

DEPARTMENT OF ANESTHESIOLOGY AND PERIOPERATIVE MEDICINE

2017
REPORT

www.anesthesia.ca

Providence Care Hospital

Kingston Health
Sciences Centre

Centre des sciences de
la santé de Kingston

KGH+ Kingston
General
Hospital



Hôpital
Hotel Dieu
Hospital



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message

FROM THE DEPARTMENT HEAD



This Report summarizes the many varied activities of the Queen's University Department of Anesthesiology and Perioperative Medicine. The Department provides service to Queen's University, the Kingston hospitals, and the people of southeastern Ontario and beyond. All of the members of the Department contribute unique skills to our mission, based on fellowship training, graduate education and varied experiences. Our clinical services include general and regional anesthesia in the full range of surgical subspecialties, obstetrics, acute and chronic pain management, medical, surgical and cardiovascular critical care, intraoperative echocardiography and perioperative ultrasound. Almost daily, our involvement in activities outside of the operating room is increasing.

Our members dedicate a large proportion of their practice to the varied educational programs we offer. Our Anesthesiology Residency program is well respected nationally, with our graduates moving on to become clinical and academic leaders across the country. We provide robust simulation education sessions to postgraduate, undergraduate and interdisciplinary groups in the superb facilities within the new Medical School building, as well as in hospitals. According to a recent national survey, the Queen's Department is one of the most involved in undergraduate medical education in Canada. We also provide a Family Medicine Anesthesia program, Fellowship training programs and continuing medical education to physicians from our surrounding region. We hold weekly Grand Rounds, which are webcast to 15 centres and are partners with McGill and Ottawa in the annual Lower and Upper Canada Anesthesia Symposium. Finally, Anesthesiology and Perioperative Medicine co-sponsors, with the School of Nursing, the innovative Master of Science in Healthcare Quality degree, an exciting program that specializes in linking theory and practice in quality, risk, and safety in healthcare.

Medical research is a priority of our academic mission, and our high productivity will be evident in this Report. We have dedicated significant resources to clinical, basic science and translational research, and collaborate with many other disciplines. A spirit of inquiry is encouraged in our trainees in our daily practice, and our annual Research Day highlights the projects that they have contributed to.

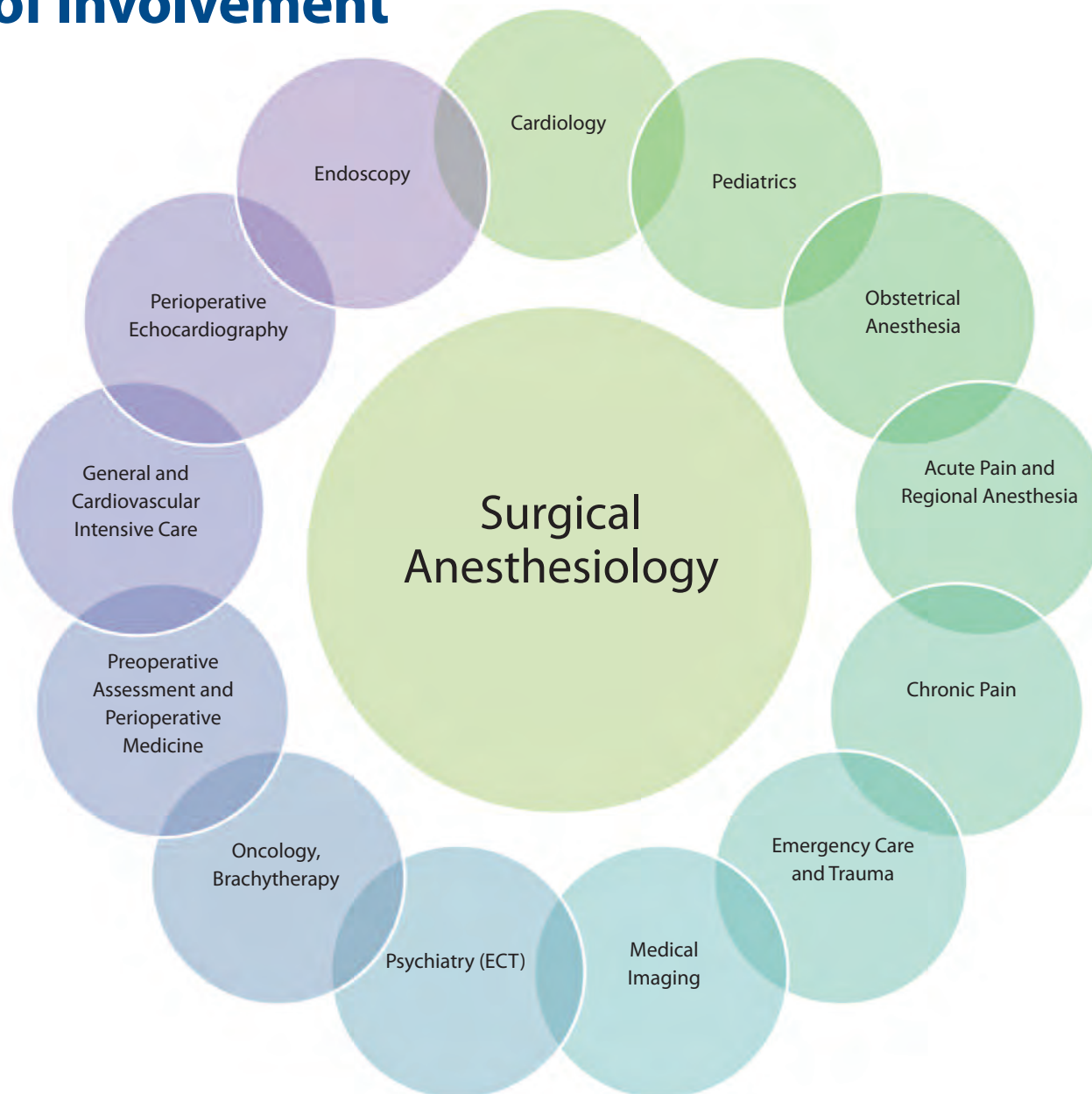
The future holds many opportunities for our Department. Many medical innovations will be coming to the new Kingston Health Sciences Centre, and our work will be central to their success.

Joel Parlow, MD, FRCPC, MSc
Professor and Head
Department of Anesthesiology and Perioperative Medicine
Queen's University and Kingston Health Sciences Centre



clinical PROGRAMS

Areas of Involvement



Clinical Programs

All of the members of Anesthesiology & Perioperative Medicine have unique skills and interests in clinical anesthesiology. The following pages illustrate a few of our clinical programs.

Quick Facts...

We provide anesthetic services for over 17,000 surgical cases per year, for a total of 31,000 anesthetic hours!





Acute Pain Management Service

ACUTE PAIN MANAGEMENT SERVICE MISSION:

"Through a team based, patient centric approach, assess and manage acute pain in the hospital setting using solid evidence founded innovative techniques with a goal of supporting and educating our professional colleagues in attaining the best pain management for their patients."

The field of acute pain management is continuing to evolve in the complexity of the challenging pain management problems encountered. Our Acute Pain Management Service (APMS) strives to be at the forefront of the safe delivery of evidence based analgesia and follow up for our hospitalized population of perioperative, trauma and medical patients suffering acute pain.

Building on the work of Dr David Goldstein and Dr Melanie Jaeger, we employ a team based approach in the delivery of the service with interprofessional liaison between other services and our APMS physicians and nurse practitioners. Our day to day patient assessment and follow up is heavily based on the ACUPAM database developed within our group, under the leadership of Dr Goldstein. This is an online integrated tool to monitor patient progress, allowing for early detection and communication of patient safety issues and facilitating research and quality improvement initiatives on acute pain related issues. This tool has been fine-tuned and forms the backbone for the efficient treatment and tracking of patients referred to our care. The success of this has been reflected in the uptake of the program by other centres in Ottawa and Montreal and we hope this may lead to collaborative research opportunities in the future.

The use of epidural analgesia is at the forefront in our management of open thoracic and abdominal surgeries. We are adding novel multimodal techniques to patient care pathways in an effort to support our surgical colleagues in their enhanced recovery programs. The use of regional anesthesia techniques such as transversus abdominal plane (TAP) blocks as well as intravenous lidocaine and ketamine provide alternatives for the more minimally invasive surgical approaches. A recent initiative is expanding our use of intravenous lidocaine and ketamine to the ward environment. This is a rapidly developing area which presents unique research opportunities that are being explored.

Our regional program, spearheaded by Dr Shyam, has increased the utilization of ultrasound guided upper limb regional blocks and continuous catheter techniques that are emerging as our standard of care for procedures such as shoulder arthroplasties. This has provided excellent educational opportunities in the management of routine and complex acute pain management. This experience is being transitioned seamlessly into the new competency by design model and we are well placed to support this important initiative.

Special mention has to go to our enthusiastic hard working nurse practitioners Sue Vasily and Samantha Kim. They are continuing the work started by Rosemary Wilson whose practice has moved towards chronic pain. Their tireless effort on a daily basis is our lynchpin in coordinating this complex service and taking us forward in a coordinated manner with patient safety at the forefront. In addition, they take on an educative role for our health care professionals and learners and act as liaison with community services and family doctors for complex pain patients.

"As a result of the widespread use of opiate analgesia and the tolerance to the effects of these drugs that goes hand in hand with the explosion of their home prescriptions, we continue to look for innovative approaches to this problem through non-opiate based techniques."

ACUTE PAIN MANAGEMENT SERVICE

Our Team

Dr. John Murdoch (Lead APMS)
Dr. Vidur Shyam (Lead Regional)
Dr. Chris Haley
Dr. Rachel Rooney
Dr. Gregory Klar

Dr. Tarit Saha
Dr. Michael McMullen
Dr. Scott Duggan
Dr. Melanie Jaeger

Nurse Practitioners

Sue Vasily

Samantha Kim

Quick Facts...

**Last year we provided over 3,100
Acute Pain consults, and more than
12,000 Acute Pain Service visits!**

Bariatric Surgery

After years of planning and preparation, the Bariatric Surgery program started at the Hotel Dieu site in September of 2016. Bariatric surgery has been shown to be an important tool to treat the systemic diseases that are associated with obesity, including high blood pressure, diabetes and obstructive sleep apnea. As part of the planning team (Anesthesiology Lead Dr. Cara Reimer), we worked with our administrative, nursing and surgical colleagues to prepare for this new program. The team has organized the procurement of special perioperative equipment and staffing requirements, and written inclusion and exclusion criteria for this program. Our ongoing participation in monthly case conferences with the Bariatric Clinic will help to guide preoperative patient selection, optimization and management. With excellent results so far, we look forward to tripling the number of patients, and expanding to more complex cases in the current fiscal year. We are pleased to be able to serve the patients in our catchment area with perioperative anesthesia services for this new endeavour at both Kingston General sites.

"Bariatric surgery has been shown to be an important tool to treat the systemic diseases that are associated with obesity, including high blood pressure, diabetes and obstructive sleep apnea."

BARIATRIC SURGERY

Dr. Cara Reimer (Lead)





Cardiac Anesthesia

Cardiac surgery is a complex field of surgery which has significant morbidity and mortality. Cardiac anesthesiologists play a significant role in patient safety and patient outcomes. The Cardiac Anesthesia and Perioperative Echocardiography section of the Queen's Department of Anesthesiology and Perioperative Medicine is comprised of highly skilled anesthesiologists who have undergone special training in both cardiac anesthesia and perioperative transesophageal echocardiography (TEE). We have been working with both the Division of Cardiac Surgery and the Division of Cardiology to provide outstanding care to our cardiac patients.

Along with intraoperative cardiac anesthesia care, we provide preoperative assessment clinics for cardiac surgery patients, we staff a perioperative TEE service, and we provide postoperative cardiac intensive care in the Cardiac Sciences Unit.

In addition to our delivery of clinical care, our members are actively involved in education and research – locally, nationally, and internationally.

Our residents each do two blocks in Cardiac Anesthesia over the course of their program, and we teach didactic lectures in the field in the Postgraduate Core Program. Dr. Tanzola and Dr. Allard have been instrumental in spearheading point-of-care echocardiography training.

Our members are also active in research, with many single- and multicenter cardiac anesthesia and cardiac surgery trials taking place here at Queen's and KHSC. Over the years, our members have produced or contributed to many peer-reviewed publications, which can be found later in this Report, and on the Departmental website, www.anesthesia.ca.

More recently, Dr. Saha has been involved in finding innovative ways to decrease Chronic Pain in patients after cardiac surgery, working in collaboration with Cardiac Surgery, Biomedical Engineering and the Department of Biomedical Sciences and Molecular Medicine. We have an evolving relationship with the Division of Neurology and other centers across Canada and the United States – exploring exciting ways to decrease the incidence of delirium in Cardiac Surgery patients. Dr. Allard is the Site PI on the Cardiac Vision study, a large multinational study of outcomes after cardiac surgery.

"Cardiac surgery is a complex field of surgery which has significant morbidity and mortality. Cardiac anesthesiologists play a significant role in patient safety and patient outcomes."

CARDIAC ANESTHESIA

Our Team

Dr. David Mark	Dr. Joel Parlow
Dr. Louie Wang	Dr. Michael Cummings
Dr. Michael Kahn	Dr. Rene Allard
Dr. Rob Tanzola	Dr. Tarit Saha



Quick Facts...

Last year we received almost 3,300 patient visits in our Chronic Pain Clinic!

Chronic Pain Service

The Kingston Health Science Centre Chronic Pain Clinic

"In view of the complex nature of chronic pain, treatment often necessitates a blend of different approaches targeting biopsychosocial factors that affect chronic pain perception."

Chronic Pain Clinic Mission Statement:

The goal of the Kingston Health Sciences Centre Chronic Pain Team is to restore patients with chronic pain to healthy living. We strive to minimize suffering and disability through evidence-based interventions and by encouraging behavioural modifications and lifestyle changes. We are committed to research and education and to furthering our understanding of pain so that dependence on medications can be minimized and self-perception may be changed from one of disability to one of wellness.

In addition to personal suffering, Canadians with chronic pain represent a cost to the economy greater than that of cancer and cardiac disease combined. In an effort to improve the delivery of chronic pain management within our region, the Hotel Dieu Site, under leadership from the Department of Anesthesiology and Perioperative Medicine, has undergone a dramatic expansion of Chronic Pain services, supported through new funds from the Ministry of Health and Long Term Care (MOHLTC). In view of the complex nature of chronic pain, treatment often necessitates a blend of different approaches targeting biopsychosocial factors that affect chronic pain perception.

The Anesthesiology physician team in Chronic Pain includes Drs. Scott Duggan (Medical Director), Richard Henry and Chris Haley with further recruitment of these specialists a priority. There are also medical specialists from Neurosurgery and Gynecology, as well as physiotherapists, occupational therapists, social workers, nurse practitioners, psychologist and other nursing support. The recent addition of a dedicated C-arm fluoroscopy machine and a new fluoroscopy compatible table has enabled the clinic to increase its ability to provide image guided interventions including targeted spine injections and radiofrequency ablation treatment options for spine and peripheral nerve pain syndromes.

Research:

The KHSC Pain Clinic is a partner in the successful \$25 Million CIHR grant “Strategy for Patient-Oriented Research (SPOR) Chronic Pain Network” (Dr. Ian Gilron, Kingston Lead). This represents a unique opportunity for KHSC to contribute to a national research effort identifying new treatments to manage and prevent chronic pain. The network will help to develop communication strategies and health policies to translate new research into improved health care outcomes.

