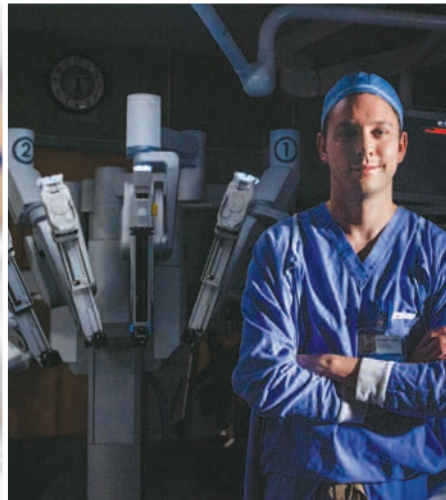


Annual Report

2018-2019



Vision

Responsive to the anesthesia care needs of our Maritime community while simultaneously providing international leadership in anesthesia education and research.

Mission

Serving the public good through excellence in anesthesia clinical practices, research and education.

The Department of Anesthesia, Pain Management and Perioperative Medicine believes:

Patients are entitled to safe, evidence-based and patient-centred care.

Lifelong learning is a prerequisite to safe, competent care and professional, compassionate clinicians.

Transparency and accountability in combination with creative thinking and leadership are foundational to the department's vision.

Development of future generations of anesthesia care providers able to contribute to excellence in patient care, research and education is a professional responsibility and commitment.

Scholarly curiosity and the advancement of knowledge are fundamental to the improvement and enhancement of patient care.

Sharing our expertise regionally, nationally and internationally is a professional obligation.

Stewardship of local and global resources is a departmental responsibility.

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Message from the Head



I wish to acknowledge the excellent patient care delivered by department members daily

Together, we have built a dynamic and thriving Department

After eight years as Head of the Department of Anesthesia, Pain Management and Perioperative Medicine, in addition to 16 years as Chief of Women's and Obstetric Anesthesia at the IWK Health Centre, it is with mixed feelings that I have announced my retirement. Consequently, this annual report is my last opportunity to officially acknowledge the varied and substantive contributions that you, my colleagues, have made to our collective vision of a culture of excellence in clinical practice, research, education and administration.

To start, I should like to acknowledge every one of my predecessors. Individually and combined, they contributed to the strong foundation upon which our Department is built. From **Dr. Walter Muir** starting in 1927, **Dr. Carl Stoddard** in 1947, **Dr. Emerson Moffitt** in 1972, **Dr. Charles Hope** in 1980 to, more recently, **Dr. Keith Hamilton** and **Dr. Tom Coonan** in 1993 and **Dr. Mike Murphy** in 2005 – all have shaped the dynamic and thriving Department we are today.

I should also like to recognize the two Deans of the Dalhousie Faculty of Medicine that I have had the privilege to work with during my tenure: **Drs. Tom Marrie** and **David Anderson**. Their steadfast support of our Department, and of me personally, is gratefully acknowledged.

As I reflect on the many accomplishments achieved over the years, I am sorely tempted to identify each and every individual and the valued contribution they have made. However, as you can appreciate, space does not permit, so suffice it to say that your hard work is recognized and valued and that it is each of you who has made the Department the success it is today.

I wish to acknowledge the excellent patient care delivered by department members daily. You are the “unsung heroes” who form the department’s backbone. It has been a privilege to work side by side with each of you over the years.

As to the academic side of the department, starting with our educational mandate, our first academic fellow (airway) arrived in 2010. Since then, our fellowship offerings have increased to seven, representing a variety of subspecialties. It is gratifying to see these programs in high demand, attracting quality applicants.

At the start of my tenure in 2011, the Department had 27 residents. Today, the number is 33. Most recently, the Department received 134 applications for the six residency positions available. This is expected to grow to fill the ever-increasing demand for anesthesiologists across the province. Hats off to **Drs. Robyn Doucet** and **Shannon Bradley** for the successful Royal College accreditation completed this past year.

In 2011, undergraduate medical education tutors numbered 24 and provided 605 hours; today that number stands at 32 and 800 hours respectively. That is in no small measure due to the efforts of **Dr. Ben Schelew** who finished his term as Undergraduate Medical Director this year.

The Department has indeed been fortunate to have the number and kind of educational leaders it has had during the past eight years. They have given us and the broader anesthesia community locally, nationally and internationally a number of key innovative educational initiatives.

Our efforts related to research have also yielded tremendous results. This is reflected in growth of grant money the Department receives: \$8.3 million last year, compared with \$2.2 million in 2011. In 2018-19, Department members had 118 peer-reviewed publications and delivered 77 presentations – a far cry from the early days of 60 and 50 respectively. The Department has also increased its protected time for clinician researchers to 6.1 FTEs from 3.7.

And to those faculty of the Department who work so tirelessly on the administrative side of things and all the members of our administrative support team, thank you. You make it all look so easy, but we are well aware that things would quickly grind to a halt without you.

To my colleagues: in New Brunswick and in Critical Care, I extend my gratitude for your continued interest and contributions; at NSHA, VP of Integrated Health Services **Paula Bond**; in Perioperative Services, **Marcy Saxe-Braithwaite** (PhD) and **Joanne Dunnington**, and the nurse managers in the PACU and PMU, at the HI and VG; and in the Department of Surgery, particularly **Dr. David Kirkpatrick**, as well as all the department heads I have had the pleasure to work with over the years, I thank you all for your steadfast support.

To **Bill Bean**, CEO of the QEII Health Sciences Centre Foundation and its board of trustees – working with you has been an inspiring and rewarding experience.

And to all the future leaders in our Department: the legacy upon which you will continue to build is a strong one. You were selected for your clinical abilities and leadership potential. The Department will continue to evolve and excel based on your contributions. I wish you every success as you embark on this exciting and fulfilling journey.

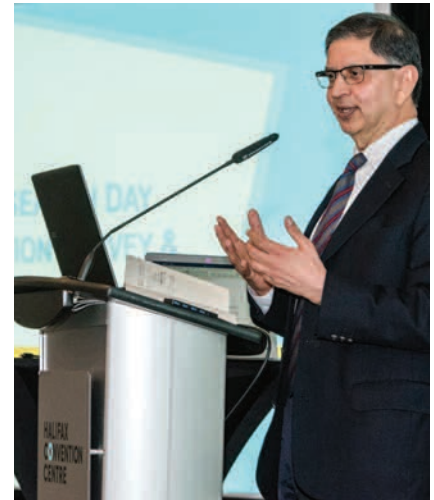
And finally, on a personal note, to the person I owe my life to, both literally and figuratively, to my ever patient and supportive **Shashi** goes the biggest thank you of all.



Romesh Shukla, MBBS, DABA, FRCPC

Professor and Head, Dalhousie University Department of Anesthesia, Pain Management & Perioperative Medicine

Our efforts related to research have also yielded tremendous results





Message from Cabinet Chair

Good governance and a focus on strategy



Through a continued commitment to inclusive and shared leadership, Cabinet plays a vital role in the pursuit of the Department's mission: *to serve the public good through excellence in anesthesia clinical practices, research and education*. As the Department's governing body, Cabinet met regularly throughout 2018-19 to undertake its workplan of setting policy and leading strategic direction for the Department of Anesthesia, Pain Management and Perioperative Medicine.

Good governance matters – no matter the size of a department or organization. Over the past year, Cabinet has enhanced its committee structure. The Finance Advisory Subcommittee was established to do the “deep dive” in overseeing the Department's finances. It supports the Department's leadership in ensuring financial practices are to the highest standard.

Cabinet also enhanced the Department's human resources function with the establishment of the Talent Recruitment, Retention and Development Advisory Subcommittee. This subcommittee advises Cabinet on all matters related to the recruitment, retention and development of anesthesiologists and other professionals.

Charged with enabling broad-based strategic planning, Cabinet undertook an iterative approach to setting strategic priorities for the next year. The result was a clear and achievable roadmap for the future. Against this backdrop, Cabinet and the Department's leadership took the opportunity for self-reflection as the Faculty of Medicine-led departmental survey process was undertaken. This marks the final phase of **Dr. Romesh Shukla's** leadership as Head, and his ongoing support of Cabinet's work over the past several years is greatly appreciated.

In the year ahead, the role of Cabinet will be enhanced with a focus on strategy and the continued development of our expertise in governance. As Cabinet Chair, my commitment is to continue to facilitate best practice in organizational governance, thereby growing what is already a high-performing and dynamic academic department within the Dalhousie community.

