infection control and prevention team, the ID fellow will communicate effectively with other physicians, hospital administrators and co-workers regarding isolation, appropriate infection control procedures, and other policies
- 2) The ID fellow will communicate effectively regarding formulary restrictions and optimal antimicrobial choices and will successfully negotiate difficult encounters unaided.
- 3) The ID fellow will work as part of the infection control and hospital epidemiology team and will engage in shared decision making.

System-Based Practice: *Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.*

Competencies: The fellow is expected to 1) work effectively in the health care delivery setting and system at his/her clinic site, 2) coordinate patient care within the health care system and 3) work in interprofessional teams to enhance patient safety and improve patient care quality.

Objectives:

- 1) The ID fellow will demonstrate competence in interacting with multidisciplinary team members including social services, nursing, and pharmacy.

- 2) The ID fellow will demonstrate understanding of the complex interactions between multiple agencies, partner with other organizations as appropriate to act on improvement opportunities in the health care system, practice within external regulations, support patient safety initiatives and conserve resources.
- 3) 2nd year ID fellows will play a greater role in decision-making and demonstrate leadership and cooperative management with particular attention to patient safety and quality initiatives.

Practice-Based Learning and Improvement: *Fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices based on constant self-evaluation and life long learning.*

Competencies: Fellows are expected to develop skills and habits to be able to 1) locate, appraise and assimilate evidence from scientific studies, expert opinion and professional judgment germane to the issues and questions raised during the rotation, 2) use information technology to optimize learning and 3) participate in the education of patients, families, students, residents and other health professionals regarding infection control, isolation, prevention and stewardship principles.

Objectives:

- 1) The ID fellow will answer questions raised by physicians and other hospital staff regarding infection control issues by appraising the scientific literature and asking for expert opinion.
- 2) The ID fellow will actively investigate errors that occur to identify procedural or cognitive issues that lead to an increased systemic risk for error and will propose solutions based on data.
- 3) The 2nd year ID fellow will take a greater leadership role in these processes and will educate other hospital staff, patients, physicians and learners.

Teaching Methods

Teaching methods include 1) observation of and participation in interventions developed by the hospital epidemiology and infection control teams, including attendance at infection control and antimicrobial stewardship committee meetings, 2) completion of the online SHEA course or attendance at the SHEA fellow's meeting, 3) attendance at core curriculum conferences focused on infection control, hospital epidemiology, patient safety and quality including training regarding outbreak analysis.

Assessments

The Infectious Disease fellow will provide documentation verifying attendance at infection control and antimicrobial stewardship meetings. A certificate of completion is required for the SHEA course. Core curriculum attendance is monitored. The hospital epidemiologists provide informal feedback. In addition, multi-source evaluations of the ID Fellow are completed every six months and include evaluation by infection control staff. The infection control experience is discussed at each semiannual review with the ID Program Director.

Level of Supervision – The fellow is supervised by the hospital epidemiologist and antimicrobial stewardship director.

Educational Resources – Please refer to the bibliography section of this document.

B. Outpatient Continuity Clinics and Subspecialty Clinics

1. Continuity Clinics (HIV):

All Infectious Disease fellows participate in a 24 month continuity clinic experience. Fellows are assigned to their continuity clinic at *list site or sites*. The clinic meets one-half day per week. Infectious Disease fellows are assigned a faculty mentor who is located on site at the clinic and provides direct supervision. These mentors are all experienced HIV physicians. The HIV continuity clinic experience includes the evaluation and care of patients with HIV infection or those needing preexposure prophylaxis, post-exposure prophylaxis or those undergoing investigation of their HIV serostatus. Infectious Disease fellows follow a cohort of at least 20 patients with HIV/AIDS in their continuity clinic who they follow longitudinally for at least one year. Because local demographics are such that it is difficult to ensure that 25% of patients are female, supplemental teaching on women's issues in HIV infection such as antiretroviral therapy in women, family planning, pregnancy, sexually transmitted diseases, cervical cancer and other topics are addressed in the *HIV conference curriculum*.

Rotational Goals:

- 1) The ID fellow will learn to evaluate and treat HIV-infected outpatients in all aspects of their care.
- 2) The ID fellow will understand the health care system and be able to facilitate the provision of care utilizing federal, state and local resources for HIV-infected patients.
- 3) The ID fellow will understand how to provide medical care to HIV-infected patients using non-judgmental approaches in a vulnerable and culturally diverse patient population.

Patient Care: *Fellows will provide patient care that is competent, compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

Competencies: Fellows are expected to gain a broad experience in the evaluation and management of HIV-infected outpatients. ID fellows will also gain experience in

the evaluation of outpatients with a broad variety of other infectious diseases including recently hospitalized patients requiring follow-up for active infectious disease issues.

Objectives:

- 1) The ID fellow will be able to formulate a comprehensive approach to the evaluation of HIV-infected patients including obtaining a comprehensive and accurate medical history and physical examination.
- 2) 2nd year ID fellows will be able to assess a complex, late stage HIV patient more independently and will be able to select salvage therapy for the antiretroviral experienced HIV patient.

Medical Knowledge: *Fellows will demonstrate knowledge about established and evolving pathophysiological, biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care.*

Competencies: Fellows are expected to develop an increased understanding of the pathophysiology, epidemiology, diagnosis and treatment including antiretroviral management of HIV infection. Fellows are expected to gain an understanding of the diagnosis and treatment of opportunistic infections common in HIV-infected patients, and other common infectious diseases treated in the outpatient setting.

Objectives:

- 1) The ID fellow will develop an understanding of the outpatient management of HIV-infected persons including:
 - a. Determining when to initiate antiretroviral therapy
 - b. Appropriate prescribing of first-line antiretroviral therapy
 - c. Use of resistance testing and selection of salvage therapy
 - d. Appropriate prescribing of prophylaxis for opportunistic infections
 - e. Providing appropriate primary care to HIV-infected patients
 - f. Management of opportunistic infections
- 2) The ID fellow will recognize and treat common infectious disease problems evaluated in the outpatient setting including pneumonia, osteomyelitis, skin/soft tissue infections, endovascular infections, osteomyelitis/septic arthritis, central nervous system infections, intraabdominal and genitourinary infections which may occur in HIV-infected patients.
- 3) 2nd year ID fellows will have a more sophisticated understanding of HIV pathophysiology and will be able to apply this knowledge to the assessment of their clinic patients.

Professionalism: *Fellows will demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population and staff.*

Competencies: The fellow is expected to demonstrate 1) compassion, integrity and respect for others, 2) respect for patient privacy and autonomy and 3) sensitivity and

responsiveness to a diverse patient population, including but not limited to diversity in age, gender, culture, race, religion, disabilities and sexual orientation.

