

EDUCATION PROGRAM 2016-17



UNIVERSITY OF
TORONTO

Interdepartmental
Division of Critical
Care Medicine

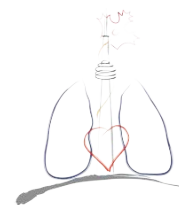
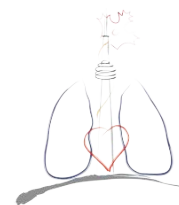


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INTRODUCTION

Dr David Hall - Program Director

The University of Toronto has one of the largest and most successful education programs in the World. Each year we recruit nearly 60 residents and fellows to the Interdepartmental Division

We have the greatest patient population (more than 5 million) of any Canadian university Critical Care Division which translates to the greatest diversity and complexity of patients. Residents and fellows in our Division see cases and treatments that may only be heard of in other centres. We are the only city in North America with more than 2 million inhabitants and only one medical school. So there is no competition for medical education.



We have the World's most successful, and productive academic critical care Faculty. This not only provides residents and fellows with outstanding opportunities for research but also a means to introduce them to Faculty at the forefront of Critical Care.

Because we have our Program divided into hospitals with a site coordinator in each they need not fear becoming lost in a large Division. Mentorship is vital to the success of the Program and the happiness of all of our Faculty from our medical students to our full Professors.

Our mandate is to develop leaders in critical care and foster the development of competent, caring and resourceful intensivists. There are a large number of opportunities for research and development in the areas of basic science, physiology, clinical trials, clinical epidemiology, ethics, and education. The success of our program lies in the diversity of our faculty and breadth of the educational opportunities provided by the various academic and community ICU's. We hope you take advantage of our diverse faculty in enriching your training experience.

Dr Laurent Brochard - Division Chief

I arrived at the end of 2013 to take over the responsibility of Director of this prestigious Interdepartmental Division, a position which Dr. Arthur Slutsky assumed for more than ten years. I have now the enjoyable task of leading this Division in the next ten years. This looks easy and challenging at the same time. Easy because of the highly successful achievements of the Division, and challenging almost for the same reason!

The year 2015 will offer an important occasion to implement our new strategic plan, and for determining a common vision for our future. Our Division has some unique features, gathering professionals from all departments, and from both the adult and paediatric worlds. All academic acute hospitals and research centres work together within the same University. The main force of our Division is our members, and I have no doubt that a very exciting time for the Division is coming. Welcome!





UNIVERSITY OF TORONTO

FACULTY OF MEDICINE

Established in 1827, the University of Toronto (UofT) is a world-renowned community of 85,000 students and 13,000 faculty members, located in one of the world's most vibrant and multicultural cities.

The Faculty of Medicine is an outstanding educational institution, attracting people to the University of Toronto from all over the World. UofT trains more than half of all practising specialists, and one third of family physicians in Ontario, and has the largest MD/PhD training program in the country. It is also Canada's largest provider of Continuing Professional Development (CPD) with the highest standards of accreditation of the University of Toronto has a long history of innovation and research. In the health care professions, lifelong learning experiences are required to stay current and deliver the best possible patient care. Thousands of professionals, from health care and beyond, come to Toronto to acquire new knowledge or to maintain existing skills.

UNDERGRADUATE MEDICAL EDUCATION

MD Program enrolment	1,002
MD/PhD Program enrolment	51

POSTGRADUATE MEDICAL EDUCATION

	All	(Adult) Critical Care
Residents (Canadian Citizen or Permanent Resident)	1,823	16
Residents (International Visa)	67	1
Clinical Fellows (Canadian Citizen and Permanent Resident)	396	4
Clinical Fellows (International Visa)	720	58

The Department of Postgraduate Medical Education currently maintains a dynamic inventory of over 500 different clinical fellowships, varying from standardized fellowships (e.g. Cardiac Imaging) to clinical fellowships developed for the individual trainee. Our commitment and contribution to medical education in Canada is exceptional and unparalleled:

We train 68% of all clinical fellows in Ontario (2014-15)*











We train 47% of all clinical fellows in Canada (2014-15)*

Not counting elective trainees, 996 international trainees from over 74 nationalities were registered during the 2014-15 academic session.

* Canadian Post-MD Education Registry (CAPER) Annual Census, November, 2014

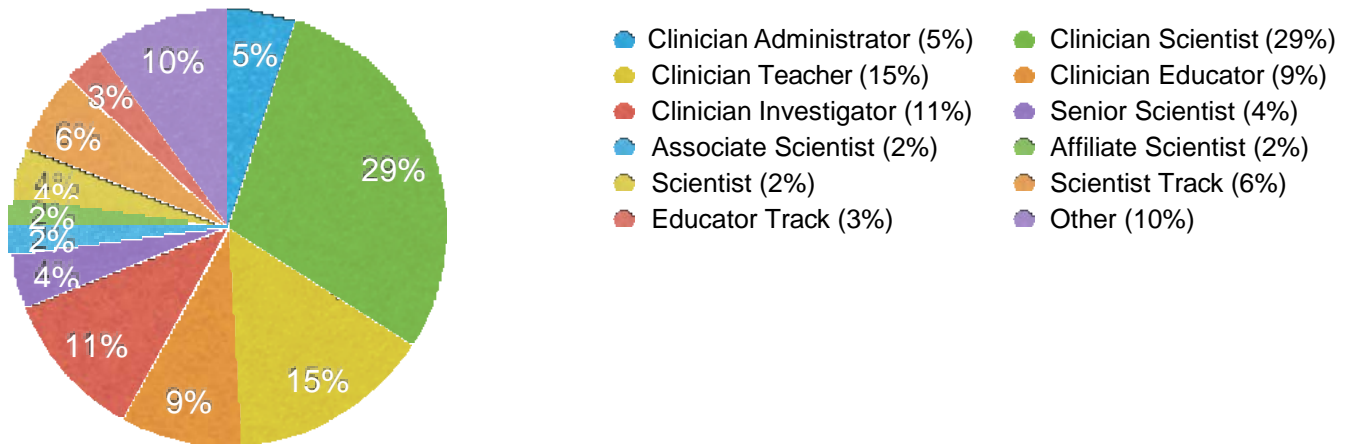
The Faculty of Medicine at UofT enjoys a rich history. This is where Banting and Best first isolated insulin in 1921 and went on to use it to treat diabetes, and where Ernest McCulloch and James Till discovered stem cells in 1961. Today, our research community spans three University campuses and nine partner hospitals, with annual research income totalling \$1.2 billion. The Faculty of Medicine itself is recognized as being one of the highest performing Faculties in the University, and currently ranks third in the World among our peers in Clinical Medicine.

CRITICAL CARE MEDICINE

World Rank	Institution		Score
1	Harvard University		100.00
2	University of Toronto		92.64
3	University of Pittsburgh		91.36
4	Johns Hopkins University		90.68
5	University of Pennsylvania		88.69
6	University of Washington		87.00
7	University of California, San Francisco		85.74
8	University of Michigan		84.57
9	Imperial College London		83.87
10	University of Colorado Denver Anschutz Medical Campus		83.59

Source: Center for World University Rankings (CWUR) April 2017

Critical Care Medicine is not a distinct department at the University of Toronto, but is an interdepartmental division of the Faculty of Medicine. It includes over 80 full-time and part-time faculty members who are cross-appointed to their base-specialty Departments (Anaesthesia, Medicine, Paediatrics, and Surgery). Amongst the Division's Faculty 20 members of staff have now attained the academic rank of full Professor.



Academic Appointments in the Interdepartmental Division of Critical Care Medicine, University of Toronto

We are renowned for our clinical expertise and research leadership in a broad range of fields including:

- Acute Lung Injury
- Mechanical Ventilation
- Critical Care Physiology
- Sepsis
- Trauma
- Critical Care Education
- Outcomes after Critical Illness
- Neuroscience
- Cellular and Molecular Biology of Critical Illness

PAEDIATRIC CRITICAL CARE PROGRAM

The Paediatric Critical Care Program is an accredited training program of Royal College of Physicians and Surgeons of Canada. Its Faculty and graduates have earned the Program an unrivalled, global reputation in clinical practice, scientific discovery, and postgraduate medical education. Paediatric CCM trainees consist of highly-motivated, suitably-qualified, Canadian and international applicants. The training experience includes immersion in the clinical programs of Cardiac Critical Care, Paediatric Intensive Care and Critical Care Response. These clinical rotations are combined with the formal paediatric critical care teaching program, research training, simulation-based research & training, quality & safety and access to the world renowned adult critical care program at the University of Toronto.

For graduates from outside Canada, the clinical fellowship is intended as post-certification training. The fellowship year is recognized as an additional training year that may contribute to training requirements in other countries that have critical care specialty certification. This is an exciting program which receives over 2,000 admissions per year. The hospital has active cardiac, lung, liver, small bowel and renal transplant programs, as well as being the regional mechanical support (ECMO, VAD, interventional lung assist) and trauma centre.

The volume and diversity of patients for which Sick Kids provides care offers numerous opportunities for clinical research. Trainees are mentored in the development of their own research interests with the active participation and direction of the attending critical care staff and other sub-specialty services within the hospital. Trainees are encouraged to be active participants in clinical conferences, multidisciplinary rounds, and weekly meetings of other subspecialty services such as Cardiology/Cardiovascular Surgery, General Surgery, Trauma and Transplantation. The Critical Care Response Team is an outreach program led by a critical care trainee. This team is responsible for managing in-hospital patients with escalating acuity as well as in coordinating appropriate stabilization and transportation of critical care referrals from around the country to the Hospital for Sick Children.



ADULT CRITICAL CARE MEDICINE RESIDENCY

INTRODUCTION

The (Adult) Critical Care Medicine Program at the University of Toronto is a two-year residency program that leads the successful physician to Royal College of Physicians and Surgeons of Canada (RCPSC) sub-specialty certification. Each year the Ministry of Health and Long-Term Care (MOHLTC) funds approximately 7 places in our program for eligible physicians. In addition to these places the Division has the capacity to support exceptional trainees to complete an equivalent academic curriculum and clinical training to the Residency Program.

The rapidly expanding body of knowledge regarding the treatment of the critically ill, the continuing introduction of new technology for life support, and more complex societal issues (legal, moral, ethical) have created a need for specialists trained in the recognition and management of this patient subset. To develop such specialists, our residency program focuses on the knowledge, skills, and attitudes pertinent to the expected roles and competencies of the adult critical care medicine specialist. Residents training within the unique interactive environment in which the critically ill are managed learn to respect the rights of the patient and family and acknowledge the importance of age, gender, culture, and ethnicity.

The Residency Program is divided into 26 four-week training blocks. In accordance with the Objectives of Training set out by the RCPSC and by the Education Program Committee of the IDCCM, University of Toronto; the training program has mandatory and elective content.

MANDATORY TRAINING

Each trainee following the Residency Program will complete 16 blocks of Core Critical Care training with 15 blocks spent in Academic hospitals and 1 block spent in an affiliated community hospital. Generally speaking trainees will spend 9 blocks in Academic hospitals in year 1, and undertake 6 blocks of academic hospital training and their community hospital block in year 2.

Academic Hospitals: Toronto General Hospital, Sunnybrook Health Science Centre, St. Michael's Hospital, Toronto Western Hospital, Mount Sinai Hospital

Community Hospitals: Trillium Health Partners, St. Joseph's Hospital, Toronto East General Hospital, North York General Hospital

Scholarly Activity: Each trainee will be afforded 6 blocks of academic time to complete a scholarly project

ELECTIVE TRAINING

Elective or “selective” blocks of clinical training relevant to Critical Care Medicine, are chosen by the trainee and approved by the program director. The elective training blocks in complementary disciplines broaden the overall educational experience of the Program.

Electives also enable trainees to develop sub-specialty expertise in Critical Care - which is vital both for career advancement and for academic development. They must be taken in periods of not less than four weeks and can be nominated from any of the recognized Royal College medical or surgical subspecialties, including but not limited to the following list:

Anaesthesiology	Echocardiography
Burns Management	Neurosurgery
Cardiovascular Surgery	Radiology
Cardiovascular ICU	Transplantation (Lung, Liver, Heart, Bone Marrow)
Neurocritical Care	Transport Medicine
Trauma ICU	Nephrology and Dialysis
Paediatric Critical Care	Trauma Surgery
Community ICU	Toxicology
Critical Care Ultrasound	Emergency Medicine
Palliative Care Medicine	

*** For information regarding experiences outside of Canada, please read the information from the University of Toronto contained with the Appendix: Global Health Initiatives.



RESOURCES

The following resources are available to trainees in the Critical Care Residency Program and are commensurate with those available to Clinical Fellows from their base hospital:

Conference Attendance

The program offers all Residents an Education Allowance of \$3000 during their 2-years of training to attend critical care conferences and courses of their choice. This can be used to reimburse trainees for registration, travel and accommodation (subject to University regulations). Examples of meetings to attend include: ATS meeting, SCCM, ESICM, National ACES Course, Critical Care Review Program. The program pays for all CCM trainees to attend the annual Critical Care Canada Forum in addition to the Education Allowance.

When presenting work e.g. an abstract, on behalf of the University of Toronto it is expected that the trainees' supervisor and or the research group will offset costs and therefore the impact on the trainee's allowance by providing additional support for e.g. poster printing, travel expenses.

The Education Allowance cannot be used for the purchase of items such as textbooks, computers and software, or for laboratory equipment and such consumables for research.

ACLS and ATLS

The program pays for residents to complete both ACLS and ATLS, if they have not already completed these courses.

Practice Examinations

The program funds all trainees to sit the SCCM MCCKAP multiple choice exam and the University of Toronto Critical Care OSCE annually.



ADULT CRITICAL CARE MEDICINE CLINICAL FELLOWSHIP

INTRODUCTION

The Critical Care Medicine Clinical Fellowship at the University of Toronto is truly an international program. Our alumni, with whom we continue to collaborate, include former fellows from countries all over the World including: Australia, Brazil, United States, Italy, Japan, Switzerland, United Kingdom, Singapore, Argentina, Ireland, Spain, and Israel. We have trained leaders in critical care throughout the World and the Clinical Fellowship is an essential vehicle for the Division's Global Outreach Program - helping improve the quality and delivery of patient care in every continent.

The Critical Care Medicine program provides clinical fellows with an exceptional clinical, educational, and research experience. Our aim is to recruit those trainees who are about to or have recently completed their Critical Care training in their home country. It is important to the success of our educational programs that we have learners that are at different postgraduate levels, different educational and professional goals, and who will augment one another's learning.

Our program is recognized by the University of Toronto, Faculty of Medicine, and upon completion fellows are awarded a certificate from the University that attests to their achievement. Many of our fellows will sit the European Diploma of Intensive Care Medicine (EDIC) and American Board of Internal Medicine Critical Care examinations during their time with us. They have found our academic program to be invaluable for exam preparation.

The clinical experience offered by the program spans the breadth of critical care. Each fellow will spend time at one or more of our university hospitals: St. Michael's Hospital, Toronto General Hospital, Sunnybrook Health Science Centre, Toronto Western Hospital, and Mount Sinai Hospital. In addition to affording patients the highest standard of general adult intensive care, each is a tertiary referral centre for subspecialty critical care, as detailed later.

The fellowship program is usually offered initially as a one year program but can be extended to two or three years. This would be at the discretion of the Site Fellowship Director and Department Chief, and subject to the performance of applicants and their educational goals.

TWO COMPLEMENTARY PROGRAMS

The University of Toronto enrolls physicians in training in two distinct categories: residents and clinical fellows. Therefore Divisions of the Faculty of Medicine effectively have two training schemes: Residency and Fellowship. This is an important distinction with respect to terms of eligibility and the process of application to our training programs, however operationally and educationally we make a lot of effort to blend the two streams together such that trainees are afforded the same opportunities and status.

	RESIDENCY	CLINICAL FELLOWSHIP
Recruitment	Canada United States Affiliated Gulf States	Global
Eligibility	Minimum 6 months of Critical Care experience Base specialty - Anaesthesia, Internal Medicine, General Surgery, ER, Cardiac Surgery, (or direct-entry Critical Care Medicine) Fluent in spoken and written English	
Postgraduate training (median)	3 years	8 years
Postgraduate Appointment	Resident	Clinical Fellow
Operational Rank/Title	Critical Care Fellow	Critical Care Fellow
Length of Program	2 years	1 year minimum
Clinical Training Program	5 University Hospital sites 1 Community ICU Elective periods anywhere at UofT	1-3 University Hospital sites 5 University/1 Community ICU options Elective periods anywhere at UofT
Education Program	Royal College Objectives Mandatory, academic half-day program Critical Care Canada Forum	Royal College Objectives Fully-supported academic half-day program Critical Care Canada Forum
Scholarly Training Program	Mandatory academic project Research methodology training Quality improvement training	Fully-supported academic project Research methodology training Quality improvement training

ADULT CRITICAL CARE MEDICINE PROGRAM COMMITTEES

EDUCATION PROGRAM COMMITTEE

The overall goals of the Education Program Committee in Adult Critical Care Medicine are: to ensure that the Training Program provides the highest quality education to all trainees within the Division, and that those who successfully complete the Program will provide the very highest standard of safe and compassionate care to patients in need of critical care consultation or intervention.

Membership*

Standing membership:

1. David Hall - Program Director, Adult Programs (Chair),
2. Dominique Piquette - Associate Director for Scholarly Activity and Education Research
3. Tilman Humpl, Paediatric Representative
4. Christie Lee - Site Director, Mount Sinai Hospital
5. Simon Abrahamson - Site Director, St. Michael's Hospital
6. Shelly Dev - Site Director, Sunnybrook Health Science Centre
7. Alberto Goffi - Site Director, Toronto Western Hospital
8. Ghislaine Doufle – Site Director Toronto General Hospital
9. Chief Resident, representing all Adult Critical Care Medicine Residents
10. Chief Clinical Fellow, representing all Adult Critical Care Medicine Fellows

Trainee representatives will be nominated, or elected by their peers. A resident representative will sit on the Committee for 1 year. Resident members may self-nominate and will be appointed from the senior year for a period of 12 months.

Ex Officio membership:

1. **Laurent Brochard**, Chair, Interdepartmental Division of Critical Care Medicine

OPERATIONAL ASPECTS

The committee will meet at least quarterly during the academic year and at the discretion of the Chair. An agenda with request for agenda items from the membership will be provided in advance of each meeting. The minutes of each meeting will be circulated for approval. The Chair of this Committee reports to the Chair of the Interdepartmental Division of Critical Care, and will provide regular updates about the Committee's activities at the Executive meetings of the Interdepartmental Division of Critical Care. The Chair also reports to the Vice-Chair of Education. Quorum is defined as 50% attendance of the membership and quorum is required when a vote is undertaken by the Committee.