Sincerely,

André Bernard, MD, MSc, FRCPC, ICD.D

Cabinet Chair, Dalhousie Department of Anesthesia, Pain Management & Perioperative Medicine

Cabinet

Dr. André Bernard (Chair; Member-at-Large)

Dr. Romesh Shukla, Head

Dr. Adam Law, Associate Head

Dr. Colin Audain, Scheduler for Adult Services

Dr. Janice Chisholm, Victoria General Site, QEII Health Sciences Centre, Site Chief

Dr. Claudio Diquinzio (Member-at-Large)

Dr. Scott Drysdale, Pediatric Anesthesia, IWK Health Centre, Chief

Dr. Robyn Doucet, Program Director, Postgraduate

Dr. Blaine Kent, Halifax Infirmary Site, QEII Health Sciences Centre, Site Chief

Dr. Bruce Macaulay (Member-at-Large)

Dr. Dolores McKeen, Women's and Obstetric Anesthesia, IWK Health Centre, Chief (*Effective July 2018*)

Dr. Rob Nunn, Women's and Obstetric Anesthesia, IWK Health Centre, Past Chief

Dr. Orlando Hung, Medical Director, Research

Dr. Narendra Vakharia, Medical Director, Education

Ex-Officio

Ms. Marilyn Girouard, Executive Director

Dr. Jane Henderson, Human Resource Advisor (*To August 2019*)

Mr. Carl Stevens, Administrator

Who We Are & What We Do

Patient Care



Where We Do It

QEII Health Sciences Centre

IWK Health Centre

Dartmouth General Hospital

Saint John Regional Hospital

Hants Community Hospital

Cases by Subspecialty

Acute Pain Service	1,320 new consults
Adult Chronic Pain Management	8,274 clinic visits
Blood Management Services	1,900 patient visits
Cardiac Anesthesia	2,380 cases
Chronic Pain Management	1,102 new patients
Liver Transplantation	26 cases
Neuroanesthesia	1,227 cases
Pre-anesthesia	7,849 patients seen
Pediatric Pain Management	1,272 patient visits
Pediatric Anesthesia	6,061 cases
Thoracic Anesthesia	883 cases
Women's & Obstetric Anesthesia	7,608 cases

Approx. **76,880** procedures provided

100 anesthesiologists

50 anesthesia technicians and assistants

33 residents & **5** fellows

Surgeries/Procedures

The Department supports thousands of surgeries and procedures across various disciplines. **For example:**

 Cardiovascular	1,799
 Ear, Nose & Throat (ENT)	1,590
 General Surgery/Trauma	5,103
 Gynecological Oncology	426
 Neurosurgery	1,249
 Obstetrics/Gynecology (CZ)	418
IWK Births	4,428
IWK Surgeries	2,224
 Oral Maxillofacial Surgery	977
 Orthopedics	7,295
 Ophthalmology	7,687
 Pediatrics	6,061
 Plastic	1,531
 Thoracic	883
 Transplantation (Kidney, Liver, Heart)	117
 Urology	5,229

Education

191
Faculty

13.6%
with professorship status

68
Med 4 undergrad electives

21
off-site Med 4 undergrad electives

22
Med 3 electives

34
Med 1 & 2 electives

101
other learners

7
Fellowships

- Airway Management
- Cardiac Anesthesia
- Global Health
- Regional Anesthesia & Acute Pain
- Pediatric Anesthesia
- Women's & OB Anesthesia
- Chronic Pain


33
Residents

6
entering first year
(134 applicants for six residency positions)


Undergraduates

 **800** undergraduate teaching hours
32 faculty involved in teaching

Postgraduates

 **50** off-service or visiting elective residents
5 off-service residents in Saint John, NB

Professional Development


 **36** grand rounds sessions
10 conferences supported
3 journal clubs hosted


Research



 **19** Researchers
(total of **6.1** full-time equivalent protected time)

 **\$8.3M** Grants & industry funding

 **17** New Projects

 **88%** Collaborative Projects

 **118** Publications

 **77** Presentations



Excellence in Patient Care

Team

Dr. Greg Dobson, Director

Dr. Andrew Milne, Associate Director

Mr. Paul Brousseau, Quality Officer and Data Analyst

Ms. Vicki Christian, Administrative Assistant

With acknowledgment, for their extensive support and collaboration, to

Dr. Dennis Drapeau, Director of Information Management

Mr. George Campanis, Senior IT Analyst



Dr. Greg Dobson

Patients are entitled to safe, evidence-based and patient-centred care

The work of the Office of Quality Improvement and Patient Safety is critical to continuously improving the care provided by members of the Department of Anesthesia, Pain Management and Perioperative Medicine. Recognized nationally for its leadership, the office pursues a broad mandate that focuses primarily on, but is not restricted to, monitoring the quality and safety of all anesthesia care through: collecting outcome and adverse event data, hosting morbidity and mortality rounds, developing practice guidelines, issuing quality safety alerts, and sharing expertise through membership on a variety of committees and research projects.

The quality team is also a source of education, support and guidance to help physicians navigate adverse events. That includes assisting them in communicating with patients and families as well as maintaining their personal health and wellness in the aftermath.

During the 2018-19 academic year, the team hosted nine morbidity and mortality sessions. These well-attended learning opportunities led to several policy and process changes and an education session for operating room nursing related to supporting anesthesia during routine and difficult airway management. Reflecting the integrated nature of the role of anesthesia, the quality office also arranged rounds with other specialties, including with surgeons and emergency department staff for cases that call for a multidisciplinary approach. It also supported the Cardiac Anesthesia and Cardiac Surgery teams as they reinvigorated their own morbidity and mortality rounds. The Anesthesia group maintained a close relationship with the Critical Care quality team and shared reviews and recommendations collaboratively when anesthesia care overlapped with critical care.

The Office of Quality Improvement and Patient Safety continued to contribute to a range of local and national initiatives, which included:

- **Dr. Greg Dobson**, Medical Director of the Office of QI and Patient Safety, organizing and moderating a Canadian Anesthesiologists' Society (CAS) presentation entitled *Beyond the Statistics: How One Canadian Anesthesiologist Survived Workplace Opioid Addiction*.
- **Dr. Andrew Milne**, Associate Medical Director, Office of QI and Patient Safety, developing safety and anesthesia complications related questions for the Royal College exam and developing a Quality Improvement module for the new competency-based anesthesia curriculum.
- Contributing to the updating and release of the Canadian National Anesthesia Guidelines.
- Creating a model for the use of PACU outcome data as a global assessment of patients' postoperative experience.
- Supporting the work of improving the understanding of blood tag management, including a survey of large Canadian hospitals to learn how other hospitals manage blood tag management issues.



Department's Chiefs and Site Chiefs/Leads:

Dr. Kevin Bent, Dartmouth General Hospital, Site Chief

Dr. Janice Chisholm, Victoria General Site, QEII Health Sciences Centre, Site Chief

Dr. Scott Drysdale, Pediatric Anesthesia, IWK Health Centre, Chief

Dr. Jocelyn Foran, Hants Community Hospital, Site Lead (*effective August 2018*)

Dr. Alison Kelland, Hants Community Hospital, Past Site Lead

Dr. Blaine Kent, Halifax Infirmary Site, QEII Health Sciences Centre, Site Chief

Dr. Dolores McKeen, Women's and Obstetric Anesthesia, IWK Health Centre, Chief (*effective July 2018*)

Dr. Rob Nunn, Women's and Obstetric Anesthesia, IWK Health Centre, Past Chief

What We Do

Our Patient Care service delivery includes:

Specialized anesthetic services in:

- Acute pain management, including regional block
- Blood management services
- Chronic pain management
- Cardiac
- Neurosurgery
- Pediatric
- Pre-anesthesia assessment
- Thoracic
- Transplantation
- Women's and obstetric

Anesthesiology Surgery support for:

- Orthopedics
- Plastics
- Vascular
- General

Off-site support for:

- electrophysiological ablation procedures
- transcatheter aortic valve implants
- cardioversions
- interventional neuro-radiologic procedures
- MRI and radiotherapy

Hants Community Hospital

The anesthesia team at Hants Community Hospital, led by **Dr. Jocelyn Foran**, completed its first full year in newly renovated and expanded surgical suites. The space provides for two operating rooms and an endoscopy suite. Surgical cases are done on an outpatient basis, chosen by the surgeon using patient-selection criteria for Hants Community Hospital. Anesthesiologists from the QEII and IWK work collaboratively on a rotational basis with Dr. Foran to provide the care needed by this patient population.

The hospital exceeded its goal of an additional 800 surgical cases with the operating suite expansion – logging an additional 859 cases during the year. Of those, 621 were additional orthopedic cases. Thirty-six surgeons used the Hants operating rooms during the year. Vascular surgery was added, and the eye, ear, nose and throat (EENT) program was expanded to include hemithyroids and parathyroids.

Higher volumes necessitated scheduled monthly visits by an anesthesia technologist so as to ensure better machine maintenance and also supplied the rationale necessary to the funding of a full-time PACU nurse.

The team saw a change in leadership during the year with Dr. Foran succeeding **Dr. Alison Kelland** on her retirement from anesthesia practice in August 2018.



1,194 cases – (up 256%*)

1,529 hours – (up 244%*)

*Operating rooms closed for 6 months during renovations

Dartmouth General Hospital

Led by Site Chief **Dr. Kevin Bent**, the anesthesia team at Dartmouth General Hospital currently deliver service to patients in four operating rooms as they prepare for an additional four suites to be opened in 2021. The group staff DGH pre-anesthesia clinics and an acute pain service, and contribute to the education of medical students and residents. Additionally, they provide service to patients at the nearby Nova Scotia Hospital.

The year continued to be a transitional one as work progressed on the Dartmouth General's renovations, which are part of the larger QEII redevelopment plan. Exciting growth is ahead, but for the past year the reality has been akin to working in a construction zone. Team members displayed considerable flexibility as they delivered services amid the challenges of noise, risk of contamination and continual moving of supplies and storage. In spite of it all, patient care continued with the number of orthopedic total joint procedures completed at Dartmouth General increasing by 25 per cent over the past year.



5,007 anesthetics given in the ORs
(down 9%)

1,356 pre-op consultations
(up 21%)

4,035 treatments were given at
the Nova Scotia Hospital
(down 3%)



Dartmouth General Hospital



The QE II redevelopment plan has meant significant change and has required flexibility on the part of the Halifax Infirmary staff

Halifax Infirmary Site

The anesthesia team at the Halifax Infirmary, led by Site Chief **Dr. Blaine Kent**, provides anesthetic support for tertiary and quaternary surgical procedures in 15 operating rooms dedicated to neuro, orthopedic, plastic, vascular, general and cardiac surgery. In addition, anesthesia support is provided to “off-site” areas for electrophysiologic ablation procedures, transcatheter aortic valve implants (TAVIs), cardioversions, interventional neuro-radiologic procedures (acute stroke protocol and aneurysms) and the occasional general anesthetic for MRIs. Attending anesthesiologists are deployed out of the OR during the weekdays to transesophageal echocardiography (TEE), the Same-Day Admission Clinic, and the regional/block room. Anesthesia attending staff are also primarily responsible for patients recovering in the post-anesthesia care unit (PACU).

