

2019

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Effective for residents who enter training on or after July 1, 2019.

DEFINITION

Cardiac Surgery is the branch of surgery concerned with disease of the pericardium, heart, and great vessels.

CARDIAC SURGERY PRACTICE

Cardiac Surgery is a surgical specialty that improves survival and enhances quality of life in patients with cardiovascular disease, both congenital and acquired.

Cardiac surgeons are involved in the care of patients with suspected cardiac disease through each stage of their journey, including selecting appropriate investigations, interpreting the results of those investigations, as well as determining the patient's surgical options and candidacy. Cardiac surgeons optimize patients for surgical, endovascular, and other interventions, perform the appropriate procedures, participate in post-operative critical care management, and provide in-hospital post-operative care before transitioning the patient back to the care of their referring physician or primary care provider. In some cases, the cardiac surgeon may provide further long-term care for patients whose conditions require ongoing monitoring.

Cardiac surgeons manage the medical and surgical aspects of a variety of cardiovascular conditions, including ischemic heart disease, valvular heart disease, thoracic aortic disease, arrhythmia, pericardial disease, cardiac tumours, congenital cardiac disease, pulmonary vascular disease, and injuries to the cardiothorax. They participate in the management of patients with heart failure and cardio-pulmonary failure, assessing perioperative risk, collaborating with cardiologists to establish a management plan, and providing expert surgical management when required. The procedures performed by cardiac surgeons include short- and long-term mechanical cardiopulmonary support, implantation of pacemakers and implantable cardioverter defibrillators (ICDs), minimally invasive surgery and endovascular interventions, as well as cardiac surgery with or without cardiopulmonary bypass. New advances in Cardiac Surgery are providing avenues to treat patients who were previously deemed inoperable or allowing procedures to be performed by less invasive means and thus

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facilitating faster recovery.

Cardiac Surgery is a discipline that depends on collaboration with cardiologists, anesthesiologists, critical care medicine physicians, perfusionists, nurses, dietitians, physiotherapists, and other health care professionals to achieve optimal patient outcomes.

Cardiac surgeons practise in tertiary care hospitals where their patients can receive the full range of diagnostic services, intensive care, and access to the collaborative care of interprofessional heart teams to achieve excellent clinical results. In addition to providing direct patient care, cardiac surgeons participate as competent health care administrators, educators, and researchers in both clinical and basic science.

CARDIAC SURGERY COMPETENCIES

Medical Expert

Definition:

As *Medical Experts*, cardiac surgeons integrate all of the CanMEDS Roles, applying medical knowledge, clinical skills, and professional values in their provision of high-quality and safe patient-centred care. Medical Expert is the central physician Role in the CanMEDS Framework and defines the physician's clinical scope of practice.

Key and Enabling Competencies: Cardiac surgeons are able to...

1. Practise medicine within their defined scope of practice and expertise

- 1.1. Demonstrate a commitment to high-quality care of their patients
- 1.2. Integrate the CanMEDS Intrinsic Roles into their practice of Cardiac Surgery
- 1.3. Demonstrate the competencies of Surgical Foundations
- 1.4. Apply knowledge of the clinical and biomedical sciences relevant to Cardiac Surgery
 - 1.4.1. Cardiac embryology
 - 1.4.2. Anatomy and physiology of the cardiovascular system
 - 1.4.2.1. Coronary circulation
 - 1.4.2.2. Cardiac valves and relationships to adjacent structures
 - 1.4.2.3. Endocardium
 - 1.4.2.4. Cardiac conduction system
 - 1.4.2.5. Thoracic aorta, including its intrathoracic branches and related intrathoracic structures
 - 1.4.2.6. Pulmonary circulation
 - 1.4.2.7. Pericardium
 - 1.4.2.8. Peripheral vasculature

CARDIAC SURGERY COMPETENCIES (2019)