Ad-hoc Subcommittee Structure

The Committee will have the following ad-hoc subcommittees populated by at least one trainee representative where appropriate and as necessary to fulfill their mandate:

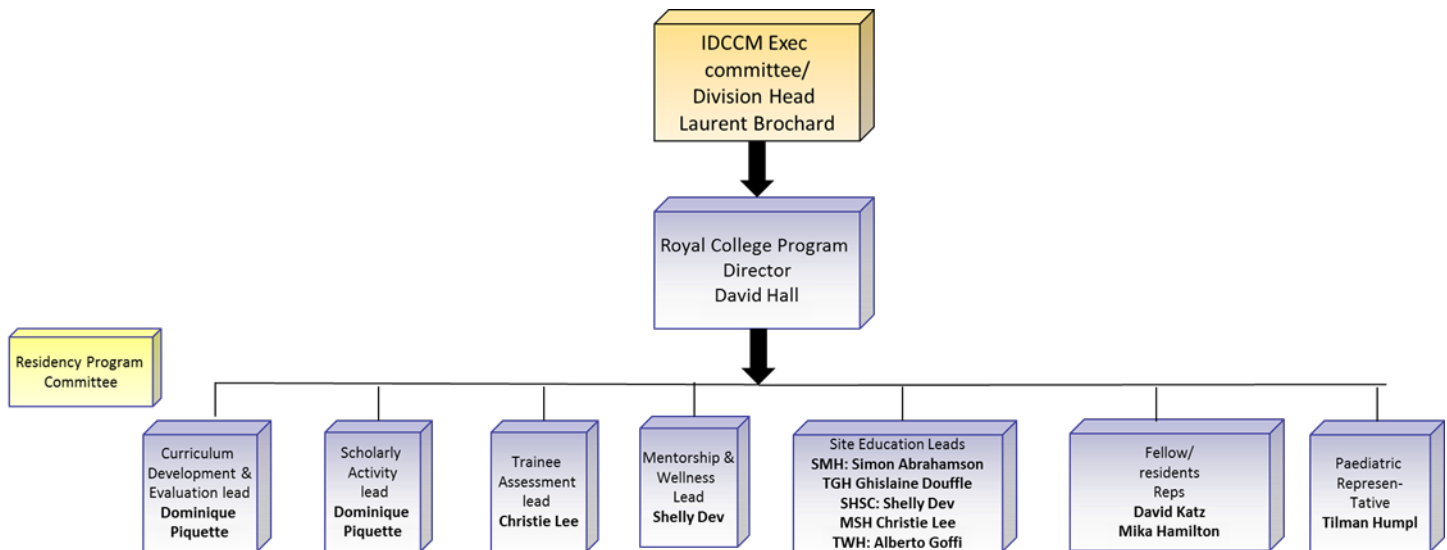
Competency-Based Training Development

Chair: Dominique Piquette

Appointment Selection Committee

Chair: David Hall

These subcommittees are not standing committees, but may be formed as ad hoc committees when deemed appropriate by the EPC. The subcommittee chairs report to the Education Program Committee.



ADULT CRITICAL CARE MEDICINE CLINICAL TRAINING PROGRAM

The *Toronto Academic Health Science Network (TAHSN)* is one of the largest academic health partnerships in North America. The network is comprised of the University of Toronto and its affiliated academic hospitals; these organizations work together to provide high quality patient care, conduct innovative research, offer top- quality education programs and participate in knowledge- translation activities.

	Toronto General Hospital	Mount Sinai Hospital	St. Michael's Hospital	Sunnybrook Health Sciences Centre	Toronto Western Hospital
ICU beds	24	16	24	57	26
Critical Care Outreach	√	√	√	√	√
Specialty Populations	-Organ transplant	-Obstetrical -Bone marrow transplant	-Obstetrical -Complex hematologic	-Trauma -Neurotrauma -Cardiac surgery	-Neurosurgical -Orthopedic
Critical Care Supports	-Mechanical ventilation -Continuous renal replacement -ECLS	-Mechanical ventilation -Continuous renal replacement -Plasmapheresis	-Mechanical ventilation -Continuous renal replacement Plasmapheresis	-Mechanical ventilation -Continuous renal replacement -(ECLS)	-Mechanical ventilation -Continuous renal replacement Plasmapheresis
On-Call Structure	In-house call	In-house call	Home-call	In-house call	In-house call

TORONTO GENERAL HOSPITAL

585 University Avenue, Toronto, Ontario

Site Director: Ghislaine Douflé

The University Health Network is comprised of the Toronto General Hospital (TGH), Toronto Western Hospital (TWH), Princess Margaret Cancer Centre, and Toronto Rehabilitation Institute (TRI).

Toronto General Hospital has three ICUs: a Medical-Surgical ICU (MSICU), Cardiovascular Surgical ICU (CVICU), and a Coronary ICU (CICU).

The MSICU is a closed 24 bed general intensive care unit. It provides support to the medical and surgical services at the hospital. It has a focus on solid organ transplantation (lung, liver, intestine), thoracic surgery, vascular surgery, general surgery, and general internal medicine.

Toronto General Hospital is a Provincial referral centre for cardiac and respiratory failure and therefore is a key educational resource for the Critical Care Residency Program for training in extracorporeal life support. Currently TGH has approximately 70-80 new ECLS patients per year. Modalities include VV-ECMO, VA-ECMO, and less frequently ECCO2R and Tandem Heart.

The site provides all aspects of ICU care and have full resources including conventional and non-conventional modes of ventilatory support, hemodialysis and plasmapheresis.

Each day, a sign over and brief teaching session occurs at 0700h, followed by ECMO multidisciplinary rounds at 09.15hrs, followed by multidisciplinary rounds at 10.00. Educational rounds (provided by attendings, trainees, allied health or visiting speakers) occur immediately after sign over in the morning. Sign over rounds typically occur between 1600 and 1730 hours.

Residents and Fellows are not on call for cardiac arrests but routinely provide consultations to the wards and to the emergency department. Residents and Fellows are expected to take in-house call.

In addition to providing consultations in critical care, there is a 24/7 outreach program at each site. This team consists of a staff intensivist, critical care nurse and CCM Resident or Fellow. This team follows discharges from the ICU, provides support to medical and surgical care providers (nurses, physicians) and assists in the management of patients who demonstrate signs of clinical worsening or instability.



MOUNT SINAI HOSPITAL

600 University Avenue, Toronto, Ontario.

Site Director: Christie Lee



The Mount Sinai ICU is a 16 bed closed medical-surgical intensive care unit. In addition to serving Mount Sinai Hospital, it provides critical care services to the adjacent Princess Margaret Hospital. The typical patient admissions comprise of general medical cases, post-operative and surgical complications (predominantly gastrointestinal, orthopedic oncology and ENT), complications of hematological malignancies and bone marrow transplantation and obstetrical complications.

Areas of clinical expertise and research interest include the ventilator management of ARDS, management of the bone-marrow transplant patient and critical illness in pregnancy. This ICU provides conventional and non-conventional ventilator support, continuous renal replacement therapy, intermittent hemodialysis and plasmapheresis.

CCM trainees will be responsible for running rounds under the supervision of the attending physician. A second fellow is allocated to work with the ACCESS (Critical Care Response) team consults and follow-up of patients recently transferred to the wards. A third fellow provides back-up for additional clinical emergencies..

The medical Resident on call is responsible for hospital cardiac arrests during weekdays, under the supervision of a CCM Trainee. Residents and Fellows are expected to take in-house call here. .

Formal teaching on core ICU topics takes place daily for junior residents and CCM trainees at noon. Teaching is delivered by the ICU attending and members of the multidisciplinary team. There are bi-weekly simulation-based training sessions and weekly Grand Rounds. Critical Care Residents are responsible for teaching junior trainees every Monday, and have their own dedicated sessions every Wednesday and Friday morning. Tri-site Journal Club between Toronto General, Toronto Western, and Mount Sinai Hospital occur on Wednesdays on a bi-weekly basis and Morbidity and Mortality rounds occur once a month.

	Monday	Tuesday	Wednesday	Thursday	Friday
AM			Fellow Teaching		Fellow Teaching
Noon	Core ICU Teaching	Attending or M+M Rounds	Grand Rounds	Core ICU Teaching	Core ICU Teaching
PM		Academic Half-Day	Bi-Weekly Journal Club	Simulation (Bi-Weekly)	

ST MICHAEL'S HOSPITAL

30 Bond Street, Toronto, Ontario.

Site Director: Simon Abrahamson

St. Michael's Hospital has three separate Intensive Care Units within the hospital, in addition to the Coronary Care Unit.

The Medical-Surgical ICU is a 24 bed unit. Two intensivists staff the unit each week. Patient admissions typically consist of medical-surgical cases.

In addition are admissions of critically ill obstetric patients from the obstetric unit. The MSICU provides conventional and non-conventional ventilatory support, plasmapheresis and multiple types of dialysis including intermittent hemodialysis, SLED and CRRT. The unit regularly admits a wide variety of patients including: those with ARDS, acute renal failure, sepsis, complex general surgery (including pancreatitis), interventional gastroenterology, vascular surgery, neurological diseases, and acute plasma exchange.

Critical Care trainees provide back-up to more junior rotating residents via a home-call system. Call is scheduled no more frequently than 1 in 4 so fellows who wish to remain in house can do so.

Seminars are held for junior Residents 1-2 pm Monday to Thursday covering a core curriculum with one session each week given by allied health professionals. There is a hands-on half-day resuscitation course that is part of the orientation for new junior Residents. Critical Care trainees attend a separate weekly session with the attending staff. In addition the Critical Care trainees present a weekly Journal Club under guidance of a staff physician as part of weekly department wide lunchtime grand rounds on Fridays.

The Cardiovascular Surgical ICU is a 15-bed unit providing care to postoperative cardiac and vascular surgery patients. There is a weekly seminar series that specifically targets Critical Care trainees. In addition many of the attending staff from the Department of Anaesthesia are National Board certified in echocardiography and provide Transoesophageal Echocardiography seminars and hands-on training to the trainees in the CVICU. Trainees are exposed to temporary pacing techniques and PA catheterization in almost all patients. Intra-aortic balloon pumps, and other ventricular assist techniques such as ECMO are less frequently employed.



The Trauma-Neurosurgery ICU (TNICU) is a 19-bed unit caring for critically ill neurosurgical patients and interventional neuroradiology patients. It is one of two Level I adult trauma centres serving the Greater Toronto Area. The TNICU specializes in teaching trainees advanced neuro-monitoring techniques such as Transcranial Doppler, Licox tissue P_O₂ monitoring, jugular bulb monitoring, and continuous bedside EEG. There is a weekly, year round seminar program on trauma, as well as separate seminars on neurosurgical ICU for all trainees.

Monthly, as part of grand rounds, a renowned local, national or international speaker is invited. In addition, every 2 months grand rounds are combined presentations from critical care/nephrology which are attended by staff from both disciplines.



SUNNYBROOK HEALTH SCIENCES CENTRE

2075 Bayview Avenue, Toronto, Ontario

Site Director: Shelly Dev



The Department of Critical Care Medicine at Sunnybrook Health Sciences Centre provides primary patient care for a diverse patient population including trauma, neurotrauma, medical-surgical (including cardiovascular surgery) patients. In total, a total of 57 (closed) ICU beds comprise the department:

22 bed Medical-Surgical-Trauma ICU with 1200 annual admissions, including all ventilated patients from the largest trauma program in Canada,

14 bed General Cardiac and Vascular Surgical ICU with 1100 annual admissions,

13 bed Neurosurgical-Trauma Step-down ICU, and 8 bed Medical- Surgical Step-down Unit.

This department also coordinates a hospital wide Critical Care Response Team service for the wards (24/7 service), and provides daily consultant care to the largest adult burn unit in Canada (10 beds, 200 acute burn admissions annually).

Mechanical ventilation, continuous and intermittent hemodialysis and (less frequently) extra-corporeal life support is available as support therapies, as well as invasive neurologic monitoring techniques.

Critical Care trainees are expected to take 1 in 4 in-house call. There are 3 Critical Care trainees on call each night along with 2 junior residents. As a team they are collectively responsible for all of the department's beds, and also for consultations to the various medical and surgical floors, the emergency department, and frequently requests from other hospitals. Junior residents are first responders for consults and calls for the Critical Care Response team.

Formal educational sessions include a weekly journal club, during which a CCM publication is critically-appraised and the principles of evidence-based medicine reviewed; biweekly problem-based learning (PBL) sessions; weekly fellow-led case discussions; and weekly Quality Improvement Rounds (formerly Morbidity and Mortality Rounds) during which quality and process of care issues are reviewed. In addition, there are weekly Critical Care Grand Rounds (Wednesdays) presented by an invited speaker. For Junior residents, there are daily morning report sessions and daily lunchtime lectures covering core topics in CCM.

Educational Activities

	Monday	Tuesday	Wednesday	Thursday	Friday
AM	Case discussion	PBL	Invited speaker	Quality rounds	PBL
PM		IDCCM Half-day	Grand Rounds	Journal Club	

TORONTO WESTERN HOSPITAL

399 Bathurst Street, Toronto, Ontario.

Site Director: Alberto Goffi

TWH is a closed 26 bed medical - surgical and neurosurgical intensive care unit. It specializes in orthopaedic and neurosurgical patients and provides support to other medical and surgical programs at the hospital.

The unit provides all aspects of ICU care and have full resources including conventional and non-conventional modes of ventilatory support, hemodialysis and plasmapheresis.



TWH MSNICU is one of the few programs in Canada that has been built with the capability to provide level 4 biocontainment. It will therefore provide critical care e.g. for Ebola virus or Middle East Respiratory Syndrome (MERS) virus infected patients arriving to or living in the Greater Toronto Area.

Each day, a sign over and brief teaching session occurs at 0730, followed by bedside rounds at 0900. Educational rounds (provided by attendings, the trainees, allied health or visiting speakers) occur at noon or 1500 daily. Sign over rounds occur at 1630 hours.

As with Toronto General Hospital, trainees are not on call for cardiac arrests but routinely provide consultations to the wards and to the emergency department. Critical Care residents and fellows are on-call in-house at Toronto Western.

In addition to providing consultations in critical care, there is a 24/7 outreach program at this site. This team consists of a staff intensivist, critical care nurse and Critical Care trainee. This team follows discharges from the ICU, provides support to medical and surgical care providers (nurses, physicians) and assists in the management of patients who demonstrate signs of clinical worsening or instability.

HOSPITAL FOR SICK CHILDREN

555 University Avenue, Toronto, Ontario.



The Hospital for Sick Children, or SickKids is a 300-bed tertiary care centre and the sole paediatric hospital serving the Greater Toronto Area. Sickkids is the regional paediatric trauma centre and provincial paediatric referral centre for Neurosurgery, Oncology, and for Interventional and Perioperative Cardiac Care. The Department of Critical Care Medicine at SickKids is a multidisciplinary department including the two intensive care units, the critical care response team, the University of Toronto Paediatric Training Program and the regional paediatric mechanical support program. The department is staffed by 11 Intensivists, 15-20 full-time Critical Care Trainees, and the rotating residents from paediatrics, anaesthesia, surgery and other subspecialty services.

COMMUNITY HOSPITALS

The (TAHSN) and University of Toronto affiliated community hospitals are excellent centres for elective clinical rotations and for Residency Program trainees to undertake their mandated community ICU rotation. They include:

NORTH YORK GENERAL HOSPITAL

4001 Leslie Street, Toronto, Ontario

The North York General Critical Care Unit (CrCU) is a 21 bed closed medical-surgical and cardiac intensive care unit. The case-mix comprises medical admissions, high-risk and or emergent surgical admissions, as well as emergent obstetrical admissions. The ICU regularly accept patients via CriteCall for patients within the Local Health Integration Network (LHIN). There is one attending intensivist per week, with subspecialty backgrounds including general surgery, internal medicine, respiratory and infectious disease. Cardiologists also attend on the CrCU, but only to the cardiac patients (approximately 1-2 beds) and therefore elective Critical Care trainees will have minimal involvement with this patient population.



The CrCU provides conventional and non-conventional ventilatory support, including high-frequency oscillation. The ICU is capable of providing dialysis support using slow low-efficiency dialysis (SLED) which is administered independently by the CrCU nurses and supervised by the Attending Intensivist. North York General has a Critical Care Response Team in place that provides consultation and support throughout the hospital.

The interprofessional CrCU team includes a pharmacist, dietitian, respiratory therapist(s), physiotherapist and social worker. Critical Care trainees participate and, when appropriate, lead daily interprofessional goal rounds. CCM trainees work closely with the attending physician, including daily review of X-rays, formal and informal bedside teaching and supervision of procedures. CCM trainees may provide teaching to junior residents and trainees (e.g. family medicine residents or medical students). If interested, trainees may participate in CCRT consultations out of the unit. Trainees do not respond to cardiac arrests throughout the hospital as coverage is provided by internists.

TORONTO EAST GENERAL HOSPITAL

825 Coxwell Avenue, Toronto, Ontario



Toronto East General Hospital (TEGH) is a community teaching hospital affiliated with the University of Toronto, Faculty of Medicine. It has a combined-medical surgical ICU (MSICU) that has been closed and intensivist-led unit since 2005. There are 16 Level 3 (ICU) beds and four Level 2 surgical step-down (HDU) beds.

The case mix includes general medical cases and both planned and unexpected post-operative surgical cases. TEGH is one of three Level 1 Thoracic Surgery centres in Toronto, performing all types of thoracic surgical procedures except for lung transplant.

Lobectomy, pneumonectomy and oesophagectomy patients are all cared for by Critical Care trainees in the ICU.

In addition to tertiary thoracic surgical care, continuous renal replacement therapy (CRRT) is available in the ICU and collaboratively managed with the nephrology team. Critical Care trainees can gain an understanding of novel long-term weaning strategies as TEGH is home to the Prolonged-ventilation Weaning Centre, a provincial resource and leading research program.

The educational program is focused on hands-on learning. Critical Care trainees will rotate to TEGH during their senior year and will therefore operate at a highly independent level. Critical Care trainees typically function as a Junior Attending from the beginning of their rotation. They are fully supported by an in-house intensivist, but generally run all aspects of the ICU independently, and lead the multi-disciplinary ICU team. Critical Care trainees often have one or two junior residents who work with them. Due to the small size of the trainee team, CCM trainees are able to perform a high volume of procedures including chest tube insertion, bronchoscopy, percutaneous tracheotomy, and intubation.