Similar to Dartmouth General, the QEII redevelopment plan has meant significant change and has required flexibility on the part of Halifax Infirmary staff. Ongoing renovations to the pre-op area, PACU and post-recovery resulted in some minor disruptions and adjustments in the flow of patients through the peri-op process. Cross-training of pre- and post-op nursing staff, work on amending discharge criteria for patients who underwent spinal anesthesia (aligned with ortho post op discharge criteria to decrease time in PACU), and alterations to some directives related to post-op medication holds were begun this past year. The end product will be worth the disruptions as two properly equipped isolation rooms will be located in PACU; the number of PACU beds will be expanded; and an area to accommodate overflow in the afternoon period for

recovery and as patients “transition to home” will be included.

An anesthesia co-ordinator, available during weekdays and working with a charge nurse and a surgical co-ordinator, contributes to the smooth flow of patient cases. The anesthesia co-ordinator is aided in their role by an anesthesia assistant (AA). Anesthesia assistants also provide invaluable support in the block room, in high-acuity situations, and during some anesthetic inductions. Working in a team that includes an anesthesiologist and nurses, the AAs are now routinely providing care to patients undergoing pacemakers and cardiac resynchronization therapy in the electrophysiology suite.

Excellent clinical care continued to be the hallmark of the HI group, thereby creating increased learner demand and providing opportunities for a variety of learners, including off-service residents, medical students and learners from other health professions. Clinical trials in areas such as cardiac care and airway management were completed.



11,264 cases – (down 3.2%)

151 hours in PACU – (up 26%)

Victoria General Site

Led by Site Chief **Dr. Janice Chisholm**, the anesthesia team at the Victoria General site serves 11 operating rooms and a lithotripsy unit. On-call operating coverage is provided 24/7, inclusive of liver transplantation and thoracic emergencies. In addition, team members cover four operating rooms in Ophthalmology and the operating room in the Brachytherapy Unit. Anesthesia services are also provided on request to Interventional Radiology and Endoscopy, for patient consults, and in the Same-Day Admission Clinic at the VG site.

During the past year, the *DaVinci* robot was introduced initially for prostatectomies and subsequently hysterectomies. Staff were introduced to the robot and its various features during an educational session; consequently, implementation went smoothly.

Anesthesia assistants continue to maintain their airway skills in the operating room with each AA routinely performing endotracheal intubations in addition to laryngeal mask placement and other procedures. The availability of personnel with advanced airway skills outside the operating room 24/7 has also had a positive effect on patient care.

Staff continue to be challenged by the issues related to an aging infrastructure; however, all have risen to the occasion thereby ensuring that the provision of safe, high quality patient care remains the priority.



16,409 OR cases – (up 0.1%)

24,226 hours in OR – (up 0.8%)

Subspecialty Care

Skilled clinicians in the Anesthesia, Pain Management and Perioperative Medicine Department offer subspecialty services to patients from Halifax and throughout Nova Scotia as well as other parts of Atlantic Canada. The specialized programs are also an ideal learning environment for medical students, residents and fellows, and other health-care providers.

(Adult) Acute Pain Management and Regional Anesthesia

The adult Acute and Regional Pain Management group, led by Subspecialty Chief **Dr. Kwesi Kwofie**, includes patients receiving regional blocks at the HI site as well as patients requiring acute pain management services, i.e., post-operatively at both the HI and the VG. This past year, the group has been taking part in point-of-care ultrasound (PoCUS) initiatives for routine assessments of gastric volume, lung pathology, basic heart function, volume status and vascular access. Members have become innovators in teaching these modalities to residents and staff.

With its commitment to education, the group is producing patient care videos and exploring with stakeholders how best to implement these newly created education tools. Its ultrasound-guided peripheral nerve blocks cadaver course continues to be in demand, requiring an increase in maximum enrolment numbers to 12 participants from the previous eight.

The group remained on course to achieve its five-year (2016-21) plan to create a world-renowned centre of excellence for research in regional anesthesia and acute pain medicine. The past year was marked by consistent, continued growth and productivity of the



Anesthesiologist Dr. David Watton stands in front of the *DaVinci* robot. Photo courtesy of the QEII Foundation, whose donors are fully funding this robotic innovation as part of its mission to bring this technology to Atlantic Canadian patients.

research group as members participate in multi-centre clinical trials.

Such growth is built on the work of our predecessors. The group acknowledges the many contributions of **Dr. Gordon Launcelott**, who retired last year. Dr. Launcelott was the founding chief and the last active founding member of the VG Acute Pain Service. The group is grateful for his many years of visionary leadership and dedicated clinical work.



2,784 regional anesthesia procedures



1,320 new consults – Acute Pain Service (VG & HI)



16% of consults with Highly Opioid Tolerant (HOT) patients (compared with last year's 32%)

Blood Management Service

The Perioperative Blood Management Service, led by **Dr. Blaine Kent**, works toward improving perioperative management of blood transfusion and adjuvant therapies and reducing the risk of adverse outcomes associated with transfusions, bleeding or anemia. Focused on its goal of improving patient outcomes, the service relies on approaches that detect and treat perioperative anemia, surgical blood loss and perioperative coagulopathy.

The number of referrals to the service continues to increase as the number of orthopedic surgeries continue to rise. Expansion of the service to Dartmouth General, which occurred in July 2017, had to be temporarily rerouted to the HI this past year due to DGH construction.

During the past year the service has de-

veloped a pre-printed order for anemia management and updated guidelines, algorithms, pamphlets and policies related to iron infusion and preoperative blood management. Work continues on developing a cell salvage training and competency assessment of operating room nursing staff and developing and implementing a preoperative anemia screening and treatment program. The goal is to have advanced screening, diagnosis and initiation of therapy weeks prior to elective surgery.

The Perioperative Blood Management Service hosted its 12th annual CME Blood and Beyond conference in 2018 at Halifax's new convention centre. The two-day meeting brought together professionals from a wide range of disciplines to share and expand knowledge in workshops, small groups and lectures from local, national and international speakers. Topics included hemostasis and coagulation, perioperative best practices, and problem/case-based discussions. The ultrasound workshop targeted critical care and acute care physicians and was designed to teach echocardiography and point-of-care ultrasound techniques.



1,900 patient visits



475 new patients

Cardiac Anesthesia

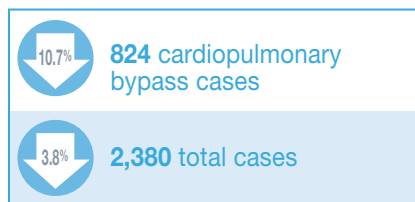
Led by Subspecialty Chief **Dr. Myron Kwapisz**, the cardiac anesthesia group provides anesthesia care for some of the most complex cases, such as open and endovascular repair of thoracic/thoracoabdominal aortic aneurysm, redo-sternotomies, aortic root and/or



arch repair with deep hypothermic circulatory arrest, insertion of right and/or left ventricular assist devices, transcatheter aortic valve implantation and heart transplantation.

The Cardiac group regularly cares for patients in acute or chronic heart failure with a reduced ejection fraction, treats those with severe perioperative bleeding and performs state-of-the-art transesophageal echocardiography (TEE) and transthoracic echocardiography (TTE.) The assessments inform clinical decision-making in the OR, recovery room and intensive care unit.

Members of the Cardiac Anesthesia group provide extensive training to anesthesia assistants inclusive of lectures, high-fidelity simulations and one-on-one teaching in the OR. This improves AAs' skill set in caring for cardiac patients undergoing device implantation (pacemaker/ICD) and cardioversions.



Neuroanesthesia

The neuroanesthesia team gives exemplary 24-hour care for all patients undergoing a wide range of neurosurgical procedures at the QEII Health Sciences Centre. Led by Subspecialty Chief **Dr. Carlo Mariotti**, the team provides care to patients requiring aneurysm repairs such as coil embolizations, craniotomies, deep brain stimulation, as well as biopsies, trigeminal compression and shunts. The team also provides care to patients needing MRI sedation, and many in the group are actively involved

in research, interdisciplinary clinics and teaching.

A recent interdisciplinary retreat was held which determined strategies that would continue to enhance and improve patient care. Engagement on the part of all health-care providers has led to increased commitment and success in improving OR efficiency, leading to benefits for patients and staff.



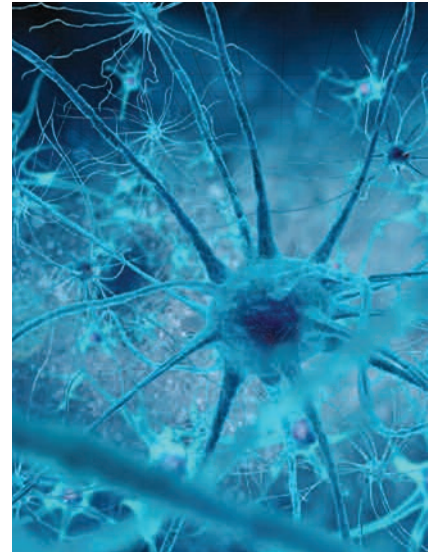
Pain Services

Adult Chronic Pain Management Services

The Pain Management Unit (PMU), led by Medical Director **Dr. Ian Beauprie**, provides care to patients experiencing chronic pain. Services are provided at the QEII Dickson Building and the Victoria Building. Inpatient consults, including palliative care, are conducted at the VG and HI sites as appropriate. The team also serves patients at Hants Community Hospital.