Objectives:

- 1) The ID fellow will demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients, their families and society that supercedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development.
- 2) The ID fellow will demonstrate sensitivity and responsiveness to patients' culture, age, gender, sexual orientation and disabilities both in their interactions with patients and in discussions with members of the multidisciplinary team caring for the patient. The ID fellow will respect the patient's privacy by adhering to HIPAA rules.
- 3) The ID fellow will respect patient autonomy and will discuss potential diagnostic and therapeutic approaches with the patient before recommending a definitive approach to care.
- 4) The ID fellow will demonstrate professionalism in sensitive areas of the patient history, including sexual history, previous drug abuse and specific risk factors for infectious diseases.

Interpersonal and Communication Skills: *Fellows must demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, patients' families, and professional associates and trainees.*

Competencies: The ID fellow is expected to 1) communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds, 2) communicate effectively with physicians, other health professionals and health related agencies, 3) work effectively as a member and leader of a health care team and 4) maintain comprehensive, timely and legible medical records.

Objectives:

- 1) The ID fellow will communicate concisely with team members in formal and informal daily follow-up of the patients.
- 2) The ID fellow will update patients on the status of their health and their test results in a compassionate and clear manner that is appropriate to the patient's level of medical understanding.
- 3) The ID fellow will provide instruction and discussion in end of life issues, especially as they relate to end stage AIDS.
- 4) 2nd year ID fellows will be able to counsel their patients more effectively about treatment options, antiretroviral side effects and complications of HIV/AIDS.

System-Based Practice: *Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.*

Competencies: The fellow is expected to 1) work effectively in the health care delivery setting and system at his/her clinic site, 2) coordinate patient care within the health care system and 3) work in interprofessional teams to enhance patient safety and improve patient care quality.

Objectives:

- 4) The ID fellow will demonstrate competence in interacting with multidisciplinary team members including social services, nursing, pharmacy, chaplains and nutrition services.
- 5) The ID fellow will utilize the local, state and federal resources available to help provide care and social resources for HIV-infected patients, including those provided as part of the Ryan White Care Act.
- 6) The ID fellow will interact with home health services and health departments in the management of specific infectious diseases including but not limited to outpatient antibiotic therapy and tuberculosis.
- 7) 2nd year ID fellows will have a greater understanding of the resources available to HIV infected patients and will be able to utilize these resources independently.

Practice-Based Learning and Improvement: *Fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices based on constant self-evaluation and life long learning.*

Competencies: Fellows are expected to develop skills and habits to be able to 1) locate, appraise and assimilate evidence for scientific studies related to their patients' health problems, 2) use information technology to optimize learning and 3) participate in the education of patients, families, students, residents and other health professionals as documented by evaluations of a fellow's teaching abilities by faculty.

Objectives:

- 1) The ID fellow will utilize an evidence-based approach to patient care when deciding on optimal treatment plans including appropriate and timely access to the medical literature.
- 2) The ID fellow will use information technology including internet-based resources and national guidelines to maintain current knowledge in patient management, including accessing internet sites for resistance analysis and drug interactions.
- 3) The ID fellow will educate the patient and patient's family about the diagnosis or the approach to reach the diagnosis, the management plan and the expected clinical outcome in a way that is both culturally appropriate and accessible to the patient and his/her family.
- 4) 2nd year ID fellows will read the current medical literature on HIV/AIDS, be aware of ongoing and recently completed clinical trials and will be able to apply this new information to the care of their patients.

Teaching Methods

Teaching in the outpatient clinic is primarily through case based learning, including both didactic learning centered around the patient's case and

through bedside teaching in the clinic exam room. On days where time allows, these methods may be supplemented with more structured lectures.

Assessments

The Infectious Disease clinic attending provides informal ongoing verbal feedback to the ID fellow throughout the year. ID fellows are formally evaluated by their clinic attending using a written global assessment every quarter. These are available immediately upon completion for fellow review. In addition, multi-source evaluations of the ID Fellow are completed every six months and include evaluation by clinic staff and patients. Infectious Disease fellows have the opportunity to evaluate their clinic attendings anonymously. The continuity clinic experience is discussed at each semiannual review with the ID Program Director. This includes a discussion of strengths and weaknesses of the clinic, the patient load, the attending physician and other issues affecting this educational experience.

Level of Supervision – The fellow is supervised during the clinic sessions by the clinic preceptor(s)/attending assigned to that fellow. The clinic attending is also available at all times by pager for questions or management issues that may arise outside the clinic half day. The clinic attending evaluates the fellows in the competencies and objectives outlined above. In addition the attending models appropriate behavior for all competencies.

Educational Resources – Please refer to the bibliography section of this document.

2. Continuity Clinics (General ID):

All Infectious Disease fellows participate in a 24 month continuity clinic experience. Fellows are assigned to their continuity clinic at **list site or sites**. The clinic meets one-half day per week. Infectious Disease fellows are assigned a faculty mentor who is located on site at the clinic and provides direct supervision. The continuity clinic experience includes the evaluation and care of patients with a variety of infectious disease issues. Many of the patients are follow-ups from the hospital service, often on outpatient antibiotic therapy, or referrals for outpatient consults when infectious diseases are in the differential diagnosis.

Rotational Goals:

- 1) The ID fellow will learn to evaluate and treat outpatients in all aspects of their care.
- 2) The ID fellow will understand the health care system and be able to facilitate the provision of outpatient care.

3) The ID fellow will work with home health agencies to provide optimal care for those patients on outpatient parenteral therapy.

Patient Care: *Fellows will provide patient care that is competent, compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

Competencies: Fellows are expected to gain a broad experience in the evaluation and management of outpatients with a broad variety of infectious diseases including recently hospitalized patients requiring follow-up for active infectious disease issues.

Objectives:

- 1) The ID fellow will be able to formulate a comprehensive approach to the evaluation of infectious disease outpatients including obtaining a comprehensive and accurate medical history and physical examination.
- 2) The ID fellow is expected to document thoroughly and appropriately in the medical record.
- 3) The ID fellow is expected to follow patients longitudinally including adequate monitoring both during clinic visits and following up between clinic visits as appropriate.
- 4) The second year ID fellow is expected to take a greater role developing diagnostic and therapeutic plans for outpatients.

Medical Knowledge: *Fellows will demonstrate knowledge about established and evolving pathophysiological, biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care.*

Competencies: Fellows are expected to develop an increased understanding of the pathophysiology, epidemiology, diagnosis and treatment of common and less common infectious diseases.

Objectives:

- 1) The ID fellow will recognize and treat common infectious disease problems evaluated in the outpatient setting including but not limited to fever of unknown origin, pneumonia, osteomyelitis, skin/soft tissue infections, endovascular infections, osteomyelitis/septic arthritis, central nervous system infections, intraabdominal and genitourinary infections.
- 3) 2nd year ID fellows will have a more sophisticated understanding of infectious disease pathophysiology and will be able to apply this knowledge to the assessment of their clinic patients.

Professionalism: *Fellows will demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population and staff.*

Competencies: The fellow is expected to demonstrate 1) compassion, integrity and respect for others, 2) respect for patient privacy and autonomy and 3) sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in age, gender, culture, race, religion, disabilities and sexual orientation.

