



THE UNIVERSITY OF ARIZONA
COLLEGE OF MEDICINE TUCSON

Infectious Diseases

**Training Manual
Division of Infectious Diseases
Infectious Diseases Fellowship Program
8th Revision**

2017 – 2018

**Covering Policies and Procedures for Fellows
in Training
as a Supplement to the
Policy and Procedures Manuals of the
Office of Graduate Medical Education
and
The Department of Medicine**

**Approved by the University of Arizona
Infectious Diseases Fellowship Program**

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This document supplements the GME office Housestaff Policy and Procedure Manual, and in case of conflict, that document supersedes this one.



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Division Chief's Welcome

Welcome to the Infectious Diseases Division of the University of Arizona! Our faculty have broad expertise in infectious diseases as well as specific in depth experience in HIV, coccidioidomycosis, trypanosomiasis, transplant infections, antimicrobial stewardship, infection prevention, public health and tuberculosis. Some of our faculty perform clinical research and others basic science research. We are located at the University, the VA, as well as the Pima County Health Department. Our faculty are committed to providing you with the best possible education.

The clinical experience provided by our program is outstanding. Our division has a distinguished history of excellence in the provision of medical care to people living with HIV infection. It is important that you become skilled in this area, as the HIV seropositive population is growing not only in Arizona but throughout the world. It is imperative as well that all infectious disease physicians in Arizona become adept at diagnosing and treating coccidioidomycosis, a disease that is endemic in the state. Our program will provide specific training in this area from faculty who are leaders in the field. You will be exposed as well to a broad array of infectious diseases in both the inpatient and outpatient setting. You will receive training in the microbiology laboratory as well as in the diagnosis and treatment of sexually transmitted diseases and tuberculosis. At the conclusion of your fellowship you should be a highly skilled infectious disease physician.

Within the field of infectious diseases there are different career paths including private practice, public health, general infectious disease, transplant infectious disease, HIV care, antimicrobial stewardship, infection prevention, and clinical as well as basic research. During your second year of fellowship, we will make available to you elective activities to help you identify and develop your career path. All fellows are expected to engage in scholarly activities. Our faculty will work with you to develop and implement clinical or laboratory based research projects, depending upon your interests. Fellows' training plans will be individualized with the assistance of the fellowship director and myself, to ensure that you acquire the skills that you need. Our goal is to support you in achieving the career that you seek.

We are honored to work with you to train the next generation of infectious disease specialists. We are passionate about our work and our educational mission, and hope that we will ignite that same passion in you.



Elizabeth Connick, M.D.
Professor of Medicine
Chief, Division of Infectious Diseases
University of Arizona Health Sciences
College of Medicine - Tucson



Program Director's Welcome

Congratulations and a warm welcome to the Infectious Diseases Fellowship Program of the University of Arizona Health Sciences in Tucson. It will be a transformational period as you grow from an doctor of Internal Medicine to an excellent, competent infectious diseases specialist. You will find the next two years of your fellowship training to be emotionally exciting, physically demanding and most intellectually fulfilling in an ever-changing field of medicine.

The faculty members of the Division are committed to ensuring your success as colleagues-in-training. You will have a diversity of experiences in Banner University Medical Center-Tucson's (BUMC-T) Main and South Campuses, the Veteran Affairs Medical Center – Tucson (SAVAHCS), and the HIV ambulatory care experiences in the Peterson Clinic and the Pima County Health Department; these opportunities will allow you to explore and develop your interests.

As infectious diseases fellows, you set the example of the professional consultant- a “doctor’s doctor”, to those in training- medical students, interns, residents and even fellows in other specialties. This challenge involves not only becoming knowledgeable in the field (read as much as you can on a daily basis) but also demonstrating excellence both critical appraisal of the literature and in scholarly presentation. We will help develop these important aspects of becoming the specialist in Infectious Diseases.

The most important point I want to leave with you is this- as Infectious disease fellows, you stand alone- however, recognize that you are never alone. At times, the demands may weigh heavy. It is my responsibility to serve as your advocate, and ensure your training is satisfying and positive experience.



John Leander Po, MD, PhD
Associate Professor of Medicine
Infectious Diseases Fellowship Program Director
University of Arizona Health Sciences
College of Medicine – Tucson



Goals of the Program

The overall goal is to prepare the trainee to function as a competent Infectious Diseases physician in a variety of settings, and to meet the requirements for the American Board of Internal Medicine (ABIM) certification in Infectious Diseases. The Infectious Diseases program is accredited by the American Council of Graduate Medical Education (ACGME). It is designed to teach the six general competencies over two years of training. These include Patient Care, Medical Knowledge, Practice-Based Learning and Improvement, Interpersonal and Communication Skills, Professionalism and Systems-Based Practice. Each trainee is expected to achieve milestones in each competency, which are the essential habits needed for life-long learning.

Fellows are expected to:

- Acquire a good working knowledge of the specific program content in clinical Infectious Diseases as outlined by the ACGME and ABIM.
- Achieve proficiency in the key technical skills in Infectious Diseases as outlined by ACGME and ABIM.
- Participate in scholarly activities and a research experience that prepares the trainee for lifelong learning and scholarship.

The written curriculum outlines the clinical and other educational experiences that prepare the trainee to meet these objectives. The specific objectives, methods, expectations and evaluation for each experience are delineated. Descriptions of facilities, resources, support services, schedules are also included.



Overview

Fellowship Training – Infectious Diseases Division

Description of the Program:

The Fellowship Training Program is based in the Infectious Diseases Division in the Department of Medicine at BUMC-T. The Program is designed to provide training and supervised experience for the fellow to acquire the competency of a specialist in the field of Infectious Diseases and meet the requirements for ABIM certification in Infectious Diseases. The Program is two years duration with an emphasis on training in clinical Infectious Diseases. Candidates for training must be board eligible or certified in Internal Medicine.

The overall objective of the program is to produce well-trained, competent, compassionate physicians who are certified by the ABIM in Infectious Diseases and who will be committed to life-long learning.

Facilities and Resources:

The major training sites are: BUMC-T Main and South Campuses and the Southern Arizona VA Healthcare System (SAVAHCS). 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 sub-specialties are available.

Program Components:

Clinical Experience

The clinical experiences afforded to ID fellows include opportunities to observe and manage adult patients with infectious diseases on both an inpatient and ambulatory basis. The program requires 24 months of supervised clinical rotations.

Inpatient rotations. Inpatient consultations are performed mainly at the BUMC-T main campus. At the completion of the required clinical time, the fellow will also have provided consultative services for an average of 500 inpatients. The inpatient experience includes a pediatric infectious disease rotation conducted at BUMC-T.

Ambulatory care. Fellows have outpatient infectious disease clinics at both the BUMC-T sites and at the SAVAHCS. Outpatient clinics provide care for patients with HIV, general Infectious Diseases, and coccidioidomycosis. Each fellow is required to follow at least 20 HIV patients for a minimum of 12 months.

Elective rotations. Fellows have the option of experiencing other career opportunities that the Infectious Diseases Specialty training offers, including the Outpatient Parenteral Antibiotic Therapy Center at BUMC-T, the Pima County Tuberculosis Clinic at BUMC-SC, and in the future, the BUMC-T Hepatology Clinic, Coccidioidomycosis Clinic, and Theresa-Lee Sexually Transmitted Infections Clinic.



