

2012

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VERSION 1.1**

This document applies to those who begin training on or after July 1, 2012.

DEFINITION

Infectious Diseases is a subspecialty concerned with the prevention, investigation, diagnosis, and management of human illness caused by any infectious agent. Infectious diseases remain the leading cause of morbidity and mortality throughout the world and are important contributors to illness and death in Canada. These diseases traverse the usual boundaries of organs and systems and the specialist in Infectious Diseases must be prepared to deal with illnesses that involve any region of the body. The ability and likelihood of these diseases to be transmitted to other persons, and measures to prevent such transmission are an essential component of infectious disease practice. Additionally, patients with complex multi-system diseases, including congenital and acquired immune deficiencies, are at high risk of serious infections. These infections may further complicate the course of the patient's underlying disease and its management, and modify the presentation of the illness itself. Furthermore, there are non-infectious illnesses that may mimic the presentation of an infectious disease. It is therefore important that the Infectious Diseases specialist have a strong grounding in Internal Medicine or Pediatrics.

GOALS

Upon completion of training, a resident is expected to be a competent subspecialist in Infectious Diseases capable of assuming a consultant's role in the subspecialty. The resident must acquire a working knowledge of the theoretical basis of the subspecialty, including its foundations in the basic medical sciences and research. The specialist in Infectious Diseases must acquire expertise in critical analysis of the scientific literature and apply its findings to clinical practice, and be an effective participant in the education of colleagues, students, other health care professionals and patients.

Only candidates certified by the Royal College of Physicians and Surgeons of Canada in Internal Medicine or Pediatrics may be eligible for certification in Infectious Diseases. The practice of Infectious Diseases requires that the individual have the competencies acquired through training in Internal Medicine or Pediatrics.

Residents must demonstrate the requisite knowledge, skills, attitudes, and behaviours for effective patient-centred care and service to a diverse population of patients. Infectious Diseases Specialists must be knowledgeable about the impact of infectious diseases on communities and understand the roles and responsibilities of Infectious Diseases Specialists in the prevention, control and management of such diseases. In all aspects of practice, they

must be able to address ethical issues and issues of gender, sexual orientation, age, substance abuse, culture, ethnicity, and beliefs in a professional manner.

During the course of Infectious Diseases training, the resident must acquire clinical competence in the diagnosis and management of infections, together with a sound background in the basic sciences of microbiology, immunology, pathology, pharmacology, public health and epidemiology. Experience in both inpatient and ambulatory settings is necessary, including longitudinal follow-up. Residents must learn to serve as consultants to other health care professionals, and understand how to apply their specific skills in ongoing multidisciplinary and interprofessional care of patients. They must acquire an understanding of the microbiology laboratory, as well as the ability to order appropriate tests from the microbiology laboratory, interpret their results, and contribute to laboratory stewardship. The resident must strengthen the problem solving skills acquired during Internal Medicine or Pediatrics training and utilize them in the comprehensive management of infectious diseases in patients with complex diseases. The specialist in Infectious Diseases must have the ability to recognize and respond to new infectious diseases threats, and demonstrate judicious use of resources including antibiotics, laboratory, and other diagnostics.

INFECTIOUS DISEASES COMPETENCIES

At the completion of training, the resident will have acquired the following competencies and will function effectively as a:

Medical Expert

Definition:

As *Medical Experts*, Infectious Diseases physicians integrate all of the CanMEDS Roles, applying medical knowledge, clinical skills, and professional attitudes in their provision of patient-centred care. *Medical Expert* is the central physician Role in the CanMEDS framework.

Key and Enabling Competencies: Infectious Diseases physicians are able to...

1. Function effectively as consultants, integrating all of the CanMEDS Roles to provide optimal, ethical, and patient-centred medical care

- 1.1. Perform a consultation effectively, including the presentation of well-documented assessments and recommendations in oral, written and/or electronic form in response to a request from another health care professional
- 1.2. Demonstrate use of all CanMEDS competencies relevant to the practice of Infectious Diseases
- 1.3. Identify and appropriately respond to relevant ethical issues arising in patient care
- 1.4. Demonstrate the ability to prioritize professional duties effectively when faced with multiple patients and problems
 - 1.4.1. Recognize that the nature of infectious diseases, including outbreaks, is unpredictable, making it important that the Infectious Diseases physician demonstrate flexibility and strong prioritization skills

- 1.5. Demonstrate compassionate and patient-centred care
- 1.6. Recognize and respond to the ethical dimensions in medical decision-making
- 1.7. Demonstrate medical expertise in situations other than direct patient care, such as providing expert legal testimony, advising governments, infection prevention and control, public health as it relates to infectious diseases, and antimicrobial stewardship

2. Establish and maintain clinical knowledge, skills and attitudes appropriate to the practice of Infectious Diseases

- 2.1. Apply knowledge of the clinical, socio-behavioural, and fundamental biomedical sciences relevant to Infectious Diseases

Infectious agents:

- 2.1.1. Describe the taxonomy, structure, physiology, life cycle, virulence factors, pathology, and antimicrobial susceptibility of microorganisms that cause human disease
- 2.1.2. Describe the structure and pathogenesis of proteinaceous infectious particles (prions)

