



## **McMaster University Thoracic Surgery Residency Training Program**

### **Introduction, Goals & Objectives**

***\*\*\*Please note these goals and objectives are paraphrased from, and founded on the goals and objectives as described by the Royal College of Physicians and Surgeons of Canada, more specifically the “Specific Standards of Accreditation for Residency Programs in Thoracic Surgery”, “Subspecialty Training Requirements in Thoracic Surgery” and “Objectives of Training in the Subspecialty of Thoracic Surgery” documents, Version 1.0 2010.***

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#### **Introduction**

Thoracic Surgery is that branch of surgery concerned with congenital and acquired diseases of the chest wall, mediastinum, lungs, trachea, pleura, esophagus and diaphragm.

The Thoracic Surgical Residency Program at McMaster University adheres to the Royal College Accreditation guidelines. Only candidates certified or enrolled in a Royal College Program in General Surgery may be eligible to enroll in a thoracic surgery residency. Only candidates certified in General Surgery may be eligible to undertake the examination leading to a certification of special competence in Thoracic Surgery.

The resident, following completion of the program will have fulfilled the Royal College –Thoracic Surgery requirements and is prepared to sit his fellowship exams. The structure and training of the program is under regular review by the Program Committee. The Thoracic Surgical Residency Program is a small program and hence allows a large degree of direct interaction between resident trainee and attending staff. This also allows for the availability of a tremendous clinical volume to which the resident is exposed. Rotation on all services involves resident to resident interactions as well as teaching sessions and seminars.

The goals and objectives of each rotation are set out with an increasingly graded responsibility and skill requirement for each resident. The goals and objectives of training in thoracic surgery at McMaster operationalize the national Objectives of Training within the context of the McMaster Thoracic Surgery training program. They provide a framework that builds upon competencies of a fully trained General Surgeon to develop into a Thoracic surgeon who can assume complete responsibility for the preoperative, operative and postoperative management of Thoracic surgical problems. These skills will be learned and integrated in a graduated manner so that by the end of the two years the resident in thoracic surgery will seamlessly take on the Most Responsible Physician role. Interwoven within these objectives will be those of an ethical and academic nature that will reflect the conscience of modern thoracic surgery and help shape its future.

This document outlines the overall goals of the Thoracic Surgery Residency Program. Specifically, what follows is an outline of rotation specific objectives for both the mandatory and elective components of training for the thoracic surgery resident. Whenever possible we have endeavored to incorporate the CanMEDS competencies into these goals and objectives. The training of the Thoracic resident in the key competencies outlined in CanMEDS including Medical Expert, Communicator, Collaborator, Manager, Health Advocate, Scholar, and Professional roles is integrated into all the components of the formal educational curriculum as well as instructed and evaluated during the informal day to day workings of the rotation.

## **GOALS AND OBJECTIVES**

### **Mandatory Content of Training**

#### **General Thoracic Surgery Training Requirements**

*\*\*founded upon those requirements listed in the Royal College of Physicians and Surgeons of Canada 2010 Version 1.0 Subspecialty Training Requirements in Thoracic Surgery)*

Duration: 24 months of training in an accredited Thoracic Surgery program. This must include:

- Six months of non-senior residency training in Thoracic Surgery (“first year”/junior year)
- Twelve months of senior residency training in Thoracic Surgery (“Chief year”/senior year)
- Four months of Cardiac surgery
- Two months of optional elective rotations which may include: Thoracic radiology, lung transplantation, medical oncology, radiation oncology, thoracic surgical training in another center, Intensive Care, research or any other rotation approved by the Program Director

Site(s) of Training (while in Hamilton): St. Joseph’s Hospital, Hamilton General Hospital

### **Goals of the McMaster Thoracic Surgery Training Program**

Upon completion of the Thoracic Surgery Training Program at McMaster University the graduating resident is expected to be a competent specialist in Thoracic Surgery capable of assuming a consultant’s role in the specialty.

The graduating resident will have a strong working knowledge of both the clinical as well as the foundational knowledge in the underlying basic science, physiology and important areas of research.

Residents must demonstrate the requisite knowledge, skills, and attitudes for effective patient-centered care and service to a diverse population. In all aspects of specialist practice, the graduate must be able to professionally address issues of gender, age, sexual orientation, culture, ethnicity and ethics.

## **MEDICAL EXPERT**

### **a) Cognitive Skills & Clinical Decision Making**

As Medical Experts, thoracic surgeons will possess a defined body of knowledge, skills and professional attitudes which are used to collect and interpret data, make appropriate clinical decisions, and carry out diagnostic and therapeutic procedures within the boundaries of their discipline and expertise. The medical expert role is central to being a specialist thoracic surgeon and draws on the competencies implicit to the roles of scholar, communicator, health advocate, manager, collaborator and professional.