- 1.4.3. Pathophysiology of the fetal, neonatal, and pediatric circulation
- 1.4.4. Electrophysiology as relevant to the normal cardiac rhythm and cardiac arrhythmias
- 1.4.5. Pathology and pathophysiology as relevant to cardiovascular diseases and conditions
- 1.4.6. Pathophysiology of brain death and management of the organ donor, including biochemistry and pharmacology of donor heart preservation
- 1.4.7. Immunology of cardiac transplant rejection and management of immunosuppression
- 1.4.8. Principles of diagnosis, natural history, and medical and surgical management of the following:
 - 1.4.8.1. Ischemic heart disease
 - 1.4.8.1.1. Acute coronary syndromes and complications of myocardial infarction, including ischemic ventricular septal defect (VSD), cardiac rupture, and mitral insufficiency
 - 1.4.8.1.2. Chronic coronary insufficiency, including indications, timing, and outcomes of revascularization
 - 1.4.8.2. Valvular heart disease
 - 1.4.8.2.1. Infective endocarditis
 - 1.4.8.3. Arrhythmia
 - 1.4.8.3.1. Atrial fibrillation
 - 1.4.8.3.2. Ventricular and supraventricular arrhythmias
 - 1.4.8.4. Cardiopulmonary failure, including end-stage heart and lung disease
 - 1.4.8.5. Congenital cardiac defects
 - 1.4.8.6. Cardiac tumours
 - 1.4.8.7. Pericardial disease
 - 1.4.8.8. Thoracic aortic disease
 - 1.4.8.9. Pulmonary vascular disease
 - 1.4.8.10. Trauma, with emphasis on thoracic injury
 - 1.4.8.11. Concomitant medical conditions in the patient undergoing cardiac surgery, including but not limited to diabetes, renal dysfunction, and respiratory failure
 - 1.4.8.12. Cerebrovascular disease, particularly when presenting with concomitant cardiac disease
 - 1.4.8.13. Vascular, neurological, and general surgical complications in patients with cardiac disease

CARDIAC SURGERY COMPETENCIES (2019)

- 1.4.8.14. Wound complications
- 1.4.8.15. Abnormalities in coagulation, including but not limited to heparin-induced thrombocytopenia

- 1.4.9. Principles of diagnostic techniques and imaging relevant to Cardiac Surgery
 - 1.4.9.1. Electrocardiography (ECG)
 - 1.4.9.2. Echocardiography, including transthoracic (TTE), transesophageal (TEE), point-of-care, epiaortic, and epicardial echocardiography
 - 1.4.9.3. Stress testing
 - 1.4.9.4. Cardiac catheterization
 - 1.4.9.5. Hemodynamic evaluation
 - 1.4.9.6. Radiography and fluoroscopy
 - 1.4.9.7. Nuclear medicine imaging, including positron emission tomography (PET)
 - 1.4.9.8. Computed tomography (CT)
 - 1.4.9.9. Magnetic resonance imaging (MRI)

- 1.4.10. Principles of therapeutic modalities relevant to Cardiac Surgery, including but not limited to
 - 1.4.10.1. Parenteral nutrition
 - 1.4.10.2. Pharmacology
 - 1.4.10.2.1. Anesthetic management, including the use of sedatives, analgesics, and local anesthetic agents
 - 1.4.10.2.2. Cardiac medications, including but not limited to inotropes, antiarrhythmics, vasoactive agents, antihypertensive agents, statins, and heart failure therapies
 - 1.4.10.2.3. Antimicrobials
 - 1.4.10.2.4. Anticoagulation and anti-platelet therapy, and reversal agents
 - 1.4.10.2.5. Thrombolytic therapies
 - 1.4.10.3. Blood products and recombinant factors
 - 1.4.10.4. Myocardial intraoperative protection
 - 1.4.10.4.1. Ischemia and reperfusion injury and their prevention
 - 1.4.10.4.2. Myocardial metabolic pathways and their response to ischemia and reperfusion
 - 1.4.10.4.3. Cardioplegia: composition, temperature, alternative delivery methods, and assessment of myocardial protection

