Core Curriculum

Infectious Diseases and International Medicine Fellowship (IDIM)

University of Minnesota

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Overall Goals of the Infectious Diseases and International Medicine Fellowship Program

The overriding goal of the Infectious Diseases and International Medicine Fellowship program is to provide excellent training in the practice and science of Infectious Diseases and in Infectious Diseases-related research skills through mentored relationships involving progressive independence for the fellow. The following specific components contribute to this goal.

1) Identify the fellow’s individual short- and long-term professional goals and interests.
2) Provide effective training, feedback, and support for the trainee.
3) Provide a structured learning experience that will enable the trainee to:
4) Develop clinical and intellectual expertise in and experience with the diagnosis and management of infectious diseases in the inpatient and outpatient setting.
5) Develop an independent, thoughtful, organized, and flexible approach to the evaluation of patients with a range of symptoms and signs that suggest the presence of an infectious disease.
6) Develop and enhance life-long learning skills that allow the trainee to adapt to the changing spectrum of infectious diseases and their changing management, including changes in the health care system and associated technologies.
7) Learn the professional and interpersonal skills required for effective communication to the primary care team of conclusions and recommendations for diagnosis and patient management.
8) Assure that all professional interactions with patients and colleagues are performed with respect for self and others and with the highest ethical and intellectual standards.
9) Develop effective teaching skills for students, residents, and colleagues.
10) Recognize and respond to both psychosocial and economic factors that impact on patient care.
11) Develop expertise in the design, performance, analysis, and communication of scholarly activities, involving clinical, epidemiological, and/or basic science investigation.
Overall Objectives of the Infectious Diseases Fellowship for Fellows

With the advice and support of faculty, the fellow should:

1) **Define his/her individual goals**, make these goals known to the Program Director in regular meetings, and assure that the program helps the fellow meet these goals successfully.

2) **Perform consultation on a broad spectrum of hospitalized patients with infectious diseases**, including patients with HIV infection, elderly patients, immunocompromised patients (e.g. with cancer, neutropenia, solid organ and stem cell transplant recipients), surgical patients, complicated general medical patients, indigent and privately-insured patients, and immigrants.

3) **Evaluate a broad spectrum of outpatients with infectious diseases**, including those with HIV infection, tuberculosis, sexually transmitted diseases, immigrants, and patients with chronic infections, and provide follow-up of patients seen in the inpatient setting.

4) **Perform longitudinal primary care for a cohort of HIV-infected patients for at least 24 months in a continuity clinic.**

5) **Participate in a Journal Club** with colleagues on a monthly basis to evaluate the current medical literature.

6) With skilled and experienced senior staff, **observe and develop effective consultative skills** for the efficient evaluation of patients referred for infectious disease consultation, learning how to **communicate with referring physicians and other members of the health-care team**, and **coordinating responsibilities and information with the patient’s primary care physician** in order to ensure uninterrupted patient care.

7) **Learn to recognize and avoid potential conflicts of interest and self-interested behavior** as they relate to patient care and professional interactions.

8) **Learn to speak and write effectively** by regularly giving well-planned lectures and discussions to colleagues and by writing manuscripts for publication.

9) Recognize the **appropriateness and acceptability of recommendations** on actual patient care and the **financial feasibility** of such recommendations for the patient and care conditions.

10) **Develop an independent research program** with the guidance and support of one or more faculty members. **Perform and complete the project, and present and publish results in peer-review journals.**

11) **Seek and respond effectively to feedback and advice.**

12) **Provide feedback** regarding the fellowship program and the faculty members.

13) Through participation in Infection Control committee activities and other experiences, develop an understanding of and demonstrate **competency at systems-based practice.**

14) Develop an understanding of and demonstrate **competency at practice-based learning.**
Fellowship Schedule

Clinical Requirement
The Fellowship requires 12 clinical training months in the first 24 months of a 24-48 month fellowship experience. This clinical training is provided as a mixture of inpatient clinical training, outpatient clinical training, and training in clinical microbiology.

Inpatient
Inpatient clinical training (10 months total in years 1 and 2) is provided on inpatient I.D. consult service rotations of 1-3 months duration, distributed among 4 hospitals, i.e. University of Minnesota Medical Center (UMMC), Hennepin County Medical Center (HCMC), the Veterans Affairs Medical Center (VAMC), and Abbott-Northwestern Hospital (ANWH).

Outpatient
Outpatient training is provided in three settings.
- Some inpatient rotations include a weekly half-day ambulatory clinic at the particular hospital.
- During the first month, each fellow has a one-month ambulatory care rotation involving some combination of the Infectious Diseases and HIV clinics at the three hospitals, the TB and STD clinics at HCMC, private Hepatitis C, Infectious Diseases, and HIV clinics, a pediatric infectious diseases clinic at a local children’s hospital, and International/Travelers’ clinics at Regions Hospital.
- Each fellow has a weekly half-day continuity clinic at UMMC, HCMC, VAMC, Regions Hospital, or Clinic 42, which continues for the duration of the fellowship.

Clinical Microbiology
One month of Clinical Microbiology training is provided at the clinical microbiology laboratories at the VAMC (3-4 weeks) and HCMC (1 week).

Infection control and antibiotic subcommittees
Fellows are automatically considered members of the Infection Control Committee and Antimicrobial Subcommittee at the hospital where they are rotating on the consult service (consult and clinical microbiology rotations) or are based for research (research rotations). First-year fellows on research rotations, and all second and third-year fellows, are expected (Infection Control) or encouraged (Antimicrobial) to attend all committee meetings and to participate in committee functions. First-year fellows on clinical rotations are welcome to participate as their clinical responsibilities allow, but are not required to do so.

Conferences and Seminars
1) Weekly Inter-hospital Infectious Diseases Conference is held at the VAMC (Tuesdays, 7:30-8:30 AM). The first conference each month is a state-of-the-art lecture on a relevant I.D. topic or a presentation from the Emerging Infections Program of the Minnesota Department of Health (3-4 times annually). The remaining conferences are devoted to clinical case presentations, which are presented as unknowns, followed by a succinct review of the relevant literature and discussion of salient points raised by the case.

2) I.D. Research Conference, which serves both as a basic science conference and research conference, is held every Tuesday at 12:00 in the McGuire Translational Research Facility (MTRF) and sponsored by the Center for Infectious Diseases & Microbiological Translational research (CIDMTR). Faculty presenters ("ID/Micro" lectures) alternate on a weekly basis with trainee ("Work in progress") presenters. ID fellows present toward the end of the academic
First-year fellows on research rotations, and all second and third-year fellows, are expected to attend (or to view via webcast) the "ID/Micro" lectures, and the fellow presentations. First-year fellows on clinical rotations are welcome to attend/view as their clinical responsibilities allow, but are not required to do so.

3) **Fellow’s journal club meets twice monthly (1st and 3rd Tuesday, 8:30-9:30 AM)** for an in-depth review of one or more recent I.D. papers from the medical literature.

4) **Fellows Core lecture series meets approximately twice monthly (Tuesdays, 8:00-10:00 AM)**, rotating among the three academic hospitals. These lectures are presented by faculty members to the fellows in a seminar-like setting and cover a broad range of core I.D. topics over an approximately two-year cycle.

5) **Tropical and Travel Medicine Seminars are held every 1-2 months, 6:00-9:00 PM (days vary) at the Shriner's Hospital for Children.** These seminars include a combination of state-of-the-art lectures on current topics in tropical and travel medicine, global updates on emerging infections and epidemic disease trends, case presentations, and travelogues from individuals (including medical students and residents) who have had international medicine experiences in diverse locales and settings.

6) **Fellows HIV Core Curriculum seminars are held approximately quarterly,** usually in the late afternoon. Speakers (local or visiting) present state-of-the-art lectures and question-answer sessions for fellows on current issues in HIV/AIDS epidemiology, immunopathogenesis, diagnosis, prevention, and clinical management.

7) **DOM Summer Research and Career Development Workshop** is coordinated by the Department of Medicine for fellows and residents from all divisions within the Department. These half day seminars cover 11 core topics (grant writing, critical review of the literature, ethics, health care delivery systems, prevention, statistics, medical/legal issues, physician as communicator, research design, professional and personal development, and cost containment/QA/QI) in three morning-long sessions in July, 2011. This is repeated every summer. Fellows are expected to attend each session at least once during their fellowship (remember to make arrangements to be gone from your rotation/clinical duties that half day).

8) Specific formal Infectious Diseases conferences (e.g. NCCIDSA, Emerging Infections, ICAAC, and IDSA) and lectures (Spink and Wannamaker lectures) are also held several times per year, as outlined in the conference schedule.

9) **Department of Medicine Research Conference, Medicine Grand Rounds, and General Medicine core lectures are held weekly at each site.** Attendance by fellows is encouraged.

10) Other clinical and basic science conferences are noted in each hospital’s summary.

11) **Grant writing seminars** are offered by various groups within the University several times annually. Fellows are encouraged to participate in one of these, in consultation with their research mentor.

Masters programs through the School of Public Health

Fellows whose research training (years 2-3) is supported by the division's NIH-funded training grant (see below) and who do not already have a Master of Public Health degree may, during years 2-3, if approved by their research mentor, the fellowship program director, and the principal investigator of the training grant, take relevant coursework through the University of Minnesota School of Public Health. Because of the substantial time commitment and cost of the two relevant degree programs, i.e., the Master of Public Health (MPH) in Epidemiology and Master of Science in Clinical Research, selected individual courses (e.g., epidemiology and biostatistics) rather than a full
degree program may be preferable. This coursework must be integrated with the fellow's other research training efforts, in coordination with the fellow's research mentor.

Academic Research track versus Clinician-Scholar track

The program offers both an academic research track (36-48 months) and a clinician-scholar track (24 months).

