

Department of Anesthesia, Pain Management  
and Perioperative Medicine

# Annual Report

**2019-2020**

## 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.



**DALHOUSIE  
UNIVERSITY**

FACULTY OF MEDICINE  
Department of Anesthesia,  
Pain Management and  
Perioperative Medicine

## Beliefs & Values

### **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



Our greatest asset is each individual who contributes directly or indirectly to the research, education and clinical mandates that we are entrusted to achieve.

## Carrying a leadership legacy forward

It is my privilege and honour to carry forward the leadership legacy of the **Department of Anesthesia, Pain Management and Perioperative Medicine** as its new Head.

As I look back on our incredible history, I am struck by how each of my predecessors have played a catalyzing role in transforming anesthesiology for the better across all domains of our specialty – clinical care, quality improvement and patient safety, education and research. The successive legacies of my predecessors have made this Department what it is today: an impressively strong and vibrant academic community that continues to make a sustained positive impact on those we serve. I want to express my gratitude to **Dr. Romesh Shukla**, Professor and former Department Head, for his steadfast leadership over the past nine years and bringing us to where we are today.

Following in Dr. Shukla's footsteps, I am committed to making this "little department" a giant among its peers nationally and internationally. My vision is a shared vision with each member of the Department: I am committed to providing patients of Atlantic Canada the best anesthetic care and pain management services in the country. Entrusted by you, I will lead with courage, transparency and collaboration.

Our greatest asset is each individual who contributes directly or indirectly to the research, education and clinical mandates that we are entrusted to achieve. Each member of this Department is a keystone – an essential part of that which holds us together. Each person, regardless of their role, enables us to provide exemplary clinical care, demonstrate top-rate teaching and education, and pursue world-class research. In particular, I wish to extend a heartfelt thank you to the health services managers and staff at Nova Scotia Health, IWK Health Centre and Horizon Health who support our clinicians every day, and to the Department's wonderful administrative team who advance the important work of our finance, research, education and quality offices. I see my leadership as one that supports each Department member in being their best.

With the challenges that COVID-19 brought as I began my tenure as Department Head, I wish to recognize that we all stepped into the breach to respond in ways none of us had ever expected. We will continue to step up boldly, as clinical and academic innovators and leaders, as the pandemic alters our world. I look forward to the future as we work together to take on the challenges and collectively grow as both individuals and a department.

**Janice Chisholm, MD, FRCPC**

Professor and Head

Dalhousie University

Department of Anesthesia, Pain Management and Perioperative Medicine

Head, Central Zone, Nova Scotia Health Authority

# Message from Cabinet Chair

## Supporting a vision of strong leadership



Among its roles, Cabinet is the Department's governance body charged with monitoring its success and promoting the achievement of its overall mandate. Cabinet is really about supporting the collective and individual leadership efforts of everyone who works to make a difference in research, education and clinical care through the Department of Anesthesia, Pain Management and Perioperative Medicine.

The 2019-20 year was a significant one as we bid farewell to **Dr. Romesh Shukla**, who led the Department with strength over the past nine years. On behalf of Cabinet, I am grateful to the leadership legacy he leaves behind and wish him the best in his retirement. In the same vein, I welcome **Dr. Janice Chisholm** in her new role as Department Head. As an advisory body, Cabinet exists to support her leadership vision of making the Department among the very best in the country.

The year also provided an opportunity for self-reflection as we undertook a comprehensive self-survey. We will continue to study its results and grow in response to its findings. I wish to extend my sincerest thanks to **Marilyn Girouard**, Executive Director, who has steadfastly supported Cabinet since its inception. As she plans her retirement in the coming year, I remain grateful for the strategic leadership she has provided the Department over her many years of service.

With the writing of this report, a new reporting year has already begun with the unforeseen impacts of the COVID-19 pandemic. Cabinet remains poised to support the leadership required to respond with strength and courage, in furtherance of our clinical, education and research mandates.