Objectives:

- 1) The ID fellow will demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients, their families and society that supercedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development.
- 2) The ID fellow will demonstrate sensitivity and responsiveness to patients' culture, age, gender, sexual orientation and disabilities both in their interactions with patients and in discussions with members of the multidisciplinary team caring for the patient. The ID fellow will respect the patient's privacy by adhering to HIPAA rules.
- 3) The ID fellow will respect patient autonomy and will discuss potential diagnostic and therapeutic approaches with the patient before recommending a definitive approach to care.
- 4) The ID fellow will demonstrate professionalism in sensitive areas of the patient history, including sexual history, previous drug abuse and specific risk factors for infectious diseases.

Interpersonal and Communication Skills: *Fellows must demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, patients' families, and professional associates and trainees.*

Competencies: The ID fellow is expected to 1) communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds, 2) communicate effectively with physicians, other health professionals and health related agencies, 3) work effectively as a member and leader of a health care team and 4) maintain comprehensive, timely and legible medical records.

Objectives:

- 1) The ID fellow will communicate concisely with team members in formal and informal daily follow-up of the patients.
- 2) The ID fellow will update patients on the status of their health and their test results in a compassionate and clear manner that is appropriate to the patient's level of medical understanding.
- 3) The ID fellow is expected to communicate directly with the primary physicians requesting a consultative opinion and communicate with other specialties to develop a plan of care when necessary.
- 4) The ID fellow is expected to address end-of-life care sensitively but clearly when appropriate.
- 5) The 2nd year ID fellow is expected to be handle more difficult communication issues particularly with other specialties with minimal reliance on the attending physician and is expected to communicate the infectious disease issues with a greater level of sophistication.

System-Based Practice: Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.

Competencies: The fellow is expected to 1) work effectively in the health care delivery setting and system at his/her clinic site, 2) coordinate patient care within the health care system and 3) work in interprofessional teams to enhance patient safety and improve patient care quality.

Objectives:

- 5) The ID fellow will demonstrate competence in interacting with multidisciplinary team members including but not limited to social services, nursing, pharmacy, chaplains and nutrition services.
- 6) The ID fellow will interact with home health services and health departments in the management of specific infectious diseases including but not limited to outpatient antibiotic therapy and tuberculosis.
- 7) 2nd year ID fellows will have a greater facility interacting with hospital services, home services and health department services to optimize outpatient care.

Practice-Based Learning and Improvement: Fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices based on constant self-evaluation and life long learning.

Competencies: Fellows are expected to develop skills and habits to be able to 1) locate, appraise and assimilate evidence for scientific studies related to their patients' health problems, 2) use information technology to optimize learning and 3) participate in the education of patients, families, students, residents and other health professionals as documented by evaluations of a fellow's teaching abilities by faculty.

Objectives:

- 1) The ID fellow will utilize an evidence-based approach to patient care when deciding on optimal treatment plans including appropriate and timely access to the medical literature.
- 2) The ID fellow will use information technology including internet-based resources and national guidelines to maintain current knowledge in patient management, including accessing internet sites for resistance analysis and drug interactions.
- 3) The ID fellow will educate the patient and patient's family about the diagnosis or the approach to reach the diagnosis, the management plan and the expected clinical outcome in a way that is both culturally appropriate and accessible to the patient and his/her family.
- 4) 2nd year ID fellows will read the current medical literature, be aware of ongoing and recently completed clinical trials and will be able to apply this new information to the care of their patients.

Teaching Methods

Teaching in the outpatient clinic is primarily through case based learning, including both didactic learning centered around the patient's case and through bedside teaching in the clinic exam room. On days where time allows, these methods may be supplemented with more structured lectures.

Assessments

The Infectious Disease clinic attending provides informal ongoing verbal feedback to the ID fellow throughout the year. ID fellows are formally evaluated by their clinic attending using a written global assessment every quarter. These are available immediately upon completion for fellow review. In addition, multi-source evaluations of the ID Fellow are completed every six months and include evaluation by clinic staff and patients. Infectious Disease fellows have the opportunity to evaluate their clinic attendings anonymously. The continuity clinic experience is discussed at each semiannual review with the ID Program Director. This includes a discussion of strengths and weaknesses of the clinic, the patient load, the attending physician and other issues affecting this educational experience.

Level of Supervision – The fellow is supervised during the clinic sessions by the clinic preceptor(s)/attending assigned to that fellow. The clinic attending is also available at all times by pager for questions or management issues that may arise outside the clinic half day. The clinic attending evaluates the fellows in the competencies and objectives outlined above. In addition the attending models appropriate behavior for all competencies.

Educational Resources – Please refer to the bibliography section of this document.

2. Subspecialty Clinics

a. Travel Clinic

The Travel and Tropical Medicine Clinic gives pre-travel advice and provides post-travel care for all types of travelers returning with any type of illnesses. The Travel and Tropical Medicine Clinic offers the infectious diseases fellow an opportunity to see a spectrum of diseases not encountered in their consultative rotations. The fellows attend Travel clinic approximately three half-days/year.

Rotation Goals: 1) The ID fellow will learn to evaluate and advise patients pre- and post-travel. 2) The fellow will learn the appropriate diagnostic and therapeutic approaches to these patients, and will learn to place their illnesses into the proper global and socioeconomic context, which will include an understanding of orphan diseases.

Patient Care: *Fellows will provide patient care that is competent, compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

Competencies: Fellows are expected to gain a broad experience in the evaluation and management of pre-travel patients and returning travelers.

Objectives:

- 1) The ID fellow will be able to formulate a comprehensive approach to the evaluation of pre-travel patients including obtaining a comprehensive and accurate medical history including appropriate travel details and will perform a physical examination.
- 2) The ID fellow will be able to obtain a comprehensive and accurate medical and travel history on returning travelers.
- 3) The ID fellow will be able to perform a comprehensive and accurate physical examination with added elements pertinent to the individual's differential diagnosis.

Medical Knowledge: *Fellows will demonstrate knowledge about established and evolving pathophysiological, biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care.*

Competencies: Fellows are expected to develop an increased understanding of the pathophysiology, epidemiology, diagnosis and treatment of diseases common to the returning traveler and those disease that are endemic in immigrants from countries outside the United States.

Objectives:

- 1) The ID fellow will display an understanding of the pre-travel patient evaluation including utilization of internet based resources and published guidelines for:
 - a. Vaccine-preventable diseases
 - b. Vector-borne diseases
 - c. Prevention and/or self-treatment of gastrointestinal and other infections
 - d. Administration of necessary vaccinations and prophylactic medications
 - e. Education of the traveler on all aspects of safe travel
- 2) The ID fellow will demonstrate an understanding of diagnosis and treatment of diseases seen primarily in the returning traveler including but not limited to:
 - a. Parasitic Infections, including diseases due to Protozoans and Helminths
 - b. Bacterial Diseases endemic to other regions, e.g. melioidosis, rickettsial disease, mycobacterial disease
 - c. Fungal Diseases endemic to other regions, e.g. *Penicillium marneffii*

Professionalism: *Fellows will demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population and staff.*

Competencies: The fellow is expected to demonstrate 1) compassion, integrity and respect for others, 2) respect for patient privacy and autonomy and 3) sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in age, gender, culture, race, religion, disabilities and sexual orientation.