1. The academic research track is designed to prepare fellows for a successful research-focused career involving competitive research funding at the national level. The research undertaken during fellowship can be clinical, epidemiological, or laboratory based, or a combination of these. Fellows supported by the division's NIH training grant will be in this track. Highly motivated fellows may wish to pursue a 4th year of fellowship for advanced research training, while seeking Career Development grant funding (from NIH, VA, or CDC) to support post-fellowship mentored research, in preparation for an independent investigative career. Support for a 4th year must be arranged by the fellow and his/her research mentor. Possible sources include investigator funds, the VA Clinical Chief Resident positions, or an individual NRSA award.

2. The clinician-scholar track is designed to prepare fellows for an academic career involving education, scholarship, quality improvement efforts, clinical care, and/or administration, with or without a clinical or epidemiological research component. The second year of fellowship comprises additional clinical enrichment training (including a combination of inpatient consult months, clinical microbiology, ambulatory care experiences, antimicrobial stewardship, etc.), and scholarly activity such as clinical research (e.g. case reports, case series, and literature reviews), educator development, medical informatics, patient safety, etc. Currently, research in the second year is supported by the VAMC; as such research in the second year will be VA based.

Calendar: Academic Research track

Year 1: 10 months clinical training (including 8 months inpatient consults, one month ambulatory care block, one month clinical microbiology), 2 months structured research time. The fellow selects a mentor and research project by mid-year, assembles and meets with research committee and initiates the research project by end of year. A weekly continuity clinic is maintained throughout. Meet semiannually with Scholarship Oversight Committee (SOC--see subsequent section) and program director.

Year 2: 10 months structured research time, 2 months inpatient consult rotations. Meet 1-2 times with research committee. A weekly continuity clinic is maintained throughout. Case presentations at the Inter-hospital Clinical Conference are expected. There are optional research presentations at local/national meetings. There is a required research presentation at the CIDMTR Research Conference in the spring. School of Public Health coursework is optional. Meet semiannually with SOC and program director.

Year 3: 12 months structured research time (academic track fellows) to complete research project. Meet 1-2 times with research committee. A weekly continuity clinic is maintained throughout (optional but recommended). Case presentations at the Inter-hospital Clinical Conference are expected. There are optional research presentations at local/national meetings. There is a required research presentation at the CIDMTR Research Conference in the spring. School of Public Health coursework is optional. Prepare for I.D. board examination, job search. Meet semiannually with SOC and program director.
Year 4: (optional): same as year 3.

Calendar: Clinician-Scholar track

Year 1: **10 months clinical training** (including 8 months inpatient consults, one month ambulatory care block, one month clinical microbiology), **2 months structured research time**. Fellow selects a mentor and a VA-based research project by mid-year and initiates research project by end of year. A weekly continuity clinic is maintained throughout. Meet semiannually with SOC and program director.

Year 2: **4-8 months clinical rotations, 4-8 months scholarly activity**. Clinical rotations include 2 inpatient consult months (to complete the required 12 months of clinical training), plus additional elective inpatient or outpatient months corresponding with fellow's interest areas. Fellows continue and complete their research project under the direction of the research mentor. A weekly continuity clinic is maintained throughout. Case presentations at the Inter-hospital Clinical Conference are expected. There are optional research presentations at local/national meetings. There is a required research presentation at the CIDMTR Research Conference in the spring. Meet semiannually with SOC and program director.
Specific Curriculum Content

A. Clinical care
Fellows gain expertise in the following areas by clinical and lecture formats at selected sites in the program, as summarized below.

<table>
<thead>
<tr>
<th>Topic</th>
<th>Modality</th>
<th>Location*</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Patients</td>
<td>Lecture</td>
</tr>
<tr>
<td>Febrile patient (including FUO)</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Upper respiratory infection</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Pleuropulmonary infection</td>
<td>X</td>
<td>X</td>
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<tr>
<td>-COPD</td>
<td></td>
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<tr>
<td>-cystic fibrosis</td>
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<td></td>
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<tr>
<td>Urinary tract infections</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Peritonitis/abdominal infection</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Cardiovascular infections</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Central nervous system</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Skin/soft tissue infections</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Trauma, burns, bites</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Gastrointestinal/foodborne</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Bone and joint</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Reproductive organs</td>
<td>X</td>
<td>X</td>
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<tr>
<td>STDs</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Ocular infections</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Viral hepatitis</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Sepsis syndromes</td>
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<td>X</td>
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<tr>
<td>Nosocomial infections</td>
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<td>X</td>
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<tr>
<td>HIV/AIDS</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Immunocompromised host</td>
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<td>X</td>
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<tr>
<td>Leukemia/lymphoma</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Stem cell transplant</td>
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<td>X</td>
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<tr>
<td>Solid organ transplant</td>
<td>X</td>
<td>X</td>
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<tr>
<td>-renal</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>-lung, pancreas, heart, bowel</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Geriatric patients</td>
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<td>X</td>
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<tr>
<td>-long term care</td>
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<tr>
<td>Travelers</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Parenteral drug users</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Parasitology</td>
<td>X</td>
<td>X</td>
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<tr>
<td>Pediatric patients</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Surgical infections</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

* UMMC, University of Minnesota Medical Center; VAMC, Veterans Affairs Medical Center; HCMC, Hennepin County Medical Center; Regions, Regions Hospital; ANW, Abbott Northwestern Hospital; ambulatory, ambulatory block rotation and continuity clinic
Areas of Special Emphasis

The infectious disease subspecialty training program at the University of Minnesota is designed to provide the subspecialty fellow with outstanding training and experience in all the clinical areas cited above. Graduating fellows should be able to competently evaluate and appropriately, safely, and cost-effectively direct management and treatment of most common problems in these areas. Particular expertise should be developed in the special emphasis areas listed below.

1. **HIV/AIDS.** The evaluation and management of patients with HIV/AIDS. Training is multidimensional. Inpatient management is routine at all four hospitals (UMMC, HCMC, VAMC, and ANWH). These consultations focus on management of acute and serious complications of HIV disease, such as *Pneumocystis jiroveci* pneumonia, bacterial sepsis syndromes (e.g. pneumococcal, *S. aureus*, *P. aeruginosa*), and acute neurologic deficits (e.g. cerebral toxoplasmosis and lymphoma or cryptococcal meningitis).

   The emphasis of training is on high-quality and efficient outpatient management of HIV-infected patients. This training takes place primarily at UMMC and HCMC, under the direction of full-time academic clinicians. Fellows have the option of exposure to private HIV care at the Infectious Disease Clinic at Abbott Northwestern Hospital (formerly known as Clinic 42) or to the care of HIV infected veterans at the VAMC’s HIV clinic. Management focuses on prevention of secondary transmissions of HIV, carefully monitored and appropriate antiretroviral therapy, appropriate prophylactic therapy to avoid secondary infections, diagnosis and management of infections in the outpatient setting, and psychosocial issues. At most of these centers, fellows are welcome to participate in ongoing clinical trials or to evaluate quality control in approaches to patient management.

   Each fellow begins a longitudinal clinic one half-day per week from the beginning of the fellowship and extending through the research period (≥ 24 months). Case discussions in clinic, regular lectures in the training program, and attendance at national meetings add further depth to the fellows' competence in the crucial area of HIV/AIDS medicine.

2. **Clinical Microbiology.** A dedicated one-month rotation is provided, directed by John Holter (VAMC) and Dr. Glen Hansen (HCMC). Three to four weeks are spent at the VAMC and one week at HCMC to learn the basics of the evaluation of bacterial disease (blood cultures, sputum, fluids, urine, wounds), plus mycology, parasitology, virology, molecular diagnostics, and mycobacteriology. This training is supplemented with lectures and clinical microbiology rounds, which are held one or more times per week on clinical rounds at each hospital.

3. **Mycobacterial disease.** During the rotation at HCMC, fellows participate in the Hennepin County Public Health/TB clinic to learn current methods of antimicrobial selection and delivery (e.g. directly observed therapy), as well as logistic issues related to management of TB. The clinic follows a large cohort of East Africans, who have among the highest rates of infection and reactivation in the U.S. Emphasis is placed on understanding the principles of evaluation and management of positive TSTs and IGRA in a range of hosts. Inpatients with TB are seen primarily at HCMC (particularly immigrants) and the VAMC (particularly the elderly).

   Atypical mycobacterial disease is evaluated in each HIV clinic (disseminated disease) and at the VAMC (local pulmonary disease). Diagnostic methods for mycobacteria, particularly TB, are reviewed during the Microbiology month.
4. **Immunocompromised Hosts. HIV.** As noted above, HIV-infected patients comprise a significant, but not dominant, component of the clinical training at each hospital. Fellows receive ample training in this area. **Neutropenic patients.** Patients undergoing chemotherapy for a range of tumor types are seen primarily at UMMC and VAMC. Understanding appropriate diagnostic methods, approaches to empiric and specific therapy, and management of these patients over time is a priority for the trainee. **Bone marrow (stem cell) transplant patients,** both autologous and allogeneic, are seen primarily at UMMC, which has a large and successful unit. Fellows may spend additional time rounding with the transplant team and may use the transplant database for clinical summaries of quality assessment projects (e.g. efficacy of various antimicrobial prophylaxis regimens). **Solid organ transplant patients** are seen routinely at UMMC (heart, lung, pancreas, and kidney), HCMC (kidney), VAMC (kidney), and ANW (kidney, heart).

5. **Infection Control/Epidemiology.** Principles of Universal Body Substance Precautions are introduced during clinical rounds. Specific control measures for control of respiratory infections (particularly TB and varicella) and resistant organisms (particularly methicillin-resistant S. *aureus* [MRSA] and vancomycin-resistant enterococci and multidrug-resistant Gram-negative bacilli) are provided through the hospital epidemiology program at each hospital. Participation in the Infection Control Committee at each hospital is required at the fellow's base hospital during research years. A formal course in the Epidemiology of Infectious Diseases has been available to the fellows every other year through the School of Public Health. For fellows with a particular interest in the area, the **Society of Hospital Epidemiologists of America (SHEA) annual course on hospital epidemiology is available.** In addition, an epidemiological perspective is integral to most case discussions in determining potential etiologies and most likely initial therapies for patients with unidentified infections. Fellows receive four presentations annually at the Inter-hospital I.D. Conference from the Emerging Infections Program of the (nationally recognized) Minnesota Department of Health. These presentations address current public health epidemiology issues such as bioterrorism preparation, the West Nile virus epidemic, emerging animal infections of human health significance, the foot-and-mouth disease and variant Creutzfeld-Jacob disease epidemics, etc. These presentations address the infection control and prevention aspects of these problems.

