University of Minnesota Pediatric Infectious Diseases Fellowship
Program Goals

The mission of the Pediatric Infectious Diseases Fellowship training program is to produce pediatric infectious diseases clinicians that: 1) are outstanding clinicians prepared to manage diverse patient populations of children with infectious diseases and immune deficiencies; 2) effective researchers capable of generating new knowledge with translational importance to the management of infectious diseases in children; 3) possess the capability of working in a variety of practice settings; and 4) possess habits of life-long learning to build upon their knowledge, skills and professionalism.

Overall Goals:

- Develop a basic core of knowledge of clinical manifestations, clinical presentations, pathophysiology and management of pediatric infectious diseases and immune deficiency disorders.
- Develop the clinical skill of data collection including history-taking, physical examination and the appropriate request of laboratory and imaging studies.
- Develop the ability to formulate appropriate differential diagnoses and therapeutic plans based on an ability to critically analyze the clinical data, and integrate this analysis with the basic fund of medical knowledge.
- Develop the ability to perform as a consultant or a health-care team leader when summoned.
- Develop the understanding of the principles, indications, contraindications, risk, cost and expected outcome of the various treatments.
- Recognize the need for appropriate consultation and the reasonable expectations from a consultant.
- The performance and/or interpretation of diagnostic and therapeutic procedures used in the practice of pediatric infectious diseases.
- Further development of appropriate communication skills with patients, families, peers and health care personnel.
- Develop skill and expertise in research. All Fellows must be capable of demonstrating competence in the understanding of the design, implementation and interpretation of research studies; specifically including research methodology, critical interpretation of data, critical interpretation of published research, and the responsible use of informed consent.
- Develop skills in life-long learning and in critical analysis, synthesis and reassessment of knowledge, skills and professionalism.
Rotation Objectives

Outpatient Pediatric Infectious Diseases Clinic

**Goal:** Over the course of three years, the Fellow will gain all the necessary skills and acumen to diagnose and manage pediatric and young-adult patients with acute and chronic infectious diseases and immune deficiencies.

This is expected to occur in a stepwise fashion, primarily during the first year:

- **Months 1-3:** Obtaining an appropriate history, performing a physical exam, and developing a differential diagnosis.
- **Months 4-6:** Selecting and interpreting appropriate diagnostic tests.
- **Months 7-9:** Development of treatment plans, including medical therapy, appropriate referrals, and use of additional services.
- **Months 10-12:** Comprehensive longitudinal care of patients, observing response to therapy, modifying therapy appropriately.

**PGY 4 (First Year) Continuity Clinic Objectives:** Upon completion of the first year of the fellowship the Fellow is expected to:

- Understand the major microbiological techniques used in diagnosis (MK, PC).
- Understand basic function of the immune system and of immunological basis of disease (MK).
- Understand the pharmacology, pharmacokinetics, and pharmacodynamics of antibiotics and their interaction with other drugs (MK, PBLI).
- Understand the utility of diagnostic modalities in evaluating for and diagnosing infections (imaging, cultures, surgical interventions, biopsies) (PC, MK, PBLI).
- Present treatment plans to patient families with faculty input (PC, CS, MK).
- Understand the indications for and limitations of prescribing outpatient antibiotic therapy for children with diagnoses requiring prolonged antimicrobial courses (e.g. osteomyelitis, hardware infection).
- Recognize the toxicities associated with prolonged antimicrobial courses and monitor for such toxicities (PC, MK).
- Coordinate care and communicate effectively with primary inpatient services, pharmacists, outpatient primary care providers, home health services, inpatient and outpatient ID faculty providers, patients, and families to optimize dosing, duration, and monitoring during OPAT and minimize complications related to IV lines and medication toxicities (PC, SBP).
- Manage toxicities and complications associated with OPAT if they arise (PC, MK).
• Understand the principles of the approach to antiretroviral treatment, differences in drug classes, and mechanisms of resistance to therapy, including changing therapy due to toxicities or resistance (PC, MK).
• Learn the tests used for monitoring clinical status in HIV-infected children (HIV RNA PCR or viral load, T cell subsets, antiretroviral resistance testing) and how to interpret results (PC MK, SBP).
• Recognize antiretroviral-associated complications in children with HIV, including acute toxicities and long-term changes (PC, MK).
• Understand the complex psychosocial issues in the care of HIV-infected children and adolescents including parental infection and death, sexual activity and safe-sex practices, and developmental, learning, and behavioral issues (PC, MK, CS, Prof).
• Effectively and sensitively obtain sexual histories and information about sexual partners and behaviors (PC, CS, Prof).
• Identify and evaluate children and adolescents who may have a primary immunodeficiency (PC, MK).
• Obtain an accurate and orderly history in patients suspected of having, or with an immune defect (PC, CS).
• Initiate proper laboratory investigations based on the specific immune defect;
• Correctly interpret laboratory results (MK, PC, SBP).
• Recognize the appropriate therapies for specific immune defects (PC, MK).

