



المجلس العربي للاختصاصات الصحية

The Arab Board of Health Specializations

البرنامج التدريبي لاختصاص الأمراض المعدية

المجلس العلمي لاختصاص الأمراض الباطنة

Fellowship Program in Infectious Diseases

The Scientific Council of Internal Medicine

March 2023



Arab Board Fellowship Program in Infectious Disease

The process of program specification development:

The process of development of this program specification should go into three phases:

- Phase I: Production of an initial draft by a small working party of teaching Staff (curriculum committee), done by our previous colleagues
- Phase II: Gathering comments and proposals for modifications and additions comments.
- Phase III: final program approval. July 2019

Committee members:

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Introduction

The Arab Board program for Infectious Diseases Fellowship (Arab Board of for Infectious Diseases) training is organized to provide training and supervised experience at a sufficient level for the Infectious Diseases (ID) fellow to acquire the competency of a specialist in the field of infectious diseases. The ID training program is a minimum of 2 years in duration. During their training, the ID fellows participate in a formal didactic experience, a wide variety of direct patient care rotations and learning experiences designed to teach all competencies.

The goal of the program

The specialty of Infectious Diseases provides the opportunity for a career ranging from challenging and constantly varied clinical management to intellectually stimulating frontier research into diseases of worldwide importance. The specialty encompasses the requirements of an objective-based training curriculum and offers training programs ranging from pure Infectious Diseases to combined training in Infectious Diseases and General Internal Medicine, Infectious Diseases and Medical Microbiology or Infectious Diseases and Medical Virology and medical education.

The ID fellow will progress through the Combined Infection Training Curriculum and the Higher Infectious Diseases Training Curriculum to gain a certificate of completion of training in Infectious Diseases.

- To provide ID fellow with essential knowledge, skills and attitudes to competently practice

infectious diseases in ambulatory and hospital settings.

- To provide ID fellow with the basics of research methodology and medical education.

At the end of the program, we are expecting from the ID fellow to:

1. Acquire a good working knowledge of the specific program content in Clinical Infectious Diseases.
2. Achieve proficiency in the key technical skills in Infectious Diseases.
3. Participate in scholarly activities and a research experience that prepares the trainee for lifelong learning and scholarship.



Requirements for Arab board of infectious diseases Certification of Training

Admission Criteria:

To be enrolled in the Infectious Diseases Program under the Arab Board of Medical Specialization:

1. The fellow should have completed a **certificate program in Arab Board** in Internal Medicine or a certificate in **accredited Residency Program** or equivalent in Internal Medicine
2. The Training center should be accredited by the Arab Board of Medical Specialization
3. Three letters of recommendation from attending faculty whom the applicants have worked with in the last 1-2 years
4. The fellow has to pass local criteria for acceptance.

Eligibility:

To be eligible for the Arab Board of **Infectious** Diseases Fellowship Certification, and to maintain a satisfactory accreditation of the training program, the following requirements are needed:

1. The Fellow should complete two years in the program
2. The Fellow has rotated in specified clinical specialty rotations, with direct supervision and clear documentation by the attending faculty (trainer) in the logbook that the trainee has developed the required competencies in each of the objectives of the rotation (documented by logbook).
3. The Fellow has passed the monthly evaluations of the clinical and research rotations
4. The Fellow should pass the final exam in both summative and formative parts according to the roles of the Arab Board of Medical Specialization.

Each fellow should complete satisfactorily supervised training in:

- Inpatient care
- Referrals and consultations
- Outpatients' clinics
- Infection control and healthcare epidemiology
- Antibiotic use and antimicrobial stewardship
- Research
- **Scholarly activities in infectious diseases that include**

- Multidisciplinary conferences
- Research conferences
- Journal Club
- Weekly Case Conference



Program Structures

Inpatient Rotations

General ID Consult Service

Fellows rotate on the General ID Consult service in one-month blocks on average 8 months in the first year.

The patient mix includes the entire spectrum of adult patients including those in the intensive care unit (neurology, cardiothoracic, surgical, and medical), those who are Immunocompromised (including FW-infected patients and those taking immunosuppressive medications) and those with post-surgical complications. Teaching takes place at daily attending rounds. The fellows are expected to attend all the required divisional/departmental conferences and clinical microbiology rounds held daily in the microbiology laboratory. The team typically includes residents and medical students. All care is supervised by the attending physician assigned to the ID consult service.