Looking ahead:

As we move forward, the KHSC Chronic Pain Program is committed to improving access to pain treatments within our Southeast Ontario LHIN and supporting primary care with the management of these patients. We have initiated Patient Orientation Sessions for new patients and have also created a self-management program that spans 6 weeks, promoting education, activity and positive lifestyle changes. We are excited to be contributing to provincial initiatives such as the creation of a chronic pain registry and membership on the Ministry of Health and Long Term Care Adult Chronic Pain Network Advisory Board.

CHRONIC PAIN CLINIC

Our Team

Dr. Scott Duggan Dr. Richard Henry

Dr. Chris Haley





Critical Care

The Queen's/KHSC Critical Care Department has one of the largest units in Canada, providing 33 beds and a dedicated multidisciplinary team of health care professionals to those who live in its large catchment area. Over the past decade, Critical Care has evolved and grown to meet the needs of an expanding population and in 2015, it achieved departmental status, marking an important milestone in its evolution and a promising foundation for the future.

Critical Care Medicine (CCM) at Queen's is comprised of a multidisciplinary group, with physicians from Anesthesiology, Internal Medicine, Respiriology, Emergency Medicine, Surgery, and Neurology. Currently, two members of the Department of Anesthesiology and Perioperative Medicine (Dr. Jason Erb and Dr. Imelda Galvin) are jointly appointed to the Department of Critical Care and together contribute a total of 36 weeks of clinical coverage to the unit.

In his role as rotating resident program coordinator, Dr. Erb has provided mentorship and guidance to the large numbers of residents who rotate through the specialty during their training.

In keeping with its well established reputation for excellence, education in CCM at Queen's is highly sought after. Rotating residents come from diverse fields and do 4 to 12 week rotations depending on their training

requirements. The Critical Care group provides them with an intensive training package to help them learn the principals of caring for the critically ill.

Daily scheduled lectures are structured to cover major topics and issues in critical care patient management and dynamic, interactive bedside teaching is part of the culture of clinical learning. In addition, weekly simulation sessions provide additional high fidelity training in resuscitation, crisis management and clinical leadership.

The Critical Care Department also provides training for future Critical Care physicians through our fellowship program. This thriving, well renowned program currently provides training to nine Fellows. Entry into the program is through a highly competitive interview process, with panel representation and participation from each base specialty including Anesthesiology. Drs. Erb and Galvin provide training sessions to fellows in several key domains of learning including safe sedation, induction of anesthesia, airway management in the critically ill, respiratory physiology, ventilatory parameters, ARDS, pharmacology and adverse drug reactions.

Research is a major component of critical care medicine and the critical care team has participated in several landmark critical care trials over the last few years. Drs. Erb and Galvin have been integrally involved in a number of important studies in Critical Care and Perioperative Medicine.

The Queen's Department of Anesthesiology and Perioperative Medicine has long had a warm and collegial relationship with Critical Care. There is a long tradition of cooperation, shared values and commitment to the delivery of both high quality care and excellent training between the two departments. In the past few years, two residents from Anesthesiology, Dr. Stacy Ridi and Dr. Ryan Mahaffey have successfully completed fellowships in our Critical Care program and countless residents rotating through the program have contributed to care, acquired a deeper knowledge of clinical medicine and consistently cited positive experiences while learning to care for the critically ill.

CRITICAL CARE

Anesthesiology Members

Dr. Jason Erb

Dr. Imelda Galvin



Pediatric Anesthesia

The five pediatric anesthesiologists at Kingston Health Sciences Centre provide anesthesia and perioperative care for children from birth onwards for a wide variety of elective and emergency procedures.

They cover 24 hour on-call responsibilities and manage the neonatal patients and those under one year of age, as well as older children with complex medical conditions. This group is joined by many other skilled anesthesiologists who also provide pediatric anesthesia to children over this age.

Looking after children is fun, rewarding, and challenging. Pediatric anesthesia requires special considerations for the unique physiology, pharmacology, and anatomy of children and neonates. The margin of safety is smaller and the allowable reaction time to mishaps and crisis is much shorter. For example, the solution to poor pulmonary status in a premature baby is not simply increasing the inspired oxygen, as that could lead to retinopathy of prematurity. Double-lumen tubes are not available for small children who require one-lung ventilation. With the challenges, however, comes the reward of helping these most vulnerable patients.

Our anesthesiologists covers a wide variety of cases in the operating room, and sites outside of the OR such as radiology, cancer clinic, consult clinics, critical care unit, and the ward, where diagnostic and therapeutic procedures are often carried out. Residents in Anesthesiology learn from all these varied roles. In addition to their pediatric anesthesiology learning at Queen's, our residents either complete a rotation at the Hospital for Sick Children in Toronto or the Children's Hospital of Eastern Ontario in Ottawa.

"Pediatric anesthesia requires special considerations for the unique physiology, pharmacology, and anatomy of children and neonates."

Our group works closely with colleagues in both the neonatal and general intensive care units to help provide multidisciplinary perioperative care for the most complex pediatric patients. We are leaders in key patient safety endeavours such as developing the pediatric sedation policies for our hospitals. We are also involved in specialized pediatric teaching such as neonatal resuscitation courses and multidisciplinary pediatric simulation, and have conducted numerous research projects related to pediatric anesthesia.

PEDIATRICS

Our Team

Dr. Melinda Fleming

Dr. Joanna Dion

Dr. Anthony Ho

Dr. Richard Henry

Dr. Gopa Nair

Quick Facts...

We provide anesthetic services for over 1,600 pediatric surgical cases per year, plus many more outside of the operating room!



Quality Improvement

The Department of Anesthesiology and Perioperative Medicine at Queen's University and the Kingston Hospitals is committed to improving patient care through Quality Improvement and Assurance initiatives.

Within our Department, staff anesthesiologists and residents meet regularly for morbidity and mortality rounds to discuss difficult cases. The goal is to identify system or infrastructure issues that can be improved in a sustainable and consistent way to create positive change in our health care system. In addition, all SAFE reports of incidents involving quality-safety concerns are reviewed by the Department Head or Deputy Head, and fed back to staff and trainees involved.

"The goal is to identify system or infrastructure issues that can be improved in a sustainable and consistent way to create positive change in our health care system."

Our Department plays a leading role in organizing Combined Perioperative Grand Rounds on a regular basis which involve our surgical, obstetrical and internal medicine colleagues. Topics that are of global perioperative interest or complex cases are presented and discussed in a truly multidisciplinary environment. In this way we promote creative solutions stemming from collaboration between departments.

The Department of Anesthesiology and Perioperative Medicine is represented hospital-wide on the KGH Joint Quality and Utilization Improvement Committee (JQUIC). This committee monitors hospital safety data, as well as initiating Quality Improvement Plans. A Quality Improvement Plan (QIP) is a formal, documented set of quality commitments aligned with system and provincial priorities that a health care organization makes to its patients/clients/residents, staff and community to improve quality through focused targets and actions. An example of a QIP is monitoring and improving rates of hand-washing by staff in the hospital.

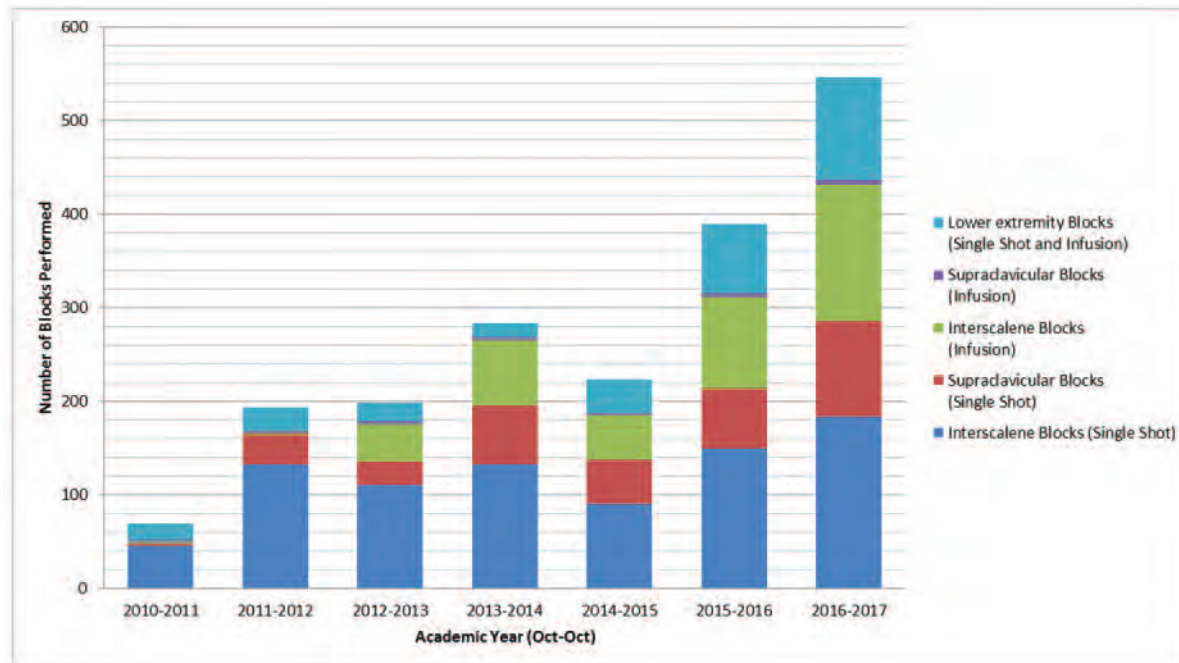
On the horizon, we are looking forward to developing new Quality Improvement Plans for our department and the perioperative setting. Also, we plan to more formally involve the residents in our departmental Quality Improvement Plans to help ensure the next generation of physicians are confident in monitoring and implementing quality and safety initiatives.

Regional Anesthesia Program

Peripheral regional anesthesia is a valuable adjunct for perioperative pain control. Since the 1990s, ultrasound guided nerve blocks have grown in popularity, and has been incorporated into the Department of Anesthesiology and Perioperative Medicine at Queen's University and the Kingston hospitals since 2005. Over the past 5 years (Figure 1), the number of regional procedures performed by staff and residents has increased to the benefit of our patients, who are more comfortable postoperatively and less dependent on opioids for acute pain control. The recent emphasis on achieving competency in regional anesthesia is hugely valuable for residents, as regional skills are rapidly becoming standard of practice for anesthesiologists in academia and especially in the community.

Getting the Ball Rolling

A critical step was ensuring the support of surgical services, particularly orthopedic surgery. One of the keys to the success of this program has been educating surgeons and nurses as to the importance of regional anesthesia, and highlighting how it benefits everyone, especially the patients, at the end of the day. In collaboration with orthopedic surgeons, patients having upper and lower extremity elective surgery are offered regional procedures, which are performed preoperatively to minimize anesthetic requirements intraoperatively and narcotic use postoperatively. Safety is of the utmost concern, and any patient who receives a peripheral nerve block is admitted to the Acute Pain Management Service, and is visited or called at home by a physician (staff or resident) to ensure their comfort and to evaluate for any complications.



"The recent emphasis on achieving competency in regional anesthesia is hugely valuable for residents, as regional skills are rapidly becoming standard of practice for anesthesiologists in academic centres, and especially in the community."

Improving The Resident Experience in Regional Anesthesia

The Resident Program Committee became aware of the opportunity to improve the educational experience of the residents in regional anesthesia thanks to open feedback through the department. This instigated a change in how regional anesthesia was prioritized on a day-to-day basis, and the result was a far greater emphasis on the importance of gaining competence in these skills. The expert group of regional practitioners is routinely assigned to OR lists and allocated residents who would benefit from regional anesthesia experience. These staff anesthesiologists help to facilitate the organization of the procedures, communicate with the surgeon regarding planning around regional techniques and teach the residents a wide range of upper and lower extremity ultrasound-guided nerve blocks. This education initiative has been very successful in exposing residents to a wide range of regional procedures and building competence in ultrasound and regional anesthesia. During a typical regional anesthesia rotation, a resident can easily perform 30 procedures, with some residents expressing particular interest and efficiency able to achieve over 50 procedures in one academic block. Residents unanimously enjoy the exposure to regional anesthesia, and appreciate the time and effort Dr Shyam and his team invests to enhance their skills as training anesthesiologists.



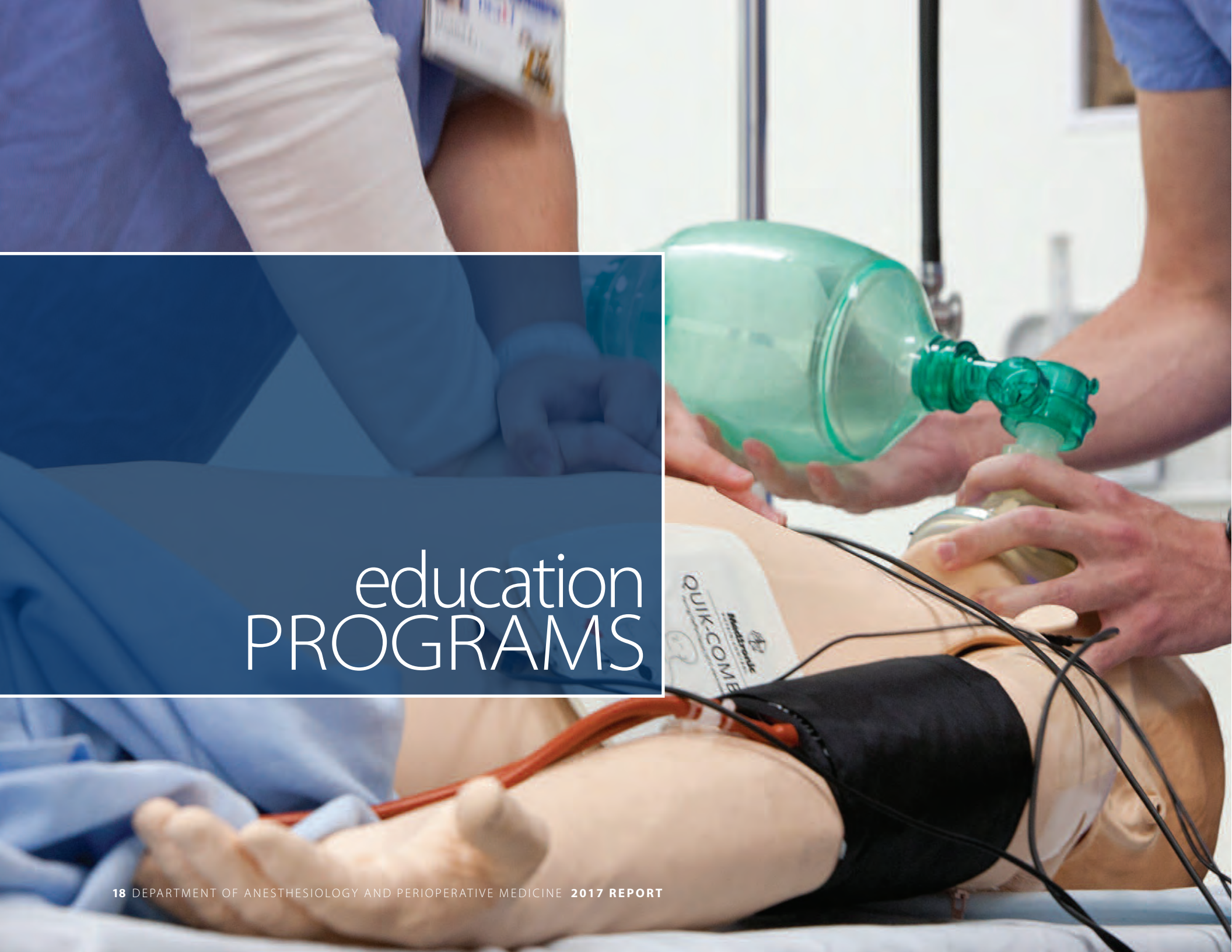
Promising Future

Not only are Anesthesiology staff and resident comfort, competency and satisfaction in regional anesthesia progressing each year, but the perception of surgeons and nurses of the value of peripheral nerve blocks in managing perioperative pain continually improves. The key is a joint perioperative effort and belief in the importance of these procedures and the benefit they confer to patients, and we are well on our way to achieving this. With high-fidelity simulation, educational workshops for interested staff and a resident goal to perform at least 25 blocks per year, Queen's Anesthesiology and Perioperative Medicine is well situated to continue its current upward trajectory in offering regional anesthesia to patients to improve pain control and reduce perioperative suffering.