PGY 5 (Second Year) Continuity Clinic Objectives:

• Recognize the differences in approach to managing outpatient referrals to the pediatric infectious diseases clinic and inpatient consultations.
• Evaluate, test, and treat for common pediatric infectious diseases diagnoses for which patients are referred to the outpatient general ID clinic (e.g. Lyme disease, community acquired MRSA, recurrent fevers, recurrent infections, fatigue).
• Recognize the controversies associated with particular pediatric infectious diseases questions (e.g. chronic Lyme disease, vaccine-associated complications, PANDAS) and how to appropriately and effectively counsel parents regarding such questions (PC, PBLI, CS).
• Effectively communicate with community providers regarding patients seen in the infectious diseases clinic, through appropriate use of the EMR, and both through verbal follow-up phone calls and written consultation notes (PC, SBP, CS).
• Understand normal mechanisms of host defense, manifestations of primary immune disorders and host susceptible to infectious agents (PC, MK, PBLI).
• Review the current literature on immunological disorders as applied to specific patients and use information to contribute to the formulation of a plan of care (MK, PC, PBLI).
PGY 6 (Third Year) Continuity Clinic Objectives:

- Independently evaluate and manage diagnoses for which children are referred for pediatric infectious diseases consultation (PC, MK, PBL, SBP).
- Understand how an outpatient infectious disease practice is structured (PC, MK, SBP)
- Appropriately bill and code for outpatient services provided (PC, SBP, Prof).
- Independently interact with other subspecialty providers in the care of patients with complex conditions (PC, SBP, CS).

University of Minnesota Amplatz Children’s Hospital
Inpatient Consult Service

Rotation Overview: The Pediatric Infectious Diseases service has an active consultative service responsible for a wide range of individual ID and epidemiologic issues associated with a very busy tertiary care children’s hospital. The team routinely is involved in the diagnosis and management of infections in children with complex underlying illnesses, such as stem cell and solid organ transplantation, complex congenital heart disease, and prematurity, as well as community-acquired infections in otherwise healthy children. The service manages infections following organ transplantation, catheter-related sepsis, shunt infections, neonatal sepsis, sepsis in immunocompromised children, endocarditis, osteomyelitis, pneumonia, AIDS, post-operative wound infections and congenital or neonatal viral infections.

The infectious disease Fellows spend five months (one month in FL1, two months in FL2 and two months in FL3) throughout their training program working on the infectious disease inpatient consult service at UMACH.