Acute and chronic infectious diseases:

- 2.1.3. Describe the etiology, epidemiology, pathogenesis, natural history, pathology, clinical features, prevention, and management of:
 - 2.1.3.1. Commonly seen community-acquired infections, including:
 - 2.1.3.1.1. Bacteremia, pneumonia, gastroenteritis and hepatitis, and genital, urinary tract, endovascular, central nervous system, skin and soft tissue, head and neck, bone and joint, and device associated infections
 - 2.1.3.2. Infectious diseases caused by specific pathogens, including bacteria, mycobacteria, fungi, viruses, parasites, and prions
 - 2.1.3.3. Infectious diseases in special hosts or specific populations, including:
 - 2.1.3.3.1. Immigrants and refugees
 - 2.1.3.3.2. Travellers
 - 2.1.3.3.3. Immune compromised hosts, including those with primary or secondary immune deficiency
 - 2.1.3.3.4. Pregnant women
 - 2.1.3.3.5. Pediatric patients from prematurity to adolescence
 - 2.1.3.3.6. Human immunodeficiency virus (HIV) infected individuals

OBJECTIVES OF TRAINING IN INFECTIOUS DISEASES (2012)

- 2.1.3.3.7. Injection drug users
- 2.1.3.3.8. Postoperative patients
- 2.1.3.3.9. Burn and trauma patients
- 2.1.3.3.10. Patients with cystic fibrosis
- 2.1.3.3.11. Nosocomial infections
- 2.1.3.3.12. Patients living in poverty
- 2.1.3.3.13. Patients with implanted medical devices
- 2.1.3.3.14. Critically ill patients
- 2.1.3.3.15. Indigenous persons

- 2.1.3.4. Infectious diseases occurring as a result of emerging pathogens and bioterrorism
- 2.1.3.5. Infections caused treatment-resistant organisms
- 2.1.3.6. Zoonoses, including ectoparasites

Infection prevention and control:

- 2.1.4. Discuss the duties and responsibilities of the infection control professional and hospital epidemiologist
- 2.1.5. Recognize an outbreak and describe the principles of outbreak investigation, both in the institutional and community setting
- 2.1.6. Demonstrate knowledge of reporting requirements to local public health authorities
- 2.1.7. Discuss surveillance methods
- 2.1.8. Describe infection prevention and control interventions,
- 2.1.9. Describe the principles and practice of disinfection and sterilization, including implications of disinfection and sterilization failure
- 2.1.10. Outline the practice and principles of environmental cleaning as it pertains to transmission
- 2.1.11. Discuss the role of infection prevention and control committees in the health care setting
- 2.1.12. Outline the pharmacologic and non-pharmacologic strategies to prevent surgical site infections
- 2.1.13. Discuss the principles of preventing and managing communicable diseases in institutional settings
- 2.1.14. Explain the relevance of molecular epidemiology techniques in infection prevention and control
- 2.1.15. Demonstrate knowledge of infectious diseases pertinent to occupational health

OBJECTIVES OF TRAINING IN INFECTIOUS DISEASES (2012)

- 2.1.16. Discuss the role of infection prevention and control in the identification and screening of patients for novel or emerging pathogens
- 2.1.17. Demonstrate knowledge of indications and procedures for donning and doffing personal protective equipment (PPE)

Complex problems in which infections may play a role:

- 2.1.18. Develop a differential diagnosis for fever syndromes, including fever of unknown origin, fever and skin eruption, fever in the immune compromised patient, periodic fever, recurrent/relapsing fever, and acute febrile illness, and describe the clinical and laboratory approach to their management
- 2.1.19. Recognize the presence of sepsis, systemic inflammatory response syndrome and multiple organ dysfunction/failure syndrome, and describe the principles of their management
- 2.1.20. Develop a differential diagnosis for and discuss the investigation of pulmonary infiltrates of uncertain etiology, particularly in the immune compromised host

Medical microbiology and clinical laboratory testing:

- 2.1.21. Discuss proper specimen selection, collection, and transportation for bacterial, viral, fungal, parasitic and prion infections
- 2.1.22. Explain how specimen quality is assessed
- 2.1.23. Demonstrate appropriate utilization of microbiology tests
- 2.1.24. Describe how the following laboratory tests are performed and/or interpreted:
 - 2.1.24.1. Methods for isolation and identification of microorganisms
 - 2.1.24.2. Antimicrobial susceptibility testing
 - 2.1.24.3. Serology for infectious agents
- 2.1.25. Demonstrate knowledge of the role of the microbiology laboratory in infection prevention and control, stewardship, and surveillance
- 2.1.26. Describe the laboratory reporting requirements for public health

Immunology:

- 2.1.27. Demonstrate knowledge of the concepts of innate and adaptive immunity
- 2.1.28. Demonstrate knowledge of the pathogenic mechanisms by which immune responses facilitate or prevent disease, including cytokines, graft versus host diseases, and transplant rejection
- 2.1.29. Develop an approach to the immunological evaluation of the patient with recurrent infections

OBJECTIVES OF TRAINING IN INFECTIOUS DISEASES (2012)

- 2.1.30. Discuss the effects of emerging therapies that selectively target specific components involved in host response

Immunization:

- 2.1.31. Demonstrate knowledge of passive and active immunization, especially as they relate to different populations, new vaccines, and new vaccination strategies
- 2.1.32. Discuss different types of vaccines, including live attenuated, conjugated polysaccharide, and purified bacterial protein
- 2.1.33. Discuss the indications, contraindications, efficacy, effectiveness, misconceptions regarding, and adverse effects of licensed vaccines

Antimicrobial agents and other infectious diseases therapies:

- 2.1.34. Demonstrate knowledge of classification of licensed antimicrobial agents
- 2.1.35. Describe the pharmacokinetics and pharmacodynamics of antimicrobial agents in normal and diseased states
- 2.1.36. Demonstrate knowledge of the mechanisms of action of and resistance to antimicrobial agents
- 2.1.37. Prevent, recognize and manage antimicrobial toxicities and drug-drug interactions
- 2.1.38. Demonstrate detailed knowledge of the clinical indications for, contraindications to, and use of antimicrobial agents
- 2.1.39. Discuss the economic implications of antimicrobial use
- 2.1.40. Demonstrate knowledge of the principles and indications for chemoprophylaxis
- 2.1.41. Demonstrate an awareness of the process of acquiring antimicrobial agents through Health Canada's Special Access Program (SAP) and other routes for accessing medication
- 2.1.42. Demonstrate knowledge of the clinical indications for, contraindications to, and use of immune globulin in the treatment of infection
- 2.1.43. Demonstrate knowledge of the clinical indications for, contraindications to, and use of antitoxins in the treatment of infection

Antimicrobial stewardship:

- 2.1.44. Describe the epidemiology of antimicrobial resistance, including its prevalence, incidence and contributing factors
- 2.1.45. Demonstrate knowledge of the implications of antimicrobial resistance at patient, health care setting, and community levels
- 2.1.46. Discuss strategies to promote judicious use of antimicrobials
- 2.1.47. Discuss benefits associated with antimicrobial stewardship programs and the components of these programs

OBJECTIVES OF TRAINING IN INFECTIOUS DISEASES (2012)

- 2.1.48. Discuss organization and implementation of antimicrobial stewardship programs at the hospital level
- 2.1.49. Discuss metrics for measuring efficacy of an antimicrobial stewardship program

Public health:

- 2.1.50. Identify infections and infectious syndromes of public health importance
 - 2.1.51. Discuss the principles of public health management of communicable infections, including surveillance, reporting, quarantine, prophylaxis, and environmental controls
 - 2.1.52. Discuss investigation of an epidemic or outbreak
 - 2.1.53. Describe physician reporting requirements for public health
- 2.2. Describe the CanMEDS framework of competencies relevant to Infectious Diseases
 - 2.3. Apply lifelong learning skills of the Scholar Role to implement a personal program to keep up to date and enhance areas of professional competence
 - 2.4. Contribute to the enhancement of quality care and patient safety in Infectious Diseases, integrating the best available evidence and best practices
 - 2.4.1. Discuss the impact of nosocomial infections on patient health and outcomes
 - 2.4.2. Prescribe antimicrobial agents in a safe and effective manner, considering their positive and negative effects in individual patients and the community in general

3. Perform a complete and appropriate assessment of a patient

- 3.1. Identify and effectively explore issues to be addressed in a patient encounter, including the patient's context and preferences
- 3.2. Elicit a history that is relevant, concise, and accurate to context and preferences for the purposes of diagnosis, management, health promotion, and disease prevention, including:
 - 3.2.1. Travel, work, and personal behaviours and exposures that may predispose the patient to certain infectious diseases
 - 3.2.2. Predisposing factors, family history, allergies and history of recurrent or recent infections that may suggest a history of immune compromise or infection with an antimicrobial-resistant microorganism
 - 3.2.3. Immunization status
- 3.3. Perform a focused physical examination that is relevant and accurate for the purposes of diagnosis, management, health promotion, and disease prevention
 - 3.3.1. Don and doff personal protective equipment, as needed

- 3.4. Select medically appropriate investigative methods in a resource-effective and ethical manner
 - 3.4.1. Identify the most appropriate microbiological tests for the specific infection under consideration
 - 3.4.2. Demonstrate basic knowledge of diagnostic imaging modalities that are useful in the investigation of infectious diseases and diseases that mimic infection

- 3.5. Demonstrate effective clinical problem solving and judgment to address patients' problems, including interpreting available data and integrating information to generate differential diagnoses and management plans
 - 3.5.1. Identify short and long term complications of infectious diseases and their treatments, including the potential for drug-drug interactions and occurrence of superinfections
 - 3.5.2. Suggest alternative non-infectious diseases as the cause of illness mimicking infectious diseases

4. Use preventive and therapeutic interventions effectively

- 4.1. Implement a management plan in collaboration with a patient, the patient's family¹, and consulting health professional
 - 4.1.1. Recognize that patient and family understanding and involvement are crucial to effecting adherence to the management plan
 - 4.1.2. Educate patients and families about the role of proper antimicrobial use in contributing to a good therapeutic outcome and decreasing the occurrence of antimicrobial resistance
 - 4.1.3. Educate patients and families about adverse effects and complications of treatment
 - 4.1.4. Educate patients and families on the role of immunizations in the prevention of disease, including the role of herd immunity

