

**20**

**18**

**INTERDEPARTMENTAL  
DIVISION OF CRITICAL CARE MEDICINE**  
Departments of Medicine, Surgery, Anaesthesia, and Paediatrics

**ANNUAL REPORT**

# Table of Contents

---

Message from the Division Director	2
Members of the Executive Committee	4
Executive Summary	5
Research Summary	17
Organizational Charts	19
Departmental Reports	21
<b>APPENDIX</b>	<b>27</b>
Faculty List	
Link to Summary Activity Reports of individual members	36

## MESSAGE FROM THE DIVISION DIRECTOR

---



**Laurent Brochard, MD**

Dear colleagues, supporters and friends,

After more than 5 years working as Director of the Interdepartmental Division of Critical Care, I am delighted to present our annual report for 2018. This annual report will complement the 2014-2019 report which we have generated for our external review, held in 2019.

This report offers a summary of some of the major events and promotions which took place in 2018 at each site, adult and pediatric, a summary of the activities of the Program presented by our Adult and Pediatric Program Directors as well as a summary of IDCCM research activities organized by our Research Executive Committee. Education is an extremely important part of our portfolio, and includes novelties in the way the program is delivered every year and also a strong research focus on education. I want to thank both the pediatric and adult members which support education with such a high profile in IDCCM.

Our policy has been to include more 'cross appointed' members over the recent years to acknowledge the collaborative work we are doing and this is reflected by an increased number of members. But this higher number also reflects a positive balance in the numbers of recruited members and the total net amount of full time equivalent. The quantification of scientific publication gives an impressive results: IDCCM members publish more than 400 publications a year with a mean impact factor above 8.0. Also, we have indicated the main journals where these publications take place. Our research executive committee is continuously working to facilitate the active participation of all members in research activities, with a special focus on young Faculty members. I am really grateful for the crucial work generated, which is essential for our Division, both internally and for our international visibility.

We cannot cite all activities in our annual report, the life of the Division being so rich, diverse and highly collaborative. This is also why our 2014-2019 report and this 2018 annual report nicely complement each other, as well as our bi-annual Newsletters.

IDCCM is a lively, dynamic, vibrant, productive and diverse group generating multiple interactions. I am very proud for having been the leader of this academic group for more than five years. Enjoy reading this report!

A handwritten signature in black ink, appearing to read 'Laurent Brochard'. The signature is stylized and written in a cursive-like font.

Laurent Brochard, MD  
Division Director, Interdepartmental Division of Critical Care Medicine  
Department of Medicine, University of Toronto

## MEMBERS OF THE EXECUTIVE COMMITTEE

---

### **Chair**

Dr. Laurent Brochard, St. Michael's Hospital

### **Department Chiefs**

Dr. Andrew Baker, St. Michael's Hospital

Dr. Brian Cuthbertson, Sunnybrook Hospital

Dr. Niall Ferguson, University Health Network and Sinai Health System

Dr. Peter Laussen, The Hospital for Sick Children

### **Program Directors**

Dr. David Hall (adult)

Dr. Briseida Mema (pediatric)

### **Research Directors**

Dr. Margaret Herridge

Dr. Hannah Wunsch

## Department of Critical Care Medicine, St. Michael's Hospital

---



Andrew Baker, MD, FRCPC

### MAJOR ACHIEVEMENTS

St. Michael's Hospital Department of Critical Care has continued to strive for success in areas of education, research and clinical activity. The successes of the Department's members have been recognized in many ways including the awards and appointments they have received.

#### Promotions

Congratulations to Dr. Bernard Lawless and Dr. Natalie Wong who were both promoted to Associate Professor.

#### Education

Congratulations to a number of our faculty for the awards they received this year.

- Dr. Simon Abrahamson , Fellowship Program Director at St Michael's Hospital was selected as the recipient of the Teaching Excellence Award – St Michael's for 2018 – 2019.
- Dr. Karen Burns received the St Michael's Hospital Outstanding Teacher Award from the Department of Medicine.
- Dr. Claudia dos Santos is also a recipient of the Department of Medicine Outstanding Postgraduate Teaching Award.
- Dr. David Hall is the winner of the Sheldon Mintz Award for Undergraduate Teaching in the Division of Respiriology.
- Dr. John Marshall was awarded the 2018 Distinguished Lecturer Award by the Canadian Critical Care Society and Institute of Circulatory and Respiratory Health.
- Dr. David Mazer – recipient of a Gold medal from the Canadian Anesthesiology Society, in recognition of his excellence and leadership in Anesthesia.
- Dr. Natalie Wong continuous to be recognized for her excellence in teaching, again this year, she received the Award for Individual Teaching Excellence by the IDCCM residents and fellows.

#### Research

Dr. Warren Lee and Dr. Xiao-Yan Wen's project: Discovery of Novel Drugs for Severe Influenza is the second runner up at the Global Healthcare Innovation Academy meeting in Hong Kong.

Dr. David Mazer –published two first authored manuscript in the NEJM as well two editorials in high impact journals in collaboration with Dr. Verma. This speaks to Dr. Mazer’s international reputation and his expertise in cardiovascular anesthesia and surgery.

Congratulations to Orla Smith who is the recipient of the IDCCM Inaugural Interprofessional Award. It is to highlight and honour the essential contribution that our interprofessional colleagues make to our research and teaching enterprise in Pediatric and Adult Critical Care across the University of Toronto.

Dr. Brochard Lab and the Critical Care Research Unit won the Discovery and Innovation Award at the SCC Research Education and Innovation Day at St. Michael’s Hospital. At the Art Slutsky Research Day, a) Dr. Laurent Brochard’s international research fellows: Dr. Tai Olivier Pham won the “Best Abstract (Physiology), and Dr. Lu Chen was one of the top 9 Oral and Abstract Presentation Award. Dr. Warren Lee’s post-doctoral fellows: b) Dr. Victoria Mintsopoulos won the First Prize of Best Abstract. Dr. Lee’s research fellow - Dr. Siavash Ghaffari won the First Prize at the Canadian Lipoprotein Conference. At Angel’s Den, Dr. Warren Lee and Dr. Xiao-Yan Wen won the Biomedical Innovation Award for their research using Zebrafish to find a new compound to treat influenza virus.

### **Our Critical Care Research Unit**

Our current research portfolio is comprised primarily of investigator-initiated trials targeted at improving or expanding existing approved therapies to address unmet health needs instead of discovering new interventions. Comparative effectiveness research is gaining ground since the real issue is no longer the choice of the “best” agent or intervention, but rather the identification, on a rational basis, of the population of patients who will benefit from a given agent or intervention the most.

### **Our ICUs**

The MSICU is Gold recipient of The Beacon Award for Excellence by the American Association of Critical Care Nurses (AACN) and TNICU also received a Silver Beacon Award for Excellence. This award recognizes caregivers in stellar units whose consistent and systemic approach to evidence-based care make patient outcomes better. Units that receive this international recognition serve as role models to others on their journey to excellent patient and family care. Our MSICU is the only unit in Canada that currently holds this unique distinction.

## Department of Critical Care Medicine, Sunnybrook Hospital

---



**Brian Cuthbertson, MD, ChB, FRCA**

In 2018, Dr. Brian Cuthbertson remained the Chief of Critical Care Medicine. Dr. Shelly Dev continued to lead the education programme as our Residency Director and Co-Director with Dr. Cameron Guest of the International Fellowship Program. Dr. Dominique Piquette continued her role as the Associate Director, Education Research & Scholar Development for IDCCM. Dr. Hannah Wunsch continued to be active as the Associate Research Director for the IDCCM.

### **Research**

In research the department enjoyed a number of notable academic accomplishments.

The Acute and Intensive Care Outcomes Research Network (AICORN) continues to grow. This group, led by Drs. Hannah Wunsch, Damon Scales and Robert Fowler, focuses on health services research projects that make use of Ontario population health data, with a particular focus on ICU-related research, including pharmaco-epidemiology, long-term outcomes, trends over time in care of critically ill patients, trauma care, and end-of-life care. The AICORN group meets bi-weekly at Sunnybrook to discuss progress on specific projects and plan new studies. AICORN had its first research retreat in May 2018 at Hart House at the University of Toronto, with the next scheduled for June, 2019. AICORN is supported by the Chief's Fund from the Sunnybrook Department of Critical Care Medicine, as well as operating grants from CIHR, NIH and the Canadian Frailty Network. The "Nuts and Bolts of Research" series included a grant writing mini symposium in October, 2018, and a Clinical Trials afternoon in April 2019.

The Visiting Professorship Program organized by Dr. Hannah Wunsch and Meredith Malloy continues to be tremendously successful in attracting international experts in Critical Care to the IDCCM. We hosted 7 visiting professors for the 2018-19 academic years and organized the Clinical Research in Progress (CRIP) program, bringing together researchers from across the city for dinner and a discussion of ongoing research projects. Since Dr. Gordon Rubinfeld implemented the program in 2010, the IDCCM has hosted over 80 Visiting Professors.

In 2018, Dr. Brian Cuthbertson' main research focus was on the SuDDICU study and he received \$3.1M from CIHR to conduct the project in Canada. He worked closely with the Australia and UK collaborative group to launch the study in those areas also. He is currently seeking further funding for SuDDICU from CIHR project grant funding. The multi-national METS study (cardio-pulmonary exercise testing in patients before major surgery) is now complete and published after recruiting 1400 patients. Dr. Cuthbertson also launched and has nearly completed the CHORAL study of chlorhexidine withdrawal and oral health care intervention with an interprofessional team of investigators. Dr. Cuthbertson leads the pragmatic trials course at HPME once again which received excellent student reviews.