Objectives:

- 1) The ID fellow will demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients, their families and society that supercedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development.
- 2) The ID fellow will demonstrate sensitivity and responsiveness to patients' culture, age, gender, sexual orientation and disabilities both in their interactions with patients and in discussions with members of the multidisciplinary team caring for the patient. The ID fellow will respect the patient's privacy by adhering to HIPAA rules.
- 3) The ID fellow will respect patient autonomy and will discuss potential diagnostic and therapeutic approaches with the patient before recommending a definitive approach to care.
- 4) The ID fellow will demonstrate an understanding of neglected diseases and the ethics of clinical care in patients presenting to a tropical medicine clinic including vulnerable populations such as immigrants and refugees.

Interpersonal and Communication Skills: Fellows must demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, patients' families, and professional associates and trainees.

Competencies: The ID fellow is expected to communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds

Objectives:

- 1) The ID fellow will update patients on the status of their health and their test results in a compassionate and clear manner that is appropriate to the patient's level of medical understanding.

System-Based Practice: Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.

Competencies: The fellow is expected to 1) work effectively in the health care delivery setting and system at his/her clinic site, and 2) coordinate patient care within the health care system.

Objectives:

- 1) The ID fellow will demonstrate competence in interacting with multidisciplinary team members including travel nurses and physicians.

- 2) The ID fellow will interact with home health services and health departments in the management of specific infectious diseases including but not limited to outpatient antibiotic therapy and tuberculosis.

Practice-Based Learning and Improvement: *Fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices based on constant self-evaluation and life long learning.*

Competencies: Fellows are expected to develop skills and habits to be able to 1) locate, appraise and assimilate evidence for scientific studies related to their patients' health problems, 2) use information technology to optimize learning and 3) participate in the education of patients, families, students, residents and other health professionals as documented by evaluations of a fellow's teaching abilities by faculty.

Objectives:

- 1) The ID fellow will utilize an evidence-based approach to patient care when deciding on optimal treatment plans including appropriate and timely access to the medical literature.
- 2) The ID fellow will use information technology including internet-based resources and national guidelines to maintain current knowledge in patient management.
- 3) The ID fellow will educate the patient and patient's family about the diagnosis or the approach to reach the diagnosis, the management plan and the expected clinical outcome in a way that is both culturally appropriate and accessible to the patient and his/her family.

Teaching Methods

Teaching in the outpatient clinic is primarily through case based learning, including both didactic learning centered around the patient's case and through bedside teaching in the clinic exam room. On days where time allows, these methods may be supplemented with more structured lectures.

Assessments

The clinic attending provides informal verbal feedback to the ID fellow during the clinic experience. Because this is a relatively brief experience, fellows are not formally evaluated. The clinic experience is discussed at each semiannual review with the ID Program Director. This includes a discussion of strengths and weaknesses of the experience and other issues affecting this educational experience.

Level of Supervision – The fellow is supervised during the clinic sessions by the clinic preceptor(s)/attending assigned to that fellow. The clinic attending is also available at all times by pager for questions that may arise outside the clinic.

Educational Resources – Please refer to the bibliography section of this document.

b. Transplant ID Clinic

The Transplant Infectious Disease Clinic offers the infectious disease fellow the opportunity to observe the outpatient management of post-solid organ transplant patients with infectious disease complications. In addition, the clinic evaluates patients pre-transplant and emphasizes appropriate the appropriate screening evaluations, prophylaxis including pre-transplant vaccination and risk reduction. **The fellows attend transplant ID clinic approximately three half-days/year. Dr. x directs the Transplant ID clinic.**

Rotation Goals: 1) The ID fellow will learn to evaluate and manage patients pre- and post-transplant. 2) The fellow will learn the appropriate diagnostic and therapeutic approaches to these patients. 3) The ID fellow will gain an understanding of the organ procurement system in the United States 4) The ID fellow will learn how to work within a broad, multidisciplinary team to facilitate patient care.

Patient Care: *Fellows will provide patient care that is competent, compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

Competencies: Fellows are expected to gain experience in the evaluation and management of pre- and post-transplant patients.

Objectives:

- 1) The ID fellow will be able to formulate a comprehensive approach to the evaluation of pre-transplant patients including obtaining a complete and accurate medical history with appropriate details about infectious disease exposures and other screening considerations.
- 2) The ID fellow will be able to obtain a comprehensive and accurate medical and travel history on patients after solid organ transplantation.
- 3) The ID fellow will be able to perform a comprehensive and accurate physical examination with added elements pertinent to the individual's differential diagnosis.

Medical Knowledge: *Fellows will demonstrate knowledge about established and evolving pathophysiological, biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care.*

Competencies: Fellows are expected to develop an increased understanding of the issues unique to transplantation including transplant-associated opportunistic infections, issues pertaining to immunosuppressive medications and non-infectious complications of transplantation.

Objectives:

- 1) The ID fellow will gain an understanding of those issues unique to transplantation and transplant infectious disease including but not limited to:
 - a. Graft rejection
 - b. Graft vs. Host Disease
 - c. Immunosuppressive medications and toxicities
 - d. Diagnosis of Opportunistic Infections
 - i. CMV
 - ii. Invasive fungal disease
 - iii. Respiratory viruses
 - iv. EBV and PTLD
 - v. Other Herpesviruses
 - vi. Polyoma virus
 - vii. Bacterial infections common to the transplant recipient
 - viii. Other Opportunistic infections
 - e. Treatment of Opportunistic Infections as mentioned in i - viii
 - f. Prevention and prophylaxis of Opportunistic Infections mentioned in i – viii.
 - g. Pre-transplantation evaluation

Professionalism: *Fellows will demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population and staff.*

Competencies: The fellow is expected to demonstrate 1) compassion, integrity and respect for others, 2) respect for patient privacy and autonomy and 3) sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in age, gender, culture, race, religion, disabilities and sexual orientation.

Objectives:

- 1) The ID fellow will demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients, their families and society that supercedes self -interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development.
- 2) The ID fellow will demonstrate sensitivity and responsiveness to patients' culture, age, gender, sexual orientation and disabilities both in their interactions with patients and in discussions with members of the multidisciplinary team caring for the patient. The ID fellow will respect the patient's privacy by adhering to HIPAA rules.
- 3) The ID fellow will respect patient autonomy and will discuss potential diagnostic and therapeutic approaches with the patient before recommending a definitive approach to care.
- 4) The ID fellow will gain an understanding of the ethical issues which arise in patients who have undergone organ transplantation or those considering organ transplantation.

Interpersonal and Communication Skills: *Fellows must demonstrate interpersonal and communication skills that result in effective information exchange*

and teaming with patients, patients' families, and professional associates and trainees.

