THE UNIVERSITY OF ARIZONA
COLLEGE OF MEDICINE TUCSON
Infectious Diseases

Training Manual
Division of Infectious Diseases
Infectious Diseases Fellowship Program
12th Revision

2021-2022

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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1. Program Director and Division Chief's Welcome

Welcome to the Division of Infectious Diseases at 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 Banner – University Medical Center Tucson (BUMC-T) Main Campus, South Campus (BUMC-S), and the Southern Arizona VA Healthcare System (SAVAHCS). 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 fellowship, we will make elective activities available to you 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 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
Infectious Diseases Fellowship Program Director
Chief, Division of Infectious Diseases
University of Arizona Health Sciences
College of Medicine - Tucson

2. 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 Accreditation Council for 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, and schedules are also included.

3. Overview

Fellowship Training – Infectious Diseases Division

Description of the Program:

The Fellowship Training Program is based in the Division of Infectious Diseases in the Department of Medicine at BUMC-T Campus. 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 a minimum of two years duration with an emphasis on training in clinical Infectious Diseases. An optional third year may be offered to individuals with a strong interest in a research career. Candidates for training must be board eligible or board 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 Tucson (or Main) and South campuses and the Southern Arizona VA Healthcare System (SAVAHCS). The BUMC-T Main Campus and the SAVAHCS 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 and research.

Inpatient rotations. Inpatient consultations are performed at BUMC-T and SAVAHCS. At the completion of the required clinical time, the fellow will also have provided consultative services for an average of 500 inpatients.

Ambulatory care. Fellows have outpatient infectious disease clinics at BUMC-T, BUMC-South 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 rotating through other clinical experiences including Pediatric Infectious Diseases, an elective in coccidioidomycosis, and the Pima County Tuberculosis Clinic. Fellows are also encouraged to identify elective rotations outside of Arizona that they might benefit from, such as a mycobacterial elective at National Jewish Hospital in Denver.

Conferences

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

1. ***Case Conference (BUMC-T Fridays, 11:00 am).*** Fellows and faculty present ID cases from their own experiences in either the inpatient or outpatient setting. 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. Once every quarter, a Morbidity and Mortality (also known as Root Cause Analysis) conference will be held instead of the usual case conference.

2. ***ID Plate Rounds (BUMC-T every Friday, 12:00 pm; SAVAHCS on 3rd Tuesday 9:00 am monthly).*** Microbiology rounds are held every Friday after case conference and at the SAVAHCS on the third Tuesday of the month following the VA lecture. Traditional microbiologic methods as well as molecular ID diagnostic techniques are covered.

3. ***Journal Club (1st Tuesday monthly at 8:00 am) and Board Review.*** One fellow reviews 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. Thirty minutes of this conference is dedicated to ABIM ID Specialty board review.

4. ***Didactic ID curriculum (BUMC-T Thursdays, 8:00 am)***. 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.

5. ***Cocci Case presentations (BUMC-T, 2nd Tuesday monthly 8:00 am).*** ID fellows and faculty informally discuss management of cases of coccidioidomycosis with Dr. Galgiani and Dr. Donovan.

6. ***VA Seminar (SAVAHCS, 3rd Tuesday monthly 8:00 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.

7. ***ID Grand Rounds (BUMC-T, 4th Tuesday monthly 8:00 am).*** ID faculty and guest speakers present research in infectious diseases designed to expose fellows to contemporary research and research methods.

Additional meetings and conferences are available to fellows, but attendance is not required including:

8. Medicine Grand Rounds (BUMC-T Wednesdays 12:00 pm). A wide range of clinical and research topics relevant to internal medicine and its subspecialties are presented. A Morbidity and Mortality (also known as Root Cause Analysis) conference is presented quarterly.

9. Antimicrobial Stewardship Committee Meeting (BUMC-T Wednesdays 12:00 pm). The antimicrobial stewardship committee meets weekly to review antibiotic usage and assess current interventions to promote stewardship.

10. ID Transplant Morning Report (BUMC-T every other Wednesday at 8:00 am). The ID Transplant team presents and discusses current ID Transplant cases.