Dr. Gordon Rubenfeld continues his work as a Clinician Scientist with interests in the epidemiology and definitions of sepsis and ARDS, tools to translate research findings in to practice (both by adoption and de-adoption), health services research around the organization of critical care services, and, when time permits, the ethics and law around the delivery of end-of-life care in the ICU.

Dr. Damon Scales was promoted to Full Professor at the University of Toronto in 2018. He is currently conducting 3 CIHR-funded trials: the PROTEST RCT, which compares the safety and effectiveness of early versus delayed thromboembolic prophylaxis using anticoagulants in patients with traumatic brain injury; the PITSTOP RCT, which evaluates the impact on mortality of prompt antibiotic and/or intravenous fluid administration by paramedics to patients with sepsis; and the NEURO-ETT RCT, which tests the optimal airway management strategy for patients who are weaned to minimal ventilator settings but remain intubated due to underlying neurological injury. Two of his students graduated in 2018: Dan Lane completed a PhD in Clinical Epidemiology that focused on prehospital identification and treatment of sepsis, and Lavarnan Sivanathan completed an MSc in Clinical Epidemiology that examined risks for mental illness diagnoses after critical illness.

In 2018, Dr. Adhikari contributed to several publications and was co-PI on 2 RCTs: (1) Impact of permissive hypotension on end-organ damage in the elderly (OVATION-65, NCT03431181), and (2) Lessening Organ Dysfunction with VITamin C (LOVIT, NCT03680274). With Alberto Goffi, he co-leads University of Toronto contribution to a critical care medicine fellowship at Addis Ababa University and spent 2 months in Addis Ababa. He also worked on various projects related to viral outbreaks at World Health Organization.

Over the past year, Dr. Rob Fowler has enjoyed clinical work, teaching and learning in the ICUs at Sunnybrook Hospital, supporting graduate students as the Director of the Clinical Epidemiology and Health Care Research Program at U of T's Institute of Health Policy, Management and Evaluation and honored to be the incoming Chair of the Canadian Critical Care Trials Group. His academic foci include infection-related critical illness, end-of-life care, and care of critically patients in resource-limited settings. He is collaborating with Dr. Nick Daneman and many other members of the Canadian Critical Care Trials Group as part of the BALANCE (Bacteremia Antibiotic Length Actually Needed for Clinical Effectiveness) Randomized Control Trial, with sites in Canada, Saudi Arabia, Israel, New Zealand and Australia. Working with the seedling AICORN (Acute and Intensive Care Outcomes Research) Network, they've examined trends in end-of-life and palliative care in Ontario and Canada, and end-of-life care delivered to recently immigrated Canadians. Rob has continued to grow from the experience of working in resource-constrained environments, in the ongoing Ebola virus outbreak in the Democratic Republic of the Congo in the fall of 2018, with WHO, and working with trainees on outbreak- and resource-constrained setting focused projects.

Dr. Martin Chapman continued to be involved in education and research, particularly focused on Neurocritical Care. He participated as faculty for undergraduate and postgraduate training including Case Based Learning tutoring. His research areas include Role of EEG monitoring in the ICU environment, Focused Ultrasound and Neuromodulation, Transfusion thresholds in subarachnoid hemorrhage, Craniectomy in acute subdural hemorrhage and Imaging modalities in neurocritical illness.

In 2018, Louise Rose, who holds the TD Nursing Professorship in Critical Care Research at Sunnybrook Health Sciences Centre (50%) and is a Professor of Critical Care Nursing at the Florence Nightingale Faculty of Nursing, Midwifery and Palliative Care at King's College London (50%), was successful in 10 grant competitions totaling \$1,873,000, including four as the nominated principal investigator. This success includes a ResMed investigator initiated grant to conduct a stepped wedge randomised controlled trial of home non-invasive ventilation with oxygen therapy for COPD with persistent hypercapnia after acute exacerbation, and a CIHR project grant for a process evaluation of the SuDDICU trial.



Louise published 15 manuscripts in 2018. These include as lead author of a study using ICES data documenting patterns of healthcare utilisation for respiratory complications of adults with neuromuscular disease published in the European Respiratory Journal and co-author of a randomized controlled trial of protocolized extubation to non-invasive versus invasive weaning from mechanical ventilation in acute respiratory failure: The Breathe Study published in JAMA.

Dr. Barbara Haas continues to focus her research and education efforts on the care of severely injured older adults and older adults with surgical emergencies. Recruitment continues in the PCOP-PS study, which is focused on prognostication of long-term outcomes after critical illness by intensivists and surgeons (Dr. M. Detsky Co-PI). Her research team was awarded a Sunnybrook Education Advisory Council and Education Research Unit Education Research and Scholarship Grant, focused on "Surgical Trainees' Beliefs and Attitudes Regarding the Value of Geriatric Trauma Care in Residency Training." Finally, she was the recipient of an Undergraduate Medical Education Excellence in Teaching Award from the Faculty of Medicine, University of Toronto.

During the 2018-2019 academic years, Dr. Bourke Tillmann transitioned from his Masters studies to the PhD program in Clinical Epidemiology and Health Care Research Program at IHPME. His work is focused on improving health services resource utilization and equity in access to critical care. Along these lines, his thesis is focused on the examining factors that impact triage decisions of traumatically injured patients and the implications of these decisions on healthcare resource utilization. In 2018 he also published a systematic review on the role of ECMO in out-of-hospital cardiac arrest and a cohort study examining the impact of delays in activation of critical care outreach teams. Likewise, he was successful in obtaining a research grant from the Tory Trauma Research Program to investigate the impact of type of hospital admission on the receipt of ECMO for patients with respiratory failure.

Dr. Mike Tylee completed his first year as a Clinical Associate with the Department of Critical Care in 2018. He successfully transferred into the PhD program at the Institute for Health Policy, Management, and Evaluation in April 2018. The focus of his PhD work is physician-patient communication around high stakes decisions with surgical patients in the ICU. He recently became certified in Perioperative Transesophageal Echocardiography by the National Board of Echocardiography (NBE), and now provides TEE support in both CVICU and CrCU. He continues to practice cardiovascular and general anesthesia at Toronto General Hospital.

In 2018, Dr. Lorraine Tremblay became President of the Trauma Association of Canada, Provincial Lead for the General/Thoracic/Vascular Surgeon Peer Assessor Network of the CPSO, and one of the inaugural members of the American Board of Surgery Committee tasked with development of educational materials and testing for the new Surgical Critical Care Continuous Certification Program. She continues to serve on the Royal College of Physicians and Surgeons Examination Board, in addition to her multiple clinical, administrative and teaching responsibilities at the University of Toronto and for various trauma associations and the Journal of Trauma and Acute Care Surgery.

The Critical Care Research Department, led by our Research Director Dr. Neill Adhikari and Research Manager Nicole Marinoff RN continue to support the IDCCM with their participation in industry and academic trials. The DOCCM participated in many collaborative CCCTG research projects including industry, academic and observational studies which resulted in multiple publications and presentations. The group secured funding for and launched several investigator initiated multisite RCT's. DOCCM members have committed to complete research regulatory training to support departmental clinical trials as Sub Investigators and 90% have completed their training to date. The group continues to promote ongoing research development through regulatory submissions, site initiations, compliance reviews and education.

## **Education and Quality Improvement**

Over the last 2 years, Dr. Dev has become a highly sought out speaker on the topics of medical culture, physician well-being and healthcare worker mental health. She has written on the topic for The Globe and Mail and has been interviewed on CBC radio. She holds the IDCCM portfolio for Mentorship for our Critical Care trainees and has recently been appointed as the Mentorship lead for the Peter's-Boyd academy for Undergraduate Medical Students. Dr. Dev continues to work on independent and collaborative multimedia projects, acting as producer and consultant with colleagues across the Faculty of Medicine. Her current projects in production for the New England Journal of Medicine across the IDCCM include Video Laryngoscopy, Lung Ultrasound and FAST Ultrasound. In the last year, Dr. Dev developed educational materials for new clinical studies including the CHORAL and SUDDICU trials headed by Dr. Brian Cuthbertson. She is now collaborating with colleagues across the border; she is in the pre-production phase of creating the media for the PARTNER trial intervention headed by Dr. Doug White in Pittsburgh. Also on the radar is the soon to launch newly revamped IDCCM website Dr. Dev has been developing with Dr. Laurent Brochard.

For the upcoming academic 2019-2020, Dr. Dev will be on sabbatical, spending more time focusing on her work on physician mental health and wellbeing and medical culture.

In Quality Improvement the Department continues to collect data on key quality indicators reflecting our performance. Our Process of Care Database has been revised with interprofessional input from all sites and we started the process of meeting with each site to deepen the understanding and usability of the reports. We also welcomed both the Scarborough and Rouge Hospital and St. Joseph's as contributors to the database. Dr. Amaral continues to supervise voluntary fellows and residents in a Quality Improvement workshop, and this year we included nurses and respiratory therapists in the workshops, further enhancing the interprofessional experience of Quality Improvement for the trainees. In collaboration with Drs. Fan and Ferguson, Dr. Amaral is supporting the Toronto-Central LHIN to develop a quality dashboard, which is based on existing indicators in the iCORE dataset. The Toronto-Central LHIN has provided funds to support the development of a web portal to improve access to the quality report.