6. **Anti-infective Therapy.** Fellows are instructed in the mechanisms and spectrum of action of a range of antimicrobial agents, as well as untoward reactions to these agents. Rates of resistance for common organisms are identified for each hospital based on local susceptibility data, as are drug costs. Fellows are directed to consider these data in selecting appropriate initial therapy. Mechanisms of resistance and rates in other parts of the country and world are discussed on rounds and at formal conferences (e.g. NCCIDSA conference and Emerging Infections conference). The use of these agents in different patient groups and in various settings (e.g. in- vs. outpatient, and home intravenous therapy) is an important part of clinical training.


B. Research. An integral component of the fellow's training and experience is the selection, development, performance, and completion of a primary research project. The goal of this component differs for fellows in the academic research track versus in the clinician-scholar track:

1. **Academic Research track**: develop skills for independent research and/or insightful analysis of experimental results, both clinical/epidemiological and basic, to produce effective, productive, and successful investigators in the field of infectious diseases.

2. **Clinician-Scholar track**: develop an appreciation for the critical elements of biomedical research and scholarly writing, to produce effective, productive, and successful educators and scholars in the field of infectious diseases.

All fellows are expected to acquire familiarity with general research-related disciplines such as study design, biostatistics and data analysis, to differing depths depending on their track (academic research versus clinician-scholar). For fellows in the academic research track, those who have a laboratory research focus are expected to acquire a detailed fund of knowledge and mastery of essential experimental laboratory techniques in a specific content area sufficient to enable them to pursue a career in laboratory-based infectious disease research. Likewise, those who have an epidemiological/clinical research focus are expected to acquire a detailed fund of knowledge and mastery of essential epidemiological/clinical research techniques plus familiarity with a specific content area sufficient to enable them to pursue a career in epidemiological/clinical infectious disease research. Academic research track fellows can be supported through the division's NIH-funded training grant (see below), and may request tuition support for relevant coursework in biostatistics and epidemiology through the School of Public Health.

Regardless of which track fellows are in (academic research or clinician-scholar), to select a research project fellows meet with various faculty members during the first 6 months of the program to discuss options. The fellow's thoughts and goals are discussed throughout the process with the Program Director. By the end of December of the first year, the fellow should have selected both a faculty mentor and a research project. The project may be clinical (e.g. therapeutic trials), epidemiological (e.g. outcomes research, natural history, or epidemiology of disease), translational (e.g., laboratory correlates or predictors of clinical outcomes) or laboratory-based (e.g. microbiology, immunology, pharmacology, cell biology, biochemistry). Two months of dedicated research time at the VAMC are scheduled within the first year, during which the fellow's only clinical obligations are the continuity clinic and a general ID clinic. This allows adequate preparation by the fellow (and, possibly, host laboratory or research program) for full-scale initiation of the project by or before the start of the second year. Fellows are directed to choose a specific area with well-defined hypotheses, objectives, and end-points. Mentors are chosen on the basis of the projects proposed, funding, productivity, and ability to teach and support the fellow. For fellows in the academic research track, the program provides 24-36 months of uninterrupted protected time, other than continuity clinic, to foster successful and productive research and investigator development, whereas for fellows in the clinician-scholar track up to 10 months in the 2nd year are available primarily for scholarly activity. Currently, research in the second year for the Clinical-Scholar track is supported by the VAMC; as such research in the second year will be VA based. For additional detail, please see supplemental document "Roles and Responsibilities of Faculty Mentors, Research Committee Members, and Fellows".

Research expertise is developed primarily within the faculty mentor's research program or laboratory or, for fellows with a strong career interest in epidemiological or clinical research and who are
supported by the division's NIH training grant, through course work within the School of Public Health. Collaborations with other investigators in the areas of molecular medicine, microbiology, public health, ecology, veterinary medicine, food science, immunology, genetics, cell biology, nutrition, or health outcomes research are encouraged.

Fellows are taught the principles and specifics of grant writing and manuscript preparation by their mentor(s) as an essential component of their training, and have the option of taking one of several short grant-writing courses offered by the University. Fellows are directly supervised by their scientific mentors.

Additional faculty members are selected to assist with the fellow's research project, as the fellow's research committee. Central oversight of each fellow's academic progress is provided by the Scholarship Oversight Committee (see subsequent section for additional details).

**Fellows are expected to present at least one paper at ID Research Conference and at a regional or national scientific meeting. They also should submit one or more manuscripts for publication in a peer-reviewed journal, preferably in time to have one accepted for publication before the end of fellowship.**

**NIH Training Program: Infectious Diseases Training in Clinical Investigation**

Because of the increased need for Infectious Diseases Clinical Investigators to address the growing crisis of "Emerging and Re-emerging Infections," the Departments of Internal Medicine and Pediatrics at the University of Minnesota Medical School offer a training track for fellows interested in acquiring skills in the areas of clinical epidemiology and clinical trials research. This multidisciplinary, NIH-supported T32 Training Program draws upon a large number of University of Minnesota faculty members (from within the Infectious Diseases and International Medicine division, Departments of Pediatrics and Microbiology, School of Public Health, School of Pharmacy, Dental School, Veterinary School, and Center for Infectious Diseases Policy and Research) and colleagues at the Minnesota Department of Health. Fellows entering this two-year training track will generally be second year fellows who have completed a clinical year of adult or pediatric Infectious Diseases training. In addition to working with a primary mentor and a research advisory committee on a research project(s) related to an Emerging Infectious Diseases topic (see list of training areas below), many fellows opt to take courses within the School of Public Health that are applicable to a Master of Public Health (MPH) in Epidemiology degree (for fellows interested primarily in epidemiology-focused research) or a Master of Science (MS) degree in Clinical Research (for fellows interested in clinical trials or other clinically-based research). Selection of a Primary Mentor is encouraged early in the first year of clinical training.

**Topic areas covered by ID training grant:**

- HIV/AIDS
- Zoonoses
- Invasive Bacterial Infections
- Immunodeficiency-Vaccines
- Antimicrobial Resistance
- International and Immigrant Health
- Bioterrorism
- Foodborne Infections

**Research Standards and Ethics**

Independent of the type of research project chosen, the highest intellectual and ethical standards must be utilized in hypothesis development, experimental design, data acquisition, and statistical
analysis. The fellow should be aware of and comply with all rules of scientific integrity and responsible conduct of research, including compliance with the institutional protection of animal and human rights (IRB, IACUC), integrity in the collection and recording of data, integrity in the interpretation of data, integrity of authorship and publication, all in accord with the Nuremberg code, Helsinki declaration and Belmont Report. Web-based information regarding these documents, principles, and organizations are available at the "Fostering Integrity in Research, Scholarship, and Teaching" (FIRST) site (http://cflegacy.research.umn.edu/first/).

Scientific misconduct and fraud must be considered in terms of possible self-deception, fabrication, falsification, or plagiarism, and conflicts of interest in scientist-scientist relationships and scientist-industry relationships. These issues are covered in the "Ethics" lecture within the Core Curriculum series that is required for all fellows, and in training modules available at the FIRST site.

Fellows whose research involves human subjects can satisfy the National Institutes of Health's requirements for training in these issues by completing the training modules available at the Collaborative Institutional Training Initiative (CITI) site (https://www.citiprogram.org/Default.asp?) or the Protecting Human Research Participants site (http://phrp.nihtraining.com/users/login.php) provided by the NIH.

**Infectious Diseases Fellow Core Lectures**

The Core Lectures are required for all fellows and over a two year cycle cover the didactic requirements for the fellowship program. Below is the list of lectures.

**Format: Topic – Speaker – Institution – Academic year the lecture was last given**

Organ Systems:

2. Lower Respiratory Infections –Thurn – VA – 10/11
5. GI infections/diarrhea—Peterson – U – 11/12
7. Sepsis/Line Infections —Kline – U- 10/11
10. UTI –Johnson – VA – 10/11
11. Trauma/burn infections –Williams – HCMC – 10/11
12. STIs—DeVries – MDH – not yet given

Patient Populations:

1. Approach to fever/FUO –Filice- VA – 10/11
2. Infections in Immunocompromised hosts –Morrison – VA – 10/11
3. Transplant ID-Solid Organ— Young/Green – 10/11
4. Transplant ID-BMT – Young/Green – 10/11
5. Transplant ID #3 – topic in process – Young/Green – not yet given
6. Tropical Medicine: 1 hour in person, additional online lectures – Stauffer – U – not yet given

Specific Pathogens
1. Tuberculosis – Tsukayama – HCMC – 10/11
2. Hepatitis A and B – Coleman Smith – U – not yet given
3. HCV – Schwebke – HCMC – 11/12
5. Tick-borne illnesses – Lynfield – MDH – 11/12
7. HIV-ARTs – Henry – HCMC – not yet given
9. HIV-OIs – Ron Schut – HCMC – not yet given
11. HIV Primary Care – Jason Baker – HCMC – not yet given
12. HIV-IRIS – Boulware – U-11/12
13. Herpesviruses – Cavert – U – 11/12

Antibiotic Therapy
1. Lab testing for Resistance – Glen Hanson – HCMC – 10/11
2. Overview of antimicrobial agents – Williams – HCMC -10/11

Broad Topics
1. Health disparities – Okuyemi – U – not yet given
2. Epidemiology of Infectious Diseases – Lifson – U - not yet given
3. Quality control – Clinical quality associate chair – U – not yet given
4. Infection Control/Nosocomial infections – Kline – U – 10/11
5. Immunology 1: Primary immune deficiencies – Schleiss? – not yet given

Total: 45
INPATIENT ROTATIONS: GOALS, OBJECTIVES, & EXPECTATIONS FOR FELLOWS

I. Goals and Objectives:
A primary goal of the inpatient rotations is educational, i.e. for the fellow to learn more about the practice and science of infectious diseases. This is accomplished through the following:

A. **Patients (on the inpatient service and in I.D. Clinic) with infectious disease problems.**
   A primary source of learning for the fellow is his/her experience with patients being seen by the Infectious Diseases consult service or in the I.D. Clinic, and the teaching the fellow receives from the infectious disease attendings. The fellow should work up and/or see patients with a variety of infectious disease problems. The fellow should also see outpatients and discuss these patients with the I.D. attending in the clinic.