There are weekly medical grand rounds and weekly interdisciplinary ICU rounds, for which Critical Care trainees are responsible for one presentation during their rotation. We also have an Antibiotic Stewardship Team which reviews ICU patients three times a week. The Critical Care trainees represents the ICU at these meetings.

Critical Care trainees have the opportunity to hone their skills at acute resuscitation. The ICU is first call for all day-time Code Blue events and the Critical Care trainee is the first responder. There is also a Critical Care Outreach team run by a second in-house intensivist. The Critical Care trainee participates in the care of Outreach patients when acute resuscitation is required.

ST. JOSEPH'S HEALTH CENTRE

30 The Queensway, Toronto, Ontario

St Joseph's Health Centre (SJHC) is a community teaching hospital affiliated with the University of Toronto, Faculty of Medicine. The SJHC ICU is a closed, 16 bed, mixed medical-surgical Level III ICU. There is a 4 bed step-down unit that is physically removed from the main ICU that is referred to as the HDU (High Dependency Unit). This is covered by the attending ICU physician as well, but does not have the ability to ventilate patients nor run vasoactive medication infusions. The Critical Care trainees are not involved in the care of patients in the HDU as a routine.



The case mix for the main ICU has traditionally been approximately 60:40 surgical:medical. We provide post-operative support for all surgical services (except cardiac surgery and neurosurgery), including general surgery, urology, plastics, ENT and high risk obstetrics. SJHC is a level III Thoracic Surgery centre with three active thoracic surgeons that provide full thoracic surgery support short of lung transplantation. SJHC also has a level III Hepato-Biliary Surgical service with two active surgeons providing all surgical support short of liver and pancreas transplant, including a large number of Whipple procedures and hepatic resections. Both these services provide care to a large number of out of LHIN patients and emergency transfers through CritiCall. They also account for a large portion of the surgical admissions to the ICU.

Approximately 30% of admissions come from the Emergency Department. SJHC ER has a very high volume (97,000 pt visits/yr) with an 11-13% daily admission rate. The ER population and subsequent admitted patient population has a high proportion of mental health and addiction co-morbidities, given its proximity to several high risk areas of the city. This carries through to the ICU population.

SJHC has a 24/7 CCRT that is comprised of an MD, critical care RN, and an RT. The Critical Care trainees do not participate in the CCRT rounds unless they request to. They will have interaction with the CCRT in urgent/emergent situations as necessary.

SJHC has a large and active hemodialysis program. Subsequently, a substantial proportion of patients come from this patient population and will require ongoing HD/CRRV support while in ICU. The ICU also has the capability to provide Continuous Renal Replacement Therapy (CRRT) in the form of 5 CVVHD machines that are used predominantly for unstable patients. This is initiated by the Nephrology team and co-managed by the ICU and Nephrology.

Both conventional and non-conventional forms of ventilation support are available at SJHC ICU. These include two (2) High Frequency Oscillation Ventilators as well as APRV and inverse ratio ventilation. Prone position ventilation is becoming more frequently performed and Nitric Oxide is available and used on an ad hoc basis.

The daily rounds are multidisciplinary including MDs, RT, bedside and charge nurses, and pharmacy. Dietitians, physiotherapy, clinical ethicists and social workers participate in bedside rounds on an ad hoc basis. Critical Care trainees are expected to participate and lead rounds - commensurate with their level of training. Attending MDs are always present and will support Critical Care trainees during main daily rounds and providing consultation services during the daytime hours, Monday to Friday.

There are bi-monthly ICU Grand Rounds (often involving faculty from the teaching hospitals) as well as afternoon teaching sessions for junior residents. All procedures are supervised directly by attending staff, or by Critical Care trainees, in the case of junior residents. Critical Care trainees are expected to participate in the teaching of more junior residents. There are no after hours call responsibility at the SJHC ICU unless requested by the trainee.

Weekly ethics rounds led by ethics are provided to all staff and CCM trainees are encouraged to participate.



ADULT CRITICAL CARE MEDICINE EDUCATION PROGRAM

The Critical Care Medicine Education Program at the University of Toronto is a two-year curriculum. It reflects the length and learning objectives of the Royal College of Physicians and Surgeons of Canada (RCPSC) CanMEDS 2014 Physician Competency Framework for subspecialty training (see Appendix 4). The core lecture series, designed and implemented over the past 5 years, has been updated this year to enable a transition to Competency Based Training. This progressive change from July 2015 will be completed in three years.

The Program is delivered through blended learning techniques including: interactive didactic lectures, pro-con debates, high-fidelity simulation-based training, and hands-on workshops. Throughout the program all of our trainees are afforded unique access to World-class educators, scientists, and investigators. After two years trainees will acquire the core competencies required to function as a critical care consultant. They will also gain the chance to excel; to develop a career as an expert and leader in their chosen clinical or academic field.

A record of attendance at the Tuesday sessions is kept. Critical Care Residents are expected to attend 80% of the Tuesday sessions.

ACADEMIC HALFDAY PROGRAM

Faculty Lead: Dominique Piquette

All trainees are relieved from their clinical responsibilities for educational events and the academic half-day rounds. The rounds are held each Tuesday from 14.00 to 16.30 hrs at one of the 5 academic hospitals.

CanMEDS TRAINING

The Education Program was developed to fulfill the education objectives aligned to CanMEDS roles and delivered as educational series. Our curriculum is continuously evolving based on feedback from trainees and observations from our faculty. Some examples of sessions from previous years are given below:

Critical Care Expert

As a Medical Expert, a consultant in adult Critical Care Medicine needs to integrate all of the roles of a physician, applying medical knowledge, clinical skills, and professional attitudes in their provision of patient-centred care. Medical Expert is the central physician role in the Royal College CanMEDS framework.

Critical Care Communicator

As a Communicator, a consultant in Critical Care Medicine must effectively facilitate the doctor-patient relationship and the dynamic exchanges that occur before, during, and after a medical encounter.

Critical Care Advocate

As a Health Advocate, a consultant in Critical Care Medicine will responsibly and ethically use their expertise, within the law, to influence and advance the health and well-being of individual patients, communities, and populations.

Critical Care Collaborator

As a Collaborator, a consultant in Critical Care Medicine will effectively work within a health care team to achieve optimal patient care.

Critical Care Scholar

As a Scholar, a consultant in Critical Care Medicine should demonstrate a lifelong commitment to reflective learning, as well as the creation, dissemination, application and translation of medical knowledge.

Critical Care Leader and Manager

As a Manager, a consultant in Critical Care Medicine is an integral participant and leader in healthcare organizations; organizing sustainable practices, making decisions about critically ill patients, allocating resources, and contributing to the effectiveness of the healthcare system.

Critical Care Professional

As a Professional, a consultant in Critical Care Medicine should be committed to the health and well-being of individuals and society through ethical practice, profession-led regulation, and high standards of behaviour.

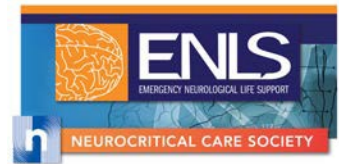
CRITICAL CARE EXPERT

Much of the core knowledge of critical care has traditionally been taught as a didactic lecture. At the University of Toronto we have made every attempt to deliver the content in an innovative and exciting way. Where possible there is hands-on learning with relevant technology, simulated patients, group learning workshops, and always delivered by experts in their respective field.

EMERGENCY NEUROLOGICAL LIFE SUPPORT

Course Organizers: Simon Abrahamson, Alberto Goffi, Martin Chapman & Vicki McCreadie

The ENLS course is a comprehensive educational program created by members of the Neurocritical Care Society in cooperation with leaders from Emergency Medicine. Rather than a course of prescriptive doctrine, its protocols are designed to help healthcare professionals improve patient care and outcomes during the critical first hours of a patient's neurological emergency.



The University of Toronto has delivered the first such ENLS program in Canada which reviews the early critical management of 13 key neurologic emergencies, including:

- ischemic stroke
- intracranial hemorrhage
- subarachnoid hemorrhage
- traumatic brain injury and spinal cord compression
- intracranial hypertension and herniation
- spinal cord compression.

The ENLS program teaches a collaborative, multi-disciplinary approach and provides a consistent set of protocols, practical checklists, decision points, and suggested communication to use during critical patient management. Trainees will undertake the ENLS certification during their first year of training.

CRITICAL CARE ULTRASOUND

Course Organizers: Simon Abrahamson, Alberto Goffi, Warren Luksun, & Ghislaine Douffle

Critical care ultrasound has gained momentum as a powerful clinical tool for the diagnosis and management of a number of acute conditions. Worldwide most Critical Care societies and Critical Care training programs consider ultrasound an essential skill and have established competencies in their curricula.

Over the past five years, experts in the Division have developed a longitudinal ultrasound curriculum for critical care trainees. The program has evolved and currently we offer the following streams and topics:

Core Training

Training targets different levels of experience and disciplines and its overall goal is to afford the critical care physician the fundamental skills and clinical knowledge to practice safe and effective ultrasound examination. The UofT Core training is more than sufficient to fulfil the Royal College objectives of training. There are five key sessions through the academic program:

- Introduction to ultrasound principles and technology
- Focused cardiac ultrasound
- Lung ultrasound
- Focused assessment with sonography in trauma (FAST ultrasound)
- Vascular ultrasound

Each hands-on ultrasound training session will be accompanied by a clinical lecture from an expert in the associated field, e.g. Heart Failure with Cardiac Ultrasound, Interstitial Lung Diseases with Lung Ultrasound.

Advanced Training

In the past academic year, a longitudinal curriculum was conducted for critical care trainees with a competency-based final certification exam, and, in collaboration with World Interactive Network Focused on Critical Ultrasound, the first Canadian edition of the WINFOCUS basic echocardiography course.

This program is offers to selected (10-15) trainees who have already gained competency in sonography and are able to commit to the additional training requirements over 12 months:

- 1 week full-time, intensive tuition
- Regular training sessions and weekend WINFOCUS Course
- 60 scanned, reported, and assessed examinations

RESEARCH

Currently there are many research and educational opportunities for residents and fellows interested in ultrasound. Examples of areas of focus include: Adult ECLS, lung ultrasound during prone positioning for ARDS, trainees' perception of limitations of critical care ultrasound, and optimal strategies of teaching image acquisition and interpretation. Recently publications from the Faculty include a paper in Chest on the use of lung ultrasound in the Emergency Department for the diagnosis of acute decompensated heart failure.

Finally, there is a collaboration with the Department of Anesthesia Peri-operative Interactive Education (PIE) Group at Toronto General Hospital developing online interactive modules to assist with teaching and learning the use of point-of-care ultrasound (<http://pie.med.utoronto.ca/POCUS/index.htm>).

EXTRACORPOREAL LIFE SUPPORT WORKSHOP

Course Organizers: Eddy Fan, Mindy Madonik, & Valerie Cunningham

This intense workshop is designed as an introduction and refresher for trainees as specialists caring for adult patients with severe acute respiratory and cardiac failure who may be candidates for Extracorporeal Support.



Common diagnoses and considerations for adult ECLS support reviewed are: viral pneumonitis, and bacterial pneumonias, inhalation injury, pulmonary embolism, myocarditis or sepsis associated heart failure, and other forms of irreversible injury or illness as a bridge to transplant.

The course content includes indications and contraindications, cannulation techniques, initiation of support, patient and circuit physiology of ECLS, intra- and inter-facility transport, programmatic design and management, and all aspects of patient management and decision making for patients on ECLS.

Complementing the half-day didactic session is a high-fidelity simulation session with a mannikin and ECMO circuit. All trainees will participate in a four hour ECLS Fundamentals simulation workshop to review the essentials of bedside ECMO, such as, a circuit check, equipment components, alarms, pressure monitoring, stopcocks and pigtails, drawing samples from the circuit, de-airing the circuit, and changing a pump.

The goal is to familiarize trainees with ECLS terminology and technology, and provide an in-depth understanding of the current state of the art with a review of the literature and current research projects. The Program is appropriate for novice and experienced trainees alike.

FLEXIBLE BRONCHOSCOPY

Course Organizer: Christie Lee

This course aimed largely at intensivists who are not or are only minimally familiar with bronchoscopy. Participants will learn about handling of the bronchoscope, basic techniques of, and indications for bronchoscopy in mechanically ventilated patients as well as intubation of the upper airway. At the end of the course, the participant will be capable of performing bronchoscopy in a mechanically ventilated patient, including removal of secretions for diagnostic and/or therapeutic reasons. The participant will also be able to describe the anatomy of the bronchial tree, and intubate the upper airway in a non-ventilated patient. Included in this course:

1. Theoretical introduction to bronchoscopes, instrumentation and equipment. Bronchoscopes will be present and formal instruction will be given of how to handle a bronchoscope safely. (This includes safety measures to prevent damage of the bronchoscope). Explanation and instruction on microbial hygiene, cleaning and sterilization, will also be given.
2. Interactive presentation on the indication of bronchoscopy in the intensive care unit. Chest X-rays with common disorders will be shown and discussed.
3. Anatomy of the upper airways and the bronchial tree. Participants are instructed on subscription to the course to study the basic anatomy of the bronchial tree.
4. Practical exercises to enhance the ability to maneuver the bronchoscope using the Dexter endoscopic dexterity trainer.
5. Step by step training of entering the upper airway and the bronchial tree on an anatomic model/virtual reality bronchoscopy simulator. Special attention will be given to posture.
6. Exercises to intubate endoscopically and identify tracheal and bronchial anatomy, and to enter all bronchial segments.
7. Simulation scenarios

CRITICAL CARE COMMUNICATOR

Course Organizer: James Downar

This course was designed to provide Critical Care trainees with the skills required to communicate effectively with patients and their families in the ICU. The program also includes training in effective communication with consultants and other healthcare professionals.

It is structured as a half-day workshop for planning and conducting family meetings, verbal skills, breaking bad and catastrophic news. It includes interactive role play scenarios with professional actors as standardized patients/relatives. This will be the 10th year that we have held a communication workshop for Critical Care trainees at the University of Toronto. The workshop features a lecture and video session to teach important ethical concepts and communication skill, followed by a series of simulated family meetings with standardized family members. The family meetings are typical but challenging communication scenarios that Critical Care physicians face, and they require the trainee to demonstrate a compassionate integration of communication skill and ethical knowledge.

This workshop has been published in *Critical Care Medicine*, (Downar J, Knickle K, Granton JT, Hawryluck L. *Crit Care Med*. 2012; **40**: 1814-9), and has been shown to improve communication skill, physician comfort, as well as the ethical knowledge of participants.

CRITICAL CARE MANAGER

Intensivists frequently face challenging situations requiring particular leadership and management skills. The role of the intensivist is becoming increasingly complex as patients, families, and healthcare organizations demand greater accountability and performance. Intensivists are no longer expected to be just clinicians, but also managers, researchers, educators, and leaders in all these fields.

LEADERSHIP AND MANAGEMENT PROGRAM

Course Organizers:

The purpose of this 1 day course is to afford the residents and fellows the toolbox of management skills needed as a clinician and leader in intensive care. It is an introduction to basic management skills for the role of Clinical Lead/Department Head but it is not an MBA, - we cannot teach all of management in a day. It will offer a practical skill set and a springboard into management through interactive lectures, workshops and case histories.

A typical ICU leader's accountabilities and expectations include ensuring high quality care, providing strategic direction and vision, using resources to ensure alignment with organizational direction, departmental budgeting and cost containment, guaranteeing professional competence, and enhancing teamwork.

In the ICU there is a direct correlation between effective leadership and the quality of patient care and staff morale. Contrary to traditional belief, leadership is simply not innate, but represents honed traits and skills. During your training for your primary specialty and Critical Care you were primarily focused on the acquisition of knowledge and clinical skills. Only after gaining a position as a specialist or consultant in an ICU are you likely to be able to gain experience and test your leadership and management skills.

The *Leadership and Management Program* is designed for senior trainees and junior consultants in intensive care medicine. The aim is to enable fellows to develop knowledge and skills with the organisational and management aspects of Critical Care Medicine. The sessions will use a mixture of blended learning techniques including problem based learning, small group teaching, workshops, video, and didactic lectures. When you return to your own institutions you will be taking up positions as consultants (or equivalent) in critical care units. This program of lectures is designed to afford you with the opportunity to learn from experienced clinicians in the Division about the non-clinical roles of the position.

QUALITY IMPROVEMENT WORKSHOP

Course Organizers: Andre Amaral & Brian Wong

Senior trainees are offered a two-day intensive Safety and Quality Improvement Workshop (first offered at University of Toronto in the Fall of 2011). The course is geared towards those who have little to no background in the field and would like to learn more. A workshop is delivered to groups of 15-20 participants, aspects of the workshop curriculum are customized to meet the distinct needs of the Critical Care physician.

It is our goal to offer this program to all second year residents and clinical fellows with an expressed interest in Quality Improvement and ICU Management. Commitment to the longitudinal assessment and completion of a QI project is a minimum requirement for the course.

Using a mixture of didactic lectures, interactive discussions and activities, topics covered include: Characterizing

- quality problems

- Change management

- QI tools such as process mapping and fishbone diagrams

- Understanding variation with run charts

- The role of qualitative methods in improvement

CRITICAL CARE SCHOLAR

Course Organizer: Eddy Fan

This course builds basic skills in statistics and research methodology in critical care. To ensure the quality, appropriateness and cost-effectiveness of the services they provide, an intensivist must make decisions based on the best available evidence.

Even if you do not engage in research activities yourself, you must understand the research process, assumptions which underlie research strategies, and be able to critically assess research findings as the basis for decision-making.

Topics included are:

- Fundamentals of health research Introduction to biostatistics Systematic reviews methods
- Research methods for randomized controlled trials

CRITICAL CARE ADVOCATE

Course Organizers: Neil Lazar & Laura Hawryluck

During their training, critical care trainees are expected to assume an advocate role dealing with encounters that require physicians to balance a patient's own values with professional and societal expectations. Medical legal principles that relate to critical care are often topics of discussion during ward rounds, at hospital morbidity and mortality rounds, and quality assurance rounds.

At the University of Toronto, there has been a long-standing commitment to teaching clinical ethics at both undergraduate and postgraduate levels. This series within the Education Program enables trainees to regularly discuss bioethical and legal issues with their peers, expert faculty and external experts from law, philosophy and other humanities.