- 1.4.11. Principles of the support of failing cardiopulmonary circulation
- 1.4.12. Principles of intensive care management, including but not limited to ventilator management, inotropic management, treatment of arrhythmias, and the manipulation of the pulmonary and systemic circulations
- 1.4.13. Principles of the use of cardiopulmonary bypass (CPB)
 - 1.4.13.1. Use and pathophysiology of CPB
 - 1.4.13.2. Design and function of components of CPB circuits, including alternate types of pumps and oxygenators
 - 1.4.13.3. Complications of CPB
 - 1.4.13.4. Effects of CPB on the inflammatory, coagulation, and hematological systems, as well as end organ damage
 - 1.4.13.5. Use of hypothermia and circulatory arrest
 - 1.4.13.6. Adaptation of CPB principles to the pediatric patient
- 1.4.14. Indications and techniques for surgical procedures
 - 1.4.14.1. Mechanical circulatory support, including intra-aortic balloon pump (IABP), extracorporeal membrane oxygenation (ECMO), and ventricular assist devices (VAD)
 - 1.4.14.2. Thoracic and other relevant incisions for the surgical approach to conduit harvest and vascular access
 - 1.4.14.3. Coronary revascularization
 - 1.4.14.4. Surgical management of the complications of myocardial ischemia
 - 1.4.14.5. Valve surgery, including methods of valve repair, prostheses, and management of aortic root enlargement, and management of complications
 - 1.4.14.6. Transcatheter valvular therapies, including but not limited to transcatheter aortic valve implantation (TAVI) and transcatheter edge-to-edge repair (TEER)
 - 1.4.14.7. Methods of surgical aortic repair, including choice of conduits (including thoracic endovascular aortic repair [TEVAR]), and techniques for preventing brain and spinal cord injury
 - 1.4.14.8. Resection of cardiac tumours
 - 1.4.14.9. Relief of cardiac tamponade
 - 1.4.14.10. Pericardial window and pericardectomy
 - 1.4.14.11. Repair of simple and complex congenital cardiac defects
 - 1.4.14.12. Surgical management of pulmonary vascular disease
 - 1.4.14.13. Implantation of pacemaker devices, including automatic implantable cardioverter devices (AICD) and cardiac resynchronization therapy, and management of their complications, including techniques of lead extraction

- 1.4.14.14. Surgical therapy for heart failure, including valve surgery, ventricular reconstruction, VAD insertion, and transplantation
- 1.4.14.15. Alternative transplantation procedures, including heart-lung or lung transplantation with repair of cardiac lesions in patients with primary or secondary pulmonary hypertension
- 1.5. Perform appropriately timed clinical assessments with recommendations that are presented in an organized manner
- 1.6. Carry out professional duties in the face of multiple competing demands
 - 1.6.1. Prioritize patients on the basis of the acuity and severity of clinical presentation
- 1.7. Recognize and respond to the complexity, uncertainty, and ambiguity inherent in Cardiac Surgery practice

2. Perform a patient-centred clinical assessment and establish a management plan

- 2.1. Prioritize issues to be addressed in a patient encounter
- 2.2. Elicit a history, perform a physical exam, select appropriate investigations, and interpret their results for the purpose of diagnosis and management, disease prevention, and health promotion
 - 2.2.1. Gather relevant clinical history
 - 2.2.2. Explore and consider the implications of pre-existing medical conditions
 - 2.2.3. Identify and interpret clinically significant findings of the physical examination
 - 2.2.4. Select, and interpret results of, appropriate investigations and imaging techniques relevant to Cardiac Surgery
 - 2.2.5. Perform and interpret limited transthoracic echocardiograms
 - 2.2.6. Determine the indications for, and the benefits and risks of, cardiac surgery intervention for the clinical presentation
 - 2.2.7. Assess perioperative risk
 - 2.2.8. Synthesize patient information to determine suitability for surgical intervention, and to plan perioperative management
- 2.3. Establish goals of care in collaboration with patients and their families,¹ which may include slowing disease progression, treating symptoms, achieving cure, improving function, and palliation

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 their care, including, according to the patient's circumstances, family members, partners, caregivers, legal guardians, and substitute decision-makers.