REGIONAL

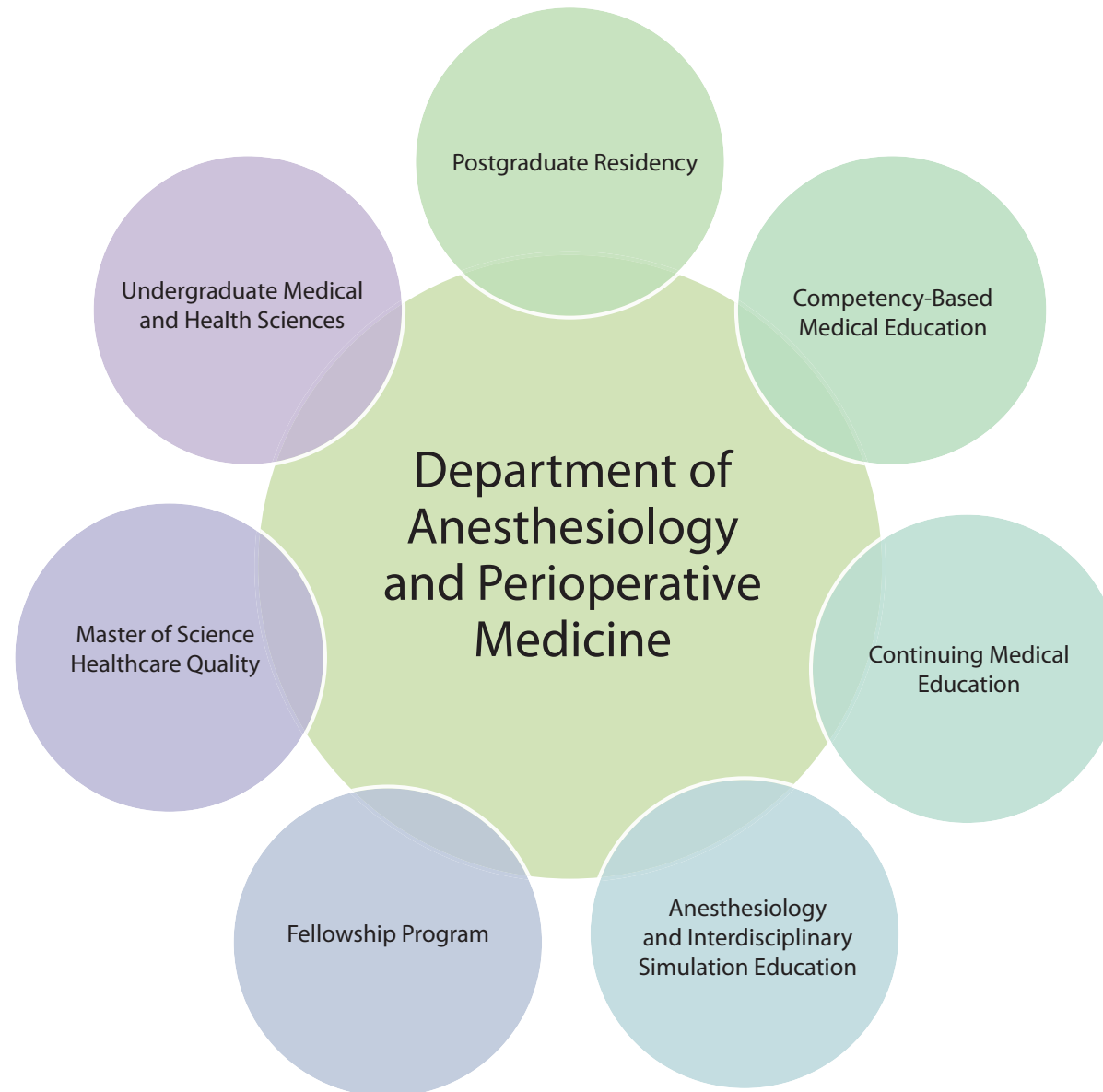
Our Team

Dr. Vidur Shyam	Dr. Rachel Rooney	Dr. Glenio Mizubuti	Dr. Scott Duggan
Dr. Michael McMullen	Dr. Michael Kahn	Dr. Tarit Saha	Dr. Gopa Nair
Dr. John Murdoch	Dr. Gregory Klar	Dr. Richard Henry	
Dr. Melanie Jaeger	Dr. Chris Haley	Dr. Asad Mir-Ghassemi	



education PROGRAMS

Education and Anesthesiology





Postgraduate

"The objectives and content of the Academic Program have been mapped to the National Curriculum in Anesthesiology, which reflects the knowledge and skills necessary to successfully challenge the FRCPC Specialty Examinations in Anesthesiology."

The postgraduate Queen's residency is a five-year Royal College Accredited program. There was a change in leadership on July 1st, 2015 with Dr. Melinda Fleming succeeding Dr. Michael Cummings and previously Dr. Melanie Jaeger as the program director.

Our Program

The program's most recent Internal Review in 2014 commented on strengths in its excellent Program Directors and Program Assistant, Mrs. Kim Asselstine, with an engaged and supportive faculty and Department Head, a responsive Residency Program Committee and an enthusiastic and effective Research Director, Dr. Ian Gilron, resulting in high morale amongst our residents. Our facilities, the library with its computers, recently renovated call rooms and a state of the art Simulation Lab provides an enriching learning environment. Insights from this extensive program evaluation provide the impetus and direction for positive changes within our Anesthesiology residency.

Our Sites

The majority of our residency training takes place in the tertiary care Kingston university hospitals, Kingston Health Sciences Centre and Providence Care. The Residency program is complimented and enhanced by regional rotations in Pediatric Anesthesia at CHEO in Ottawa, in Community Anesthesia and Thoracic Anesthesia at Lakeridge Health in Oshawa and in Community Anesthesia at Peterborough Regional Health Centre and Humber River Hospital in Toronto, as well as many other sites chosen by the residents to provide elective experiences.

Curricular Development

Our Anesthesiology residency has continued to advance with the addition of a FocUS rotation in transthoracic ultrasound and an evolution in our regional anesthesia to reflect modern practice patterns.

We have reconfigured our anesthesiology rotations into comprehensive modules that combine clinical experience with self-assessments and knowledge assessments as well as on line modules and other resources to improve knowledge and clinical skill acquisition.

The Academic Program has been restructured into stage specific series unique to each stage of the residency: Transition to Discipline, Foundations of Discipline and Core to Discipline, and Transition to Practice. The objectives and content of the Academic Program have been mapped to the National Curriculum in Anesthesiology, which reflects the knowledge and skills necessary to successfully challenge the FRCPC Specialty Examinations in Anesthesiology. We have an active Journal Club, Case Management Rounds and Grand Rounds covering Anesthesiology, interdisciplinary topics and Morbidity and Mortality Rounds.

There is academic scholarship active through all years of our Anesthesiology program. During our annual Research Day, students present their research, which in several instances has resulted in poster presentations at conferences and publications in leading medical journals.

<http://anesthesiology.queensu.ca/home/research/publications>

The Simulation Program has evolved to include formative educational sessions and summative assessments, incorporating multidisciplinary learners to enhance critical thinking and crisis resource management skills.

Through an annual resident-organized Retreat, an Academic Resident Retreat, and collegial opportunities of TGIFs, a Summer Anesthesia Party, Christmas Rounds, a festive Holiday Party and other social and athletic activities, our program supports Resident Health and Wellness. Queen's University initiatives, through workshops presented at QCARE and through customized support at the PGME Learner Wellness Centre, expand and support our residents.

Assessment and Promotions

We utilize multifaceted assessment modalities in daily and multidisciplinary work based assessments, written and oral examinations, as well as summative simulation assessments, to provide ongoing feedback with the goal of continued improvement to produce a well-rounded anesthesiology practitioner. Recently developed is an electronic web-based platform to ensure efficient and timely assessments, which will provide integrated analysis for our new Academic Advisors and the Competency Committee responsible for assessment and promotions with the onset of Competency-Based Medical Education.





Competency-Based Medical Education (CBME)

Competence By Design

After three years of planning and preparing, we are very excited to be implementing our Competence by Design curriculum for our Anesthesiology Residency program in July 2017, under the guidance of our Residency Program Director, Dr. Melinda Fleming and Competency-Based Medical Education Lead, Dr. Melanie Jaeger.

Competence by Design, or CBD, is the Royal College of Physicians and Surgeons of Canada's vision of Competency-Based Medical Education (CBME). CBME is an educational design where the final desired product (an Anesthesiologist, in our case) is described first, and then a training program is developed in order to achieve the competencies required for success. In other words, we determine what we want the final product to look like, and we then design a program to allow the learners to get there. The emphasis shifts to the learner to demonstrate that they can do a task, as the goals are now knowledge application rather than knowledge acquisition.

The residency program will remain 5 years in length, and is divided into 4 stages: Transition to Discipline, Foundations, Core, and Transition to Practice. Each stage will be organized around, and defined by, measurable

Entrustable Professional Activities (EPAs) that must be attained by the end of the stage. An EPA is a clinical activity or a task that the learner 'does'. Assessment strategies will be linked to each EPA to facilitate multiple assessments and feedback opportunities for the learner. Every EPA will be comprised of many milestones that describe progression within each of the seven CanMeds domains. Achieving competence in all of the EPAs implies overall competence within the profession of Anesthesiology, since the EPAs were developed with the "final product" in mind.

In CBME, time becomes a resource rather than a prerequisite for program completion, although everyone realizes that there must be some time structure in order to provide health care services. The curriculum will be divided into rotations or 'modules' similar to what we have now in order to cover essential services and have an on-call schedule, but we will have the freedom to improve their design in order to achieve the desired end product.

The academic program will be delivered in two cycles: the first at the Foundations level (one year cycle) and the second at the Core level (two year cycle). The academic program may not necessarily coincide with the clinical rotation that the resident is doing at that particular time, but rather will be done as a group to foster teamwork, collegiality and peer learning.

Our residents will be guided and mentored throughout the program by their Academic Advisor. Our Competence Committee, chaired by Dr. Mike Cummings, will collate their assessments and determine successful completion of each EPA and stage.

The support from the entire organization, in particular Dr. Ross Walker and the Postgraduate Medical Education Office, as well as the RCPSC, has been instrumental in helping us develop and implement this curriculum. Multiple workshops and the development of a Queen's University electronic platform for managing the curriculum and assessments will enable us to succeed. Working together with all residency programs here at Queen's to achieve a unified implementation across all specialties in July 2017 has been inspiring.



that every resident is given the opportunity to learn at their pace and be successful. This training philosophy and the dedication to education that our staff have shown are significant contributors to our amazing Royal College Exam pass rate over the past three years!

"The close and collegial relationships within the resident group and with our preceptors ensures that every resident is given the opportunity to learn at their pace and be successful."

Report from the Residents

With every new academic year, we must part ways with some amazing peers who are doing great things in fellowships, communities, and academic centres all over Canada. We have also welcomed new members to our group who continue to elevate the program and level of care that patients receive both in and out of the operating room.

The Program

The residents at Queen's are a very special group who get a unique experience through our longitudinal block format and diverse patient population. The benefit of early exposure to community anesthesia and varied anesthesia practices during regional rotations enables our residents to enhance their skills early in their training. The close and collegial relationships within the resident group and with our preceptors ensures



Leadership

Residents in Anesthesiology are proving to be leaders throughout the hospital and our specialty, with Dr. Gita Raghavan heading up the “Choosing Wisely Campaign” for residents, as well as leading the local Resident Advisory Committee. Dr. Curtis Nickel sits on the Resident Section Executive for the Canadian Anesthesiologists’ Society and was recently the resident delegate to the American Society of Anesthesiologists House of Delegates Meeting. Many other residents have taken leadership roles in both undergraduate and postgraduate medical education.

Resident Research

Queen’s Anesthesiology has been well represented with presentations at both the national and international levels over the past three years including major conferences such as the Postgraduate Assembly in Anesthesia, the Canadian Anesthesiologists’ Society Annual Meeting, and the World Congress of Anesthesiologists. In 2016, Dr. Sophie Breton assisted Drs. van Vlymen and Jaeger in the research proposal “Can healthcare-associated hepatitis C virus outbreaks occur when intravenous medication vials are accessed with clean needles and syringes for use in multiple patients?” that won a \$150,000 grant from the Anesthesia Patient Safety Foundation and the Ellison C. Pierce Merit Award for top project. Dr. Jordan Leitch was recently selected to present at the inaugural Lower and Upper Canada Anesthesia Symposium Best of Resident Grand Rounds Speaking Competition for her talk entitled “Management of Novel Oral Anticoagulants for Emergency Surgery”.

Residents and Global Health

Residents at Queen’s University have had a strong influence in the area of global health in many different countries and capacities. Dr. Julie Zalan travelled to rural Philippines with Dr. Froese in 2014-2015 with a multi-disciplinary and international medical team to provide anesthesia services to an in need population. She presented her experience that year in Grand Rounds, detailing her amazing experience. Through Queen’s, she was able to get an experience that many others would not; learning and changing the lives of patients in another country. Dr. Yuri Koumpan provided accommodation in his home to Dr. Gaston Nyirigira, an anesthesiologist from Rwanda, during his three-month exchange in Kingston. Queen’s has a close relationship with the National University of Rwanda through both the Canadian Anesthesiologists’ Society International Education Foundation and ongoing research through a Canada-Africa Research Exchange Grant. In the past residents have travelled to Rwanda with Dr. Parlow to assist in creating and teaching educational seminars to residents in the Anesthesiology residency program there.

Overall, the Anesthesiology residency program at Queen’s University continues to thrive and develop successful residents. The dedication of our faculty and administrators to ensure a fun, but challenging environment with amazing opportunities for everyone is second to none. We look forward to many more years leading the way in anesthesia in Kingston, Canada, and throughout the world!



Simulation

Clinical Simulation Centre Mission Statement:

The Clinical Simulation Centre is committed to promoting excellence in patient care through simulation-based educational programs and research for all health care professionals in a safe, supportive interprofessional learning environment.

At Queen's University we have been using high fidelity simulation since 2005 to enhance the learning of all of our students.

The New Medical School building is home to a state of the art 8,000 square foot simulation centre where most of our high fidelity simulation activity takes place. The flexible set up of the labs allows us to create scenarios that occur in the operating room, ICU, on labour and delivery, or in the ward setting. Adjacent debriefing rooms provide a location for our instructors to lead discussion of our scenarios regarding medical management, crisis resource management and patient safety. In addition, for the past year, the Kingston General Hospital site has supported the creation of simulation space within a decommissioned operating room. Our simulation team has been spearheading an interprofessional education project to provide in-situ simulation training for the entire OR team (anesthesiology, surgery and nursing) in this space.