Competencies: The ID fellow is expected to 1) communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds

Objectives:

- 1) The ID fellow will update patients on the status of their health and their test results in a compassionate and clear manner that is appropriate to the patient's level of medical understanding.

System-Based Practice: *Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.*

Competencies: The fellow is expected to work in interprofessional teams to enhance patient safety and improve patient care quality.

Objectives:

- 1) The ID fellow will demonstrate competence in interacting with multidisciplinary team members including travel nurses and physicians.
- 2) The ID fellow will interact with home health services and health departments in the management of specific infectious diseases including but not limited to outpatient antibiotic therapy.
- 3) The ID fellow will gain an understanding of the organ procurement system in the United States including considerations of listing for transplantation and donor organ selection.

Practice-Based Learning and Improvement: *Fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices based on constant self-evaluation and life long learning.*

Competencies: Fellows are expected to develop skills and habits to be able to 1) locate, appraise and assimilate evidence for scientific studies related to their patients' health problems and 2) use information technology to optimize learning.

Objectives:

- 1) The ID fellow will utilize an evidence-based approach to patient care when deciding on optimal treatment plans including appropriate and timely access to the medical literature. This will include evaluating the scientific evidence regarding transplantation prophylaxis and treatment protocols.
- 2) The ID fellow will use information technology including internet-based resources and national guidelines to maintain current knowledge in patient management.

Teaching Methods

Teaching in the outpatient clinic is primarily through case based learning, including both didactic learning centered around the patient's case and through bedside teaching in the clinic exam room. On days where time allows, these methods may be supplemented with more structured lectures.

Assessments

The Transplant ID clinic attending provides informal verbal feedback to the ID fellow during the clinic experience. Because this is a relatively brief experience, fellows are not formally evaluated. The Transplant ID clinic experience is discussed at each semiannual review with the ID Program Director. This includes a discussion of strengths and weaknesses of the experience and other issues affecting this educational experience.

Level of Supervision – The fellow is supervised during the clinic sessions by the clinic preceptor(s)/attending assigned to that fellow. The clinic attending is also available at all times by pager for questions that may arise outside the clinic.

Educational Resources – Please refer to the bibliography section of this document.

c. Tuberculosis Clinic

The Tuberculosis Clinic offers the infectious disease fellow the opportunity to observe the evaluation and management of patients with latent TB infection and active TB infection. *The clinic is operated in the County Department of Health and is directed by Dr. x.*

Rotation Goals: 1) The ID fellow will learn to evaluate and manage patients with latent TB infection or proven or probable active TB infection. 2) The fellow will learn the appropriate diagnostic and therapeutic approaches to these patients. 3) The ID fellow will learn about public health resources and public health considerations for the tuberculosis-infected patient.

Patient Care: *Fellows will provide patient care that is competent, compassionate, appropriate and effective for the treatment of health problems and the promotion of health.*

Competencies: Fellows are expected to gain experience in the evaluation and management of patients with suspicion of latent or active TB infection.

Objectives:

- 1) The ID fellow will be able to formulate a comprehensive approach to the evaluation of patients with a positive tuberculin skin test or other indicator suggesting TB exposure or infection including obtaining a complete and accurate medical history with appropriate details about possible symptoms of active TB.

- 2) The ID fellow will be able to perform a comprehensive and accurate physical examination with added elements pertinent to the evaluation of tuberculosis and the extent of infection.

Medical Knowledge: *Fellows will demonstrate knowledge about established and evolving pathophysiological, biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) sciences and the application of this knowledge to patient care.*

Competencies: Fellows are expected to develop an increased understanding of the epidemiology, pathophysiology, and treatment of tuberculosis.

Objectives:

- 1) The ID fellow will gain an understanding of the issues specific to tuberculosis care in patients seen at an **urban, public health department clinic** including but not limited to:
 - a. TB pathogenesis,
 - b. Diagnosis of TB
 - c. TB treatment
 - d. Complications of TB and treatment of TB
 - e. Gain an understanding of contact tracing and public health reporting for TB
 - f. Diagnosis and management of Latent TB Infection (LTBI)

Professionalism: *Fellows will demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population and staff.*

Competencies: The fellow is expected to demonstrate 1) compassion, integrity and respect for others, 2) respect for patient privacy and autonomy and 3) sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in age, gender, culture, race, religion, disabilities, sexual orientation and socioeconomic status.

Objectives:

- 1) The ID fellow will demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients, their families and society that supercedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development.
- 2) The ID fellow will demonstrate sensitivity and responsiveness to patients' culture, age, gender, sexual orientation and disabilities both in their interactions with patients and in discussions with members of the multidisciplinary team caring for the patient. The ID fellow will respect the patient's privacy by adhering to HIPAA rules.
- 3) The ID fellow will respect patient autonomy and will discuss potential diagnostic and therapeutic approaches with the patient before recommending a definitive approach to care.
- 4) The ID fellow will understand the ethical issues in the clinical care of patients with tuberculosis including vulnerable populations such as immigrants, prisoners and minorities.

Interpersonal and Communication Skills: *Fellows must demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, patients' families, and professional associates and trainees.*

Competencies: The ID fellow is expected to 1) communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds

Objectives:

- 1) The ID fellow will demonstrate non-judgmental approaches to communicating with this vulnerable patient population including eliciting and discussing sensitive information with patients.

System-Based Practice: *Fellows must demonstrate an awareness of and responsiveness to the larger context and system of health care and the ability to effectively call on system resources to provide care that is of optimal value.*

Competencies: The fellow is expected to coordinate patient care within the public health department health care system and will work in interprofessional teams to enhance patient safety and improve patient care quality.

Objectives:

- 1) The ID fellow will gain an understanding of public health resources to facilitate care for TB patients.
- 2) The ID fellow will discuss TB cases in a multi-disciplinary environment with the TB clinic personnel including nurses, social workers and outreach staff.

Practice-Based Learning and Improvement: *Fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices based on constant self-evaluation and life long learning.*

Competencies: Fellows are expected to develop skills and habits to be able to 1) locate, appraise and assimilate evidence for scientific studies related to their patients' health problems and 2) use information technology to optimize learning.

Objectives:

- 1) The ID fellow will utilize an evidence-based approach to patient care when deciding on optimal treatment plans including appropriate and timely access to the medical literature. This will include evaluating the scientific evidence regarding tuberculosis prophylaxis and treatment protocols.
- 2) The ID fellow will use information technology including internet-based resources and national guidelines to maintain current knowledge in patient management.

Teaching Methods

Teaching in the outpatient clinic is primarily through case based learning, including both didactic learning centered around the patient's case and through bedside teaching in the clinic exam room. On days where time allows, these methods may be supplemented with more structured lectures.

Assessments

The Tuberculosis clinic attending provides informal verbal feedback to the ID fellow during the clinic experience. Because this is a relatively brief experience, fellows are not formally evaluated. The Tuberculosis clinic experience is discussed at each semiannual review with the ID Program Director. This includes a discussion of strengths and weaknesses of the experience and other issues affecting this educational experience.