During the last academic year, Dr. Piquette has pursued a range of educational research and scholarly projects with 2 primary aims: 1- better understanding how changes in the healthcare and medical education systems affect education and learning in acute care environments, and 2- increasing the quality of critical care education locally, nationally, and internationally. Her main accomplishment in 2018 was to obtain, as a Co-PI with Dr. Chris Parshuram, a CIHR grant (>\$3M) for a large, national, cluster randomized crossover trial on the effects of resident schedule on patient mortality and safety, and on resident learning and wellbeing. This study will be conducted over the next 4 years in 18 Canadian ICUs and will be complemented by a series of sub-studies that will significantly advance our understanding of resident scheduling, but also of Canadian ICU educational practices and outcomes. In parallel with this project, she continues to lead a RCPSC-funded project on the implementation of competency-based medical education within the Adult and Pediatric critical care residency programs.

She is also involved in two externally funded projects that explore the use of simulation and other educational strategies to provide formative feedback to practicing critical care physicians. Last year, she has completed, on behalf of the Canadian Critical Care Society, a national survey on intensivists' current use of assessment activities as part of their continuing professional development. In addition to these projects, she is collaborating with various groups of local and national researchers whose research interests include organ donation education, competency-based medical education, physician moral distress, and international fellows' transition into Canadian ICU teams. In 2018, she received the Annual John Granton Award for Outstanding Contribution to Critical Care Education in the Interdepartmental Division of Critical Care Medicine.

## Department of Critical Care Medicine, The Hospital for Sick Children

---



**Peter Laussen, MD, BS, FCICM**

The clinical activities for the Department in 2018 included over 2300 admissions to the PICU and CCCU combined, with over 13,000 patient days; 5000 follow-up visits after transfer from the CCU and additional new consults by CCRT; over 1100 extramural bridge calls for consultation and transfer; and 55 patients treated with ECMO for over 8000 hours of care. The overall ICU mortality of 3.5% was similar to preceding years. I wish to extend my gratitude for the extraordinary care provided by all staff, always doing what was needed and then some. The quality of care is exceptional and meets all societal and regulatory benchmarks. The Quality, Risk and Safety teams have juggled many competing pressures very well, and we had notable successes, such as sustained hand hygiene audit (moments 1 and 4) above 90%. Vascular Health, Nutrition Health and Lung Health teams have made significant strides, and I particularly want to acknowledge the advanced interdisciplinary practices that have been embedded in the Unit. We continued to partner with HumanEra at the University to understand human factors within the Unit, and completed a large project mapping the way we round and transfer information.

After 30 wonderful years of dedicated service, Dr Peter Cox retired at the end of 2018. There are few people that have shaped paediatric critical care worldwide as Peter has. A master clinician with clear insights and perspective, Peter has been a wonderful teacher and mentor to nearly 400 fellows and residents in critical care from 40 countries who have subsequently gone on to make an impact on paediatric critical care all over the globe. Dr. Tilman Humpl who was appointed as Director of Intensive Care at Inselspital, University Hospital in Bern, Switzerland and left the Department after 15 years in which time he headed the Pulmonary Hypertension Service and was Education Program Director. We were very pleased that Dr. Haley Christian has joined our faculty, working in the Cardiac Critical Care division. Haley is originally from Ontario, and completed her medical degree in 2011 at the University of Manitoba. She continued her training at BC Children's Hospital in Vancouver, completing her Paediatric residency in 2015 and her Paediatric Critical Care fellowship in 2017 after 12 months as a senior fellow at Boston Children's Hospital in Cardiac Intensive Care. We are thrilled that we were able to recruit her to SickKids.

The highlight for 2018 was the celebration of the 50<sup>th</sup> anniversary of the Department, culminating in a wonderful Gala on November 10<sup>th</sup>. In 1968 the opening of the McLaughlin Intensive Care Unit provided the venue for one of the first ICUs for children in the world. The Program grew to the largest in Canada and is recognized as amongst the best in the world for clinical care, education and research; in November 2017 we admitted our 60,000<sup>th</sup> patient. Over this period, there are over 400 critical care alumni and are very proud of the impact they have had worldwide in the care of critically ill children. In addition to the Gala, a series of 7 PRACTICAL symposia were held throughout the year, focusing on advancing critical care, and included themes around ECLS, the immunocompromised child, advances in respiratory care, cardio-endothelial dysfunction, continuing critical illness, solid organ transplantation and acquired brain injury. The sessions provided practical and evidence-informed information and experiences to advance understanding, stimulate reflection, and illustrate best practices when caring for children and families

experiencing a critical childhood illness or injury. Other academic activities to celebrate our 50 years included sponsoring a Risky Business Conference from November 5<sup>th</sup> to 6<sup>th</sup> and an Alumni Session at the Canadian Critical Care Canada Forum (CCCF). My gratitude to Chris Parshuram, Erika Robinson and Samantha Morin for their imagination and tireless efforts.

Our training program remains a gem and a central focus. We trained 4 residents as part of the critical care training program and there were an additional 23 international fellows. The training program was run by Dr. Tilman Humpl through May 2018, and after he left to take a position running the ICU in Bern, Dr. Briseida Mema was appointed as the Program Director for the Department of Critical Care Medicine at SickKids. Briseida is indeed a natural fit for this role given her experience and research in education to date, and in particular her expertise and vision for the future. We have important challenges ahead with the implementation of Competency by Design, and we are confident that we will be able to navigate this under Briseida's leadership. My thanks to Melanie Hamilton, Program Coordinator, for organization of the education program, and to Nella Perri for managing international applications and the myriad of paperwork. I would also like to acknowledge the outstanding leadership from our Chief Fellows for 2018: Andrew Helmers and Mariella Vargas-Gutierrez.

Under the direction of Dr. Anne-Marie Guerguerian, our research efforts continued to be extremely productive with just under 100 publications for calendar year 2018. Anne-Marie Guerguerian was also named Chair of the Appointments Committee at The Research Institute. There were numerous awards including:

- Brian Kavanagh & team won an intramural Dragon's Den competition (\$100,000) in support of his CNAP device 'Negative Abdominal Pressure for Injured Lungs' (January 2018).
- Brian Kavanagh received CIHR project grant award (\$705,330 over 5 years) to study "Minimizing lung injury during mechanical ventilation" (January, 2018).
- Chris Parshuram was awarded a large grant from CIHR for the "Intensive Care Unit Resident Scheduling (InCURS) trial: A cluster RCT of 16 and 24 hour schedules in Canadian ICUs" (\$3,048,525) (March, 2018).
- Chris Parshuram also received funding from SickKids Foundation Gluskin Sheff & Associates Pediatric Critical Care Research endowment, Hospital for Sick Children Critical Care Program, to support secondary analyses of data from EPOCH: A large International Cluster RCT (\$35,000) (July, 2019 for 1 year).
- Peter Laussen and Azadeh Assadi NP were awarded funding from SickKids Labatt Family Heart Centre Innovation Fund for ongoing development of MyHeartPass (\$23,866) (January, 2018).
- Both Brian Kavanagh and Peter Laussen were recipients of Merit Awards from the Department of Anaesthesia, University of Toronto, to support ongoing research efforts (July 2018 for 2 years).

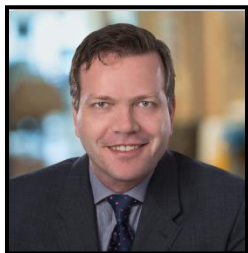
#### **Congratulations to a number of outstanding research fellows on their success as well:**

- Rishi Lalgudi-Ganesan as recipient of the inaugural 'Ernst A. Rodin Distinguished Fellowship' award from the American Clinical Neurophysiology Society (ACNS) and American Clinical MEG Society (ACMEGS). Rishi also received a travel grant awarded to present a QEEG related work at the International Federation of Clinical Neurophysiology (May, 2018).
- Nadia Roumeliotis won the CCCTG Research fellowship Award for her project "Medication errors in critically ill children: Incidence, harm analysis and prevention practices" (Centre for Safety Research) (September 2018).
- Bhushan Katira was awarded Winter/Spring 2018 School of Graduate Studies (SGS) Conference Grant, University of Toronto (\$730).
- Takeshi Yoshida, MD, PhD (Kavanagh Lab, Translational Medicine) won the Andrew Sass-Kortsak Award for his work with Drs. Brian Kavanagh and Laurent Brochard.

The quality of care, the attention to detail and the non-wavering commitment to managing the sickest of children defines this department. From across all interdisciplinary areas, staff come together around a common purpose.

Add to this the imagination and innovation in research, and the dedication to training new generations of pediatric critical care specialists, and one can see why this program remains one of the most storied and respected programs in the world. Over the past 50 years, we have had a significant impact on changing the field. We celebrate this. We now turn to the next 50 years, over which time we will lead new discoveries, train new generations and change the systems of care.

## Department of Critical Care Medicine University Health Network and Sinai Health System



**Niall Ferguson, MD, MSc, FRCPC**

The Critical Care programme at University Health Network and Mount Sinai Hospital is a complex structure involving the provision of intensive care across 4 physically separate geographic sites and 2 separate hospital organizations. We have over 20 intensivists working in our three Level-3 medical-surgical ICUs (our MSICU group), and also count on the involvement of our colleagues in the Peter Munk Cardiac Centre who provide care for patients in the CardioVascular ICU (CVICU) and Coronary ICU (CICU) at Toronto General Hospital.

### **Personnel**

Over the course of 2018 several important personnel changes occurred within our group.