- 4.2. Demonstrate appropriate and timely application of preventive and therapeutic interventions
 - 4.2.1. Recognize and respond to those infections that represent a medical emergency
 - 4.2.2. Identify patients for whom chemoprophylaxis is recommended
 - 4.2.3. Evaluate and manage individuals who have been exposed to blood and/or bodily fluids
 - 4.2.4. Demonstrate an understanding of the role of harm reduction strategies

¹ Throughout this document, references to the patient's family are intended to include all those who are personally significant to the patient and are concerned with his or her care, including, according to the patient's circumstances, family members, partners, caregivers, legal guardians, and substitute decision-makers.

for individuals with ongoing risk for infection

- 4.2.5. Implement prompt infection control measures to prevent transmission of known and emerging communicable infectious diseases
- 4.3. Obtain appropriate informed consent for investigations and therapies
- 4.4. Ensure patients receive appropriate end-of-life care
 - 4.4.1. Discuss advanced care directives and end-of-life preferences/decisions with patients (or decision makers) for whom the physician provides ongoing care
 - 4.4.2. Recognize when antimicrobials may play a role in palliative care
- 5. Demonstrate proficient and appropriate use of procedural skills, both diagnostic and therapeutic**
 - 5.1. Demonstrate effective, appropriate, and timely performance of diagnostic procedures relevant to Infectious Diseases
 - 5.1.1. Apply safe practices relevant to specimen collection and handling in the microbiology laboratory, including the use of personal protective equipment
- 6. Seek appropriate consultation from other health professionals, recognizing the limits of their own expertise**
 - 6.1. Demonstrate insight into their own limits of expertise
 - 6.2. Demonstrate effective, appropriate, and timely consultation of another health professional as needed for optimal patient care
 - 6.3. Arrange appropriate follow-up care services for patients and their families

Communicator

Definition:

As *Communicators*, Infectious Diseases physicians effectively facilitate the doctor-patient relationship and the dynamic exchanges that occur before, during, and after the medical encounter.

Key and Enabling Competencies: Infectious Diseases physicians are able to...

- 1. Develop rapport, trust, and ethical therapeutic relationships with patients and families**
 - 1.1. Recognize that being a good communicator is a core clinical skill for physicians, and that effective physician-patient communication can foster patient satisfaction, physician satisfaction, adherence, and improved clinical outcomes

OBJECTIVES OF TRAINING IN INFECTIOUS DISEASES (2012)

- 1.2. Recognize that patients may identify individuals other than family members as their significant supports
 - 1.3. Demonstrate a positive, non-judgmental attitude towards patients and their families/supports
 - 1.3.1. Recognize the importance of developing and maintaining these relationships with vulnerable and marginalized patient populations who may be stigmatized because of their infectious disease and/or the factors that put them at risk of infection
 - 1.3.2. Display skill and caring in identifying and exploring issues that may be sensitive to patients, such as sexual practices or illegal drug-use practices
 - 1.3.3. Demonstrate an understanding of terminology that patients may use to describe personal practices and behaviours
 - 1.3.4. Familiarize oneself with the health and illness beliefs of patients from other ethnocultural backgrounds
 - 1.3.5. Establish positive therapeutic relationships with patients and their families/supports that are characterized by understanding, trust, respect, honesty and empathy
 - 1.3.6. Communicate complicated information to patients and families in an understandable manner, considering language skills and educational level
 - 1.4. Respect patient privacy, confidentiality, and autonomy
 - 1.4.1. Recognize that patients with an infectious disease may feel vulnerable in terms of confidentiality, privacy, and autonomy
 - 1.4.2. Communicate with patients in those situations where the physician is required by law to divulge personal patient information such as a communicable infection
 - 1.5. Counsel and support patients with newly diagnosed infection, particularly those infections that are chronic, potentially stigmatizing, or contagious to others
 - 1.6. Listen effectively and obtain and synthesize relevant history from patients, families/supports, and communities
 - 1.7. Be aware of and responsive to nonverbal cues
 - 1.7.1. Recognize that patients who feel embarrassed or ashamed by having an infectious disease, or of the behaviours that led to the infection, may exhibit nonverbal cues
 - 1.7.2. Engage the reluctant, ambivalent, or hostile patient during the course of a clinical encounter
 - 1.8. Facilitate a structured clinical encounter effectively
 - 1.9. Demonstrate respect for patients, their families/supports, and their value systems and health care preferences, which may be different from one's own values
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2. Accurately elicit and synthesize relevant information and perspectives of patients and families, colleagues, and other professionals

- 2.1. Gather information about illness, as well as the patient's beliefs, concerns, expectations, and illness experience
- 2.2. Seek out and synthesize relevant information from other sources, such as a patient's family and other professionals, while respecting individual privacy and confidentiality
 - 2.2.1. Seek out information about cultural beliefs that may impact on the patient's health from resources such as cultural associations and support agencies
- 2.3. Recognize the impact of such factors as age, gender, sexual practices, ethnocultural background, social support, alternative health care practices, substance abuse, financial support, education, and emotional influences on a patient's illness