Conferences

The training program provides a variety of conferences and educational experiences. Fellows are expected to participate in the following:

1. Case Conference (Fridays, 11:00 am). Fellows and Pediatric Infectious Diseases Faculty present ID cases from the inpatient consultation services. Differential diagnosis, diagnostic techniques, and patient management are emphasized. Fellows develop and master the skills of clear and concise case presentations with focused learning objectives.

2. ID/Plate Rounds (SAVAHCS on 3rd Tuesday monthly; BUMC-T every Friday, 12:00 pm). Important real-time in-patient micro findings discussed in the microbiology lab. On the first Friday of the month, Pathology faculty present cases relevant to ID, with clinical correlation by ID fellows or faculty as appropriate. Microbiology rounds are held on the subsequent Fridays-cell/molecular biology, ID diagnostics, and microbiology lab topics are covered.

3. Didactic ID curriculum (Fridays, 12:30 pm). ID fellows, faculty, and guest speakers present core topics selected to cover the range of knowledge expected of an Infectious Diseases Specialist as one prepares for the ABIM Board Certification Subspecialty Examination.

4. ID Grand Rounds (BUMC-T, 1st Tuesday monthly), Cocci Case presentations (BUMC-T, 2nd Tuesday monthly, VA Seminar (SAVAHCS, 3rd Tuesday monthly) 11:00 am. ID fellows learn from expert faculty on specific topics that span the knowledge expected of an Infectious Diseases Specialist in preparation for the ABIM Board Certification Subspecialty Examination. Expert and guest faculty that cover their experiences that touch on infectious diseases- related subjects and on their field of research.

5. Journal Club (4th Tuesday of each month at 11:00 am). One fellow review a journal article. Emphasis is placed on critical appraisal of the literature, understanding study design, study populations, measurement of outcomes, and the study's applicability to our practice. The investigations can be centered on basic sciences, translational medicine, quality improvement initiatives, and studies that impact the Infectious diseases subspecialty as a profession. It is strongly encouraged to choose articles from high-impact peer-reviewed journals.



Research and Scholarly Activities

Scholarship is an important component of ID faculty and fellow 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. Fellows are required to be involved in their own investigations or to be assigned to faculty investigations. Research design and study implementation are addressed as part of this activity. Each fellow will be mentored over the 2 year program, to generate meaningful scholarly activity such as:

- a. Peer-reviewed funding or publication of original research in peer-reviewed journals.
- b. Publication of review articles or chapters in textbooks.
- c. Publication or presentation at local, regional, or national professional and scientific society meetings
– For example, case reports or clinical series.

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 fellows involved in research; and provision of support for ID fellow participation as appropriate in scholarly activities.

Training in Medical Education

The fellow will have considerable experience in medical education. The fellow has ample opportunity to observe ID and other faculty in the organization, presentation and use of visual aids in teaching. Further, the fellow is expected to provide a significant portion of the educational experience of medical students and Internal Medicine residents who rotate through the Infectious Diseases inpatient consultation service. Fellows provide limited lecturing experience to medical students as part of their Clerkships in Internal Medicine. Fellows have the opportunity to give presentations in departmental conferences attended by Internal Medicine trainees and faculty, in outreach activities for the Arizona AIDS Education and Training Center, and in conferences presented by other departments.

Evaluation of Fellows:

Infectious Disease fellows are evaluated using multiple tools and techniques including:

1. Milestones evaluations: Completed by faculty after a clinical rotation to assess clinical performance in accordance to the ACGME parameters;
2. Semiannual written evaluations, reviewed by the Curriculum Assessment Committee, and discussed with the fellow at a face-to-face meeting;
3. Annual IDSA Fellows' In-Training Examination (FITE) and review of FITE performance with the Program Director and Division Chief;
4. Conference attendance, and;
5. Faculty observation while on rotations



Evaluations are collected in the fellows' online portfolios in *New Innovations* where they can be reviewed at any time.

Each Infectious Diseases Fellow must demonstrate success in achieving the milestones expected, to achieve clinical competency in the specialty, and to become a certified trainee of the program. Should the fellow fail to achieve these milestones that demonstrate the ability to practice independently, the Infectious Diseases faculty must meet to discuss whether this trainee can continue with the Infectious Diseases Fellowship Program. Such a meeting will be done with the advice of the GME office and appropriate committees of the department of Medicine. In such case, the Infectious Diseases Fellow has the right to appeal any finding or recommendation of the committee as published in the IM guidelines.

Evaluation of Faculty and Program:

Fellows evaluate the faculty by written, anonymous evaluations after each rotation. The evaluations are batched by the Program Coordinator and the dates removed. These measures are intended to preserve the confidentiality of each fellow's evaluations. The Program Director reviews the evaluations semiannually and distributes individual summaries annually to each member of the teaching faculty. Any problems that are identified are reviewed with the Division Chief and the faculty member as appropriate. Fellows and faculty evaluate the program annually with a written evaluation. Fellows and faculty are asked to submit written suggestions to the Program Director about the strengths and weaknesses of the program.

The Program Director prepares an annual report including evaluation of the curriculum, fellow performance, duty hours, supervision, faculty development, graduate performance, fellow and faculty evaluations of the program, and plans for improvement. The report is reviewed at the end of each academic year at a meeting including faculty and fellows, revised, and submitted to the College of Medicine Graduate Medical Education Office.

Access to counseling or therapy:

Physician burn-out is recognized as an unhealthy outcome in any training program for which both our Program and ACGME takes seriously, and can potentially lead to the program losing its accreditation. Physician burn-out, which is not uncommon in medicine, is the result of factors that include, but not limited to, stress, family tragedy, homesickness, mental illness, work-overload, feelings of needs not being addressed, and unrealistic expectations. Ultimately, this can negatively affect the fellow and their ability to complete the program successfully due to poor performance- as examples: depersonalization, depression, and unprofessional conduct with patients and peers (again, these examples is not exhaustive).

Throughout training, it is expected that trainees attend (if not on vacation or at a conference) the scheduled Fellows meetings with the program director. These meetings are designed to improve communications between the fellow and faculty and to allow activities conducive to relaxation, to prevent the conditions and continuation of burn-out. If the fellow feels like they are burning out, or if faculty observes signs of burn-out, it must be brought up to the Program Director. Specific incidences detailing poor performance and factors contributing to the burnout, must be described either verbally or



documented by email to faculty. It is both the trainee and faculty's responsibility to cooperate and work on as many mechanisms as needed, (including, but not limited to, providing coverage, GME office-facilitated counselling, strategies on dealing with stress, providing additional time for study), to halt burn-out. Fellows are assured that they may solicit such help anonymously, or may solicit the assistance of the Program Director, Division Chief, or any member of the Infectious Diseases faculty.

Grossly inappropriate behavior including the use of substances legal or illegal drugs may result in inability to perform duties optimally, and lead to patient harm. Should there be evidence of unprofessional conduct or activity unbecoming of a physician by the Infectious Diseases Fellow, faculty will report this directly to the Program Director. In conjunction with the Division Chief, the GME office and the Department of Medicine administration will intervene as necessary, to ensure maintenance of the safety and rights of both the patient and fellow.