2.3.1. Address the impact of the medical condition on the patient's ability to pursue life goals and purposes

2.4. Establish a patient-centred management plan

2.4.1. Recommend a surgical approach, as appropriate

2.4.2. Direct resuscitation and hemodynamic and mechanical circulatory support, including initiation, weaning, and withdrawal or discontinuation

2.4.3. Prescribe measures to prevent infection and thrombosis

2.4.4. Diagnose and institute appropriate management of complications in patients who have undergone cardiac surgery

2.4.5. Provide post-operative management in the critical care setting and on the inpatient ward

2.4.6. Apply primary and secondary prevention of ischemic heart disease, including current guidelines

2.4.7. Provide follow-up care, including evaluation for cardiac rehabilitation, adjustment of medical therapy, and wound care

2.4.8. Institute and monitor nutrition via enteral or parenteral routes

3. Plan and perform procedures and therapies for the purpose of assessment and/or management

3.1. Determine the most appropriate procedures or therapies

3.2. Obtain and document informed consent, explaining the risks and benefits of, and the rationale for, a proposed procedure or therapy

3.3. Prioritize procedures or therapies, taking into account clinical urgency and available resources

3.4. Perform procedures in a skilful and safe manner, adapting to unanticipated findings or changing clinical circumstances

3.4.1. Resuscitation of a patient with trauma

3.4.2. Management of airway problems, including performance of tracheostomy

3.4.3. Central venous and arterial cannula insertion for parenteral nutrition, dialysis, and hemodynamic monitoring

3.4.4. Chest tube insertion

3.4.5. Insertion of IABPs

3.4.6. Institution of CPB using a variety of cannulation techniques and devices; appropriate conduct of CPB

3.4.7. Institution of ECMO

3.4.8. Sternotomy and thoracotomy incisions

3.4.9. Institution of effective myocardial protection using a variety of delivery methods

- 3.4.10. Coronary artery bypass grafting (CABG) using a range of arterial and venous conduits
- 3.4.11. Emergency CABG
- 3.4.12. Surgical management of complications of myocardial infarction: VSD, mitral insufficiency, left ventricular aneurysm repair
- 3.4.13. Aortic valve replacement and repair
- 3.4.14. Mitral valve replacement and repair using a variety of approaches and prosthetic devices
- 3.4.15. Tricuspid valve replacement
- 3.4.16. Tricuspid valve annuloplasty
- 3.4.17. Aortic root replacement
- 3.4.18. Elective repair of thoracic aortic aneurysms
- 3.4.19. Emergent repair of thoracic aortic dissections
- 3.4.20. Endovascular and transcatheter interventions for valvular and aortic disease
- 3.4.21. Pulmonary embolectomy
- 3.4.22. Resection of cardiac tumours
- 3.4.23. Pericardial aspiration, biopsy, window, and pericardiectomy
- 3.4.24. Closure of patent ductus arteriosus
- 3.4.25. Repair of atrial septal defect and patent foramen ovale
- 3.4.26. Repair of traumatic injuries to the chest, including thoracic aortic tears, cardiac lacerations, great vessel injury, and pulmonary lacerations
- 3.4.27. Cardiac reoperations, including redo sternotomy
- 3.4.28. Implantation of pacemakers, including single/dual chamber, epicardial/endocardial leads, AICDs, and loop recorders
- 3.4.29. Management of complications of electrophysiological device, including but not limited to lead removal
- 3.4.30. Peripheral arterial reconstruction
- 3.4.31. Management of vascular complications of endovascular or other interventions
- 3.4.32. Wound debridement
- 3.4.33. Sternum reconstruction