Our goal is always to design excellent educational experiences that will benefit our learners, promote patient safety and so benefit all our future patients. In addition, our ongoing educational research helps us refine best practices for using this novel teaching method to its best potential.

There are currently 10 trained simulation faculty in our department who are all committed to simulation and medical education. Drs. Michael Cummings (new Simulation Director), Devin Sydor, Rachel Rooney,





Melinda Fleming, David Mark, Michael McMullen, Jessica Burjorjee (past Simulation Director), Louie Wang (past Simulation co-Director), and Glenio Mizubuti (past Fellow) have all made major contributions to the simulation program throughout the past few years. In addition, we have five Anesthesia Assistants who support our educational programs: Paula King, Tyler Ladas, Jaime Colbeck, Edwin Aguilar and Patty Thomas. The support staff at the Clinical Simulation Centre continue to contribute their expertise to put our scenarios into action.

Undergraduate Medical Education

We are very active in the undergraduate curriculum, with every clinical clerk participating in a half day session during their Anesthesiology rotation. This simulation based introductory session conducted bi-weekly prepares them for their upcoming anesthesiology experience by refreshing technical skills and gaining familiarity with the process of conducting a general anesthetic on a very healthy and co-operative mannequin!

"We hear from our residents as to how simulation has helped them to treat real patients, and that they have used the Commitment to Change methodology to examine knowledge translation to patient care."

Postgraduate Medical Education

Our Anesthesiology residents participate in multiple simulation sessions during their residency program. The simulation program has been consistently recognized as a strength of the program by both external and internal reviews. As part of core program, residents participate as 'hotseat', 'backup help', or 'confederates' for 3 scenarios, approximately 5 times per year. The rich educational debriefing following the scenarios intends to refine crisis resource management skills and provoke further reflection for all involved.

In addition, each postgraduate year has specially designed formative sessions intended for their level of training. These include the Nightmares course, Bootcamp for on-call, Airway Workshop, Managing Emergencies in Pediatric Anesthesia and Surgical Airway Workshop. As we transition to Competency-Based Medical Education we have also introduced specific Assessment sessions into the program including; Simulation Based Evaluation of Anesthesia Residents (prior to independent call), ACLS Assessment, Pediatric Assessment, and the Canadian National Anesthesia Simulation Committee (CanNASC) Assessment Scenarios for our senior residents. We also provide remediation sessions when necessary for any residents who require additional simulation experiences.

Interprofessional Sessions

Our group works closely with our simulation colleagues from the Departments of Obstetrics/Gynecology, Emergency Medicine and Surgery as well as our education leaders from Nursing to provide opportunities to collaborate on patient care. These sessions often focus on developing communication strategies between team members and emphasize all aspects of team work.

Together, along with the team members from the OR, our residents practice the management of obstetrical emergencies, intraoperative crises, and the management of critically ill patients in PACU, both at the simulation centre and recently within the Kingston General site simulation Operating Room.



Simulation Fellowship

This year is our second to provide an Anesthesiology Fellowship In Simulation and Medical Education. This fellowship curriculum was founded on 3 pillars: Simulation-based education, educational theory pertaining to simulation, and simulation-based research. Our first fellow, Dr. Glenio Mizubuti, worked closely with simulation staff and ancillary team members to learn, create and deliver simulation based curricula for resident trainees as well as interprofessional staff. He was also heavily involved in several research projects related to simulation and medical education.

We are grateful to collaborate with Dr. Rylan Egan, director Office of Health Sciences Education, for further sessions on educational theory and efforts to create a new approach to learner self-assessment.

Dr. Glenio Mizubuti is now an Assistant Professor in our Department, and is actively conducting further studies and educational endeavours involving simulation.

CME for Community Anesthesiologists

We also provide a Continuing Medical Education event specifically created to meet the learning needs of community anesthesiologists and family medicine anesthesiologists. This day focuses on practising and improving crisis resource management skills that can be brought back and used at the bedside at our anesthesia partners' institutions.

Educational Scholarship

Over the past 3 years, our group has been active in investigating and contributing to the field of Simulation in many diverse areas. We have recently explored best methods of debriefing, and published a study using a "pause button" to determine in-scenario timing of debriefing entitled: Debriefing on Demand. Prior collaborative work has also explored the hierarchy of the operating room environment and its effects on clinical decision making; Incorporating Professionalism into Anesthesia Residency Curriculum as well as simulation assessment for the Managing Emergencies in Pediatric Anesthesia Project. We hear from our residents as to how Simulation has helped them to treat real patients, and that they have used the Commitment to Change methodology to examine knowledge translation to patient care.

Ongoing work has produced a novel proficiency-based assessment tool, designed specifically to enable the provision of feedback to anesthesiology residents following simulation sessions. We will now study its impact on resident Self-Assessment Accuracy, Motivation, Practice and Self-Efficacy. We are also actively working on a method for tracking Simulation based experiences within the Resident Log Book.

Finally, we are also proud to continue to collaborate with the Canadian Simulation community in the work of the CanNASC group, developing and implementing standardized simulation scenarios and assessment tools: Simulation-based Assessment of Anesthesiology Residents' Competence: Development and Implementation of the Canadian National Anesthesiology Simulation Curriculum.

SIMULATION

Our Team

Dr. Michael Cummings	Dr. Devin Sydor
Dr. Rachel Rooney	Dr. Melinda Fleming
Dr. David Mark	Dr. Michael McMullen
Dr. Kathleen Carten (fellow)	Dr. Jessica Burjorjee
Dr. Louie Wang	Dr. Glenio Mizubuti

Clinical Fellowships

Our clinical anesthesiology fellowship program continues to grow with our fellows now taking on more subspecialty training roles. Many international Anesthesiology graduates, from countries such as Brazil, Colombia, United Kingdom, Malaysia, Ireland, the US and Saudi Arabia (and even Canada!) have joined our fellowship program.

Dr Andre Schneider, from Brazil, completed a year with us and has since completed a family medicine residency in Toronto.

Dr Chiaw Ling Chiu, from Malaysia, completed 2 years clinical fellowship with us, during which she successfully completed the Royal college examination in anesthesia to gain FRCPC. She now enjoys the outdoor lifestyle afforded by a staff anesthesiology position in the BC interior.

Dr Glenio Mizubuti, from Brazil, following a cardiac anesthesia fellowship in Montreal, completed a one year clinical fellowship in our department followed by a year's combined fellowship in clinical anesthesiology and Simulation Education. Following on from that, he has come on board as a full GFT staff member of the department and continues his interest in clinical simulation and education.

Dr Christopher Haley, from the United Kingdom, following a chronic pain fellowship in Toronto, completed a general clinical fellowship with us and has since come on board as a full GFT staff member with an interest in acute and chronic pain, and Healthcare Quality.

Our most recently graduated fellow, **Dr Nuala Treanor**, from Ireland, completed a clinical fellowship in our department with an interest in regional anesthesia. She is currently extending her fellowship in Regional Anesthesia for another year at the University of Ottawa.

Dr. Kathleen Carten is currently undertaking a fellowship focusing on Simulation Education, while **Dr. Alaa Sabbahi**, from Saudi Arabia, is doing a general clinical fellowship.



"In past years we have had numerous international medical graduates complete our general clinical and specialty fellowships."



Master of Science in Healthcare Quality

The World Health Organization has recognized that: “Patient safety is a fundamental principle of healthcare. Every point in the process of care-giving contains a certain degree of inherent unsafety.”

The importance of an interdisciplinary approach to the study and improvement of healthcare quality and safety was recognized by Dr. Jennifer Medves, Director of the School of Nursing, and Dr. Joel Parlow, Head of the Department of Anesthesiology and Perioperative Medicine, in the joint creation of the Queen’s University Master of Science in Healthcare Quality (MSCHQ). The need for this initiative was further reinforced and formalized in the program’s mission to: “cultivate interprofessional leaders in healthcare quality, EDUCATION AND research”.

The Queen’s University MSCHQ program is the first of its kind, specializing in linking theory and practice in quality, risk, and safety in healthcare. It is the only program in Canada to address the growing need for interactions across diverse disciplines, professions and communities. Its interdisciplinary learners are able to complete the program via distance learning, using on-line resources including webinars with a team-based interprofessional approach enabling students to continue practicing in their current professions while completing their studies.

The program has been very successful in attracting applicants from a wide range of health related areas, enrolling its first class of 20 students in 2012 and expanding to accept 50 students in 2016 from the pool of qualified applicants. The class of 2016 included the program’s first participant in the new combined MSCHQ /MBA with The Smith School of Business. A PhD program is currently under development, and for the coming year, enrolment in MSCHQ has increased to 75 students.

The Department of Anesthesiology and Perioperative Medicine’s continued involvement in the MSCHQ includes the position of Medical Lead. This position was initially held by Dr. David Goldstein who was instrumental in founding the program. Dr. Kim Turner was appointed to this role as of September, 2015. Department members have been involved in the preparation and presentation of lectures and supervision of students in their healthcare quality final project. Plans are also ongoing for increased departmental involvement as the program expands.

*The World Health Organization has recognized that
“Patient safety is a fundamental principle of healthcare.
Every point in the process of caregiving contains a
certain degree of inherent unsafety.”*

Building upon the success of the program, recruitment of the first full-time tenured faculty member, Dr. Thomas Rotter, has occurred, along with plans for increased international marketing. In addition, preapproval has been received for a PhD program which is now being created.

The Department of Anesthesiology and Perioperative Medicine and partners in the School of Nursing, take pride in their leadership roles in the founding and continuing roles in the MSCHQ as we strive together to fulfill our vision of being “Global Leaders in the Science of Healthcare Quality.”



Undergraduate Education

Anesthesiology staff at Queen's participate in the undergraduate medical education (UGME) program from early years through clerkship. Besides actively educating and mentoring all students during their mandatory Anesthesiology rotation, Queen's faculty are involved heavily in all aspects of the undergraduate program. Our staff play active teaching roles of both clinical and communication skills, Facilitated Small Group Learning, respirology, and professionalism.

We believe very strongly that our specialty brings a unique aspect to UGME. This is reflected in the recent survey published in the Canadian Journal of Anesthesia, where, despite being one of the smaller departments of Anesthesiology within Canada, our faculty provides the highest number of pre-clerkship teaching hours per faculty member per year, as well as the second highest percentage of faculty participating in UGME. The medical students have shown their recognition of this commitment and enthusiasm to teaching via the numerous Excellence in Clinical Teaching awards awarded to our faculty.

"...despite being one of the smaller departments of Anesthesiology within Canada, our faculty provides the highest number of pre-clerkship teaching hours per faculty member per year, as well as the second highest percentage of faculty participating in UGME."

The UGME curriculum has undergone a huge transformation over the last 7 years to now become a Patient Focused, Competency-Based Foundations Curriculum. Dr. Ted Ashbury was one of the leading contributors to this change, of which our department is very proud. This process also served to solidify the unique contribution our department gives to UGME.

LEADERSHIP POSITIONS: Preclerkship

Dr. Rene Allard, and now Rachel Rooney have been instrumental in ensuring that the competency of Professionalism as a physician, is both present and evaluated in the curriculum, as well as being advisors to students where needed.

Dr. Susan Haley works with the Student Affairs team as a career advisor for our medical students. This role helps our medical students make the gradual transition from student to professional life, guiding them on which career within medicine to choose and the processes involved.

Dr. Lindsey Patterson is course director for Procedural skills training. This covers all four years of medical school training, during which time skills are initially taught on mannequins within the clinical skills lab, followed by direct instructional training on stable patients in the clerkship years. Our faculty are involved in instructing over half of these small group sessions. The course has identified 14 procedural skills, or Entrustable Professional Acts (EPA 11), which our students must demonstrate at the expected level of competence in order to graduate. These skills are assessed via direct observation checklists, OSCEs and assessment rubrics.

Dr. Tarit Saha is co-director of the Facilitated Small Group Learning (FSGL) courses. These span both preclerkship years, and have replaced the previous problem based learning. Many of our faculty are involved in teaching these sessions as well as within the Communication and Clinical skills courses.

Clerkship

Dr. Vidur Shyam serves as the Clerkship Course Director, Perioperative Medicine, and Dr. Rob Tanzola as the Clerkship Lead for Anesthesiology.

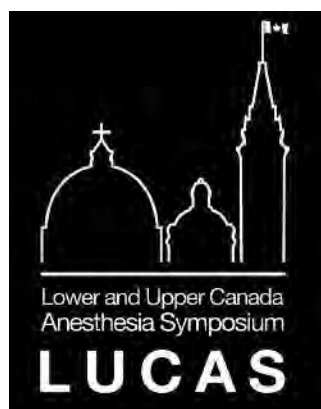
The Anesthesiology Clerkship rotation is a two week mandatory course within the 6 week Perioperative Medicine rotation. Students gain experience at KHSC, and are exposed to a variety of anesthesia settings, both within the operating rooms as well as in presurgical assessment clinic, acute pain, obstetrics, trauma, codes and an evening “on call”. The course starts with a morning in the Simulation Lab to review procedural skills, become familiar with the anesthetic machine and monitors, and go through the steps for administering a general anesthetic to our high fidelity mannequin. Students are then assigned to a specific room each day; we aim to avoid having more than one learner assigned to a room in order to maximize the opportunities for instruction and learning. This learning is then enhanced by several small group teaching sessions that are scheduled at the end of the day.

All of this would not be possible without the invaluable support and expertise of our Undergraduate Education administrator, Saulina Almeida. Together we strive to create a dynamic, creative and nurturing environment for our students to learn in, and our faculty to excel in as instructors.

Conferences

Inaugural Lower and Upper Canada Anesthesia Symposium, Ottawa, Ontario – February 3-5, 2017

lowerupperanesthesia.ca



Our Department has joined forces with the Anesthesiology groups at McGill and the University of Ottawa, to create the Lower and Upper Canada Anesthesia Symposium (LUCAS).

The inaugural LUCAS was held Friday, February 3, 2017 to Sunday, February 5, 2017 at the Westin Hotel in Ottawa, Ontario along the Rideau Canal National Historic site. The Ottawa Winterlude Anesthesia Symposium and the McGill Anesthesia Update have been combined to form this event that will grow the relationships between our three institutions and continue to deliver an outstanding educational and collaborative experience.



Highlights of LUCAS 2017:

Pre-conference hands-on workshops in Point of Care Ultrasound (POCUS) and Ultrasound Guided Regional Anesthesia led by renowned expert faculty

Nationally recognized keynote speakers including Andre Picard, Dr. Ki Jinn Chin and Dr. Duminda Wijeyesundera

A combination of plenary presentations and problem based workshops featuring a range of anesthesiology topics such as perioperative risk and outcomes, point of care ultrasound, guideline updates, global health, obstetric care, chronic pain and pediatrics

The Saturday evening Order of Canada Gala Dinner honoured three anesthesiologists who are members of the Order of Canada: Drs. Joanne Douglas, C.M., Angela Enright, O.C., and J. Earl Wynands, O.C., with our own Dr. Alison Froese sharing the stage to discuss her experiences in a long and illustrious career.