Specific Program Content

Medical Knowledge

It is expected that by the end of the training period, the fellow will have had clinical experience and/or formal instruction in the prevention, evaluation, and management of the following:

1. Fever, including fever of unknown origin and systemic illness with fever and rash
2. Pleuropulmonary infections
3. Cardiovascular infections
4. Central nervous system infections
5. Gastrointestinal and intra-abdominal infections
6. Urinary tract infections
7. Sepsis syndromes
8. Skin and soft tissue infections
9. Infections of prosthetic devices
10. Bone and joint infections
11. Infections related to trauma, including animal and human bites
12. Nosocomial infections
13. Infections in patients who are neutropenic
14. Infections in patients with leukemia, lymphoma, or other malignancies
15. HIV infection and AIDS
16. Infections in patients immunocompromised due to medical therapies
17. Infections of the reproductive organs
18. Sexually transmitted infections
19. Infections in solid organ transplant recipients
20. Infections in stem cell transplant recipients
21. Viral hepatitis
22. Infections in travelers
23. Infections in geriatric patients
24. Infections in parenteral drug abusers
25. Microbial virulence factors and host defense mechanisms.
26. Basic concepts of immunology
27. The epidemiology, clinical course, manifestations, diagnosis, treatment, and prevention of major infectious agents including: viruses, chlamydia, mycoplasma and ureaplasma, rickettsioses, bacteria including spirochete mycobacteria, mycoses, protozoa and helminths.
28. Critical assessment of the medical literature, medical informatics, clinical epidemiology, and biostatistics and research methodology.
29. Quality assurance and cost containment in the clinical practice of Infectious Diseases



Technical Knowledge and Skills

By the end of the training period, the fellow will have had practical experience 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 drugs, techniques to determine concentration of antimicrobial agents in blood and other body fluids, the appropriate use and management of antimicrobial agents in a variety of clinical settings, including the hospital, outpatient, and in the home.
2. The utility of procedures for specimen collection relevant to ID:
 - a. The most appropriate procedures for specimen collection, and the most appropriate tests to be done on each specimen, to diagnose a particular infection.
 - b. Cultural and non-cultural methods for identification in tissues and fluids of bacteria, mycobacteria, fungi, viruses, rickettsia, chlamydia and parasites.
 - c. The sensitivity, specificity, efficacy, benefits and risks of emerging technologies such as those for rapid
 - d. Microbiological diagnosis; e.g., PCR and gene probes, and the use and limitations of imaging techniques in the diagnosis and follow-up of infectious processes.
3. Principles and practice of hospital infection control/prevention and healthcare epidemiology.
4. Principles of chemoprophylaxis and immunoprophylaxis.
5. Mechanisms of actions of biological products including monoclonal antibodies, cytokines, interferons, interleukins, and colony, stimulating factors and their applications in the treatment of infectious diseases or their role in enhancing the immune response.
6. The interpretation of Gram stains, other special stains, blood culture methodology, susceptibility testing, and basic principles of molecular biology as it relates to services offered by the microbiology laboratory.



Faculty and Personnel Contact Information

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STD clinic (Phillip Merkel) 694-8271

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Job Description for Infectious Diseases Fellows

1 Block = 4 weeks = 1 month

The 2-year ID fellowship training:

18 Blocks In-patient consultations primary at BUMC-T, BUMC-SVC, and SAVAHCS

1 Block of Vacation (20 days total)

2 Blocks of Outpatient Selectives with Pima County Health Department or outside institution rotation (subject to Program Director approval)

3 Blocks of research / scholarly activity

Job description for fellows in 1st and 2nd years:

Provision of inpatient consultations for patients with known or suspected infection in a timely fashion, generally within 24 hours of the request. Fellows take call from home with a faculty member as a back up also on call. Fellows and faculty are expected to respond to pages within 15 minutes unless exceptional circumstances prevail.

Outpatient clinics at least one half-day per week on average, providing care for patients with HIV, sexually transmitted diseases, and other confirmed or suspected infectious diseases. Fellows are assigned new patients and expected to follow these patients during the entire training period if appropriate. The maximum number of patients that can be seen in ½ day is 6.

Attendance and participation at the weekly conferences including core curriculum, research conference, journal club, and case conferences. Attendance at the weekly Medical Grand Rounds and monthly Department of Medicine Morbidity and Mortality conference is strongly encouraged.

Participation in research or scholarly activity with preparation of at least one manuscript suitable for publication, at least one abstract for submission to a regional, national, or international meeting, and at least one Grand Rounds quality lecture prior to completion of the two-year training period.



Job Descriptions and Goals

Specific to Level:

1st year fellow:

- Acquire knowledge of the diagnosis and management of common infections. Examples include septicemia, infective endocarditis, HIV infection, coccidioidomycosis, and meningitis.
- Learn to develop diagnostic, therapeutic and management plans for patients with known or suspected infection.
- Supervise evaluation by residents and medical students.
- Review the student presentations before rounds.
- Learn to find and discuss pertinent literature relating to the cases being seen.
- Become comfortable presenting cases at weekly case conference.
- Prepare at least one Core Curriculum presentation.
- Present one or more articles at Journal Club.

2nd year fellow:

- Develop more specialized, detailed knowledge of infectious diseases, including less commonly encountered pathogens or cases requiring individualized management. Examples include emerging infectious diseases, complicated urinary tract infections, complicated cases of coccidioidomycosis, cases with numerous positive cultures of uncertain significance, and HIV with drug resistance.
- Take a more central role in developing the diagnostic and therapeutic plan for patients on the consult service.
- Lead clinical rounds and take a prominent teaching role with residents and students.
- Refine the ability to identify pertinent literature to help manage complex cases.
- Compare the relative diagnostic, therapeutic, and cost values for different laboratory studies and therapeutic options.
- Provide at least two core curriculum lectures, and one research lecture.
- Continue to present articles in Journal Club.
- Begin to become an expert in one or more specific areas, as a foundation for lifelong learning and/or future scholarship.
- Produce one abstract for submission to a regional or national meeting, and/or one manuscript for submission to a peer reviewed publication.



Descriptions and Competency-Based Learning Objectives for Each Activity

Clinical Rotations

1. Inpatient Consultation Services at BUMC-T main campus and SAVAHCS

Fellows rotate on these services in 2-4 week blocks. An attending physician is assigned to the consultation service at all times and the team may include one or more residents, medical students, pharmacy residents, and pharmacy students. The attending physician supervises all consultations and must see and examine each patient. Rounds occur daily but not all patients need be seen every day. With guidance by the attending physician, the fellow will learn to determine which patients need to be seen on a particular day based on clinical status and pending tests. The fellow assigns new consultations to the residents and students, supervises their work-ups and reviews their notes. Resident notes may be signed by the attending physician without an additional note by the fellow. Student notes may go in the medical record but the fellow (or resident) must write a separate note.

"Curb-side" consultations are not permitted. The fellow must not engage in medical decision-making for patients they have not personally evaluated. Too many consult requests at one time, contributes to the pressure to the "curb-side," carrying a risk of making a medical decision based on incomplete and/or inaccurate information recalled and communicated verbally by the requesting physician. From such a foundation, follow up questions on the same case are sometimes asked later, compounding the initial error.

It is the attending on consultation who guides fellows in prioritization of consults such that informal consultations are diverted. This will liberate time and energy for the fellow. If a request is placed for a "curb-side" consultation, it is the fellows' purvey to request a formal consultation. If the request comes from the Emergency Department (ED), the immediately unavailable fellow and attending physician are obligated for patient safety to request patient admission if Infectious Diseases consultation is necessary. Fellows are encouraged and expected to ask the attending physician for help to navigate these situations.

Learning Objectives:

Patient Care

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) 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) Obtain a comprehensive and accurate medical history using all available sources.
- 3) Perform a comprehensive and accurate physical examination with added elements pertinent to the individual patient's differential diagnosis.
- 4) Review ancillary materials including radiology, pathology, laboratory data, and microbiology data with appropriate consultation of experts in these areas.