3. Convey relevant information and explanations to patients and families/supports, colleagues, and other professionals

- 3.1. Deliver information to a patient and family, colleagues, and other professionals in a humane manner and in such a way that it is understandable and encourages discussion and participation in decision-making
 - 3.1.1. Be aware of the potential for mixed messages to be delivered to patients and their families, particularly as this relates to choice of diagnostic procedures, antimicrobial agents, duration of antimicrobial therapy and infection prevention and control measures
 - 3.1.2. Use various strategies to engage the reluctant, ambivalent, or hostile patient, including vaccine-hesitant patients
 - 3.1.3. Communicate with other health professionals in a manner that facilitates the delivery of consistent messages to the patients and their families
 - 3.1.4. Disclose adverse events
- 3.2. Address challenging communication issues effectively, including obtaining informed consent, delivering bad news, complying with public health reporting requirements and contact tracing, and addressing anger, confusion and misunderstanding
 - 3.2.1. Obtain informed consent and assent, such as for HIV testing and giving immunizations

4. Develop a common understanding on issues, problems, and plans with patients, families, and other professionals to develop a shared plan of care

- 4.1. Identify and effectively explore problems to be addressed from a patient

- encounter, including the patient's context, responses, concerns, and preferences
- 4.2. Respect diversity and differences, including the impact of gender, religion, sexual identification and orientation, and cultural beliefs in decision-making
 - 4.3. Encourage discussion, questions, and interaction in the encounter
 - 4.4. Engage patients, families, and relevant health professionals in shared decision-making to develop a plan of care
 - 4.4.1. Recognize that marginalized patients may feel disempowered and require additional support, such as social workers and/or patient advocates, to assist them in shared decision-making
- 5. Convey oral, written, and/or electronic information effectively about a medical encounter**
- 5.1. Maintain clear, concise, accurate, and appropriate records of clinical encounters with rationale for plans
 - 5.1.1. Write well-organized letters, providing clear direction to the referring physicians and other health professionals where indicated
 - 5.1.2. Write well-organized and legible orders and progress notes in the medical chart
 - 5.2. Present oral reports of clinical encounters and plans
 - 5.3. Convey medical information appropriately to ensure safe transfer of care
- 6. Present medical information effectively to the public or media about a medical issues**
- 6.1. Recognize those topics that are likely to be of public interest, such as communicable disease outbreaks, immunizations, antimicrobial resistance, and potential threats such as bioterrorism, pandemic and emerging infections
 - 6.2. Contribute to the development of patient/public education/information tools
 - 6.3. Convey information in a manner that is accurate and easily understood

Collaborator

Definition:

As *Collaborators*, Infectious Diseases physicians effectively work within a health care team to achieve optimal patient care.

Key and Enabling Competencies: Infectious Diseases physicians are able to...

1. Participate effectively and appropriately in an interprofessional health care team

- 1.1. Describe the subspecialist's roles and responsibilities to other professionals, particularly in the context of:
 - 1.1.1. Infection prevention and control and antimicrobial stewardship and pharmacy and therapeutics committees in acute and non-acute care settings
 - 1.1.2. Interprofessional patient care teams, including HIV, Hepatitis, STD, transplant, and outpatient intravenous therapy, in inpatient and outpatient settings
 - 1.2. Describe the roles and responsibilities of other professionals in the health care team
 - 1.3. Recognize and respect the diverse roles, responsibilities, and competencies of other professionals in relation to their own
 - 1.4. Work with others to assess, plan, provide, and integrate care for individuals and groups of patients
 - 1.4.1. Recognize that integration of care usually involves health care and non-health care providers in both the hospital and community settings
 - 1.4.2. Work effectively as a team member when not in a team leadership role
 - 1.5. Work with others to assess, plan, provide, and review other tasks, such as research problems, educational work, program review or administrative responsibilities
 - 1.5.1. Demonstrate an awareness that most activities in the health care and university settings involve collaboration with colleagues and other professionals in health care and non-health care fields
 - 1.5.2. Participate in infection prevention and control, drugs and therapeutics, and antimicrobial stewardship committees
 - 1.5.3. Participate in hospital accreditation activities
 - 1.5.4. Participate in educational activities/programs for health care workers regarding infectious diseases and their prevention and management
 - 1.6. Participate in interprofessional team meetings
 - 1.6.1. Work collaboratively with interprofessional team members to support the best possible health outcomes for patients
 - 1.7. Enter into interdependent relationships with other professionals for the provision of quality care, functioning within the principles of team dynamics
 - 1.8. Describe the principles of team dynamics
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1.9. Respect team ethics, including confidentiality, resource allocation, and professionalism

1.10. Demonstrate leadership in a health care team, as appropriate

2. Work with other health professionals effectively to prevent, negotiate, and resolve interprofessional conflict

2.1. Demonstrate a respectful attitude towards colleagues and members of an interprofessional team

2.2. Work with other professionals to prevent conflicts

2.2.1. Recognize that infection prevention and control, and antimicrobial stewardship activities and policies may conflict with the practice pattern of other physicians and conventional beliefs

2.2.2. Employ strategies to minimize the potential for conflict related to infection prevention and control, and antimicrobial stewardship and/or drugs and therapeutics responsibilities