Sincerely,

**André Bernard, MD, MSc, FRCPC, ICD.D**

Cabinet Chair, Department of Anesthesia, Pain Management and Perioperative Medicine  
Associate Professor, Dalhousie University  
Staff Anesthesiologist, Nova Scotia Health Authority

## Cabinet

**Dr. André Bernard** Chair, Member at Large

**Dr. Janice Chisholm**, Head (*effective March 2020*); previously, VG Site Chief, QEII Health Sciences Centre

**Dr. Romesh Shukla**, Head (*to March 2020*)

**Dr. Adam Law**, Associate Head

**Dr. Colin Audain**, Scheduler for adult services

**Dr. Todd Chedore**, Acting Chief, Anesthesiology, Saint John Regional Hospital

**Dr. Claudio Diquinzio**, Member at Large

**Dr. Robyn Doucet**, Program Director, Postgraduate

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

**Dr. Orlando Hung**, Medical Director, Research

**Dr. Blaine Kent**, HI Site Chief, QEII Health Sciences Centre

**Dr. Bruce Macaulay**, Member at Large

**Dr. Dolores McKeen**, Chief, Women's and Obstetric Anesthesia, IWK Health Centre

**Dr. Narendra Vakharia**, Medical Director, Education

## Ex-Officio

**Ms. Marilyn Girouard**, Executive Director

**Mr. Carl Stevens**, Administrator

# Who We Are & What We Do

## Patient Care\*



### Where We Do It

#### Nova Scotia Health

- QEII Health Sciences Centre (Halifax Infirmary and Victoria General sites)
- Dartmouth General Hospital
- Hants Community Hospital

#### IWK Health Centre

#### Horizon Health

- Saint John Regional Hospital
  - St. Joseph's Hospital
  - Sussex Health Centre

## Cases by Subspecialty

Acute Pain Service	1,285 new consults
Adult Chronic Pain Management	7,461 clinic visits
Blood Management Services	1,900 patient visits
Cardiac Anesthesia	2,250 cases
Chronic Pain Management	1,014 new patients
Liver Transplantation	30 cases
Neuroanesthesia	1,175 cases
Pre-anesthesia	7,987 patients seen
Pediatric Pain Management	1,399 patient visits
Pediatric Anesthesia	6,048 cases
Thoracic Anesthesia	1,202 cases
Women's & Obstetric Anesthesia	8,279 cases

## At the QEII HSC & IWK

Approx. **76,308** procedures provided

**105** anesthesiologists

**43** anesthesia technicians and assistants

**33** residents & **6** fellows

## Surgeries/Procedures

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

	Cardiovascular	1,648
	Ear, Nose & Throat (ENT)	1,896
	General Surgery/Trauma	5,110
	Gynecological Oncology	554
	Neurosurgery	2,100
	Obstetrics/Gynecology (Births)	4,534
	Obstetrics/Gynecology (OB, Gyn, Breast)	3,745
	Oral Maxillofacial Surgery	1,126
	Orthopedics	9,374
	Ophthalmology	7,613
	Pediatrics	6,048
	Plastic	1,951
	Thoracic	1,202
	Transplantation (Kidney, Liver, Heart)	151
	Urology	4,685

\* Patient care data from Saint John, N.B., sites not included.

## Education

**191**  
Faculty

**13.6%**  
with professorship  
status

**8**  
Fellowships

- Academic Adv. Clinical
- Airway Management
- Cardiac Anesthesia
- Chronic Pain Mgmt.
  - Global Health
- Pediatric Anesthesia
- Regional Anesthesia & Acute Pain
- Women's and Obstetric Anesthesia

**80**  
Med 4 undergrad  
electives  
**22**  
off-site Med 4  
undergrad electives  
**15**  
Med 3 electives  
**38**  
Med 1 & 2 electives  
**98**  
other learners

**33**  
Residents

**6**  
entering first year  
(130 applicants for six  
residency positions)

## Undergraduates



**722** undergraduate teaching hours  
**38** faculty involved in teaching

## Postgraduates



**43** off-service or visiting elective residents  
in NSHA Central Zone and the IWK  
**5** off-service residents in Saint John, N.B.