- 5) 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) 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

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) 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) Continue to develop expertise and competency in the care of patients requiring ICU care, including those with hospital-acquired infections.
- 3) Recognize indications, side effects and drug interactions of diverse classes of antimicrobials utilized to treat hospitalized adult patients.
- 4) Understand the relevance of evolving infectious disease epidemiology and be able to apply that to the evaluation of the patient in real time.
- 5) 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

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) Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients, their families and society that supersedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development.
- 3) Demonstrate sensitivity and responsiveness to patients' culture, age, gender, and disabilities both



in their interactions with patients and discussion about patients with the team. respect the patient's privacy by adhering to HIPAA rules.

- 4) Respect patient autonomy and will discuss potential diagnostic and therapeutic approaches with the patient and/or family before recommending a definitive approach to care.
- 5) 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) 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

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) Work with the requesting physician to appropriately formulate a focused question for the basis of an infectious disease consult
- 2) Effectively interview the patient, family members and staff to obtain a comprehensive assessment of the important clinical issues to be addressed. The fellow will use telephone or in-person translators to take a history if needed.
- 3) Communicate concisely with team members in formal and informal daily follow-up of the patients.
- 4) 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) Communicate in written and verbal form with the requesting physician and team, including subjective and objective information pertinent to the ID problems being addressed.
- 6) 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) 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.

Systems-Based Practice

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, and 3) participate in identifying systems errors and in implementing potential system solutions.

Objectives:

- 1) Demonstrate competence in interacting with multidisciplinary team members including social services, case management, nursing, pharmacy, and infection prevention/hospital epidemiology.
- 2) Work closely with team pharmacist to oversee appropriate antibiotic utilization and dosing.
- 3) 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 and infection prevention department.).

Practice-Based Learning and Improvement

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) Use an evidence-based approach to patient care when deciding on optimal treatment plans including appropriate and timely access to the medical literature.
- 2) 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) 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) 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 attending physician will spend time in teaching above and beyond the time required solely for patient care. This may take the form of bedside teaching or lectures. Fellows, residents, and students may also present brief lectures or reviews of the literature pertinent to a patient being seen on the service.

Assessment:

Ongoing informal feedback occurs daily when the fellow presents cases to the attending physician. In addition, the attending physician completes a competency-based written evaluation at the end of the rotation. This is reviewed by the fellow and becomes part of the fellow's permanent file.

Fellows give written anonymous evaluations of the faculty as described in "Evaluation of Faculty and Program," above. This is done in a manner intended to help preserve anonymity. However, if there are immediate or serious problems, the fellow should immediately contact the ID Program Director.

Level of Supervision:

The fellow is supervised on a daily basis by the attending physician, who is available by pager or phone 24/7 during the rotation. For further details please see the Supervision Policy. In addition, the attending physician role models appropriate behavior for all competencies.

Other Inpatient Objectives:



As well as the general objectives for inpatient consultation services, the following are additional specific objectives for each site:

BUMC-TUCSON

1. Become familiar with the differential diagnosis, diagnosis, and treatment of infections unique to the immunocompromised host, including patients with solid organ or stem cell transplants and patients undergoing cytotoxic chemotherapy for cancer.
2. Evaluate and treat infections in specialized surgical patients including cardiovascular and neurologic surgery.

BUMC-South Campus

1. Become familiar with infectious disease problems affecting an underserved population, in which infections and other medical problems may present at a more advanced stage and the patient's resources may be more limited.

SAVAHCS

1. Become familiar with the infectious disease problems affecting veterans and their families.
2. Observe techniques in the microbiology laboratory unique to SAVAHCS, including serologic testing for coccidioidomycosis and culturing of acid-fast bacilli.
3. Improve knowledge and patient care skills in coccidioidomycosis through participation in the weekly coccidioidomycosis clinic.

2. Outpatient Consultation and Continuity Clinics

Each trainee attends at least one half-day in the BUMC-T Main Campus, BUMC-T South Campus, and/or VA adult ambulatory Infectious Diseases Clinics each week throughout the training program. These experiences provide experience in the evaluation and work-up of outpatients, as well as longitudinal follow-up of patients to observe the course of illness and the effects of interventions. Additionally, trainees gain experience in telephone and written communications with referring physicians, and with patients after they go home from the hospital or clinics.

Learning Objectives:

Patient Care

Competencies: Fellows are expected to gain a broad experience in the evaluation and management of outpatients with infectious diseases.

Objectives:

- 1) Be able to formulate a comprehensive approach to the evaluation of patients with HIV and other infectious diseases including obtaining a comprehensive and accurate medical history and physical examination.
- 2) Document thoroughly and appropriately in the medical record.
- 3) 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.
- 5) The second-year ID fellow will be able to assess a complex, late-stage HIV patient more



independently and select salvage therapy for the antiretroviral experienced HIV patient.

Medical Knowledge

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

Objectives:

- 1) 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) Recognize and treat common infectious disease problems evaluated in the outpatient setting including pneumonia, osteomyelitis, skin/soft tissue infections, endovascular infections, coccidioidomycosis, mycobacterial infections, sexually-transmitted diseases, and fever of unknown origin.
- 3) Learn the approach to pre-travel immunization, prophylaxis, and counseling for the international traveler, as well as the evaluation of post-travel problems such as fever.

Professionalism

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) Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients, their families and society that supersedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development.
- 2) 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. respect the patient's privacy by adhering to HIPAA rules.
- 3) Respect patient autonomy and will discuss potential diagnostic and therapeutic approaches with the patient before recommending a definitive approach to care.
- 4) 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

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) Communicate concisely with referring physicians, including transmission of the clinic note and telephone contact as appropriate.
- 2) Discuss the diagnosis and test results with the patient in a compassionate and clear manner that is appropriate to the patient's level of medical understanding.
- 3) Second-year ID fellows will be able to counsel their patients more effectively about treatment options, antiretroviral side effects and complications of HIV/AIDS.

Systems-Based Practice

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) Demonstrate competence in interacting with multidisciplinary team members including social services, nursing, and pharmacy.
- 2) 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.
- 3) 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

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) Use an evidence-based approach to patient care when deciding on optimal treatment plans including appropriate and timely access to the medical literature.
- 2) Use information technology including internet-based resources and national guidelines to maintain current knowledge in patient management, including accessing internet sites for HIV drug resistance analysis and drug interactions.
- 3) 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 is conducted through one-on-one interactions with attending physician as well as problem-oriented reading based on problems encountered in clinic patients.

Assessment:

The Infectious Disease clinic attending physician provides ongoing informal feedback to the fellow throughout the year. In addition, multi-source evaluations of the ID fellow are completed every year and include evaluation by clinic staff and patients. Fellows give written anonymous evaluations of the



faculty as described in "Evaluation of Faculty and Program," above. This is done in a manner intended to help preserve anonymity. However, if there are immediate or serious problems, the fellow should immediately contact the Program Director. Fellows evaluate the program yearly, including 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 attending physician. The attending physician is also available by pager for questions or management issues that may arise outside the clinic hours. If the attending physician who saw the patient is not available, other faculty members are available to help with issues that arise with clinic patients on non-clinic days.

3. Tuberculosis (TB) Clinic [*policy in progress*]

Fellows attend the Pima County Health Department TB Clinic for one month, usually in July or August of the 1st year. Clinic occurs one or two half-days per week and the TB Clinic Conference occurs every other week. Fellows work with a TB clinic attending physician and/or physician assistant (PA) in evaluation of patients and also discussion of active cases and review of X-rays.