As a first-year resident in thoracic surgery at McMaster it is expected that assessment in the form of history taking and physical examination be comprehensive and complete and that appropriate investigations are considered and ordered. During the second year recommendations for further care will be developed with appropriate judgment. In the final six months of the second year it is expected that these recommendations are formalized within the greater scope of thoracic surgery with the insight and considerations of those of a junior consultant.

At the completion of training a McMaster thoracic surgery resident will:

#### ***General Requirements***

- Utilize and demonstrate diagnostic and therapeutic skills for ethical and effective patient care
- Access and apply relevant clinical and scholarly information to clinical practice
- Demonstrate effective use of and delivery of consultation services with respect to patient care, education and legal opinions.
- Possess a strong knowledge base in thoracic surgery including epidemiology, diagnostic methods, prognosis, multimodality cancer care, intensive care and palliative care in both acute and chronic ambulatory patients. This will include all facets of thoracic diseases.
- Experience and participate in preoperative assessment, postoperative care and intensive care unit medicine
- Be familiar with controversies in the multimodality management of thoracic malignancies
- Be familiar with Anesthetic management of thoracic surgical patients including ventilation, principles of lung isolation, ventilator support, regional pain control and physiotherapy
- Be familiar with Laboratory procedures in the diagnosis of thoracic disease including diagnostic imaging, PET scans, pulmonary physiology testing, esophageal function testing, endoscopy, pathology testing and surgical staging.
- Understand sepsis as it applies to the operative care of thoracic and esophageal diseases and sternal wound infections
- Be aware of the range of outcomes from thoracic surgical interventions and to distinguish from unacceptable to unexpected clinical results

#### ***Specific Requirements***

### **b) Core Knowledge**

The Thoracic Surgeon must be able to discuss:

- The principles and practice of surgery include, pathophysiology of shock, nutrition, metabolism, infection, coagulation, immune system, genetics, wound healing, pulmonary function, biostatistics, bioethics, transplantation, oncology, chemotherapy and radiation oncology

- The anatomy, embryology and diseases of the chest wall, mediastinum, lung, trachea, pleura, esophagus, stomach, and diaphragm
- Respiratory physiology, pulmonary function tests, ventilatory support
- Esophageal physiology, and esophageal motility tests
- Diseases of the heart and great vessels
- The physiology and complications of extracorporeal perfusion

### c) **Clinical Skills**

Specifically the resident will possess and in-depth understanding of the physiology, pathophysiology and therapeutic options for diseases of:

- Epidemiology, pathophysiology, staging and treatment of neoplasia of:
  - the lung
  - trachea
  - esophagus
  - mediastinum
  - chest wall
- Pulmonary Metastases
- Chest wall deformities
- Diaphragmatic trauma, hernias and hiatal hernias
- Pleural effusions, empyemas, pneumothoraces, chylothorax, and hemothorax
- Pericardial disease in thoracic surgery
- Thoracic trauma
- Tracheal disease, airway trauma, airway obstruction, hemoptysis, tracheostomy
- Congenital, structural, and inflammatory disease of the lung
- Esophageal physiology and motility
- Basic understanding of cardiac physiology and cardiac function testing
- Mechanical ventilation
- Transplantation and emphysema surgery
- Thoracic outlet syndrome
- Principles of palliative care
- Perioperative Complications

The resident can also:

- Obtain an accurate patient history and perform appropriate physical examination.
- Develop a weighted differential diagnosis
- Outline an appropriate plan of laboratory and radiological investigations
- Recommend an appropriate therapeutic plan taking into account such matters as age, general health, risk/benefit ratio, and prognosis
- Manage with proficiency and expertise, thoracic surgical emergencies including trauma, airway emergencies, sepsis and esophageal perforation
- Manage pre- and post operative care including intensive care unit (ICU) management.

## d) Technical Skills

At McMaster, thoracic surgical operative skills are acquired in a gradational fashion, first, by initial observation and assisting in thoracic surgical cases. This brief introductory phase is quickly followed by the resident then performing parts of the procedure under direct supervision. By the completion of the first 6 months of training the junior thoracic resident will have seen and played a major participatory role in procedures and operations across the spectrum of thoracic surgery. In the final year, the first six months allows for increased skill development permitting the resident to complete standard pulmonary lobectomy, endoscopy, thoracoscopy and most parts of esophagectomy safely. In the later six months of senior thoracic training exposure to greater volumes and more complex cases matures the resident's technical ability to conduct all thoracic cases in a primary role, regardless of their complexity.