This past year, the team continued to offer its Group Medical Visit for all new, non-urgent patients. By hosting these group sessions, the unit significantly reduced wait times for patients. Feedback from patients has generally been favourable with travel, parking and issues related to a lack of localized resources identified as challenges.

The closure of the pain clinic at Dartmouth General Hospital the previous year continued to be identified as a concern by Dartmouth based patients and physicians. Planning for a satellite clinic in a location closer to the Dartmouth community is underway.



Group Medical Visits for non-urgent patients are helping to reduce wait times

The team is committed to sharing its expertise and growing its knowledge in pain management through research



Community outreach efforts by two team members were recognized this year. **Dr. Alison Kelland** was named Dalhousie Faculty of Medicine Community Teacher of the Year for her work on a pilot project designed to assess/treat orthopedic patients in the Pain Management Unit. Dr. Kelland also started planning for a one-year pilot project that will see South Shore patients (previously seen in the Halifax or Hants clinic) receive care at South Shore Regional Hospital in Bridgewater. **Dr. John Fraser**, recipient of the Health Promotion Award from Doctors Nova Scotia, began providing services at the Mobile Outreach Street Health, or MOSH, clinic which is part of Halifax's North End Community Health Centre.

The team is committed to sharing its expertise and growing its knowledge in pain management through research. To that end, the team delivered 44 presentations at the international, national and local level; served as the go-to experts for news media and conferences, and led and/or participated in 16 research studies.

15% ↑ 1,102 new patients

7% ↑ 8,274 clinic visits

7% ↓ 1,083 consults

Liver Transplantation Anesthesia

The transplant anesthesia team provides high-quality care for patients undergoing liver and combined liver-kidney transplantation. Led by Subspecialty Chief **Dr. Arnim Vlatten**, the group provides two transplantation anesthesiologists for each case, which is con-

sistent with best practice standards across North American academic centres.

This past year, the group hosted visiting professor Dr. Dieter Adelman from the University of California, San Francisco. Discussion centred on early recovery after liver transplantation. Consequently, it became evident that practices in Halifax varied minimally from those of large-volume centres like San Francisco.

Committed to sharing its knowledge, the team began in early 2019 to include senior anesthesiology residents in the care of patients undergoing liver transplants. In so doing, it enhanced the learning experience of residents and the care of patients. Several members also presented transplantation anesthesia topics during the weekly postgraduate teaching sessions. The previous year's goal to use transesophageal echocardiography in all liver transplantations was achieved.

8% ↑ 26 cases

7% ↓ 55 patients screened

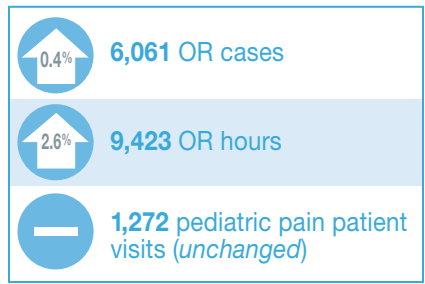
Pediatric Anesthesia

Dr. Scott Drysdale, Chief of Pediatric Anesthesia, leads a team responsible for providing anesthesia, consultation and pain management services to neonates, infants, children and adolescents of the Maritime provinces. The department of 23, including 14 anesthesiologists, also provided anesthetic coverage for emergency procedures.

During the year, the Department hosted the 2018 Canadian Pediatric Anesthesia Society Annual Conference

in Halifax. **Dr. Sarah Stevens** chaired the local organizing committee which was composed of departmental members. Other accomplishments include developing and implementing a new centre-wide sedation policy and continuing to improve access to corrective spinal surgeries – the spine team completed an additional 32 such surgeries over its baseline.

Team members involved in research presented on a variety of topics, with the subject of pain in children delivered by **Dr. Allen Finley** in the United States, South Africa and Ukraine. Dr. Finley also co-authored five peer-reviewed articles and served as the local hub lead of Solutions for Kids in Pain (SKIP). This initiative drew \$1.6 million in Knowledge Mobilization funding under the leadership of **Christine Chambers**, PhD, who is cross-appointed to the Department.



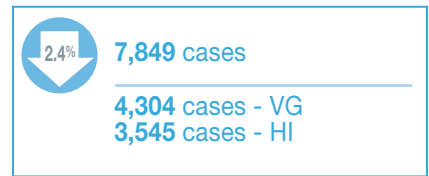
Pre-Anesthesia

Dr. David MacDonald provides leadership to the pre-anesthesia clinic at the Halifax Infirmary and the Victoria General Hospital. Anesthesiologists assigned to the clinic evaluate, stratify risk and optimize patients scheduled for post-surgical admission. Clinic staff also assess high-risk or medically complex ambulatory surgical patients. Each pre-anesthesia clinic team consists of anesthesiologists, registered nurses, pharmacy technologists, and ward clerks

at each site. Learners such as anesthesia residents, medical students and anesthesia assistant students spend time in the clinics so as to learn how to effectively assess and counsel patients. An average of 654 patients were seen monthly at the two clinics in 2018.

The clinics have continuously sought ways to improve patient care and resource use. A dedicated pharmacy tech, reorganization of nursing assessments, and increased use of the electronic anesthesia pre-op assessment form have resulted in greater efficiency and decreased wait-time for patients.

In the past year, a collaboration with NSHA focused on reducing unnecessary inpatient admissions and pre-operative testing in Central Zone. Working with an industrial engineer, clinics determined that over the past three years these costs totalled between \$1.8 million to \$2.5 million. Work has started on standardizing preoperative bloodwork across the province so that it is consistent and aligned with major anesthesia associations best practices and clinical guidelines.



Thoracic Anesthesia

Dr. George Kanellakos, Subspecialty Chief, leads the thoracic anesthesia team in providing services for all thoracic surgery performed at the QEII Health Sciences Centre. As a regional referral centre, patient care is provided to individuals from throughout the Maritimes with the occasional patient from Newfoundland and Labrador.





For the second year in a row, a team from the department placed in the Top 3 in the CAS Resident Simulation Olympics – (l-r) Drs. Haotian Wang, Brendan Morgan, Emma Kehoe and Kayla MacSween

Cases range from straightforward procedures to complex mediastinal mass resections (with the exception of lung transplantation).

Demand for thoracic anesthesia is expected to increase due to several factors: the addition of a fifth thoracic surgeon to the QEII, the referral of patients from the former health authorities in Nova Scotia that no longer offer thoracic surgical services, and an increase in the number of patients arriving from other Atlantic provinces for specialized care.

Members of the thoracic team continue to actively participate in departmental activities, as reflected in the teaching of **Dr. Ben Schelew**, who successfully led a team of departmental residents to a Top 3 position at the national CAS Resident Simulation Olympics.

9.8%
883 cases

Women's and Obstetric Anesthesia

The IWK Women's and Obstetric Department of Anesthesia, led by Chief **Dr. Dolores McKeen**, comprises 20 specialty-trained fully qualified anesthesiologists who provide in-house 24/7 care to patients at the IWK Health Centre and the QEII Health Sciences Centre, NSHA. It offers an active labour analgesia/anesthesia service and serves gynecology and breast health anesthetic needs. The department also supports and provides service to other parts of Nova Scotia and the Maritimes via the IWK's role as an obstetric and neonatal referral centre for tertiary high-risk cases. As well, the group has an active Acute Pain Service,

a Pre-Admission Clinic and a consultation service, and is an integral part of the Cardiac Arrest Team.

Significant improvements in patient experience and perioperative efficiencies were realized this past year as the Enhanced Recovery After Surgery (ERAS) program was successfully implemented within the gynecology–urogynecology in-patient populations. Care based on evidence has now become “standard work” in all aspects of the patient's perioperative journey. Early data indicate in-patient length of stay has been reduced by 10 hours.

In addition, proactive improvements to operating room space have prevented patient safety issues. The renovation of one OR addressed the need for space for urgent caesarean deliveries; another OR was dedicated to 24/7 emergency obstetric cases, and two others were renovated to support gynecology surgery.

The team made significant contributions to the department's overall education and research mandates. The new competency-based medical education curriculum, with increased direct observations and standardized case-based learning, was fully integrated into the department's teaching curriculum. The team published 12 articles and one book chapter and provided 21 presentations.

3.5%
7,608 cases





Excellence in Education

Lifelong learning is a prerequisite to safe, competent care and professional, compassionate clinicians

The Office of Education continued its work to ensure the delivery of a variety of top-quality learning experiences to hundreds of learners inclusive of respiratory therapists, anesthesia assistants, paramedics and practising clinicians. The Department's undergraduate medical elective program, as well as its postgraduate (residency) program and fellowships continue to be highly regarded as evidenced by the numbers requesting placement. The team maintains its commitment to supporting anesthesiologists in enhancing and expanding their knowledge by hosting grand rounds and other continuing professional development opportunities. Numerous faculty members are actively engaged in the departmental mentorship program, as are the department's residents.

The Royal College of Physicians and Surgeons of Canada conducted an on-site accreditation survey of the department's postgraduate program in November 2018. In its final report, the College noted: *"The residency program in Anesthesiology is especially commended for its ongoing efforts to provide high-quality residency education."* This review served to validate the feedback provided by the residents who indicated satisfaction with the quality of their educational experience and the calibre of the faculty teaching them.

Dr. Narendra Vakharia, Office of Education Medical Director, attributed the success of accreditation to the daily dedication and co-ordinated effort of everyone involved in the delivery of the postgraduate program. Recruitment to this program continues to be attractive to medical students with 134 applications this past year for six CaRMS positions.