2.3. Respect differences and the scope of practice of other professions

2.3.1. Recognize that different professionals have varying levels of knowledge, attitudes and adherence to accepted infection prevention and control, immunization, and antimicrobial prescribing practices

2.3.2. Demonstrate collegiality in efforts to educate other professionals in accepted infection prevention and control, and antimicrobial and vaccination prescribing practices

2.4. Reflect on their own differences, misunderstandings and limitations that may contribute to interprofessional tension

2.5. Reflect on interprofessional team function

2.6. Employ collaborative negotiation to resolve conflicts

2.6.1. Resolve conflicts arising out of infection prevention and control, laboratory testing, and antimicrobial utilization/stewardship responsibilities

Manager

Definition:

As *Managers*, Infectious Diseases physicians are integral participants in health care organizations, organizing sustainable practices, making decisions about allocating resources, and contributing to the effectiveness of the health care system.

Key and Enabling Competencies: Infectious Diseases physicians are able to...

1. Participate in activities that contribute to the effectiveness of their health care organizations and systems

- 1.1. Work collaboratively with others in their organizations to advise on:
 - 1.1.1. Infection prevention and control activities and antimicrobial stewardship strategies
 - 1.1.2. Planning for infectious diseases emergencies such as pandemic influenza, natural disasters, emerging pathogens and bioterrorism events
 - 1.1.3. Occupational health issues related to infection in the health care setting
 - 1.1.4. Immunization recommendations and strategies
- 1.2. Participate in systemic quality process evaluation and improvement, including patient safety initiatives
 - 1.2.1. Serve on infection prevention and control, antimicrobial stewardship, and drugs and therapeutics committees
 - 1.2.2. Undertake audits related to such areas as health care associated infections and antimicrobial use in collaboration with other health care personnel
 - 1.2.3. Participate in critical incident/near miss audit and response activities
 - 1.2.4. Demonstrate awareness of the principles and practice of continuous quality improvement in health care
- 1.3. Describe the structure and function of the health care system as it relates to Infectious Diseases, including the roles of physicians
 - 1.3.1. Demonstrate knowledge of the roles and responsibilities of local, provincial, and federal public health professionals and agencies and their relationship with Infectious Diseases specialists
 - 1.3.2. Describe the role of provincial health departments and their relations with health care settings
- 1.4. Describe the principles of health care financing, including physician remuneration, budgeting, and organizational funding
 - 1.4.1. Recognize the physician's role in participating in program management, including budgetary processes and advocacy for increased resources where appropriate

2. Manage their practice and career effectively

- 2.1. Set priorities and manage time to balance patient care, practice requirements, outside activities, and personal life

OBJECTIVES OF TRAINING IN INFECTIOUS DISEASES (2012)

- 2.2. Manage a practice including finances and human resources
 - 2.2.1. Manage time and work efficiently as either an independent physician or as a member of an intra- or interdisciplinary or interprofessional team
 - 2.2.2. Deal effectively with issues of missed and late patient appointments and other managerial matters that may be encountered, such as with patients with substance abuse problems
 - 2.2.3. Demonstrate awareness of the various modes of delivering care to patients with infectious diseases in different settings, including directly observed therapy to patients with tuberculosis (TB), outpatient, and home antimicrobial therapy
 - 2.2.4. Participate in program planning, budgeting, and evaluation of special modes of delivering infectious diseases care, including outpatient intravenous antibiotic therapy and directly observed therapy
 - 2.2.5. Demonstrate basic negotiation skills
 - 2.2.6. Prioritize and manage competing responsibilities while on call
- 2.3. Implement processes to ensure personal practice improvement
 - 2.3.1. Develop a continuing professional education strategy, including participating in formal educational programs and regular review of the literature
 - 2.3.2. Develop a strategy for personal practice evaluation that may include periodic audits of resource utilization and patient outcomes
- 2.4. Employ information technology appropriately for patient care

3. Allocate finite health care resources appropriately

- 3.1. Demonstrate an understanding of the importance of just allocation of health care resources, balancing effectiveness, efficiency, and access with optimal patient care
 - 3.1.1. Discuss the economic implications of infection prevention and control
 - 3.1.2. Apply infection prevention and control practices and knowledge to prevent diseases and investigate outbreaks of infectious illnesses in the hospital and community setting
 - 3.1.3. Utilize pharmacotherapeutic expertise to participate in the hospital formulary selection of antimicrobial agents and immunization products, with consideration being given to cost-effectiveness of these agents/products
- 3.2. Apply evidence and management processes for cost-appropriate care
 - 3.2.1. Access and apply a broad base of information to the care of patients in ambulatory care, hospitals and other health care settings, including knowledge of the most cost effective laboratory procedures

- 3.2.2. Demonstrate an understanding of the importance of antimicrobial stewardship in optimizing resource utilization

4. Serve in administration and leadership roles

- 4.1. Participate effectively in committees and meetings
 - 4.1.1. Be an effective resource to the infection prevention and control committee
 - 4.1.2. Serve as an advisor on antimicrobial agents to the pharmacy and therapeutics committee
 - 4.1.3. Demonstrate an understanding of emergency preparedness planning for infectious diseases emergencies
- 4.2. Lead or implement change in health care
- 4.3. Plan relevant elements of health care delivery, such as work and call schedules

Health Advocate

Definition:

As *Health Advocates*, Infectious Diseases physicians responsibly use their expertise and influence to advance the health and well-being of individual patients, communities, and populations.