Rotational Goals: At the end of the rotation the ID fellow will be able to

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

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

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



Intended learning outcomes: at the end of the program the ID fellow will be able to:

- 1) Formulate a basic approach to the evaluation of acutely ill patients with potentially infectious diseases including a pertinent history and physical exam, appropriate utilization and interpretation of diagnostic tests (including molecular diagnostic tests), and development of a prioritized differential diagnosis based upon history, exam and diagnostic studies
- 2) Obtain a comprehensive and accurate medical history using all available sources.
- 3) Perform a comprehensive and accurate physical examination with added elements pertinent to the individual's differential diagnosis.
- 4) Review ancillary materials including radiology, pathology, laboratory data, and microbiology data with appropriate consultation of experts in these areas.
- 5) Communicate the findings and recommendations both verbally and in a written format clearly and appropriately to the patient and other members of the health care team.
- 6) Follow the patient's hospital course and will adjust the management plan accordingly.
- 7) 2nd year the fellow able to create (this cannot be written within ILO) more independent diagnostic and therapeutic plans and will revise those plans as the patient's course evolves.

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

Competencies: Fellows are expected to develop an increased understanding of the pathophysiology of common infectious diseases in hospitalized adult patients and the epidemiology and evolution of infectious diseases. The fellow is expected to learn how known and evolving data including guidelines (American and European in the management of important Infectious diseases e.g., HIV, HCV and HBV) influences and informs clinical practice.



Intended learning outcomes: The ID fellow will be able to:

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

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

Competencies: The fellow is expected to demonstrate:

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



Intended learning outcomes: The ID fellow will be able to

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

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

Competencies: The ID fellow is expected to:

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



Intended learning outcomes: The ID fellow will be able to

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

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

Competencies: The fellow is expected to:

- 1) Work effectively in the health care delivery setting and system.
- 2) Coordinate patient care within the health care system.
- 3) Participate in identifying systems errors and in implementing potential system solutions.



Intended learning outcomes: The ID fellow will be able to:

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

Practice-Based Learning and Improvement:

Fellows must be able to investigate and evaluate their patient care practices, appraise and assimilate scientific evidence, and improve their patient care practices based on constant self-evaluation and lifelong learning.



Competencies:

Fellows are expected to develop skills and habits to be able to:

- 1) Locate, appraise and assimilate evidence for scientific studies related to their patients' health problems.
- 2) Use information technology to optimize learning and.
- 3) Participate in the education of patients, families, students, residents and other health professionals as documented by evaluations of a fellow's teaching abilities by faculty.

Intended learning outcomes: ID fellow will be able to

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



Teaching Methods

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

Assessment

Ongoing informal feedback occurs daily during the rotation when the fellow presents cases to the attending physician. In addition, formal ongoing feedback by the Attending Physician is required. At midmonth and at the end of the month, the ID attending physician will give feedback to the ID fellow. This will be in the form of both verbal feedback and a written evaluation which will become part of the fellow's permanent file. The written evaluation is a global competency-based assessment of the fellow's performance. Semi-annually, the Program Director will review all rotation evaluations with the ID fellow. In addition, each fellow will have a directly observed examination by the attending physician at least once during the two weeks attending physician rotation. The fellow will be observed taking the history, performing the clinical examination, communicating with the patient, and synthesizing material and forming a differential diagnosis and therapeutic or diagnostic plan. The encounter will be evaluated and will cover all competencies and immediate feedback will be given.

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

Level of Supervision — The fellow is supervised daily by the ID attending physician assigned to the rotation. The attending is available by pager 24 hours/day, 7 days/week during the rotation if issues occur outside attending rounds. The attending physician evaluates the fellows in the competencies and learning outcomes outlined above.

In addition, the attending physician role models appropriate behavior for all competencies.



Outpatient continuity and subspecialist clinic

1.Continuity Clinics

All Infectious Disease fellows participate in a 24-month continuity clinic experience. Fellows are assigned to their continuity clinic at the list site or sites. The clinic meets one-half day per week. Infectious Disease fellows are assigned a faculty mentor who is located on-site at the clinic and provides direct supervision.

These mentors are experienced HIV/STIs physicians. The HIV/STIs continuity clinic experience includes the evaluation and care of patients with HIV infection or those needing pre-exposure prophylaxis, post-exposure prophylaxis or those undergoing an investigation of their HIV sero status as well as patients with other STIs and their partners. Infectious Disease fellows follow a cohort of at least 20 patients with HIV/AIDS in their continuity clinic who they follow longitudinally for at least one year. Because local demographics are such that it is difficult to ensure that 25% of patients are female, supplemental teaching on women's issues in HIV infection such as antiretroviral therapy in women, family planning, pregnancy, sexually transmitted diseases, cervical cancer and other topics are addressed in the HIV conference curriculum.