This past year, the Department received requests from the Dalhousie Faculty of Medicine and the Nova Scotia Department of Health and Wellness to expand the postgraduate program by two residents. This would result in a total of 10 additional residents over the five-year program. The impact of this undertaking continues to be reviewed.

As well, 169 requests for medical student electives were received with 89 learners accommodated. Unfortunately, 80 requests had to be declined due to limited OR capacity.

Feedback from medical students regarding their elective experience has been resoundingly positive.

"This elective definitely exceeded my expectations!"

"My preceptor, as well as the other anesthesia, surgical and support staff, were extremely professional and enjoyable to work with. I have nothing but great things to say about Halifax, Dalhousie, and my hospital training/experience."

The department's continued participation in the Pre-clerkship Residency Exploration Program (PREP) has proven to be time well spent. The two-week summer elective program provides second-year medical students with early exposure to a variety of specialties and aids in their career decisions. At the conclusion of this year's program, 22 of 37 medical students indicated a high or very high interest in the anesthesia as a career choice.



Dr. Narendra Vakharia

Leadership Team

Dr. Narendra Vakharia, Medical Director, Education and Simulation

Dr. Robyn Doucet, Program Director, Postgraduate

Dr. Shannon Bradley, Associate Program Director, Postgraduate

Dr. Jane Henderson, Medical Director, Fellowship (to September 2018)

Dr. Tim Mullen, Medical Director, Fellowship (effective February 2019)

Dr. Patty Livingston, Medical Director, Global Health

Dr. Ben Schelew, Medical Director, Undergraduate

Dr. Bruce Macaulay, Medical Director, Continuing Professional Development

Ms. Laura Harris Buffett, Managing Director, Education



Residents in simulation training

Seven subspecialties in the department continue to offer much coveted fellowship positions. Quality applicants indicate they are attracted to the learner-centric environment and the experience provided them by educational leaders in the department. The fellowship programs are enriched by both teaching and research opportunities, which are customized to each program and each Fellow. Additionally, the department gains new insights and perspectives through the teaching that the Fellows deliver, particularly to residents and other learners. For 2019-20, the department looks forward to welcoming its first cardiac anesthesia fellow.

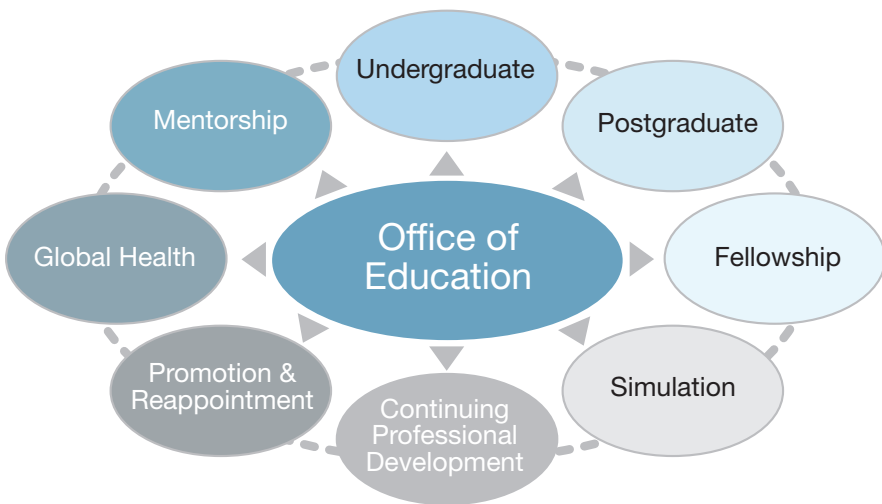
Although a majority of the clinical teaching is directed at residency programs and medical students, a great deal of time is also provided to more than 100 learners in other medical professions such as nursing, paramedicine and anesthesia assistants. For example, the Respiratory Therapy program completes a mandatory one-week rotation in anesthesia with the following reflecting the typical laudatory comments made regarding the experience: *“Our students truly benefit from an amazing anesthesia rotation. The students always comment on how well organized and welcoming the anesthesia rotation is at the QEII.”*

Beyond the delivery of educational activities and teaching within our department, faculty were invited to present at approximately 40 events and conferences locally, nationally and internationally. Their scholarly work has increased in the areas of simulation training, global health and competency-based medical education. This scholarly work in turn enriches the Department’s educational activities.

Global Health efforts continue with the VAST (Vital Anesthesia Simulation Training) course delivered and well received in locations as far afield as Rwanda, Ethiopia and India and, closer to home, northern British Columbia.

This past year, there were several administrative changes, with **Dr. Jane Henderson** (Fellowship Medical Director), **Dr. Ben Schelew** (Undergraduate Medical Director), and **Dr. Bruce Macaulay** (Continuing Professional Development Medical Director) completing their terms. Their dedication throughout their tenure has been invaluable and their legacy will continue to contribute to the department’s success for years to come. We welcomed **Dr. Tim Mullen** (Fellowship Medical Director and Continuing Professional Development Medical Director), **Dr. Adrienne Carr** (Undergraduate Medical Director) and **Dr. Cathy Delbridge** (Simulation Medical Director) to their new leadership roles. Thank you for your years of dedicated service, and welcome to those joining the Office of Education!

“Without the enduring dedication and breadth of skill and knowledge provided by medical directors, administrative staff and faculty, the outstanding academic achievements of our Department could never be achieved,” Dr. Vakharia said. *“We remain a distinguished and leading department in many educational initiatives.”*



Simulation-based learning: 'sweat-inducing' but safe

Simulation-based education is a valued part of a strong residency program, and despite resource challenges, the Department continues to deliver a strong curriculum in this area.

During the academic year, anesthesiology provided four sessions in the simulation centre to residents during the Transition-to-Discipline phase, 10 sessions as part of the Foundation curriculum, and four as part of the Core curriculum. Other simulation training included sessions in crisis resource management, arterial and central lines, ultrasound, echo, advanced airway management, CanNASC and OSCE. Clinical rotation simulation sessions continued in pediatric anesthesia and regional anesthesia, and a sim session titled *Transition and Neonatal Physiology: Why Newborns Are Different* was introduced to the curriculum in 2018-19.

"Simulation is never going to trump actual OR time," said **Dr. Cathy Delbridge**, Medical Director, Simulation, *"but it is one of the most critical components of the residents' education."*

"It gives them exposure to common and uncommon events – to events they may never encounter in the OR, like malignant hypothermia, which is rare but still a major life-threatening event that can happen in anesthesia. Simulation can give them a mental model of what to do should it ever happen."

In addition to giving residents the opportunity to use technical skills, simulation-based education allows learners to practise such skills as crisis resource management, leadership and communication, said Dr. Delbridge.

Interprofessional *in situ* simulation sessions have shown to be particularly effective for improving communication skills, a main source of delays or errors.

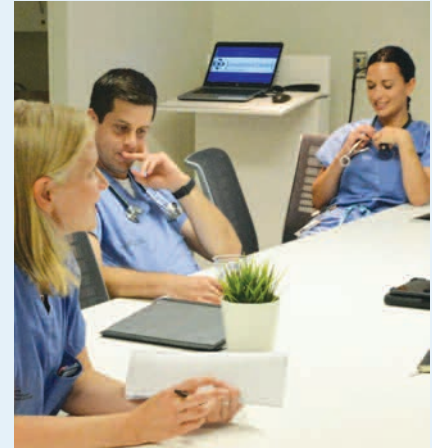
These sessions bring together learners from multiple disciplines – Anesthesia, Surgery and Nursing – to train in QEII operating rooms. The training allows the health professionals to practise and learn together in their actual work environment.

"Each person knows their specific role – they operate within their scope of practice," said Dr. Delbridge. That's in contrast to anesthesia-only simulation sessions in which residents take on different OR roles and make assumptions that may inadvertently be inaccurate.

Despite the quality learning from these interprofessional *in situ* simulations, the program was paused the previous year as a result of a funding shortage that affected technician support. Restarting the sessions is one of Dr. Delbridge's objectives.

As medical disciplines adopt competency-based medical education, the demand for simulation will continue to grow as it is one means of demonstrating competency. Add to that the increasing emphasis on simulation-based education in the accreditation of hospitals and residency programs, and the need to overcome funding challenges is clear.

Dr. Delbridge also plans to examine how best to address what she sees as a gap: simulation training for staff anesthesiologists to meet CME needs as well as provide opportunities to practise managing uncommon clinical scenarios. Research is another area that she will pursue, examining whether the extent to which simulation-based training contributes to patient care has been or can be quantified.



Dr. Cathy Delbridge (left) leads a debriefing with residents following a simulation training session.

Anesthesia residents offer thoughts on how simulation training benefits them and potential patients:

"Being in the hot seat is scary! When we do simulation ... there is no risk to patients, and it actually prepares you for real clinical emergencies, which I think is a huge benefit for patient safety."

"We're able to take the sweat-inducing cases and actually learn and apply the technical as well as human skills – arguably more important and difficult to learn and apply."

"It's hands down the best way to learn the acutely life-threatening scenarios faced by anesthesiologists in a safe learning environment."

The opioid misuse crisis within Nova Scotia recorded 54 opioid-related deaths in 2018



Dr. Jennifer Szerb

Inspired to act: Doctors Against Tragedies educates youth about opioids

The Global Health Office has been successfully directing its energy internationally for many years to improve the level of anesthesia training, mostly in East Africa. It has also identified significant challenges to health at the local and national levels.

One such challenge has been the opioid misuse crisis within Nova Scotia, which recorded 54 opioid-related deaths in 2018. **Dr. Jennifer Szerb**, a professor in the Department of Anesthesia, Pain Management and Perioperative Medicine, felt it timely to introduce a primary opioid misuse prevention strategy.