4. Establish plans for ongoing care and, when appropriate, timely consultation

- 4.1. Implement a patient-centred care plan that supports ongoing care, follow-up on investigations, response to treatment, and further consultation
 - 4.1.1. Determine the necessity and appropriate timing of referral to other health care providers

- 4.1.2. Provide referral for advanced cardiac surgery procedures
- 4.1.3. Recognize and treat wound complications, including but not limited to mediastinitis, other infections, and dehiscence
- 4.1.4. Arrange for post-operative surveillance of patients, as appropriate, including aortic pathology, valvular disease, and long-term mechanical support devices

5. Actively contribute, as an individual and as a member of a team providing care, to the continuous improvement of health care quality and patient safety

- 5.1. Recognize and respond to harm from health care delivery, including patient safety incidents
- 5.2. Adopt strategies that promote patient safety and address human and system factors

Communicator

Definition:

As *Communicators*, cardiac surgeons form relationships with patients and their families that facilitate the gathering and sharing of essential information for effective health care.

Key and Enabling Competencies: Cardiac surgeons are able to...

1. Establish professional therapeutic relationships with patients and their families

- 1.1. Communicate using a patient-centred approach that encourages patient trust and autonomy and is characterized by empathy, respect, and compassion
 - 1.1.1. Demonstrate an appreciation of the contribution of the therapeutic relationship to the patient experience and outcomes
- 1.2. Optimize the physical environment for patient comfort, dignity, privacy, engagement, and safety
- 1.3. Recognize when the perspectives, values, or biases of patients, patients' families, physicians, or other health care professionals may have an impact on the quality of care, and modify the approach to the patient accordingly
- 1.4. Respond to a patient's non-verbal behaviours to enhance communication
- 1.5. Manage disagreements and emotionally charged conversations
- 1.6. Adapt to the unique needs and preferences of each patient and to the patient's clinical condition and circumstances

2. Elicit and synthesize accurate and relevant information, incorporating the perspectives of patients and their families

- 2.1. Use patient-centred interviewing skills to effectively gather relevant biomedical and psychosocial information
- 2.2. Provide a clear structure for and manage the flow of an entire patient encounter
- 2.3. Seek and synthesize relevant information from other sources, including the patient's family, with the patient's consent

3. Share health care information and plans with patients and their families

- 3.1. Share information and explanations that are clear, accurate, and timely, while assessing for patient and family understanding
- 3.2. Disclose poor outcomes or harmful patient safety incidents to patients and their families

4. Engage patients and their families in developing plans that reflect the patient's health care needs and goals

- 4.1. Facilitate discussions with patients and their families in a way that is respectful, non-judgmental, and culturally safe
- 4.2. Assist patients and their families to identify, access, and make use of information and communication technologies to support their care and manage their health
- 4.3. Use communication skills and strategies that help patients and their families make informed decisions regarding their health

5. Document and share written and electronic information about the medical encounter to optimize clinical decision-making, patient safety, confidentiality, and privacy

- 5.1. Document clinical encounters in an accurate, complete, timely, and accessible manner, in compliance with regulatory and legal requirements
 - 5.1.1. Document discussions regarding informed consent in an accurate and complete manner
 - 5.1.2. Prepare concise, clear descriptions of surgical procedures
 - 5.1.3. Prepare consultation, discharge, progress or clinic notes that are well organized, document all relevant findings, and provide a plan for ongoing management
 - 5.1.4. Demonstrate good prescribing practices
- 5.2. Communicate effectively using a written health record, electronic medical record, or other digital technology, including via telemedicine and virtual encounters
- 5.3. Share information with patients and others in a manner that enhances understanding and that respects patient privacy and confidentiality

Collaborator

Definition:

As *Collaborators*, cardiac surgeons work effectively with other health care professionals to provide safe, high-quality, patient-centred care.