First Year (PGY4) Rotation Objectives: Upon completion of the first year (PGY4) UMACH consult rotation Fellows are expected to:

- Evaluate children with a wide range of infections including respiratory infections, CNS infections, bone and joint infections, cardiovascular infections, skin and soft tissue infections, gastrointestinal and intra-abdominal infections, ocular infections, reproductive tract and sexually transmitted infections, foreign body and catheter-associated infections, and bloodstream infections (PC, MK).
- Generate differential diagnoses that encompass both infectious and noninfectious etiologies (PC, MK).
- Perform initial work-up and management of pediatric infectious diseases (MK, PC, CS)
• Understand the pathogenesis and natural history of the major types of pediatric infectious diseases (MK, PC).
• Recognize presentations of various infectious diseases and modalities for diagnosis and treatment (MK, PC).
• Present treatment plans to patient families with faculty input (PC, CS, MK).
• Provide teaching to pediatrics residents and medical students on rounds and at the bedside (PBLI, CS).
• Understand the prevention and screening strategies important in the management of transplant patients (CMV, EBV, HSV, VZV, TB, candidiasis, aspergillosis, etc.).
• Understand the UMACH formulary and ensure that orders and prescribing follow the specified parameters (PC, SBP).
• Work effectively with nursing and pharmacy staff to implement orders and treatments (PC, CS, Prof, SBP).
• Provide timely oral and written consultation reports to requesting providers (PC, CS, SBP).
• Recognize limits of knowledge and skill and seek faculty supervision appropriately (PC, CS, Prof, PBLI).

Second Year (PGY5) Rotation Objectives: Upon completion of the second year (PGY5) UMACH consult rotation Fellows are expected to:

• Evaluate for infections in children with underlying medical conditions that may complicate diagnoses, such as neuromuscular conditions, genetic conditions, previous surgeries or other interventions, and foreign bodies/foreign material (PC, MK).
• Manage most complicated infectious diseases, and understand their pathogenesis and natural history (PC, MK, PBLI).
• Understand hospital epidemiology and infection control (PC, SBP).
• Participate in antimicrobial utilization committee (PC, SBP).
• Solicit other subspecialty input when indicated (PC, CS, SBP).
• Develop and coordinate follow-up plans for patients (PC, SBP).
• Demonstrate awareness of new developments in the field (PC, PBLI).
• Present and discuss treatment plans to families with minimal faculty input (PC, CS).
Clinical Microbiology Rotation Objectives: By the end of the rotation the residents/Fellows should have a better understanding of how the clinical microbiology laboratory operates and how to use it effectively to establish a specific etiological diagnosis and select the most effective antimicrobial therapy.

- Understand the culture and identification techniques in bacteriology, mycology and mycobacteriology (MK).
- Understand the identification techniques in parasitology (MK).
- Understand how serology assays and PCR are used to identify pathogens (MK).
- Become familiar with antibiotic resistance assays for viruses, fungi and bacteria (MK).
- Become familiar with blood culture methodology (MK, PC).
- Become familiar with such automated equipment used in the clinical microbiology laboratory such as the Microscan or Vitek diagnostic systems (MK, SBP).
- Understand classical methods used for Kirby-Bauer and Microdilution (MIC) susceptibility testing as well as more current automated systems for determining antimicrobial susceptibility (MK).
- Become familiar with the techniques used in virology (MK).
- Understand how to optimize the effective and timely communication of results from the lab to clinicians (PC, MK, CS, SBP).

Third Year (PGY6) Rotation Objectives: Upon completion of the second year (PGY5) UMACH consult rotations Fellows are expected to:

- Design and implement treatment plans for complicated infectious diseases in children effectively and independently (PC, MK).
- Lead the consult service including residents and medical students with minimal input from the faculty educators (PC, Prof, SBP).
- Recognize the importance and significance of infectious complications on the overall management and outcome of transplantation, especially with regard to underlying diseases and rejection (MK, PC).
- Manage serious post-transplant viral infections and understand the use of systemic antiviral agents (ganciclovir, acyclovir, foscarnet, cidofovir) (PC, MK, SBP).
Hennepin County Medical Center
Infectious Disease Inpatient Consult Service

Rotation Overview: The infectious disease Fellows spend four months (two months in the first year, one month each in year 2 and year 3) throughout their training program working on the infectious disease inpatient consult service at Hennepin County Medical Center (HCMC). HCMC is a Level I trauma center and Fellows provide consultation on trauma patients, patients in the international travel clinic, and patients in the burn unit (experiences not available at other participating sites). HCMC serves a large immigrant population so Fellows also provide consultation to immigrant and refugee patients and patients and gain experience in treating diseases of global health importance such as malaria, typhoid fever, tuberculosis, and HIV infection.