At a conference in New York City in 2018, Dr. Szerb was inspired by a presentation on a novel social awareness campaign called Doctors Against Tragedies and decided to launch a chapter in Nova Scotia.

An Edmonton physician, Dr. Michiko Maruyama, established the original Doctors Against Tragedies in response to the large number of young people dying from fentanyl overdoses in Alberta. It was a new take on the popular Cards Against Humanity trivia game. The card game is fun and educational, plus a great icebreaker. *"It's a novel way of interacting with a group that can be difficult to reach,"* said Dr. Szerb.

There are three versions of the game: the 'horrible' version for 18 and older, the trivia version for high school health classes, and a 12-and-under version designed by kids for kids on general harm reduction. Once people are laughing and talking, it is an opportunity to segue into some teaching about recognizing the signs of opioid overdose and how to use the naloxone kit.

To launch the program in Nova Scotia, Dr. Szerb brought together a support

group of residents, nurses, members from the community and medical students to strategize about fundraising and how to roll out the campaign. Many training sessions took place and the original group enlisted additional support in the form of first- and second-year medical students.

This group morphed into a team of facilitators and naloxone trainers who have delivered this program to a wide variety of audiences in the city, from Dalhousie and Saint Mary's university students, to Phoenix House residents, and to a public session at the Halifax North Memorial Public Library. In 2019, the team expanded its outreach and began planning sessions for the Boys and Girls Clubs of Greater Halifax.

Dr. Szerb finds it particularly gratifying to see the enthusiasm of the medical students and their desire to reach out to the community. Some of the volunteers have been inspired to take their exposure to Doctors Against Tragedies to a new level, starting a Special Interest Group in Harm Reduction specific to Dalhousie medical students. Two junior anesthesia residents are presently taking formal training on opioid addiction disorder and have joined a team to provide inpatient care for those patients with addictions.

Dr. Szerb encourages physicians to help expand the program across Nova Scotia. Her goal is to offer workshops at more schools, universities and other institutions. She's particularly interested in hearing from retired physicians. *"This is something retired physicians could consider doing that would be meaningful for them and their communities."*

Residents and Fellows

In 2019, five residents and five fellows completed a learning milestone with the Department.

Congratulations to:

RESIDENTS:

(Pictured, l-r)

- Dr. Charlotte Edwards
- Dr. Mallory Garza
- Dr. Stewart Forbes
- Dr. Margaret Hanley
- Dr. Richard Roda

All five successfully completed their FRCPC exams in June 2019



FELLOWS:

(Pictured, l-r)

- Dr. Jon Bailey
Regional Anesthesia and Acute Pain
- Dr. Carrie Goodine
Airway Management
- Dr. Dave Rawson
Global Health
- Dr. Lesley Bautista
Women's and Obstetric Anesthesia
- Dr. Jessica Gray *(Not pictured)*
Pediatric Anesthesia





4 / 0.1
160 / -

25

60

Excellence in Research

Scholarly curiosity and the advancement of knowledge are fundamental to the improvement and enhancement of patient care

The work of the Department's 19 researchers drew \$8.3 million in grants and industry funding this past year. They published 118 peer reviewed articles and provided 77 presentations.

However, as important as those numbers are in marking how well the Department is doing, **Dr. Orlando Hung**, Medical Director for the Office of Research, points to something else.

"What's more important is the change in culture that I see happening," he said. "There's a growing acceptance of research as a vital part of our work and in patients' understanding of how research connects to the care they receive."

The Office of Research's efforts in several areas this past year have contributed to creating this more receptive environment. As an example, Dr. Hung pointed to the initiative that resulted in the integration of patient recruitment for research into the Department's clinics at the QEII Health Sciences Centre.

Admission clerks ask patients at these clinics if they are willing to be considered for research. The process, involving a signed form, was the result of months of effort led by the Office of Research and involving health services managers and directors and frontline clinic staff.

"Instead of viewing it as an add-on to their work, the clinic staff feel more a part of the team and are more supportive in making the request, taking the time to explain the process to patients," said Dr. Hung. "As a result, patients are more receptive toward the idea of taking part in research."

Patients have overwhelmingly shown interest in participating in research – up to 95 per cent have said yes to being considered.

Patients' perspectives can help to ensure that the Department's research is relevant. This past year, the Office of Research continued to strengthen its capacity to engage patients, families and communities in research activities in a meaningful way. Project Co-ordinator **Jillian Banfield**, PhD, led the development of a healthcare consumer group inclusive of current/former patients as a standing advisory committee to researchers. See sidebar on page 30.

Similarly, **Dr. Dolores McKeen** spearheaded a national effort that reached out to patients and clinicians to identify the most pressing areas for anesthesia research. The Canadian Anesthesia Research-Priority Setting Partnership is profiled on page 29. As Dr. McKeen noted, the results of the partnership represent a "collective wisdom."

In addition, some Department researchers have had some success in taking their research to market. One such venture saw the commercialization of a product designed to reduce pain, while several device development projects are nearing completion.

"Translation of research – from bench to market – is what makes it real," said Dr. Hung.



Dr. Orlando Hung

Leadership Team

Dr. Orlando Hung
Medical Director

Dr. Christian Lehmann
Associate Director, QEII

Jill Chorney, PhD
Associate Director, Pediatrics
(March 2018 – June 2018)

Dr. Scott Drysdale
Associate Director, Pediatric
Anesthesia

Dr. Dolores McKeen
Associate Director, Women and
Obstetrics

Heather Butler, PhD
Managing Director, Research

When it comes to competency assessments, there has been much discussion around quality versus quantity



Improving CBME: Better evidence of competence in narrative assessments

In early 2018, **Dr. Janice Chisholm** launched a mixed-methods research project examining the self-assessment of anesthesia residents who use a new e-portfolio tool to track their progress in residency. *“Internationally, some jurisdictions have used resident portfolios to assess competence to varying degrees,”* she said. *“We wanted to look at how well a resident-driven portfolio works.”*

Four years ago, Dalhousie’s postgraduate program moved from a time-based model to a competency-based medical education (CBME) model. Dr. Chisholm was instrumental in implementing CBME within the Dalhousie department, and her current research examines ways to improve upon her original work.

“CBME in the Dalhousie anesthesia program differs from how the Royal College has moved CBME forward,” she said. *“Our residents are responsible for determining whether the assessments they have received provide enough evidence of their competence to perform Entrustable Professional Activities. Our study sought an in-depth understanding of how they assess that evidence.”*

Dr. Chisholm and her research collaborators – **Cindy Shearer**, PhD, **Jillian Banfield**, PhD, **Dr. Robyn Doucet** and **Dr. Shannon Bradley** – were hoping to demonstrate that a resident-led portfolio helps to encourage residents to self-assess their competence.

“We learned that narrative comments seem to provide better evidence of competence than numerical scores, and that residents value the comments more than the scores,” said Dr. Chisholm. They also learned that a resident-led portfolio does lead to self-assessment, but it may add

to residents’ stress levels because it is time-consuming.

When it comes to competency assessments, there has been much discussion around quality versus quantity.

“In the interviews, residents told us that if they have quality assessments, they don’t need to have as many,” said Dr. Chisholm. *“We need to teach our faculty what makes a quality assessment.”* Residents may also need guidance on how to self-assess their competence.

The results have garnered interest at several international conferences, and a manuscript about the project is being prepared to submit to an academic journal.

“We believe that teaching people how to self-assess will make them better lifelong learners over the course of their career,” said Dr. Chisholm, who received the 2018 Royal College/Associated Medical Services Donald Richard Wilson Award for championing resident education. *“If you can recognize your strengths and weaknesses and focus on improvements, you’ll provide better patient care.”*

'Collective wisdom' guides future anesthesia research

What are the most pressing areas for research that could help to improve the physical and mental well-being of patients who require anesthetic care? The question was at the heart of a national partnership led by **Dr. Dolores McKeen**.

The Canadian Anesthesia Research–Priority Setting Partnership (CAR-PSP) gathered information from across the country to identify and prioritize clinical care and treatment questions. The aim of the “needs-led” project was to form a Top 10 list of research priorities that will ultimately help researchers frame and develop their projects.

“Clinical research often does not reflect the needs of a patient population,” said Dr. McKeen, Chief of Women’s and Obstetric Anesthesia at the IWK Health Centre and Vice-President of the Canadian Anesthesiologists’ Society. *“Bringing patients and clinicians together with researchers can prioritize questions, particularly in treatment uncertainty.”*

The CAR-PSP started the project by gathering questions about anesthesia and care around the time of surgery. More than 250 people from across Canada – patients, family and caregivers, as well as health-care providers – completed a survey asking for their questions.

The research team then worked to categorize, merge and summarize the questions, checking them against existing research. A second survey to shortlist the 49 questions was then completed by 233 Canadians. The final phase brought together 22 people from across the country to a one-day workshop in Toronto to review and rank the questions. *See the next page for the list of The Top 10 Priorities.*



Dr. Dolores McKeen

“The Canadian anesthesia community is changing how we think about research in anesthesia and perioperative care,” said Dr. McKeen. *“By moving to focus on answering questions that matter to patients, we can have immediate impact on daily lives of our patients and a more sustainable health-care system.”*

The CAR-PSP Top 10 serves as a valuable tool to initiate and guide the anesthesia research community, she said. The partnership has been sharing the list with researchers and funding organizations with the objective of having these research priorities incorporated into their research agendas.

“The CAR Top 10 represents a collective wisdom and a wide variety of priorities that capture the diversity of Canadians receiving and providing anesthesia care as well as the scope of anesthesia practice.”

The project is funded in part by the Canadian Institutes of Health Research. Matching partners include the Association of the Canadian University Departments of Anesthesia and the Canadian Anesthesiologists’ Society and the Dalhousie Department of Anesthesia, Pain Management and Perioperative Medicine.