The Thoracic Surgeon must demonstrate appropriate use of, and competency in performing a wide breadth of technical skills in both the ambulatory and in-patient setting. This skill set includes but is not limited to:

1. Mediastinum
  - i. Mediastinal node staging via mediastinoscopy, endobronchial ultrasound, thoracic staging
  - ii. Resection of primary tumors and cysts of the mediastinum and thymus gland
2. Esophagus:
  - i. Correction of benign esophageal disorders including diverticula cysts, motor disorders, hiatus hernias, gastroesophageal reflux, esophageal perforation
  - ii. Esophageal Cancer Management
    - a. esophagectomy
      - i. esophageal reconstruction with stomach, colon and small bowel
      - ii. palliative esophageal stenting
3. Management & Repair of traumatic injury, repair of chest wall, major airways, diaphragm, lung and esophagus.
4. Pulmonary resections, both open and minimally invasively, including wedge resections, segmental resections, lobectomies, pneumonectomies and extended resections involving diaphragm, chest wall, thoracic inlet and mediastinum
5. Thoracoplasty
6. Decortication of the lungs
7. Tracheal resection and approaches
8. Chest wall:
  - Correction of chest wall deformities
  - Surgical procedures of the chest wall and pulmonary infections
  - Chest wall resections for neoplasia
  - Surgical therapy of thoracic outlet syndrome
  - Chest wall reconstruction
9. Surgical therapy of pleural effusions, chylothorax, pneumothorax
10. Primary and metastatic pleural tumors
11. Surgical procedures of benign and malignant diseases of the trachea
12. Pulmonary transplantation
13. Hernia's, traumatic injuries, tumors and motor diseases of the diaphragm
14. Pericardial effusions
15. Laser therapy
16. Video-assisted thoracic surgery
17. Bronchoscopy, endobronchial ultrasound, rigid bronchoscopy
18. Esophagoscopy, flexible and rigid, esophageal dilation, stenting
19. Thoracostomy insertion and management
20. Surgical management of complications of thoracic and esophageal procedures

## **COMMUNICATOR**

As an effective communicator the resident will endeavor to provide humane, high quality care, establish effective therapeutic relationships with patients, family members, physicians, and other health professionals. Communication skills are essential for the functioning of a specialist, and are necessary for obtaining information from and conveying information to patients and their families. These abilities are critical in eliciting patients' beliefs, concerns, and expectations about their illness, and for assessing key factors impacting on patients' health.

### ***General Requirements***

- Upon completion of the Thoracic Surgery Residency Program each resident is expected to communicate effectively with patients/families to be compassionate and show an overall understanding of the patient/families and his disease.
- The resident is also expected to be an effective listener.
- Residents are expected to gather information not only about the disease but also about the patient's beliefs, concerns and expectations about the illness, while considering the influence of factors such as patients age, gender, ethnic, cultural and socioeconomic background, and spiritual values on that illness.
- Residents will communicate with other health care professionals involved in the care of individual patients on the Thoracic Surgery service. These discussions will aim to clearly delineate the roles of each of these allied healthcare professionals and ensure that consistent messages are delivered to patients and their families.

### ***Specific Requirements:***

The Thoracic resident must be an effective communicator and good listener. At all times, he/she must communicate with medical colleagues, health team personnel, patients, and families in a professional, timely, accurate and informative and when appropriate, compassionate manner.

#### **a) Knowledge:**

The resident must:

- Understand and empathize with the emotion surrounding illness
- Appreciate the dynamics of the traumatized family
- Understand the concerns patients have of loss of control, self worth, and personal dignity.
- Recognize the need for effective use of language
- Understand the need to explain medical matters in simple terms
- Appreciate the fact that interpreters will be required for some patient groups (cultural, deaf)
- Appreciate how differences in race, gender and ethnicity affect patient/families responses to therapeutic suggestions and diagnosis

b) **Clinical Skills**

The resident must:

- Address patients concerns with empathy and respect
- Explain details of medical conditions and therapy in understandable terms
- Understand the principles and be able to obtain informed consent
- Include all members of the health care team in discussions of therapeutic plan when appropriate
- Communicate with medical colleagues, health team personnel, patients, and families in a professional, timely, accurate, informative and compassionate manner, at all times
- Communicate with his colleagues and supervisors when significant clinical, social, communication, ethical or legal issues arise in the course of patient care
- Maintain appropriate and complete medical documentation
- Complete discharge summary records that accurately reflect the hospital stay.

## **COLLABORATOR**

The thoracic resident will work in partnership with others who are appropriately involved in the care of individuals or specific groups of patients. It is, therefore, essential for them to be able to collaborate effectively with patients and a multidisciplinary team of expert health professionals for provisions of optimal patient care, education, and research.

### ***General Requirements***

- The resident will function as a member of a multi-disciplinary health care team and contribute to the understanding and management of patients with their thoracic disease.
- The resident will participate in the weekly multidisciplinary tumor board
- The resident will participate in multidisciplinary clinics
- The resident will enlist the assistance of consulting services for the betterment of patient care
- The resident will provide timely, respectful, complete and ongoing communication when serving in the consulting role for other medical services
- All residents will collaborate in the operative cases and ultimate care of the patient in the ward as well as the active, vigorous open intensive care unit at St. Joseph's Hospital.
- The senior resident is expected to play a major role in collaboration with the program director in education and working closely with his junior colleagues, clinical clerks and allied health professionals, both in a supervisory and advisory capacity.

### ***Specific Requirements***

The resident must be a team player, contributing to and utilizing the knowledge and skills of other physicians and health care professionals, in a manner that benefits patient care and enhances overall knowledge.