The formal Critical Care Advocate course is structured in the following way:

- Introduction to medical ethics and a discussion of its importance for the practice of critical care medicine.
- Introduction to Canadian medical law
- How individuals make ethical decisions
- The patient-physician relationship, including beginning-of-life and end-of-life issues.
- Consent and capacity
- Basic ethical requirements for medical research involving human subjects.
- Organ and tissue donation
- Privileges and responsibilities of physicians and the future of medical ethics
- Education-based research Survival analysis in health research
- Observational and analytical research methods
- Qualitative research methods for analyzing and interpreting data

ADULT CRITICAL CARE MEDICINE

FORMATIVE ASSESSMENTS

Faculty Lead: Christie Lee

Two structured examinations occur yearly and are taken by all residents.

SCCM MCKAP EXAM

The Society for Critical Care Medicine Multidisciplinary Critical Care Knowledge Assessment Program (MCKAP) examination is a 200-question multiple choice examination that is sponsored by the SCCM, and used by most programs in Canada. This online, formative test allows the trainee to evaluate their knowledge as it relates to critical care and compare their performance to other residents across Canada and the United States.

The MCKAP exam is available in both adult and paediatric formats and assesses the Critical Care Programs internationally and helps program directors:

- Prepare fellows for the subspecialty examinations in critical care

- Identify specific strength and weakness for each trainee with references and key terms for missed questions

- Assess results for each individual fellow and the overall program as well as the institution's national ranking

Exam content is developed by multi-disciplinary critical care professionals experienced in exam preparation and analysis. The MCKAP exam is taken in English and presented as a four-hour, timed multiple-choice test with accompanying graphics, including: diagnostic imaging, monitoring waveforms and photomicrographs. Candidates are allowed one un-timed break during the exam.

Immediate preliminary scores and analysis are available to the examinee and the corresponding program director upon completion of the test. Final results are available approximately five weeks after exam week.

ORAL EXAM

The university of Toronto oral exam is an OSCE - an objective structured clinical examination. The exam typically is two hours long with a series of clinical scenarios developed with specific goals and objectives. The goals and objectives of each scenario are divided into core competencies and advanced competencies. Structured questions are provided to the examiners (two per station) along with suggested answers.

Stations that have been tested in past examinations include:

- Communication - using standardized patients to test candidates' ability to deliver information to patients and their families, colleagues and other professionals in such a way that it is understandable, encourages discussion and participation in decision-making.

- Knowledge - case-based questions testing expertise in management of common conditions such as: traumatic brain injury, ARDS, and cardiovascular support.

- Advocacy - testing trainees approach to implementing a change in a determinant of health of the populations they serve and how public policy impacts on the health of those populations.

Collaboration – using virtual or phone simulation to mimic real-life situations where candidates are expected to co-manage and provide advice to a colleague in a remote location and potential develop an safe plan for transport of the patient to a tertiary or quaternary center

ADULT CRITICAL CARE MEDICINE SCHOLARLY PROJECT

Faculty Lead: Dominique Piquette

INTRODUCTION

While not all trainees will become researchers, it is a vital part of training in Critical Care Medicine to gain an understanding of academic methods. It is also fundamental to the practice of evidence-based medicine that an intensivist has the ability to critically analyze, share, and improve the quality of care using scientific literature.

To encourage the development of these skills, all trainees in the Royal College Program are required to complete a formal scholarly project. Final In-Training Evaluation Reports (FITERs) cannot be completed until the Project has been successfully completed

DEFINING A SCHOLARLY PROJECT

Scholarship includes any activity that belongs to one of the following four categories:

1. scholarship of **discovery**: advancement of knowledge, usually through original research;
2. scholarship of **integration**: synthesizing knowledge to interpret, draw together, and bring new insight to bear on original research;
3. scholarship of **application**: utilizing knowledge in a practical and responsible manner;
4. scholarship of **teaching**: sharing and transforming knowledge to educate others on the products of scholarship.

EXAMPLES OF PROJECTS

The following types of projects are suggested that meet requirements of the Royal College and the Education Program:

Systematic reviews with or without meta-analysis as appropriate

Education projects with a formal and testable evaluation of effectiveness in meeting predetermined educational objectives

Prospective clinical trials including local aspects or data related to larger multi-centred trial where this is acceptable to the Primary Investigator, and where the contribution of the trainee is a stand-alone project, product, or activity

Quality Improvement, including clinical practice review, with pre-specified objectives and demonstrable change in practice or guideline development

Narrative reviews where based on a clearly defined question and where the review includes a systematic review of the available medical literature

Epidemiological studies (case series, case-control, cohort, cross-sectional, intervention)

Laboratory-based, basic science (including physiology) or translational research investigations of Critical Care relevance

Surveys of practice or opinion conforming to the principles of research for survey design

Health advocacy projects with a formal impact assessment e.g. under-represented communities, and global outreach

Where appropriate, approval by an institutional Ethics Committee must be granted.

The following would not meet requirements and will not be accepted by the Program: An

individual case report

Correspondence to the editor Book chapters

Editorials

Educational initiatives with any form of evaluation of impact

Narrative reviews that do not include a systematic literature review

Contribution to larger entity that does not lead to an individual project or product for the trainee

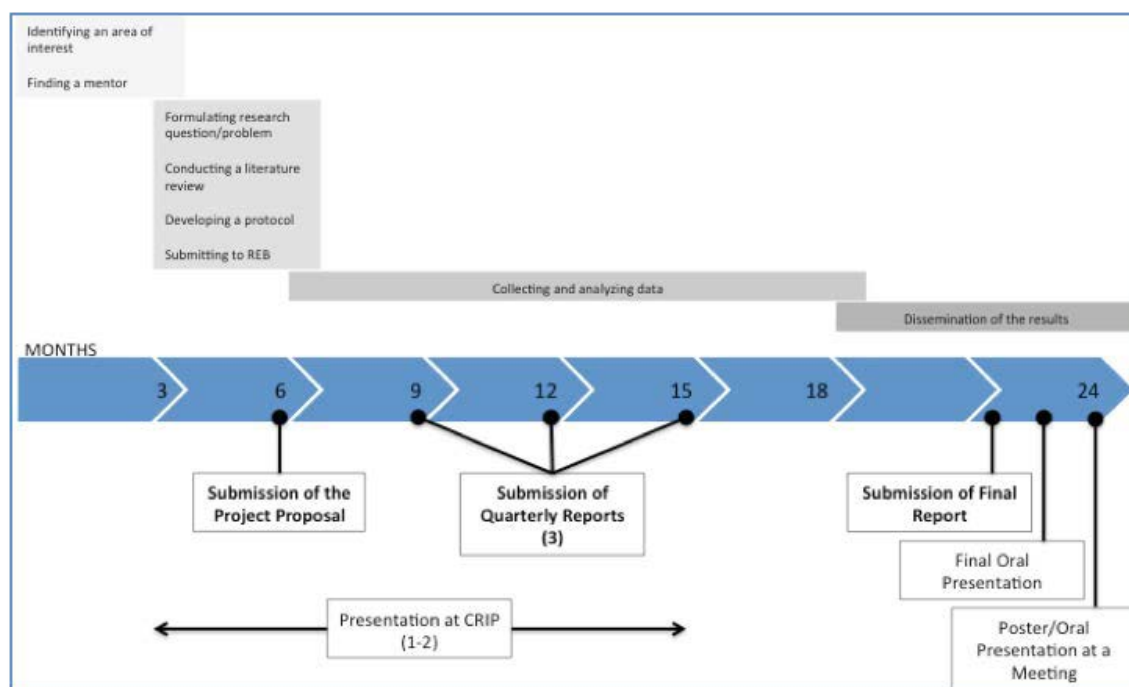
BEGINNING THE PROJECT: WHAT IS INVOLVED?

The program will provide trainees with appropriate resources, time, and supervision to complete a scholarly research, quality improvement, or educational project. If the research is in basic science, allowance will be made for concurrent maintenance of clinical expertise.

Conducting the scholarly project typically involves:

1. Identifying your area of interest or focus
2. Finding a supervisor with the clinical expertise, availability, and resources appropriate for your needs
3. The formulation of a question, problem, and objectives to be addressed
4. Conducting a literature review
5. Developing a protocol
6. Addressing ethical considerations
7. Grant application will be limited given the time available, but its a very important skill to acquire - even if not relevant to the resources required for your project.
8. Collecting and analyzing data
9. Dissemination of results (including publication of a paper, oral and poster presentation)

The following timeline should be respected to ensure the successful completion of the scholarly project. The key activities described above, as well as the reporting and knowledge translation activities expected by the program (see below for details) are included in the timeline.



FINDING A PROJECT SUPERVISOR

All projects **must** be under the supervision of a scientist or Critical Care Medicine specialist affiliated with the University of Toronto. Exceptions will be made to enable trainees to maintain or develop academic relationships in specific fields at other Universities. In this instance approval should be sought from the Program Director before embarking on the project as this will constitute an external elective study period.

Once the trainee has identified an area of interest or the type of project they want to conduct, different strategies can be used to find a suitable supervisor:

- Discussing ideas with the Associate Director or Program Director who can suggest a potential supervisor;
- Approaching a critical care specialist or researcher previously known by the trainee;
- Asking for help from a critical care specialist or researcher encountered during the first clinical rotations of the academic year;
- Consulting the IDCCM inventory of scholarly work available on the University of Toronto IDCCM website.

Selecting your academic supervisor is an important decision and it requires a good match. You should consider meeting with several before making a decision.

Supervisors are responsible for:

Advising trainees on the selection and conduct of the project and preparation of the final presentation;

Involving other senior colleagues with specific expertise relevant for the project when needed;

Critically reviewing and approving the Project Proposal and Final Report submitted by the trainee to the Program, as well as any presentation or manuscript resulting from the project to ensure its suitability;

Completing the In-Training Evaluation Report (ITER) during the periods dedicated to Scholarly Activity that will contribute to the FITER at the end of the training period;

Meeting regularly with the trainee to insure that goals are being met.

PROGRAM EXPECTATIONS - REPORTING ACTIVITIES

Each trainee will be responsible for completing the following reporting activities during their critical care training:

Scholarly Project Proposal (completed by Month 6) - the format included in Appendix X should be followed. The supervisors must review, approve, and sign the proposal before submission to the program. The Training Evaluation Committee (TEC) will approve the proposal submitted and may request clarifications or modifications of the project from the trainee or from the supervisor.

Quarterly Progress Reports (completed by Month 9, 12, and 15) - the format included in Appendix Y should be followed. These reports will be reviewed by the Associate Director to ensure of the consistent progression of the project and an appropriate level of support provided to the trainee.

Trainees are expected to take advantage of the large academic community of the University of Toronto and present their project design at **Clinical Research in Progress (CRIP)** meetings (or relevant basic science rounds) during their first academic year. The project supervisor is expected to attend the session and assist the trainee in their preparation for the meeting.

Final Project Report - the format included in Appendix Z should be followed for the report. The Final Report must be submitted 2 weeks prior to the Final Oral Presentation.

Final Oral Presentation - trainees are expected to present their completed work to the class and to a panel of scholars at the end of the senior year. Each presentation will last 10-15 minutes and will be followed by a question period of 10-15 minute. A statement of conflict of interests of all personnel involved in the project, and sources of support is required. The panel will provide feedback to the trainees on their project at the end of the session.

PROGRAM EXPECTATIONS - DISSEMINATION OF RESULTS

While the trainees' projects should ideally be submitted for publication, publication is not mandatory. However the trainee is required to present the project as an abstract at an international, national or regional scientific meeting. The poster sessions must involve a discussion period where the trainee is answerable to an audience and a meaningful interrogation of the project is available. The details of this meeting must be included in the Final Project Report and completed on the trainee's ITER.

Meetings with perpetual pre-approval include:

Art Slutsky Day

Critical Care Canada Forum (CCCCF)

Annual Scientific Meetings e.g. CCCTG, ATS, ESICM, SCCM, ACCP (CHEST), ANZICS, CICM, ICS (UK)

The supervisor will need to provide a report of the adequacy of other meetings used for the dissemination of project results.

Note that if there is no formal presentation and discussion period (walk round), a poster alone will not be accepted.

ASSESSING THE SCHOLARLY PROJECT

The quality of a scholarly project will be assessed based on the following six criteria:

- 1- Clear goals: the purpose, problem, or question to be addressed is clearly defined and important in the field;
- 2- Adequate preparation: a comprehensive review of the literature that demonstrates a thorough understanding of the topic;
- 3- Appropriate methods: the choice of methods is appropriate for achieving the goals, and the methods are adequately described and applied;
- 4- Effective communication: the work is presented effectively to the appropriate forums;
- 5- Reflective critique: the work includes a reflection that relies on a breadth of evidence and clearly identifies its limitations;
- 6- Significance and results: the goal is achieved, new knowledge is created or new areas are identified for future exploration.

These criteria can be cross-referenced with the following requirements for competency in the CanMEDS Scholar role:

The project must be original and the trainee must be the first author of the project

The project must demonstrate the minimal criteria for the principles of investigation and research including:

Posing a clear, scholarly question and specify the primary outcome of the research

Conducting a systematic search for evidence using relevant databases, evidence-based medicine techniques and specific search criteria and methodology

Selecting appropriate study design and methodology to address the question including bias minimization strategies where relevant, and analysis appropriate to the study design

Describing requisite, relevant ethical approval processes

The specific evaluation criteria for the Scholarly Project Proposal and Final Project Report are provided respectively in Appendix 8.

The PASS or FAIL status of a project will rely on the timely completion by the trainee of the Scholarly Project Proposal, Quarterly Progress Reports, and Final Project Report, as well as on the supervisor evaluations (ITERs) and the successful dissemination of the results (Panel Review, abstract submissions, publications, etc.)



ADULT CRITICAL CARE MEDICINE ACADEMIC MEETINGS

CRITICAL CARE PHYSIOLOGY ROUNDS

Faculty Leads: Alberto Goffi & Laurent Brochard

An understanding of human physiology and homeostasis is fundamental to practising critical care medicine. a good critical care physician. Critical Care Physiology Rounds (CCPR) started out two years ago as a small group of interested members of the Division meeting on a regular basis to discuss subjects of interest, but it rapidly ‘morphed’ into an organized, University-wide initiative featuring speakers from a wide variety of disciplines both within and outside the Division. CCPR’s goal is to promote the understanding and application of physiological knowledge and measurement to clinical practice and research in critical care medicine.

CCPR has featured a wide variety of topics including: the physiological basis for ex vivo lung perfusion, stem cell therapy for ARDS, echocardiographical evaluation of right ventricular function, and cerebrovascular auto-regulation.

Rounds are held on the last Tuesday every month, beginning at 4.30pm to 6pm, and are hosted by the Hospital for Sick Children, PGCRL Research Tower, 3rd Floor, Room 3a and 3b.

VISITING PROFESSOR ROUNDS

Faculty Lead: Hannah Wunsch

Since 2009, the Interdepartmental Division of Critical Care Medicine has hosted regular, formal Visiting Professor (VP) Rounds. In that time we have received 41 visiting professors spanning a broad range of seniority and research interests.

The VP rounds were designed to be more than typical “Grand Rounds and Go” experience. The visiting professors typically spend 2 full days as guests of the University of Toronto; meeting with trainees, and research and education faculty. They give two lectures; one for Critical Care trainees and one Grand Rounds lecture at the site of the local expert host who is facilitating the visit.

This program also includes the annual or bi-annual named lectureships in critical care: Art Slutsky Day Lecture, the Sibbald Lecture, and the Goldstein Lecture. The VP rounds have recently been organized along topics to allow area experts in the city to engage their colleagues from across the city. These include: neurocritical care, quality improvement, clinical or applied physiology, and ICU survivorship.

CLINICAL RESEARCH IN PROGRESS ROUNDS

Faculty Lead: Hannah Wunsch

Clinical Research in Progress Rounds (CRIP) is a forum for individuals to present new research ideas, draft protocols, or preliminary data and receive feedback from colleagues throughout the university division and community hospitals. In addition, it is hoped that they will spawn new ideas and collaborations, both across sites and disciplines. The concept is not to present published or even completed work rather than receiving feedback of the on-going projects and fostering future efforts and ideas.

CRIP will take place generally on the 2nd Tuesday of each month, and rounds are hosted by members of the Faculty at their own homes. Each session will feature two presentations – one focused on a basic/translational research project, the other on a clinical research project. Speakers are encouraged to follow an outline during their presentations:

- Background material and rationale: 5 minutes

- Study questions / hypothesis: 5 minutes

- Identify key points for discussion or specific questions for attendees:

- Throughout talk and list again at end

- Methodology / preliminary data: 15 minutes

- Interactive discussion 20 minutes (either at end or more likely interspersed throughout the talk).

In addition, each speaker is encouraged to prepare a single page handout that outlines the key points for discussion, along with enough background and study information to put them into context for non-content experts.

Target Audience for rounds are the critical care specialists, physicians (MDs, RN, RT, Pharmacy, etc.) interested in research, basic scientists, clinical researchers, fellows and students interested in Critical Care Medicine.

ART SLUTSKY DAY

Named in honour of a pioneer and respected leader in Critical Care Medicine, Dr. Art Slutsky; current Vice-President for Research at St. Michael's Hospital; Professor of Medicine, Surgery and Biomedical Engineering; and formerly Director of the Interdepartmental Division of Critical Care Medicine.

Art Slutsky Day is an annual event that brings together all members of the Interdepartmental Division of Critical Care Medicine to celebrate our academic activities and accomplishments in the pursuit of excellence in: clinical practice, research, leadership, and education.

Program highlights include

- Distinguished Speakers
- Oral Abstract Presentations - Residents and fellows
- Innovations Rounds
- Faculty Teaching Awards
- Certification of our Graduating Class
- Reception



CRITICAL CARE CANADA FORUM

The Critical Care Canada Forum (CCCF) is a 4-day conference organized by the Interdepartmental Division of Critical Care Medicine, which focuses on high-profile topics that are relevant to the individuals involved in the care of critically ill patients, wherever the patients are located.

Internationally recognized, the Critical Care Canada Forum presents leading-edge science through informative and interactive sessions, dynamic speakers and numerous exhibitions.

The CCCF is an event where doctors, nurses and respiratory therapists, and other healthcare professionals collaborate on shared knowledge across disciplines, departments and institutions.