11. Abdominal transplant multidisciplinary patient meeting (BUMCT daily 12 pm) Fellows on ID transplant are recommended to attend this meeting, except on clinic days in order to discuss the care of their patients with all members of the transplant team.

Research and Scholarly Activities

The Division of Infectious Diseases is dedicated to maintaining an environment of inquiry and engagement in research and scholarly activity is an integral part of the ID training program. Fellows are required to be involved in their own investigations under the supervision of a qualified mentor, who may be but is not necessarily a member of the ID division. Research design and study implementation are addressed as part of this activity. Each fellow is expected to select a research mentor (or mentors) who will support them over the 2-year program, to generate meaningful scholarly activity such as:

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

The division will provide technical support for all fellows for their research in terms of research design and statistical analysis. In addition, each fellow will be provided support to attend one meeting annually if they have an abstract accepted for presentation at the meeting.

Training in Medical Education

The fellow will have considerable experience in medical education. The fellow has ample opportunity to observe teaching by ID and other faculty at the University including presentation and use of visual aids. 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 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 with the ACGME parameters.
2. Semiannual written evaluations, reviewed by the Clinical Competency 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.
5. Faculty observation while on inpatient and outpatient rotations; and
6. Other reviewers including patients, peers, and non-physician medical staff.

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 approximately every seven months 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 Evaluation Committee, which includes at least one Infectious Disease Fellow, meets annually to review the program. The committee actively participates in: planning, developing, implementing, and evaluating educational activities of the program; reviewing and making recommendations for revision of competency-based curriculum goals and objectives; addressing areas of non-compliance with ACGME standards; and reviewing the program annually using evaluations of

faculty, fellows, and others. The PEC must prepare a written plan of action to document initiatives to improve performance. 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 by the PEC, 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 that 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 are 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 (these examples are not exhaustive).

Throughout training, it is expected that trainees attend scheduled meetings with the program director. These meetings are designed to improve communications, to assess whether there are stressors that can be removed or addressed, and to prevent the conditions that could lead to burn-out. If the fellow feels like they are burning out, or if faculty observe signs of burn-out, it must be brought up to the Program Director. 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 service 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) 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.

4. 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

In addition, fellows must demonstrate knowledge of the following:

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 urea plasma, rickettsioses, bacteria including spirochetes, 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
30. Knowledge of the scientific method of problem solving and evidence-based decision making
31. Indications, contraindications, limitations, complications, techniques, and interpretation of results of diagnostic and therapeutic procedures integral to the discipline including the appropriate indications for and use of screening tests/procedures.
32. Mechanisms of action and adverse reactions of antimicrobial agents, antimicrobial and antiviral resistance, drug-drug interactions between antimicrobial agents and other compounds.

33. The appropriate use and management of antimicrobial agents in a variety of clinical settings, including the hospital, ambulatory practice, non-acute-care units, and the home.
34. Appropriate procedures for specimen collection relevant to infectious disease, including but not limited to bronchoscopy, thoracentesis, arthrocentesis, lumbar puncture and aspiration of abscess cavities.
35. Principles of prophylaxis and immunoprophylaxis to enhance resistance to infection.
36. Characteristics, use, and complications of antiretroviral agents, mechanisms and clinical significance of viral resistance to antiretroviral agents, and recognition and management of opportunistic infections in patients with HIV/AIDS.
37. Antimicrobial stewardship principles and practices.
38. Infection control and hospital epidemiology.

5. 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 to 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. Culture and non-culture 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 Microbiological diagnosis, e.g., PCR and gene probes, and
    d. 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.

6. Faculty and Personnel Contact Information

Mailing address:

The University of Arizona College of Medicine
Division of Infectious Diseases, Department of Medicine
1501 N Campbell Ave., PO Box 245039
Tucson, AZ 85724
Phone (520) 626-6887
Fax (520) 626-5183

The ID office is in Room 6410 of the College of Medicine, University of Arizona Health Science Center:

KEY CLINICAL FACULTY

Name	Phone	Email Address
Elizabeth Connick, MD Division Chief ID Fellowship Program Director	626-6887	connicke@arizona.edu
Lori Fantry, MD, MPH Associate Clinical Division Chief	626-6887	lfantry@arizona.edu
Stephen A. Klotz, MD	626-6887	sklotz@arizona.edu
John Galgiani, MD	626-4968	spherule@arizona.edu
Tirdad Zangeneh, DO	626-6887	tzangeneh@arizona.edu
Fariba Donovan, MD, PhD	626-0725	faribadonovan@arizona.edu
Justin Hayes, MD	626-2532	justinhayes@arizona.edu
Mohanad Al Obaidi, MD	626-5268	mohanad.al-obaidi@bannerhealth.com
Matthew Adams, DO	626-9501	mdadams4@arizona.edu
Danielle Avila, MD	626-1618	danielledavila@arizona.edu
D. Alex Perry, MD, MPH	626-7856	daperry@arizona.edu
Desiree Golden, MSN, RN, FNP-C, AAHIVS	626-4895	genevieve.golden@bannerhealth.com
Southern Arizona VA Healthcare System		
Chinh Nguyen, MD	792-1450 ext 6186	chinh.nguyen@va.gov
Brentin Roller, DO	792-1450 ext 4325	blroller@gmail.com
Division Staff		
Carolyn Bothwell, ID Fellowship Program Coordinator	626-6405	cbothwell@arizona.edu
Monique Murillo, Banner, Clinical Division Sr. Manager	626-5836	malissa.murillo@bannerhealth.com
Stephanie Abalos	626-6887	stephanie.abalos@bannerhealth.com
Rachel Lyman	621-0190	rlyman@arizona.edu
HIV Program		
Stephen A. Klotz, MD, Medical Director	626-6887	sklotz@deptofmed.arizona.edu
Alyssa Guido, MPH, Program Director	626-0723	alyssa1@deptofmed.arizona.edu
Andrea Verdin, MSW, Program Manager	626-5114	awverdin@deptofmed.arizona.edu
Cesar Egurrola, Program Manager	626-2446	cegurrola@deptofmed.arizona.edu
Jai Smith, Lead Medical Case Manager	626-4196	jais@deptofmed.arizona.edu

PAETC Arizona		
Lori Fantry, MD, MPH, Medical Director	626-6887	lfantry@deptofmed.arizona.edu
Alyssa Guido, MPH. Program Director	626-0723	alyssa1@deptofmed.arizona.edu
Brittany Nigon, MPH, Program Manager	626-7635	bmnigon@deptofmed.arizona.edu
Valley Fever Center for Excellence		
John Galgiani, MD	626-4968	spherule@arizona.edu
Fariba Donovan, MD, PhD	626-0725	faribadonovan@arizona.edu
Division of Pediatric ID		
Ziad Shehab, MD, Division Chief	626-6507	zshehab@email.arizona.edu
Kareem Shehab, MD	626-6507	kshehab@peds.arizona.edu
Nathan Price, MD	626-6507	pricen@email.arizona.edu
Pharmacy (Faculty and Clinical)		
Kathryn Matthias, PharmD	626-4352	matthias@pharmacy.arizona.edu
David Nix, PharmD	626-4814	nix@pharmacy.arizona.edu
Juan Villanueva, PharmD	626-5764	villanueva@pharmacy.arizona.edu
Connie Chan, Pharm D, Dir. Clin. Oper.	626-2575	connie87@deptofmed.arizona.edu
Kristen Ellis, PharmD, Clinical Pharmacist	626-2882	keeaz220@deptofmed.arizona.edu
Larry York, PharmD, Clinical Pharmacist	626-7450	lyork@deptofmed.arizona.edu
Director of Microbiology Laboratory		
William Lainhart, PhD	694-7867	wlainhart@email.arizona.edu
Joint Appointments		
Kathryn Ellingson, PhD	626-3118	kellingson@arizona.edu
Purnima Madhivanan, MBBS, PhD, MPH	621-5730	pmadhivanan@arizona.edu
Refugee Clinic		
Lori Fantry, MD, MPH, Director	626-6887	lfantry@arizona.edu
Emeritus and Adjunct Faculty		
Carlos Perez-Velez, MD, Clin Fac TB Expert		
Anita Koshy, MD, Neurology		akoshy@bio5.org
James McAuley, MD, Clin Dir Wht. Mtn. Hosp		James.McAuley@ihs.gov
Neil Ampel, MD		
Robert Kalinske, MD		
William Martone, MD		
Gordon Trenholme, MD		
Pima County Health Department		
Main	243-7797	
TB Clinic	243-8450	
STD Clinic (Phillip Merkel)	694-8271	
Hospital Infection Prevention		
Brandie Beuthin, RN, BSN, MPH, CIC	694-2623	brandie.anderson@bannerhealth.com
Nathan Price, MD	626-6507	pricen@email.arizona.edu