Rotational Goals: The ID fellow will learn to:

- 1) Evaluate and treat HIV-infected outpatients in all aspects of their care. They will learn to evaluate and comprehensively manage patients with STDs and investigate and treat their partners.
- 2) Understand the health care system and be able to facilitate the provision of care utilizing federal, state and local resources for HIV-infected patients and other STDs.
- 3) Understand how to provide medical care to HIV-infected and STDs patients using non-in a vulnerable and culturally diverse patient population.



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

Competencies: Fellows are expected to gain a broad experience in the evaluation and management of HIV-infected outpatients. ID fellows will also gain experience in the evaluation of outpatients with a broad variety of other infectious diseases including recently hospitalized patients requiring follow-up for active infectious disease issues. They will acquire the necessary skills to treat and manage STDs.

Intended learning outcomes: The ID fellow will be:

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

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

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



Intended learning outcomes: The ID fellow will

- 1) Develop an understanding of the outpatient management of HIV-infected and other STIs infected persons including:
 - a. Determining when to initiate therapy
 - b. Appropriate prescribing of first-line antiretroviral therapy
 - c. Use of resistance testing and selection of salvage therapy
 - d. Appropriate prescribing of prophylaxis for opportunistic infections
 - e. Providing appropriate primary care to HIV-infected patients
 - f. Management of opportunistic infections management of ART and TB co-infection
 - g. management of HIV/HCV and HIV/HBV co-infection
 - 2) **The ID fellow** will recognize and treat common infectious disease problems evaluated in the outpatient setting including pneumonia, osteomyelitis, skin/soft tissue infections, endovascular infections, osteomyelitis/septic arthritis, central nervous system infections, intra-abdominal and genitourinary infections which may occur in HIV-infected patients.
 - 3) 2ndyear ID fellows will have a more sophisticated understanding of HIV pathophysiology and will be able to apply this knowledge to the assessment of their clinic patients.
- 3- **Professionalism:** Fellows will demonstrate a commitment to carrying out professional responsibilities, adherence to ethical principles, and sensitivity to a diverse patient population and staff.

Competencies: The fellow is expected to demonstrate:

- 1) Compassion, integrity and respect for others.
- 2) Respect for patient privacy and autonomy and sensitivity and responsiveness to a diverse patient

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



Intended learning outcomes: The ID fellow will:

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

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

Competencies: The ID fellow is expected to:

- 1) Communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds.
- 2) Communicate effectively with physicians, other health professionals and health-related agencies,
- 3) work effectively as a member and leader of a health care team and maintain comprehensive, timely and legible medical records.

Intended learning outcomes: The ID fellow will:

- 1) Communicate concisely with team members in the formal and informal daily follow-up of the patients.
- 2) Update patients on the status of their health and their test results compassionately and clearly that is appropriate to the patient's level of medical understanding.
- 3) Provide instruction and discussion on end-of-life issues, especially as they relate to end-stage refractory AIDS.
- 4) 2ndyear ID fellows will be able to counsel their patients more effectively about treatment options, antiretroviral side effects and complications of HIV/AIDS and other STDs.



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

Competencies: The fellow is expected to:

1) work effectively in the healthcare delivery setting and system at his/her clinic site, 2) coordinate patient care within the healthcare system and 3) work in inter-professional teams to enhance patient safety and improve patient care quality.

Intended learning outcomes: The ID fellow will able to:

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

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

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



Intended learning outcomes: The ID fellow will

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

Teaching Methods

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

Assessments

The Infectious Disease clinic attending provides informal ongoing verbal feedback to the ID fellow throughout the year. ID fellows are formally evaluated by their clinic attending using a written global assessment every quarter. These are available immediately upon completion for fellow review.

In addition, multi-source evaluations of the ID Fellow are completed every six months and include an evaluation by clinic staff and patients. Infectious Disease fellows have the opportunity to evaluate their clinic attending anonymously.

The continuity clinic experience is discussed at each semiannual review with the ID Program Director. This includes a discussion of the strengths and weaknesses of the clinic, the patient load, the attending physician and other issues affecting this educational experience.



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

2. Continuity Clinics (General ID):

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

Rotational Goals: The ID fellow will be able to

- 1) Learn to evaluate and treat outpatients in all aspects of their care.
- 2) Understand the health care system and be able to facilitate the provision of outpatient care.
- 3) Work with home health agencies to provide optimal care for those patients on outpatient therapy.

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

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



Intended learning outcomes: ID fellow will be able to

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

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

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

Intended learning outcomes: The ID fellow will:

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

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



Competencies: The fellow is expected to demonstrate:

- 1) Compassion, integrity and respect for others.
- 2) Respect for patient privacy and autonomy and sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in age, gender, culture, race, religion, disabilities and sexual orientation.