Learning Objectives:

Patient Care

- 1) Learn to perform an appropriate history, physical examination, and review of laboratory and radiographic data for patients with TB.
- 2) Develop appropriate management plans for patients with TB.

Medical Knowledge

- 1) Become familiar with the diagnosis and treatment of TB.
- 2) Understand the principles of evaluation and management of suspected TB contacts.
- 3) Become familiar with the delivery of directly observed therapy (DOT) for TB.

Professionalism

- 1) Communicate in a timely fashion with the supervisor about the clinic schedule and any unexpected events that require absence from clinic.

Systems-Based Practice

- 1) Become familiar with the role of the health department in TB control, particularly source investigation and DOT.

Teaching Methods

- 1) One on one instruction by the supervising physician or PA.
- 2) Reading from the CDC Guidelines for TB diagnosis and management, provided to the fellow at the beginning of the rotation, and other sources as appropriate.

Assessment:

The TB clinic attending physician and/or PA submits a written evaluation of the fellow at the end of the rotation. The fellow submits a written evaluation of the rotation, along with other rotations, at the end of the year.



Level of Supervision:

The fellow is directly supervised by the TB clinic attending physician or PA while in the clinic.

4. Sexually Transmitted Disease (STD) clinic [*policy in progress*]

Fellows attend the Pima County STD Clinic (Theresa Lee Clinic) for two half-days per week for one month, usually in July or August of the 1st year. Fellows work with a clinic attending physician and/or PA in evaluation and management of patients with known or suspected sexually transmitted diseases.

Learning Objectives:

Patient Care

- 1) Learn to perform an appropriate history, physical examination, and review of laboratory and radiographic data for patients with known or suspected STDs.
- 2) Develop appropriate management plans for patients with STDs.

Medical Knowledge

- 1) Become familiar with the diagnosis and treatment of common STDs.
- 2) Understand the importance of STDs in increasing the risk of HIV transmission.

Professionalism

- 1) Communicate in a timely fashion with the supervisor about the clinic schedule and any unexpected events that require absence from clinic.

Systems-Based Practice

- 1) Become familiar with the role of the health department in STD control, particularly partner notification and treatment.

Teaching Methods

- 1) One on one instruction by the supervising physician or PA
- 2) Reading from the current CDC Guidelines for STDs, and other sources as appropriate.

Assessment:

The STD clinic attending physician or PA submits a written evaluation of the fellow at the end of the rotation. The fellow submits a written evaluation of the rotation, along with other rotations, at the end of the year.

Level of Supervision:

The fellow is directly supervised by the STD clinic attending physician and/or PA while in the clinic.

5. Clinical Microbiology

This rotation takes place in the clinical microbiology laboratories at BUMC-T or SAVAHCS. The fellow will be assigned a 2-week block at the BUMC-T or SAVAHCS laboratory in their first month of fellowship. On assigned days, the fellow is expected to report to the laboratory at the time specified by the laboratory supervisor (usually 7 or 7:30 a.m.) and stay until about 12 p.m. The fellow will observe



and participate in processing of microbiology specimens and microbiologic tests involving bacteriology, virology, mycology, mycobacteriology and serology. The Microbiology Laboratory Supervisor is responsible for determining the schedule of the rotation, in consultation with the ID Fellowship Program Director and the Laboratory Director, and communicating expectations to the fellow.

Learning Objectives:

Medical Knowledge

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

Objectives:

- 1) Develop a competency in interpreting Gram stains as well as familiarity with interpretation of other special stains (e.g., KOH, AFB) from clinical specimens.
- 2) Become familiar with the use of growth media employed in the evaluation of respiratory, urine, wound, genital and stool specimens.
- 3) Understand methods used to cultivate fungal and acid fast organisms.
- 4) 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*, *Coccidioides* species, *Aspergillus*).
- 5) Become familiar with blood culture methodology.
- 6) Become familiar with automated equipment used in the clinical microbiology laboratory.
- 7) Understand methods used for antimicrobial susceptibility testing.
- 8) Become familiar with diagnostic techniques used in virology.
- 9) 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

Objectives:

- 1) Demonstrate respect, compassion, and integrity in interactions with laboratory staff, other physicians and other professionals.
- 2) Demonstrate a commitment to excellence and on-going professional development.
- 3) Arrive on time and communicate with the director and laboratory staff when clinical commitments require absence from the laboratory.

Interpersonal and Communication Skills

Objectives:

- 1) Communicate effectively with physicians, other health professionals and health related agencies.
- 2) Work with the laboratory staff to communicate the clinical context of laboratory samples when needed.

Systems-Based Practice

Objectives:

- 1) Participate in discussions about reporting and interpretation of laboratory results.
- 2) Actively contribute to finding solutions to prevent system errors.



Practice-Based Learning and Improvement

Objectives:

- 1) Indicate understanding of strengths and weaknesses of knowledge.
- 2) Use an evidence-based approach to clinical microbiology including appropriate and timely access to the medical literature.

Teaching Methods

- 1) One-on-one instruction by experienced laboratory technologists
- 2) Lectures and discussion with the Clinical Microbiology Laboratory Director. When applicable these will be shared with Pathology residents who are doing their Microbiology rotation.

Assessment:

The Laboratory Director provides a written evaluation of the fellow's performance at the end of the rotation, with input from the Laboratory Supervisor and other technologists who provided the training. Faculty evaluations during other rotations will also reflect the fellow's knowledge of clinical microbiology.

Level of Supervision:

The fellow is supervised while in the laboratory by the laboratory technologists with whom they are working, the Laboratory Supervisor, and Laboratory Director.

6. Infection Control Training

Educations on infection control and prevention is incorporated into the curriculum throughout the fellowship in the form of core curriculum lectures, an online course, and attendance at Infection Prevention Committee meetings. Expectations of fellows are as follows:

- 1) Attend the monthly meeting of the Infection Control / Prevention Committee at the hospital where they are working when on inpatient rotations.
- 2) Complete the online SHEA/IDSA Fellows' Infection Control Course. Fellows must provide their certificate of completion of the course to the Program Coordinator.

Objectives:

Medical Knowledge

- 1) Prepare to serve as a hospital Infection Control consultant or director by acquiring knowledge of the principles of Infection Control and its importance in the hospital or other health care setting.
- 2) Understand the definition, recognition, evaluation, and prevention of a variety of hospital acquired infections.

Teaching methods:

Online course, one-on-one discussion with the attending physician, Core Curriculum lectures.

Assessment:

Completion of online SHEA/IDSA course with assessment module.



7. UA Valley Fever Center for Excellence

Each trainee trains one half-day on Friday mornings while on elective rotations, at the UA Valley Fever Center for Excellence (VFCE) under the mentorship of its director, Dr. John Galgiani, accompanied by Dr. Fariba Donovan, at the BUMC-T main campus throughout the training program. This opportunity will provide experience in the evaluation and work-up of patients with diverse clinical presentations of coccidioidomycosis, as well as longitudinal follow-up of patients to observe the course of illness and the effects of interventions. Additionally, trainees gain experience in telephone and written communications with referring physicians, and with patients after they go home from the hospital or clinics.

Learning Objectives:

Patient Care

Competencies: Fellows are expected to gain a broad experience in the evaluation and management of outpatients with coccidioidomycosis.