## Professional Development



**31** grand rounds sessions  
**9** conferences supported  
**2** journal clubs hosted

## Research



**20** Researchers  
(total of **5.7** full-time equivalent  
protected time)



**\$9M** Grants &  
industry funding



**22** New funded projects



**91%** Collaborative projects



**68** Publications



**73** Invited presentations



# Excellence in Patient Care

## 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 patient safety and the care provided by members of the Department of Anesthesia, Pain Management and Perioperative Medicine. Led by Director **Dr. Greg Dobson**, the team focuses on a mandate that includes monitoring the quality and safety of all anesthesia care through the collection of outcome and adverse event data, reviewing cases, hosting morbidity and mortality rounds, developing practice guidelines and issuing safety alerts. Team members also look to expand and share expertise through research projects and participation on a variety of committees, including the Clinical Advisory Committee, the Perioperative Quality Committee and the Provincial Interdisciplinary Quality and Safety Council.

The quality team is also a source of education, support and guidance to physicians navigating adverse events. That includes assisting them in communicating with patients and families as well as in maintaining their personal health and wellness in the aftermath. The team also offers assistance as needed to staff in preparing for morbidity and mortality rounds. Throughout, members strive for a confidential, non-judgmental, non-punitive process that focuses on process improvement and staff support and development.

## During 2019-20, activities and initiatives of the Office of Quality Improvement and Patient Safety included:

- **Hosting nine morbidity and mortality rounds.** These well-received educational sessions led to several policy and process changes. When required, the team arranged rounds with other specialties, including with surgeons and emergency department staff for cases that call for a multidisciplinary approach.
- **Participating in or leading several quality case reviews organized by the Nova Scotia Quality, Patient Safety and Risk Management group.** More of these are expected, and Dr. Dobson and **Dr. Andrew Milne** will continue to support the process.
- **Delivering annual Introduction to QI in Anesthesia education session in the summer to first- and second-year residents.** Other new staff and fellows were also invited to better understand and learn how to participate in local quality improvement activities. Knowledge was augmented with teaching in the OR and to identify residents who may have a career or research interest in quality and patient safety.
- **Participating significantly in or supporting research.** At any one time, several projects by Department researchers were underway in whole or partly related to quality improvement. Eight studies were specifically supported; another seven were published.
- **Continuing to improve the robustness and utility of the database.** This included increased data reporting on volume statistics and big data reports. The Anesthesia Dashboard continued to expand as a place to display some of outcome data and statistics. Among many other efforts, the team continued to acquire the Laboratory Services data to better understand the impact of anesthesia and surgery on the perioperative condition of surgical patients' physiology.



Dr. Greg Dobson (l) with quality team member Mr. Paul Brousseau

## Team

**Dr. Greg Dobson**, Director

**Dr. Andrew Milne**, Associate Director

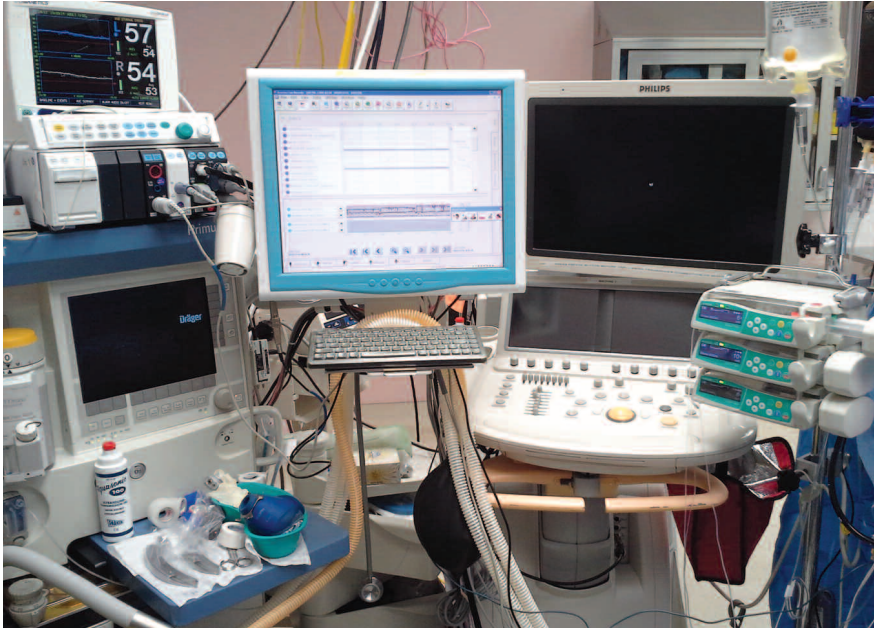
**Mr. Paul Brousseau**, Quality Officer and Data Analyst