Intended learning outcomes: ID fellow will able to:

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

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

Competencies: The ID fellow is expected to:

- 1) Communicate effectively with patients and families across a broad range of socioeconomic and cultural backgrounds.
- 2) Communicate effectively with physicians, other health professionals and health-related agencies,
- 3) work effectively as a member and leader of a health care team and maintain comprehensive, timely and legible medical records.



Intended learning outcomes: ID fellow will be able to:

- 1) Communicate concisely with team members in the formal and informal daily follow-up of the patients.
- 2) Update patients on the status of their health and their test results compassionately and clearly that is appropriate to the patient's level of medical understanding.
- 3) Is expected to communicate directly with the primary physicians requesting a consultative opinion and communicate with other specialties¹ to develop a plan of care when necessary.
- 4) Is expected to address end-of-life care sensitively but clearly when appropriate.
- 5) The 2nd-year ID fellow is expected to handle more difficult communication issues, particularly with other specialties with minimal reliance on the attending physician and is expected to communicate the infectious disease issues with a greater level of sophistication.

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

Competencies: The fellow is expected to:

- 1) Work effectively in the health care delivery setting and system at his/her clinic site.
- 2) Coordinate patient care within the health care system and work in inter professional teams to enhance patient safety and improve patient care quality.

Intended learning outcomes: ID fellow will able to:

1. Demonstrate competence in interacting with multidisciplinary team members including but not limited to social services, nursing, pharmacy, chaplains and nutrition services.
2. Interact with home health services and health departments in the management of specific infectious diseases including but not limited to outpatient antibiotic therapy and tuberculosis.
3. Have a greater facility interacting with hospital services, home services and health department services to optimize outpatient care.



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

Competencies: Fellows are expected to develop skills and habits to be able to:

- 1) Locate, appraise and assimilate evidence for scientific studies related to their patients' health problems.
- 2) Use information technology to optimize learning and participate in the education of patients, families, students, residents and other health professionals as documented by evaluations of a fellow's teaching abilities by faculty.

Intended learning outcomes: ID fellow will able to:

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

Teaching Methods

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



Assessments

The Infectious Disease clinic attending provides informal ongoing verbal feedback to the ID fellow throughout the year. ID fellows are formally evaluated by their clinic attending using a written global assessment every quarter. These are available immediately upon completion for fellow review.

In addition, multi-source evaluations of the ID Fellow are completed every six months and include an evaluation by clinic staff and patients. Infectious Disease fellows have the opportunity to evaluate their clinic attending anonymously.

The continuity clinic experience is discussed at each semiannual review with the ID Program Director. This includes a discussion of the strengths and weaknesses of the clinic, the patient load, the attending physician and other issues affecting this educational experience.

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

Subspecialty Clinics

2.. Travel Clinic

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



Rotation Goals:

- 1) The ID fellow will learn to evaluate and advise patients pre- and post-travel.
- 2) The fellow will learn the appropriate diagnostic and therapeutic approaches for these patients and

will learn to place their illnesses into the proper global and socioeconomic context, which will include an understanding of orphan diseases.

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

and effective for the treatment of health problems and the promotion of health.

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

Intended learning outcomes: ID fellow will be able to

- 1) Formulate a comprehensive approach to the evaluation of pre-travel patients including obtaining a comprehensive and accurate medical history including appropriate travel details and will perform a physical examination.
- 2) Obtain a comprehensive and accurate medical and travel history of returning travellers.
- 3) Perform a comprehensive and accurate physical examination with added elements pertinent to the individual's differential diagnosis.

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

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



Intended learning outcomes: ID fellow will be able to

1) Understanding the pre-travel patient evaluation including utilization of internet-based resources and published guidelines for:

- a. Vaccine-preventable diseases
- b. Vector-borne diseases
- c. Prevention and/or self-treatment of gastrointestinal and other infections
- d. Administration of necessary vaccinations and prophylactic medications
- e. Education of the traveler on all aspects of safe travel

2) Demonstrate an understanding of diagnosis and treatment of diseases seen primarily in the returning traveller including but not limited to:

- a. Parasitic Infections, including diseases due to Protozoans and Helminths
- b. Bacterial diseases endemic to other regions, e.g., melioidosis, rickettsial disease, mycobacterial disease
- c. Fungal Diseases endemic to other regions, e.g., *Penicilliummarneffii*

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

Competencies: The fellow is expected to demonstrate:

- 1) Compassion, integrity and respect for others.
- 2) Respect for patient privacy and autonomy and sensitivity and responsiveness to a diverse patient population, including but not limited to diversity in age, gender, culture, race, religion, disabilities and sexual orientation.



Intended learning outcomes: the ID fellow will be able to

1) Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients, their families and society that supersedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and ongoing professional development.