Organizing Committee Members:

Brian P. Kavanagh (Chair, Organizing Committee)

Niall D. Ferguson (Chair, Scientific Program)

Sean Bagshaw

Laurent Brochard

Shelly Dev

Claudia dos Santos

Robert A. Fowler

David J. Klein

John C. Marshall

Stephen E. Lapinsky

Dominique Piquette

Damon C. Scales

Arthur S. Slutsky

Thomas E. Stewart

Interprofessional Scientific Advisory Committee

Louise Rose (co-chair) (Toronto, ON)

Orla Smith (co-chair) (Toronto, ON)

Craig Dale (Toronto, ON)

Michelle Kho (Hamilton, ON)

Lisa Burry (Toronto, ON)

ADULT CRITICAL CARE MEDICINE AWARDS

JOHN GRANTON AWARD

Dr. John Granton was Program Director for the Adult Critical Care Program between 2000 and 2009. Under his stewardship as Program Director he was instrumental in the early development of the Clinical Fellowship Programs and the success of the Residency Program. His extraordinary contributions to Critical Care Education were recognized in 2009 by the University with his award of the Anderson Award for Education and the inaugural award of the John Granton Award for Teaching.

Awarded for: Outstanding contribution to Critical Care Education.

Criteria: Nominated by the trainees in the Division of Critical Care Medicine.
Contributions to Critical Care Education of great significance locally, nationally, or internationally.
Teaching evaluations.

Eligibility: Appointment with the Faculty of Medicine, University of Toronto.
The Program Director is not eligible whilst holding office.

SIMON ABRAHAMSON AWARD

Dr. Simon Abrahamson is an Associate Professor, Division of Critical Care Medicine, Department of Anesthesiology, University of Toronto, and was Education Program Director from 2001 to 2015.

Awarded for: Outstanding academic achievement and performance

Criteria: Nominated by the Faculty of the Division of Critical Care Medicine
Contributions to clinical medicine or science of great significance locally, nationally, or internationally
Examination performance
Rotation evaluations

Eligibility: Training appointment with the Interdepartmental Division of Critical Care Medicine, University of Toronto
Registered with Postgraduate Medical Education, University of Toronto
The nominee can be registered in an Adult or Paediatric training program, in a Clinical or Research position.

ART SLUTSKY AWARD

Dr. Art Slutsky is a Professor of Medicine in the Divisions of Critical Care Medicine and Respiriology, University of Toronto. He was Director of the IDCCM from 2001 to 2013, and is credited with the development of the Interdepartmental Division at the University of Toronto. He is recognized across the World as a pioneer and leader in Critical Care Medicine research and innovation.

Awarded for: Best (overall) abstract presented at Art Slutsky Day – the Divisional Academic Day in June.

Criteria: The Abstract Committee will select lead abstracts in sub-sections, usually: Clinical Medicine, Physiology, Translational Science, and Quality Improvement.

The Art Slutsky Prize winner will be selected from the four section winners following oral presentation and questions.

Selection will be based upon criteria including, (but not limited to): originality, methodology, and quality of presentation and defence

Eligibility: Abstract must be original work and un-published

First or second author must be a registered trainee within the Faculty of Medicine in a clinical or research program

Presenting author must be a registered trainee within the Faculty of Medicine in a clinical or research program



ADULT CRITICAL CARE MEDICINE TEACHING EVALUATIONS

Faculty Lead: Christie Lee

All trainees have the ability to evaluate their trainers using the University of Toronto POWER Web evaluation system. Through POWER, annually the University conducts 10,300 learner evaluations 11,750 teacher evaluations, 11,000 rotation evaluations, on behalf of 79 programs based over 125 teaching sites.

Trainees have the choice over how many, and which, teachers they will evaluate on a given rotation. Once completed the evaluations are stored on the central POWER site.

Registration System

- Personal information

- Postgraduate history records

- Letter of appointment , CPSO license info, CMPA cover, Immunization records, Payroll, Certificates, Tax info

Evaluation System

- Rotation schedule

- Case/Procedure Logs

- Evaluations (Trainee, Rotation, Teaching)

Teachers have access to summary aggregate reports for prior years once a minimum of three evaluations are completed. The Division education leads and rotation coordinators will have a higher level of access that allows review of individual evaluations for individual teachers in real time.

An 'alert' system is built into POWER so that the Program Director and Site Chiefs are alerted whenever a teacher or a rotation receives a score below a minimum threshold. These are investigated in real time to ensure no threat to trainee well-being and educational integrity are present and appropriate action will be taken.

The PGME office provides a 'report card' each year to the program detailing the completion rates for teacher evaluation forms and comparators, including PGME benchmarks. Finally, an annual report is produced by PGME that outlines average teaching and rotations scores for each rotation across all hospitals.

Evaluations of individual teachers are reviewed by the Program Director and in turn by the Division Director. The five site leads and three Critical Care Hospital Chiefs are provided with summaries of individual teaching effectiveness. They all in turn appraise teaching staff annually (precautions are in place to safeguard trainee confidentiality).

ADULT CRITICAL CARE MEDICINE BURNOUT, WELFARE, AND SUPPORT

Faculty Lead: Shelly Dev

Physician burnout is a growing epidemic with symptoms noted for as many as one in three physicians. Several international studies have demonstrated high levels of burnout amongst physicians and nursing staff in our own specialty. Burnout is characterized by three components:

- Emotional exhaustion and loss of passion for your work

- Depersonalization or treating patients as objects

- A sense that your work is no longer meaningful

The body of medical literature on burnout has demonstrated significant professional repercussions including decreased patient satisfaction, increased medical errors and litigation, and the personal consequences of substance abuse and depression. One proposed solution to physician burnout is to address physician wellness. Wellness can be defined as “the complex and multifaceted nature of physicians’ physical, mental, and emotional health and well-being”. The limited amount of medical research in this area has focused on interventions at the level of the individual, such as enhanced resiliency or mindfulness.

The IDCCM, in partnership with the Department of Medicine, is prioritizing physician, in particular trainee, wellness. Steps are being taken to implement a longitudinal wellness curriculum to engage staff and trainees in discussions around wellness, burnout and to collectively explore diverse approaches to achieving a healthier way of living as a physician. This mandate will include exploring the impact and approach to time management, nutrition, sleep, stress reduction and mindfulness meditation. The trainees will be invited to inform the content of this curriculum and trainee leadership opportunities in curriculum development will be offered.

All trainees are encouraged to also seek support from the variety of Wellness Resources offered by the Department of Medicine. These include:

- Counseling/psychotherapy and wellness coaching
- Disability and accommodation support
- Support during remediation/academic difficulty
- Support services for urgent/acute crises

Trainees can also access the various resources via the Wellness Library as well as a variety of courses on Wellness related topics. For more information on the Wellness Resources, please contact the office via the contacts below:

Resident Wellness
501-500 University Avenue
Toronto M5G 1V7
416-946-3074
pgwellness@utoronto.ca

ADULT CRITICAL CARE MEDICINE MENTORSHIP

Faculty Lead: Shelly Dev

With a diverse, prolific and skilled faculty membership, the IDCCM aims to provide only the best in trainee mentorship. A formalized mentorship program is currently in development with the objective of matching trainees with suitable (a) academic and (b) professional mentors. Each trainee will be matched to mentors within the first quarter of the first academic year. At least quarterly mentorship meetings will be encouraged and arranged with opportunities for mentors and mentees to engage in formal bi-directional feedback, development on mutually agreed learning objectives and professional development activities.

APPENDIX 1: Faculty Directory

MEMBERS OF THE INTERDEPARTMENTAL DIVISION FACULTY

Please see our most up to date list [here](#) or visit:

http://www.criticalcare.utoronto.ca/faculty/Directory_bios_included.htm

APPENDIX 2: Clinical Electives

ANESTHESIOLOGY - TORONTO GENERAL HOSPITAL

Objectives:

The resident will be exposed to the following types of cases and be introduced to the knowledge and skills necessary to effectively manage these cases:

- Thoracic surgery

- Major head and neck surgery for malignancy

- Major general (including hepato-biliary), gynecologic, and urologic cancer surgery

- Major vascular surgery

- Cardiac surgery and intensive care
- Transplantation including liver, kidney, kidney/pancreas, heart, lung, and heart/lung transplants; transplant patients for non-transplant surgery

Understanding of the surgical care pathway

- Demonstrate an understanding of managing the operating room schedule and prioritization of surgical emergency patients.

- Demonstrate a basic understanding of resource issues in the perioperative period.

Management of preoperative risks

- During this rotation, the resident will be exposed to the possible risks and complications for a generally high-risk population of patients, and with the help of their attending staff, design anesthetic plans with patient safety at the forefront and be prepared to deal with complications as they arise.

- Demonstrate the ability to assess patients in the preoperative period and formulate a management plan based on patient and surgical considerations. This will include ordering and interpretation of preoperative investigations.

- Demonstrate an understanding of, and explain the risks and benefits associated with regional vs. general anesthesia.

- Communicate risk of anesthesia with patients and their families, including high risk patients.

Intraoperative anaesthesiology management, including: physiology, pharmacology, team work, and communication

- Become familiar with the common drugs used in the provision of anesthesia and in resuscitation.

- Demonstrate an understanding of acute intra-operative resuscitation.

Demonstrate an approach to management of perioperative pain, with exposure to routine and complex patients with acute on chronic pain.

Communicate anesthetic related concerns effectively with the perioperative team.

Demonstrate the ability to establish and maintain effective working relationships with colleagues and other health care professionals.

Demonstrate the ability to consult effectively with other physicians and health care professionals.

Some intraoperative procedures where appropriate and supervised e.g. Airway, lines

Demonstrate competency in basic airway management and vascular access.

Introduction to CVICU and CVICU Group, in order to plan further elective periods later in the Program.

Evaluations:

Daily on-line evaluations (Survey Monkey)

Input from many staff collated to provide overall evaluation for each resident

Formal mid-term and final evaluations for each resident with the Resident Coordinator

Residents to fill out daily Survey Monkey evaluations for staff (link will be emailed to you) and POWER evaluations at end of rotation

Teaching Rounds:

No rounds on Mondays

Resident Rounds take place at 7:00-7:30 am on Tuesdays to Thursdays, and include Didactic Seminars and Case Discussion Rounds, and Simulation rounds

Grand Rounds take place at 7:30-8:30 am on Fridays

EMS ROTATION WITH THE ORNGE TRANSPORT MEDICINE

Purpose

To expose post-graduate medical trainees to transport medicine in an air and ground critical care setting, and the delivery of medical care in this setting during a one-month rotation.

Goals and Objectives

Understand the organization of EMS in Canada, Ontario, and the Greater Toronto Area.

The trainee would gain understanding regarding the legislative and medicolegal environment (and constraints) in which the EMS system operates.

Resources and contacts: 1 day with medical director and administrative lead person for both air and ground

Paramedic Scope of Practice.

The trainee would gain understanding regarding training, certification, and scope of practice of the three levels of paramedics in Canada

Resources and contacts: half to full day with medical director and paramedic education group

Orientation to Dispatch and Communications Centre Operations.

The trainee would gain understanding in dispatch operations, focusing on medical decision-making behind crew and resource (vehicle / aircraft) allocation.

Resources and contacts: average of 1 day per week at air medical dispatch centre, under supervision of transport medicine physician

Critical Care land transfer unit rideout.

Introduces the trainee to the highest level of out-of-hospital paramedic care provision in a busy land inter-facility transfer service, with an opportunity to interact with critical care paramedics.

Resources and contacts: average of 1 shifts per week with land-based Critical Care Land Transfer Unit

Air Ambulance rideout.

Introduces the trainee to primary response and inter-facility transfer air operations (including flight safety) with critical care flight paramedics and aeromedical flight crews.

Resources and contacts: average of 1 shift per week on a rotor wing aircraft (Toronto island base) and one to two shifts on a fixed wing aircraft (Timmins – this is optional and dependent on availability for trainee to travel).

The fixed wing experience is particularly valuable to the trainee to acquire a better understanding of critical care in remote and rural areas of Ontario where secondary and tertiary care are not routinely available

Disaster Management / Multiple Casualty Medicine.

This introduces the trainee to emergency medical assistance, disaster planning, and deployment of surge capacity in the setting of disasters.

Resources and contacts: Medical Director and Manager of the Provincial Emergency Medical Assistance Team (EMAT)

This option is contingent upon EMAT training or deployment taking place during the trainee's rotation, and is not typically available

Medical Director Activities.

Introduces the trainee to the medical director's role in an EMS service, including first-hand experience of on-line medical control of flight paramedics in the field, oversight of provision of care, and knowledge of the educational and academic responsibilities of a medical director. This may include participation in protocol and policy revision, administrative duties, and "shadow" patching for on-line medical control of aeromedical and CCTU crews.

Resources and contacts: Medical Director or designate, dependent on scheduling and availability

Delivery of paramedic education.

Introduces the trainee to paramedic trainees and paramedics in practice in an educational setting.

Resources and contacts: delivery one or two education sessions to paramedic personnel

The exact nature of this objective is at the discretion of the education division, and will depend on the division's ongoing activities

Self-directed reading and learning of core areas relevant to transport medicine.

Key topic areas, resources, and materials will be provided to ensure core areas are covered

Development of a discipline-specific topic of interest or investigation of a controversial area that bridges trainee's discipline and transport medicine.

The trainee will develop the question or topic prior to the beginning of the rotation and devote approximately one day per week to self-directed learning pertinent to that topic / area.

The end-product will be a rounds or other seminar-style presentation / session the trainee can present to their colleagues and peers during their own academic half-day

Particular emphasis is placed on the "non-rideout" aspect of EMS, because this is the typical role a physician would play as medical director, consultant, or advisor in an EMS system.

Timeframe

This rotation is designed for trainee participation 4 days per week for the duration of the rotation, allowing for “home” training program academic half-day. It is impossible to develop a generic, day-by-day schedule because each trainee’s rotation will be different due to dates of their own academic half-day, availability of rideouts, ongoing activities in the education division. Regardless, all objectives will be met during the rotation.

This rotation is based, in part, on the core training objectives developed by a working group of Canadian EMS and transport medicine experts, and published in the Prehospital Emergency Care (vol 12, no 3, pp 372-80).

Appendix 3: Global Health Initiatives

Residents may decide to engage in global health experiences outside of Canada during their training program. These experiences can be educationally, professionally and personally rewarding. However, they can also pose health and safety risks for trainees, for patients and populations, at home and abroad.

It is in the interests of everyone involved in postgraduate medical education to ensure that all Global Health Experiences (GHE) are educationally valuable and ethically sound. Therefore, in collaboration with local and global educators, PGME at UofT has developed a Global Health Experience application process, GHE Guidelines and pre-/ post departure training sessions.

All residents planning a global health elective outside of Canada should visit the PGME Global Health Website at gh.pgme.utoronto.ca for details on this new process. The website contains information and resources to help plan and apply for a Global Health Elective.

Key Departmental resources include:

ANAESTHESIOLOGY

Greg Silverman	Mount Sinai Hospital
Alex Jadad	Global eHealth Innovation, University Health Network
Katherine Taylor	Hospital for Sick Children

SURGERY

Howard Clarke	Hospital for Sick Children
Abdallah Daar	University Health Network
Ronald Zucker	Hospital for Sick Children

MEDICINE

Isaac Bogoch	University Health Network
Anna Banerji	Hospital for Sick Children & St. Michael's
Hospital Ophira Ginsburg	Women's College Hospital
Andrea Boggild	Toronto General Hospital
Rob Fowler	Sunnybrook Health Science Centre
Neill Adhikari	Sunnybrook Health Science Centre

DETWEILER TRAVELLING FELLOWSHIP

This award from the Royal College of Physicians and Surgeons of Canada is intended to improve the quality of medical and surgical practice in Canada. The fellowship will enable the recipient to visit medical centres in Canada (other than their own) or abroad, to study or gain experience in the use or application of new knowledge or techniques or to further the pursuit of a project relevant to clinical practice or research. (It is not intended to support individuals in their completion of Royal College accredited training programs).

Five or more fellowships offered annually to a maximum of \$21,000 will be reserved for junior applicants (i.e., those who have held Royal College certification for five years or less, based on the date of obtaining primary or first RCPSC specialty certification).

Two additional fellowships are offered annually and are reserved for senior applicants: one will be granted to a Fellow who has held Royal College certification for five years or more and has been in private practice for at least three years, and one will be granted to a Fellow who has held Royal College certification for five years or more and has been in academic practice for at least three years. Each award will be to a maximum of \$10,500.

Support is provided for visits of 3 to 12 months' duration; visits may be broken into separate time blocks but must be completed within two years. An amount equivalent to 75% of the award will be given at the beginning of the fellowship and the remainder upon receipt of the final report at the end of the fellowship. The fellowship may be used to supplement financial assistance granted from other sources.

Eligibility

Applicants must be Fellows of the Royal College in good standing, or residents in the final year of their training who will be admitted to Fellowship in the Royal College prior to December 31, 2016. In the latter case, the award will be conditional upon admission to Fellowship. Applicants must reside in Canada.

Repeat or renewal applications will be considered on an individual basis. However, Fellows are eligible to receive the Detweiler Travelling Fellowship only twice in their career: once in the junior (still-in-training) category and once in the senior (academic or private practice) category.

Selection

The selection is based on the overall merit of the application and the degree to which the proposal meets the described objectives; however, the income available to the applicant may be considered in the adjudication of applications of equal merit. Specifically, the Awards Committee assesses:

- the applicant's education and experience;
- the benefits to the individual and to the community; the quality of the program to be undertaken.

University of Toronto Recipients

The following members of the Interdepartmental Division of Critical Care Medicine have been awarded the Detweiler Fellowship Grant in the past. Our colleagues will be an excellent resource for those trainees (with FRCPC) interested in applying for the grant. Please do get in contact with them and with the Program Director before submitting an application.

Dr. Kali Barrett	2014
Dr. Ewan Goligher	2013
Dr. Eyal Golan	2009
Dr. Eddy Fan	2007
Dr. Warren Lee	2006

Further information

Additional information is available from the [Royal College of Physicians and Surgeons of Canada](#).

HARRY S. MORTON TRAVELLING FELLOWSHIP IN SURGERY

The Harry S. Morton Travelling Fellowship in Surgery, was established in 2013 to advance and to promote the study of surgical training and the practice of surgery, and to support the building of capacity and expertise within Canada's academic surgical programs. It is named in honour of Harry S. Morton who trained at the Royal London Hospital Medical School in England and joined the Royal Canadian Navy in 1938. Following the Second World War, he taught at McGill and practiced as Chief Surgeon at Queen Mary's Veterans Hospital in Montreal. He was made a Patron of the Royal College of Surgeons in 1999, and died in Halifax in 2001.

One or more fellowships are awarded each year, supported by a grant of \$50,000 per year. The sum is pro-rated monthly, and awards are contingent upon a financial commitment from a University/Department of Surgery to provide funding support for salary/living expenses.