New Faculty: Dr. Ghislaine Douflé, Clinician-Teacher and Education Lead, TGH

We are excited to welcome our new team members and look forward to their future successes. With mixed emotions we also recognize the important departures from our group in 2018. Dr. Neil Lazar retired from ICU clinical work, and Dr. James Downar was recruited to the University Ottawa to become Head of Palliative Care. We wish them both all the best in the next stages of their lives and careers. The executive committee for our group in 2018 was comprised of Drs. Neil Lazar, Jeff Singh, and Stephen Lapinsky serving as Site Directors for Toronto General, Toronto Western, and Mount Sinai, respectively, along with Dr. John Granton as Head, Division of Respiriology, Dr. Geeta Mehta as member-at-large, and Dr. Niall Ferguson, Head of Critical Care Medicine.

### **Research**

We maintained our devolved model of research infrastructure in 2018 – with each geographic site managing research coordinator resources and a local research lead for each site – Dr. Elizabeth Wilcox at TWH, Dr. Lorenzo Del Sorbo at TGH and Dr. Michael Detsky at Sinai. We were also delighted that Dr. Ewan Goligher was named as the 2018 recipient of the IDDCM Scholar Award.

2018 was another excellent year for our research group. Our group of 13 faculty clinician-investigators and scientists published 110 unique papers in 2018, with at least 30 of these being in high impact journals (IF>10) including the New England Journal, JAMA, and ARJCCM. Our grant capture was also strong (see individual reports). Key research programmatic themes arising from within our group include: ARDS & Mechanical Ventilation; Long-Term Outcomes after ICU; Extra-Corporeal Life Support; Diaphragm Dysfunction; Neuro-critical Care; and Critical Care Oncology.

### **Education**

Our site education leads are Dr. Ghislaine Douflé for TGH, Dr. Christie Lee at Sinai, and Alberto Goffi at TWH – they continue to do a phenomenal job of reinvigorating the educational experience for trainees of all levels at these sites. Dr. Christie Lee continues as Director of the International Fellowship Director at UHN/SHS – thanks to her leadership we continue to attract and train outstanding clinical fellows from around the world.

## University of Toronto Critical Care Training Programs, 2018

---



David Hall, MD, PhD, FRCPC

### **IDCCM Education Program 2017-2018**

The University of Toronto is a premier centre for sub-specialty training in Critical Care Medicine. With more than 70 registered trainees, it continues to be the largest Adult Critical Care training program in Canada.

Over the past decade, we have been fortunate in attracting some of the best physicians in the world with diverse specialized backgrounds. Approximately 25% are from Canada, joining our Residency, and clinical fellows from more than 50 countries – with significant representation from the UK, Brazil, India, and Saudi Arabia.

The Center for World University Rankings (CWUR) has ranked the University of Toronto as the second most productive Critical Care research center in the world. With our 5 principal academic training hospitals and our community hospital partners we produce the highest quality intensivists and leaders in Critical Care Medicine.

### **Our Program**

The introduction of **Competency by Design** (CBD) last year has brought some new changes to the IDCCM Program. Formative workplace assessments have been introduced, in addition to ITERs, as well as more tailored educational plans structured to meet Critical Care Medicine **Entrustable Professional Activities** (EPAs). We continue to work with the University of Toronto Post MD Education office, as well as the RCPSC to ensure the most efficient and effective onboarding of CMBE, launching as of July 1, 2019.

A special thank you to our portfolio leads in continuing to head the specific initiatives within **Competency Based Medical Education**:

Curriculum Development & Evaluation – **Dr. Dominique Piquette**

Scholarly Activity – **Dr. Dominique Piquette**

Trainee Assessment – **Dr. Christie Lee**

Mentorship & Wellness – **Dr. Shelly Dev**

### **Art Slutsky Day 2018**

An inaugural Pub evening was held on Monday June 18<sup>th</sup> at the Mill Street Brewery in the Distillery District to kick off Art Slutsky Day 2018 festivities. It was a fun evening and a great celebration in honour of the 16<sup>th</sup> annual Art

Slutsky Research Day, which not only pays tribute to **Dr. Arthur Slutsky**, but also celebrates the breadth of academic activity and achievement of Faculty and trainees of the IDCCM Division.

This year, we hosted distinguished speaker, **Dr. Marc Moss**, Roger S. Mitchell Professor of Medicine and Vice Chair of Clinical Research for the Department of Medicine at the University of Colorado School of Medicine

IDCCM Chair, **Dr. Laurent Brochard**, as well as Faculty Members, **Drs. David Mazer, Chris Parshuram, Elizabeth Wilcox** and **Victoria McCredie** also provided comprehensive overviews and valuable insights on their current work and research related to the IDCCM and University community.

The Abstract Section received over 55 entries from trainees within or with supervisors in the Division this year. Judges identified the top 9 abstracts, with those authors invited to give an oral presentation. After presentations and deliberation with Visiting Professor, Dr. Marc Moss and the IDCCM Research Committee the top 2 *Overall Best Abstracts* were awarded to the following:

**Dr. Victoria Mintsopoulos** – 1<sup>st</sup> Place

**Dr. Bhushan Katira**– 2<sup>nd</sup> Place

A separate group of abstract judges were tasked with identifying Best Abstracts in each of the five (5) categories of *Clinical Research, Basic Science, Quality Improvement, Physiology & Systematic Review*. Winners were awarded as follows:

**Dr. Lavarnan Sivanathan** – Clinical Research

**Dr. Sahil Gupta** – Basic Science

**Dr. Nadia Roumeliotis**– Quality Improvement

**Dr. Tai Pham** – Physiology

**Dr. Laura Dragoi** – Systematic Review

The residents and clinical fellows awarded the *John Granton Award*, for outstanding contribution to Critical Care Education, to **Dr. Dominique Piquette** in recognition of her support and significant contribution to the Interdepartmental Division of Critical Care Medicine Education Program.

The Education & Residency Program Committee awarded the *Simon Abrahamson Award*, for outstanding academic performance in Critical Care Medicine, to **Dr. Martin Urner**, for his leadership at the Divisional and University level, as well as for his exemplary clinical, teacher and learner work.

The John Laffey Award for achievement and contribution to Critical Care Research was awarded to IDCCM trainee, **Dr. Christopher Yarnell** for his exemplary work in Critical Care research.

The site-specific winners for excellence in teaching were: **Dr. Briseda Mema** (Hospital for Sick Children), **Dr. Christie Lee** (Sinai Health System), **Dr. Natalie Wong** (St. Michael's Hospital), **Dr. Andre Amaral** (Sunnybrook Health Science Centre), **Dr. Ghislaine Doufle** (Toronto General Hospital), **Dr. Alberto Goffi** (Toronto Western Hospital), and **Dr. Kevin Shore** (U of T-affiliated community hospitals, The Scarborough Hospital).

We concluded the year graduating **Drs. Brian Buchan, James East, James Lee, Pierre Alexis Lepine, Maxime Pichette, Julien Viau-Lapointe** and **David Paskar** from the Critical Care Residency Program. We look forward to following them in their continued career development and success!



## **Canadian Resident Matching System (CaRMS 2018)**

I am pleased to announce that the following physicians have joined in the Adult Critical Care Medicine Residency Program: **Dr. Thomas Bodley** (University of Toronto), **Dr. Jasmine Grenier** (University of Toronto), **Dr. Maria Jogova** (University of Toronto), **Dr. Taylor Kain** (University of Toronto), **Dr. Michael Sklar** (University of Toronto), and **Dr. Raid Shaarbaf** (Dalhousie University) and **Dr. Bijan Teja** (Harvard Medical School)

## **Chief Fellows & Residents**

I would like to thank our Chief Residents, **Dr. Brian Buchan** and **Dr. David Paskar** as well as our Critical Care Chief Fellows, **Dr. Carmen Lopez-Soto**, **Dr. Martin Uner** & **Dr. Bruno Ferreyro**. They continue to demonstrate excellent leadership in representing our trainees and are wonderful ambassadors for the IDCCM Resident and Fellowship programs.

We would also like to welcome our new Chief Resident, **Dr. Jenna Spring** and Chief Fellow, **Dr. Federico Angriman** for the upcoming 2018-19 year!

## **The Future**

There are some significant challenges ahead for us in the Division related to education. The transition to RCPSC *competency-by-design* has become a reality for the first tranche of programs across Canada. Critical Care will follow and there is no debate. Achieving successful transition will need the support and expertise of the entire Faculty, not just the site education leads. Fundamental to this is timely workplace based assessment. Although we will have several new evaluation tools in 2018 we must continue to support the existing ITER process and currently approximately 50% are completed within 30 days of rotations.

## Research Summary

---



Margaret Herridge, Research Director



Hannah Wunsch, Associate Research Director

### Annual Art Slutsky Day and Brew Pub Evening

Art Slutsky Day 2019 is the culmination of our IDCCM research/education academic year and an opportunity to honour the legacy of Art Slutsky and to celebrate his exceptional vision and contributions to our diverse pediatric, adult and interprofessional critical care community across the University of Toronto. The Art Slutsky Day festivities begin the evening before with an informal gathering of faculty/trainees/alumnae at the Mill St Brew Pub in the Distillery District.

Attendance for this all day event was over 160 faculty/interprofessional colleagues/trainees. Faculty judges vetted **53** abstracts encompassing basic and clinical science, quality, physiology and education contributed by our adult and pediatric trainees with an exceptional breadth and quality of work. First and Second Prize for Best Abstracts of the day were awarded to: Dr. Michael Sklar and Dr. Alice Luo respectively.

Distinguished Faculty speakers included Dr. Haibo Zhang, Dr. Ewan Goligher, Dr. Andreas Laupacis and Dr. Najma Ahmed.