LOWER AND UPPER CANADA ANESTHESIA SYMPOSIUM

Our Team

Dr. Paul Wieczorek

Co-Chair from McGill University
Department of Anesthesia

Drs. Mahaffey, Mizubuti and Saha

Co-Chairs from Queen's University
Department of Anesthesiology and Perioperative Medicine

Dr. Jason McVicar

Co-Chair from University of Ottawa
Department of Anesthesiology and Pain Medicine

Grand Rounds

Every Wednesday morning provides an opportunity for our staff, residents and visiting professors to present a relevant topic to our Department, web-cast to about 15 community hospital locations. Here are some of the topics recently presented:

- The Right Ventricle: Anatomy, Assessment and Treatment
- Beyond a Single Bolus of Hydrocortisone – The Perioperative Management of the Patient on Steroids
- Venous Return, Autonomic Nervous System and the Brain
- The Bloody Truth. Cell Saver Breaking The Boundaries
- Point-of-care Lung Ultrasound – Relevant Points for the Anesthesiologist
- Why Subarachnoid Block Failed
- Regional anesthesia's impact on cancer recurrence: can we make a difference?
- The 2014 AHA, ACC Valvular Heart Disease Guidelines, a Non-Cardiac Anesthesia Approach
- Postoperative Cognitive Dysfunction (POCD)
- Bloody Hell: Peri-operative Management of Patients on Dabigatran
- Organ Donation in the Beating Heart, Brain Dead Donor
- Limitations of Video-Laryngoscopes
- Opioid Induced Hyperalgesia
- Pre-Operative Sedation in Pediatrics
- One, Two, Three, Four – What a Lot of Screens There Are!!
- How to Get Your Paper Published – What the Journal Editor Wants to See
- Regional Anesthesia and Acute Compartment Syndrome: Are we Causing Harm?
- Nitrous Oxide: Notorious or N2OT
- Perioperative Intravenous Lidocaine Infusions – A stride towards The Holy Grail of Post Operative Analgesia or just a step back in time?
- Dexmedetomidine: The Ideal Sedative?
- An Introduction to AIMS: Potentials and Pitfalls of Change
- Reducing the confusion: prevention and management of postoperative delirium in the elderly
- Evidence-Based Management of Residual Neuromuscular Blockade
- Gastric Ultrasound and Aspiration Risk Assessment
- “Making Anesthesia Great Again”: The Perioperative Surgical Home Model of Care
- Anesthesia and scoliosis
- Medication Safety and Policy Practices
- Diagnosis and Management of New Onset Lymphoma in a Pregnant Patient – Anesthesia and Obstetrical Considerations
- The Year in Obstetric Anesthesia – A Review
- The Surgical Airway: Are You Ready?
- The New Canadian Perioperative Cardiovascular Risk Guidelines: Improving Outcome in Our Surgical Patients
- Approach to a Pediatric Jehovah's Witness: Law, Ethics and Best Practices
- Pre-Operative Sedation in Pediatrics: Just Chill Out Man!!!
- Anesthesia and the Environment: Opportunities for a Greener O.R.
- Pulmonary Hypertension & RV Failure: Diagnosis, Risk Stratification and Perioperative Management
- Sick of Being Sick! A Review of Management of Post-Operative Nausea and Vomiting (PONV)
- Continuous Peripheral Nerve Blocks: Theory and Practice
- A “Hole” Better Way to do it? Review of Current Neuraxial Labour Analgesia Techniques
- The Brachial Plexus and Shoulder Surgery
- Concussion and Anesthesia
- Perioperative Diabetes Management
- Avoiding Adverse Respiratory Events in Pediatric Anesthesia
- Tracheal Extubation: Risk, Prevention & Guidelines
- Intraoperative Protective Lung Ventilation: What is the Evidence?
- Postoperative Atrial Fibrillation: Incidence, Outcomes and Management
- Cannabinoids: An Overview
- The Cold Truth: Calamities and Cures for Hypothermia
- Confirming Facemask Ventilation Prior to Paralysis: Safe Practice or Baseless Dogma?
- Ketamine: Old Dog, New Tricks
- Failed Thoracic Epidurals: Why do they happen and how can we improve?
- Three-Dimensional Imaging: Perioperative Applications
- Team Broken Earth - A Paradigm Shift in Health Care Delivery and Education in the Third World

Global Health

A number of members of Anesthesiology and Perioperative Medicine have been involved in clinical, educational and research programs in low and middle income countries. These partnerships are very important as they offered much needed help to underserved areas around the globe. Furthermore, this has enabled many of our residents to gain incredible experiences working in under-resourced environments. Dr. Alison Froese has supervised numerous residents during surgical missions in many countries, including the Philippines, Nepal, Cambodia and Rwanda. Dr. Joel Parlow has involved residents in the education of trainees in Rwanda, as part of a program of the Canadian Anesthesiologists' Society International Education Foundation. An ongoing research/educational collaboration has also been established with colleagues in Rwanda, in conjunction with investigators from the Queen's Department of Public Health Sciences, the School of Nursing, and the Faculty of Health Sciences Office of Education.

The interest in international health is growing among staff and residents. Providing ethically sound and effective aid and education is a difficult task and we feel that this is an area for growth within our anesthesiology program. Our recent faculty member, Dr. Gregory Klar has a Master's degree in International Public Health, and has a keen interest in international health and international health education. He is developing a curriculum to support staff and residents who will be participating in international health projects. Gregory Klar will also liaise with other departments within Queen's to promote safe anesthesiology and surgery within the international health and public health arena.



Drs. Gregory Klar and Marta Cenkowski



RESEARCH



Research

Our Research team supports numerous studies, projects and clinical trials. The training and skills brought by each person to our Department helps us continue to exceed our research metrics and improve patient care.

Our members have been extremely active in a wide variety of locally initiated and multicentre studies. Areas of focus include Cardiovascular, Perioperative, Pediatric, Population Health, Acute and Chronic Pain and Medical Education (see list of publications below).

From left to right: Ore Adeyinka, Jessica Shelley, Debbie DuMerton, Rachel Phelan, Dana Thompson-Green

Chronic Pain Research

Chronic pain affects 20-30% of our population and Anesthesiologists play an important role in chronic pain treatment and research. Chronic pain research by the Department of Anesthesiology and Perioperative Medicine, continuously funded by the Canadian Institutes of Health Research (CIHR) since 2000, have expanded over the past 3 years and built further upon growing collaborations here on Queen's Campus as well as nationally and internationally. Among other efforts, recent achievements highlighted here include chronic pain clinical trials, systematic reviews of focused questions in chronic pain, the dissemination of new consensus guidelines related to chronic pain research and treatment and, finally, the development of a Canada-wide chronic pain research network.

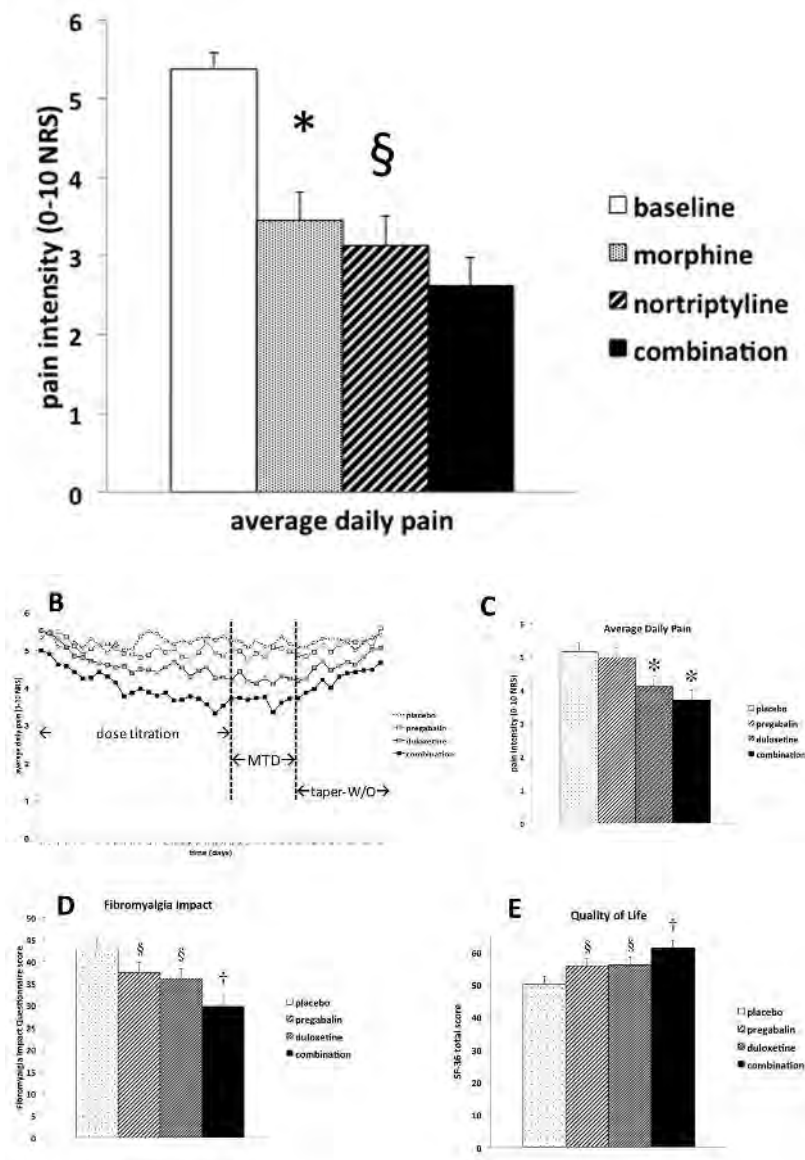
Clinical trials

COMBINATION OF MORPHINE WITH NORTRIPTYLINE FOR NEUROPATHIC PAIN.

Published in: *Pain* 2015;156:1440. Funded CIHR

Neuropathic pain – pain due to nerve injury or nerve disease – is an important cause of chronic pain and affects 8 – 17% of Canadians. In this double-blind randomized controlled trial, our Clinical Pain

Research group here at Queen's has demonstrated the superiority of a nortriptyline-morphine combination over either single drug for neuropathic pain. This study was featured in over a half dozen media releases and also highlighted in the journal *PAIN* with a prominent editorial by international pain expert, Dr. Michael Rowbotham, from the University of California, San Francisco.



COMBINATION OF PREGABALIN WITH DULOXETINE FOR FIBROMYALGIA: A RANDOMIZED CONTROLLED TRIAL.

Published in: *Pain* 2016;157:1532. Funded by CIHR

Fibromyalgia – affecting about 5% of the population – is characterized by chronic widespread pain, with sleep disturbance, depression and fatigue. In this double-blind randomized controlled trial, we have shown improved outcomes with a pregabalinduloxetine combination versus either single drug for fibromyalgia. This study has been featured in several media releases by MD Magazine, News Medical Net, Science Daily, Pain Medicine News and Fibromyalgia News Today. Research training: Queen's Department of Anesthesiology and Perioperative Medicine Research Fellow, Dr. Luis Chaparro, played a major role in the development and execution of this trial.

Systematic reviews

PHARMACOTHERAPY FOR THE PREVENTION OF CHRONIC PAIN AFTER SURGERY IN ADULTS.

Published in: *Cochrane Database of Systematic Reviews* 2013;7:CD008307. Funded by the Cochrane

Collaboration, the Royal College of Physicians and Surgeons of Canada and Queen's Department of Anesthesiology and Perioperative Medicine

Pain associated with surgery generally resolves within one to two weeks, however in some situations surgical patients are left with longstanding chronic pain for months or even years after the surgical procedure. Researchers have studied the ability of various drug treatments to prevent the development of chronic pain after surgery and our group at Queen's Department of Anesthesiology and Perioperative Medicine has reviewed published studies in this field. Available studies suggest a modest effect of ketamine, compared to placebo, for prevention of chronic pain after surgery. This systematic review has been highlighted in several international conferences and cited by over 80 published articles. Research training: Queen's Department of Anesthesiology and Perioperative Medicine Research Fellows, Dr. Shane Smith and Dr. Luis Chaparro, played major roles in the development and execution of this trial.

COMBINATION PHARMACOTHERAPY FOR MANAGEMENT OF CHRONIC PAIN.

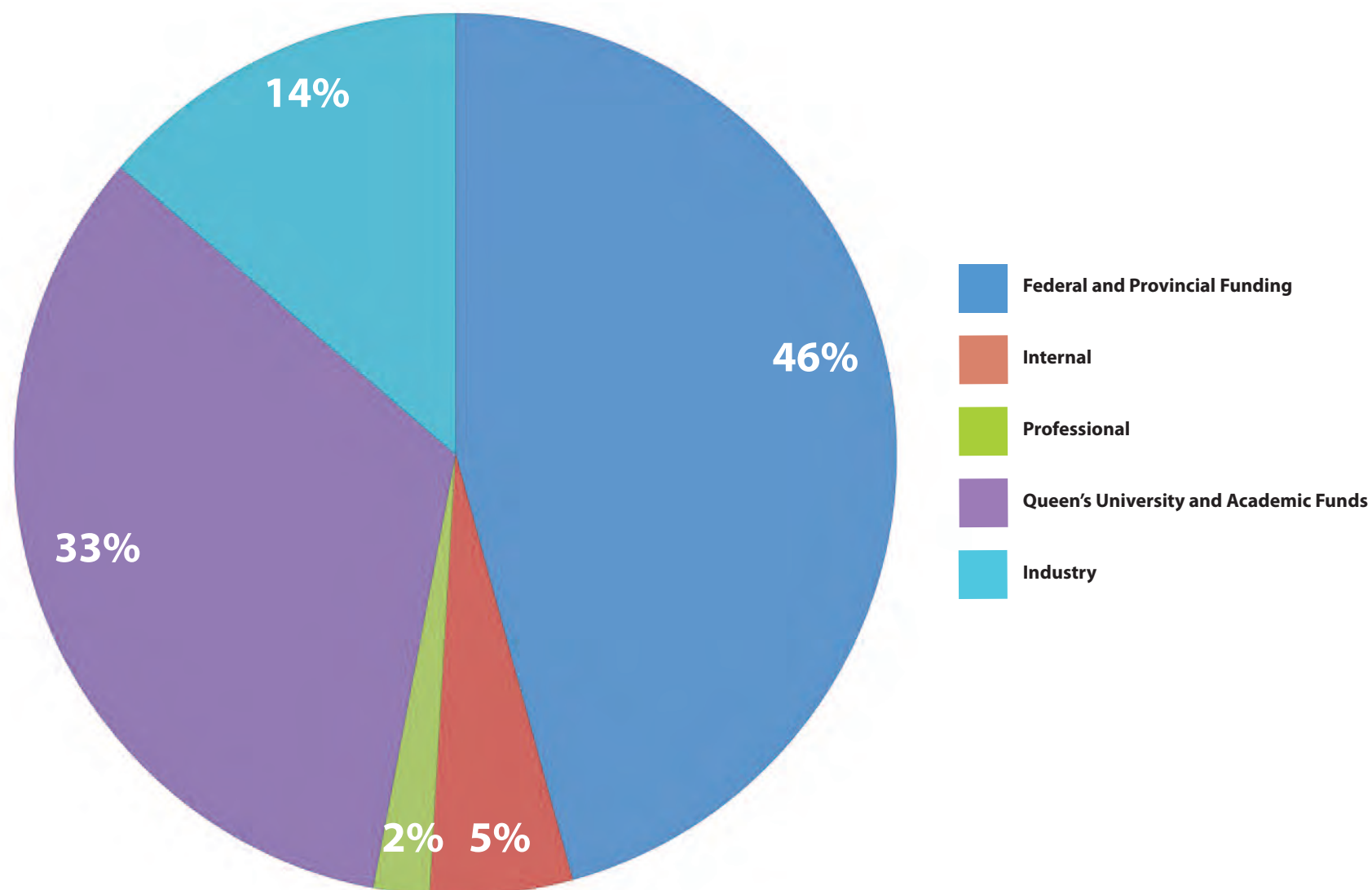
Published in: *Lancet Neurology* 2013;12:1084. Funded by CIHR, Physicians' Services Incorporated Foundation (PSI), and Queen's University.