**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



### Department's Chiefs and Site Chiefs/Leads:

**Dr. Kevin Bent**, Site Chief, Dartmouth General Hospital

**Dr. Todd Chedore**, Acting Chief, Anesthesiology, Saint John Regional Hospital

**Dr. Janice Chisholm**, Site Chief, Victoria General Site, QEII Health Sciences Centre (to March 2020)

**Dr. André Bernard**, Interim VG Site Chief (March-May 2020)

**Dr. Colin Audain**, VG Site Chief (effective May 2020)

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

**Dr. Jocelyn Foran**, Site Lead, Hants Community Hospital

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

**Dr. Dolores McKeen**, Chief, Women's and Obstetric Anesthesia, IWK Health Centre

## 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

## Dartmouth General Hospital

Site Chief **Dr. Kevin Bent**, leads the anesthesia team at Dartmouth General Hospital in delivering service to patients in four operating rooms, pre-anesthesia clinics and an acute pain service, as well as to patients at the nearby Nova Scotia Hospital. Additionally, team members contribute to the education and training of medical students and residents from a variety of disciplines, and as a refresher site for ICU and emergency department colleagues.

With the onset of the pandemic, all elective surgery was cancelled. Anesthesia members offered airway expertise to minimize exposure of COVID-19 to as few colleagues as possible in the ICU and emergency department.

Construction continued at Dartmouth General to renovate and expand the site. The anesthesia team moved into new operating rooms in December 2019. No expansion of clinical services will take place until the new day surgery and PACU are ready in 2021. Dates for completion of work remained to be confirmed as the hospital focused on operating through the pandemic with updated safety standards and maintaining bed vacancy at 15 per cent to be prepared for a possible COVID-19 surge.



**4,569 anesthetics given in the ORs**  
(down 8.7%)

**1,092 pre-op consultations**  
(down 19.5%)

**3,261 treatments given at the Nova Scotia Hospital**  
(down 19.2%)

## Hants Community Hospital

**Dr. Jocelyn Foran** provides site leadership and anesthesia service at Hants Community Hospital, which has two operating rooms and an endoscopy suite. Surgical cases are handled on an outpatient basis, chosen by surgeons using patient-selection criteria for the Windsor, N.S., hospital. Anesthesiologists from the QEII and IWK work on a rotational basis with Dr. Foran to provide the care needed by this patient population.

A small decrease in cases from the previous year reflected the impact of the pandemic, when no elective surgery was performed. As well, the hospital noted many last-minute changes to assignments that affected surgical lists. In addition to addressing this issue, Hants Community Hospital had begun work to create a pool of local general practitioners to help to decrease cancellations due to lack of surgical assists.

The hospital continued the process of adding outpatient tonsillectomies to its services and anticipated achieving this in the coming year.