2) Demonstrate sensitivity and responsiveness to patients' culture, age, gender, sexual orientation and disabilities both in their interactions with patients and in discussions with members of the multidisciplinary team caring for the patient. The ID fellow will respect the patient's privacy by adhering to HIPAA rules.

3) Respect patient autonomy and will discuss potential diagnostic and therapeutic approaches with the patient before recommending a definitive approach to care.

4) Demonstrate an understanding of neglected diseases and the ethics of clinical care in patients presenting to a tropical medicine clinic including vulnerable populations such as immigrants and refugees.

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

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



Intended learning outcomes: ID fellow will be able to

1) Update patients on the status of their health and their test results compassionately and clearly that is appropriate to the patient's level of medical understanding.

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

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

Intended learning outcomes: ID fellow will be able to:

1) Demonstrate competence in interacting with multidisciplinary team members including travel nurses and physicians.

2) Interact with home health services and health departments in the management of specific infectious diseases including but not limited to outpatient antibiotic therapy and tuberculosis.

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

Competencies: Fellows are expected to develop skills and habits to be able to:

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



Intended learning outcomes: ID fellow will be able to:

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

Teaching Methods

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

Assessments

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

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



RESEARCH EXPERIENCES

ID Fellows should have protected time for research during the first and second years. The fellows are expected to identify a mentor and develop a research proposal during their first year. This proposal is due to the Program Director and is reviewed by the local fellowship research committee for feasibility and to assess the project to be certain it matches the career goals of the fellow. In addition, both the mentor and the fellow mentee are expected to sign a mentor/mentee agreement together after a discussion of the content of the agreement. This is kept on file. Fellows may seek mentorship with any investigator (clinical or basic science) either within or outside the Division of Infectious Disease. A second research project is recommended where the ID fellow will be a co-investigator and not necessarily the main investigator like in the project.

Infectious control rotation

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

Rotational Goals:

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



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

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

Intended learning outcomes: ID fellow will be able to:

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

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

Competencies: The fellow is expected to demonstrate:

- 1) interest and attention to principles of patient safety, 2) recognition of the role of the physician and indicate this by attending committee meetings and 3) appropriate interactions with colleagues and staff.



Intended learning outcomes: ID fellow will be able to:

- 1) Demonstrate respect, compassion, and integrity; a responsiveness to the needs of patients, their families and society that supersedes self-interest; accountability to patients, society, and the profession; and a commitment to excellence and ongoing professional development.
- 2) Demonstrate a willingness to put patient welfare above their own when contributing to decisions about interventions and reporting outbreaks.

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

Competencies: The ID fellow is expected to:

- 1) communicate effectively with physicians, other health professionals and health-related agencies, and 2) work effectively as a member and leader of a health care team.

Intended learning outcomes: ID fellow will be able to:

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



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

Competencies: The fellow is expected to:

1) work effectively in the healthcare delivery setting and system at his/her clinic site, 2) coordinate patient care within the healthcare system and 3) work in interprofessional teams to enhance patient safety and improve patient care quality.

Intended learning outcomes: ID fellow will be able to:

- 1) Demonstrate competence in interacting with multidisciplinary team members including social services, nursing, and pharmacy.
- 2) Demonstrate an understanding of the complex interactions between multiple agencies, partner with other organizations as appropriate to act on improvement opportunities in the health care system, practice within external regulations, support patient safety initiatives and conserve resources.
- 3) 2nd- year ID fellows will play a greater role in decision-making and demonstrate leadership and cooperative management with particular attention to patient safety and quality initiatives.

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



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

Intended learning outcomes: ID fellow will be able to

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

Teaching Methods

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

Assessments

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



infection control experience is discussed at each semiannual review with the ID Program Director.

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

The training experience in clinical microbiology, is a one-day-per-week rotation for the whole first year in the clinical microbiology laboratory. The ID fellows are expected to be available for the functioning hours depending on the country's system of working hours with exceptions for clinic assignments. During this time ID fellow participate in structured rotations at the different benches in the clinical microbiology laboratory including, primary plating, sub culturing, susceptibility testing, blood cultures, respiratory, urines, miscellaneous, anaerobes, mycology, mycobacteriology, parasitology, virology, and molecular microbiology. They learn from the medical technologists the basic principles and practices in clinical microbiology and the capabilities of our laboratory. ID fellows are also expected to participate in daily microbiology laboratory rounds with the laboratory directors and pathology residents and fellows. Current problems, unusual findings, and instructive examples are the basis for discussion at laboratory rounds. Laboratory rounds also include a discussion of the integration of the microbiology laboratory into the health care system and the prevention of system errors. Fellows actively contribute to developing solutions and problem-solving in this arena. In addition, fellows should attend the weekly clinical pathology conference. This case-based conference integrates all areas of laboratory medicine.