B. **Lectures and conferences.** Required internal conferences include the weekly Inter-hospital Infectious Diseases Clinical Conference, biweekly I.D.-Microbiology Research Conference (for 2nd and 3rd-year fellows, and 1st-year fellows on research rotations), fellows core lecture series, and fellows journal club (as listed elsewhere). Other lectures and conferences specific to each hospital are as listed in the Program Description part B addendum and below under each hospital separately.

C. **Reading and self-study.** The fellow’s reading should center on patients seen as part of the consult and outpatient services. In addition to general medical and infectious disease textbooks, and clinical practice guidelines (available at www.idsociety.org), which will serve as primary resources, the I.D. staff may recommend additional articles and references. Fellows are expected to independently search the literature to identify publications relevant to their patients’ problems and to share this information with their consult team. When reading about a particular problem, fellows should use this as an opportunity to read more generally about the broader topic area. During the first month of fellowship, fellows are expected to complete one module of the Global Health Course; access to all of the modules is available for self study.

II. Core Topics:
In addition to patient-specific topics, fellows should read extensively about the following twelve I.D. core topics:

1. Antimicrobial Use and Resistance (principles and practice)
2. HIV/AIDS
3. Approach to Immunocompromised Patients
4. Fever
5. Infective Endocarditis
6. Pneumonia (including TB)
7. Gastroenteritis
8. Skin, Soft Tissue and Bone Infections
9. Urinary Tract Infections
10. Central Nervous System Infections
11. Infection Control
12. Sexually Transmitted Disease (non-HIV)
Most of these topics will be discussed in the context of patients being seen in clinic or on the consultation service. References dealing with specific aspects of these topics will be provided by the I.D. attending staff and should be sought by the fellow through literature searches and review of clinical practice guidelines (www.id society.org).

III. Inpatient Consultations and Outpatient Interactions:
The fellow’s primary responsibility and educational activity will be related to inpatient consultations and patients evaluated in the hospital's I.D. Clinic. In the consultative role, the fellow will serve as a liaison between the Infectious Diseases Service and the physician teams asking for I.D. input. The goal of the I.D. consult service is to provide both excellent education and excellent patient care.

A. Consult Team. The fellow is part of an Infectious Diseases Consult team. An infectious disease attending is always assigned to the inpatient consult service. The Consult Team may include one or more medicine residents, medical students, and/or pharmacists in training.

B. Patient Care Responsibilities. If the fellow is assigned a patient, he/she should contact the primary team to clarify the question, perform a history and physical examination and review pertinent laboratory data, imaging studies, and other relevant information. As part of the initial work-up, the fellow should consider his/her assessment and proposed plan, which will be discussed and finalized at attending rounds. After the patient is presented, the fellow will contact the primary team again to discuss the ID team's assessment and recommendations, and write a consult note in the patient’s chart.

If the fellow conducts an initial inpatient work-up, he/she is expected to follow the patient, unless the fellow and attending agree otherwise. This means being familiar with what is happening with the patient each day, in terms of both clinical status and laboratory/diagnostic studies. The fellow will write additional follow-up progress notes, as appropriate.

C. Workload. The fellow’s activities will involve a combination of service and training. He/she will be expected to follow a greater number of patients than residents or students on the team, and/or to supervise and instruct the students or residents on the team in the follow-up and management of their assigned patients. The fellow should be familiar with all the patients followed by the consult service, regardless of which team member is following them primarily. As noted above, the goal of the I.D. consult service is to provide both excellent patient care and excellent education. If the fellow feels that one of these goals is being sacrificed for the other, this should be discussed with the attending.

D. Getting started. On the first day of the rotation the fellow should report to the Infectious Diseases Office at the assigned hospital. The I.D. secretary will orient the fellow to the rotation, including the learning objectives, the weekly schedule, the attending, others on the team, and the assigned time and place for rounds. The fellow should then contact the attending for instructions regarding the specific operations of the clinical service.

E. Microbiology. As part of their inpatient rotations, fellows should seek to learn more about microbiology, including (but not limited to) the following:

- Basic information as to how specific organisms are identified and categorized (e.g., Gram stain; major tests to differentiate within Gram-positive and Gram-negatives, etc.)
- What tests are used to diagnose different infectious diseases, what specimens to submit, and how long it takes for results to come back
• How to interpret results from the microbiology lab (including antibiotic sensitivities) and how these tests should affect clinical management

An important venue for fellows to learn about the microbiology of the infections of the patients followed by the I.D. consult team is “microbiology rounds”, which are held one or more times per week at each hospital.

F. Ethical and Respectful Conduct. It is expected that all students, residents, faculty, and especially patients be treated with dignity, respectfully and with professionalism. Abuse of any kind, including verbal abuse, is unacceptable, and should be reported immediately to head of Infectious Diseases at the particular hospital or the Program Director or Division Director.

IV. Feedback:
The inpatient rotations should be educational and enjoyable for fellows. Feedback in both directions is necessary to make this experience worthwhile. Fellows should receive feedback from the attending on their presentations, write-ups, and patient follow-up. At the midpoint of the rotation, the fellow and attending should sit down to discuss how the rotation is going. This would include time for the fellow to provide feedback to the attending on whether his/her educational needs are being met. A more formal evaluation will also take place at the end of the rotation. Fellows are asked to let the faculty know what works and what needs to be improved.

In addition, if fellows have concerns about lack of teaching, excessive workload, or other significant problems with the rotation, they should do not wait until the rotation is half over, but should promptly discuss these concerns with the attending. If the fellow feels that the attending is not concerned about or responsive to the fellow’s concerns, they should be brought to the attention of the head of Infectious Diseases at the particular hospital or the Program Director or Division Director.

V. General expectations for fellows on inpatient rotations:
The fellow should:
1) Assume a responsible role in organizing and running the clinical service.
2) Have a primary teaching role on the consult service.
3) Develop an independent evaluation of each patient.
4) Identify specific syndromes most prevalent at each hospital and develop expertise in these areas.
5) Gain expertise in principles and practice of infection control procedures.
6) Gain expertise in outpatient management of infectious diseases.
7) Reinforce microbiology skills during the rotation.
8) Develop effective skills for communicating successfully with all clinical services to gain confidence and experience as a consultant.

VI. Specific expectations for fellows on inpatient rotations:
The fellow should:
1) Be the supervisor and organizer of the consult team, consisting usually of a medicine resident and one or two 3rd or 4th-year medical students.
2) Review cases with the residents and students prior to rounds to highlight relevant points and provide an initial direction for related literature evaluation. The fellow should also present a case from the month at the I.D. Inter-hospital Conference to expand his/her I.D. knowledge base and presentation/communication skills.
3) Generate his/her own approach to the patient and a preliminary plan prior to discussion with the attending.

4) Develop expertise in the recognition, diagnosis, management, and prevention of specific infectious diseases or syndromes that are prevalent at the particular hospital.

For UMMC these would include conventional and opportunistic infections in stem cell or solid organ transplant recipients and patient with other forms of endogenous or medical immunosuppression (including HIV/AIDS), hospital-acquired fevers of unknown origin, infections in university students, infections associated with implanted devices, and pulmonary infections in patients with advanced cystic fibrosis.

For the VAMC these would include diabetic foot ulcers, recalcitrant pneumonias, chronic osteomyelitis, acute and subacute bacterial endocarditis, catheter-associated infections, infected orthopedic implants, infections in patients with solid tumors and CLL, surgical wound infections, fevers of non-infectious origin, infections in the elderly with atypical presentations (e.g. diverticulitis, cholecystitis, dental abscess), infections with *Staphylococcus aureus* (including MRSA), and nosocomial infections.

For HCMC these would include infections in trauma and burn victims, infected orthopedic implants, infections in homeless and immigrant or refugee populations, parasitic diseases, tuberculosis, HIV/AIDS-associated infections, and endemic mycoses.

For ANWH these would include the types of infectious diseases encountered by a private ID consultant in a private urban tertiary care medical center such as post surgical infections (orthopedic, neurologic, cardiovascular, general, colorectal), infectious endocarditis, sepsis, respiratory tract infections, infections in spinal cord injury patients, and complex skin and soft tissue infections.

The fellow should:

5) Attend monthly Infection Control meetings (during years 2-3) and discuss current issues with the Infection Control practitioners.

6) Provide follow-up in the Infectious Diseases Clinic for patients seen in consultation in hospital, and review the mechanisms of evaluation, discharge, and management of patients on home antimicrobial therapy.

7) Routinely personally review microbiology results on their patients in the clinical microbiology laboratory and review the Gram stain slide sets and/or self-teaching clinical microbiology CD-ROMs that are available at each hospital.

8) Assure that all consulting services receive a rapid and clear response to their patient management question and that the recommendations are understood.
ROTATION DESCRIPTIONS AND ROTATION-SPECIFIC OBJECTIVES

University of Minnesota Medical Center (UMMC)

UMMC is a 520-bed tertiary care and referral center that opened in April 1986. The complex is located on the campus of the University of Minnesota. Infections in the immunocompromised host are seen with particular frequency because of the large oncology services and the number of patients receiving organ transplants (stem cell, kidney, liver, heart, lung, bowel, and pancreas). However, the hospital has an active Emergency Department through which patients with a variety of problems are admitted. Undergraduate and graduate students of the University are also referred frequently for admission by the Boynton Student Health Center.