Key and Enabling Competencies: Infectious Diseases physicians are able to...

1. Respond to individual patient health needs and issues as part of patient care

- 1.1. Identify the health needs of an individual patient
 - 1.1.1. Identify determinants of health particular to an individual patient
 - 1.1.2. Adapt patient assessment and management according to particular determinants of health
 - 1.1.3. Determine a patient's ability to access various services in the health and social systems
- 1.2. Identify opportunities for advocacy, health promotion, and disease prevention with individuals to whom they provide care
 - 1.2.1. Appreciate that patients with infectious diseases may be vulnerable to discrimination, poverty, sexual assault, and violence
 - 1.2.2. Advocate on behalf of the patient in the community or on the health care team, including supporting the individual's efforts to obtain affordable medication, legal assistance, and housing, through referrals to social services, community organizations, and legal aid

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- 1.2.3. Identify behaviours that place patients at risk for adverse health outcomes, such as recreational drug use, excessive alcohol consumption, unsafe travel, unsafe food handling, and unsafe sexual practices, and recommend strategies to reduce those risks
 - 1.2.4. Promote and educate an evidence-based approach to infectious diseases prevention and management, including vaccination and pitfalls of unproven therapies
 - 1.2.5. Recognize and respond to misconceptions that people may have about vaccine effectiveness and safety
- 1.3. Demonstrate an appreciation of the possibility of competing interests between individual advocacy issues and for the community at large

2. Respond to the health needs of the communities that they serve

- 2.1. Describe the practice communities that they serve
- 2.2. Identify opportunities for advocacy, health promotion, and disease prevention in the communities that they serve, and respond appropriately
 - 2.2.1. Identify initiatives and programs to reduce community infections, including immunization programs, screening for infection, hand hygiene programs, and needle exchange programs
 - 2.2.2. Advocate for patients with infectious diseases, including serving on committees and working groups
 - 2.2.3. Advocate for antimicrobial stewardship
- 2.3. Demonstrate an appreciation of the possibility of competing interests between governments, communities served, and other populations, such as government policy in conflict with evidence supporting risk reduction interventions

3. Identify the determinants of health for the populations that they serve

- 3.1. Identify the psychological, social, and physical determinants of health of the population, including barriers to achieving optimum health and access to care and resources
 - 3.1.1. Recognize that individuals at risk for infection from injection drug use often come from backgrounds of low education level and low socioeconomic status
- 3.2. Identify vulnerable or marginalized populations, including immigrants and those at risk for HIV, tuberculosis, viral hepatitis and sexually transmitted diseases, and respond appropriately
 - 3.2.1. Apply available knowledge regarding health promotion and disease prevention within vulnerable or marginalized populations, including street clinics, needle exchanges, and safer sex programs

- 3.2.2. Contribute to the generation of population-based data for improved understanding of the health issues of vulnerable or marginalized populations

4. Promote the health of individual patients, communities, and populations

- 4.1. Describe an approach to implementing a change in a determinant of health of a population they serve
- 4.2. Describe how public policy impacts on the health of the populations served
 - 4.2.1. Identify policies that affect health, either positively or negatively, such as childhood immunization, isolation and quarantine, antimicrobial restrictions, harm reduction programs, and non-occupational HIV post-exposure prophylaxis
- 4.3. Identify points of influence in the health care system and its structure
 - 4.3.1. Identify contacts within the health care system, including hospital administrators, communications experts, and medical officers of health, who have the ability to effect change that will impact on the health of the populations served
- 4.4. Describe the ethical and professional issues inherent in health advocacy, including altruism, social justice, autonomy, integrity, and idealism
- 4.5. Recognize that isolation and quarantine measures to prevent the spread of infection may interfere with the patient's autonomy, liberty and quality of care
- 4.6. Recognize that legislated reporting requirements for infectious diseases may place the physician in conflict with the patient's desire for confidentiality and privacy
- 4.7. Demonstrate an appreciation of the possibility of conflict inherent in their role as a health advocate for a patient or community with that of manager or gatekeeper
- 4.8. Describe the role of the medical profession in advocating collectively for health and patient safety

Scholar

Definition:

As *Scholars*, Infectious Diseases physicians demonstrate a lifelong commitment to reflective learning, as well as the creation, dissemination, application and translation of medical knowledge.

Key and Enabling Competencies: Infectious Diseases physicians are able to...