This award is applicable to visits of three to twenty-four months duration; visits may be broken into separate time blocks but must be completed within two years. An amount equivalent to 75% of the award will be given at the beginning of the fellowship and the remainder upon receipt of a final report at the end of the fellowship. Fellowships approved for funding beyond one year will receive subsequent years' funding following receipt of a satisfactory progress report on completion of one year's study.

Eligibility

The *Travelling Fellowship* is open to Royal College Fellows certified in any surgical discipline recognized by the Royal College, and to residents in the final year of their surgical training who will be admitted to Fellowship in the Royal College prior to December 31 of the year following receipt of the Fellowship.

The *Travelling Fellowship* provides funds for Canadian surgeons and surgical residents travelling to the United Kingdom and may be used to support surgery-related clinical, scientific, or medical education studies or research. The Travelling Fellowship will provide extended training support (3 months or more) for individuals with academic surgical career plans when they return to practice in Canada.

Nomination & Selection:

Nominations shall be accepted from Deans of Canadian Faculties of Medicine, with support from a relevant surgical department Chair. Visits will ideally commence in the calendar year following application, however visits commencing within the calendar year of application will also be accepted for consideration. The Awards Committee of the Royal College selects the recipient(s).

Further information

Additional information is available from the [Royal College of Physicians and Surgeons of Canada](#).

Appendix 4: Resident Safety Policy

BACKGROUND

The Royal College of Physicians and Surgeons of Canada and the College of Family Physicians of Canada have collaborated in developing national standards for Residency programs. Standard B 1.3.9 states that:

“3.9 The residency program committee **must** have a written policy governing resident safety related to travel, patient encounters, including house calls, after-hours consultations in isolated departments and patient transfers (i.e. Medevac). The policy should allow resident discretion and judgment regarding their personal safety and ensure residents are appropriately supervised during all clinical encounters.

3.9.1 The policy **must** specifically include educational activities (e.g. identifying risk factors).

3.9.2 The program **must** have effective mechanisms in place to manage issues of perceived lack of resident safety.

3.9.3 Residents and faculty **must** be aware of the mechanisms to manage issues of perceived lack of resident safety.”

The document, “University of Toronto, Faculty of Medicine, Postgraduate Medical Education Resident Health and Safety Guidelines” available at:

<http://www.pgme.utoronto.ca/content/policies-guidelines>

provides background to the relationship between the University and all clinical teaching sites with respect to resident safety. Procedures for reporting and responding to specific circumstances are contained in that document. The Adult Critical Care Medicine residency program formally acknowledges, endorses and agrees to adhere to these guidelines.

PURPOSES OF THIS POLICY

1. To augment the above PGME guidelines by identifying program-specific safety risks
2. To describe the mechanism in place at the program level for addressing, reporting, and/or reducing unsafe events and conditions
3. To establish that residents have the right to use their judgment when deciding if, when, where, and how to engage in clinical and/or educational experiences that they perceive to involve safety risks.

It is not the purpose of this policy to supersede Federal or Provincial health and safety in the workplace legislation nor to deliberately contradict the policies instituted in teaching hospitals where trainees are working.

SCOPE AND RESPONSIBILITY

The University and all (fully and partially) affiliated teaching sites as well as ambulatory, outpatient and private practice locales are accountable for the environmental, occupational, and personal health and safety of their employees. Residents must adhere to the relevant health and safety policies and procedures of their current teaching site, and all teaching sites must meet the requirements of the PARO-OHA collective agreement.

The Adult Critical Care Medicine residency program is responsible for identifying and communicating foreseeable safety risks related to education carried out within the program, educating residents about risk minimization strategies, and for making decisions about educational experiences that take into account, among other things, the educational benefit relative to any safety risk.

This policy outlines the provisions to address safety concerns related to educational activities undertaken as part of the Adult Critical Care Medicine residency program.

POLICY STATEMENT

Reporting of, and response to, all manner of incidents related to Environmental Health, Occupational Health, and Personal Health and Safety will be addressed as outlined in the document, *University of Toronto, Faculty of Medicine, Postgraduate Medical Education Resident Health and Safety Guidelines*.

The Adult Critical Care Medicine residency program requires residents to engage in the following specific situations that may pose a safety risk:

- exposure to potentially dangerous environments
- exposure to potentially harmful bodily fluids
- exposure to environmental hazards
- encounters with potentially violent or aggressive patients
- exposures to potentially dangerous equipment and/or high risk transportation

The program commits to providing residents with a full disclosure of foreseeable potential risks associated with these activities. The program will ensure that residents receive education and preparation for these activities using best available evidence and practices AND assess residents for appropriate understanding PRIOR TO involvement in these activities.

Residents must immediately notify their supervisor, clinical administrator, or more senior resident of perceived safety concerns.

Residents will not be required to see patients in any of the above situations if not appropriately supervised.

It is recognized that, at times, a resident may be called upon to respond to an acute situation involving a patient which poses a risk to the resident's personal safety and well-being. Residents are expected to consider the effect

on themselves and the patient when deciding on a course of action. Every effort should be made to consult more experienced health care providers or staff and seek assistance, support or alternative courses of action. Ultimately, residents should use their best judgment when deciding if, when, where, and how to engage in clinical and/or educational experiences. Should a resident fail to engage in such an experience (or engage in a manner other than what has been requested or previously expected of them) due to perceived safety concerns, the resident will report this to their site supervisor immediately AND to the residency program director at the earliest reasonable time.

Residents involved in safety-related events or who have safety concerns are encouraged to contact the office of resident wellness, PGME

A resident should not encounter negative repercussions for decisions they made in good faith related to personal safety concerns.

The residency program committee will review all concerns brought forth and take steps to minimize future risk.

Should there be a situation in which a resident repeatedly fails to engage in an activity that can be reasonably considered part of their specialty practice, that is a mandated component of the residency training, and for which all means of risk reduction and education have been instituted by the program, the residency program committee will review the circumstances in the context of the specialty-specific and general CanMEDS physician competency frameworks. Disputes or appeals of decisions made by the residency program committee will be referred to the Vice Dean or Associate Dean, PGME.

Current Revision Number:	CCM-3
Drafted By:	Damon Scales
Approved By:	UofT Adult CCM Residency Program Committee
Date:	March 23, 2017
Review Date:	March 21, 2017
Approved By:	UofT Adult CCM Residency Program Committee
Proposed Date of Review:	March 2018

APPENDIX 5: RCPSC Statement on Moonlighting

The Royal College of Physicians and Surgeons of Canada (RCPSC) defines moonlighting as the independent practice of medicine during residency training in situations that are not part of required training in the residency program.

The RCPSC neither condemns nor condones the practice of moonlighting during residency training. However, if moonlighting does occur, the following principles should be considered:

Moonlighting must not be coercive.

Residents must not be required by their residency program to engage in moonlighting.

The moonlighting workload must not interfere with the ability of the resident to achieve the educational goals and objectives of the residency program.

All program directors have an obligation to monitor resident performance to assure that factors, e.g. resident fatigue, from any cause are not contributing to diminished learning or performance, or detracting from patient safety.

Program directors should bring to the attention of all residents any factors which appear to detrimentally affect the performance of the resident.

To facilitate this, it is advisable that the program director be informed when a resident chooses to moonlight.

If residents do moonlight, it should not occur on the same unit or service to which they are currently assigned as a resident.

For example, a resident on an ICU rotation and taking call should not also cover the same ICU as a moonlighting physician on other days of the same rotation. This has been seen to lead to difficulties in lines of responsibility and resident evaluation.

Confirmation of licensing, credentialing and appropriate liability coverage is the responsibility of the employer.

Residents are encouraged to maintain a balance between their personal and professional life to promote their own physical and mental health and well-being as essential to effective life-long practice.

Approved by RCPSC Accreditation Committee - 10 January 2002

APPENDIX 6: Goals & Objectives

The educational objectives for the University of Toronto Critical Care Medicine training program have been updated based on the CanMEDS 2014 Physician Competency Framework for subspecialty training. The objectives of the program are met during the course of training through the academic half-day lecture series, simulation sessions, journal club, ethics sessions, and clinical rotations. By the end of the training period, the resident will acquire the core competencies required to function as an independent critical care consultant.

MEDICAL EXPERT

Definition:

As *Medical Experts*, sub-specialists in adult Critical Care Medicine 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.

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 written and/or oral form in response to a request from another health care professional
 - 1.2. Demonstrate effective use of all CanMEDS competencies relevant to adult Critical Care Medicine
 - 1.3. Identify and appropriately respond to relevant ethical issues arising in patient care
 - 1.4. Prioritize professional duties effectively and appropriately when faced with multiple patients and problems
 - 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 patient care, such as providing expert legal testimony or advising governments, as needed
2. Establish and maintain clinical knowledge, skills and behaviour appropriate to adult Critical Care Medicine
 - 2.1. Apply knowledge of the clinical, socio-behavioural, and fundamental biomedical sciences relevant to adult Critical Care Medicine
 - 2.1.1. Demonstrate knowledge of applied clinical physiology and homeostasis

2.1.2. Demonstrate an understanding of physiology, pathophysiology, and pharmacology as they pertain to the critically ill patient

2.1.3. Demonstrate knowledge of the following:

2.1.3.1. Respiratory

2.1.3.1.1. Normal anatomy of the respiratory system

2.1.3.1.2. Physiology of the airway, gas exchange unit, lung and chest wall mechanics including control of breathing

2.1.3.1.3. Principles of respiratory monitoring Diagnostic imaging of the respiratory system

2.1.3.1.4. Pathophysiology and treatment of lung diseases, including but not limited to acute lung injury, obstructive lung disease and pneumonia

2.1.3.1.5. Principles and theory of assisted ventilation and other methods of respiratory support

2.1.3.1.6. Weaning from assisted ventilation

2.1.3.1.7. Initiation and maintenance of long-term assisted ventilation

2.1.3.1.8. Initiation and maintenance of long-term assisted ventilation

2.1.3.2. Cardiovascular

2.1.3.2.1. Normal anatomy of the cardiovascular system

2.1.3.2.2. Physiology of the heart and circulation, including heart-lung interactions

2.1.3.2.3. Invasive and non-invasive hemodynamic monitoring, including but not limited to calculation of the cardiac output and other calculations derived from the pulmonary artery catheter

2.1.3.2.4. Diagnostic imaging of the cardiovascular system

2.1.3.2.5. Pathophysiology and treatment of acute coronary syndromes, dysrhythmias, cardiac failure and circulatory and hypertensive emergencies

2.1.3.2.6. Principles of Advanced Cardiac Life Support (ACLS)

2.1.3.3. Neurological

2.1.3.3.1. Normal anatomy of the neurologic systems

2.1.3.3.2. Physiology of the central and peripheral nervous systems

2.1.3.3.3. Diagnostic imaging of the neurologic systems

- 2.1.3.3.4. Pathophysiology and treatment of toxic, metabolic, structural, vascular and infectious causes of altered consciousness including but not limited to intracranial hypertension, seizure disorders, delirium, and substance intoxication and withdrawal
- 2.1.3.3.5. Determination of brain death
- 2.1.3.3.6. Principles of invasive and non-invasive neurologic monitoring
- 2.1.3.4. Neuromuscular
 - 2.1.3.4.1. Acute neuromuscular disease, including but not limited to disorders of the myoneural junction, myopathy and polyneuropathy of the critically ill, and spinal cord syndromes, including investigations and therapeutic options
 - 2.1.3.4.2. Supportive care, including but not limited to medical, physiotherapy, occupational therapy, orthotic and social services, as well as administrative and ethical considerations, associated with the care of the patient with chronic neuromuscular disease
- 2.1.3.5. Renal
 - 2.1.3.5.1. Normal anatomy of the genito-urinary system
 - 2.1.3.5.2. Physiology of the genito-urinary system
 - 2.1.3.5.3. The principles of renal function monitoring
 - 2.1.3.5.4. Diagnostic imaging of the genito-urinary system
 - 2.1.3.5.5. Pathophysiology, prevention and management of acute kidney injury, including but not limited to renal replacement therapies
- 2.1.3.6. Gastrointestinal and hepatobiliary
 - 2.1.3.6.1. Normal anatomy of the gastrointestinal and hepatobiliary systems
 - 2.1.3.6.2. Physiology of the gastrointestinal and hepatobiliary systems
 - 2.1.3.6.3. Principles of gastrointestinal and hepatobiliary monitoring
 - 2.1.3.6.4. Diagnostic imaging of the gastrointestinal and hepatobiliary systems
 - 2.1.3.6.5. Pathophysiology and treatment of
 - 2.1.3.6.5.1. Gastrointestinal dysfunction including but not limited to acute abdomen arising from obstruction, ischemia, perforation and dysmotility
 - 2.1.3.6.5.2. Upper and lower gastrointestinal bleeding

- 2.1.3.6.5.3. Severe acute pancreatitis
- 2.1.3.6.5.4. Acute and chronic hepatobiliary dysfunction, including but not limited to fulminant hepatic failure
- 2.1.3.6.5.5. Abdominal compartment syndrome
- 2.1.3.7. Shock
 - 2.1.3.7.1. Physiology of the hormones and regulatory cytokines involved in shock
 - 2.1.3.7.2. Principles of invasive and non-invasive monitoring for shock
 - 2.1.3.7.3. Diagnostic imaging of the patient with shock
 - 2.1.3.7.4. Pathophysiology and treatment of shock, including but not limited to distributive, hypovolaemic, cardiogenic and obstructive shock
- 2.1.3.8. Hematologic disorders
 - 2.1.3.8.1. Coagulation and fibrinolytic pathways
 - 2.1.3.8.2. Pathophysiology and treatment of disorders of red cells, white cells and platelets
 - 2.1.3.8.3. Pathophysiology and treatment of coagulation disorders, including but not limited to thromboembolic disease, and disseminated intravascular coagulation
 - 2.1.3.8.4. Blood component therapy and alternatives, and principles of massive transfusion
- 2.1.3.9. Oncologic emergencies
 - 2.1.3.9.1. Pathogenesis and management:
 - 2.1.3.9.1.1. Superior vena cava syndrome
 - 2.1.3.9.1.2. Tumour lysis syndrome
 - 2.1.3.9.1.3. Central airway obstruction
 - 2.1.3.9.1.4. Neoplastic spinal cord compression
 - 2.1.3.9.1.5. Hypercalcaemia
 - 2.1.3.9.2. Acute complications of chemotherapy and radiation therapy resulting in organ function compromise
- 2.1.3.10. Metabolic and endocrine

2.1.3.10.1. Physiology of thermal regulation and metabolic, endocrine, fluid and electrolyte homeostasis

2.1.3.10.2. Pathophysiology, diagnosis and treatment

of: 2.1.3.10.2.1. Fluid and/or electrolyte

disturbances 2.1.3.10.2.2. Acid-base disorders

2.1.3.10.2.3. Endocrine emergencies

2.1.3.10.2.4. Abnormal body temperature, including but not limited to hyperthermia, rewarming for hypothermia, and therapeutic hypothermia

2.1.3.11. Perioperative care

2.1.3.11.1. Patient assessment and optimization, and minimization of perioperative

risk 2.1.3.11.2. Management of pain and sedation in the perioperative period

2.1.3.11.3. Pathophysiology and treatment of critical illness in the perioperative period

2.1.3.12. Trauma and environmental hazards

2.1.3.12.1. Immediate care of the injured patient in accordance with practices advocated by Advanced Trauma Life Support (ATLS) training

2.1.3.12.2. Diagnostic imaging of the injured patient

2.1.3.12.3. Pathophysiology, diagnosis and continuing treatment

of 2.1.3.12.3.1. Blunt and penetrating trauma

2.1.3.12.3.2. Environmental injuries:

2.1.3.12.3.2.1. Near drowning

2.1.3.12.3.2.2. Biologic

2.1.3.12.3.2.3. Chemical

2.1.3.12.3.2.4. Electrical

2.1.3.12.3.2.5. Radiation

2.1.3.12.3.2.6. Thermal

2.1.3.12.4. Principles for the coordination and management of mass casualties

2.1.3.13. Septic illness

2.1.3.13.1. Pathogenesis and diagnostic criteria of sepsis, severe sepsis, septic shock, systemic inflammatory response syndrome and multiple organ dysfunction syndrome

2.1.3.13.2. Innate host response to sepsis including the immunocompromised

host 2.1.3.13.3. Techniques for diagnosis of sepsis

2.1.3.13.4. Pathophysiology and treatment of septic illnesses, including but not limited to appropriate use of source control, antimicrobial agents and other therapies

2.1.3.13.5. Preventative infection control techniques including but not limited to protection of health care workers

2.1.3.14. Intoxication

2.1.3.14.1. Pharmacology of common intoxicants and poisons

2.1.3.14.2. Strategies to reduce absorption and enhance elimination of intoxicants including but not limited to:

2.1.3.14.2.1. General supportive care of the intoxicated patient

2.1.3.14.2.2. Specific antidotes or supportive therapy pertinent to individual

intoxicants 2.1.3.14.3. Indications for psychiatric assessment

2.1.3.15. Nutritional therapy

2.1.3.15.1. Identification of current deficiencies, ongoing losses and extra needs induced by critical illness, including but not limited to monitoring of nutritional status and response to therapy

2.1.3.15.2. Caloric, protein, vitamin and micronutrient requirements in the critically ill

patient 2.1.3.15.3. Indications for, and use of, disease specific nutrition therapies

2.1.3.15.4. Indications, limitations, methods, and complications of enteral and parenteral nutrition therapy

2.1.3.16. Pharmacotherapy

2.1.3.16.1. Principles of pharmacokinetics and pharmacodynamics

2.1.3.16.2. Indications, routes of delivery, risks and drug interactions of

pharmacotherapy 2.1.3.16.2.1. Indications for and use of vasoactive agents

2.1.3.16.2.2. Management of sedation, analgesia, and neuromuscular blockade

2.1.3.16.3. Safe administration of therapeutic agents including modification in the setting of organ dysfunction

2.1.3.16.4. Medication related psychopathology associated with critical illness including but not limited to anxiety, sleep disorders, delirium and withdrawal

2.1.3.17. Patient transport

2.1.3.17.1. Physiology associated with air and ground transportation

2.1.3.17.2. Risks, benefits and specific issues related to transportation of the critically ill patient

2.1.3.17.3. Equipment and monitoring methods specific to air and ground transportation

2.1.3.17.4. Patient preparation, transportation modes and communication to facilitate safe patient transport including but not limited to the roles of paramedical personnel and physician accompaniment