7. Job Description for Infectious Diseases Fellows

The schedule for the first year of ID fellowship will consist of:

- 36 weeks of in-patient consultations at BUMC-T, and SAVAHCS
- 12 weeks of research or elective time
- 4 weeks of vacation

The second year of ID fellowship will be designed according to the fellow's career interest. The schedule for fellows who wish to pursue a purely clinical career will be like that of a first-year fellow. The schedule for ID fellows interested in a research career will include up to 24 weeks of research time.

Job description for 1st and 2nd year fellows:

Inpatient consultations for patients with known or suspected infections are expected to be performed in a timely fashion, generally within 24 hours of the request. An attending physician is usually present on site while these consultations are occurring, and always available by telephone. 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.

All fellows are expected to see patients in an outpatient continuity clinic at least one half-day per week on average, providing care for patients with HIV, patients being managed through the outpatient parenteral antibiotic treatment program, and patients with 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 8 follow-up patients or 4 new patients.

Attendance and participation at the weekly conferences including didactic lectures, ID Grand Rounds, journal club, and case conferences is mandatory. Attendance at the biweekly Transplant ID case conference, weekly Medical Grand Rounds and weekly meetings of the Antimicrobial Stewardship Committee is encouraged.

All fellows are expected to participate 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 concerning their research 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 at least two 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, infections in transplant patients or patients with malignancies, 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, one research lecture, and one Root Cause Analysis.
- 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.
- Complete the SHEA course in hospital epidemiology.

8. Descriptions and Competency-Based Learning Objectives for Each Activity

Clinical Rotations

1. Inpatient Consultation Services at BUMC-T Main Campus, and SAVAHCS

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, and which patients require a formal note in the chart. The fellow or resident is expected to have seen and examined all established patients prior to attending rounds. The fellow assigns new consultations to the residents and students, supervises their workups 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.

<u>New Consults</u>

The fellow holding the new consult pager makes decision as to the distribution of the new consults. New consults must be distributed in a timely manner in order to ensure they are seen and evaluated without significant delay. If there is conflict over distribution of new consults between the fellows, the attendings will make the decision. In general, consults should be seen the same day the consult is requested. Decisions to defer a consult to the next day must be discussed with the attending physician. Fellows and residents are expected to interview and examine their patients and present them to the attending.

<u>Weekend Expectations:</u>

- Weekend attendings must communicate with the weekend fellows on Friday regarding the patients they are expected to see and the timing of rounds for the next day.
- New consults are staffed with the weekend attending. The back-up attending will round on their established patients with the fellow(s) covering the back-up attending's team
- Established patients are to be seen by the fellows and staffed with the appropriate attending
- Fellows should have seen all of the established patients and have completed rounds with the back-up attending no later than 10:30 am.

Transplant Patients should be seen by only one fellow on the weekends.

<u>Documentation</u>

In all initial consult notes the following needs to be documented

- Reason for the consult
- Name of attending who requested the consult
- Full HPI
  - Past Medical History
  - Past Surgical History
  - Family history
  - Social history
  - Medication

- Allergies
- 10-point review of systems
- Physical Exam
- Laboratory studies and imaging
- Assessment
- Plan
- Sign note with: Name, credentials (MD.DO, MBBS, etc.)
  Infectious Disease Fellow, PGY#.

Fellows are expected to develop their own assessment and plan that will be augmented after discussion with the attending. All review of culture data, radiology and physical exam documentation is expected to be done on date of the note. A more thorough medical decision-making documentation should be considered on more complicated patients.