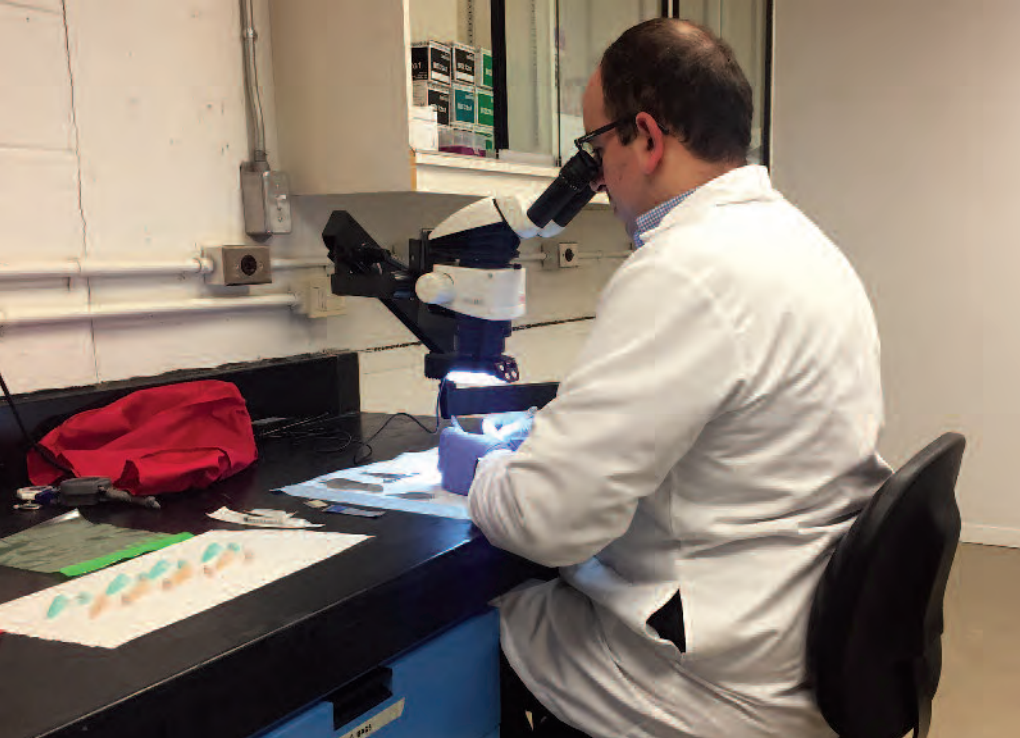
Chronic pain is treated with different classes of drugs. Current agents are limited by incomplete efficacy and dose-limiting side-effects. Knowledge of pain processing implicates multiple concurrent mechanisms of nociceptive transmission and modulation. Thus, synergistic interactions of drug combinations might provide superior analgesia and fewer side-effects than monotherapy by targeting of multiple mechanisms. Several trials in neuropathic pain, fibromyalgia and other disorders have assessed various 2 drug combinations containing antidepressants, anticonvulsants, non-steroidal anti-inflammatories, opioids, and other agents. In some trials, combinations showed superiority over monotherapy, but in others improved benefit or tolerability was not seen. Efforts to develop novel analgesics that surpass the efficacy of current treatments have not yet been successful; therefore, combination therapy remains an important beneficial strategy. Methodological improvements in future translational research efforts are needed to maximise benefit with combination pharmacotherapy for pain.

Future directions

Queen's Department of Anesthesiology and Perioperative Medicine investigators are leading 3 new chronic pain projects: 1) IMPALA (Innovations in the Management of Musculoskeletal Pain with Alpha-Lipoic Acid), funded by the PSI Foundation; 2) PAIN-CARE (Pain Improvement with Novel Combination Analgesic REGimens) funded by CIHR; and 3) CADENCE (Combination Analgesic Development for Enhanced Clinical Efficacy) funded by CIHR. Furthermore, Queen's Department of Anesthesiology and Perioperative Medicine is one of 15 leaders of the CIHR Strategy on Patient-Oriented Research (SPOR) Chronic Pain Network. This \$25 million Canada-wide network accelerate the introduction of new treatments into clinical practice and also translate new clinical research results into real-world practice to improve care for patients suffering from chronic pain.

Grants and Funding





Basic Science and Translational Research

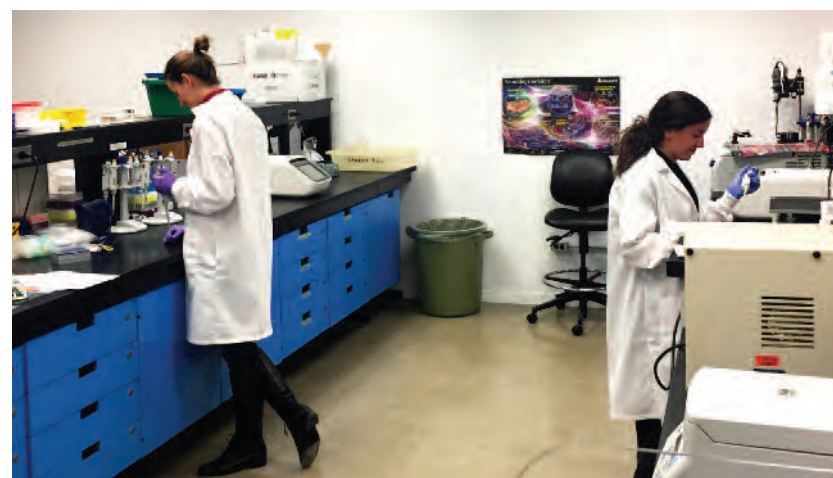
The Department of Anesthesiology and Perioperative Medicine has, over many years, benefitted from a fruitful and collaborative relationship with researchers based in the Departments of Biomedical and Molecular Sciences (DBMS), Psychology and Pharmacology at Queen's University. The Department then made the strategic decision to create a faculty position, joint with DBMS, to recruit a fundamental scientist to the university.

After an international search, Dr. Nader Ghasemlou was recruited to Queen's University in January 2015 from Harvard Medical School and Boston Children's Hospital. Dr. Ghasemlou completed his postdoctoral fellowship in the laboratory of Dr. Clifford J. Woolf, a world-renowned scientist studying the mechanisms underlying acute and chronic pain. During his time at Harvard, Dr. Ghasemlou was funded by a prestigious Banting Fellowship from the Government of Canada, as well as fellowships from the Canadian Institutes of Health Research (CIHR) and Fonds de recherche du Québec – Santé (FRQS). Prior to his postdoctoral work, Dr. Ghasemlou

completed his PhD in Neurology and Neurosurgery at McGill University, under the supervision of Dr. Samuel David, and his MSc at Queen's University with Dr. Michael D. Kawaja. Dr. Ghasemlou has published over 20 manuscripts in high-impact journals including Nature, Proceedings of the National Academy of Sciences, Journal of Clinical Investigation, and Brain.

Queen's Laboratory for Translational Neuroimmunology and Pain Research Outline

Dr. Ghasemlou established his laboratory, the Laboratory for Translational Neuroimmunology and Pain, in the central corridor of the 7th floor on Botterell Hall, providing the Department a footprint within DBMS and access to its resources and facilities. Dr. Ghasemlou's research is focused on understanding the mechanisms regulating interactions between the nervous and immune systems during injury and disease. The laboratory uses animal models of spinal cord injury, multiple sclerosis, neuropathy, and surgical wound to identify new therapeutic targets that modulate pain, regeneration, and wound healing. The team works closely with Dr. Ian Gilron to study molecular aspects of chronic pain and the newly established Chronic Pain Clinic, led by Dr. Scott Duggan, to translate their findings in patient populations.





Research Team

His research team currently includes 8 trainees – a postdoctoral fellow, three graduate students, three undergraduate students, and a research technician. In an effort to increase collaborations with members of the Department of Anesthesiology and Perioperative Medicine, Dr. Ghasemlou has paired each graduate student and postdoctoral trainee with a clinician faculty member in the department, including Drs. Ian Gilron, Scott Duggan, and Tarit Saha. This has not only helped bring a clinical perspective to each project, but has been critical to project development. The group looks to expand over the coming years to establish a physical presence within the Chronic Pain Clinic and the Acute Pain Management Service, and create a Pain Network across the faculties and schools at Queen's University, with the Department of Anesthesiology and Perioperative Medicine as its hub.

Research Funding

The Laboratory for Translational Neuroimmunology and Pain has, in less than two years, received more than \$500,000 in research grants and awards. Dr. Ghasemlou was awarded an infrastructure grant from the Canada Founda-

tion for Innovation (CFI) John Evans Leader's Fund, with matching funds from the Ontario Research Fund (ORF). This has helped him set up a state-of-the-art molecular biology laboratory, including resources for live-cell calcium imaging, cell culture, and proteomics; a surgical suite within the Queen's Animal Care Facility, with a new Infinite Horizons Spinal Cord Impactor to model contusive spinal cord injury; and two behavioural suites, where his group is able to assess evoked and non-evoked measures of acute and chronic pain as well as a circadian rhythm platform that allows his team to measure changes in activity, a central aspect of his collaboration with Dr. Ian Gilron.

Dr. Ghasemlou was also successful in his first CIHR Project Scheme grant application, receiving a one-year bridge grant to study the cellular and molecular inflammatory component to surgical wounds using transgenic mouse models. This work is in collaboration with Dr. Gilron, as well as Drs. Christophe Altier (University of Calgary) and the University of Toronto's SPARC BioCentre. He has also received a New Investigator Award from the Canadian Anesthesiologists' Society, the Conquer Paralysis Now Foundation, Botterell Foundation, and Queen's University Senate Advisory Research Committee. A postdoctoral fellow in the laboratory, Dr. Jaqueline Silva (PhD, University of Sao Paulo, Brazil) is funded by the Queen's Research Leaders Fund; graduate student Ms. Kaitlyn Tresidder received a research award from the Canadian Pain Society to fund part of her project; and graduate student Ms. Julia Segal received a Queen's Entrance Graduate Award, given to the incoming student with the highest grade-point average.

Further attesting to the Department's strong focus on pain, Dr. Ghasemlou, along with Drs. Gilron, Duggan and Elizabeth vandenKerkhof (Sally Smith Chair, School of Nursing), are members of the CIHR Chronic Pain Network Strategic Patient-Oriented Research program. Through this Network, Dr. Ghasemlou has received funding to study circadian rhythms in chronic pain patients (with Dr. Gilron) and to identify the universe of proteins expressed by patients with chronic pain relative to those without, using advanced proteomics techniques and bioinformatics (with Dr. Qingling Duan, Queen's National Scholar in Bioinformatics).

Publications (past 3 years)

Anesthesiology Staff
Anesthesiology Resident
or Student
Collaborator

Cardiac / Cardiovascular

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Research Projects

Cardiac /cardiovascular

Allard R, Parlow JL. *A large, multicenter, international cohort study evaluating major vascular events in patients undergoing cardiac surgery-**VISION***-To determine the relationship between postoperative high-sensitivity Troponin I measurements and the 30-day risk of death.

Boyd G, Hamilton A, **Saha T.** *Cerebral oxygenation and long-term neurological outcomes after CABG surgery. **COLNO***-To determine if there is a relationship between oxygen delivery to the brain and neurological function postoperatively. Neurological function is measured by using novel and quantitative robotic techniques to perform neuropsychological testing at baseline and three months postoperatively.

Erb J, Parlow JL, Thakrar A. *Management of myocardial injury After Non-cardiac surgery **MANAGE***- To assess the impact of Dabigatran (direct thrombin inhibitor) and Omeprazole (PPI) in patients suffering Myocardial Injury after Noncardiac Surgery (MINS).

Ho AMH, Saha T, Hamilton A. *Transfusion Requirements in Cardiac Surgery. **TRICS-III***:

To determine if a restrictive transfusion strategy (Hgb \geq 75g/L) will be non-inferior to a liberal strategy (Hgb \geq 95g/L in the CSU & \geq 85g/L on the ward) in terms of vital organ function (heart, brain and kidney) and mortality in moderate to high risk patients undergoing cardiac surgery on cardiopulmonary bypass.

Parlow JL (site PI), Allard R (site Co-I). *The PeriOperative Ischemic Evaluation-2 (**POISE-2**) Trial.* A large, international, placebo-controlled, factorial trial to assess the impact of clonidine and acetyl-salicylic acid (ASA) in patients undergoing noncardiac surgery who are at risk of a perioperative cardiovascular event.

Payne D, Brown P, Hamilton A, **Milne B**, Nakatsu K, Petsikas D, Malik P, Zelt D. *Remote Ischemic Preconditioning in High Risk Cardiovascular Surgery Patients: A Randomized-Controlled Trial- **RIPC***-to determine if remote ischemic preconditioning (i.e., three 5 min. cycles of upper arm ischemia) immediately preoperatively before cardiovascular surgery will lower rates of adverse ischemic events.

Saha T, Cukovik D, Phelan R. *SOLV Afb Multicenter Validation Study:* Multicentre external validation of the SOLV Afb score, a prospective observational cohort study of cardiac surgery patients to document the incidence of new onset of postoperative atrial fibrillation.

Anesthesiology Staff
Anesthesiology Resident
or Student
Collaborator

PROJECTS

Saha T, Fenton P, Bryant T, Ploeg L, Petsikas D, Phelan R, Dumerton-Shore D, Milne B. *CT imaging of Joint & Tissue damage with sternal retraction & applied forces: Underlying mechanisms of chronic post-sternotomy pain?* The purpose of the current investigation is to measure average and total applied forces, and examine joints and tissues before and after standard or slow sternal retraction in fresh human cadavers.

Saha T, Petsikas D (Co-PIs) Hamilton A, Payne D, Milne B, VanDenKerkhof E, Parry M. *Does the speed of sternal retraction during coronary artery bypass graft surgery affect postoperative pain outcomes: A randomized controlled trial-RCT* to determine whether increasing the time to complete the sternal retraction maneuver to 15 minutes (from the standard 30 seconds), will result in reduced acute and chronic post-sternotomy pain and an improved quality of life in elective primary coronary artery bypass graft patients.

Saha T, Stroman P (Co-PIs), Petsikas, D, Ghasemlou N, Phelan R, DuMerton-Shore Lui K, D, Murrel N, Prince J, Couture-Tremblay J, Bryant T, Fenton P *Functional and anatomical MRI of the spinal cord and perispinal tissues 6 months after cardiac surgery with standard vs. gradual sternal retraction: Implications for chronic post-surgical pain.* Blinded prospective investigation to determine whether there are functional changes in the brain stem and spinal cord and/or anatomical changes in thoracic/cervical structures 6 months following cardiac surgery patients who are suffering from chronic post-sternotomy pain vs. those who are not.

Saha T, Tanzola R (Co-site-PIs), Chen K, DuMerton-Shore D, Allard R, Phelan R, Payne D, Bisleri G, Boyd G. *Electroencephalography Guidance of Anesthesia to Alleviate Geriatric Syndromes (**ENGAGES-Cardiac**) Study:* A randomized clinical trial in cardiac surgery patients.

A multi-center RCT to determine whether using an EEG-guided anesthesia protocol (to avoid excessive anesthesia and EEG burst suppression) can alter the incidence of post-operative delirium in elderly cardiac surgery patients.