Key and Enabling Competencies: Cardiac surgeons are able to...

1. Work effectively with physicians and other colleagues in the health care professions

- 1.1. Establish and maintain positive relationships with physicians and other colleagues in the health care professions to support relationship-centred collaborative care
 - 1.1.1. Demonstrate respect for staff in the operating room, intensive care unit (ICU), and ward, other residents, advanced practice nurses, and other members of the health care team
 - 1.1.2. Create a respectful and collaborative working environment
- 1.2. Negotiate overlapping and shared responsibilities with physicians and other colleagues in the health care professions in episodic and ongoing care
 - 1.2.1. Make effective use of the scope and expertise of other health care professionals
 - 1.2.2. Delegate responsibilities respectfully to members of interprofessional health care team
- 1.3. Engage in respectful shared decision-making with physicians and other colleagues in the health care professions
 - 1.3.1. Convey to the operating team the plan for the surgical approach
 - 1.3.2. Contribute surgical expertise to interprofessional heart teams
 - 1.3.3. Consult with other specialists and colleagues with regard to patients' medical and surgical issues
 - 1.3.4. Consult with other health professionals with regard to patients' social, rehabilitative, and nutritional concerns

2. Work with physicians and other colleagues in the health care professions to promote understanding, manage differences, and resolve conflicts

- 2.1. Show respect toward collaborators
 - 2.1.1. Develop and support constructive relationships with physicians and other health care professionals
 - 2.1.2. Develop and support constructive relationships with hospital administrators and regional, provincial/territorial, and federal government agencies and representatives

- 2.2. Implement strategies to promote understanding, manage differences, and resolve conflict in a manner that supports a collaborative culture
 - 2.2.1. Achieve consensus when there are differences in recommendations provided by other health care professionals

3. Hand over the care of a patient to another health care professional to facilitate continuity of safe patient care

- 3.1. Determine the necessity and timing of when care should be transferred to another physician or health care professional
- 3.2. Demonstrate safe handover of care, using both oral and written communication, during a patient transition to a different health care professional, setting, or stage of care
 - 3.2.1. Gather all relevant information from the referring physician to optimize treatment and the surgical plan, and to mitigate risks to patient safety during transfer to cardiac surgery care
 - 3.2.2. Provide safe handover of care of the post-operative patient to the critical care team, summarizing clinical information and anticipating plans for ongoing weaning and hemodynamic support
 - 3.2.3. Provide clear reports at occasions of transfer of care to the primary health care provider, including plans for anticoagulation, infection prophylaxis, and ongoing monitoring, as relevant

Leader

Definition:

As *Leaders*, cardiac surgeons engage with others to contribute to a vision of a high-quality health care system and take responsibility for the delivery of excellent patient care through their activities as clinicians, administrators, scholars, or teachers.

Key and Enabling Competencies: Cardiac surgeons are able to...

1. Contribute to the improvement of health care delivery in teams, organizations, and systems

- 1.1. Apply the science of quality improvement to contribute to improving systems of patient care
 - 1.1.1. Apply a systems-based approach to address quality improvement and patient safety issues
 - 1.1.2. Identify potential improvement opportunities arising from the review of patient outcomes
 - 1.1.3. Demonstrate awareness of guidelines for reporting surgical results

- 1.2. Contribute to a culture that promotes patient safety
 - 1.2.1. Participate in quality assurance rounds
- 1.3. Analyze patient safety incidents to enhance systems of care
- 1.4. Use health informatics to improve the quality of patient care and optimize patient safety