Level of Supervision – The fellow is supervised during the clinic sessions by the clinic preceptor(s)/attending assigned to that fellow. The clinic director is also available at all times by pager for questions that may arise outside the clinic.

Educational Resources – Please refer to the bibliography section of this document.

V. Research Experiences

ID Fellows at the [institution] Fellowship Training Program complete the bulk of their clinical rotations in the first year and have [x mos] of protected time for research during the second year. The fellows are expected to identify a mentor and develop a research proposal during their first year. This proposal is due to the Program Director by June 1 and is reviewed by the fellowship research committee for feasibility and to assess the project to be certain it matches the career goals of the fellow. In addition, both the mentor and the fellow mentee are expected to sign a mentor/mentee agreement together after discussion of the content of the agreement. This is kept on file.

Fellows may seek mentorship with any investigator (clinical or basic science) either within or outside the Division of Infectious Disease.

Rotation Goals: 1) The ID fellow will learn how to develop a hypothesis from a thorough understanding of existing data, develop specific aims to test that hypothesis, understand study design and develop an appropriate protocol to accomplish the specific aims, analyze the data or work with a biostatistician to do so, and develop a manuscript to communicate research findings. 2) The ID fellow will learn varying techniques whether in the laboratory, clinical research or public health arena to add sophistication or new directions to a project. 3) The ID fellow will learn how to communicate findings both in the written format and as a verbal presentation.

Medical Knowledge: *Fellows will demonstrate knowledge about established and evolving pathophysiological, biomedical, clinical, and cognate (e.g. epidemiological and social-behavioral) science.*

Competencies: Fellows are expected to understand the background literature applicable to their field of study.

Objectives: 1) The ID fellow will identify and understand existing data evaluating both clinical data, basic data and epidemiologic data to understand a problem from multiple perspectives using their skills both in the sciences but as a clinical physician as well.

Professionalism: *Fellows will demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population and staff.*

Competencies: The fellow is expected to conduct research to the highest ethical standards.

Objectives:

- 1) The ID fellow will conduct their investigations honestly and openly with the highest regard for ethics.
- 2) The ID fellow will understand the human subjects protection standards and will maintain their study to the IRB standard with all appropriate documentation completed in a timely manner.
- 3) The ID fellow will interact with collaborators, patients, technicians and others in a manner consistent with the highest professional standards.

Interpersonal and Communication Skills: *Fellows must demonstrate interpersonal and communication skills that result in effective information exchange and teaming with patients, patients' families, and professional associates and trainees.*

Competencies: The ID fellow is expected to 1) communicate effectively with patients, collaborators and technicians, and 2) to present data to the research and non-research community in an clear and cogent fashion.

Objectives:

- 1) The ID fellow is expected to prepare a manuscript from the data, written in an appropriate scientific tone which is understandable, concise and carefully crafted.
- 2) The ID fellow is expected to present his/her data formally to the Division at a level where all in the audience can understand the background, study methods, findings and significance.

Practice-Based Learning and Improvement: *Fellows must be able to appraise and assimilate scientific evidence based on constant self-evaluation and life long learning.*

Competencies: Fellows are expected to develop skills and habits to be able to 1) use IT to locate, appraise and assimilate information pertinent to the project, 2) teach students, staff and colleagues effectively and adequately and 3) understand and develop a hypothesis.

Objectives:

- 1) The ID fellow will utilize a logical, thoughtful and evidence-based approach to develop a hypothesis
- 2) The ID fellow will use information technology including internet-based resources to obtain and manage information adequately
- 3) The ID fellow will teach others new information from the data obtained but also from scientific evidence to discuss and advance the project and communicate results.

Expectations

During the research experience, fellows are expected to complete the following:

- 1) CITI biomedical research training and Good Clinical Practices certification (A copy is filed in the fellow's portfolio)
- 2) Apply for one grant (foundation level, K award, scholars award, loan repayment etc)
- 3) Complete *at least* one manuscript for publication and submit one abstract to a regional or national meeting
- 4) Present their work-in-progress to the ID faculty in the spring of the 2nd year if planning a 3rd year of fellowship
- 5) Deliver a one hour formal presentation summarizing the work to the ID faculty (the "Senior Seminar") in the month prior to graduation

Assessments

Fellows are assessed with a global competency evaluation by their mentors quarterly. In addition, the evaluations and the experience are discussed in detail at the semiannual evaluation with the Program Director.

Level of Supervision

The mentor is expected to provide close supervision during the research experience. Mentor meetings are expected to be held at least every other week with the mentee.

Educational Resources

The university library system with eJournals and literature search engines serves as a critical resource for the fellow as the necessary resources are variable based on the project and the area of investigation.

VI. Conferences

1. ID Core Curriculum

The core curriculum series provides the ID fellow with formal instruction in infectious diseases with a particular focus on information that might not be encountered during clinical rotations as well as important information on clinical conditions that is useful in the care of patients. The course includes a general review of basic science methods, antibiotic mechanisms of action and resistance, infectious disease syndromes, and infectious agents. In addition, the course includes the following specific content areas: the factors that determine the outcome between host and parasite, including microbial virulence factors and host defense mechanisms; basic concepts of immunology; the epidemiology, clinical course, manifestations, diagnosis, treatment and prevention of major infectious agents including viruses, *Chlamydiae*, *Mycoplasma* and *Ureaplasma*, rickettsioses, bacteria including spirochetes and mycobacteria, mycoses, protozoa, and helminths; bioterrorism and emerging infectious diseases; hospital epidemiology, quality assurance and cost containment in the clinical practice of infectious diseases. The course is on a two year schedule or cycle to ensure that all ID fellows receive the entire curriculum during the course of their fellowship training.

Rotational Goals for Infectious Diseases Didactic Course

Systems Based Practice/Practice based Learning

1. Provide an introduction to epidemiology sufficient to allow interpretation of published epidemiologic studies and performance of basic epidemiologic studies such as a case-control or cohort study.
2. Provide exposure to the areas of nosocomial infections, health outcomes, quality assurance, and palliative care/end of life issues, and cost containment in the clinical practice of infectious diseases.

Professionalism

1. Provide instruction in the ethics of biomedical research and ethics of clinical care.
2. Provide instruction in palliative care and end of life issues.