Other special features of the hospital include: an outpatient clinic in which organ transplant recipients are followed post-hospitalization until their infectious disease problems have resolved and patients with HIV/AIDS are followed and enrolled in clinical trials. The adult Infectious Diseases section works closely in clinical activity and in research with these services. Fellows rotate on both the general ID service and the transplant ID service (minimum, 1 month each). An optional 3rd clinical month at UMMC can involve either one (or a combination of) these services; 2 weeks of one of these services plus 2 weeks of activity with the Antimicrobial Management Team; or the Pediatric ID consult service, which includes 2 weeks of activity with the Antimicrobial Management Team.

UMMC rotation-specific objectives:

General and Transplant ID: At UMMC fellows will develop familiarity with the epidemiology, pathogenesis, diagnosis, prevention, and treatment of infectious diseases frequently encountered at UMMC as outlined above. Particularly emphasized are opportunistic infections in stem cell or solid organ transplant recipients and patients with other forms of endogenous or medical immunosuppression (including HIV/AIDS), hospital-acquired fevers of unknown origin, infections in university students, infections associated with implanted devices, and pulmonary infections in patients with advanced cystic fibrosis.

Pediatric ID: During their UMMC Pediatric ID rotation, fellows will accomplish the following goals and objectives:

1. Gain familiarity with the clinical entities most frequently encountered by a Pediatric Infectious Diseases consultant.
2. Identify which of these entities are specific to children or present differently in children than in adults, and describe the differences in presentation in children versus adults.
3. Gain familiarity with the usual approaches used to evaluate and manage pediatric patients with these disorders, and describe how these approaches resemble or differ from those used with adult infectious disease patients.
4. Become knowledgeable about pharmacological principles of management of infectious diseases in children. What antimicrobials have a unique niche in pediatric care compared to adult infectious diseases care? Which antimicrobials used in adult care are relatively contraindicated in children?
5. Be familiar with immunization recommendations for routine childhood vaccines. Compare and contrast goals of immunization in children and adult patients.
6. Compare major classes of pathogenic microorganisms in pediatric infectious diseases patients with adult infectious diseases patients. What bacterial and viral infections are relatively unique to
pediatric patients? Name the most common bacterial and viral agents most commonly responsible for infectious diseases inpatient and outpatient infectious diseases in children. Be familiar with the pathogenesis of common pediatric infectious diseases and how it compares and contrasts with adult patients.

Antimicrobial Management Team (AMT): Fellows rotating on the AMT will:
- gain an understanding of the rationale for having an AMT;
- become knowledgeable regarding alternative (or complementary) approaches that can be used to optimize antimicrobial use in a hospital or health care system, and their respective strengths and weaknesses;
- practice strategies for efficient and effective implementation of an AMT; and
- become familiar with the impact of an AMT on systems-based practice.

UMMC Staff

I.D. Faculty:

Medicine:  
Paul Bohjanen, M.D., Ph.D. (Interim Director, IDIM Division)  
Timothy Schacker, M.D. (Director, Delaware St. Clinic)  
Susan Kline, M.D. (Director, Infection Control and Education)  
David Boulware, M.D., M.P.H.  
Winston Cavert, M.D.  
Jamie Green, M.D.  
Edwin Pereira, M.D.  
Phillip Peterson, M.D.  
Bryan Rock, M.D. (Director, ID Fellowship Program)  
Meghan Rothenberger, M.D.  
Lee Sabath, M.D.  
William Stauffer, M.D., M.P.H.  
David Strike, M.D.  
Jo-Anne Young, M.D.  
Daniel Zydowicz, M.D.

Pediatrics:  
Mark Schleiss, M.D., Director  
Patricia Ferrieri, M.D.  
Jin Young Han, M.D.  
Cynthia Howard, M.D.  
Chandy John, M.D., M.S.  
Edward Kaplan, M.D.  
Warren Regelman, M.D.  
Mark Robien, M.D.  
Sing Sing Way, M.D.

Fellowship Coordinator:  Jo Belvedere, Office phone: (612) 626-9943; fax (612) 625-4410

Clinical Microbiology Laboratory:  Patricia Ferrieri, M.D., Director
Infection Control Department: Susan Kline, M.D., Director

UMMC I.D. Schedule*

**Consultation Rounds will begin in the microbiology laboratory.**

<table>
<thead>
<tr>
<th>Day</th>
<th>Time</th>
<th>Event</th>
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<tbody>
<tr>
<td>Monday</td>
<td>1:30 pm</td>
<td>Consultation Rounds**</td>
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<tr>
<td>Tuesday</td>
<td>7:30 am</td>
<td>Inter-hospital I.D. Clinical Conference (VAMC)</td>
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<tr>
<td></td>
<td>9:00-11:00 am</td>
<td>Fellows Core lectures (rotating sites: Tuesdays)</td>
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<td></td>
<td>12:00 pm</td>
<td>I.D. Research Conference (CIDMTR-MTRF)</td>
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<tr>
<td></td>
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<td>HIV Core Curriculum (UMMC, quarterly)</td>
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<tr>
<td>Thursday</td>
<td>1:30 pm</td>
<td>Consultation Rounds**</td>
</tr>
<tr>
<td>Friday</td>
<td>7:30 am</td>
<td>Infection Control Committee (3rd Friday; Bridges)</td>
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<td></td>
<td>7:30 am</td>
<td>Antimicrobial Subcomm. (2nd Fri. of Jan/Apr/Jul/Oct, Bridges)</td>
</tr>
<tr>
<td></td>
<td>1:30 pm</td>
<td>Consultation Rounds**</td>
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* Fellows are also encouraged to attend the Morbidity and Mortality Conference, Medicine Research Conference, Microbiology and Immunology Seminar series, Microbiology or Immunology journal clubs, Pediatric I.D. Conference, and Medicine Grand Rounds: see details below

** Each day consultation rounds will begin in the microbiology laboratory.

UMMC conferences: The Department of Medicine posts the weekly conference schedule on their website at: [http://www.med.umn.edu/dom/wcs/home.html](http://www.med.umn.edu/dom/wcs/home.html). It’s best to check this weekly for updates and changes to regularly scheduled conference.

- **Immunology Journal Club**
  - Mondays 9:00-10:00 AM
  - 6-101 BSBE

- Medicine Research Conference
  - Mondays 12:00-1:00 PM
  - 450 CCRB

- Microbiology Journal Club
  - Wednesdays 12:00-1:00 PM
  - 1450 Mayo

- Microbiology and Immunology Seminars
  - Wednesdays 12:00-1:00 PM

- Mayo Todd Amphitheatre
  - Medicine Grand Rounds
  - Thursdays 12:00-1:00 PM

- Pediatric I.D. Conference
  - Thursdays 12:00-1:00 PM
  - 13-204 PWB

- Morbidity & Mortality Conference
  - Fridays 12:00-1:00 PM
  - 2-650 Moos Tower

VA Medical Center (VAMC)

The **VAMC** is a 300 bed acute medical-surgical hospital that is also a tertiary referral center for the VA in the six-state area. The hospital is clinically active in areas of renal transplantation, hematology-
oncology, and general medicine and surgery, which provide a constant source of interesting and challenging problems for infectious disease consultation. The infectious diseases section works closely with the clinical microbiology laboratory at the VAMC. In addition to the 2-4 new infectious diseases consultations each day, the infectious diseases section is supplied by the clinical microbiology laboratory with a daily list of all positive blood and body fluid (ascites, joint, pleural fluids, CSF) cultures as well as all systemic fungi, viruses, mycobacteria, parasites, and unusual bacteria isolated or identified. The infectious diseases section follows up with the housestaff on these patients and frequently generates additional new infectious disease consultations as a result. The microbiology laboratory also provides practical "hands-on" training to infectious diseases fellows and residents in mycology, parasitology and general bacteriology on a rotating basis throughout the year. Infection control is an integral component of the VA experience.

**VAMC rotation-specific objectives:** At the VAMC fellows will develop familiarity with the epidemiology, pathogenesis, diagnosis, prevention, and treatment of infectious diseases frequently encountered in the VAMC patient population as outlined above, particularly diabetic foot ulcers, recalcitrant pneumonias, chronic osteomyelitis, acute and subacute bacterial endocarditis, catheter-associated infections, infected orthopedic implants, infections in patients with solid tumors and CLL, surgical wound infections, fevers of non-infectious origin, infections in the elderly with atypical presentations (e.g. diverticulitis, cholecystitis, dental abscess), infections with *S. aureus* (including MRSA), and nosocomial infections.

**VAMC Staff**

I.D. Faculty:  **Gregory Filice,** M.D., Director  **Kent Crossley,** M.D.  **Dimitri Drekonja,** M.D.  **James R. Johnson,** M.D. (Senior Associate Director, ID Fellowship Program)  **Anjum Kaka,** M.D. (Primary Care Service; attends on ID consult service)  **Vicki Morrison,** M.D.  **Joseph Thurn,** M.D., M.P.H. (Director, MRTC Clinic & Infection Control Dept.)