2.1.3.18. Transplantation

2.1.3.18.1. Basic principles of immunosuppression and rejection

2.1.3.18.2. Opportunistic and nosocomial infectious risk and disease

2.1.3.18.3. Perioperative issues, pharmacological management, and potential complications in the transplant recipient

2.1.3.18.4. Common problems specific to solid organ and bone marrow transplantation

2.1.3.19. End of life issues

2.1.3.19.1. Ethical principles

2.1.3.19.2. Cultural awareness and psychological, social and spiritual support

2.1.3.19.3. Pain and symptom management

2.1.3.19.4. Prognostication, communication and shared decision-making involving the patient or substitute decision-maker and intensive care unit (ICU) team

2.1.3.19.5. Withholding and/or withdrawing life sustaining therapies

2.1.3.19.6. Organ and tissue donation including the medical and ethical issues associated with neurologic determination of death and donation after cardiac death

2.1.3.19.7. Optimal management of the organ donor

2.1.3.19.8. Bereavement and counselling

2.1.3.20. Critical illness in pregnancy

2.1.3.20.1. Alterations in maternal

physiology 2.1.3.20.2. Fetal considerations

2.1.3.20.3. Pathophysiology and treatment of critical illness due to complications of pregnancy and birth

2.1.3.20.4. Pathophysiology and treatment of critical illness in the pregnant patient

2.1.3.21. Chronic critical illness

2.1.3.21.1. Pathophysiology of chronic critical illness

2.1.3.21.2. Interprofessional care in restorative

treatments 2.1.3.21.3. Cognitive dysfunction

2.1.3.21.4. Management of the chronically ventilated patient

2.1.3.21.5. Palliative care and symptom management

2.1.3.21.6. Psychosocial issues affecting patients and patients' families

22. Describe the CanMEDS framework of competencies relevant to paediatric Critical Care Medicine

23. Apply lifelong learning skills of the Scholar Role to implement a personal program to keep up-to-date, and enhance areas of professional competence

24. Integrate the available best evidence and best practices to enhance the quality of care and patient safety in paediatric Critical Care Medicine

3. Perform a complete and appropriate assessment of a patient

3.1. Identify and explore issues to be addressed in a patient encounter effectively, 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

3.3. Perform a focused physical examination that is relevant and accurate for the purposes of diagnosis, management, health promotion, and disease prevention

3.4. Select medically appropriate investigative methods in a resource-effective and ethical manner

3.5. Demonstrate effective clinical problem solving and judgment to address patient problems, including interpreting available data and integrating information to generate differential diagnoses and management plans

3.5.1. Institute immediate life-sustaining measures, carry out an appropriate examination, develop a differential diagnosis, and continue with appropriate diagnostic and therapeutic measures in the following conditions in a critically ill patient:

3.5.1.1. Single or combined organ dysfunction

3.5.1.1.1. Respiratory

3.5.1.1.2. Cardiovascular

3.5.1.1.3. Neurological

3.5.1.1.4. Neuromuscular

3.5.1.1.5. Renal

3.5.1.1.6. Gastrointestinal and hepatobiliary

3.5.1.1.7. Hematologic disorders

3.5.1.1.8. Metabolic-endocrine disorders

3.5.1.2. Shock

3.5.1.3. Oncologic emergencies

3.5.1.4. Trauma and environmental injuries

3.5.1.5. Sepsis

3.5.1.6. Intoxication

3.5.1.7. Perioperative setting

3.5.2. Demonstrate the safe application of equipment, careful monitoring, and judicious use of pharmacotherapy for effective organ system support

3.5.3. Recognize, resuscitate, and stabilize patients sustaining, or at risk of, cardiopulmonary arrest or other life-threatening disturbances

3.5.4. Diagnose brain death

4. Use preventive and therapeutic interventions effectively

- 4.1. Implement an effective management plan in collaboration with patients and patients' families
 - 4.2. Demonstrate effective, appropriate, and timely application of preventive and therapeutic interventions
 - 4.2.1. Use, zero and calibrate transducers
 - 4.2.2. Use monitoring equipment appropriately
 - 4.2.2.1. Measure cardiac output
 - 4.2.2.2. Monitor intra-abdominal pressure
 - 4.2.2.3. Monitor neuromuscular blockade with peripheral nerve stimulation
 - 4.2.2.4. Monitor intracranial pressure (ICP)
 - 4.2.3. Use medications judiciously
 - 4.2.4. Evaluate the nutritional status of the critically ill patient and devise a management strategy
 - 4.2.5. Use invasive and non-invasive ventilation
 - 4.2.6. Use a transcutaneous pacer
 - 4.2.7. Use techniques to treat hypo/hyperthermia and induce hypothermia
 - 4.2.8. Supervise continuous renal replacement therapy
 - 4.2.9. Monitor pain and symptom management
 - 4.2.10. Manage the organ donor
 - 4.3. Ensure appropriate informed consent is obtained for therapies
 - 4.4. Ensure patients receive appropriate end-of-life care
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- 5. Demonstrate proficient and appropriate use of procedural skills, both diagnostic and therapeutic
 - 5.1. Demonstrate effective, appropriate, and timely performance of diagnostic and therapeutic procedures relevant to adult Critical Care Medicine including:
 - 5.1.1. Airway
 - 5.1.1.1. Assessment and maintenance of the airway
 - 5.1.1.2. Endotracheal intubation
 - 5.1.1.3. Management of the difficult and failed airway

5.1.1.4. Replacement of an existing tracheostomy tube

5.1.2. Breathing

5.1.2.1. Ventilation by bag and mask

5.1.2.2. Thoracostomy tube insertion

5.1.2.3. Thoracentesis

5.1.2.4. Fiberoptic bronchoscopy in the intubated patient

5.1.3. Circulation

5.1.3.1. Cardiopulmonary resuscitation

5.1.3.2. Insertion of arterial lines

5.1.3.3. Insertion of central venous lines

5.1.3.4. Intraosseous vascular access

5.1.3.5. Defibrillation

5.1.3.6. Elective cardioversion

5.1.3.7. Insertion of a pulmonary artery catheter

5.1.4. Renal

5.1.4.1. Insertion of a temporary hemodialysis catheter

5.1.5. Gastrointestinal

5.1.5.1. Paracentesis

5.1.6. Nervous system

5.1.6.1. Lumbar puncture

5.1.7. Ultrasound assessment for

5.1.7.1. Vascular access including but not limited to central venous access

5.2. Demonstrate knowledge (with limited experience) of the effective, appropriate, and timely performance of the following procedures:

5.2.1. Airway

5.2.1.1. Fiberoptic intubation

5.2.2. Breathing

5.2.2.1. Diagnostic bronchoalveolar lavage

5.2.2.2. Advanced ventilation strategies

5.2.3. Circulation

5.2.3.1. Insertion of temporary transvenous pacemaker

5.2.3.2. Cardiac overdrive pacing

5.2.3.3. Intra-aortic balloon pump supervision

5.2.4. Gastrointestinal

5.2.4.1. Post-pyloric feeding tube placement

5.2.4.2. Gastro-esophageal balloon tamponade

5.2.5. Ultrasound assessment of:

5.2.5.1. Pericardial effusion

5.2.5.2. Cardiac ventricular size and function

5.2.5.3. Vascular volume status

5.2.5.4. Pleural effusion

5.2.5.5. Ascites

5.3. Describe performance of the following procedures

5.3.1. Airway

5.3.1.1. Anaesthesia and airway management during initial tracheostomy tube insertion in the intensive care unit (ICU)

5.3.1.2. Open or percutaneous tracheostomy

5.3.1.3. Cricothyrotomy and other urgent or emergent surgical airways

5.3.2. Breathing

5.3.2.1. Fiberoptic bronchoscopy in the non-intubated patient

5.3.2.2. Intrathoracic pressure (oesophageal pressure) measurements

5.3.3. Circulation

5.3.3.1. Pericardiocentesis

5.3.3.2. Mechanical cardiovascular support supervision and/or insertion including but not limited to extracorporeal membrane oxygenation and ventricular assist device

5.3.3.3. Minimally invasive cardiovascular hemodynamic monitoring

5.3.4. Nervous system

5.3.4.1. Jugular bulb oximetry insertion

5.3.4.2. Insertion of ICP monitoring and other neurological monitoring devices

5.3.4.3. Electroencephalogram (EEG)

5.3.4.4. Cerebral Doppler

5.3.5. Ultrasound

5.3.5.1. Focused abdominal sonography in trauma (FAST)

5.3.5.2. Deep venous thrombosis (DVT) assessment

5.3.5.3. Lung

5.3.5.4. Abdominal aorta

5.4. Ensure appropriate informed consent is obtained for procedures

5.5. Document and disseminate information related to procedures performed and their outcomes

5.6. Ensure adequate followup is arranged for procedures performed

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 followup care services for patients and patients' families

COMMUNICATOR

Definition:

As Communicators, sub-specialists in adult Critical Care Medicine effectively facilitate the doctor-patient relationship and the dynamic exchanges that occur before, during, and after the medical encounter.

1. Develop rapport, trust, and ethical therapeutic relationships with patients and patients' families
 - 1.1 Recognize that being a good communicator is a core clinical skill for physicians, and that effective physician-patient communication is a two way process that fosters patient and family satisfaction, physician satisfaction and improved clinical outcomes
 - 1.2. Establish positive therapeutic relationships with patients and patients' families that are characterized by understanding, trust, respect, honesty and empathy
 - 1.2.1. Recognize the unique and stressful environment of the critical care facility for patients and patients' families
 - 1.3. Respect patient confidentiality, privacy and autonomy
 - 1.4. Listen effectively
 - 1.5. Be aware of and responsive to nonverbal cues
 - 1.6. Facilitate a structured clinical encounter effectively
2. Accurately elicit, interpret, synthesize, record and communicate (written and verbal) relevant information and perspectives of patients and patients' families, colleagues, and other professionals
 21. Gather information about a disease and also about a patient's and their family's beliefs, concerns, expectations, and illness experience
 - 21.1. Gather information about the patient's and family's perspectives and values for end-of-life care
 22. Seek out and synthesize relevant information from other sources, such as a patient's family, caregivers and other professionals
3. Convey relevant information and explanations accurately to patients and patients' families, colleagues and other professionals
 - 3.1. Deliver information to patients and patients' families, colleagues and other professionals in a humane manner and in such a way that it is understandable, encourages discussion and participation in decision- making

3.1.1. Recognize the impact of the language used when imparting information

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

4.1. Identify and explore problems to be addressed from a patient encounter effectively, including the patient's context, responses, concerns, and preferences

4.2. Respect diversity and differences, including but not limited to the impact of gender, religion and cultural beliefs on decision-making

4.3. Encourage discussion, questions, and interaction in the encounter

4.4. Engage patients, patients' families, and relevant health professionals in shared decision-making to develop a plan of care

4.4.1. Explain life-sustaining therapies, in clear language, and describe the expected outcome of such therapies in view of the patient's goals and wishes

4.5. Address challenging communication issues effectively, such as obtaining informed consent, delivering bad news, and addressing anger, confusion and misunderstanding

4.5.1. Assess, communicate with, and support patients and patients' families confronted with critical illness

4.5.2. Communicate effectively with families who may present as dysfunctional, angry, confused, or litigious

5. Convey effective oral and written information about a medical encounter

5.1. Maintain clear, concise, accurate and appropriate records (e.g., written or electronic) of clinical encounters and plans

5.2. Present oral reports of clinical encounters and plans

5.3. Convey medical information appropriately to ensure safe transfer of care

5.4. Present medical information to the public or media about a medical issue

5.4.1. Explain the concept of brain death and organ donation, in clear language

COLLABORATOR

Definition:

As Collaborators, sub-specialists in adult Critical Care Medicine effectively work within a health care team to achieve optimal patient care.

1. Participate effectively and appropriately in an interprofessional health care team
 - 1.1. Describe the sub-specialist's roles and responsibilities within the interprofessional health care team and be able to describe that role to the other team members
 - 1.1.1. Demonstrate an understanding of the role and responsibilities of a critical care physician and how they vary between the local, regional, and national levels
 - 1.2. Describe the roles and responsibilities of other professionals within the health care team
 - 1.3. Recognize and respect the diversity of roles, responsibilities and competencies of other professionals and their contribution to patient management
 - 1.4. Work with others to assess, plan, provide and integrate care for individuals or groups of patients
 - 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. Contribute to productive communication and cooperation among colleagues in all aspects of education, service, and research, as they impact on the critical care environment, recognizing the multidisciplinary nature of the specialty
 - 1.6. Participate effectively by contributing to or leading, as appropriate, interprofessional team meetings dealing with patient care and administrative functions
 - 1.6.1. Demonstrate respect and understanding for the role of other team members in communicating and facilitating decision-making with critically ill patients and their families
 - 1.7. Enter into interdependent relationships with other professions for the provision of quality care
 - 1.8. Describe the principles of team dynamics
 - 1.9. Respect team ethics, including confidentiality, resource allocation and professionalism
 - 1.10. Demonstrate effective 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

22. Work with other professionals to prevent conflicts
23. Employ collaborative negotiation to resolve conflicts
24. Respect differences and address misunderstandings and limits of scope of practice in other professions
25. Recognize one's own differences, misunderstanding and limitations that may contribute to interprofessional tension
26. Reflect on interprofessional team function

MANAGER

Definition:

As Managers, sub-specialists in adult Critical Care Medicine are integral participants in health care organizations, organizing sustainable practices, making decisions about critically ill patients, allocating resources, and contributing to the effectiveness of the health care system.

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
 - 1.2. Participate in systemic quality process evaluation and improvement, including but not limited to patient and staff safety initiatives
 - 1.2.1. Identify environmental hazards and promote safety for patients and staff
 - 1.2.2. Identify, analyze, and minimize risk of critical incidents and adverse events, including but not limited to complications of critical illness
 - 1.2.3. Implement quality improvement activities, including but not limited to evidence based practice, best practice guidelines and benchmarking, and change management
 - 1.3. Describe the structure and function of the health care system as it relates to adult Critical Care Medicine, including the roles of physicians
 - 1.3.1. Demonstrate knowledge of the physical requirements of ICU design
 - 1.3.2. Demonstrate knowledge of the administrative organization required to operate an adult Intensive Care Unit
 - 1.3.3. Demonstrate knowledge regarding unit staffing requirements, skills, education, and organization
 - 1.3.4. Evaluate and cooperatively determine critical care unit equipment requirements

1.4. Describe principles of health care financing, including physician remuneration, budgeting, organizational funding and strategic planning of the ICU service, including structure, function and financing, within the wider health care environment

1.5. Manage the clinical, academic, and administrative affairs of a paediatric intensive care unit

1.5.1. Facilitate the clinical care of the critically ill patient

1.5.1.1. Triage and prioritize patients appropriately

1.5.1.2. Manage safe and timely admission to ICU, and discharge from ICU

1.5.1.3. Supervise and delegate to others according to competence and role

1.5.1.4. Provide effective multidisciplinary and interprofessional team cooperation and leadership

1.5.2. Apply knowledge of:

1.5.2.1. Criteria for admission to, and discharge from ICU

1.5.2.2. Common risk factors for post-ICU mortality or re-admission

1.5.2.3. Commonly used scoring systems for assessment of severity of illness, case mix and workload

1.5.2.4. Published standards of care at local, national and international level including but not limited to consensus statements and care bundles

1.5.2.5. Principles of national / local health care legislation applicable to Critical Care Medicine

2. Manage their practice and career effectively

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

2.2. Manage a practice including finances and human resources

2.3. Implement processes to ensure personal practice improvement

2.3.1. Apply knowledge of the purpose and methods of clinical audit including but not limited to mortality reviews and complication rates

2.3.2. Participate in the processes of clinical audit and peer review

2.4. Employ information technology appropriately for patient care

3. Allocate finite health care resources appropriately

- 3.1. Describe the principles of allocation of health care resources, balancing effectiveness, efficiency and access with optimal patient care
- 3.2. Apply evidence and management processes for cost-appropriate care
- 3.3. Describe the principles of surge planning

4. Serve in administration and leadership roles

- 4.1. Chair or participate effectively in committees and meetings
- 4.2. Lead or implement change in health care
- 4.3. Plan relevant elements of health care delivery, such as work schedules

HEALTH ADVOCATE

Definition:

As Health Advocates, sub-specialists in adult Critical Care Medicine responsibly use their expertise and influence to advance the health and well-being of individual patients, communities, and populations

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

- 1.1. Identify the health needs of an individual patient and involve the patient or patient's family in decisions about care and treatment
 - 1.1.1. Identify religious and cultural, and socioeconomic issues related to the care of the patient
- 1.2. Identify opportunities for advocacy, health promotion and disease prevention with individuals to whom they provide care
- 1.3. Demonstrate an appreciation of the possibility of competing interests between individual advocacy issues and the community at large
- 1.4. Demonstrate an awareness of the psychological impact critical illness has on patients and patients' families, both acutely and long-term

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

- 2.1. Describe the practice communities that they serve

22. Identify opportunities for advocacy, health promotion and disease prevention in the communities that they serve, and respond appropriately

2.2.1. Communicate about critical care issues and their impact on the maintenance and improvement of health care to the general population

23. Appreciate the possibility of competing interests between the communities served and other populations

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

3.1. Identify the determinants of health of the population, including barriers to access to care and resources

3.2. Identify vulnerable or marginalized populations within those served and respond appropriately

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 the populations they serve

4.2. Describe how public policy impacts on the health of the populations served

4.3. Identify points of influence in the health care system and its structure

4.4. Describe the ethical and professional issues inherent in health advocacy, including altruism, social justice, autonomy, integrity and idealism

4.5. 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

4.6. Describe the role of the medical profession in advocating collectively for health and patient safety

SCHOLAR

Definition:

As Scholars, sub-specialists in adult Critical Care Medicine demonstrate a lifelong commitment to reflective learning, as well as the creation, dissemination, application and translation of medical knowledge.