Objectives:

- 1) Be able to formulate a comprehensive approach to the evaluation of patients with coccidioidomycosis including obtaining a comprehensive and accurate medical history and physical examination.
- 2) Document thoroughly and appropriately in the medical record.
- 3) 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.
- 5) The second year ID fellow will be able to assess a complex patient with coccidioidomycosis more independently.

Medical Knowledge

Competencies: Fellows are expected to develop an increased understanding of the pathophysiology, epidemiology, diagnosis and treatment of coccidioidomycosis in the outpatient setting.

Objectives:

- 1) Develop an understanding of the outpatient management of cocci-infected persons including:
 - a. Determining when to initiate antifungal therapy
 - b. Appropriate prescribing of first-line antifungal therapy
 - c. Use of second-line therapies
 - d. Appropriate prescribing of prophylaxis for cocci infections
- 2) Recognize and treat coccidioidomycosis in its diverse clinical presentations, pneumonia, osteomyelitis, skin/soft tissue infections, and other end-organ infections.

Professionalism

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) Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients, their families and society that supersedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and on-going professional development.
- 2) 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.
- 3) Respect patient autonomy and will discuss potential diagnostic and therapeutic approaches with the patient before recommending a definitive approach to care.
- 4) 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

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) Communicate concisely with referring physicians, including transmission of the clinic note and telephone contact as appropriate.
- 2) Discuss the diagnosis and test results with the patient in a compassionate and clear manner that is appropriate to the patient's level of medical understanding.

Systems-Based Practice

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) Demonstrate competence in interacting with multidisciplinary team members including social services, nursing, and pharmacy.
- 2) Interact with home health services and health departments in coccidiomycosis management

Practice-Based Learning and Improvement

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) Use an evidence-based approach to patient care when deciding on optimal treatment plans including appropriate and timely access to the medical literature.
- 2) Use information technology including internet-based resources and national guidelines to maintain current knowledge in patient management.



- 3) 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 is conducted through one-on-one interactions with attending physician as well as problem-oriented reading based on problems encountered in clinic patients.

Assessment:

The VFCE attending physician provides ongoing informal feedback to the fellow throughout the year. In addition, multi-source evaluations of the ID fellow are completed every year and include evaluation by clinic staff and patients. Fellows give written anonymous evaluations of the faculty as described in "Evaluation of Faculty and Program," above. This is done in a manner intended to help preserve anonymity. However, if there are immediate or serious problems, the fellow should immediately contact the Program Director. Fellows evaluate the program yearly, including 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 attending physician. The attending physician is also available by pager for questions or management issues that may arise outside the clinic hours. If the attending physician who saw the patient is not available, other faculty members are available to help with issues that arise with clinic patients on non-clinic days.

Conferences

1. Case Conferences

A weekly clinical conference is held in which cases are discussed, most often from the active list of patients being seen by the consultation service. Cases are selected by the attending physician in discussion with the Fellow. The Fellow is responsible for presenting the case orally in a concise yet thorough fashion, with use of radiographic images, photographs or micrographs as applicable. Cases are discussed by conference attendees who have not seen the patient. Short didactic discussions ensue. The attending may ask the Fellow to prepare a short discussion of the topic with appropriate references to the literature. Follow-up of previous cases is presented, allowing continued learning with a longitudinal perspective.

Learning Objectives:

Practice-Based Learning and Improvement

- 1) Develop the ability to present a clinical case concisely with use of imaging studies when appropriate.
- 2) Learn to identify knowledge deficits regarding a particular disease process and then, based on these deficits, identify learning and improvement goals.
- 3) Identify and incorporate relevant literature in the case discussion.
- 4) Gain an appreciation of how experienced clinicians analyze cases as each discussant shows their thought processes in solving problems.



Medical Knowledge

- 1) Learn the pathogenesis, microbiological, epidemiological, clinical, and therapeutic aspects of the selected case.

Interpersonal and Communication Skills

- 1) 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.
- 2) Participate in a multidisciplinary discussion of management, which may include different perspectives or conflicting opinions.
- 3) The second-year Fellow will begin to take a more active role in leading and guiding the discussion.

Teaching methods:

Didactic presentation by peers and faculty, group discussion

Assessment:

The attending physician for the inpatient consultation rotation evaluates the Fellow's presentation based on content, organization and speaking skills. This is incorporated into the evaluation for the rotation. In addition, the Program Director incorporates evaluation of the Fellow's formal presentations into the semi-annual evaluation.

2. 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 faculty. The fellow or faculty member presents an article from the literature, which may be a clinical trial, observational or cohort study, or systematic review. The fellow is expected to have read the article carefully and to have done relevant background reading in order to understand the context of the article. The fellow is encouraged to send the article to conference participants ahead of time. The fellow presents the article including its design and findings, with use of figures or tables from the article as appropriate. The fellow should discuss the conclusions of the article and the strengths and weaknesses of its design, execution, quality of data, statistical analysis, and applicability to Infectious Disease practice.

Learning Objectives:

Medical Knowledge

- 1) Learn new scientific and clinical information relating to Infectious Disease as well as the design and interpretation of clinical and scientific studies.
- 2) Acquire skills for critical appraisal of the literature with respect to study design, techniques, qualitative understanding of basic statistical concepts such as sample size.

Practice-Based Learning and Improvement

- 1) Gain an understanding of the use of information technology (IT) to locate a relevant article.
- 2) Apply the results of the study to patient care as appropriate.

Interpersonal and Communication Skills

- 1) Learn to organize the presentation of an article in a logical fashion and present the data clearly and succinctly.



Teaching methods:

Formal presentation of an article and informal instruction by faculty.

Assessment: Journal Club presentations are incorporated in the semiannual evaluation by the 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.

3. Core Curriculum Conference

The Core Curriculum Conference is held 4 hours monthly. Core topics are presented by faculty and fellows on a rotational basis. Special presentations by experts from other sections, departments or institutions are included. Topics are derived from the list of topics cited earlier in this document as well as other important or timely infectious diseases topics. These lectures provide the trainee with a formal curriculum in infectious diseases with a particular focus on topics that may not be encountered during clinical rotations. The course is on a two-year cycle to ensure that all ID fellows receive the entire curriculum during the course of their fellowship training.

Learning Objectives:

Medical Knowledge

1. Acquire a core of knowledge in infectious diseases topics as listed above.
2. Acquire relevant background knowledge on the basic concepts of molecular biology and immunology.
3. Become familiar with factors that determine the outcome between host and parasite, including microbial virulence factors and host defense mechanisms.

Interpersonal and Communication Skills:

1. Learn to prepare a didactic presentation of sufficient complexity and detail appropriate for an advanced curriculum in infectious diseases, and to present it formally.

Teaching Methods:

Didactic instruction by faculty and peers.

Assessment:

1. Required participation at $\geq 80\%$ of sessions.
2. Score on the yearly IDSA Fellows' In-Training examination.
3. The Fellow's didactic presentations are included in the Program Director's semi-annual evaluation.

4. ID Grand Rounds

ID Grand Rounds are part of the Core Curriculum series and are held for an hour every first Tuesday of the month. The speaker will cover the following academic areas:

- Research or scholarly project in which an ID fellow can potentially complete a research project.
- Visiting speaker from an outside institution or in-house who will provide a different insight to infectious diseases and their research



Learning objectives:

Medical Knowledge

- 1) Maintain and develop new knowledge regarding the pathogenesis, epidemiology and management of infectious diseases, with an emphasis on recent discoveries.
- 2) Become familiar with research taking place locally, regionally, nationally and internationally in the field of infectious diseases.
- 3) Learn to evaluate research presentations for their quality and relevance.