Secretary:  **Kathleen Brown,** Office phone: (612) 467-4185; fax: (612) 727-5995

Clinical Microbiology Laboratory:  John Holter, Supervisor

**VAMC I.D. Schedule***

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<td></td>
<td>1:30 pm</td>
<td>Consultation Rounds** (resident to MRTC clinic)</td>
</tr>
<tr>
<td>Wednesday</td>
<td>8:00 am</td>
<td>Fellows lectures (rotating sites: Wednesdays)</td>
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<td>Thursday</td>
<td>11:00 am</td>
<td>Infection Control Committee (4th Thu, Dir’s Conf. Rm)</td>
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</tbody>
</table>
11:00 am  Antimicrobial Subcommittee (2nd Thu, room TBA)
1:30 pm  Consultation Rounds** (start in laboratory)

Friday:  8:30-12:00 am  I.D. Clinic (3D)
1:30pm  Consultation Rounds**

* Fellows are also encouraged to attend the House Staff noon conferences, Morbidity and Mortality Conference, Medicine Research Conference, Medicine Biology Journal Club, and Grand Rounds: see details below

** The time of I.D. Consultation rounds will be set by the attending and will vary. On Thursdays rounds will begin in the microbiology laboratory

VAMC Conferences
Morbidity and Mortality Conference
Wednesdays 12:00-1:00 PM  Medicine Grand Rounds
3B-108  Fridays 12:00-1:00 PM

Research Conference/Journal Club
Thursdays 12:00-1:00 PM 1st Floor Auditorium

Hennepin County Medical Center (HCMC)

HCMC is a 430 bed general hospital in downtown Minneapolis. The client population comprises indigent as well as privately insured patients. Infectious disease problems include those that are common in refugee/immigrant populations (e.g., extrapulmonary tuberculosis, neurocysticercosis, and malaria), injection drug users, (e.g., infective endocarditis) and the elderly. The HCMC HIV Clinic is the largest in the state of Minnesota (over 1000 patients), and the HIV clinical research program is an area of special emphasis for the ID Division. There is also ongoing interest in musculoskeletal infections and in infections in patients in the Critical Care Unit. The regional Sexually Transmitted Disease and Tuberculosis Clinics are located near HCMC and are directed by (STD) or in close coordination with (TB) the Infectious Diseases Service. The clinical infectious diseases fellowship at HCMC will provide experience in all of these areas.

HCMC rotation-specific objectives: At HCMC fellows will develop familiarity with the epidemiology, pathogenesis, diagnosis, prevention, and treatment of infectious diseases frequently encountered in the HCMC patient population as outlined above, particularly infections in trauma and burn victims, infected orthopedic implants, infections in homeless and immigrant populations, parasitic diseases, tuberculosis, HIV/AIDS-associated infections, and endemic mycoses.

HCMC Staff
I.D. Faculty:  Ron Schut, M.D. (Division Director)
Dean Tsukayama, M.D (Education Director)
Jason Baker, M.D.
Keith Henry, M.D.
Kay Schwebke, M.D., M.P.H.
Margaret Simpson, M.D.
David Williams, M.D.
Kathy Kuempel, N.P.
HCMC I.D. Schedule*

**Monday:** 1:30 pm The fellow should select cases from both the inpatient I.D. and the HIV outpatient service for presentation at Wednesday Pulmonary/I.D. Conference - notify Radiology

**Tuesday:**
- 7:30 am Inter-hospital I.D. Clinical Conference (VAMC)
- 10:00 am Inf. Control Committee (2nd Tues.); OL 200
- 12:30 pm Orthopedic Infectious Diseases Case Conference
- 1:30 pm Consultation Rounds**

**Wednesday:**
- 8:00 am Fellows lectures (rotating sites: Wednesdays)
- 12:00 pm Pulmonary/I.D. Case Conference (LL42) (1st and 3rd Wednesdays)
- 1:30 pm Consultation Rounds**
- 5:00 pm HIV Core Curriculum (UMMC: quarterly)

**Thursday:**
- 1:30 pm Consultation Rounds**

**Friday:**
- 1:30 pm Consultation Rounds**

* Fellows are also encouraged to attend the Medicine Research Conference, the Core Curriculum Conference, and Grand Rounds

** The time of I.D. Consultation rounds will be set by the Attending and will vary. On selected days rounds will begin in the microbiology laboratory (2nd floor, North block). Each team member will attend one half-day outpatient clinic every week. Assignments will be made at the beginning of the rotation.

HCMC Conferences
I.D. Clinical Conference Orthopedic/I.D. Case Conference
Thursdays 4:00-5:00 PM Tuesdays 12:30-1:30 PM
B515 conference room 3B Burnham Conference Room

Pulmonary/I.D. Case Conference Medicine Grand Rounds
1st and 3rd Wednesdays 12:00-1:00 PM Thursdays 12:00-1:00 PM
Lower Level 42 conference room Lower Level 42 conference room

Abbott Northwestern Hospital (ANWH)

ANWH provides care for the largest number of adult patients of any hospital in the Twin Cities metro area and has 1,300 physicians on its staff. The entire medical complex is also the largest in the Twin Cities, occupying six city blocks near downtown Minneapolis. It includes the Sister Kenny Institute for
physical rehabilitation and the adjacent Children's Hospitals and Clinics - Minneapolis facility. A 2005 major new addition created an integrated Heart Hospital and private rooms throughout the institution. A complete electronic patient record that integrates inpatient and outpatient records throughout our multi-hospital and clinic care system began in our clinics and hospital in 2004-2005. Abbott Northwestern is part of Minneapolis-based Allina Health System. Allina® is an integrated health care system comprised of physicians and hospitals serving communities throughout Minnesota, western Wisconsin, and eastern North and South Dakota. As a major affiliate of the University of Minnesota Medical School, Abbott Northwestern participates in resident and student education in Internal Medicine and at least 10 other medical specialties.

**ANWH rotation-specific objectives:** During this rotation fellows will gain experience with the infectious diseases issues encountered by infectious diseases consultants at a private tertiary care medical center (4 weeks) and by physicians in a busy private HIV-focused, research-oriented, outpatient practice (1 AM each week). They will gain familiarity with the "ins and outs" of private practice, including billing, inpatient versus outpatient care, and the diverse roles of the private academic infectious diseases and HIV/AIDS practitioner (e.g. education, hospital epidemiology, patient care, clinical research, and interactions with the hospital administration). They will learn approaches to the management of challenging HIV/AIDS problems, including treatment of multi-resistant HIV infection, in a private practice setting. They will learn how clinical research can be integrated into a clinical practice and how to establish a successful clinical research program, including utilizing a research nurse, negotiating regarding funding and salary, and interacting with the pharmaceutical industry and with relevant governmental and non-governmental entities. Emphasis will be given to whichever aspects of the educational offerings are most appropriate for the individual fellow’s interests and career plans.

**ANWH Staff**

ID Faculty:  [Daniel Anderson](#), MD (Rotation Director)
Alison Bormann, MD
[Neelay Kothari](#), MD
[Frank Rhame](#), MD (Clinic 42, The Doctors)
[Steve Sonnesyn](#), MD

Infectious Diseases Consultants: office phone 952-746-8360
Manager, Clinic 42: Mary Mitchell: office phone: 612-775-5402

**ANWH Conferences**

House Staff Teaching Conferences  Medical Grand Rounds  M/Th/F 12:15-1:15 PM  Wed. 7:30-8:30 AM  G-750 Conference Room  Watson Room (Education Building)

**Ambulatory block**

**Rotation description.** The month-long ambulatory care rotation occurs in the first month of fellowship and consists of half-day sessions at a variety of ID clinics at different institutions, including general Infectious Diseases clinics, clinics specializing in HIV care, sexually transmitted diseases (STDs), tuberculosis (TB), or hepatitis C, a pediatric infectious diseases clinic, and an International medicine/Travelers’ clinic. Through these experiences, fellows will be exposed to a wide variety of Infectious Diseases problems and clinical care situations. Additional time is allowed for completion of required Global Health Course material.
**Ambulatory block rotation-specific objectives:** During this rotation fellows will gain technical expertise in the outpatient management of diverse infectious diseases in ambulatory patients and in the administration and monitoring of home intravenous antimicrobial therapy. They will develop a more refined understanding of the strengths and limitations of outpatient clinics in the management of infectious diseases; will become familiar with diverse clinic organizational structures and individual physician practice patterns; and will participate in systems-based outpatient practice as it occurs within different health care systems. Fellows will learn about the disease entities and clinical problems they encounter in their clinic patients through self-study, using print and electronic information resources.

**Clinical Microbiology**

**Rotation description:** This one-month rotation includes 3-4 weeks at VAMC and one week at HCMC. The core of this rotation is hands-on experience in clinical bacteriology, mycology, and parasitology, by working with microbiology technicians on actual patient samples. Emphasis is placed on the practical details of processing clinical microbiological specimens and accurate interpretation of results. Mycobacteriology, virology, and molecular diagnostics are also covered. This practical experience is augmented by self-study materials available at each institution, including CD-ROMs and microbiology texts. Short lectures are also given by microbiology staff.

**Microbiology rotation-specific objectives:** Through this rotation, fellows will gain familiarity with standard diagnostic procedures used to identify the presence (and, when relevant, determine the concentration) of microorganisms in patients, including bacteria, fungi, parasites, mycobacteria, and viruses. They will learn which such tests commonly are done in hospital laboratories and which are sent out to reference laboratories; the requirements for sample collection and specimen processing for specific tests; the time required to obtain results; and the limitations of the methods used. They will gain experience with the laboratory-clinician interface, including systems for test ordering results reporting. They will develop an understanding of the various methods used to determine the susceptibility of microorganisms to antimicrobial agents and to define the concentration of antimicrobial agents in relevant body fluids of patients. They will gain familiarity with the limitations and potential pitfalls of currently used diagnostic microbiology methods.

**Continuity clinic**

**Continuity clinic-specific objectives:** Through this experience, fellows will develop a continuous healing relationship with patients for whom they provide subspecialty care. They will be responsible for four to eight patients during each half-day session. Their panel of patients will include at least 25% of patients from both genders, or they will be provided with relevant alternative didactic instruction. They will observe and learn the course of the disease(s) for which care is provided in their continuity clinic. They will provide longitudinal care (with at least 12 months of direct supervision of each patient) of at least 20 patients with HIV infection, under the direct oversight of an experienced HIV physician. They will develop proficiency in management of HIV-infected patients, including assessment of candidacy for antiretroviral therapy, selection of antiretroviral therapy (initial and salvage regimens), monitoring for efficacy, toxicity, and adherence while on antiretroviral therapy, prophylaxis against and treatment of opportunistic infections, screening for and appropriate management
of relevant co-morbid conditions (including substance use, mental illness, high-risk behaviors, and STIs), and attention to medically-relevant psychosocial and economic issues. They will learn how to effectively utilize the available support networks, medical resources, and payment systems to provide optimal cost-effective, patient-focused outpatient care for patient with HIV and other infectious diseases.