#### a) **Knowledge**

- Identify and describe the role, expertise and limitations of all members of an interdisciplinary team required to optimally achieve a goal related to patient care, a research problem, an educational task, or an administrative responsibility. The thoracic resident will be exposed to a number of different healthcare professionals, including nurse practitioners, other physicians, administrative and research support staff, all within the Thoracic Surgery division.
- The Thoracic resident is expected to appreciate the unique aspects of care provided by nursing, physiotherapy, and health care technologists.

#### b) **Clinical Skills**

- Effectively communicate with the members of an interdisciplinary team in the resolution of conflicts, provisions of feedback, and where appropriate be able to assume a leadership role.
- Participate in an interdisciplinary team meeting, demonstrating the ability to accept, consider and respect the opinions of other team members, while contributing specialty-specific expertise him/herself.
- Develop a care plan for a patient they have assessed, including investigation, treatment and continuing care, in collaboration with the members of the interdisciplinary team.



## **MANAGER**

The Thoracic Resident will learn the skills to prioritize and effectively execute tasks through teamwork with colleagues, and make systematic decisions when allocating finite health care resources. As managers, residents are expected to take on positions of leadership within the context of professional organizations and the dynamic Canadian health care system.

Graduates of the McMaster thoracic surgery program will have the skills and foundation to become active participants in the greater thoracic surgical community within Canada and abroad for the betterment of the specialty.

### ***General Requirements***

- The Thoracic resident learns how to utilize resources effectively to balance patient care, learning needs and outside activities.
- The resident is actively involved in the appropriate management of the thoracic patient keeping in view of fiscal and expeditious bed management issues. The effective management of beds is important in the Step Down Unit which is responsible for patient care of acutely ill patients.
- The resident must learn to work effectively and efficiently within the health care environment.
- The resident must effectively utilize information technology to optimize patient care, life-long learning and other activities.

#### a) **Knowledge**

The resident must understand the basics of health care funding and the different models of health care delivery

#### b) **Clinical Skills**

The resident must:

- Manage the administrative roles of the various rotating residents
- Manage on-call issues and manpower allocation
- Manage bed-flow through the thoracic surgery service
- Manage care to patients both in and outside of St Joseph's teaching hospital
- Manage assignment of individuals to the thoracic academic seminars
- Participate in the McMaster thoracic surgery resident education committee
- Undertake quality assurance and quality delivery analyses.
- Develop plans for more effective use of resources
- Apply technology effectively to patient care

The residents must have an understanding of how to:

- Prioritize capital and operational components of care within institutions of clinic
- Participation effectively and constructively in strategic planning.
- Seek alternative funding mechanisms to enhance patient care and research

## **HEALTH ADVOCATE**

The resident learns to recognize the importance of advocacy activities in responding to the challenges represented by those social, environmental, and biological factors that determine the health of patients and society. They recognize advocacy as an essential and fundamental component of health promotion that occurs at the level of the individual patient, the practice population, and the broader community.

### ***General Requirements***

- The resident becomes aware of the lifestyle issues in managing and avoiding disease processes as they relate to thoracic pathologies. This includes the ability to recognize, assess, and respond to psychosocial, economic, and biologic factors influencing the health of those served. At the doctor patient level, this involves adapting patient management and education so as to promote health, enhance understanding, foster coping abilities, and enhance active participation in informed decision making.
- Residents must also be able to apply these skills not only to the individual patient but also at the community level.
- Residents also learn how to recognize and respond to those issues where advocacy is appropriate.

### ***Specific Requirements***

#### a) **Knowledge**

The resident must:

- Demonstrate knowledge of the epidemiology of thoracic disease.
- Recognize the importance of preventative medicine
- Understand the means available for constructive support of patient education and preventative medicine intervention.
- Understand the social factors related to tobacco use, alcohol use and resources available for support and cessation

#### b) **Clinical Skills**

The resident must:

- Participate in patient education
- Promote prevention of thoracic disease
- Examine the role of environmental toxins in the genesis of particular patient complaints
- Assist patients in the acquisition and interpretation of health care information
- Advise families of the role of genetics in the genesis of disease.
- Advocate strongly for patients for rapid access to diagnostic testing, supportive care, social work, access to the operating room and access to the cancer center

**SCHOLAR**

Specialists engage in lifelong pursuit of mastery of their domain of professional expertise. Residents will be expected to recognize the need to be continually learning and model this for others. Through their scholarly activities, they contribute to the appraisal, collection, and understanding of health care knowledge, and facilitate the education of their students, patients and others.

***General Requirements***

- The residents are expected to engage in the teaching of others (patients, house staff/students, and other health professionals). Also the resident must develop an understanding and obligation of continuing self-education. In order to accomplish this, the Thoracic resident is expected to develop, implement and monitor a personal continuing education strategy.
- The resident will also critically appraise sources of medical information as well as contribute to the development of new knowledge.
- The resident will also facilitate the learning of patients, house staff, students and other health professionals.
- The resident will also contribute to the development of new medical knowledge.