Interpersonal and Communication Skills

- 1) Learn to interact at a scholarly level with faculty and visiting speakers.

Practice-Based Learning and Improvement

- 1) Take the opportunity to appreciate different presentations formats.

Teaching methods:

Presentation by faculty and visiting speakers, group discussion

Assessment:

Observation by attending faculty and the program director, which will be incorporated into the semi-annual evaluation.

5. ID Seminars- Cocci case conference and VA conference

Cocci case conference is held on the second Tuesday of every month at BUMC-T and the VA conference is held on the 3rd Tuesday of every month at SAVAHCS.

Learning Objectives:

Medical Knowledge

- 1) Maintain and develop new knowledge regarding the pathogenesis, epidemiology and management of coccidioidomycosis.
- 2) Maintain and develop new knowledge regarding the pathogenesis, epidemiology and management of infectious diseases.

Interpersonal and Communication Skills

- 1) Learn to interact at a scholarly level with faculty and visiting speakers.

Practice-Based Learning and Improvement

- 1) Learn to manage patients with coccidioidomycosis in an field with emerging evidence-based data.

Teaching methods:

Didactic presentation by peers and faculty, group discussion

Assessment:

Observation by attending faculty and the program director, which will be incorporated into the semi-annual evaluation.



Research Rotations

Each fellow participates in clinical and/or basic research for 3 or more months of the 24-month training period. Fellows are encouraged work on the research project at other times during the year, especially if it requires Institutional Review Board approval or other activities that require sufficient lead time. The experience is working one-on-one with a faculty member who serves as a mentor for the trainee. Each fellow is given opportunity to help design a study of his or her interest. Alternatively, participation may involve an ongoing project by the mentor.

It is expected that each trainee will author or co-author at least one abstract or one publication for submission to a peer reviewed journal. Trainees may fulfill research and educational goals by preparing and presenting abstracts for presentation at regional or national meetings, writing book chapters, or writing chapters for on-line textbooks. The trainee is also expected to attend continuity clinic and all conferences during the Research rotation.

Learning Objectives:

Medical Knowledge

- 1) Learn hypothesis generation, study design and techniques necessary to carry out a study.
- 2) Gain experience in preparing manuscripts for publication or presentation.

Professionalism

- 1) Learn concepts of informed consent and ethics in research.
- 2) Work with others on a project, including meeting deadlines.

Interpersonal and Communication Skills

- 1) Work effectively with a mentor and other research collaborators as appropriate.
- 2) Develop experience in communication of research results.

Practice-Based Learning and Improvement

- 1) Develop skills of self-directed learning.
- 2) Develop the time-management skills to complete the work in a timeframe agreed upon by the fellow and mentor.

Teaching Methods:

- 1) One on one instruction by the mentor
- 2) Reading from the literature, both for background on the topic and about research methods.

Assessment:

- 1) Written evaluation by the faculty mentor at the end of each rotation.
- 2) Presentation of the findings to the faculty and fellows at a Research Conference.
- 3) Production of an abstract, manuscript, poster, and/or oral presentation at a meeting.

Level of Supervision:

The fellow is supervised by the research mentor on a schedule worked out and agreed upon by both parties. Periodic meetings to discuss the status of the work are expected, at least every other week.



References and Resources for Fellows

The Arizona Health Sciences Library provides access to a number of ID textbooks as well as databases and journals. These can be accessed from off-campus by entering the UA NetID and password.

<http://ahsl.arizona.edu/>

References which fellows are urged to read on a regular basis:

1. Mandell GL, Bennett JE, Dolin R, editors. Mandell, Douglas, and Bennett's Principles and Practice of Infectious Diseases. Philadelphia: Churchill Livingstone; 2009.
2. Murray, Baron, Pfaller, et. al., *Manual of Clinical Microbiology*, 9th ed., ASM Press, Washington, DC, 2007.
3. *Journal of Infectious Diseases* – <https://academic.oup.com/jid>
4. *Clinical Infectious Diseases* – <https://academic.oup.com/cid>
5. *Infectious Disease in Clinical Practice* – <http://journals.lww.com/infectdis>
6. *Antimicrobial Agents and Chemotherapy* – <http://aac.asm.org>
7. *The New England Journal of Medicine* – www.nejm.org
8. *Morbidity and Mortality Weekly Report* – www.cdc.gov/mmwr

Fellows should be familiar with the following resources:

■ Infectious Disease Society of America website. Includes a large number of practice guidelines that are useful for their review of the literature as well as the guidelines themselves. Links to the IDSA journals and information about the In-Training Exam as well as many other resources. Membership is free for the first year of training.

www.idsociety.org

■ U.S. Centers for Disease Control and Prevention. A-Z disease index, information for travelers, guidelines for a variety of Infection Control topics.

www.cdc.gov

■ Arizona Department of Health Services.

www.azdhs.gov

■ Pima County Health Department

www.pima.gov/health

■ UA Valley Fever Center for Excellence. Includes a "find a doctor" service for patients and online courses for physicians.

vfce.arizona.edu

Other useful websites:

- Webcast.AHSC/UA Health Sciences Biomedical Communications (BioCom):

<http://streaming.biocom.arizona.edu/home/>

Video streaming of seminars and presentations, including Grand Rounds.



- For UA Department of Medicine Grand Rounds, see:
<http://streaming.biocom.arizona.edu/categories/?id=10>
- For all COM – Tucson Grand Rounds, see:
<http://streaming.biocom.arizona.edu/categories/?id=50>

- Partners Infectious Disease Images: www.idimages.org
Images and case histories including fellow cases from IDSA meetings.

- American Board of Internal Medicine: www.abim.org
Information about the ID Board exam.

- Pro-Med mailing list: www.promedmail.org
Reports of emerging infections and diseases around the world.

- Johns Hopkins University Antibiotic Guide: www.hopkinsguides.com/antibiotics
Requires a subscription.

Disease Specific References

a. Needlestick injuries

2005 Guidelines for occupational HIV exposure:

<http://www.cdc.gov/mmwr/preview/mmwrhtml/rr5409a1.htm>

HIV post exposure prophylaxis (PEP): <http://www.nccc.ucsf.edu/> or search for "PEPline"

b. HIV

- HIV guidelines from the U.S. Department of Health and Human Services:
www.aidsinfo.nih.gov
- HIV drug resistance databases: <http://hivdb.stanford.edu/>

c. Rabies exposure

Arizona Rabies Control & Bite Management Manual:

<http://www.azdhs.gov/phs/oids/vector/rabies/manual.htm>

d. Herpes B virus exposure in laboratory animal workers

Cohen, JI et al. Recommendations for prevention of and therapy for exposure to B virus (cercopithecine herpesvirus 1). CID 2002; 35:1191.

<http://cid.oxfordjournals.org/content/35/10/1191.long>



Moonlighting Policy

Purpose:

1. Because the Infectious Disease Fellowship is a full-time educational endeavor, it is imperative that any moonlighting does not interfere with the ability of the fellow to achieve the goals and objectives of the educational program.
2. Internal/External Moonlighting may be permitted with prior approval of the Program Director.
3. Internal/External Moonlighting is not a required activity.
4. Activities outside the educational program must not interfere with the fellow's performance.
5. Fellows who are on academic probation may not moonlight.
6. Fellows may not moonlight during duty hours or during periods of on call activity.
7. University Malpractice Insurance does not cover moonlighting activities or any medical activities that might be performed on a volunteer basis.