First Year (PGY4) HCMC Consult Service Rotation Objectives: Upon completion of the first year (PGY4) HCMC consult rotation Fellows are expected to:

- Understand the HCMC formulary and ensure that orders and prescribing follow the parameters (PC, SBP).
- Understand the epidemiology, clinical presentation, and management of tuberculosis in pediatric patients (PC, MK).
- Understand the diagnostic modalities important in tuberculosis including: skin testing, acid fast culture techniques (liquid versus solid media, culture sites), polymerase chain reaction, direct smears, radiographic imaging, and quantiferon testing (PC, MK).
- Understand and recognize the major infections occurring in burn patients (PC, MK).
• Develop an understanding of major infections including malaria, tuberculosis, HIV occurring in immigrant and refugee populations served by HCMC (PC, MK, SBP).

Second Year (PGY5) HCMC Consult Service Rotation Objectives: Upon completion of the second year (PGY5) HCMC consult rotation Fellows are expected to:

• Understand the longitudinal transition from inpatient to outpatient care of patients, observing response to therapy, modifying therapy appropriately.
• Understand specific infection control practices used in control of tuberculosis, such as directly observed therapy, contact tracing, and airborne isolation requirements (PC, MK, SBP).
• Understand the systems based programs involved in the control of tuberculosis on a wide scale, including state programs that exist to control tuberculosis and understand the importance of individual county health departments in disease control (PC, SBP).
• Understand the antimicrobial management of routine cases, as well as an understanding of the effect of multiple drug resistance on type and duration of antimicrobials used (PC, MK, PBLI).
• Recognize the social implications of tuberculosis infection as well as its relationship with HIV infection (PC, CS, SBP).

Third Year (PGY6) HCMC Consult Service Rotation Objectives: Upon completion of the third year (PGY6) HCMC consult rotation Fellows are expected to:

• Utilize the unique resources that are germane to the predominately international health infectious disease population at Hennepin County, including interpreters, social workers, and individuals with expertise in global health and travel medicine (PC, SBP).
• Design and implement treatment plans for complicated infectious diseases in children effectively and independently (PC, MK).
• Independently develop and implement treatment plans for burn patients (PC, MK).
Lead the consult service including residents and medical students with minimal input from the faculty educators (PC, Prof, SBP).

St. Paul Children’s Hospital
Inpatient Consult Service

Rotation Overview: The infectious disease fellows spend four months (two months in FL1, one month each in FL2 and FL3) throughout their training program working on the infectious disease inpatient consult service at St. Paul Children’s Hospital. When working at St. Paul Children’s fellows gain experience in working with community attending and diagnosing and treating community acquired infections, meningitis, sinusitis, otitis media. St. Paul Children’s has a level III nursery and cares for a large Hmong and Southeast Asian immigrant population.

ACGME Core Competencies: Each learning objective is referenced to one or more of the ACGME core competencies. PC=Patient care, MK=medical knowledge, Prof=professionalism, CS=communication skills, SBP=systems based practice, PBLI=practice-based learning and improvement.

1. Medical knowledge (MK)
2. Patient care (PC)
3. Interpersonal and communication skills (CS)
4. Professionalism (Prof)
5. Systems-based practice (SBP)
6. Practice-based learning and improvement (PBLI)

First Year (PGY4) Rotation Objectives: Upon completion of the first year (PGY4) St. Paul Children’s consult rotations fellows are expected to:

- Evaluate NICU patients and develop a treatment plan with attending input (PC, SBP)
- Understand the Children’s St. Paul formulary and ensure that orders and prescribing follow the parameters (PC, SBP).
- Work effectively with interpreters and translators (PC, CS, SBP)
- Provide timely oral and written consultation reports to requesting providers (PC, CS, SBP).
- Recognize limits of knowledge and skill and seek attending supervision appropriately (PC, Cs, Prof, PBLI).