***Specific Requirements***a) **Knowledge**

The resident must:

- Be able to critically assess the thoracic surgery literature as it relates to patient diagnosis, investigations and treatment.
- Discuss the application of statistical methods to critical appraisal
- Appreciate the important role of clinical and basic research in thoracic practice
- Acquire the skills to participate in collaborative research projects, quality assurance, and graduate development as it applies to thoracic surgery
- Have an understanding of the scientific method and of outcome based research
- Understand the importance of continuing medical education (CME)
- Appreciate where information on medical matters is reliably obtained.
- Possess awareness of the leading organizations through which scientific material is presented and published in thoracic surgery

b) **Clinical Skills**

The resident must:

- Question current practice
- Apply outcome-based methodology to interpretation of clinical information
- Critically appraise the thoracic surgery literature
- Develop a plan for continuing personal professional development that includes but is not limited to CME meetings
- Teach other health care professionals about thoracic surgery topics

- Read relevant medical literature on a regular basis.
- Critically assess the thoracic surgery literature as it relates to patient diagnosis, investigations and treatment
- Contribute to collaborative research projects, quality assurance, and guideline developments as it applies to thoracic surgery
- Present academic seminars and updates on various thoracic surgery topics

## **PROFESSIONAL**

The resident will learn and understand the unique societal role of the Thoracic surgeon as a professional with a distinct body of knowledge, skills, and attitudes dedicated to improving the health and well-being of others. Specialists are committed to the highest standards of excellence in clinical care and ethical conduct, and to continually perfecting mastery of their discipline.

### ***General Requirements***

The Thoracic resident will deliver the highest quality care with integrity, honesty and compassion. In so doing, the resident must also exhibit the appropriate personal and interpersonal professional behaviours. Finally, the resident must practice medicine in an ethical manner, consistent with the obligations of a physician.

### ***Specific Requirements***

#### a) **Knowledge**

The resident must:

- Have knowledge of ethical responsibilities of a specialist surgeon
- Understand the application of relevant legislation to the practice of thoracic surgeon
- Appreciate how differences in race, gender and ethnicity affect patient/families responses to therapeutic suggestions and diagnosis.
- The resident is expected to recognize the psycho-social needs of the patient requiring or undergoing thoracic surgery
- Understand the independence of patients
- Recognize the requirement of patient confidentiality
- Understand the principles of biomedical ethics in the practice of a thoracic surgeon
- Understand strategies to balance the personal and professional roles of thoracic surgeons

#### b) **Clinical Skills**

The resident must:

- Be sensitive to the needs of the patient even when they conflict with best medical care
- Demonstrate personal and professional attitudes consistent with a consulting surgeon role
- Maintain patient confidentiality
- Practice in an ethical, honest, and forthright manner
- Respond to conflict and abuse constructively and with compassion.
- Recognize and manage difficult situations with frustrated patients and families
- Respectfully discuss patients in multidisciplinary format
- Recognize unprofessional behavior and understand avenues for support and reporting
- Recognize that unprofessional behavior poses a risk to individual patients, physicians, thoracic surgery departments and to the greater specialty
- Recognize that unprofessional behaviors are amongst the most serious infractions committed by physicians and have the potential to disrupt ones ability to practice

## **Mandatory and/or Elective Rotations**

### **Cardiac Surgery Program**

Supervisor: S Singh, Cardiac Program Director

Mandatory Content of Training

Duration: 4 months

Style: Block

Level: Junior thoracic year (end of first year)

Site(s) of Training: HHSC Hamilton General

The Cardiac Program is an accredited Royal College Training program. It is situated at the Hamilton General Hospital (HHSC-General Site). Rotations through cardiac surgery provide the residents with exposure to a large volume of adult cardiac surgery.

There are eight cardiac surgeons. The cardiac program is a high volume clinical service with an approved RCPS training program. There are approximately 1600 cardiac cases performed annually (1000 CABG, 450 valves, 50 percutaneous valves, and 100 thoracic aortic and congenital cases). The service is housed at the Hamilton General Hospital. It has 17 intensive care beds and 35 ward beds. The thoracic resident will join a senior cardiac resident on the service.

### **Goals and Objectives – Cardiac Surgery Rotation within Thoracic Surgery Residency**

The resident is expected to learn about and perform sternotomy, cannulation of the patient for cardiopulmonary bypass, harvest of conduit for the coronary artery graft, sternal closure, vascular suturing techniques, sternal complications. The resident is exposed to a wide variety of cardiopulmonary diseases and has the opportunity to understand cardiac and pulmonary physiology through this exposure. As a part of this rotation the resident is a key participant in the Cardiovascular Intensive Care unit. Upon completion the resident is capable of independently performing a cardiopulmonary cannulation and the use of the intra-operative/heart lung machine. He will not be expected to independently perform coronary artery bypass graft or valve replacement.