2. Engage in the stewardship of health care resources

- 2.1. Allocate health care resources for optimal patient care
 - 2.1.1. Describe triage for the surgical wait list, including rationale, and the addition or upgrading of patients
 - 2.1.2. Determine priority of surgical cases based on clinical urgency and available resources
 - 2.1.3. Allocate limited resources among individual patients, considering utility and efficacy
- 2.2. Apply evidence and management processes to achieve cost-appropriate care
 - 2.2.1. Demonstrate an appreciation of the cost-effectiveness of cardiac surgery interventions, including but not limited to new and emerging techniques and technologies

3. Demonstrate leadership in health care systems

- 3.1. Demonstrate leadership skills to enhance health care
- 3.2. Facilitate change in health care to enhance services and outcomes

4. Manage career planning, finances, and health human resources in personal practice(s)

- 4.1. Set priorities and manage time to integrate practice and personal life
- 4.2. Manage personal professional practice(s) and career
 - 4.2.1. Apply leadership skills to optimize patient care in the operating room
 - 4.2.2. Assume a leadership role in the management of complex cases
 - 4.2.3. Demonstrate knowledge of the financial and administrative aspects of cardiac surgery practice, including but not limited to billing, overhead costs, and staffing
- 4.3. Implement processes to ensure personal practice improvement

Health Advocate

Definition:

As *Health Advocates*, cardiac surgeons contribute their expertise and influence as they work with communities or patient populations to improve health. They work with those they serve to determine and understand needs, speak on behalf of others when required, and support the mobilization of resources to effect change.

Key and Enabling Competencies: Cardiac surgeons are able to...

1. Respond to an individual patient's health needs by advocating with the patient within and beyond the clinical environment

- 1.1. Work with patients to address determinants of health that affect them and their access to needed health services or resources
 - 1.1.1. Assess patients for the risk factors for cardiovascular disease and advise appropriate interventions
 - 1.1.2. Facilitate timely patient access to services and resources
 - 1.1.3. Facilitate patient access to cardiac rehabilitation services
- 1.2. Work with patients and their families to increase opportunities to adopt healthy behaviours
 - 1.2.1. Identify the perioperative period as a significant opportunity for health behaviour change
 - 1.2.2. Advocate for and prescribe positive health behaviour change, including but not limited to smoking cessation and preoperative physical fitness
- 1.3. Incorporate disease prevention, health promotion, and health surveillance into interactions with individual patients
 - 1.3.1. Apply appropriate secondary prevention strategies for cardiac vascular diseases, according to current guidelines
 - 1.3.2. Recommend screening for relatives of patients with identified genetic associations, such as Marfan and DiGeorge syndromes

2. Respond to the needs of the communities or populations they serve by advocating with them for system-level change in a socially accountable manner

- 2.1. Work with a community or population to identify the determinants of health that affect them
 - 2.1.1. Apply knowledge of Indigenous healing practices and Indigenous health issues
- 2.2. Improve clinical practice by applying a process of continuous quality improvement to disease prevention, health promotion, and health surveillance activities

- 2.3. Contribute to a process to improve health in the community or population they serve
 - 2.3.1. Promote policies that improve access to cardiac surgery care
 - 2.3.2. Support the activities of local and national organizations promoting health advocacy

Scholar

Definition:

As *Scholars*, cardiac surgeons demonstrate a lifelong commitment to excellence in practice through continuous learning, and by teaching others, evaluating evidence, and contributing to scholarship.

Key and Enabling Competencies: Cardiac surgeons are able to...

1. Engage in the continuous enhancement of their professional activities through ongoing learning

- 1.1. Develop, implement, monitor, and revise a personal learning plan to enhance professional practice
- 1.2. Identify opportunities for learning and improvement by regularly reflecting on and assessing their performance using various internal and external data sources
 - 1.2.1. Apply knowledge to patient care
 - 1.2.2. Seek and review performance data to continually improve performance
- 1.3. Engage in collaborative learning to continuously improve personal practice and contribute to collective improvements in practice