Second Year (PGY5) Rotation Objectives: Upon completion of the second year (PGY5) St. Paul Children’s consult rotations fellows are expected to:
• Work effectively with NICU attendings and staff to treat infections in neonatal patients (PC, CS, Prof, SBP).
• Recognize and utilize hospital and community resources in the care of immigrant and refugee patients (PC, SBP)
• Work with ancillary services, interpreters and other health professionals to develop and implement discharge plans (PC, SBP, CS)

Third Year (PGY6) Rotation Objectives: Upon completion of the third year (PGY6) St. Paul Children’s consult rotations fellows are expected to:

• Independently design and implement treatment plans for care of neonatal patients (PC, MK, SBP)
• Effectively diagnose and treat infectious conditions found in natives of Southeast Asia (PC, MK, SBP).
• Lead the consult service including residents and medical students with minimal input from the attendings (PC, Prof, SBP).
• Understand the factors and influences that impact decision to go into private practice of pediatric infectious diseases (PC, SBP, Prof).
• Selecting and interpreting appropriate diagnostic tests using the style of practice and approach of a fee-for-service private practice physician (PC, SBP).

Minneapolis Children’s Hospital
Inpatient Consult Service

Rotation Overview: The infectious disease fellows spend four months (two months in FL1, one month each in FL2 and FL3) throughout their training program working on the infectious disease inpatient consult service at Minneapolis Children’s Hospital. Extracorporeal membrane oxygenation (ECMO) treatment is provided at Minneapolis Children’s and fellows will gain experience in treating respiratory infections in patients undergoing ECMO treatment. Cardiac and vascular surgeries are performed at Minneapolis Children’s so fellows gain experience in the diagnosis and treatment of post-surgical infections.

First Year (PGY4) Rotation Objectives: Upon completion of the first year (PGY4) Minneapolis Children’s consult rotations fellows are expected to:

• Evaluate ECMO patients and develop a treatment plan with attending input (PC, MK, SBP)
• Understand the Minneapolis Children’s formulary and ensure that orders and prescribing follow the parameters (PC, SBP)
• Understand risk factors for post-cardiovascular surgical infections and approaches to treating post-cardiovascular operative infection prevention. (MK, PC)
• Provide timely oral and written consultation reports to requesting providers (PC, CS, SBP).
Second Year (PGY5) Rotation Objectives: Upon completion of the second year (PGY5) Minneapolis Children’s consult rotations fellows are expected to:

- Develop and implement treatment for infections in ECMO patients with minimal attending input (PC, MK, SBP).
- Work effectively with other subspecialty providers caring for the patients with minimal attending input (PC, MK, SBP).
- Develop and implement treatment plans for post-cardiovascular surgical infections with minimal attending input. (MK, PC)

Third Year (PGY6) Rotation Objectives: Upon completion of the third year (PGY6) Minneapolis Children’s consult rotations fellows are expected to:

- Independently design and implement treatment plans for ECMO patients (PC, MK, SBP)
- Independently work with surgeons to treat post-surgical infections in cardiac surgical patients (MK, PC)
- Lead the consult service including residents and medical students with minimal input from the attendings (PC, Prof, SBP).
- Understand the factors and influences that impact decision to go into private practice of pediatric infectious diseases (PC, SBP, Prof).
- Selecting and interpreting appropriate diagnostic tests using the style of practice and approach of a fee-for-service private practice physician (PC, SBP).