**1,119 cases – (down 6.3%)**





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

### Halifax Infirmary Site

### QEII Health Sciences Centre

Under the leadership of Site Chief **Dr. Blaine Kent**, the anesthesia team at the Halifax Infirmary, QEII, provides anesthetic support for tertiary and quaternary surgical procedures for residents of Nova Scotia and the other Atlantic provinces. Team members provide care in the site's 15 operating rooms dedicated to neuro, orthopedic, plastic, vascular, general and cardiac surgery. Anesthesia support is also provided to "off-site" areas for electrophysiologic cardiac ablation procedures, transcatheter aortic valve implants (TAVIs), structural heart disease, cardioversions, interventional neuro-radiologic procedures (acute stroke protocol, aneurysms and carotid stenting), and a variety of interventional procedures that require significant procedural sedation/general anesthesia.

In addition, anesthesiologists are deployed out of the OR during weekday hours to transesophageal echocardiography (TEE), the Same-Day Admission Clinic and the regional/block room. Out-of-hours coverage (5 p.m. to 7:30 a.m. weekdays and 24 hours Saturday and Sunday) is provided year-round by five attending anesthesiologists, including dedicated on-call neuro- and cardiac anesthesiologists for those subspecialty services.

Anesthesia attending staff are also responsible for medical care and oversight of patients recovering in the post-anesthesia care unit (PACU). A significant number of new staff joined the unit during the year. This, along with newly renovated swing space (pre-op assessment in the morning and PACU in the afternoon), was welcomed, as was the completion of first of two isolation

rooms, an updated nursing station in the pre-op area, new utility rooms and Pyxis systems installed throughout the area. There was much concern regarding infection-control practices in the peri-operative period with the arrival of COVID, but many of the issues were resolved with communication, education and teamwork between the Department members and the PACU team.

An anesthesia co-ordinator worked with the charge nurse and surgical co-ordinator to aid the smooth flow of OR cases. An anesthesia assistant (AA) supported this co-ordinator role. AAs also provided support in the block room and in the general ORs, providing help during high-acuity situations, support during some anesthetic inductions, and assistance with suspected COVID-19 cases. Under the auspices of the cardiac anesthesia group, AAs routinely provided care to patients undergoing pacemakers and cardiac resynchronization therapy in the electrophysiology suite, in addition to assisting with many out-of-OR procedures.

Excellent clinical care continued to be the norm at the Halifax Infirmary, and opportunities were provided within the ORs for a variety of learners, including off-service residents, medical students and allied health students. During the year, clinical trials were ongoing and completed in the cardiac and airway management arenas, respectively.



**11,155 cases – (down 1%)**

**10,031 patients cared for in PACU – (up 3%)**

## Victoria General Site

## QEII Health Sciences Centre

The anesthesia team at the Victoria General site, QEII, delivers care in 11 operating rooms and a lithotripsy unit. On-call coverage is provided 24-7 for all services at the site, including for thoracic emergencies, liver transplantation and the Acute Pain Service. 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.

**Dr. Janice Chisholm** led the anesthesia team at the Victoria General site until being appointed Department Head in March 2020. Following a short period of interim leadership by **Dr. André Bernard**, the VG site chief role was assumed by **Dr. Colin Audain** in May 2020.

Updating and replacing capital equipment continued to be a priority at the VG Site. During 2019-20, the Department purchased two new etCO<sub>2</sub>/SpO<sub>2</sub> monitors, 16 new IV fluid warmers, two new bronchoscopes at the VG site, and the entire fleet of video laryngoscopes was also updated at both the VG and HI sites.

New syringe pumps, including large volume pumps meant to replace the Plum pumps, were introduced. These additional pumps increased the inventory such that the supply of available pumps now met the daily clinical demand. A significant effort was made to ensure that these new pumps had drug libraries that were appropriate for use in the operating room.

The availability of personnel with advanced airway skills outside the operating room 24-7 continued to have a positive effect on patient care. During the year, anesthesia assistants recorded attendance at 47 code pages at the VG site. Of the 23 that required intubation/airway management, anesthesia assistants performed 16, or 70 per cent, of the endotracheal intubations.