Research Day 2019

Research Day 2019 had a different look and feel from previous years. The Department of Anesthesia, Pain Management and Perioperative Medicine collaborated with the Dalhousie Departments of Surgery and of Ophthalmology and Visual Sciences to bring together presenters and audiences at Halifax’s new convention centre. The three departments held morning and afternoon presentation sessions in separate spaces, but breaks were timed to allow attendees to network across departments. Lunch was also a shared event, with the keynote speaker, Dr. Leonard D’Avolio from Harvard Medical School, addressing all three groups at one time.

Fifteen anesthesia-related research studies were presented by a variety of trainees, including five residents/fellows. The remaining presenters – undergraduate, graduate and post-doctoral students – reflected the Department’s continuing efforts to develop junior investigator research partnerships. *See page 33 for the Research Day winners.*



Dr. Stuart Wright emcees Research Day 2019



Top 10 priorities

- 1 Which factors before, during, and after receiving anesthesia for surgery are most important to improve patient outcomes and satisfaction?
- 2 What are the impacts of involving patients in shared decision-making about anesthesia and care options before, during and after surgery?
- 3 What data should be collected from patients about anesthesia care before, during and after surgery to better understand their outcomes and experiences?
- 4 How can errors and patient injuries in anesthesia care be prevented?
- 5 How can outcomes in frail and/or elderly patients be improved after receiving anesthesia for surgery?
- 6 What is the impact of reducing opioids during anesthesia on patient outcomes and opioid dependence after surgery?
- 7 What preparation, treatment or assessment before receiving anesthesia for surgery improves patient outcomes?
- 8 How can patients' feedback about their experiences before, during and after surgery be used to improve anesthesia care?
- 9 How can anesthesiologists improve pain control after surgery?
- 10 What are the common long-term side-effects of anesthesia after surgery?

Advisory group adds patients' voices

Department researchers now have more ready access to patients' perspectives with the creation of a standing advisory group.

The group, comprising up to six health-care consumers, consult with researchers to enhance their patient engagement efforts and advise the Department's Office of Research on its role in supporting patient engagement.

"The expectation to involve patients in research is a leading practice for today's researchers," said **Dr. Orlando Hung**, Research Medical Director. *"It also creates more practical and relevant research. Through this patient committee, we will put patients' voices at the forefront of our research."*

The initiative to engage patients in research builds on the earlier addition of patients to the Department's Peer Review Committee responsible for assessing and awarding grant applications.



Members of the advisory Group: (l-r) Jessie Purvis, Carla Heggie, Katherine Dib and Jillian Banfield.
Not pictured: Kristen Hemming





17 Queen Elizabeth II
Health Sciences Centre
Halifax Infirmary
Halifax Infirmary
1796
Green Street

Celebrating Excellence

Teaching Awards

Dr. Adrienne Carr
Undergraduate Teacher of the Year

Dr. Edmund Tan
Clinical Teacher of the Year Award

Dr. Amanda Smitheram
New Brunswick Clinical Teacher of the Year Award

Dr. David MacDonald
Mentor/Role Model

Dr. Parvinder Sodhi
Resident Advocate

Dr. Haotian Wang
Resident Teacher

Dr. Parvinder Sodhi
Daily ITER Award (*Recognizing high quality Daily Encounter Cards*)

Dr. Jane Seviour
ITER Award (*Recognizing completion of high quality In Training Evaluation Reports*)

Special Recognition

In 2018-19, several Department members were singled out for their expertise and leadership:

Dr. John Fraser
Physician Health Promotion Award,
Doctors Nova Scotia

Dr. Alison Kelland
Community Teacher of the Year,
Dalhousie Faculty of Medicine

Dr. Sherry Litz
CMA Honorary Membership Award,
Doctors Nova Scotia

2019 Research Day Winners

Resident/Fellow

1st – Carrie Goodine
Development of a 3D printed surgical cricothyroidotomy trainer

2nd – Jonathan Bailey
Continuous peripheral nerve blockade for midline laparotomy: A systematic review and meta-analysis

Graduate Student/Postdoctoral

1st – Maral Aali
Comparing the efficacy of the novel iron chelator, DIBI, with different classical iron chelators in experimental poly-bacterial sepsis

2nd – Andrew Suen
Circulating plasma micrornas trigger innate immune activation in a mouse model of polytraumatic injury

Undergraduate Student

1st – Alison Harding
Women's preferences for analgesia outcomes associated with labour epidurals

2nd – Megan McNeil
Opioid prescribing after laparoscopic surgery: A retrospective study using a provincial monitoring database



Dr. David Anderson presents Dr. Alison Kelland with the Dalhousie Faculty of Medicine Community Teacher of the Year award



Dr. Edmund Tan receives the Clinical Teacher of the Year award from Dr. Richard Roda



Dr. Parvinder Sodhi receives the Resident Advocate of the Year award from Dr. Margaret Hanley

ATROPINE
mg/ml

ATROPINE
mg/ml

GLYCOPYRROLATE
mg/ml

GLYCOPYRROLATE
mg/ml

NEOSTIGMINE
mg/ml

NEOSTIGMINE
mg/ml

Epinephrine
mcg/ml

Epinephrine
mcg/ml

NEU

Appendices

Appendix A

2018 New Funded Research Projects

1. Bailey JG, Uppal V, Richardson G, Miller A (2019 - 2020). Health care resource and costs comparison between spinal anesthesia in a block room versus general anesthesia for primary hip and knee arthroplasty: an economic analysis [Grant] - Dalhousie - \$4,727.
2. Bailey JG, Uppal V, Richardson G, Miller A (2019 - 2020). Health care resource and costs comparison between spinal anesthesia in a block room versus general anesthesia for primary hip and knee arthroplasty: an economic analysis [Grant] - NSHARF - \$4,844.
3. Barry G, Bailey J, Sardinha J, Milne A, Uppal V (2018 - 2019). Factors associated with rebound pain after peripheral nerve block for ambulatory surgery: A single-centre retrospective cohort study [Grant] - Dalhousie Anesthesia Research Fund (ARF) - \$4,953.
4. Barry G, Bailey J, Sardinha J, Milne A, Uppal V (2018 - 2019). Factors associated with rebound pain after peripheral nerve block for ambulatory surgery: A single-centre retrospective cohort study [Grant] - NSHARF - \$4,893.
5. Chambers CT, Finley GA, Jordan I, LeBlanc C, Orji R, Parker JA, Stinson J, Tutelman PR (2019 - 2020). Development of an app for parents to improve procedural pain management in children: needs assessment and user experience design [Grant] - IWK - \$24,988.
6. Chambers, CT & Maynard DJ (co-Directors), & Ali S, Barwick M, Campbell F, Campbell-Yeo M, Carter N, Finley GA, Jordan I, Larocque L, Mogil J, Noel M, Oberlander T, Stevens B, Stinson J, Taddio A (2019 - 2023). Solutions for Kids in Pain (SKIP) [Grant] - Networks of Centres of Excellence: Knowledge Mobilization initiative (NCE-KM) - \$1,600,000.
7. Curran J, MacPhee S, Mackay R, Bishop A, Breneol S, Burns E, Cassidy C, Chorney J, Doyle M, Grimshaw J, Jabbour M, Lawton L, Newton M, Penney T, Plint A, Ritchie K, Straus S, Wozney L, Zemek R (2018 - 2023). Partnering with Parents and youth to co-design discharge communication interventions for pediatric emergency care [Grant] - CIHR - \$623,457.
8. Hanly JG, Beyea S, Fisk JD, Friedman A, Hashmi JA (2018 - 2021). Characterization of brain dysfunction with multi-modal functional neuroimaging in patients with SLE and cognitive impairment [Grant] - NSHA - \$615,826.
9. Hung OR, Milne AD, d'Entremont M (2018 - 2019). Positive Placement Tracheal LED Intubation Lightwand - Early Stage Commercialization Fund [Grant] - Innovacorp - \$15,000.
10. Kwofie MK, Uppal V, Szerb J, Coles C, Colish J (2017 - present). A Randomized Controlled Trial of Regional Anesthesia Versus General Anesthesia for Promoting Independence After Hip Fracture (REGAIN Trial) [Grant] - Patient-Centered Outcomes Research Institute (PCORI) - \$255,967.
11. Latimer MA, Martin D, McNally M, Rudderham S, Finley GA, Harman K, MacLellan J, Sylliboy JR, Doiron L, Gloade K, Hachey S, Janus M, Noel G, Vine J (2019 - 2020). Using a co-learning approach to create a collaborative community-led solution to improve Indigenous Children's ear and oral wellness and healthy development for school readiness [Grant] - CIHR - \$100,000.
12. Lynch M (2018). Annual Atlantic Pain Conference [Industry Donation] - Industry contributions - \$27,000.
13. Munro A, George R, Andreou P (2018 - 2020). A novel approach to optimize Programmed Intermittent Epidural Bolus (PIEB) delivery for labour analgesia [Grant] - Dalhousie - \$19,918.
14. Schmidt M, Eskes G, Roach DC, George R, MacDonald D, Matwin S, Hung O (2018 - 2019). Computerized assessment for Post-Operative Cognitive Decline (POCD) in elderly surgical populations [Grant] - Centre for Aging and Brain Health Innovation (CABHI) - \$350,000.
15. Snelgrove-Clarke E, Cashen N, O'Reilly D, Tomblin-Murphy G, West J, Lezama B, Walsh C, Casey C, Mann C, Woolcott C, McKeen D, Carson G, Scott H, Piccinini-Vallis H, McLeod L, George R, Scott S, Bleasedale E, Fiander E, Paynter M, Bernard M, Sims M, LeDrew M, Kolanko M, Mills S (2018 - 2019). Building a research team: Caring for women who live with obesity during pregnancy, birthing, and postpartum [Grant] - IWK - \$3,000.