Overall Attributes for Each Level of Training

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 the 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>Beginning</th>
<th>Developing</th>
<th>Proficient</th>
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<tbody>
<tr>
<td>Clinical data collection</td>
<td>Independent, with staff supplementation</td>
<td>Independent, with staff confirmation</td>
<td>Independent, with selective staff confirmation</td>
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<tr>
<td>Activity</td>
<td>Work Mode</td>
<td>Work Mode</td>
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<tr>
<td>Formulation of clinical assessments / plans</td>
<td>Jointly with staff</td>
<td>Independent, with staff confirmation</td>
<td>Independent, with selective staff confirmation</td>
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<tr>
<td>Communication of recommendations to 1º teams / referring MDs</td>
<td>After discussion with staff</td>
<td>Preliminary, independent; final, after discussion with staff</td>
<td>Independent, with selective staff confirmation</td>
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<tr>
<td>Antibiotic approvals</td>
<td>After discussion with staff</td>
<td>Independent, with staff confirmation</td>
<td>Independent, with selective staff confirmation</td>
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<tr>
<td>Case conference preparation</td>
<td>Jointly with staff</td>
<td>Independent, with staff confirmation</td>
<td>Independent, with selective staff confirmation</td>
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<tr>
<td>Supervision of students / residents</td>
<td>Jointly with staff</td>
<td>Independent, with staff review</td>
<td>Independent, with selective staff review</td>
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<tr>
<td>Research</td>
<td>Directed background reading, tutored skill development</td>
<td>Execution of existing projects with staff oversight</td>
<td>Analysis and presentation of results, new project development, independent conduct of research with selective staff review</td>
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*As assessed by supervising faculty based on observation of Fellow’s performance. Clinical proficiency levels correspond approximately with the first, second and third blocks of clinical experience, but individual Fellows move through the levels at different rates of development of the relevant competencies.

**Citywide Infectious Diseases Conference**

**Goal:** Each academic year, the Fellow will present two one-hour sessions at Citywide Infectious Diseases conference. These presentations will be a case conference. The emphasis is on basic and translational science as it relates to improving patient care.

**Objectives:**

Medical Knowledge. Preparing and presenting these conferences requires that the Fellow be up-to-date on the most current knowledge related to the chosen topic. The Fellow is expected to demonstrate the ability to acquire, assimilate, present, and discuss his or her new knowledge with colleagues.
Practice-Based Learning and Improvement. Discussion of cases or journal articles allows the Fellow to see the variety of style practices among local infectious diseases physicians, to discuss how emerging knowledge will affect practice, and to refine his or her own practice accordingly.

Interpersonal and Communication Skills. The Fellow will demonstrate the ability to relate medical and scientific knowledge to other health professionals in a clear and organized fashion.

Professionalism. The Fellow will gain an understanding that the practice of pediatric infectious diseases requires lifelong dedication to learning.

Systems-Based Practice. In his or her case presentation, the Fellow will demonstrate an understanding of how various medical systems influence the care of the patient.

Pediatric Infectious Diseases Journal Club

Goal: Once per month, the Fellow will attend, and twice yearly, one of the Fellows will lead an hour-long discussion of recent article(s) relevant to pediatric infectious diseases; other participants will include other Fellows and faculty.

Objectives:

Medical Knowledge. The Fellow will demonstrate the ability to select a relevant article (with faculty guidance), research the relevant background information, present the new findings, and discuss the implications of the new findings to the care of patients.

Practice-Based Learning and Improvement. If the chosen article indicates that a change in current practice might be warranted, the Fellow will recognize this and discuss the benefits and disadvantages of such a change.

Morbidity, Mortality, and Management (3M) Conference

Goal: Once per academic year, the Fellow will prepare a case conference for presentation to the Department of Pediatrics. The case chosen will be of interest to general pediatricians. The Fellow will also regularly attend the conference, and serve
as a discussant, since almost all complex cases presented at this conference (selected from all of the Children’s Hospitals in the Twin Cities) involved infectious diseases in the differential diagnosis.

**Objectives:**

Medical Knowledge. The Fellow will demonstrate thorough knowledge of the case being presented, including relevant information from recent basic, clinical, and cognate research.

Interpersonal and Communication Skills. The Fellow will demonstrate the ability to speak in a large public forum to other health care providers and to discuss a case in a clear and organized fashion.

Systems-Based Practice. The cases chosen for 3M conference often involve systems issues such as improving the time to diagnosis, enhancing communication between primary physicians and consultants, avoidance of medical errors, and so forth. The Fellow will be expected to identify how systems issues influenced the care of the patient presented, and to suggest appropriate improvements for the future.