Medical Knowledge

1. Provide a review of bacterial pathogenesis, immunology, disorders of the immune system, and evaluation of patients with suspected immune deficiency.
2. Provide review of clinical infectious diseases as listed below:
 - a. HIV (pathogenesis, immunology, virology, diagnosis, prevention, and treatment of opportunistic infections, use of antiretrovirals).
 - b. Antibiotics (antibiotic mechanisms, pharmacology, adverse reactions, mechanisms of antibiotic resistance).
 - c. Infectious Disease syndromes such as fever/rash, FUO, upper respiratory infections, peritonitis and other intra-abdominal infections, cardiovascular infections, skin and soft tissue infections, prophylaxis of infectious diseases, etc.)
 - d. Agents of infectious diseases (bacteria, viruses, fungi, protozoa, helminths, ectoparasites)
 - e. Infections in compromised hosts with emphasis on recipients of bone marrow and solid organ transplantation.
3. Provide background on the basic concepts of molecular biology and immunology
4. Discuss factors that determine the outcome between host and parasite, including microbial virulence factors and host defense mechanisms.
5. Provide review of the epidemiology, clinical course, manifestations, diagnosis, treatment, and prevention of major infectious agents including viruses, chlamydiae, mycoplasma and ureaplasma, rickettsioses, and bacteria including spirochetes and mycobacteria, mycoses, protozoa, and helminths.
6. Provide review of bioterrorism and emerging infectious diseases (in conjunction with research topics discussed in the ID research seminar series)

The Division of Infectious Diseases program core curriculum course consists of weekly one to two hour meetings moderated by Infectious Diseases faculty and invited guest speakers. The Mandell textbook is the textbook used for this course and supplemental materials are also provided. The faculty advisors and mentors for this course are Drs. X and Y.

Evaluation is in the form of required participation at $\geq 80\%$ of sessions and the written In-Training examination each spring.

2. ID Research Seminar

The Division of Infectious Disease Research Seminar is a weekly conference attended by faculty members and fellows in Infectious Disease, basic science researchers in microbiology, immunology and other related fields, faculty at the School of Public Health, and other scientists, physicians and interested individuals within or outside the Health System. **Drs. X and Y coordinate this conference and select speakers.** Speakers include faculty members from all the groups listed, as well as nationally and internationally recognized individuals from

other institutions. The topics discussed include original research and discovery in the fields of infectious disease, microbiology, immunology, vaccinology, virology and other areas.

Goals and Objectives for ID Research Seminar

Medical Knowledge

1. To serve as a forum to help maintain and develop new knowledge regarding the pathogenesis, epidemiology and management of infectious diseases, with an emphasis on recent discoveries.
2. To educate ID faculty and fellows about research taking place locally, regionally, nationally and internationally in the field of infectious diseases.
3. To facilitate interactions and collaborations among local investigators interested in infectious diseases related issues.

3. Clinical Case Conference

The clinical case conference allows Infectious Disease fellows to use *two clinical cases* to guide them to identify strengths, deficiencies and limits in their knowledge and expertise. The fellows then use this as a learning activity to achieve self-identified goals in the form of focused clinical questions. Finally, they must present this data to faculty members, peers, and other learners clearly and thoughtfully. The clinical case conference occurs weekly in the afternoon throughout the year. **EX: One fellow presents two cases and each fellow presents five to six times over the first two years of fellowship. The first case should be thirty to thirty-five minutes in length and uses a clinical case to identify three focused questions/learning goals. The fellow must then present a literature and content analysis which demonstrates attainment of their learning goals. These questions may be answered using IT to guide them to appropriate medical literature, by talking to content experts nationwide, or other techniques and may represent a discussion of clinical studies, basic science, process improvement, laboratory methodology etc. At the conclusion of this portion of the presentation, fellows must propose how they would use the information gained to manage future patients, correct process issues, etc. The second case is most commonly a clinical conundrum and is approximately 15-20 minutes in length. The fellow is required to present the clinical details of the case and lead a discussion often with a specified faculty discussant, regarding the approach to the patient. The fellow must then summarize the literature that is relevant to the case. At the conclusion of the presentation, all faculty members present evaluate each case presentation separately using a competency guided evaluation form. These comments are collated by the faculty preceptors, who also add their own assessment and a summary evaluation is returned to the fellow within 72 hours. Drs. X and Y serve as faculty preceptors for the clinical case conference and help the fellows prepare their presentations is necessary.**

Rotational Goals: To learn to identify knowledge deficits, use multiple sources to acquire knowledge and present this in a clear and concise fashion.

Goals and Objectives for the clinical case conference:

Practice Based Learning and Improvement: ID fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life long learning. Fellows are expected to develop skills and habits to:

Competencies: 1) identify strengths, deficiencies and limits in their knowledge and expertise, 2) set learning and improvement goals, 3) identify and perform appropriate learning activities, 4) locate, appraise and assimilate evidence for scientific studies related to their patients' health problems, 5) use information technology to optimize learning and 6) participate in the education of students, residents, faculty and other health care professionals as documented by evaluations of a resident's teaching abilities by faculty and learners.

Objectives

1. The ID fellow will learn to identify knowledge deficits regarding a particular disease process and then, based on these deficits, identify learning and improvement goals. These will be expressed as focused clinical questions relevant to the clinical case.
2. The ID fellow will gain an understanding of the use of information technology and other resources including content experts to acquire medical knowledge and knowledge of health care systems and processes to achieve self-identified goals.
3. The ID fellow will locate and obtain scientific evidence and will then assess the quality and generalizability of this evidence to his/her own patient care scenario.
4. The ID fellow should apply knowledge gained to improve patient care directly or indirectly.

Medical Knowledge: ID fellows must demonstrate knowledge of evolving biomedical, clinical, epidemiological and social behavioral sciences, as well as the application of this knowledge to patient care.

Competencies: ID fellows are expected to gain an understanding of the pathophysiology, epidemiology, treatment and evolving knowledge regarding specific selected infectious disease processes at a very detailed level.

Objectives:

1. The ID fellow will learn the established and evolving biomedical/pathophysiological, clinical, and epidemiological issues related to their selected topics.

Interpersonal and Communication Skills: Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families and professional associates. Fellows are expected to:

Competencies: ID fellows are expected to effectively communicate the results of their investigations to health care professionals.

Objectives:

1. The ID fellow will learn to organize a presentation of the information and present it clearly and succinctly to an audience of peers, faculty members, students and other health care professionals.

Evaluation: All faculty members in attendance grade the presentation based on content, slide quality, organization and speaking skills, in addition to adding written comments. These are collated by the faculty preceptors who also add critique and returned to the fellow and the Program Director in 72 hours

4. HIV Conference

The HIV management conference provides the ID fellows with formal instruction in HIV/AIDS pathogenesis and treatment including new “cutting edge” basic and clinical research. This course is designed to supplement the inpatient and outpatient HIV clinical experience. The course includes a general review of viral and immunopathogenesis of HIV, epidemiology including origins of disease, diagnostic methodologies, evaluation of the new patient, antiretroviral therapy including mechanisms of resistance, complications of therapy including metabolic disease, and management of opportunistic infections. In addition, the course will address the controversies in management of HIV during the acute infection, pregnancy, post- and pre-exposure prophylaxis and universal testing. Participants will understand recent literature addressing these issues. They will understand available system resources in the United States and the local region, and issues unique to resource poor settings. Participants will be required to complete an assessment of their own practice and propose and perform a practice improvement project. In addition, participants will be encouraged to complete additional CME and sit for testing for AAHIVM certification (American Academy of HIV Medicine). The HIV conference consists of weekly one hour sessions moderated by Infectious Diseases faculty and invited guest speakers, and observation and assessment of clinical care by course faculty. The faculty advisor for this course is Dr. X.