2. Teach students, residents, the public, and other health care professionals

- 2.1. Recognize the influence of role modelling and the impact of the formal, informal, and hidden curriculum on learners
- 2.2. Promote a safe and respectful learning environment free of harassment and intimidation
- 2.3. Ensure patient safety is maintained when learners are involved
 - 2.3.1. Supervise learners to ensure they work within their limits
- 2.4. Plan and deliver learning activities
 - 2.4.1. Provide clinical teaching
- 2.5. Provide feedback to enhance learning and performance

- 2.6. Assess and evaluate learners, teachers, and programs in an educationally appropriate manner

3. Integrate best available evidence into practice

- 3.1. Recognize practice uncertainty and knowledge gaps in clinical and other professional encounters and generate focused questions that can address them
- 3.2. Identify, select, and navigate pre-appraised resources
- 3.3. Critically evaluate the integrity, reliability, and applicability of health-related research and literature
- 3.4. Integrate evidence into decision-making in their practice

4. Contribute to the creation and dissemination of knowledge and practices applicable to health

- 4.1. Demonstrate an understanding of the scientific principles of research and scholarly inquiry and the role of research evidence in health care
- 4.2. Identify ethical principles for research and incorporate them into obtaining informed consent, considering potential harms and benefits, and vulnerable populations
 - 4.2.1. Demonstrate an understanding of the need to incorporate gender, cultural, and ethnic perspectives in research methodology
- 4.3. Contribute to the work of a research program
- 4.4. Pose questions amenable to scholarly investigation and select appropriate methods to address them
 - 4.4.1. Conduct scholarly work
- 4.5. Summarize and communicate to professional and lay audiences, including patients and their families, the findings of relevant research and scholarly inquiry

Professional

Definition:

As *Professionals*, cardiac surgeons are committed to the health and well-being of individual patients and society through ethical practice, high personal standards of behaviour, accountability to the profession and society, physician-led regulation, and maintenance of personal health.

Key and Enabling Competencies: Cardiac surgeons are able to...

1. Demonstrate a commitment to patients by applying best practices and adhering to high ethical standards

1.1. Exhibit appropriate professional behaviours and relationships in all aspects of practice, demonstrating honesty, integrity, humility, commitment, compassion, respect, altruism, respect for diversity, and maintenance of confidentiality

1.1.1. Demonstrate cultural competency and anti-racism

1.2. Demonstrate a commitment to excellence in all aspects of practice

1.2.1. Maintain a log of procedures and their outcomes, for the purposes of continually improving performance

1.3. Recognize and respond to ethical issues encountered in practice

1.4. Recognize and manage conflicts of interest

1.5. Exhibit professional behaviours in the use of technology-enabled communication

2. Demonstrate a commitment to society by recognizing and responding to societal expectations in health care

2.1. Demonstrate accountability to patients, society, and the profession by responding to societal expectations of physicians

2.2. Demonstrate a commitment to patient safety and quality improvement

3. Demonstrate a commitment to the profession by adhering to standards and participating in physician-led regulation

3.1. Fulfil and adhere to professional and ethical codes, standards of practice, and laws governing practice

3.2. Recognize and respond to unprofessional and unethical behaviours in physicians and other colleagues in the health care professions

3.3. Participate in peer assessment and standard setting

4. Demonstrate a commitment to physician health and well-being to foster optimal patient care

4.1. Exhibit self-awareness and manage influences on personal well-being and professional performance

4.1.1. Demonstrate knowledge of occupational hazards for cardiac surgeons and implement measures to minimize those risks

4.1.2. Maintain capacity for professional clinical performance in challenging or stressful situations

CARDIAC SURGERY COMPETENCIES (2019)

- 4.1.3. Apply strategies to mitigate the personal impact of adverse patient outcomes and safety incidents
- 4.2. Manage personal and professional demands for a sustainable practice throughout the physician life cycle
- 4.3. Promote a culture that recognizes, supports, and responds effectively to colleagues in need

This document is to be reviewed by the Specialty Committee in Cardiac Surgery by December 2023.

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