Saha T (site PI), Ho AMH, Hamilton A, Payne D. *Left Atrial Appendage Occlusion Study III **LAAOS III***- To examine the impact of left atrial appendage occlusion on the incidence of ischemic stroke or transient ischemic attack with positive neuroimaging or systemic arterial embolism over the duration of follow-up (up to 5 years) in patients with atrial fibrillation undergoing cardiac surgery with the use of cardiopulmonary bypass.

Medical Education/Simulation

Allard R, Tanzola R, Egan R, Wang L. *Training Residents to be Competent in Self-Assessment: Regular Use of Self-Assessment in a Focused Cardiac Ultrasound Curriculum and Evaluating its Effect on Learning.* – To develop and evaluate a program designed to train residents to become competent in self-assessment in three functional areas of Focused cardiac ultrasound (Focus): image acquisition, quality assessment, and image interpretation.

Arellano R, Tanzola R, Blouin D, Pal R. *Development and evaluation of a novel iPad-based application for teaching hemodynamic ultrasound in unstable patients.* – To develop and evaluate a novel iPad-based application for teaching and guiding point-of-care ultrasound in hemodynamically unstable patients.

Fleming M, McMullen M. *Development of crisis-specific simulation scenarios for the assessment of anesthesia residents' "readiness" for undertaking independent call duty.* A Queen's University Postgraduate Medical Education (PGME)-funded pilot investigation to develop a simulation-based assessment protocol as a measure of the readiness of residents currently enrolled in a Canadian Anesthesiology Residency training program to undertake independent call duties. Pilot study completed-data analysis underway.

Fleming M, McMullen M, Mizubuti G, Hall A, Caudle J, Egan R. *Concordance between resident self-assessments and faculty assessments of competency over the span of the residency program with the transition to competency-based medical education (CBME).* To examine the concordance between faculty assessments and resident's self-assessments of competency over 5 years following the implementation of CBME and to determine whether the new CBME curriculum affects the concordance of assessments in anesthesia and emergency medicine residents to the same extent.

Hall A, Caudle J, **Fleming M.** *Cadaver-assisted training program for rare and critical procedures.* Using cadavers to improve resident's competency in the performance of rare, critical, life-saving procedures prior to independent practice.

Ho AMH, Leung JYC, Chan MTV, Contardi LH, Lo TSF, Lee AKT, Mizubuti GB. *Inattention blindness in anesthesiology: A simulation study.* – Demonstrates that in a simulated operating room, anesthesiologists are less likely to notice unexpected events than medical students.

Jaeger M, Borschneck D, Ungi T, Fichtinger G, Mousavi P. *Real-time needle and ultrasound tracking system for invasive procedure skill acquisition: a pilot study.* – Pilot study to assess a position tracking system with computerized augmented reality display for simulated intrathecal needling with ultrasound guidance.

Jaeger M, Katsoulas E, McEwen LA, Luhanga U. *The Milestones Project: Defining measurable markers of progression towards competence.* This project addresses our lack of Milestones by engaging stakeholders from the undergraduate (UG) and postgraduate (PG) community to collectively define and establish (a) measurable markers of progress – "Milestones" and (b) outcomes of our CBME system – "Entrustable Professional Activities" (EPAs).

Leitch J, van Vlymen J. *CONTINUING PROFESSIONAL DEVELOPMENT MODULE- Managing the Perioperative Patient on Direct Oral Anticoagulants.* – To review the perioperative management of patients prescribed direct oral anticoagulants dabigatran, rivaroxaban and apixaban.

McMullen M. Assessment of exposure to regional anesthesia techniques during Canadian residency training and potential impact on anesthesia practice

McMullen M, Wilson RA, Fleming M, Mark D, Sydor T, Wang L, Zamora ZE, Phelan R, Burjorjee JE. "Debriefing-on-Demand": A pilot assessment of using a pause button in medical simulation. – To assess the feasibility and potential efficacy of a novel debriefing method which is initiated when the trainee feels it is necessary at any time during the scenario (rather than at the end of the scenario as with traditional debriefing).

Patterson L, Jaeger M. *Effectiveness of a novel joint undergraduate/postgraduate LMCC part 2 preparatory OSCE.* – The intended outcome of this project is to determine the effectiveness of the newly introduced formative exam and to guide the development of further educational opportunities targeting the mastery of entry-to-practice non-medical expert competencies.

Shyam V, Fleming M, Mizubuti G, Murdoch J, Ho A. *Brachial plexus block simulation for resident training.* To train residents to perform an interscalene brachial plexus block using a high fidelity simulator. Successes will be tracked and cumulative summation charts generated so the competency level can be tracked and trends visualized.

Wang L, Mizubuti G, Sydor D, Burjorjee J, McMullen M, Fleming M, Cummings M, Egan R. *Validation of a Proficiency-Based Assessment Tool and Evaluation of Its Impact on Self-Assessment Accuracy, Motivation, Practice and Self-Efficacy in an Inter-professional Simulation Curriculum.* The proficiency-based assessment tool for simulation (Pro-BATS) has been designed to assess performance rather than behavioural outcomes. This tool will be used by residents and expert assessors to track performance and provide formative feedback.

Pain (acute and chronic)

Buckley D, Hudspeth M, Choinière M, Davis K, Diatchenko L, Finley G, Fréchette P, **Gilron I**, Iorio A, Latimer M, Macdermid J, Poulin P, Schneider C, Stevens B, Stinson J. Chronic Pain Network.

Buckley N, **Gilron I**, Diatchenko L, Chambers C, Fréchette P. Chronic Pain Network

Gilron I, Dongsheng T, Holden R, Milev R, Jackson A, Towheed T, Diatchenko L, **Ghasemlou N**, Vandenkerkhof E, **Duggan S.** CADENCE – Combination Analgesic Development for Enhanced Clinical Efficacy.

Gilron I, Ghasemlou N. Cellular and molecular mechanisms of inflammatory pain.

Gilron I, Ghasemlou N. Inflammatory mechanisms controlling circadian rhythms of neuropathic pain

Gilron I, Dongsheng T, Roumen M, Holden R, Towheed T, **Wang L.** Innovations in the Management of Musculoskeletal Pain with Alpha-Lipoic Acid: The IMPALA Trial.

Gilron I, Dongsheng T, Roumen J, Holden R, Vandenkerkhof E. Pain Improvement with Novel Combination Analgesic Regimens: The PAIN-CARE Trial.

Henry R, Wood G. (Co-PIS), Hope J, **Coriolano, Da Silva K.** (PT) -SEAMO-funded investigation to compare the efficacy of myofascial pain-specific therapy to the standard-of-care physiotherapy in altering pain scores and requirement for total knee arthroplasty in patients with osteoarthritis referred to orthopedics as potential surgical candidates. This study has been completed. The data analysis is underway.

Ho AMH, Mizubuti G, Raghavan G. *Does magnesium sulfate as a supplement in TAP blocks improve pain control after total abdominal hysterectomy? (TAP block study)* To

assess the duration of analgesia in total abdominal hysterectomy surgery patients receiving either (1) TAP with local anesthetic only or (2) TAP with local anesthetic and magnesium sulfate.

Ho AMH, Mizubuti G, Murdoch J. *Continuous Epidural Infusion vs Paravertebral Infusion Study.* This is a RCT to assess the analgesic and hemodynamic effects of continuous epidural analgesia (CEA) vs a paravertebral block (PVB) in liver resection patients

Irrcher I, **Engen D.** *Randomized control trial of retrobulbar injection vs IV analgesia for transscleral diode laser.* Glaucoma Research Society of Canada

Shyam V, Corneman A. Prevalence of inadvertent plavix administration in acute pain patients sited with an epidural catheter: Chart review for quality assurance. To determine how many patients treated by the acute pain management service (APMS) over a 1 year period (2011) were inadvertently administered Plavix (or plavix was not discontinued 7 days before) the patient being cited with an epidural catheter.

Zoratto D, Murdoch J, Haley C, McMullen M, Ho AMH, Wood G, Rudan J, Mann S, Kahn M, Shyam V. *Does magnesium sulfate as a supplement in adductor canal blocks improve pain control after total knee arthroplasty?* RCT to assess the duration of analgesia in total knee replacement surgery patients receiving either (1) periarticular local anesthetics or (2) periarticular local anesthetics and adductor canal block or (3) periarticular local anesthetics and adductor canal block (with magnesium sulfate).

Pediatrics

Ho AMH, Mizubuti GB, Burjorjee J, et al. Simulated pediatric resuscitation.

Rooney R, Langdon M. et al. Does the pre and post-operative dextromethorphan improve pain control in pediatric tonsillectomy? To determine whether an over the counter cough medication is effective for managing post-tonsillectomy pain in pediatric patients.

Rooney R, Strube Y, Wright K. *Does anxiety in children on the day of surgery impact compliance in the ophthalmology clinic postoperatively?* To determine whether pediatric patients with increased levels of anxiety on the day of surgery decreased compliance with assessment in ophthalmology clinic postoperatively.

Perioperative Investigations

Ahmed L, Mizubuti GB, Bicknell R, Bardana D, Hopman, Phelan R, Shyam V, Murdoch M.

Comparison of two strategies for the management of pain following arthroscopic rotator cuff repair: Periarticular (PA) infusion of local anesthetic vs. interscalene brachial plexus block (ISBPB). An RCT to determine whether an intraoperative PA injection is at least as effective as an ISBPB for postoperative pain management. If so, a PA injection may be a preferable to an ISBPB because it is easier to administer and avoids the risk of long-term neurological complications that are associated with ISBPBs.

Baxter M, Jaeger M, Hopman W, van Vlymen J. Effect of preoperative antithrombotic agents on time to surgery after hip fracture: a retrospective observational study- To examine the impact of anticoagulant and antiplatelet use on the timing of surgery for patients presenting with hip fractures.

Bosco L, Zhou C, Murdoch M, Bicknell R, Hopman WH, Phelan R, Shyam V. *Pre or postoperative interscalene brachial plexus block and/or general anesthesia for shoulder surgery-* To compare the efficiency and analgesic efficacy of four different anesthetic techniques for ambulatory shoulder surgery.

Burjorjee J, Ho AMH, Mizubuti G, Murdoch J, Nanji S, Jalink D, Thorpe JB, Phelan R. *Plasma levels of bupivacaine in liver resection patients sited with an epidural catheter for postoperative pain control-* Prospective observational study to examine plasma levels of bound and unbound bupivacaine in liver resection patients sited with an epidural catheter and infused with bupivacaine for postoperative pain control. The purpose of this investigation is to determine whether the standard of care postoperative bupivacaine infusions used to manage postoperative pain are at levels that invoke local anesthetic toxicity in this patient population because of the compromised liver function.

Engen D, Tanzola R, Marois J, VanDenkerkhof E. *The Effect of intraoperative Labetalol, esmolol or Fentanyl on time to discharge and hemodynamic stability in laparoscopic cholecystectomy (ELF).* To assess whether an opioid-sparing technique with labetalol or esmolol in laparoscopic cholecystectomy is effective in reducing time to discharge, controlling intraoperative heart rate and blood pressure changes, and decreasing side-effects such as postoperative nausea and vomiting and respiratory depression.

Jaeger M, van Vlymen J, Kane A, Yang M, Siemens DR, Pace J. *Incidence and Prediction of Urinary Retention following Lower Limb Arthroplasty in the Enhanced Recovery Model-A prospective observational study* to determine the incidence of postoperative urinary retention (POUR) in today's standard care of total joint arthroplasty patients and to identify and define risk factors that may assist in the prediction of those at increased risk of POUR.

Koumpan Y, van Vlymen J. Prevalence of hyperglycemia and associated risk factors in patients presenting for pre-surgical screening identified through hemoglobin A1c testing. To determine hemoglobin A1C levels from all patients presenting at the pre-surgical screening clinic. A1C levels are not routinely measured but poor preoperative blood glucose control is associated with increased risk of postoperative complications so this may be a safety issue that needs consideration.

Tierney S, Heck M, McMullen M, Murdoch M, Rudan J, Shyam V. *Retrospective review of aortic stenosis in an elderly hip fracture population and its perioperative impact.* To determine the incidence of aortic stenosis in the elderly hip fracture population and determine how it impacts their perioperative management.

Turner K, Petri C, Briggs M, Murdoch M, . *Scopes vs. Blades-what are anesthesiologists using for endotracheal intubations during elective surgery and what are physicians using for emergency intubations?* To determine the frequency with which anesthesiologists use a glidescope compared to other devices for intubation for elective surgery at KGH and to determine methods used for emergency intubations.

Turner K, Murdoch M. *Use of the Boussignac CPAP system immediately following extubation to improve lung function in adults with moderate to severe obstructive sleep apnea who are not morbidly obese-* RCT to evaluate the efficacy of the Boussignac CPAP mask applied immediately following endotracheal extubation (versus standard of care which is CPAP only at night) in improving lung function in non-obese patients with moderate to severe obstructive sleep apnea.

van Vlymen J (site PI), Jaeger M. *Restrictive vs. Liberal Fluid Therapy in Major Abdominal Surgery RELIEF-* A CIHR-funded multicenter investigation to determine if a restrictive fluid regimen for adults undergoing major abdominal surgery leads to reduced complications and improved disability-free survival when compared with a liberal fluid regimen.

van Vlymen J, Jaeger M, Yang M, Kane A, Houlden R. *The incidence of postoperative hyperglycemia among non-diabetic elective surgical patients.* This project involves obtaining HbA1c level and random glucose from non-diabetic patients presenting to the Same Day Admission Centre on the day of surgery. By monitoring HbA1c and blood glucose levels, we will determine the incidence of elevated glucose levels in this population and develop models to predict who might be at risk of postoperative hyperglycemia.

Population/ICES investigations

Jaeger M, Siemens R, Wei X, Booth C. *Impact of Anesthesiology Volumes on Early and Late Outcomes after Cystectomy for Bladder Cancer: A Population-Based Study.* To describe the relationships between anesthesia provider characteristics and anesthesiologist volumes on early and late outcomes following radical cystectomy.

Johnson AP, Parlow JL, Milne B, Whitehead M, Xu J, Rohland S, Thorpe JB. *Economies of scale: body mass index and costs of cardiac surgery in Ontario, Canada.* This collaborative investigation with the Institute for Clinical and Evaluative Sciences (ICES) revealed that BMI independently influenced healthcare costs. Underweight patients had the highest per patient costs followed by morbidly obese and then normal weight patients.

Turner KE, Hall, S, Johnson A. ICES investigation into the usage and complication rate of thoracic epidural catheters for the management of postoperative pain compared lumbar epidural catheters used in obstetrics.

van Vlymen J, Breton S, Holden R, Phelan R, Sagan S, Jaeger M. *A nation-wide survey of Anesthesiologist's drug preparation and administration practices.* To determine how anesthesiologists prepare and administer common medications in routine clinical practice.

Translational

van Vlymen J, Jaeger M, Phelan R, Breton S, Day A, Sagan S. *Can healthcare-associated hepatitis C virus outbreaks occur when intravenous medication vials are accessed with clean needles and syringes for use in multiple patients?* A hepatitis C laboratory investigation to: determine whether the hepatitis C can enter medication vials when they are accessed with clean needles and syringes which would explain the mechanism of patient-to-patient transmission in medical clinic outbreaks when no obvious practice breach could be identified.

Other

Cummings M, Mahoney B, McFadden (King) N. *A Survey of Scope of Practice in Family Medicine Anesthesia.* To determine the scope of practice and range of variation across Canada.

Engen D, Sharma S, Tanzola R, McMullen M, Allard R. Assessment of OR efficiency pre vs post-implementation of the flat scheduling process. To compare the efficiency of the previous operating room scheduling process with the “flat” scheduling process implemented to even out the monthly surgical rates and increase OR efficiency.