Appendix B

2018 Publications

Note that this list of publications only includes those peer-reviewed articles that are currently published and accessible online (53).

- Abbott TEF, Ahmad T, Phull MK, Fowler AJ, Hewson R, Biccard BM, Chew MS, Gillies M, Pearse RM, International Surgical Outcomes Study (ISOS) group [including George RB, Bernard A] (2018). The surgical safety checklist and patient outcomes after surgery: a prospective observational cohort study, systematic review and meta-analysis. *British Journal of Anaesthesia*, 120(1), 146-155. [Published] PubMed ID: [29397122](#).
- Arora G, Brousseau PA, Milne AD. Laryngoscope brightness determined by visual inspection and during mannequin laryngoscopy. *Can J Anaesth*. Epub 2018 Jul 31. doi: [10.1007/s12630-018-1186-z](#).
- Arora N, Caldwell A, Wafa K, Szczesniak A, Caldwell M, Al-Banna N, Sharawy N, Islam S, Zhou J, Holbein BE, Kelly MEM, Lehmann C (2018). DIBI, a polymeric hydroxypyridinone ion chelator, reduces ocular inflammation in local and systemic endotoxin-induced uveitis. *Clin Hemorheol Microcirc*, 69(1-2), 153-164. [Pub.].
- Astapenko D, Pouska J, Benes J, Skulec R, Lehmann C, Vink H, Cerny V. Neuraxial anesthesia is less harmful to the endothelial glycocalyx during elective joint surgery compared to general anesthesia 1,2. *Clin Hemorheol Microcirc*. 2018 Nov 29. doi: [10.3233/CH-180428](#). [Epub ahead of print] PubMed PMID: 30507566.
- Astapenko D, Dostalova V, Dostalova V, Kraus J, Radochova V, Dostal P, Ticha A, Hyspler R, Lehmann C, Cerny V. Effect of acute hypernatremia induced by hypertonic saline administration on endothelial glycocalyx in rabbits. *Clin Hemorheol Microcirc*. 2018 Nov 2. doi: [10.3233/CH-189907](#). [Epub ahead of print] PubMed PMID: 30400083.
- Caldwell A, Morick JN, Jentsch AM, Wegner A, Pavlovic D, Al-Banna N, Lehmann C (2018). Impact of insulin on the intestinal microcirculation in a model of sepsis-related hyperglycemia. *Microvasc Res*, 119, 117-128. [Published].
- Curran JA, Bishop A, Chorney J, MacEachern L, Mackay R (2018). Partnering with parents to advance child health research. *Healthcare Management Forum*, 31(2), 45-50. [Published] PubMed ID: [29400092](#).
- Curran JA, Taylor A, Chorney J, Porter S, Murphy A, MacPhee S, Bishop A, Haworth R (2018). Development and feasibility testing of the Pediatric Emergency Discharge Interaction Coding Scheme. *Health Expectations: An International Journal of Public Participation in Health Care and Health Policy*, 20(4), 734-741. [Published] PubMed ID: [28078763](#).
- Dickson K, Liu S, Zhou J, Langille M, Holbein BE, Lehmann C (2018). Selective sensitivity of the gut microbiome to iron chelators polybacterial abdominal sepsis. *Med Hypotheses*, 120, 68-71. [Published].
- Ellis LD, Berrue F, Morash M, Achenbach JC, Hill J, McDougall JJ (2018). Comparison of cannabinoids with known analgesics using a novel high throughput zebrafish larval model of nociception. *Behavioural Brain Research*, 337, 151-159. [Published].
- Fischer S, Vinall J, Pavlova M, Graham S, Jordan A, Chorney J, Rasic N, Brookes JT, Hoy M, Yunker WK, Noel M (2018). The role of anxiety in young children's pain memory development following surgery. *Pain*. [Published] PubMed ID: [30586022](#).
- Fokam D, Lehmann C. Clinical assessment of arthritic knee pain by infrared thermography. *J Basic Clin Physiol Pharmacol*. 2018 Oct 31. pii: [/j/jbcpp-ahead-of-print/jbcpp-2017-0218/jbcpp-2017-0218.xml](#). doi: [10.1515/jbcpp-2017-0218](#). [Epub ahead of print] PubMed PMID: [30375348](#).
- Forgeron PA, Chambers CT, Cohen J, Dick B, Finley GA, Lamontagne C (2018). Dyadic differences in friendships of adolescents with chronic pain compared to pain free peers. *PAIN*, 159(6), 1103-1111. [Published].
- George RB, Habib AS (2018). In reply: Spinal anesthesia for Cesarean delivery in obese parturients: is this the best option? *Canadian Journal of Anaesthesia = Journal canadien d'anesthésie*. [Letter to the Editor - Published] PubMed ID: [29700800](#).
- George RB, McKeen DM, Dominguez JE, Allen TK, Doyle PA, Habib AS (2018). A randomized trial of phenylephrine infusion versus bolus dosing for nausea and vomiting during Cesarean delivery in obese women. *Canadian Journal of Anaesthesia*, 65(3), 254-262. [Published] PubMed ID: [29209926](#).
- Goudarzi R, Reid A, McDougall JJ (2018). Evaluation of the novel avocado/soybean unsaponifiable Arthrocent to alter joint pain and inflammation in a rat model of osteoarthritis. *PLoS One*, 13, e0191906. [Published].
- Groleau C, Wong MJ, Hung O, Morin SN, Vautour L, Bessissow A (2018). Perioperative glucocorticoid stress

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- dosing: a survey of anesthesiologists and general internists. *Canadian Journal of Anaesthesia = Journal canadien d'anesthésie*. [Published] PubMed ID: 30194673.
18. Hanafi Alamdari H, El-Sankary K, Peters U, Al Amer M, Milne AD, Henzler D, Brown J, Maksym G (2018). Analysis of the error in tracking linear time-varying respiratory mechanics with oscillometry. *IEEE Sensors*, 19(1), 311-321. [Published] DOI: [10.1109/JSEN.2018.2873184](https://doi.org/10.1109/JSEN.2018.2873184).
 19. Hanafi H, Kilcup N, Ford RZ, Wilfart FM, Roach DC, Schmidt M (2018). Design and Development of a Novel High-Throughput System for Learning and Memory on Zebrafish. *Journal of Behavioral and Brain Science*, 8(6), 351-368. [Published] DOI: [10.4236/jbbs.2018.86023](https://doi.org/10.4236/jbbs.2018.86023).
 20. Hashmi J (2018). Placebo Effect: Theory, mechanisms and teleological roots. *International Review of Neurobiology*, 139, 233-253. [Review - Published].
 21. Hung O, Stewart R, Malpas G, Phipps S, Hung D (2018). Managing the opioid epidemic: back to the basics with resuscitation. *Journal of Emergency Medicine*, 8, 1-2. [Editorial - Published] DOI: [10.1017/cem.2018.453](https://doi.org/10.1017/cem.2018.453).
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 24. Khan S, Hashmi JA, Mamashli F, Michmizos K, Kitzbichler MG, Bharadwaj H, Bekhti Y, Ganesan S, Garel KA, Whitfield-Gabrieli S, Gollub RL, Kong J, Vaina LM, Rana KD, Stufflebeam SM, Hämäläinen MS, Kenet T. Maturation trajectories of cortical resting-state networks depend on the mediating frequency band. *Neuroimage*. 2018 Jul 1;174:57-68. doi: [10.1016/j.neuroimage.2018.02.018](https://doi.org/10.1016/j.neuroimage.2018.02.018). Epub 2018 Feb 17. PubMed PMID: [29462724](https://pubmed.ncbi.nlm.nih.gov/29462724/); PubMed Central PMCID: [PMC5949275](https://pubmed.ncbi.nlm.nih.gov/pmc/PMC5949275/).
 25. Kristjánisdóttir Ó, McGrath PJ, Finley GA, Kristjánisdóttir G, Siripul P, Mackinnon S, Yoshida Y (2018). Cultural influences on parental responses to children's pain. *PAIN*, 159(10), 2035-49. [Published] DOI: [10.1097/j.pain.0000000000001289](https://doi.org/10.1097/j.pain.0000000000001289).
 26. Latimer M, Rudderham S, Lethbridge L, MacLeod E, Harman K, Sylliboy JR, Filiaggi C, Finley GA (2018). Occurrence and management of pain-related diagnoses comparing First Nation and non-First Nation children & youth. *CMAJ*, 190(49), E1434-E1440. [Published] DOI: [10.1503/cmaj.180198](https://doi.org/10.1503/cmaj.180198).
 27. Latimer M, Sylliboy JR, Macleod E, Rudderham S, Francis J, Hutt-MacLeod D, Harman K, Finley GA (2018). Creating a safe space for First Nations Youth to share their pain. *PAIN Reports*, 3, e682. [Published].
 28. Luther B, Mamopoulos A, Lehmann C, Klar E (2018). The ongoing challenge of acute mesenteric ischemia. *Visc Med*, 34(3), 217- 223. [Published].
 29. Malpas G, Hung O, Gilchrist A, Wong C, Kent B, Hirsch G, Morrison S (2018). The use of extracorporeal membrane oxygenation in the anticipated difficult airway. *Can J Anesth*, 65(6), 685-697. [Published].
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review and consensus definitions for the Standardised Endpoints in Perioperative Medicine (StEP) initiative: patient comfort. *British Journal of Anaesthesia*, 120(4), 705-711. [Published] PubMed ID: [29576111](#).

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