Dr. Élie Azoulay was our Visiting Professor this year and he follows other luminaries in the world of Critical Care Medicine including Dr. Marc Moss and Dr. Danny Talmor who joined us in previous years.

### IDCCM Alliance Faculty Day

The IDCCM Alliance is an initiative to build research integration across sites in the University of Toronto IDCCM. This yearly half day event is devoted to focused presentations/high profile speakers and panel discussion to foster discussion and planning of targeted research collaborations. The focus this year was on Oncology Critical Care and Research in Education. Sixty faculty/interprofessional colleagues and trainees were in attendance for this unique exchange of research ideas. This event is also the opportunity to present our Annual Interprofessional Research award and Dr. Orla Smith of St. Michael's hospital was the recipient this year.

### **IDCCM Visiting Professor Program**

During the 2018-19 academic year, we hosted 8 visiting professors from three countries, covering topics that included educational research, physiology, quality improvement, and respiratory failure management.

The IDCCM has also joined the University of Pennsylvania NIH/K24 Junior Faculty Visiting Professor Program. The University of Toronto is participating along with critical care divisions and department at the University of Pittsburgh, University of California San Francisco, University of Washington, University of Colorado, and the University of Michigan, to facilitate visiting professor opportunities for emerging leaders in the field.

### **IDCCM Scholars Program**

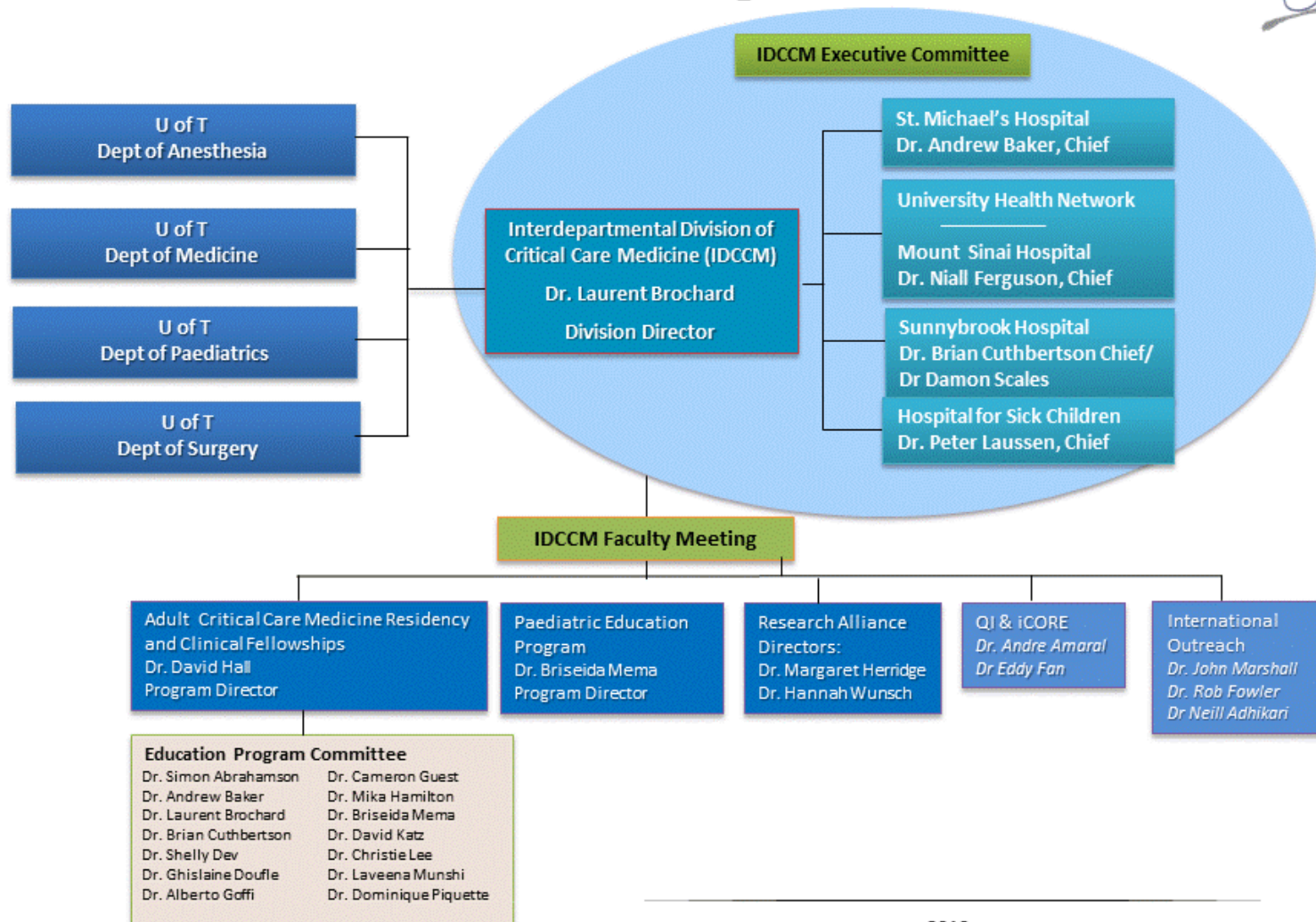
The IDCCM Scholars Program provide support and recognition for future research leaders in critical care. This program is for young investigators in the IDCCM, providing operating funds for proposed research. In January, 2019 we appointed our second IDCCM Scholar, Dr. Ewan Goligher, and renewed Dr. Elizabeth Wilcox as a scholar for a second year.

### **Nuts and Bolts of Research**

The Nuts and Bolts of Research (NABOR) series continued this past year, with a half day session in the fall on grant writing, including a mock grant committee panel at the end, and a spring session devoted to Clinical Trials. Each session had 25-30 individuals in attendance. A special thanks to all of the faculty who shared their expertise.