1. Maintain and enhance professional activities through ongoing learning

- 1.1. Describe the principles of maintenance of competence
 - 1.1.1. Explain the Maintenance of Certification requirements of the Royal College of Physicians and Surgeons of Canada
 - 1.1.2. Explain the principles of continuing professional development
 - 1.1.3. Formulate relevant personal learning objectives and projects
- 1.2. Describe the principles and strategies for implementing a personal knowledge management system
- 1.3. Recognize and reflect on learning issues in practice
 - 1.3.1. Recognize and correct deficits in knowledge through targeted learning
- 1.4. Conduct personal practice audits
- 1.5. Pose an appropriate learning question
- 1.6. Access and interpret the relevant evidence
- 1.7. Integrate new learning into practice
- 1.8. Evaluate the impact of any change in practice
- 1.9. Document the learning process

2. Critically evaluate medical information and its sources, and apply this appropriately to practice decisions

- 2.1. Describe the principles of critical appraisal
- 2.2. Critically appraise retrieved evidence in order to address a clinical question
- 2.3. Integrate critical appraisal conclusions into clinical care

3. Facilitate the learning of patients, families, students, residents, other health professionals, the public and others, as appropriate

- 3.1. Describe principles of learning relevant to medical education
 - 3.1.1. Discuss teaching models for patient and colleague education
- 3.2. Identify collaboratively the learning needs and desired learning outcomes of others
- 3.3. Select effective teaching strategies and content to facilitate others' learning, including students, junior residents, and other health professionals
- 3.4. Deliver effective lectures or presentations
- 3.5. Assess and reflect on teaching encounters

- 3.6. Provide effective feedback
 - 3.6.1. Evaluate the knowledge, skills, and competence of junior learners on the infectious diseases service
- 3.7. Describe the principles of ethics with respect to teaching

4. Contribute to the development, dissemination, and translation of new knowledge and practices

- 4.1. Describe the principles of research and scholarly inquiry
- 4.2. Describe the principles of research ethics
- 4.3. Pose a scholarly clinical or research infectious disease question
- 4.4. Conduct a systematic search for evidence to identify gaps in knowledge around the clinical or research question
- 4.5. Select and apply appropriate methods to answer the question
- 4.6. Disseminate scientific and/or medical information in the peer reviewed literature
- 4.7. Implement a solution in practice, where appropriate
- 4.8. Complete a scholarly project relevant to Infectious Diseases that is suitable for peer-reviewed publication or presentation at an academic meeting

Professional

Definition:

As *Professionals*, Infectious Diseases physicians are committed to the health and well-being of individuals and society through ethical practice, profession-led regulation, and high personal standards of behaviour.

Key and Enabling Competencies: Infectious Diseases physicians are able to...

1. Demonstrate a commitment to their patients, profession, and society through ethical practice

- 1.1. Exhibit appropriate professional behaviours in practice, including honesty, integrity, commitment, compassion, respect, an appreciation of diversity, and altruism
 - 1.1.1. Demonstrate an understanding of one's own beliefs and values as they relate to issues around infectious diseases that may influence one's professional care
 - 1.1.2. Demonstrate self-awareness
 - 1.1.3. Exhibit professional behaviour in all settings, including when on call
- 1.2. Demonstrate a commitment to delivering the highest quality care and

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maintenance of competence

- 1.3. Recognize and appropriately respond to ethical issues encountered in Infectious Diseases, such as informed consent, advanced directives, confidentiality, end of life care, isolation and quarantine, and dealing with individuals who may put others at risk by virtue of their sexual practices or other behaviours
- 1.4. Demonstrate ethical decision-making processes
- 1.5. Identify, declare, and manage perceived, potential, and actual conflicts of interest
 - 1.5.1. Recognize the potential for conflicts of interest related to interactions with manufacturers and/or distributors of antimicrobial agents, vaccines, diagnostics, and infection prevention devices and equipment
- 1.6. Recognize the principles and limits of patient privacy and confidentiality, as defined by the law and professional practice standards, which include:
 - 1.6.1. Confidentiality issues that are critical to the proper practice of Infectious Diseases, including HIV disclosure
 - 1.6.2. Communicate with patients, as appropriate, those situations where the physician may be required by law to divulge personal patient information such as a communicable infection
- 1.7. Maintain appropriate professional boundaries with patients and their families
- 1.8. Demonstrate tolerance for ambiguity, uncertainty, and the possibility of error in decision-making; demonstrate flexibility and willingness to adjust appropriately to changing circumstances

2. Demonstrate a commitment to their patients, profession, and society through participation in profession-led regulation

- 2.1. Demonstrate knowledge and understanding of professional, legal, and ethical codes of practice, including
 - 2.1.1. Appropriate conduct when interacting with industry, including the manufacturers and distributors of antimicrobials, vaccines, infection prevention devices and equipment, and diagnostics products
- 2.2. Fulfil the regulatory and legal obligations required of current practice
 - 2.2.1. Identify reporting requirements for communicable diseases
 - 2.2.2. Demonstrate knowledge of legal and ethical codes of professional behaviour and the obligations that apply to Infectious Diseases physicians, including public health legislation around reportable infections, and reporting of sexual abuse
- 2.3. Demonstrate accountability to professional regulatory bodies
- 2.4. Recognize and respond to others' unprofessional behaviours in practice
- 2.5. Participate in peer review

3. Demonstrate a commitment to physician health and sustainable practice

- 3.1. Balance personal and professional priorities to ensure personal health and a sustainable practice
- 3.2. Strive to heighten personal and professional awareness and insight
- 3.3. Recognize other professionals in need and respond appropriately
- 3.4. Use safe practices at all times including when in the microbiology laboratory and when on call
- 3.5. Demonstrate a proper risk assessment for donning appropriate personal protective equipment

This document is to be reviewed by the Specialty Committee in Infectious Diseases by November 2020.

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