VA Research Months (Year 1 of fellowship: see also section below on Research)

Rotation description: During the two VA research months during year 1, in consultation with a VA based research mentor, fellows will design and initiate a VA-relevant clinical research project. They also will see patients Friday mornings in the VA ID clinic.

Rotation-specific objectives: Fellows will become familiar with basic principles of study design, hypothesis generation, literature review, controlled hypothesis testing, statistical analysis, and, when relevant, appropriate use of human subjects, including preparation of an application to the Institutional Review Board and creation of an Informed Consent Form.

Graded Responsibility

Fellows are assigned incrementally increasing responsibility and independence during their training appropriate for their demonstrated level of competency and professional development (as assessed by the supervising physicians), according to a three-tiered format as shown below. Specific learning objectives for each rotation, as described in a previous section of this document, are adjusted in relation to the fellow's proficiency level.

<table>
<thead>
<tr>
<th>Function/ activity</th>
<th>Level of responsibility/ independence by proficiency level*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Beginning</td>
</tr>
<tr>
<td>Clinical data collection</td>
<td>independent, with staff supplementation</td>
</tr>
<tr>
<td>Formulation of clinical assessments/ plans</td>
<td>jointly with staff</td>
</tr>
<tr>
<td>Communication of recommendations to 1st teams/ referring MDs</td>
<td>after discussion with staff</td>
</tr>
<tr>
<td>Antibiotic approvals</td>
<td>after discussion with staff</td>
</tr>
<tr>
<td>Case conference preparation</td>
<td>jointly with staff</td>
</tr>
<tr>
<td>Supervision of students/ residents</td>
<td>jointly with staff</td>
</tr>
<tr>
<td>Research</td>
<td>directed background reading, tutored skill development</td>
</tr>
</tbody>
</table>
As assessed by supervising faculty based on observation of fellow’s performance. Clinical proficiency levels correspond approximately with the first, second, and third 4-month blocks of clinical experience, but individual fellows move through the levels at different rates depending on their rate of developing the relevant competencies.
Suggested Core Reading for Fellows on Infectious Diseases Rotations

For all topic areas, see IDSA practice guidelines at www.idsociety.org.

1. **Antimicrobials/Antibacterials**

   Robinson JL, Hameed T, Carr S. Practical aspects of choosing an antibiotic for patients with a reported allergy to an antibiotic. CID 2002;35:26-31.

   The choice of antibacterial drugs. *The Medical Letter* August 20, 2001; (1111) pp. 69-78, or 2002 Handbook of Antimicrobial Therapy


   CDC. Interim guidelines for prevention and control of staphylococcal infection associated with reduced susceptibility to vancomycin. JAMA 1997;278:461-462.


2. **Antifungals**


Antivirals

2. Approach to the Immunocompromised Patient


Summary of the Guidelines for Preventing Opportunistic Infections among Hematopoietic Stem Cell Transplant Recipients Clare A. Dykewicz. Clinical Infectious Diseases 2001;33:139-44 (Also available at http://www.journals.uchicago.edu/IDSA/guidelines)

3. Central Nervous System Infections


4. Febrile Patient


5. Gastrointestinal/Abdominal Infections


6. HIV/AIDS

Guidelines for antiretroviral treatment, maternal-child transmission, post-exposure prophylaxis, management of HIV complications and testing. 
www.aidsinfo.nih.gov/guidelines/


7. Immunization


Recommended Childhood and Adolescent Immunization Schedule --- United States, January--June 2004 MMWR: Vol 53, No 01;Q-1 01/16/2004


8. Infection Control

9. Infective Endocarditis


10. **Joint and Bone Infections**


11. **Pneumonia**


12. **Sexually Transmitted Disease**


13. **Skin and Soft Tissue**


14. **Staphylococcal Infections**


Crossley, K.B., Archer, G.L (eds). The Staphylococci in human disease. [This book will be in The Resident Room bookcase or VA Library (4th FL).]

15. **Streptococcal Pharyngitis**


The Travel and Tropical Medicine Manual. Saunders. Jong and McMullen

**Articles:**


Jong E. Intestinal parasites. *Primary Care* 2002;29(4):857-878


17. **Tuberculosis**


Several useful documents at: [http://www.cdc.gov/nchstp/tb/default.htm](http://www.cdc.gov/nchstp/tb/default.htm)


18. **Urinary Tract Infections**:


19. **Vector Borne Diseases**


20. **Viral Hepatitis**


Appendix 1: Roles and Responsibilities of Faculty Mentors, Research Committee Members, and Fellows

The ID Fellowship at the U of M is a 2-to-4-year training program designed primarily for individuals interested in pursuing an academic career.

- year 1: clinical training, plus 2 mos. research or scholarly activity
- year 2: research or scholarly activity, plus 2 mos. (academic research track) or 2-4 mos. (clinician-scholar track) clinical training
- years 3-4 (academic research track only): research training

Fellows identify a Primary Research Mentor as early as possible during the year 1 (see below suggested timetable, process, and list of mentor options). During the allotted 2 months of research time in year 1, fellows will initiate their research project. The missing clinical months are then made up at the beginning of year 2.

After identifying their mentor, fellows select a Research Committee. The first Research Committee meeting should occur no later than the first research month of year 2.

The Research Committee should consist of the fellow’s mentor and at least two additional faculty members.
- At least one committee member (not necessarily the mentor) must be from the Division of Infectious Diseases and International Medicine.
- The additional committee members, who should be selected jointly by the fellow and primary mentor, provide an objective, outside perspective on the research project itself and on the fellow’s progress with it.
- Committee members, including the primary mentor, may be chosen from outside the Division of Infectious Diseases, such as from the School of Public Health, the Department of Microbiology, the Minnesota Department of Health, or another division within the Department of Medicine.
- The committee must formally approve both the initial research plan (before data collection begins) and the final research project, which should be written up for publication in a peer-reviewed journal.

The roles and responsibilities of the three main participants in the research component, i.e. (1) the fellow, (2) the mentor, and (3) the committee members, are outlined below, including specific "GOALS" for the fellows to achieve during this portion of the fellowship.

For additional details, please see also the relevant sections of the document "Part B Addendum" (fellowship description), available via the "Fellowship" link at the ID Division website (http://www.med.umn.edu/idim/fellowship/home.html).

1. Fellows:
Summer and fall of year 1: Meet with multiple faculty members (see list of mentor options below) to discuss interests, career plans, and options for mentored research.

Fellows should emphasize the following criteria when selecting a mentor:
- Strong academic "track record" (see below list of mentor options below) in:
  (1) Obtaining competitive external research grant funding
  (2) Publishing research reports in prominent peer-reviewed journals
  (3) Successful mentoring of past trainees
- Personal compatibility with fellow
- Project or area of research that is of interest to the fellow
- For research track fellows, funding support for years 2-3 (if not on the ID training grant)

**By end of fall, year 1:** Select a suitable mentor from among the available faculty members (see list of mentor options below).

**First research month, year 1:** Meet with the mentor to select and plan a project, and select a Research Committee (see above for composition of committee). Also identify a VA based mentor for a small VA based research project to be conducted during the 2 VA Research months in year 1.

**Every 6 months during years 2, 3, & 4 (depending on track):** Meet with research committee.

- **First meeting (no later than the end of the first research month in year 2):** present to the committee the plans for the project (background, aims, methods, anticipated results).
- **Interval meetings:** present an interim progress report.
- **Final meeting:** present a final summary of the project.

Receive feedback from the committee at each meeting.

Conduct the proposed research under the direction of the faculty mentor.

**Weekly during years 2, 3, & 4 (depending on track):** Meet with the mentor regularly to work on the project and future career planning. Provide the mentor with feedback regarding the research experience from the fellow’s perspective.

**Throughout:** Work with the mentor to prepare abstracts and posters for Medicine Research Day and the NCCIDSA and IDSA meetings, and manuscripts for submission. Submit at least one abstract for the NCCIDSA and IDSA meetings, and at least one manuscript to a peer-reviewed journal, in time that it can be accepted for publication during the fellowship.

**Throughout:** Review manuscripts and grants from other investigators/authors, as provided by the mentor. Learn how to write and review research papers and grant applications.

**Throughout:** Meet with the Scholarship Oversight Committee (SOC) semiannually to discuss plans and progress.

### 2. Mentors:

- **During (or prior to) the fall of year 1:** discuss with prospective mentees (potentially, any of the first-year fellows or fellowship applicants) their long-term career plans and interests and the available research projects.

- **Fall, year 1:** Once a fellow has indicated a serious interest in working with the prospective mentor, if mentorship is desired coordinate with fellowship director re. funding sources.

- **By end of fellow’s first research month, year 1:** Once a decision has been made to mentor the fellow and a funding source has been defined, meet with fellow to map out the research experience timeline and to **select a project and Research Committee.**
Weekly during years 2-4: Meet with the fellow weekly during research months to plan the specifics of the research experience, review progress, solve problems, and prepare abstracts and manuscripts.

Every 6 months during years 2-4: jointly with the fellow, convene meetings of the research committee.

- The first meeting, which should occur no later than the first research month in year 2, should involve a presentation of the project by the fellow to the committee, and feedback from the committee.
- Interval meetings should include an interim progress report from the fellow.
- The final meeting should include a final summary of the project and a decision by the committee as to whether the fellow satisfactorily completed the research experience.

By fall of year 2: Coordinate with the fellowship director re. funding for a second research year, if planned.

Throughout: Provide the fellow with feedback informally on an ongoing basis, and formally via semi-annual evaluations that will be filed using the E*value system and should be discussed directly with the fellow. Discuss any concerns re. inadequate progress with the program director as they arise.

Throughout: Act as an advocate for the fellow. Solicit feedback from the fellow re. the fellow's perception of the fellowship experience and what could be improved.

Throughout: on an ongoing basis, assess the fellow's evolving career plans. Assist with employment searches and applications during the final year (year 2 or 3).

Throughout: involve the fellow in manuscript and grant reviews and grant writing, to provide familiarity with these processes. Tutor the fellow in these skills.