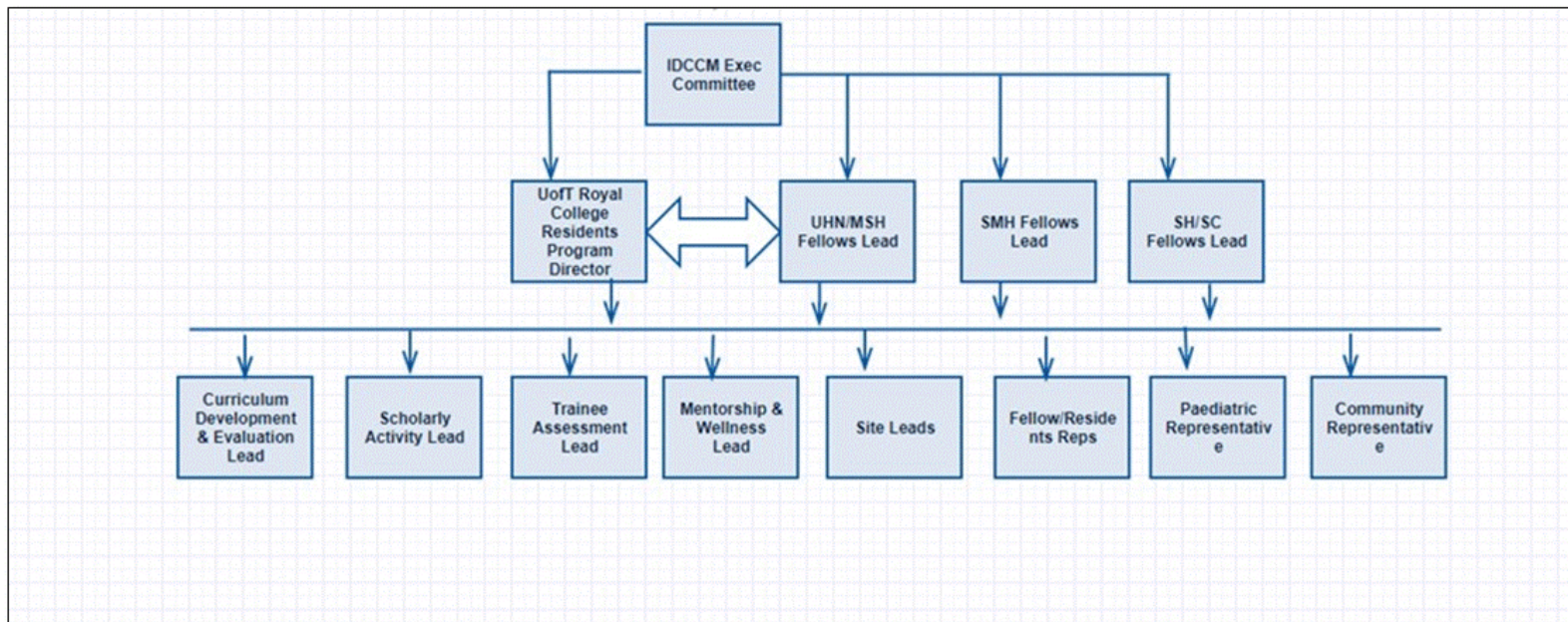


## U of T IDCCM Organization Chart



2019

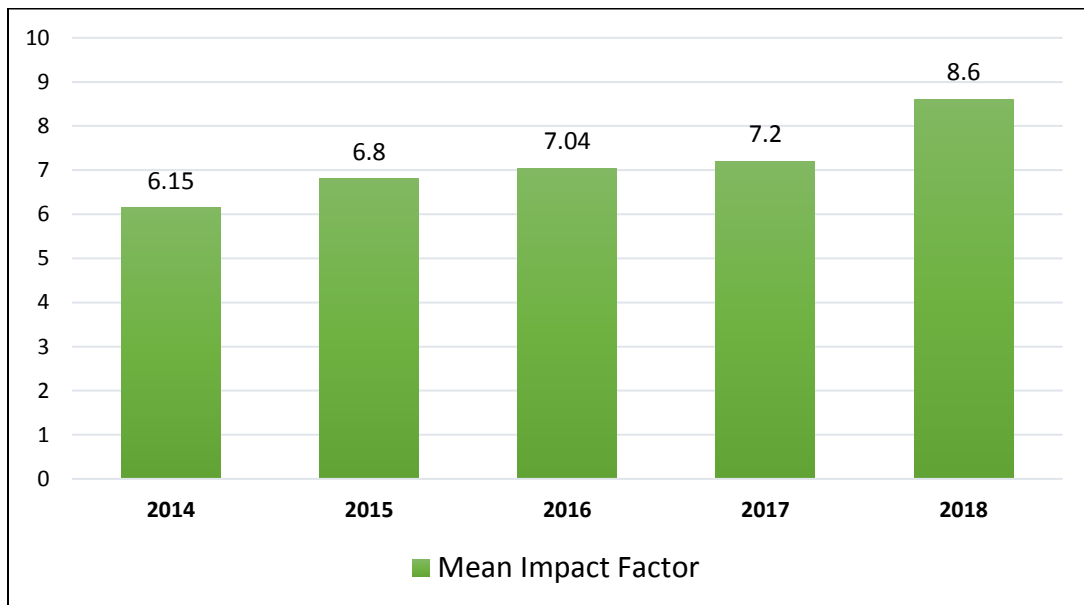
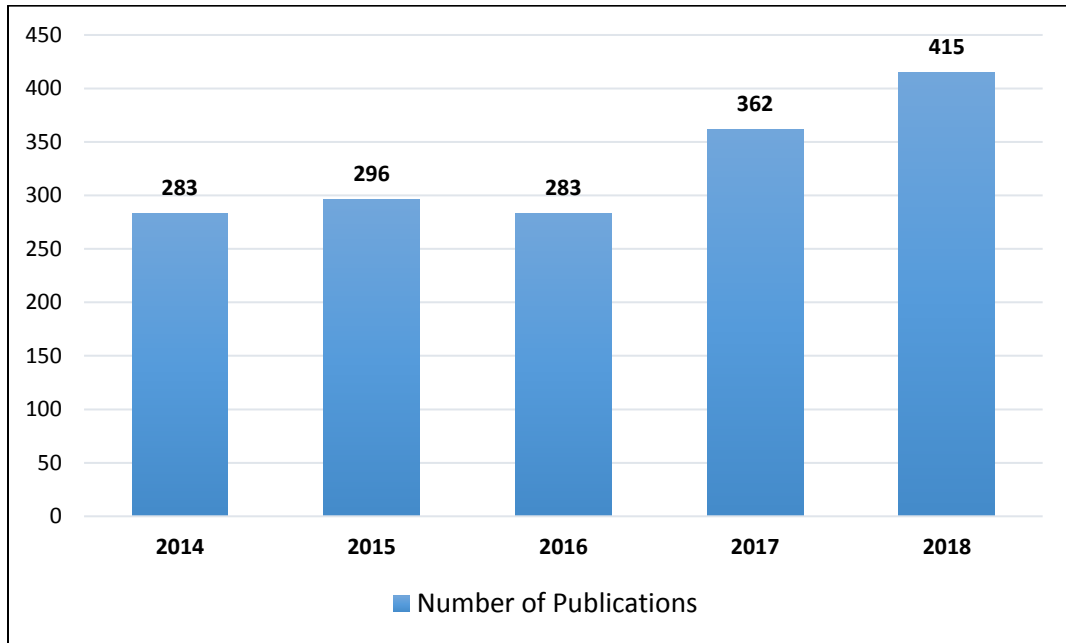
## U of T IDCCM Education Committee organization chart



2019

## Publications Analysis

### 5 Years Impact Factor



Total Publications for IDCCM members in 2018 n= 415

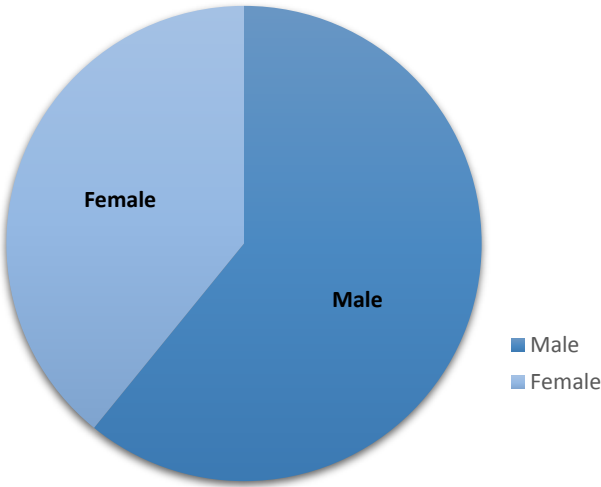
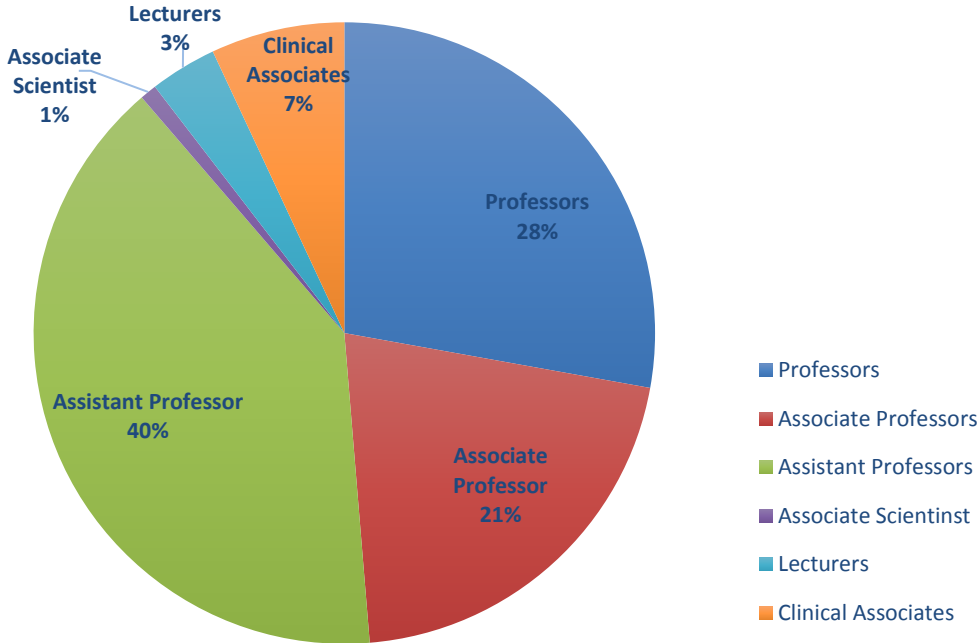
Mean IF = 8.60

Table: High impact factor journals and main journals for publications

<b>Journal</b>	<b>Impact Factor 2017</b>	<b>N of publications</b>
N Engl J Med	79.26	5
Lancet	53.254	1
Jama	47.661	10
Nat Rev Microbiol	34.648	1
Bmj	23.562	1
Lancet Respir Med	21.466	4
JAMA Intern Med	19.989	1
Ann Intern Med	19.384	3
Circulation	18.881	2
Am J Respir Crit Care Med	15.239	30
Circ Res	15.211	1
Intensive Care Med	15.008	29
Eur Respir J	11.807	4
...		
Chest	7.652	6
Crit Care Med	6.63	19
Crit Care	6.63	4
Anesthesiology	6.523	5
Resuscitation	5.863	4
J Thorac Cardiovasc Surg	5.261	5
Ann Am Thorac Soc	4.006	8
Anesth Analg	3.489	8
Can J Anaesth	3.377	12
Ped Crit Care Med	3.092	11