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

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



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

Intended learning outcomes: ID fellow will be able to:

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

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



Competencies: The ID fellow will demonstrate:

- 1) Compassion, integrity and respect for others.
- 2) Accountability' to patients, society* and the profession.

Intended learning outcomes: ID fellow will be able to

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

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

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

Intended learning outcomes: ID fellow will be able to

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



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

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

Objectives:

1) The ID fellows will participate in discussions on microbiology rounds about reporting and interpretation of laboratory results.

2) The ID fellow will actively contribute to finding solutions to prevent system errors.

- **Practice-Based Learning:** Fellows must be able to investigate and evaluate their patient care

practices, appraise and assimilate scientific evidence, and improve their patient care practices.

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

Intended learning outcomes: ID fellow will be able to

1) Indicate understanding of his strengths and weaknesses during bimonthly evaluations with the attending faculty.

2) Utilize an evidence-based approach to clinical microbiology including appropriate and timely access to the medical literature.

3) Provide pertinent literature to the ID team.

Teaching Methods

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



Assessment

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

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

Level of Supervision

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



مجلس وزراء الصحة العرب
المجلس العربي للاختصاصات الصحية
المجلس العلمي لاختصاص الأمراض الباطنة
المنهاج التدريبي لاختصاص الدقيق للأمراض المعدية

Arab Board fellowship in Infectious Diseases

ID Fellowship Program

Structure and Requirements

- مدة التدريب سنتان.

- شرط التسجيل في الاختصاص أن يكون الطبيب حاصلًا على شهادة المجلس العربي

للاختصاصات الصحية في اختصاص الأمراض الباطنة العامة أو ما يعادلها من

البوردات المحلية والشهادة الأخرى.

- اسم الاختصاص:

اللغة العربية: الاختصاص الدقيق في الأمراض المعدية

اللغة الإنكليزية: Fellowship of Infectious Diseases



Outline:

- **Teams/structure: minimum one trainer for two fellows**
- **Program size: The number of ID trainers should be a minimum of 2 in the accredited center.**
- **Program duration: 24 months**
- **Hospital size and facilities:**
 - a. **The minimum size of 200 beds**
 - b. **ICU and CCU**
 - c. **Infectious diseases division/unit with at least 2 trainers**
 - d. **Microbiology Lab (at least 1 clinical microbiologist)**
 - e. **Haematology/Oncology service**
 - f. **Minimum 4 functional operating rooms**
 - g. **Delivery suite and operating room**
 - h. **Emergency department**
 - i. **Infection control department and antimicrobials stewardship program**
 - j. **Clinical pharmacy**
- **Service outline:**
 - Provide general medical ward consultations in infectious diseases cases admitted to the general medical ward or ID ward.
 - Provide infectious diseases consultations in critical care areas (ICU, RCU, CCU, Neuro ICU...)
 - Provide infectious disease consultation for immunocompromised patients (Hematological malignancies, oncology, bone marrow and organ transplant, HIV/AIDS...)
 - Provide infectious disease consultations for surgical patients including obstetrics and gynecology, general surgery, neurosurgery, plastic surgery, colorectal, cardiothoracic etc.
 - Provide infectious disease consultation for Emergency department.
 - Attend Outpatient clinics 2 times per week with at least once weekly clinic for HIV and STIs as the main physician with the supervision of an attending ID physician
 - Collaborate with microbiology and infection control program on daily basis and participate in their teaching activities



- Provide care for inpatients admitted under infectious disease service including daily rounds, supervision of management plan and coordination with multidisciplinary consultants
- Provide weekend rounds on all patients admitted under ID inpatient service and other sick patients signed out by the ID team
- Supervise directly the residents and the medical students rotating in ID team and plan the care of the patients followed by them
- Follow up of patients under the care of other services that ID team consulted on them as follows: non-critical and non-cancer patients: minimum twice weekly follow up or as per need
Critical care and immunocompromised patients: daily follow up with clear management plans

Logistics:

To have at least 2-3 teams, one providing inpatient service and the one providing referral service.

In medium-sized medical centres, 2 teams can be combined and the number of ID fellows can be reduced to

2.

Each fellow will have 4 weeks per year vacation.

Fellows from other rotations will share coverage as per the convenience of each program.

Fellows to cover maximum on calls including weekends 2 weeks per month Pediatric ID rotation is an obligatory elective 2-4 weeks / 2 years Public Health obligatory elective for 4 weeks.



Teaching Activities:

To organize all the teaching activities within the ID service for the residents and the medical students Journal Clubs: To conduct bi monthly journal club with the coordination of the ID trainers.