1. To learn the principles and techniques of cardio-pulmonary bypass and pressure support devices.
2. To learn the principles of management of the unstable cardiac patient in the intensive care unit
3. To learn operative skills associated with cardiac and vascular surgery

The specific goals and objectives of the cardiac surgical residency are outlined and graded as a level of training and are available on request.

## **ICU Training**

Supervisor: Dr. Cindy Hamielec (Program Director Intensive Care Program McMaster University)

Requirement: Elective

Style: Block

Level: junior year or prior to entry into Thoracic Program

Duration: 1-3 Months

Site(s) of Training: St. Joseph's Hospital

At St. Joseph's Hospital the intensive care unit is a 21 bed closed unit. Both medical and surgical patients are managed in this unit. An optional rotation in intensive care is permitted during the Thoracic Surgical Residency Program. Currently the vast majority of thoracic surgical patients are managed through an intermediate intensive care unit (Stepdown Unit) following their thoracic procedures. Here, the resident and attending thoracic surgeon are responsible for all aspects of post-operative care. When a thoracic surgical patient is in need of intensive care management, the care is transferred to the intensive care unit team with frequent consultation and input from the thoracic surgical service. The transition between critical care and routine postoperative care is a common point of contact between thoracic surgery and intensive care.

### **Rotation Specific Objectives – ICU**

The primary objective to a rotation in intensive care is enhanced understanding of critical care management, mechanical ventilation, vasopressor support, airway management, septic shock and perioperative care.

The level of responsibility is determined by the level of residency training prior to entering the intensive care unit rotation. Once the resident has demonstrated the ability to manage the "ICU patient", the resident is expected to direct the patient's independently (with backup).

During the course of the resident's rotation, there is ample opportunity to develop skills and critical appraisal technique, as well as develop an understanding of the physiology and pharmacology of the management of the intensive care patient.

## **Trauma**

**Supervisor:** Dr. Samir Faidi

**Requirement:** Mandatory

**Style:** Longitudinal

**Level:** ALL

**Duration:** Thoracic trauma beyond that managed by a general surgeon and the trauma team is rare. This phenomenon is true in our region and major trauma cases occur uncommonly (2-4 cases/year). Every attempt is made to engage the resident in every trauma case as it occurs. Trauma Team on-call coverage is part of the cardiac surgical rotation at HHSC. While working at St. Joseph's Hospital the Thoracic Resident is called to assess and treat all trauma patients that sustain chest injury and present to the Emergency room.

**Site(s) of Training:** Hamilton Health Sciences Centre – Hamilton General Hospital is the designated trauma centre for the region, however a small amount of trauma is seen at St. Joseph's Hospital.

The Hamilton General Hospital is a tertiary care trauma centre for Ontario central west region. This includes LHIN 3, LHIN 4 and Halton region of LHIN 6. It is the third busiest trauma centre in the province with approximately 650 major trauma admissions annually. The resident assesses the patient and makes decisions regarding investigation and management with the trauma team leader. The junior resident learns resuscitation management and develops skills in central line placement and chest tube insertion. The thoracic resident will also follow more complex thoracic operative candidates to the OR with the on-call thoracic surgeon.

The thoracic resident is encouraged to become ATLS certified.



**Emergency Care**

Requirement: Mandatory

Style: Longitudinal

Level: ALL

Duration: Coverage of Emergency Department is part of the Thoracic rotation at St. Joseph's Healthcare

Site(s) of Training: St. Joseph's Hospital

**Overall/Specific Objectives:**

The resident is expected to see and assess most thoracic patients that arrive in the emergency department. The resident is expected to make decisions regarding investigation and management of the patient and discuss plans with the attending Thoracic Surgeon or the Thoracic Surgeon on call.

The resident is expected to develop an approach, understanding and expertise in management of common emergent conditions include airway obstruction, foreign body inhalation or ingestion, caustic injuries, hemoptysis, esophageal perforation, pneumothorax, empyema and trauma.

## **Transplant**

Supervisor: S. Keshavjee (Director Lung Transplantation Program Toronto General Hospital University of Toronto, Toronto ON Canada)

Requirement: Elective

Level: junior or senior years

Duration: 1-3 months

Site(s) of Training: Toronto

An agreement with the Toronto General Hospital Thoracic Surgical has been made. Thoracic surgery residents are welcome to participate in observatory rotations in Toronto with the lung transplantation program. These rotations are not mandatory. Further fellowship training in transplantation is available upon completion of the thoracic surgery residency.