Sign off note – The final sign-off note from ID should provide a brief summary of the patient's course from an ID perspective, especially if the patient is not following up with the fellow or attending who saw the patient when they were admitted.

Learners
It is expected all fellows will know the patients on their team, including those who are followed by a resident or medical student. Fellows should distribute patients to learners in consultation with the attending.

Medical Students
- The fellow must see the patients followed by the medical students with the student in order to attest the note of the medical student. Otherwise, the fellow will need to write a separate note for the attending to attest or the medical student will need to interview and examine the patient with the attending.
- A fellow may attest a medical student note so long as they were present during the visit for the interview and performed the exam on the patient. The fellow should review the note and correct or modify any part that differs from their own assessment. They should attest the medical student's note before sending it to the attending with the following:

  I, the fellow was present with the medical student during the visit. I personally performed an exam, made the assessment, and developed the care plan (e.g. medical decision making), as documented above. I have reviewed and edited the student's documentation and agree with the student's findings.

Residents
Residents can see consult patients independently of the fellow and can write notes without the attestation of the fellow.

Teaching expectations should be established by the attendings, fellows, and other learners at the beginning of the rotation.

Recommendations
- Preliminary recommendations may be given if they will expedite care and are discussed with the attending.

- Recommendations should be relayed verbally thereby providing the team who requested the consult the opportunity to ask questions or clarify recommendations. The thought process underlying recommendations should be explained. **Never rely exclusively on a written note in the EHR to convey recommendations.** Medical students should never convey recommendations from the teams. Fellows and residents may communicate recommendations according to attending expectations.

On call from Home
- The fellow on call from home covers both the general and transplant ID services.
- Fellows should call the general ID or transplant ID attending to discuss patients and formulate a plan if needed.
- If a team is asking for specific ID recommendations, these cases need to be formally documented and staffed with an attending.

"Curb-side" consultations are not permitted. The fellow must not engage in medical decision making for patients they have not personally evaluated. Multiple 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. If a request is placed for a "curb-side" consultation, the fellow should suggest a formal consultation. Fellows are expected to ask the attending physician for help to navigate these situations. This rule is not to stifle open discussion about infectious diseases or comparing opinions about best management practices. The rule of thumb regarding what constitutes a curbside question and what is just "talk" is this: If a management decision or plan is being discussed for a specific patient, then it is a curbside consult and should not be done.

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. 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 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 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. 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.
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 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 a 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; 3) participate in identifying systems errors and in implementing potential system solutions; and 4) be able to arrange outpatient antibiotic therapy (OPAT) and transition patients from inpatient to outpatient antibiotic therapy.

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 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 daily 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.

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, In-Basket Management, and Continuity Clinics

Each trainee attends at least one half-day in the BUMC-T Main Campus or BUMC-T South Campus, and/or VA adult ambulatory Infectious Diseases Clinics each week throughout the training program**.** These outpatient clinics 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. Fellows' continuity clinics at Banner are cancelled when they are on service at the VA or on vacation.

In-Basket Management

1) Fellows are expected to check their Cerner in-basket at a minimum once daily EXCEPT when they are on vacation or at a meeting or out of town for some other reason. Even when at the VA, fellows are expected to check the Cerner in-basket daily.
2) When a fellow sees patients in clinic and orders labs, they should follow up on those labs rapidly. The patient is the fellow's responsibility first, and the clinic attending is the back up.

3) When the fellow is out of town or on vacation, they are not expected to check their Cerner in-basket but SHOULD sign out the in-basket to someone else. In general, this will be the clinic attending, but if the attending is out of town, then it may be someone else.

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 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 inter-professional 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. Clinical Microbiology

This rotation takes place in the clinical microbiology laboratory at BUMC-T. The fellow will be assigned a 2-week block in the laboratory in the first two months of fellowship. On assigned days, the fellow is expected to report to the laboratory at the time specified by the Microbiology Laboratory Director (usually 7 or 7:30 a.m.) and stay until about 4 p.m. The fellow will observe and participate in processing of microbiology specimens and microbiologic tests involving bacteriology, virology, mycology, mycobacteriology and serology. At the end of the rotation, the fellow will be expected to give a presentation regarding some aspect of microbiological techniques in the diagnosis of infectious diseases. The Microbiology Laboratory Director is responsible for determining the curriculum, in consultation with the ID Fellowship Program Director and the Laboratory Director and communicating expectations to the fellow.