Engen D, Shum S, Hopman W, MacDonald HP, Tanzola R. Faculty time distribution across Canadian academic medical centres. To develop a robust self-reporting tool for assessing how faculty workload is fractionated and then to compare these self-reported estimates across clinician-educators in all specialties and across academic centres in Canada.

Engen D, Broussenko M, Cummings M, Saha T, Tanzola R, Allard R. *Assessment of the call value system used within the Department of Anesthesiology and Perioperative Medicine.* The purpose of the current investigation is to assess the efficacy of the “call value system” used within the Department of Anesthesiology and Perioperative Medicine.

Ho AMH, Phelan R, Mizubuti GB, Murdoch J, Shyam V, Gilron I. *Bias in before after studies-Selective overview for anesthesiologists.* To provide a selective overview of “before-after” quasi-experimental investigations which are relevant to anesthesiologists and illustrate potential sources of bias (which can sometimes be subtle).

Lalu M, Avery M, Fergusson D, Hong J, Nguyen L, Barron C, Boet S, Saha T, Chen K, Syed S, Mazer D, Sampson S, Stewart D, Gragasin F, Bourque S, Richebe P (on behalf of the Canadian Perioperative Anesthesia Clinical Trials group). *Evaluating the quality of reporting in the preclinical anesthesiology literature*- To determine how completely pre-clinical anesthesiology studies adhere to core reporting standards for rigorous study design.

Murdoch J, McMullen M, Duggan S. *RECRO Pharma. A phase 3, randomized double-blind placebo-controlled multicenter evaluation of the safety of intravenous meloxicam following major surgery.* To evaluate the safety and tolerability.

Murdoch J. McMullen M, Turner K. *Coagulopathies, time to catheter removal and use of fresh frozen plasma to reverse the coagulopathy post operatively in liver resection patients.* To provide an indication as to whether the use of epidural analgesia for postoperative pain management is safe in this surgical population.

Parlow J, Johnson A (Co-PIs), Mahaffey R, VanDenKerkhof E, Goldstein D. *Review of ICU and perioperative patient management practices at three Rwandan medical centres* The purpose of this study is to examine local Rwandan patient management practices during the perioperative period and in the intensive care unit in terms of pain management, complications, resource allocation and attitudes towards end-of-life care.

Saha T, Briggs M, Ho AMH, Holden R, Tanzola R, Milne B, Zamora JE. *Perceptions of anesthesiologists among patients in a Canadian city.* Anonymous survey to determine patients' perceptions with respect to the roles of anesthesiologists.

Wang L, Abreu C, van Vlymen J, Allard R, Reimer C, Ho AMH, Goldstein D, Gagnon B, Thorpe J, DuMerton Shore D *Can the use of a safety checklist lead to improved quality of care in electroconvulsive therapy?* A prospective RCT to determine whether the design and implementation of a safety checklist can improve the safety of patients undergoing electroconvulsive shock therapy (ECT).

Wang L, Holden R. Ghasemlou N. *A correlational analysis of International Normalized Ratio (INR) and surgical outcomes in cardiac surgery patients: A retrospective chart review.* To determine the number of cardiac surgery patients at KGH who have abnormal INR, and determine if there is a correlation between high INR (long clotting times, and therefore potentially low vitamin K levels) and surgical outcomes with a particular focus on the number of blood transfusions required perioperatively.

Recent Achievements



Dr. Kim Turner Recognized by WFSA

The World Federation of Societies of Anaesthesiologists (WFSA) held its 16th World Congress of Anesthesiologists in Hong Kong August 28–September 2, 2016. Dr Kim Turner was recognized with a first prize in the Arts and Humanities category of the Abstract Poster Competition. Congratulations to Dr Turner for this recognition. Her submission was entitled “Dr Norman Bethune’s Anesthesia Challenges in China.”



Dr. Richard Henry Recognized with the Exceptional Healer Award

Dr. Richard Henry contributions have been recognized with the Exceptional Healer Award for his focus on patients and family-centred care!!!

National Guidelines: Drs. Joel Parlow and Michael McMullen



Canadian Journal of Cardiology 33 (2017) 17–32

Society Guidelines

Canadian Cardiovascular Society Guidelines on Perioperative Cardiac Risk Assessment and Management for Patients Who Undergo Noncardiac Surgery

Emmanuelle Duceppe, MD,^{a,b,c} Joel Parlow, MD, MSc (Co-chair),^d Paul MacDonald, MD,^e
Kristin Lyons, MDCM,^f Michael McMullen, MD,^d Sadeesh Srinathan, MD, MSc,^g
Michelle Graham, MD,^h Vikas Tandon, MD,ⁱ Kim Styles, MD,^j Amal Bessissow, MD, MSc,^k
Daniel I. Sessler, MD,^l Gregory Bryson, MD, MSc,^{m,n} and P.J. Devereaux, MD, PhD (Co-chair)^{b,c,i}

Dr. Ian Gilron World Congress on Pain

The World Congress on Pain provides the ability to learn from and network with thousand of leading experts in the field of pain.



Dr. Ian Gilron presented lectures at Yokohama 2016.

Ontario Anesthesia Conference (A section of the Ontario Medical Association)



Presentations were given by Drs. Rene Allard, Dale Engen, Melinda Fleming, Chris Haley, and Tarit Saha. Pictured above: Drs. Rosy Fournier, Daenis Camire, Dale Engen, Melanie Jaeger, Chris Haley, Janet van Vlymen, Melinda Fleming and Tarit Saha



ANESTHESIOLOGY PERSONNEL

Faculty

Allard, Rene
Burjorjee, Jessica
Cummings, Mike
Dion, Joanna
Duggan, Scott
Engen, Dale
Erb, Jason
Fleming, Melinda
Galvin, Imelda
Ghasemlou, Nader
Gilron, Ian
Haley, Chris
Haley, Susan
Henry, Richard
Ho, Anthony
Jaeger, Melanie
Kahn, Michael
Klar, Gregory

Mark, David
McMullen, Michael
Mir-Ghassemi, Asadollah
Mizubuti, Glenio
Murdoch, John
Nair, Gopa
Parlow, Joel
Patterson, Lindsey
Reimer, Cara
Ridi, Stacy
Rooney, Rachel
Saha, Tarit
Shyam, Vidur
Sydor, Devin
Tanzola, Rob
Turner, Kim
Van Vlymen, Janet
Wang, Louie

Adjunct Members (Kingston Sites)

Cain, John
Cenkowski, Marta
Cupido, Tracy
Hataley, Joy
Mahoney, Brian
McLeod, Valerie
Polsinelli, Kristina
Simchison, Brian

In Memoriam

The following recently deceased members of our department have, for many years, made a significant impact through their clinical and educational dedication.

Dr. Hugh Alexander Brown 1933 – 2016

Dr. Raymond Neill 1928 – 2015

Dr. Ronald Seegobin 1950 – 2015

Dr. Herbert Joseph Grennell 1931 – 2014

Dr. Nancy Dawn Muncey 1940 – 2015

Dr. James Henry Storey Mahood 1921 – 2014

Anesthesia Assistants

The Department of Anesthesiology and Perioperative Medicine has the benefit of working with five fully trained and certified anesthesia assistants, and one respiratory therapist undertaking specialized training, in our many areas of clinical and academic work. In the OR they are valuable and essential members of the anesthesia care team, providing expert assistance with airway management, unstable patients, emergency obstetrical cases, and complex pediatrics. Just as valuable outside of the OR they regularly attend and assist in areas including pediatric and adult cancer clinic procedures, diagnostic and interventional radiology, endoscopy for pediatrics and complex adults, cardiac electrophysiology procedures for complex cardiac patients, and electroconvulsive therapy. They have also been instrumental to the early success of the transcatheter aortic valve implantation and bariatric surgery programs. We are lucky to have these hardworking, dedicated and collaborative individuals on our team.



From left to right: Jaime Colbeck, Edwin Aguilar, Christopher Dunlop



Tyler Ladas



Patti Thomas



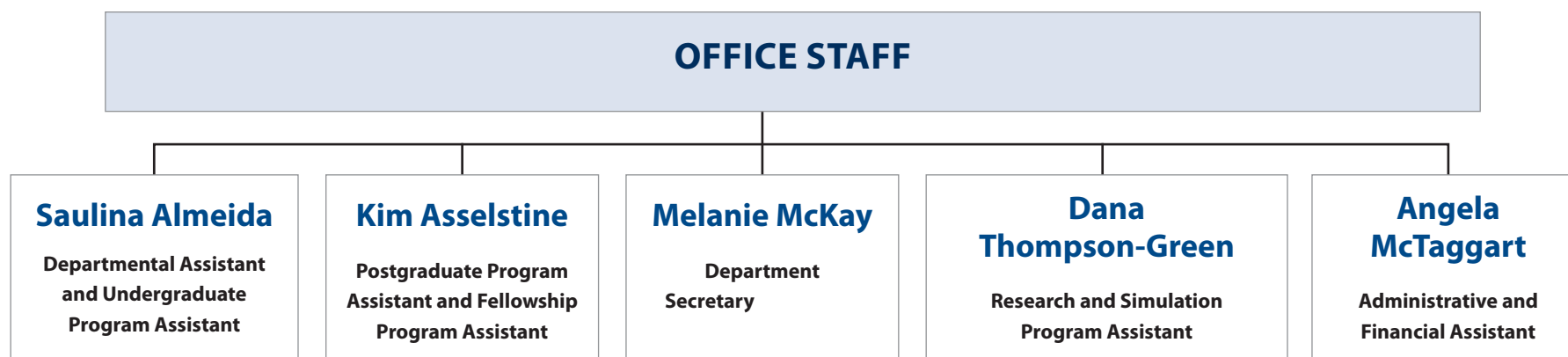
Paula King



Administrative Support

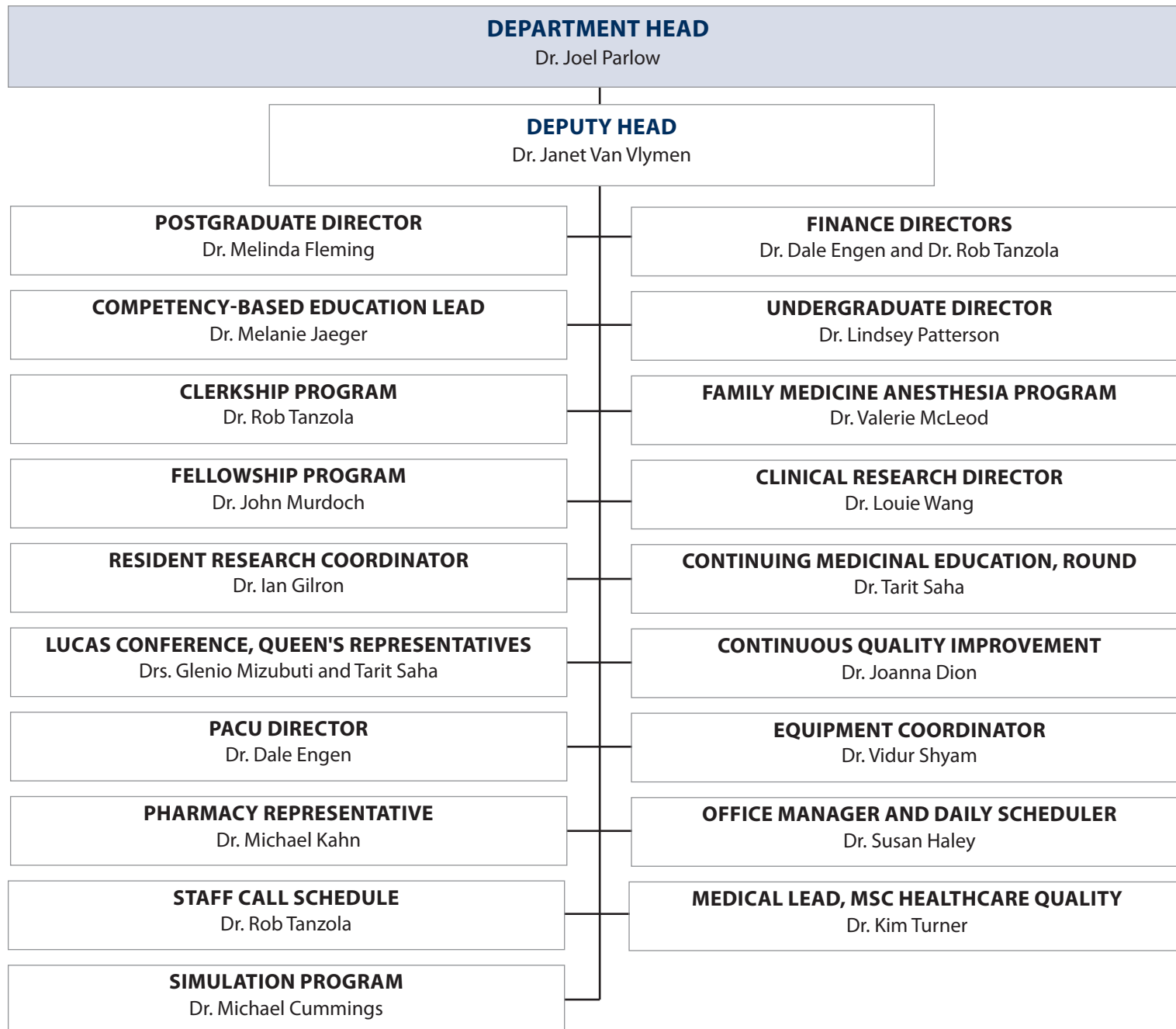
The department has a very organized team of administrative professionals who support the staff and residents. Our administrative support has many years of experience with two dedicated assistants who have been with our department for over 25 years each! The admins are truly the backbone of the department, always working diligently to organize, collaborate, and provide ideas to help our department run more smoothly.

From left to right: Kim Asselstine (Postgraduate Administrative Support), Angela McTaggart (Administrative and Financial Assistant), Melanie McKay (Departmental Secretary), Saulina Almeida (Undergraduate Administrative Support)



ORGANIZATIONAL CHART, 2017

PERSONNEL



COMMITTEE CHAIRPERSONS (2017)

EXECUTIVE / RECRUITMENT COMMITTEE

Dr. Joel Parlow

FINANCE AND FINANCE EXECUTIVE COMMITTEES

Dr. Dale Engen / Dr. Rob Tanzola

RESIDENCY PROGRAM COMMITTEE

Dr. Melinda Fleming

REAPPOINTMENT, TENURE AND PROMOTIONS

Dr. Dale Engen

ACADEMIC TIME COMMITTEE

Dr. Mike McMullen

COMPETENCY COMMITTEE

Dr. Michael Cummings

QUALITY IMPROVEMENT COMMITTEE

Dr. Joanna Dion

RESEARCH COMMITTEE

Dr. Louie Wang/Dr. Ian Gilron

CLINICAL SERVICE COORDINATORS

Medical Director, Pre-surgical Screening - Drs. Janet van Vlymen and Joanna Dion

Obstetrics - Dr. Lindsey Patterson

Cardiac/TEE - Dr. Tarit Saha

Vascular - Dr. Rene Allard

Thoracic - Dr. Cara Reimer

Neuro - Dr. Imelda Galvin

Acute Pain – Dr. John Murdoch

Regional Anesthesia – Dr. Vidur Shyam

Chronic Pain – Dr. Scott Duggan

Pediatrics – Dr. Anthony Ho

Clinical Supervisor-Anesthesia Assistants – Devon Sydor

ECT/Psychiatry – Dr. Cara Reimer

Bariatric Surgery – Dr. Cara Reimer



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