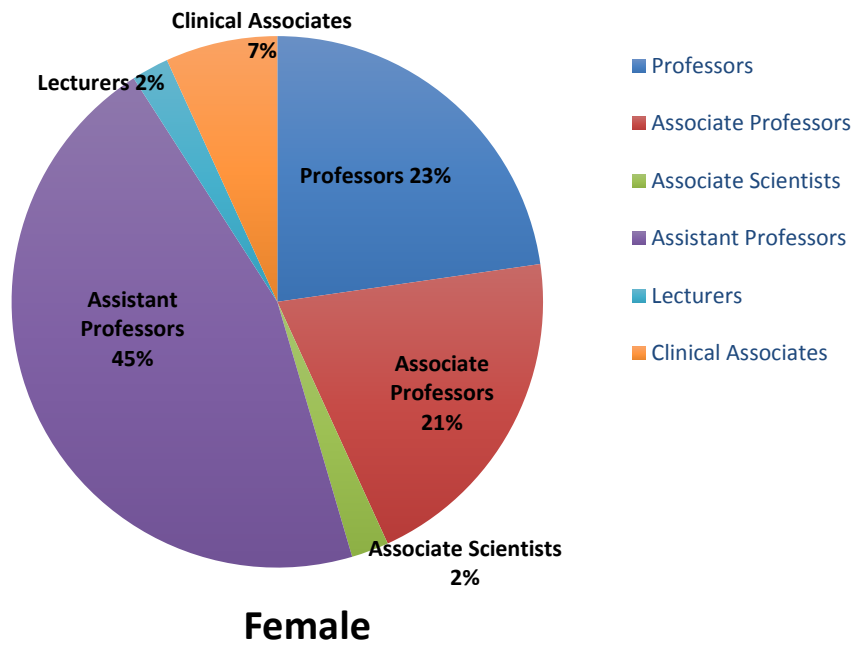
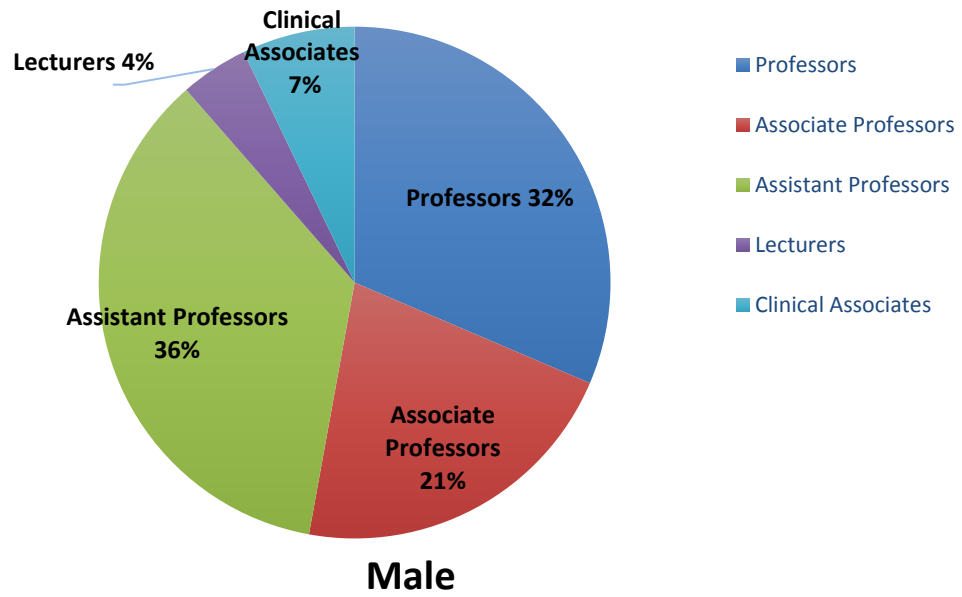
# Faculty

### University Rank Full-Time Faculty



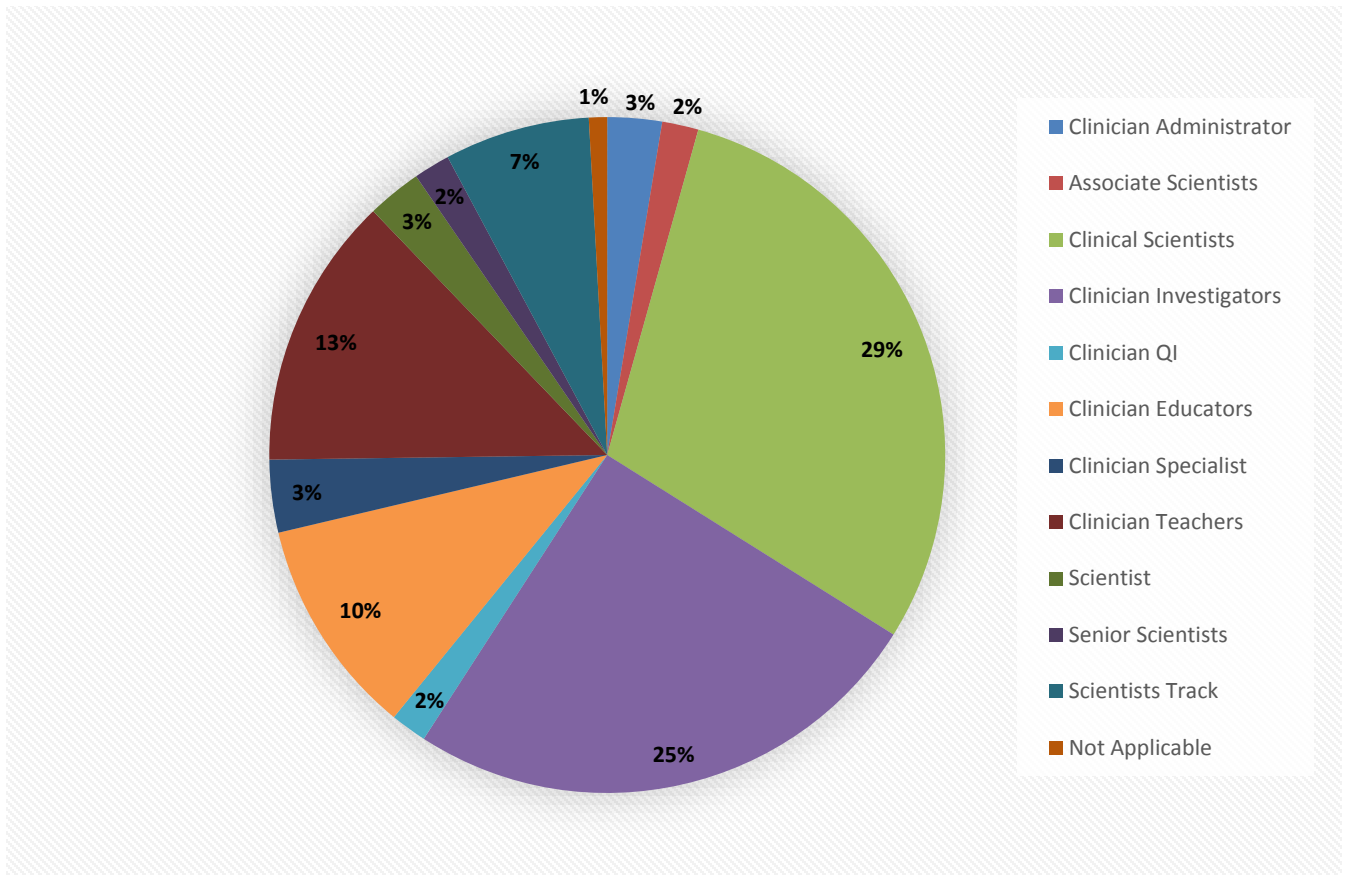


### Percentage of Male /Female



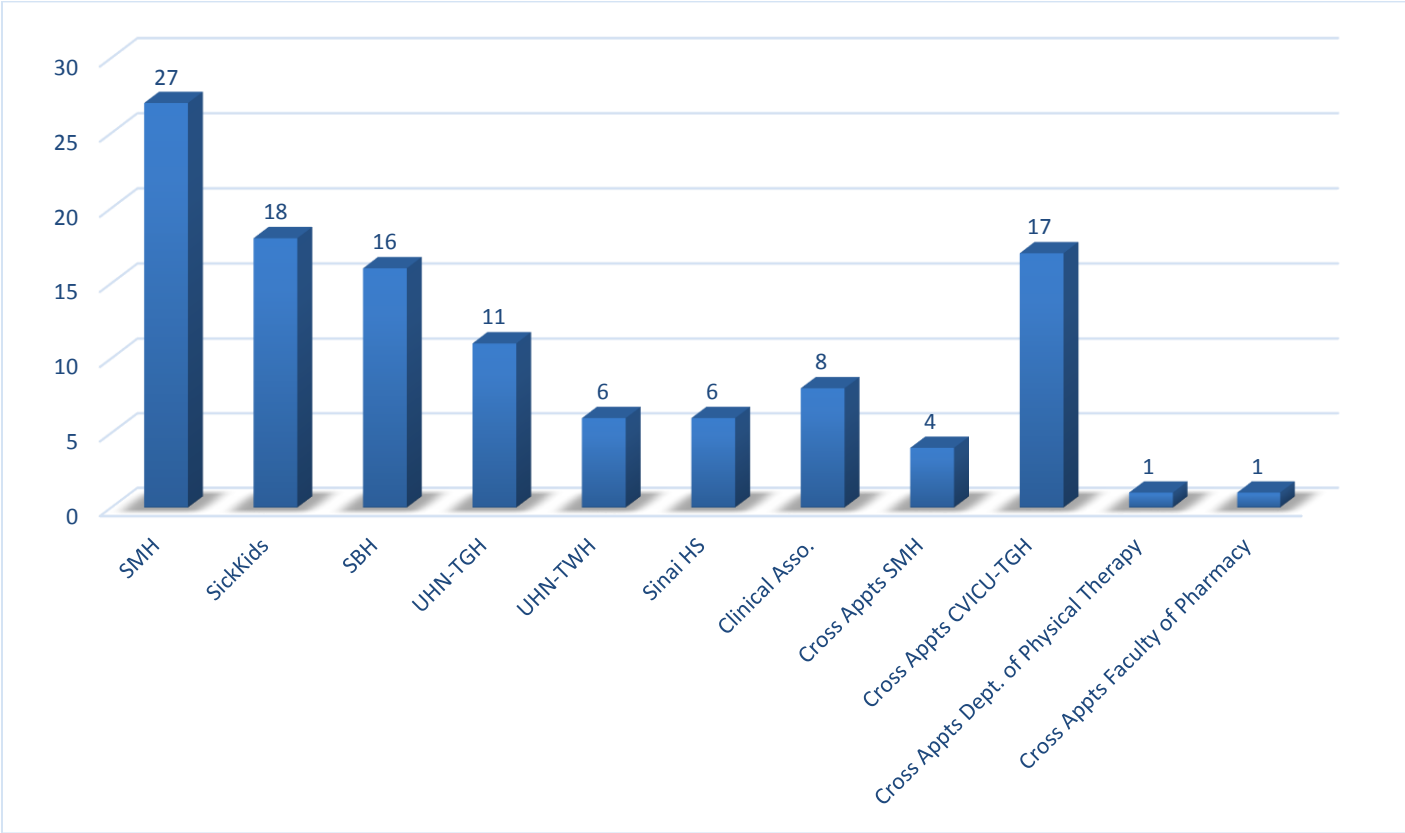
## Job Description Faculty

Clinician Administrator	3
Associate Scientists	2
Clinical Scientists	34
Clinician Investigators	29
Clinician QI	2
Clinician Educators	12
Clinician Specialist	4
Clinician Teachers	15
Scientist	3
Senior Scientists	2
Scientists Track	8
Not Applicable	1



# Overall Interdepartmental Summary

Our interdepartmental division consists of 107 faculty members and 8 clinical associates.