1. Maintain and enhance professional activities through ongoing learning

1.1. Describe the principles of maintenance of competence

1.2. Describe the principles and strategies for implementing a personal knowledge management system

1.3. Recognize and reflect on learning issues in practice

- 1.4. Conduct a 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
 - 2.1.1. Describe the principles of levels of evidence
 - 2.1.2. Describe the evidence for and against specific therapeutic interventions or treatments
 - 2.1.3. Describe the use of integrative literature, including but not limited to meta- analyses, practice guidelines, decision and economic analyses
 - 2.2. Critically appraise retrieved evidence in order to address a clinical question
 - 2.3. Demonstrate rational use of the principles of evidence-based medicine in both clinical and research settings
 - 2.4. Integrate critical appraisal conclusions into clinical care
3. Facilitate the learning of patients, patients' families, students, residents, other health professionals, the public and others
 - 3.1. Describe principles of learning relevant to medical education
 - 3.2. Identify collaboratively the learning needs and desired learning outcomes of others
 - 3.3. Participate in, and promote continuing education of members of the multi- disciplinary health care team
 - 3.4. Select effective teaching strategies and content to facilitate others' learning
 - 3.5. Deliver effective lectures or presentations
 - 3.6. Assess and reflect on teaching encounters
 - 3.7. Provide effective and constructive feedback

3.8. 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 question

4.4. Conduct a systematic search for evidence

4.5. Select and apply appropriate methods to address the question

4.6. Disseminate the findings of a study

4.7. Complete a scholarly research, quality assurance, or educational project relevant to adult Critical Care Medicine that is suitable for peer-reviewed publication or presentation at an academic meeting

PROFESSIONAL

Definition:

As *Professionals*, sub-specialists in adult Critical Care Medicine are committed to the health and well-being of individuals and society through ethical practice, profession-led regulation, and high personal standards of behaviour

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 and altruism

1.1.1. Demonstrate an awareness and understanding of moral and ethical issues as they impact on patients, patients' families, and critical care providers

1.1.2. Develop and demonstrate use of a framework for recognizing and dealing with ethical issues in clinical and/or research practice including but not limited to truth-telling, consent, conflict of interest, resource allocation, and end-of-life care

1.1.3. Recognize circumstances where personal prejudices or biases may affect behaviour, including but not limited to cultural, financial and academic aspects, and respond appropriately

1.2. Demonstrate a commitment to delivering the highest quality care and maintenance of competence

1.2.1. Develop and demonstrate use of a framework for implementing published standards of care at a local, national and international level

1.2.2. Demonstrate responsibility for safe patient care including but not limited to effective transfer and continuity of care

1.3. Recognize and appropriately respond to ethical issues encountered in practice

1.4. Recognize and manage real or perceived conflicts of interest

1.5. Recognize the principles and limits of patient confidentiality as defined by professional practice standards and the law

1.6. Maintain appropriate boundaries with patients

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

2.1. Demonstrate knowledge and an understanding of professional, legal and ethical codes of practice

2.1.1. Describe the medical, legal, and ethical issues surrounding organ donation and transplantation

2.2. Fulfill the regulatory and legal obligations required of current practice

2.2.1. Demonstrate knowledge of medico legal considerations for the critically ill

2.3. Demonstrate accountability to professional regulatory bodies

2.4. Recognize and respond appropriately 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

3.3.1. Recognize and respond appropriately to impaired performance in self and colleagues

APPENDIX 7: Evaluation of the Scholarly Project

SCHOLARLY PROJECT PROPOSAL

The project proposal must contain the following sections:

Title: This includes the project title, trainee name, and name(s) and department affiliation(s) of the supervisor(s).

Problem Statement/Research Question/Hypothesis: A statement of the problem, research question, or hypothesis/hypotheses to be tested and major aim(s) to be addressed.

Background: A brief summary of pertinent background information including selected literature citations. The section should make clear the rationale for the project. (Sections 2 & 3 may be reversed in order.)

Methodology: A description of the methods to be employed, materials to be utilized, and plan for data analysis. This section should be thorough and detailed, to allow assessment of the rigour and feasibility of the project.

Significance: A brief statement of the expected significance of the study.

Role of trainee: Clearly state your roles and responsibilities in the project. If your project is to be incorporated into a larger one, state how your role may overlap with, and be differentiated from, that of others on the project.

Setting: Where will the project be conducted, and what resources will be available.

Ethical Approval: You must provide information on ethical approval for your project. Please state if your project has REB approval, if you plan on applying for approval or exemption, or if your study does not involve animal or human subjects. An application for ethical approval must be submitted prior to the first quarterly report (at 9 months) in order to demonstrate satisfactory progress.

References: A small number (< 5) of critical references will usually suffice.

The proposal is limited to 2 single-spaced pages, including references. Use 10 or 12 point font and 1" margins on all sides.

CRITERIA FOR THE EVALUATION OF SCHOLARLY PROJECT PROPOSALS

Significance. The rationale for the planned project. If the aims of the project are achieved, how will scientific knowledge or clinical practice be advanced or the next follow-on project be defined or facilitated?

Approach. The conceptual, clinical, or social framework, design, data gathering or product production methods, and analytical or interpretive methods should be described in enough detail to give the reader confidence that the trainee understands what he or she will be doing, how he or she will interpret the outcomes or results, and that the project is doable and will result in a usable or interpretable outcome.

Independence. It should be clear to and attested by the supervisor that the trainee wrote the abstract with only the critique and guidance of the supervisor, understands the design of the project, will execute the project him- or herself under the guidance of the supervisor.

Originality. It should be clear from the abstract what it is that is “original” about this project. This could be, for example, the experiments, studies, or tangible products themselves or the synthesis, interpretation, and analysis of previously published information.

Supervisor. Formal approval of the project proposal by the supervisor is a requirement. Such approval is considered documentation that the supervisor will be responsible in an active and on-going manner for the performance of and longitudinal involvement in the project by the trainee. Furthermore, for studies that involve human or animal subjects, the supervisor approval assures that REB will be obtained before any of the proposed studies.

Context and Environment. The trainee must cite specific literature references demonstrating grasp of the relevant literature in the area of the project. By signing-off on the project proposal, the supervisor attests that his or her area of expertise and experience and the venue proposed for performance of the project are appropriate to its aims.

QUARTERLY REPORT *PRO FORMA*

TRAINEE'S NAME:

CURRENT
SUPERVISOR:

PROJECT TITLE:

1. Has the Supervisor changed since last approved?

Yes

No

2. Has the Project Title changed since last approved?

Yes

No

3. Has there been activity related to your scholarly project during the past 3 months?

No The Program recognizes that there may be a quarter when you are unable to engage in scholarly activities. If this has been the case during your last quarter, please be specific about your plans for the next quarter, recognizing that no 6-month period should go by without substantive work on your scholarly project.

Yes Describe the progress since the last report by completing the relevant domains below. It is particularly important that you provide not only the activity but also its significance or relevance to the progress of your project. If ethical approval has yet to be obtained, please discuss status under Data collection domain.

Examples of the details that could be provided are given below.

A. Literature review

Activity:

Significance/outcome

:

B. Data collection

Activity:

Significance /outcome:

C. Data analysis

Activity:

Significance/outcome

D. Manuscript preparation

Activity:

Significance/outcome

:

E. Meetings with supervisor

Activity:

Significance/outcome

:

4. What specific project related activities are planned in the next three months?

5. Please respond here to any questions posed in the reviewers' responses to your initial proposal or last progress report:

6. Do you have questions for your supervisor or the Program?

Yes

No

Please let us know if you have any questions or if there are any ways in which we might help you as you anticipate your project moving forward:

7. Has work with your supervisor resulted in publications, presentations, or awards?

Yes

No

Upon acceptance, please provide the title of the presentation, paper, or award and the meeting or journal name. After the paper is published, presentation has occurred, or award received, please provide the full citation(s) for the paper(s) and/or presentation(s) or the award information.

PROJECT FINAL REPORT

The pass/fail grade for the Scholarly Project will depend on the evaluation of the final paper/product and on demonstration of longitudinal activity throughout the preceding two plus years. This longitudinal activity is documented in part by the quarterly progress reports.

For trainees who produce a paper (or papers) as part of their scholarly project, these documents can be submitted as a final product. However, if the paper does not address the items below, separate documentation in the form of a brief write up will be needed. Any other formal publications such as conference abstracts should also be submitted.

Significance. The trainee should make clear to the reader the rationale for the project. If the aims of the project were achieved, how will scientific knowledge or clinical practice be advanced or the next follow-on project be defined or facilitated?

Approach. The conceptual, clinical, or social framework, design, methods, and analyses should be developed, well integrated, well reasoned, and appropriate to the aims of the project. They should be described in enough detail that someone wanting to repeat the project could do so from what the trainee writes in the paper.

Independence. While it would be unreasonable (and oxymoronic) to expect a mentored project to be performed entirely independently, it should be clear to and attested by the mentor that the trainee designed and/or executed the project him- or herself and interpreted the outcome, product, or result independently before discussing it with the mentor.

Originality. It should be clear from the paper what it is that is “original” about this project. This could be, for example, the experiments, studies, or novel contribution to the current state of the science in the field of study.

Project Limitations. Alternative Approaches, and Future Directions. The trainee should make it clear to the reader that he or she understands the limitations of the project as it was conducted, the alternative approaches that might have been taken, and the future directions that are suggested or made possible by the results presented.

Special Considerations. It is recognized that not all scholarly projects will be publishable or have significant positive results. In this instance, the final report should indicate what value the execution of the project has had for both the trainee and the relevant field of endeavour.

The final report is limited to 5 single-spaced pages, including references. Use 10 or 12 point font and 1" margins on all sides.

Appendix 8: CritiCall Ontario

Funded by the Ontario Ministry of Health and Long-Term Care, *CritiCall Ontario* is a 24-hour-a-day emergency consultation and referral service for physicians across the Province of Ontario. CritiCall links hospitals and medical resources throughout Ontario, to provide strategic healthcare communications solutions anywhere, any time they're needed.

THE PROCESS:

1. The patient's physician calls CritiCall Ontario at 1-800- 668- 4357 (HELP)
2. The physician or designate will be asked for:
 - Their name
 - The name and CPSO (College of Physicians and Surgeons of Ontario) number of the most responsible physician
 - Hospital site
 - Contact phone number
3. The physician or designate will be asked to provide the following patient information:
 - Name, age, gender
 - Current location of the patient within the hospital
 - Initial (working) diagnosis and several diagnosis specific questions
 - The specialty requested
 - Urgency of the case
 - If other sites or physicians have been contacted prior to calling CritiCall

Once the agents have collected the above information, they will immediately begin contacting an appropriate specialist for telephone consultation. CritiCall agents do not relay clinical information between physicians. Please ensure the MRP seeking assistance is available to come to the phone for immediate consultation with the medical specialist when CritiCall Ontario calls back.

Appendix 9: Ontario Life and Limb Policy

INTRODUCTION

There are many requests for medical consultation and patient transfers within and across Ontario and there are varying degrees of urgency for these patients. A small subset of these patients present with conditions that potentially cause loss of life or limb if not managed in a timely manner, and can only be cared for at certain hospitals due to the nature of the care they require and/or the complexity and severity of their condition.

The Life or Limb Policy embraces a philosophy of care for our sickest, most vulnerable critically ill patients, and promotes the patient's clinical condition as priority. The perception of life or limb conditions is predicated on the clinical services available at a referring hospital to manage these cases - and for some hospitals in Ontario, these clinical services may be limited. Therefore the purpose of the Life or Limb Policy is to facilitate timely access to acute care services within a best effort window of four hours in order to improve outcomes for patients who are life or limb threatened. The Ministry of Health and Long Term Care (MOHLTC) developed this Life or Limb Policy in response to recommendations from the Office of the Chief Coroner for a provincial "no refusal" policy when critical injuries or conditions of life or limb are involved.

The Life or Limb Policy applies in all hospitals in Ontario. Paediatric patients (under 18yrs) with life or limb threatening conditions have access to critical care through the Paediatric Critical Care Response Team (PCCRT).

Repatriation within a best effort window of 48 hours once a patient is deemed medically stable and suitable for transfer is key to ensuring ongoing access for patients with life or limb threatening conditions (applies to both transfers within Ontario, and out-of-country (OOC) transfers)

No patient with a life or limb threatening condition will be refused care.

ROLES

Referring hospital physician Provides care to life or limb patients with the clinical services available at the hospital.

Prior to contacting *CritiCall* Ontario regarding a provisional life or limb case, requests a consultation from a specialist on call in their hospital, if this service is available, to confirm that the patient requires a higher level of care than the hospital is able to provide.

Contacts *CritiCall* Ontario at 1-800-668-HELP (4357) to identify a provisional life or limb case that cannot be served by the hospital at which the patient is located.

Consulting Hospital Physician Responds to pages from CritiCall Ontario regarding a provisional life or limb case within 10 minutes.

Provides medical consultation even if a bed or resources are not immediately available, to determine if the patient is life or limb threatened and recommend course of action (e.g. provide recommendations regarding management of life or limb patient to include stabilization, no transfer required, appropriate for urgent transfer).

Accepts patients with life or limb threatening conditions that cannot be served by the hospital at which the patient is located, provided the clinical expertise is available. If the patient requires urgent transfer to your institution, ensure minor surge plan has been implemented, in the event a bed is not immediately available, to meet the clinical needs of the patient.

DIAGNOSES LIST

The Life or Limb Policy Diagnoses List is not a comprehensive list of all medical conditions that are considered life or limb threatening. This is not meant to replace the clinical judgment of physicians involved in managing life or limb cases either. Triage decisions shall be based on patient condition, severity and progression.

Cardiology/ Cardiac Surgery/ Vascular Surgery

Abdominal Aortic

Dissection/Rupture Acute Limb

Ischemia

Ascending Aortic Dissection/Rupture

Cardiogenic Shock or Acute Valvular Problems, Mechanical Complications of Myocardial Infarction and Intra-Aortic Balloon Pump Cardiology for Pacemakers (Temporary and Permanent)

Endocarditis Requiring Urgent Cardiac Intervention

Pericardial Tamponade with Cardiovascular Compromise

Post Heart Transplantation with Suspected Rejection

Refractory Cardiac Arrhythmias (Including Repetitive Firing of Implanted Cardiac Defibrillator) or Symptomatic Heart Block

Thoracic Aortic Dissection/Rupture

Unstable Acute Coronary Syndrome Requiring Urgent Angiography and/or Intervention (Primary/Rescue Percutaneous Coronary Imaging or Surgery)

Unstable Complex Congenital Heart Disease

Vascular Trauma (e.g., Mangled Extremity, Blunt Thoracic Aortic Injury)

Endocrinology

Adrenal Crisis

Diabetic

Ketoacidosis

Hyperglycaemic

Coma Hypoglycaemic

Coma Myxoedema

Coma Pituitary

Apoplexy

Gastroenterology

Esophageal Perforation
Fulminant Hepatic Failure
Gastrointestinal Bleed with Refractory
Shock Toxic Mega Colon with Shock
Gastrointestinal Bleed with Refractory
Shock

General Surgery

Ischemic Bowel
Multi-organ Failure with Refractory
Shock
Severe Pancreatitis with or without
Shock Perforated Viscus/Septic Shock
Toxic Colitis with Shock
Wound Dehiscence/Evisceration

Haematology

Acute Leukaemia
Disseminated Intravascular Coagulation with Thrombosis
or Bleeding
Graft vs. Host Disease
Severe Hemophilia with Associated Bleeding
Urgent Leukapheresis
Urgent Red Cell Exchange (Sickle Cell Crisis, Malaria)

Neurology/Neurosurgery

Acute Spinal Cord Compression
Acute Stroke Requiring
Thrombolysis Cervical Spine
Fracture
Guillain Barre / Myasthenia Crisis
Head Trauma Requiring Neurosurgery or
Monitoring
Intracerebral Hemorrhage Subarachnoid
Hemorrhage
Meningitis with Altered Level of Consciousness
Status Epilepticus
Stroke – non TPA, Posterior Fossa, Brainstem

Nephrology

Acute Emergency Dialysis

Urgent Plasma Exchange (Thrombotic
Thrombocytopenic Purpura, Haemolytic - Uremic
Syndrome)

Obstetrics/Gynaecology

Acute Vaginal Bleeding with Shock
Anticipated Severe Shoulder Dystocia
Amniotic Fluid Embolism
Early Pregnancy, Severe Vaginal Bleeding and Hemorrhage
Early Pregnancy, Suspect Ectopic with Shock, Intra-
Abdominal Hemorrhage
Fetal Distress Intraperitoneal Hemorrhage
Maternal Cardiac Arrhythmias in Labour
Multiple Gestation Requiring Emergency
Obstetric/Paediatric Management
Obstructed Labour
Pelvic Inflammatory Disease with Shock and/or
Disseminated Intravascular Coagulation
Post-Operative Intra-Abdominal Hemorrhage and Shock
Pre-Term Labour
Pre-Term Premature Rupture of Membranes Severe
Gestational Hypertension
Severe Postpartum Hemorrhage
Severe Antepartum Hemorrhage Ovarian Torsion
Uterine Rupture
Umbilical Cord
Prolapse

Ophthalmology

Acute Orbital
Hypertension/Glaucoma
Endophthalmitis
Severe Orbital Cellulitis
Ruptured Globe
Vision Threatening Conditions – Orbital Abscess,
Orbital Hematoma, Optic Nerve Compression

Orthopaedic Surgery

Compartment Syndrome
Compound Fractures
Femoral Neck in Patients Younger than 65 Years of Age
Fractures/Dislocation with Vascular Injury
Irreducible Major Joint Dislocation (Non-Prosthetic Joint)
Major Pelvic/Acetabular Fractures
Multiple Large Bone Fractures

Otolaryngology

Acute Airway
Obstruction Epiglottitis
Esophageal Foreign Bodies
Major Bleeding: Neck Hematoma, Massive Hemoptysis/ Hematemesis
Mastoiditis or Sinusitis with Central Nervous System Complications
Necrotizing Infections
Severe Neck Trauma/ Laryngeal Fracture

Plastic Surgery

Amputation of Extremity for Re-Implantation/Re-vascularization
Compound Fractures of the Hand
Major Burns
Necrotizing Soft Tissue Infections

Respirology

Unstable Pulmonary Embolism Causing Shock and/or Respiratory Failure
Right Heart Failure with Shock
Respiratory Failure with Need of Invasive or Non-Invasive Mechanical Ventilation
Severe Cystic Fibrosis

Spinal Surgery

Acute Deteriorating Cauda Equine Syndrome
Acute Deteriorating Spinal Cord Function
Spinal Cord Injury
Unstable Spinal Injury

Thoracic Surgery

Intrathoracic Airway Obstruction
Issues Related to Lung Transplant
Massive Hemoptysis
Massive Haemothorax
Ruptured Bronchus or Trachea
Ruptured Esophagus
Strangulated Diaphragmatic Hernia

Urology

Acute Priapism
Necrotizing Scrotal Infection/Fournier's Gangrene
Obstructive Uropathy
Renal Infection with Vascular Impairment
Renal Trauma with Hemodynamic Instability
Testicular Torsion