Program core curriculum topics: a minimum of 80 core knowledge lectures over 2years once or twice per week to cover topics pertinent to ID specialty as outlined in the program objectives including antimicrobials, microbiology laboratory including molecular techniques, pediatric, obstetrics, adult ID, pathology, public health and epidemiology, tropical medicine, infection control and outbreak investigations.

ID Weekly conference: To conduct and present once weekly case- based discussions coordinated by ID attending

Research activities: each fellow should be involved in at least 2 research projects with the supervision of an ID trainer and publish as first author in at least one research project.

National, Regional or International meetings: The fellow should be sponsored by their programs to attend at least 2 scientific meetings either at the national level (ex. Lebanese Society for Infectious Diseases Annual Congress, Saudi, Jordanian,), regional level (ex, Arab, Mediterranean ...). or international level (ex. ECCMID, IDSA. ISID ...).

Program Core Curriculum Topics:

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

1. Ethics and Medico-legal aspects relevant to the discipline
2. Microbial virulence factors and host defense mechanisms
3. Basic concepts of immunology
4. Anti-infective therapy
5. Immunization
6. The epidemiology, clinical course, manifestations, diagnosis, treatment, and prevention of major infectious agents
7. A critical assessment of the medical literature, medical informatics, clinical epidemiology, and biostatistics and research methodology
8. Quality assurance and cost containment in the clinical practice of Infectious Diseases
9. Fever, including fever of unknown origin and systemic illness with fever and rash



10. Pleuropulmonary infections including TB
11. Cardiovascular infections
12. Central nervous system infections
13. Gastrointestinal and intra-abdominal infections
14. Urinary tract infections
15. Sepsis syndromes
16. Skin and soft tissue infections
17. Infections of prosthetic devices
18. Bone and joint infections
19. Infections related to trauma, including animal and human bites
20. Healthcare-associated infections
21. Infections in surgical patients
22. SARS-CoV2 infections and other respiratory pathogens of pandemic potential
23. Infections in special hosts (immunocompromised, neutropenic patients)
24. HIV infection and AIDS
25. Infections of the reproductive organs
26. Sexually transmitted infections
27. Infections in solid organ transplant recipients and stem cell transplant recipients
28. Viral hepatitis
29. Infections in travelers
30. Infections in geriatric patients
31. Pre-and post-exposure prophylaxis
32. Zoonoses
33. Biodefence
34. Emerging and re- emerging infectious diseases.

Proposed textbook/Journals/Guidelines references

- Mandell, Douglas and Bennett's Principles
- Practice of Infectious Diseases
- Harrison's Infectious Diseases.
- Clinical Infectious Diseases



- Journal of Infectious Disease
- Lancet Infectious Disease
- Antimicrobial Agents and Chemotherapy
- Regional and international ID guidelines (WHO, CDC, IDSA, IAS, AIDS Info, AASLD, APASL, EASL for chronic viral hepatitis and HIV treatment)

General Principles:

Communication:

Effective communication among the team members is essential for organized and efficient rounds.

- Whenever the fellow changes teams or the attending physicians on service switch, it is the fellow's responsibility to coordinate with the attending on service early in the morning for the plan of the day
- The fellow on call for the weekend needs to coordinate also with the attending on call before leaving the hospital to inform him/her about any new consults after working hours.
- Early morning, the fellow needs to check the patient's list and identify any transfer to ICU or from ICU to the regular floor under the ID team to coordinate their management plan.

Pre-Round/Round/Micro data:

It is the fellow's responsibility to coordinate with the attending on service about the timing of the round to finalize the plans. No matter what time the attending will be rounding, it is the fellow's responsibility whether on inpatient services or referral service to:

- Round on the sickest patients first that are admitted under ID team
- Identify overnight events, get the laboratory results, radiology results and information, get the treatment plan from the primary team on referred patients and review patients physically with clear documentation of treatment plan after discussion with the attending ID physician.
- Contact Microbiology daily to get all the Micro data for the patients
- Review/ discuss all patients seen by the residents, interns and medical students prior to the attending rounds.



SIGN OUT:

A detailed accurate sign-out is very essential in order to guarantee the continuity of patient care. The following need to be present in every sign-out list:

- Patient's Full name and room number and case number
- Patients under ID team care needs to be clearly identified by adding word ID
- Each patient's antibiotics need to be cited as well as the date of start
- Pending ID workup on each patient
- Inactive patients on whom we can get reconciled to be kept on the list and marked as Inactive or typed in a smaller or italic font
- Discharged patients with pending workup that could necessitate follow up or change in antibiotic therapy need to remain on the list

THE LIST

It is a list of patients currently admitted under ID or followed on a given service.

It is entrusted to the fellows, to compose, edit, update and maintain the accurate vital information.