### **Overall Objectives:**

1. To learn the principles of solid organ transplantation.
2. To learn the assessment of recipient candidates for lung transplantation
3. To learn the assessment of donor candidates for lung transplantation
4. To learn the operative technique of lung and heart transplantation
5. To learn the post operative care and follow-up of transplant recipients

### **Specific Objectives**

1. To learn the principles and methods of organ preservation
2. To understand histocompatibility
3. To understand the role of the immune system in acute and chronic graft rejection
4. To learn the clinical findings, implications and principles of management of graft rejection
5. To learn the clinical finding, implications and principles of management of immunosuppression
6. To learn current approaches to immunosuppression, the specific medications and their mechanism of action
7. To learn to identify the complications of transplantation and immunosuppression

## **GI Motility**

Supervisor: M Anvari (Director of the GI Motility Lab – St. Joseph’s Hospital)

Requirement: Elective

Style: Block or Longitudinal

Level: Junior or Senior Year

Duration: 2-4 weeks

Site(s) of Training: St. Joseph’s Hospital

Overall Objectives:

To understand esophageal function testing including: motility, 24hr pH, Bernstein Test etc.

## **Laparoscopic Hiatal Hernia and Anti-Reflux Surgery:**

Supervisor: M. Anvari (Director of the GI Motility Lab St. Joseph’s Hospital)

Location: St. Joseph's Hospital

**Overall Objectives:**

- To develop skills and understanding of the role of laparoscopic Anti reflux surgery
- To learn preoperative, operative and postoperative management of patients with GERD, and esophageal motility diseases

**Specific Objectives:**

- To learn preoperative assessment and patient selection
- To learn different techniques of laparoscopic anti-reflux surgery
- To understand the relationship between GERD and cough
- To learn techniques to deal with post operative complications such as dysphagia, bloating, and gastric atony.

**Ambulatory Care**

Supervisor: Drs. Schieman, Finley and Shargall

Requirement: Mandatory

Style: Longitudinal

Level: All

Duration: Weekly attendance in ambulatory thoracic clinics

Site(s) of Training: Firestone Clinic - St. Joseph's Hospital, Juravinski Cancer Clinic

Residents are expected to spend a considerable amount of time during their training in the thoracic surgery clinics. This will take place for a minimum of one half-day per week, and often considerably more. It is here they will learn clinical skills related to history taking, physical examination, review of investigations, communication with patients and families, informed consent, management of complications, principles of oncologic surveillance and practice management.

## **Anesthesia**

Program Director: Dr. Lori Olivieri

Duration: 4 weeks

Style: Block

Level: Junior year

Site(s) of Training: St. Joseph's Healthcare

The McMaster Anesthesia Residency Program consists of over 50 staff anesthesiologists and 18 residents. Consistently ranked one of the best post-graduate programs by all McMaster residents, this department is proud of its commitment to teaching and its residents. The faculty and residents are active outside of the operating room in the areas of critical care, acute and chronic pain, and trauma care in the emergency department.

The General Hospital site of the Hamilton Health Sciences (HHS) has one of the busiest cardiac and trauma programs in Canada. The other two teaching centres, St. Joseph's Healthcare, and Juravinski Hospital are also very busy hospitals that, together, provide the full compliment of anaesthesia disciplines mandated by the Royal College.

### **Rotation Specific Objectives – Anesthesia**

1. To understand the relationship between Anesthesiology and Thoracic Surgery and how the integrated approach to patient management benefits patient care.
2. To witness and understand respirologic physiology
3. To learn the principles of ventilator management
4. To learn airway management skills
5. To learn basic principles of fluid management, including management strategies for blood loss, hemodynamics, shock, acid base problems, and oxygen transport.
6. To learn the principles of perioperative management in thoracic surgical patients
7. To gain an enhanced understanding and approach to thoracic surgical diseases
8. To enhance skills in bronchoscopy, suturing and chest tube management

## **Respirology**

Program Director: Dr. L. Whitehead

Duration: 1-2 months

Style: Block

Level: First year

Site(s) of Training: St. Joseph's

The core Respirology rotation will include a mixture of inpatient and outpatient care. The resident will be expected to gain expertise in the following at a level appropriate to that of a practicing general internist.

At the completion of the rotation the resident should be able to have an organized approach to the diagnosis and management of

- COPD, asthma, cough: inpatient and outpatient
- Interstitial lung disease (UIP, sarcoid, BOOP)
- Tuberculosis
- Hemoptysis
- Pulmonary embolism
- Pulmonary renal syndromes
- Solitary pulmonary nodule
- Lung cancer
- Respiratory failure: Acute/chronic
- Respiratory Tract infections in: the normal host, host with risk factors, immunocompromised host, ICU patient
- Bronchiectasis
- Pleural effusion
- Sleep disorder breathing/hypoventilation syndromes
- Postoperative respiratory complications (including preoperative assessment)

Competency in prescribing and monitoring

- Oxygen therapy (including home Oxygen)
- Invasive/non-invasive ventilation

Be able to perform and interpret:

- Physical examination as it pertains to respiratory/thoracic disease
- Arterial blood gases
- Thoracentesis

Have an organized approach to interpretation of chest radiology

Understand the theory and indications for Pulmonary Function Testing

The resident will display effective technical skills:

- Arterial Blood gas
- Thoracentesis

### **Rotation Specific Objectives – Respiriology**

1. To understand the relationship between Respiriology and Thoracic surgery and how the integrated approach to patient management benefits patient care.
2. To learn the assessment and management of patients with complex Respiriology problems.
3. To assist the pulmonologist and thoracic surgeon in the post operative care of the complex respirologic problems.
4. To witness and understand respirologic physiology.
5. To learn the principles of ventilator management.
6. To learn the assessment of pulmonary function studies, exercise testing.
7. To learn basic principles of post operative fluid management, metabolic and nutritional care of the operative patient, acid base problems, and oxygen transport.
8. To learn the perioperative implications of thoracic surgery and lung resection as it relates to underlying respirologic diseases such as COPD and interstitial lung disease.