On multiple occasions, anesthesia assistants were paged to the ICU or PACU at the VG site (not via code team activation) for airway management, aid with deteriorating patients, intra-unit cardiac arrests, assistance in airway management, or to be on standby for the person providing primary airway management in ICU. When time permits and on request, anesthesia assistants also aided with patients with difficult peripheral vascular access outside the OR when nursing was unable to place an IV cannula.

Staff continued to be challenged by issues related to an aging infrastructure, including heating system malfunctions, elevator breakdowns and space restrictions. Safe, high-quality patient care remained the priority amid these challenges and as plans moved ahead on the addition of operating rooms at the HI site of the QEII and Dartmouth General Hospital.



16,378 OR cases – (down 0.2%)

24,234 hours in OR – (down 0.03%)



Daily anesthesia coverage is provided for nine operating rooms at the SJRH, including two cardiac operating rooms.

### Saint John, New Brunswick

Led by Acting Chief of Anesthesiology **Dr. Todd Chedore**, the Saint John, N.B., anesthesia team provides services at Saint John Regional Hospital (SJRH) and St. Joseph's Hospital, as well as at the nearby Sussex Health Centre. The team also provides coverage for an acute pain service, chronic pain clinic, obstetrical anesthesia and the pre-operative assessment clinic. (The SJRH provides surgical services to the Saint John region and tertiary services to New Brunswick and some areas of Prince Edward Island. St. Joseph's and the Sussex centre perform out-patient day surgeries.)

Daily anesthesia coverage is provided for nine operating rooms at the SJRH, including two cardiac operating rooms. Other services include neurosurgery, thoracic, vascular, orthopedics, general surgery, gynecology, urology, ENT, plastic surgery and ophthalmology. Anesthesia services provided outside the operating room include care for cardiac electrophysiology procedures, interventional radiology, MRI and pediatric oncology. Team members provide coverage in all areas, including adult and pediatric anesthesia; the only subspecialty is cardiac anesthesia, with four members in the cardiac anesthesia group.

During the year, Dr. Chedore assumed the role of clinical department head. **Dr. Amanda Smitheram** continued as residency site co-ordinator. The team welcomed several anesthesia residents from Dalhousie and a number of medical students and non-anesthesia residents to complete rotations in Saint John. Many respiratory therapy students from the New Brunswick Community College also completed rotations with the team. Grand rounds sessions were reduced as

activities were curtailed during the pandemic.

Due to decreased nursing resources, ORs ran below capacity for the first half of the year, negatively affecting surgical waitlists and anesthesia resource utilization. Operating room use was further reduced later in the year, again as a result of the pandemic.



**7,702 OR cases at SJRH** (of which 927 were cardiac procedures, including 99 transcatheter aortic valve implants)

**7,517 day surgeries at St. Joseph's Hospital**

**1,558 day surgeries at Sussex Health Centre**

## 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

Led by Subspecialty Chief **Dr. Kwesi Kwofie**, the Acute and Perioperative Pain Management group provides care to patients receiving regional blocks at the HI site and to patients requiring acute pain management services at the HI and the VG (Acute Pain Service).

During the year, the number of procedures performed in the Regional Anesthesia Block room increased a significant 27 per cent over the previous period, due in part to the increase in elective orthopedic arthroplasty rooms.

The group worked with colleagues in Critical Care and Thoracic Surgery to create more standardized pathways for patients with rib fractures. This included work to standardize data to allow for quality assurance assessments. Mean-time, the team continued to participate actively 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.

The group's delivery of a high number of workshops and lectures, locally, nationally and internationally, and continued growth and productivity of research illustrated a strong commitment to its academic mandate. Researchers authored or co-authored 18 publications during the year on the subject of regional anesthesia and acute pain.

The group remained focused on building research capacity within the group; it continued to look to increase collaboration with like-minded colleagues to increase participation in multi-centred trials to achieve high-impact, practice-changing research. With such attention, 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.