It is a valuable document that shall be updated on a DAILY basis by the fellow and treated with respect (contains patient information).

- The fellow on service will communicate electronically the list of patients, edited and updated to the attending on that service daily before 8:30 am.
- During the day: transfers between units, ER, floor etc... are communicated VERBALLY by the fellows to the attending or the other fellows (if more than one fellow)
- Those updates will be introduced to the team lists by the fellows on a daily basis.

WEEKEND SIGN OUT:

- The attending physician on a given team will sign out the team patients to the attending on call for the weekend and the fellow on call for the weekend and will highlight problems.
- The fellow on call will update the ID inpatients and referral lists and send it to the on-call attending physician.
- The fellow / attending on call will review the patients (ID inpatients, new referrals or sick known referrals) and forward feedback to concerned team next working day



How to excel as an ID Fellow?

- a. Find out what your trainer expects of you. Meet and try to exceed their expectations. Follow through on every assigned task.
- b. Be actively involved in the care of your patients to the greatest extent possible. Go the extra mile for your patients. You will benefit as much as they will.
- c. Go the extra mile for your team. Additional learning will follow. The more you put in, the more you will gain. Read every day about cases you encountered on the service.
- d. Read consistently and deeply about all the problems your patients face. Raise what you learn in your discussions with your team and in your notes. Good ID physicians must be good internal medicine specialists.
- e. Educate your team members about what you learn whenever possible.
- f. Supervise your junior colleagues and teach them as frequently as you can.
- g. Learn to do excellent presentations as early as possible. This will make you more effective inpatient care and gain the confidence of your supervisors to allow you more involved inpatient care.
- h. Ask good questions and expect to be answered.
- i. Speak up—share your thoughts in teaching sessions, share your opinions about your patients' care, constructively discuss how to improve the education you are receiving and the systems around you.
- j. Actively seek feedback and reflect on your experiences.
- k. Keep your goals focused on the right priorities, in the following order: patient care, learning, and personal satisfaction. You should always strive to meet all three goals.
- L. Always be enthusiastic. Be caring and conscientious and strive to deliver outstanding quality to your patients as you learn as much as you can from every experience.

The following expectations are common from all House staff working at the medical Centre:

- I. Attend all clerkship activities on time. If you must be absent, get permission in advance.
- II. Dress professionally. The way you dress makes a statement about your division and the medical profession: it will influence the way you are perceived by your patients and your colleagues. If you have any question about what constitutes professional dress, consult the hospital policy or senior staff.
- III. Treat every member of the health care team, your colleagues on the clerkship team, and every patient with respect.



- IV. Always introduce yourself, correctly identifying your role on the team as a fellow in ID.
- V. Make sure your recommendations are clear and specific. Each medical note includes your supervisors name, your name, role, and contact number.
- VI. Preserve confidentiality. Do not discuss patients in public places and destroy all papers with patient-specific information that are not part of the medical record. Do not look in the chart (paper or electronic) of any patient for whom you are not caring
- VII. Although you deserve breaks and vacations; make sure you finalize your patient workup and complete your duties before leaving.
- VIII. Be compassionate with patients and their families and be a good listener.

Supervision Policy

1. Direct by ID trainer supervision
2. Indirect that include a review of the fellow's patient management chart and notes of ID supervisor in the logbook.
3. Monthly formal evaluations by rotation supervisor
4. End – of – first year's clinical assessment including OSPE exam conducted locally (objective structured practical exam).



Final examination:

- الامتحان النهائي:

1. الامتحان الكتابي:

- يتألف من ورقة واحدة 100 سؤال على شكل أسئلة متعددة الخيارات (MCQ)
- يتم اختيار إجابة واحدة صحيحة من أصل أربع خيارات.
- المدة الزمنية للامتحان: ثلاث ساعات.
- العلامة 100 درجة، علامة النجاح 70% وما فوق.
- يعقد مرة واحدة في العام تزامنا مع امتحانات الامراض الباطنة.

2. الامتحان العملي (CCA): - يتكون من خمس محطات (ويتم الاستعانة بممثلين او

مرضى حقيقيين)، علامة النجاح 70 % وما فوق:

المحطة الأولى: محطة مهارات التواصل والاخلاقيات الطبية (20 دقيقة) / 20 علامة

المحطة الثانية والثالثة والرابعة (حالات سريرية قصيرة) (20 دقيقة لكل محطة) / 20 علامة لكل محطة).

المحطة الخامسة (مهارات ضبط العدوى) (20 دقيقة) / 20 علامة

ملاحظة:

- Pass in the clinical part is a must for grand total
- All parts of the examination should follow the roles of Arab board of Health Specializations.