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.

4. Electives

- Valley Fever
- Transplant ID
- Pediatric ID
- Antimicrobial Stewardship
- Infection Prevention
- Private Practice ID
- Community HIV
- Viral Hepatitis

- NJH (National Jewish Health in Denver) Mycobacteria
- MD Anderson – ID Transplant Rotation
- Mentored Research Elective – This elective is designed to formally extend the time available for research, while providing elective time for scholarly activity. **To participate in a Mentored Research Elective, notify your mentor and the fellowship coordinator.** Fellows are expected to be physically present at the hospital while doing this work, unless the fellow and mentor have jointly agreed that it is appropriate for the work to be done at home. Mentors provide a formal review of the fellow's performance at the end of the elective time and indicate if the fellow was productive.

General Expectations of Elective Time:

1) Many electives require arrangements be made several weeks to months ahead of the elective time. You must indicate to the Fellowship Coordinator at least two weeks in advance how you will spend your elective time, or your will be reassigned to a clinical activity.
2) Fellows are expected to be engaged in their chosen elective activity for a minimum of eight hours per day on average. Fellows are expected to record the real amount of time that they spend on this activity in New Innovations.
3) Fellows are expected to attend ALL didactic sessions and their clinics during the elective time with the following exceptions:
    a. If the fellow is on an elective that is out of town:
    b. If the private practice elective has asked that you not attend didactic sessions. (You are only required to attend your clinic and Friday case conference while on private practice elective.)
    c. Additional circumstances may arise, which you must discuss with the program director.
4) Elective time may be increased for an individual who is highly research-oriented and has a specific project that requires additional time.
5) Elective time may be decreased if an individual needs more clinical training or is primarily clinically focused.
6) Elective time may be reduced if any individual does not follow the guidelines above or is unproductive during their elective time.
7) Elective time is not restricted to the structure of two-week blocks, but may be organized as the fellows wish, pending approval from the program director. Please communicate your wishes to the fellow who is drafting the schedule at the beginning of the year. If the schedule is already established, you are welcome to switch clinical and elective time among yourselves as long as it does not result in duty hour violations and the ID Fellowship Director approves it.
8) Conferences or Meetings: You may use your elective time to attend an educational conference or meeting. The most frequent example of this is ID Week. Other meetings may be considered as well, such as the TB course at National Jewish Hospital, ACP, CROI, etc. If you have a first author abstract accepted at the meeting, the ID Division will cover your registration, travel and expenses for one such meeting per year. Attendance at a conference is contingent on good clinical performance and approval of the ID Fellowship Director. Additionally, months prior planning is needed to make all arrangements. Please communicate your plans with the Fellowship Coordinator.

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 fellows in discussion with the attending. 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. On a quarterly basis, a morbidity and mortality case conference will be conducted instead of the case conference.

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.
5) Learn how to conduct root cause analyses.

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 presents an article from the literature, which may be a clinical trial, observational or cohort study, or systematic review. The fellow also identifies a faculty member to discuss the article with beforehand and provide backup during the presentation. The fellow is expected to have read the article carefully and to have done relevant background reading to understand the context of the article. The fellowship coordinator will 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 5 hours monthly. This includes 4 lectures at BUMC-T and one at SAVAHCS. 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 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 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. Attendance is required except when on vacation or with permission from the Program Director.
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 is incorporated into the semiannual evaluation.

5. Cocci Case Conference

Cocci Case Conference is held on the second Tuesday of every month at BUMC-T.

Learning Objectives:

Medical Knowledge

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

Interpersonal and Communication Skills

1) Learn to informally discuss and present cases in a collaborative group setting

Practice-Based Learning and Improvement

1) Learn to manage patients with coccidioidomycosis in a 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 is incorporated into the semiannual evaluation.

Research Rotations

Each fellow participates in clinical and/or basic research for 3 or more months of the 24-month training period. The experience allows fellows to work one-on-one with a faculty member who serves as a mentor for the trainee. Each fellow is given the 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 analytic 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.