Procedure:

1. The fellow must notify the program director in writing if he/she wishes to engage in moonlighting. The letter must include anticipated hours and setting. Once approved by the program director, the letter and notice of approval will be placed in the fellow's record.
2. If and when the fellow stops moonlighting, an addendum will be made to the letter indicating this change in status.
3. Should there be any indication that the fellow's performance and learning is impaired by excess moonlighting, such instances will be reviewed and acted upon accordingly by the program director. Moonlighting privileges may be curtailed or suspended at the discretion of the program director.



Duty Hours Policy

Supervision of Infectious Disease Fellows

- a. All patient care must be supervised by qualified teaching staff.
- b. Faculty schedules must be structured to provide fellows with continuous supervision and consultation.

Duty Hours

- a. Duty hours are defined as all clinical and academic activities on site related to the fellow program.
- b. Duty hours are limited to 80 hours per week, averaged over a four-week period, inclusive of all in-house call activities.
- c. Fellows are provided with 1 day (24-hour period) in 7 free from all educational, clinical and administrative responsibilities, averaged over a four-week period, inclusive of call.
- d. There must be a duty free interval of at least 10 hours prior to returning to duty.
- e. The call schedule will be created by the fellows with the supervision of the Program Director to ensure compliance with the program requirements and that all fellows are treated equally within the call schedule.

On-Call Activities

- a. Infectious Disease fellows do not have assigned in-house call at any time during the three-year fellows program.
- b. At-home call (or pager call) is defined as a call taken from outside the assigned institution for issues related to Infectious Disease inpatient consultation service patients and outpatients in 4-week blocks.
 - 1) On average, at home calls should incur two to three hours work from home each week, in the form of phone calls from patients in the practice and phone calls regarding inpatient consultations.
 - 2) At-home call must not be so frequent as to preclude rest and reasonable personal time for each fellow. Fellows taking at-home call must be provided with 1 day in 7 completely free from all educational and clinical responsibilities, averaged over a 4-week period.
 - 3) When fellows are called into the hospital from home, the hours fellows spend in-house are counted toward the 80-hour limit.

Oversight

- a. The monitoring of duty hours is required with frequency sufficient to ensure an appropriate balance between education and service.
- b. Back-up support systems must be provided when patient care responsibilities are unusually difficult or prolonged.

Moonlighting

- a. Internal/External Moonlighting that occurs in the primary clinical site must be counted toward the 80-hour weekly limit on duty hours.



- b. The program director must ensure that moonlighting does not interfere with the fellows' learning objectives.

Work Environment

- a. These guidelines are intended to support the work guideline policies of the Department of Medicine and University of Arizona College of Medicine requirements. In general, the intent and the work guideline policies of the Department of Medicine are applicable to Infectious Disease Fellows except where there have been specific policies developed by the Division of Infectious Disease directed towards their fellows.
- b. It is an expectation that the work environment at all participating sites will be committed to safety, and free of harassment.
- c. *The Lines of Responsibility*: The lines of responsibility are complete and identical in all areas of care including clinics and wards for all hospital and outpatient rotations.
 - 1) There is easy, reliable and 24-hour communication ability between the fellow and the responsible attending.
 - 2) Ultimate responsibility for the patient lies with the attending.
 - 3) The fellow will have adequate experience to evaluate all patients, supervise more junior house officers and medical students, and shall have the resources of the hospital from the responsible attending including consultative services to make diagnostic and treatment decisions. Throughout their training experience, fellows will be granted increasing independence by responsible attending according to their abilities and skills. Attending physicians are readily available to supervise or participate in the performance of technical procedures.
 - *Writing Orders*: Inpatient order writing is the responsibility of the patient's hospital physician and/or primary physician team. To avoid medical errors, the entry of hospital orders should be restricted to primary hospital physicians. When acting as consultants, fellows will write orders only when asked to do so by a member of the patient's primary service. However, fellows may write orders as necessary or dictated by patient care requirements.
 - *Non-Teaching Services*: Fellows shall not be responsible for patients on non-teaching services except in emergent circumstances.



Supervision Policy

Supervision of Infectious Disease fellows will be in compliance with the ACGME Common Program Requirements for Graduate Medical Education as well as The University of Arizona Graduate Medical Education Committee policy on resident supervision. The purpose of the supervision policy is to ensure patient safety and to balance fellow education with appropriate patient care.

There are four different types of supervision that co-exist in the pursuit of graduate medical education training and patient care. They are defined as follows:

1. **Direct:** Direct supervision exists when faculty has direct contact with the patient and participates in providing care together with the resident.
2. **Participatory:** Participatory supervision exists when faculty closely observes and advises the resident before and during a patient encounter.
3. **Indirect:** Indirect supervision exists when faculty review the care given to patients by examination of the medical record or treatment plan with the resident.
4. **General:** General supervision exists when faculty are involved in patient care through instruction and the establishment of a system of patient care within which the resident must function.

Fellows provide patient care in two settings: the inpatient consultation service and the outpatient clinic. For inpatient consultations, the Infectious Diseases Division maintains a faculty call schedule, made up by the Division Chief at the start of each academic year. An attending physician is designated for each hospital at all times including weekends, and that physician's contact information is provided to all fellows, faculty and the hospital operators. In inpatient settings the fellow evaluates the patient initially, with the attending physician available by pager or phone at all times (indirect supervision). In all cases, after the fellow has had an opportunity to formulate an impression and plan and make first decisions, the attending physician examines the patient, usually in the presence of the fellow (direct or participatory supervision). The fellow and attending physician discuss the case and review data as appropriate. The attending physician is responsible for final decisions. The fellow writes or dictates a consultation note, which is reviewed, approved and signed by the attending physician in the paper and/or electronic medical record.

In outpatient settings, each clinic is supervised by at least one faculty member, who is physically present. The clinic schedule is made up in advance and each faculty member has designated clinic days. The fellow evaluates the patient and then presents the case to the attending physician, who then interviews and examines the patient with the fellow (direct supervision). The fellow and attending physician review data as appropriate and the fellow writes a clinic note, which is cosigned by the attending physician in the electronic medical record. Fellows are responsible for prescriptions and diagnostic testing orders for their patients, after discussion with the attending physician, and are expected to review the results with the attending physician.

Attending physicians provide direct supervision for each fellow in each patient encounter, for the entire two years of fellowship. However, as fellows progress in the program and gain knowledge and experience, the attending physician will give the fellow more decision-making ability. This may be manifested by the attending physician repeating fewer aspects of the history, physical exam, and data review.



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This activity will be individualized for each fellow by each attending physician, based on the fellow's knowledge and experience and the acuity of the patient. Informal or "curb-side" consultations are strongly discouraged, particularly for first-year fellows.

This policy has been reviewed and approved by the Program Director and Division Chief.



Vacation Policy

1. The vacation policy is based on Banner Health policies.
2. Fellows may take vacation at any time, provided it is cleared with their attending physician for the rotation and the Program Director.
3. Fellows submit a leave slip to the Division Administrator ahead of time, and indicate that they have discussed it with their attending for the proposed vacation time. The program director will review and approve the time.
4. Vacation during inpatient adult consultation at BUMC-T main campus, is discouraged and should be limited to 1 or 2 days in most cases. Usually, this is a matter of a job interview or emergency. Fellows should discuss it with their attending physician as far ahead of time as possible.
5. When a fellow takes vacation during a consultation rotation, the attending will cover the service. Fellows may not leave an assigned rotation to cover for another fellow elsewhere, unless approved by the program director. Unusual cases or emergencies must be discussed with the program director.

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