## **Radiology**

Program Director: Dr. David Landry

Requirement: Elective

Duration: 1 month

Style: Block

Site(s) of Training: St. Joseph's Hospital

Currently, it is possible to undertake an elective at 3 hospitals in Hamilton. In addition to general radiology, each of these Radiology departments offer additional exposure to subspecialty interests.

- Neurosurgery and Traumatology at the Hamilton General Hospital
- Oncology at the Juravinski Hospital
- Chest medicine, Renal medicine and Pediatrics at the St. Joseph's Hospital
- Pediatrics, Obstetrics and Gynecology at the McMaster University Medical Centre.

The radiologists in these departments are enthusiastic and motivated teachers. In most cases, it is possible to tailor an elective to suit your needs.

We are one of only a few centers to have a dedicated digital Fuji chest unit capable of dual energy subtraction. The department is fully networked. Fellows have ample opportunity to perform lung biopsies, pleural drainage, and if they wish, pulmonary angiography and bronchoscopy. For those with an interest in nuclear imaging, McMaster has a PET scanner.

Fellow responsibilities include daily readout sessions with residents, daily rounds with ICU staff, and participating in teaching rounds for medical students, residents, and staff. The chest fellow takes part in the general on call rotation, approximately once every six weeks. There is a separate rotation for the interventionalists.

There is ample exposure to the full spectrum of chest disease. McMaster University is fortunate to have an internationally recognized group of respirologists who provide the referrals and have an excellent working relationship with Radiology. Most fellows choose to spend a month with one of our two dedicated pulmonary pathologists who provide an invaluable learning opportunity with lung cuttings, and review of daily biopsy and surgical specimens.

An excellent teaching file is available for review and fellows are encouraged to begin creating their own file. Research is encouraged and fellows are given one day a week academic time. Some seed money is available for fellows to begin projects. A generous travel allowance for meetings and AV material is available.

### **Rotation Specific Objectives**

Elective Students will be involved in the reviewing of general radiographs throughout the time of the elective. The general radiographs include chest, musculoskeletal, general pediatric, gastric and renal x-rays.

Students are encouraged to spend time in Computed Tomography (CT), fluoroscopy, angiography/interventional, as well as ultrasound.

1. **Cross-Sectional Imaging Rounds** - Mondays at 16:30 in the Radiology Conference Room (G1127). there is usually a variety of recent CT and MRI cases.



2. **Radiology Resident Half-Day Sessions** - Wednesday afternoons beginning at 13:00 hours at McMaster University Medical Centre's Diagnostic Imaging Department. Students with an interest in Diagnostic Imaging are encouraged to attend these rounds which consist of a formal presentation, either from a radiologist or radiology resident, followed by quiz cases shown among the residents. These quizzes teach the students how to describe the findings on the radiographs and to discuss the various differential diagnoses.
3. **Gastrointestinal / Surgical Rounds** - 2nd Wednesday of each month at 16:30 hours in the Radiology Conference Room (G1127). The student is encouraged to check the weekly radiology schedule to note whether they are being held during their rotation. GI/radiological cases are presented for discussion.
4. **Chest Rounds** - Fridays at 08:00 hours in the Firestone Regional Chest and Allergy Unit. Chest problem cases are presented for discussion.
5. **Medical Grand Rounds** - Wednesdays at 08:00 hours in the Fontbonne Amphitheatre.
6. **Intensive Care Unit (ICU) Rounds** - daily at 11:20 hours in the ICU. These rounds are conducted by a radiologist and the x-rays of each patient in the ICU are discussed after presentation of clinical history and findings. These are helpful to the medical students, as a variety of medical and surgical emergencies such as pulmonary edema, pneumothorax, etc., are discussed.
7. **Radiology Resident Rounds** - daily at 14:30 hours in the Diagnostic Imaging Department. These rounds are geared toward the radiology resident but the medical student may attend and partake in the discussion. The time of these rounds may vary depending on the radiologist's workload, therefore, the student is advised to check the time with the residents.
8. **Regional Chest Rounds** – Tuesday mornings. Students are encouraged to attend radiology-related presentations.

**Community**

Duration: 1-2 months

Requirement: Elective

Site(s) of Training: Variable

Residents are permitted to perform elective rotations at other institutions within Canada, United States and Europe if they have a particular interest, would like to gain broadened exposure, or are pursuing potential employment opportunities. These rotations will be reviewed and approved by the education committee on an individual basis.