9. 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, Douglas, and Bennett's Principles and Practice of Infectious Diseases: 2-Volume Set 9th Edition. Elsevier; 2019.
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: https://streaming.biocom.arizona.edu/streaming/channels
  - For all COM – Tucson Grand Rounds, see: **http://streaming.biocom.arizona.edu**

- 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

10. 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. Moonlighting hours are included in duty hours, and moonlighting should not be performed if it will result in duty hour violations.

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.

11. 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 fellowship program, and clinical note writing at home.
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 8 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 fellowship 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.
    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 4week period.
    3) When fellows are called into the hospital from home, the hours fellows spend inhouse are counted toward the 80-hour limit.

Oversight

a. Fellows are required to enter their duty hours into New Innovations. Duty hours will be monitored by the Fellowship Coordinator and Program Director.
b. If a fellow is at risk of violating duty hours, or is fatigued and unable to perform, they should immediately notify their attending so that appropriate interventions can be performed. These include: the attending taking on some of the fellow's duties, requesting another attending or fellow to assist in providing care, and triaging patients.

Moonlighting

a. Internal/External Moonlighting 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 offices 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 the responsible attending according to their abilities and skills.
        - *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.

12. 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. 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, edited, 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. 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. Fellows are expected to notify the attending in the event of an unexpected deterioration in a patient’s status.

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

13. Vacation Policy

1. The vacation policy is based on Banner Health and ACGME policies.
2. All fellows receive four weeks of vacation.
3. Fellows may take vacation at any time, provided it is cleared with their attending physician for the rotation and the Program Director.
4. 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.
5. 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.
6. When a fellow takes vacation during a consultation rotation another fellow on elective may be asked to step in to 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.

14. Sick Policy

1. If you are sick, do not come to work. Notify your attending, program director, and program coordinator that you are sick and staying home.
2. A fellow on elective will be asked to cover your work.
3. Fellows are allowed up to five days of sick time per year. After those days are used, elective days will be deducted for the time away from work.

15. Mentors

Fellows are asked to select one career mentor, and at least one research mentor.

The role of the career mentor is to act as an advisor and sounding board for career discussions and to serve as the fellow's advocate. Fellows should meet with multiple ID faculty members during the first month of their fellowship, select a career mentor, and then report their selection to the program director. Career mentorship is separate from research mentorship, although they may be carried out by the same person.

The research mentor(s) are advisors and/or collaborators in research that interests the fellow. A research mentor may be, but is not necessarily, a member of the ID faculty. Fellows should review our Research Mentor Guide at the beginning of each fellowship year and should meet with multiple faculty members before they select their research mentor(s). Fellows must report their selection of research mentor(s) to the program director and program coordinator. The program director must approve of the mentor selection.

16. Additional Instructions for Professionalism and Effectiveness

1. **Everyone should check their Cerner mailbox every day at least once** EXCEPT when you are on vacation or at a meeting or out of town for some other reason. This means, when you are in town and on elective or at the VA, you should still check your box and respond to questions related to patients who you are involved with.
2. **When you are out of town or on vacation you are not expected to check your box, but you SHOULD sign out your box** to someone else. In general, this will be your clinic attending, but if the attending is out of town, then it may be someone else.
3. When you see patients in clinic and order labs, you should follow up on those labs rapidly. The patient is your responsibility first, and the clinic attending is the back up.
4. If you saw a patient in the hospital, even if you have signed off, you should still respond when someone emails via Cerner with questions.
5. Please, make certain that your clinic is really cancelled when you are on vacation or out of town. Also, if you switch around a clinic, please make sure that it truly is open. Sometimes mistakes are made, and it is very hard on the patients and others if patients show up and you are not there, or if you go to clinic and there are no patients scheduled for you.

17. Methods for Fellows to Address Concerns

1. Attending evaluations in New Innovations include a box to check to share confidential concerns with the Program Director.
2. Speak to the Program Director personally. Your conversation will be kept confidential within the policies of the Office of Graduate Medical Education.
3. Share comments at the Department of Medicine link. https://medicine.arizona.edu/education/professionalism/professional-conduct-comment .
4. Contact the GME office directly at 626-6691.