Throughout: Encourage and help the fellow to prepare, submit, and present abstracts/posters at the spring NCCIDSA meeting, the May UM Medicine Research Day, and the fall IDSA meeting, and prepare, submit, and present a manuscript based on the fellow's research to a peer-reviewed journal.

Throughout: Meet with the Scholarship Oversight Committee (SOC) semiannually to review the progress of all current fellows.

3. Committee members:

- Attend semiannual committee meetings to hear the fellow present his/her plans (meeting 1), interval progress (interim meetings), and final results (final meeting).
- At these meetings, offer constructive criticism and suggestions to the fellow and mentor regarding the above.
- Provide feedback to the mentor and/or program director outside the meetings as appropriate, particularly for concerns regarding the direction or progress of the project.
- At or after the final committee meeting, provide to the mentor an opinion as to whether the fellow has satisfactorily completed the research experience.
RESEARCH GOALS for fellows:

- complete a meaningful research project
- present research plans and findings at the NCCIDSA and IDSA meetings, Midwest ID Fellows Forum, ID/Micro Research Conference, ID Corridor Symposium, and UM Research Day
- have an original research-based manuscript accepted by a peer-reviewed journal
- learn how to write a research grant, preferably by taking a grant-writing course
Appendix 2: Scholarship Oversight Committee (SOC)

The Infectious Diseases Fellowship Program has instituted a Scholarship Oversight Committee (SOC) to provide consistent, systematic, and centralized oversight of fellows' academic progress.

The specific goals of the SOC are as follows:

- to document for the program and the training grant the fellow's academic progress, including any need for redirection or enhancement
- to provide an outside perspective for the fellow and mentor regarding the fellow's academic progress
- to provide additional guidance to the fellow and mentor regarding desirable or necessary future professional development efforts
- to identify any problematic aspects of the fellow-mentor relationship, and to report these to relevant parties
- to improve faculty cohesiveness and communication

The SOC membership includes:

- Current and recent past research mentors of all adult ID fellows and any pediatric ID fellows on the "Infectious Diseases Training in Clinical Investigation" training grant
- Division heads of the Adult and Pediatric Infectious Diseases divisions
- Adult ID fellowship Program Director (SOC chair) and Assoc. Program Directors

Fellows to be overseen by the SOC include all adult ID fellows and any pediatric ID fellows on the "Infectious Diseases Training in Clinical Investigation" training grant

The **SOC meets semiannually (January and June) to review each trainee's progress.** It provides a written report of each review (with evaluative comments and suggestions) to the fellow, the fellow's research mentor and career mentor, the fellowship program director and, for training grant-supported fellows, the PI of the training grant.

Fellows submit written materials in advance of the semiannual SOC meetings, according to a structured outline. They then appear before the committee individually (30-45 min.) to present their report in person and to answer questions from committee members. When a fellow appears before the SOC, the fellow's research mentor is invited to attend the meeting as a (nonparticipating) observer. He/she joins the post-appearance discussion after the fellow leaves the room.

During a typical 2-year, 3-year, or 4-year fellowship, fellows meet with the SOC 4, 6, or 8 times, i.e. each January and June. The final meeting is used for a fellow’s assessment of the process and for benchmarking.

The SOC does not replace fellow's individual Research Committees with respect to their role in shaping the content and structure of the fellow's research project. Fellows still need to identify content experts to assist them and their mentors in the design and conduct of their individual research projects. The SOC is designed to address the larger picture of overall professional development to which the fellow's research project contributes, but not to help design and direct the specific research project per se.
Appendix 3: Academic, Investigative, and Scholarly Milestones for University of Minnesota ID Fellows

- This information is designed to help fellows and mentors address, in a timely fashion, important steps in the fellow's training as an academician, investigator, and scholar.
- Included are the criteria that the Scholarship Oversight Committee (SOC) will use in assessing each fellow's progress during its semiannual meetings with the fellow.
- The mentor will assist with most of these steps. The fellow and mentor are jointly responsible for their fulfillment.
- These represent a general guide, not absolute requirements, and require individualized interpretation.
- Separate schedules are shown for the traditional (3-year) track and the clinician-scholar (2-year) track.
- Clinical training milestones are addressed separately (see Core Curriculum).
- See Core Curriculum also for more detail regarding mentor and research committee (roles, composition)

**Academic Research (3-year) Track**

**Pre-year 1**
- Research mentor pre-selection (based on word of mouth, web site bios, listings in Core Curriculum or Training Grant description documents)
- If possible, identify something to present at Infectious Diseases Society of America (IDSA) meeting, fall year 1; submit abstract or case report by May deadline
- Continuity clinic selection (UM, HCMC, VA, Regions)
- If eligible for NIH Loan Repayment Program, obtain and review application (although no action needed yet)
- Communicate with fellowship coordinator regarding orientation, registration, schedule, etc.

**Year 1**
- Select primary mentor (by December), plan research project
- Assemble 3-4 person research committee (by spring); meet with committee semiannually
- During research months, begin work on research project (including IRB paperwork, as needed)
- Meet with SOC in January and June
- If eligible, prepare and submit LRP application
- If planning on graduate school courses in year 2, apply in spring
- Identify something to present at IDSA meeting, fall year 2: submit abstract or case report by May deadline
- Present at a national (e.g. IDSA), regional (e.g. NCCIDSA), Midwest ID Fellows Forum (MWIDFF), and local (e.g. Medicine Research Day) meeting. Similar presentation at each is OK.
- attend all the above-listed meetings
- Present at least 2 cases (with literature review and handout) at Tuesday AM Intercity ID Conference
- Lead at least 1 fellows' journal club session

**Year 2**
• If in MS or MPH program, complete at least half of the required coursework and select a MS/MPH committee
• Meet with SOC in January and June
• Meet with research committee quarterly (& MS/MPH committee as needed)
• Make substantial progress with main fellowship research project
• Submit at least 1 first-author manuscripts in chosen area, preferably research-based (alternative: a review)
• Present at a national (e.g. IDSA), regional (e.g. NCCIDSA, MWIDFF), and local (e.g. Research Retreat, Medicine Research Day) meeting. Similar presentation at each is OK.
• Attend all the above-listed meetings
• Identify something to present at IDSA meeting, fall year 3: submit abstract or case report by May deadline
• Make substantial progress with main research project
• Consider submitting an individual NRSA (F32) application for supporting or extending fellowship research training
• Begin planning (or prepare and submit application) for post-fellowship mentored research, e.g. NIH K award or VA Career Development, or explore other options for continued protected, mentored research training post-fellowship
• Assist mentor in peer review of at least 1 manuscript
• In Year 2 or 3, attend a workshop or take a course on grant writing (if available)
• Present at least 1 additional case (with literature review and handout) at Tuesday AM Intercity ID Conference
• Lead at least 1 additional fellows' journal club session

Year 3
• Meet with SOC in January and June
• Meet with research committee quarterly (& MS/MPH committee as needed)
• If in MS or MPH program, complete the required coursework and thesis/project
• Submit another first-author manuscript in chosen area; have at least 1 research-based manuscript submitted
• Have at least 1 published first-author peer-reviewed paper in chosen area, preferably research based (vs. a review)
• Present at a national (e.g. IDSA), regional (e.g. NCCIDSA, MWIDFF), and local (e.g. Research Retreat, Medicine Research Day) meeting, for at least 2nd time. Similar presentation at each is OK.
• Attend all the above-listed meetings
• If pursuing research career, prepare and submit application (if not already done) for post-fellowship mentored research, e.g. NIH K award or VA Career Development, or make other arrangements for continued protected, mentored research training (e.g., VA Clinical Chief position or F32 individual NRSA grant)
• If not pursuing research career, initiate job search early in year
• Complete main fellowship research project
• Assist mentor in peer review of at least 1 additional manuscript (if available)
• In Year 2 or 3, attend a workshop or take a course on grant writing (if available)
• Present at least 1 additional case (with literature review and handout) at Tuesday AM Intercity ID Conference
• Lead at least 1 additional fellows' journal club session
Clinician-Scholar (2-year) Track

Pre-year 1
- Research mentor pre-selection (based on word of mouth, website bios, listings in Core Curriculum or Training Grant description documents)
- if possible, identify something to present at Infectious Diseases Society of America (IDSA) meeting, fall year 1; submit abstract or case report by May deadline
- Continuity clinic selection (UM, HCMC, VA, Regions)
- Communicate with fellowship coordinator regarding orientation, registration, schedule, etc.

Year 1
- Select primary mentor (by December), plan research project
- Assemble 3-4 person research committee (by spring); meet with committee quarterly
- During research months, begin work on research project (including IRB paperwork, as needed)
- Meet with SOC in January and June
- Identify something to present at IDSA meeting, fall year 2: submit abstract or case report by May deadline
- Present at a national (e.g. IDSA), regional (e.g. North-Central Chapter of the IDSA [NCCIDSA], Midwest ID Fellows Forum [MWIDFF]), and local (e.g. Medicine Research Day) meeting. Similar presentation at each is OK.
- Attend all the above-listed meetings
- Present at least 2 cases (with literature review and handout) at Tuesday AM Intercity ID Conference
- Lead at least 1 fellows' journal club session
- Assist mentor in peer review of at least 1 manuscript (if available)

Year 2
- Meet with SOC in January and June
- Meet with research committee quarterly
- Beginning early in year, define post-fellowship career plans and initiate job search
- Complete main fellowship research project
- Submit at least 1 first-author manuscripts in chosen area, preferably research-based (alternative: a review)
- Present at a national (e.g. IDSA), regional (e.g. NCCIDSA, MWIDFF), and local (e.g. Research Retreat, Medicine Research Day) meeting. Similar presentation at each is OK.
- Attend all the above-listed meetings
- Identify something to present at IDSA meeting, fall year 3: submit abstract or case report by May deadline
- Assist mentor in peer review of at least 1 manuscript (if available)
- Present at least 1 additional case (with literature review and handout) at Tuesday AM Intercity ID Conference
- Lead at least 1 additional fellows' journal club session