**Pediatric Infectious Diseases Board Review/Tutorial**

**Goal:** The goal of this tutorial is to broaden the scope of the preparation for the ABP Board Examination. Although a pediatric infectious diseases-specific core curriculum exists that is case-driven, relying on cases may not capture all of the essential elements in content required for the ABP certifying examination. Accordingly, the Fellow will participate in the PREP Infectious Diseases program, an Infectious Diseases Self-Assessment tool used by several Pediatric Infectious Diseases training programs. This is an educational activity done under supervision of a Pediatric Infectious Diseases faculty member. This program is a peer-reviewed online self-assessment tool developed by pediatric infectious diseases specialists across the US, containing case-based questions, explanations of preferred responses are included with the most up-to-date references available review. Questions and critiques are based on content specifications from the American Board of Pediatrics (ABP) MOC examination.

**Objectives:**

Medical Knowledge. The Fellow will demonstrate a commitment to learning pediatric infectious diseases and will demonstrate understanding of the material. The faculty
member who is on service on that particular week will go over the questions with the Fellow in an interactive, "on-line" format. After review and discussion the correct answers will be identified. We anticipate that this training module will further enhance the performance of our Fellows on the Certifying examination. The PREP ID service offers automated transmission of completion of the self-assessment examinations (9 new questions/month) to the American Board of Pediatrics.

Interpersonal and Communication Skills. The Fellow is expected to be able to converse one-on-one and in-depth with a colleague about topics spanning the full range of the discipline of pediatric infectious diseases.

Fellow Research Experience

**Goal:** The research program in Pediatric Infectious Diseases strives to produce new and important basic and clinical scientific information that will advance the understanding of the pathophysiology and optimal management of pediatric infectious diseases. Research training will provide subspecialty Fellows with the opportunity to gain expertise in research methodology important for clinical and basic science investigations. It is a goal of the program in Pediatric Infectious Diseases to train Fellows capable of publishing in peer-review journals, compete for funding on a national level, and provide long-term leadership in the field of Pediatric Infectious Diseases.

Pediatric Infectious Diseases Fellows will explore areas of potential research based on previous interests, or interests developed early in their fellowship. Research projects will be identified during the first year of fellowship in close association with a primary research mentor, and will be designed to both fulfill requirements for a scholarly product for board certification, but more importantly serve as a springboard for a productive research career. During the clinically-focused first year of fellowship, the Fellow is expected by month 3 to initiate conversations with faculty regarding possible research projects, by month 6 to define a major research direction and begin appropriate background reading, and by month 9 to have a solid grasp of their research project. As Fellows move into the 2nd and 3rd years, they will have highly protected time to pursue their research project and advanced educational opportunities. Basic science research opportunities in well-funded, well-regarded and highly published laboratories at the University of Minnesota allow Fellows to be taught basic science research techniques, experimental design, data acquisition and analysis. Opportunities for advanced education and mentored research in clinical sciences will be available through the Center for Infectious Diseases and Microbiology Translational Research (CIDMTR), the
University of Minnesota’s Masters in Clinical Research program, the Office of Clinical Research, and newly established Clinical and Translational Science Institute (CTSI).

**Objectives:**

*Medical Knowledge.* The Fellow will select an area of research relevant to cutting edge pediatric infectious diseases. Through research, the Fellow will generate new knowledge relevant to the care of children with pediatric infectious diseases and/or immune disorders.

*Interpersonal and Communication Skills.* The Fellow will demonstrate the ability to interact effectively with a research team. The Fellow will be expected to be able to communicate his or her research findings in a public forum, such as Citywide Infectious Diseases Conference, CIDMTR research conference, and in Scholarly Oversight Committee (SOC) meetings. The Fellow will also be expected to prepare an abstract and poster presentation along with a manuscript for submission to a peer-reviewed journal.

*Professionalism:* The Fellow will demonstrate a working knowledge of the ethics of biomedical research.