Goals and Objectives for the HIV Conference

Systems Based Practice: *Fellows must demonstrate an awareness of and responsiveness to the larger context of health care, as well as the ability to call effectively on other resources in the system to provide optimal health care. Fellows are expected to:*

Competencies: 1) work effectively in various health care delivery settings and systems relevant to their clinical specialty and 2) incorporate considerations of cost awareness and risk-benefit analysis in patient care.

Objectives:

1. The ID fellow will gain an understanding of federal and state resources, particularly those provided as part of the Ryan White Care Act, for the care of HIV-infected patients.
2. The ID fellow will gain an understanding of the epidemiology of the HIV epidemic globally, nationally and regionally, and how that impacts health care delivery and outcomes.

Professionalism: *ID fellows must demonstrate a commitment to carrying our professional responsibilities and an adherence to ethical principles. Fellows are expected to demonstrate:*

Competencies: 1) compassion, integrity and respect for others, 2) sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in gender, age, culture, race, religion, disabilities, and sexual orientation.

Objectives:

1. The ID fellow will gain an understanding of the ethics of biomedical research in HIV-infected patients and ethics of clinical care in HIV-infected patients, including vulnerable populations such as immigrants, prisoners and minorities.
2. The ID fellow will gain an understanding of end of life issues.

Interpersonal and Communication Skills: *Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families and professional associates. Fellows are expected to:*

Competencies: 1) communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds, and 2) work effectively as a member or leader of a health care team or other professional group.

Objectives:

1. The ID fellow will learn about non-judgmental approaches to caring for this patient population, including instruction in eliciting and discussing sensitive information from patients.

Medical Knowledge: *ID fellows must demonstrate knowledge of evolving biomedical, clinical, epidemiological and social behavioral sciences, as well as the application of this knowledge to patient care.*

Competencies: ID fellows are expected to gain an understanding of the pathophysiology, epidemiology, treatment and evolving knowledge regarding HIV/AIDS and related disease processes at a very detailed level.

Objectives:

1. The ID fellow will gain an understanding of the clinical issues associated with HIV infection as below:
 - a. HIV pathogenesis, including immunology, virology and predictors of progression.
 - b. HIV epidemiology, including origins, classification and transmission.
 - c. Diagnostic methods for HIV including serologic, molecular and virologic methods
 - d. The acute retroviral syndrome, diagnosis and controversies surrounding treatment of the acute patient
 - e. Evaluation of the new patient and OI prophylaxis
 - f. Antiretroviral therapy, including advanced applications
 - g. Initiation of antiretroviral therapy and current literature
 - h. Complications of antiretroviral therapy
 - i. Post and pre-exposure prophylaxis
 - j. Monitoring antiretroviral therapy, resistance and viral fitness
 - k. Conception and pregnancy
 - l. Opportunistic Infections associated with HIV

Practice Based Learning and Improvement: ID fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life long learning. Fellows are expected to develop skills and habits to:

Competencies: 1) systemically analyze practice, using quality improvement methods and implement changes with the goal of practice improvement, and 2) incorporate formative evaluation feedback into daily practice.

Objectives:

1. The ID fellow will perform a self assessment of their own clinical practices using data gathering, construct an improvement plan.
2. The ID fellow will perform an observed clinical examination with an HIV expert with feedback

Assessment Methods (fellows):

- 1) HIV clinic self assessment survey/program improvement module
- 2) Self assessment pre and post-test of HIV knowledge
- 3) Optional: AAHIVM certification testing

Assessment Methods (Program Evaluation):

The HIV Management course is discussed at the semiannual review with the ID Program Director. In addition, the fellows have the opportunity to evaluate the course in the formal annual fellowship evaluation process at the end of the academic year.

Educational Resources:

An up-to-date listing of available HIV/AIDS resources is located on the Blackboard to which all fellows have access. The articles are linked in pdf format from that site. In addition, the course director electronically disseminates relevant literature throughout the year. Other critical websites are listed in the Bibliography section of this document.

5. Journal Club

Journal Club provides the Infectious Disease fellows with the opportunity to learn to critically review the medical literature with the guidance of the Infectious Disease faculty. Journal Club meets once a month. ID fellows present details here e.g. two recent articles which they have selected from the literature with oversight from the Journal Club coordinators, Drs. X and Y. One article is a "clinical article," most commonly a clinical trial. The second is a "basic science" article, most commonly a laboratory-based finding. The fellows must assess the quality of the study, validity of the data, strengths and weaknesses of the study including statistical analyses and study design and potential clinical applications. Fellows are expected to identify and read relevant studies that place their article in the appropriate context. During Journal Club, faculty and peers are free to ask questions and make comments about the study findings. The conference allows faculty members and fellows to interact in a setting that promotes informal mentoring relationships and provides an opportunity for faculty to act as role-models both personally and professionally.

Goals and Objectives for Journal Club

Practice Based Learning and Improvement: ID fellows must demonstrate the ability to investigate and evaluate their care of patients, to appraise and assimilate scientific evidence, and to continuously improve patient care based on constant self-evaluation and life long learning. Fellows are expected to develop skills and habits to:

Competencies: 1) identify strengths, deficiencies and limits in their knowledge and expertise, 2) set learning and improvement goals, 3) identify and perform appropriate learning activities, 4) locate, appraise and assimilate evidence for scientific studies related to their patients' health problems, 5) use information technology to optimize learning and 6) participate in the education of students, residents, faculty and other health care professionals as documented by evaluations of a resident's teaching abilities by faculty and learners.

Objectives:

1. The ID fellow will gain an understanding of the use of information technology (IT) to locate an article relevant to Infectious Disease.
2. The ID fellow will gain expertise in the assessment of the study methodology to determine if:
 - a. The question is relevant.
 - b. The study design answers the intended question.
 - c. The results and conclusions are valid.
- 3) The ID fellow will propose how he/she will apply the results of the study to patient care.
- 4) The ID fellow will learn to perform a literature search using IT to identify additional relevant studies that place the study in question in the appropriate context and include this understanding in the presentation.

Interpersonal and Communication Skills: *Fellows must demonstrate interpersonal and communication skills that result in the effective exchange of information and teaming with patients, their families and professional associates. Fellows are expected to:*

Competencies: The ID fellow will effectively communicate the results of their investigations to health care professionals.

Objectives

1. The ID fellow will learn to organize the presentation in a logical fashion and present the data clearly and succinctly.

Assessments

All Journal Club presentations are evaluated using a standard format by the faculty preceptors. This evaluation is returned to the fellow within one week after completion of the activity.

Journal Club is discussed at the semiannual review with the ID Program Director. In addition, the fellows have the opportunity to evaluate this educational experience in the formal annual fellowship evaluation process at the end of the academic year.

Educational Resources

All fellows have access to Medline via the *Health Library website*. *In addition, eJournal subscriptions are readily available through the library as well.* This aids in identification of appropriate articles for Journal Club.