# APPENDIX

# Faculty List

---

## Hospital for Sick Children

<b>Name</b>	<b>University Rank</b>	<b>Research Rank</b>
Annich, Gail	Professor	Clinician Investigator
Christian, Haley	Lecturer	Clinician Educator
Cox, Peter	Professor	Clinician Administrator
Floh, Alejandro	Assistant Professor	Clinician Investigator
Guerguerian, Anne-Marie	Assistant Professor	Clinician Scientist
Huang, Lennox	Associate Professor	Clinician Specialist
Humpl, Tilman	Associate Professor	Clinician Investigator
Hutchison, Jamie	Professor	Clinician Scientist
Kavanagh, Brian	Professor	Clinician Scientist
Kirsch, Roxanne	Assistant Professor	Clinician Specialist
Kotsakis, Afrothite	Assistant Professor	Clinician Educator
Laussen, Peter	Professor	Clinician Administrator
Mazwi, Mjaye	Assistant Professor	Clinician Specialist
Mema, Briseida	Associate Professor	Clinician Educator
Moga, Michael-Alice	Assistant Professor	Clinician Specialist
Mtaweh, Haifa	Assistant Professor	Clinician Investigator
Parshuram, Christopher	Professor	Clinician Scientist
Schwartz, Steven	Professor	Clinician Investigator

## Sinai Health System

<b>Name</b>	<b>University Rank</b>	<b>Research Rank</b>
Detsky, Michael	Assistant Professor	Clinician Investigator
Goligher, Ewan	Assistant Professor	Clinician Scientist
Lapinsky, Stephen	Professor	Clinician Investigator
Lee, Christie	Assistant Professor	Clinician Teacher
Mehta, Sangeeta	Professor	Clinician Investigator
Munshi, Laveena	Assistant Professor	Clinician Investigator

## St. Michael's Hospital

<b>Name</b>	<b>University Rank</b>	<b>Research Rank</b>
Abrahamson, Simon	Associate Professor	Clinician Educator
Ahmed, Najma	Professor	Clinician Educator
Baker, Andrew	Professor	Clinician Scientist
Brochard, Laurent	Professor	Clinician Scientist
Burns, Karen	Associate Professor	Clinician Scientist
Darraah, William	Assistant Professor	Clinician Teacher
Dos Santos, Claudia	Associate Professor	Clinician Scientist
Friedrich, Jan	Associate Professor	Clinician Scientist
Goffi, Alberto	Assistant Professor	Clinician Teacher
Gray, Sara	Assistant Professor	Clinician Teacher
Hall, David	Assistant Professor	Clinician Teacher
Houston, Patricia	Professor	Clinician Administrator
Kataoka, Mark	Assistant Professor	Clinician Teacher
Klein, David	Assistant Professor	Clinician Teacher
Lawless, Bernard	Associate Professor	Clinician Teacher
Laffey, John	Professor	Clinician Scientist
Lee, Warren	Assistant Professor	Clinician Scientist
Levene, Richard	Assistant Professor	Clinician Teacher
Marshall, John	Professor	Clinician Scientist
Mazer, David	Professor	Clinician Scientist
Pronovost, Antoine	Assistant Professor	Clinician Scientist
Rigamonti, Andrea	Assistant Professor	Clinician Scientist
Rizoli, Sandro	Professor	Clinician Scientist
Sinderby, Christer	Assistant Professor	Staff Scientist
Slutsky, Arthur	Professor	Staff Scientist
Tousignant, Claude	Assistant Professor	Clinician Educator
Wong, Natalie	Associate Professor	Clinician Teacher
Zhang, Haibo	Professor	Staff Scientist

## Sunnybrook Hospital

<b>Name</b>	<b>University Rank</b>	<b>Research Rank</b>
Adhikari, Neill	Assistant Professor	Clinician Scientist
Amaral, Andre	Associate Professor	Clinician Quality & Innovation
Chapman, Martin	Assistant Professor	Clinician Educator
Cuthbertson, Brian	Professor	Clinician Scientist
Dev, Shelly	Assistant Professor	Clinician Teacher
Fowler, Robert	Professor	Clinician Investigator
Guest, Cameron	Associate Professor	-
Haas, Barbara	Assistant Professor	Clinician Scientist
Piquette, Dominique	Assistant Professor	Clinician Educator
Rose, Louise	Associate Professor	Clinician Scientist
Rubinfeld, Gordon	Professor	Clinician Scientist
Scales, Damon	Professor	Clinician Scientist
Sinuff, Tasnim	Associate Professor	Clinician Scientist
Smith, Terry	Assistant Professor	Clinician Teacher
Tremblay, Lorraine	Assistant Professor	Clinician Teacher
Wunsch, Hannah	Associate Professor	Clinician Scientist



# University Health Network

## Toronto General Hospital

<b>Name</b>	<b>University Rank</b>	<b>Research Rank</b>
Del Sorbo, Lorenzo	Assistant Professor	Clinician Investigator
Dhar, Preeti	Assistant Professor	Clinician Quality
Downar, James	Associate Professor	Clinician Teacher
Douflé, Ghislaine	Assistant Professor	Clinician Educator
Fan, Eddy	Associate Professor	Clinician Scientist
Ferguson, Niall	Professor	Clinician Scientist
Granton, John	Professor	Clinician Investigator
Herridge, Margaret	Professor	Clinician Scientist
Lawler, Patrick	Assistant Professor	Clinician Scientist
Lazar, Neil	Associate Professor	Clinician Educator
Steel, Andrew	Assistant Professor	Clinician Educator

## Toronto Western Hospital

<b>Name</b>	<b>University Rank</b>	<b>Research Rank</b>
Demajo, Wilf	Assistant Professor	Clinician Teacher
Hawryluck, Laura	Associate Professor	Clinician Educator
McCredie, Victoria	Assistant Professor	Clinician Scientist
Singh, Jeff	Associate Professor	Clinician Investigator
Wilcox, Elizabeth	Assistant Professor	Clinician Scientist

## Clinical Associates

<b>Name</b>	<b>Hospital</b>
Barrett, Kali	Toronto General Hospital
Filewod, Niall	St. Michael's Hospital
Goddard, Shannon	Sunnybrook Hospital
Leligdowicz, Aleksandra	Toronto Western Hospital
Man, Jeffrey	Toronto Western Hospital
Tillmann, Bourke	Sunnybrook Hospital
Tylee, Mike	Sunnybrook Hospital
Urner, Martin	Toronto General Hospital

## Cross-Appointed Faculty

### St. Michael's Hospital

<b>Name</b>	<b>University Rank</b>	<b>Research Rank</b>
Batt, Jane	Associate Professor	Clinician Scientist
Beck, Jennifer	Assistant Professor	Associate Scientist
Morrison, Laurie	Professor	Clinician Scientist
Smith, Orla	Adjunct Lecturer	Associate Scientist

## University Health Network - Toronto General Hospital

### Department of Anesthesia, CVICU

<b>Name</b>	<b>University Rank</b>	<b>Research Rank</b>
Ansari, Bilal	Assistant Professor	Clinician Investigator
Bahrey, Lisa	Associate Professor	Clinician Investigator
Dattilo, Kathleen	Assistant Professor	Clinician Investigator
Heggie, Jane	Associate Professor	Clinician Investigator
Jariani, Marjan	Assistant Professor	Clinician Investigator
Karkouti, Keyvan	Professor	Senior Scientist
Luksun, Warren	Lecturer	Clinician Investigator
Mashari, Azad	Lecturer	Clinician Investigator
Meineri, Massimiliano	Professor	Clinician Investigator
Moreno, Jacobo	Assistant Professor	Clinician Investigator
Murphy, Patricia	Professor	Clinician Investigator
Parotto, Matteo	Assistant Professor	Clinician Investigator
Randall, Ian	Assistant Professor	Clinician Investigator
Snyman, Adam	Assistant Professor	Clinician Investigator
Van Rensburg, Adriaan	Associate Professor	Clinician Investigator
Vegas, Annette	Professor	Clinician Investigator
Wasowicz, Marcin	Associate Professor	Clinician Investigator

## University of Toronto – Department of Physical Therapy

<b>Name</b>	<b>University Rank</b>	<b>Research Rank</b>
Reid, Darlene	Professor	Senior Scientist

## University of Toronto – Faculty of Pharmacy

<b>Name</b>	<b>University Rank</b>	<b>Research Rank</b>
Burry, Lisa	Assistant Professor	Clinician Scientist

# **Appendix II: Summary Activity Reports**

Please click on the below link to access the activities reports of individual members:

**[Summary activities report 2018](#)**