**3,531** regional anesthesia procedures

#### Acute Pain Service new consults



**At the HI – 548**

*(25% of consults with highly opioid tolerant patients – compared with 27% the year before)*



**At the VG – 737**

*(8% of consults with highly opioid tolerant patients – unchanged)*

### Blood Management Service

The Perioperative Blood Management program focuses on improving perioperative management of blood transfusion and adjuvant therapies to reduce the risk of adverse outcomes associated with transfusions, bleeding or anemia. The service, headed by **Dr. Blaine Kent**, uses multidisciplinary, multimodal, individualized strategies to minimize red





The number of referrals to the service continued to increase as Orthopedic Surgery continued to perform more arthroplasty procedures each year.

blood cell transfusion with the ultimate goal of improving patient outcomes.

The evidence-based, patient-focused program relies on approaches that detect and treat perioperative anemia and reduce surgical blood loss and perioperative coagulopathy to harness and optimize physiological tolerance of anemia. Recommendations about blood transfusion and anemia aim to ensure each patient receives the best treatment and the inappropriate use of blood components and products is minimized.

During the year, the service continued to champion patient blood management initiatives that improve patient care and use of blood components and products. Among those initiatives, team members continued to develop a cell salvage training and competency assessment of OR nurses. Work also continued to develop and implement advanced screening, diagnosis and initiation of therapy weeks before elective surgery.

The number of referrals to the service continued to increase as Orthopedic Surgery continued to perform more arthroplasty procedures each year.

Perioperative Blood Management hosted its annual CME Blood and Beyond conference in April 2019. For the 13th year, the two-day meeting brought together professionals from a wide range of disciplines to share and expand knowledge in hands-on workshops, small-group interactive sessions, and lectures from local, national and international speakers. New this past year was a percutaneous tracheostomy workshop at the VG's Simulation Centre that provided participants an opportunity to perform tracheostomy on cadavers.



**622 consults**  
(new patients)

### Cardiac Anesthesia

Led by Subspecialty Chief **Dr. Myron Kwapisz**, the cardiac anesthesia group provides care for cardiovascular surgeries, including open-heart surgery, 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 (TAVI) and heart transplantation.

Members of the cardiac group regularly care for patients in acute or chronic heart failure combined with complex hemodynamics; treating patients with severe perioperative bleeding is a major part of the clinical routine. In addition, the group performs state-of-the-art transesophageal echocardiography (TEE) and transthoracic echocardiography (TTE) for clinical decision-making in the OR, recovery room and intensive care unit.

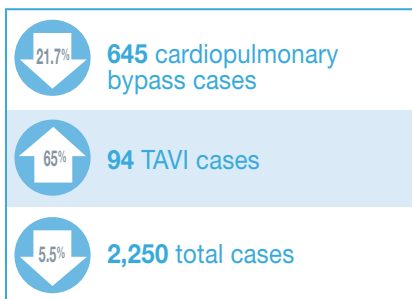
The overall number of cardiac cases remained relatively stable compared with the previous year; however, worth noting is a decrease in overall cardiopulmonary bypass cases by almost 22 per cent. In contrast, TAVI procedures increased by 65 per cent.

The cardiac anesthesia fellowship was restarted in July 2019, and **Dr. Faisal Alzahrani** completed the program successfully in June 2020. He was exposed to complex and interesting cases and received extensive training in cardiac anesthesia, TEE, TTE, intensive care medicine and additional training during his cardiology rotation.



**1,900 patient visits**  
(unchanged)

**Dr. Victor Neira** played a vital role in restarting the cardiac anesthesia fellowship successfully; he continued his role as the cardiac anesthesia fellowship director and to develop further the curriculum for a cardiac anesthesia and perioperative transesophageal echocardiography fellowship.



#### Neuroanesthesia

Subspecialty Chief **Dr. Carlo Mariotti** leads the neuroanesthesia team in providing 24-hour, high-quality care for all patients undergoing neurosurgery at the QEII Health Sciences Centre. Working closely with surgical and nursing colleagues, team members provide care in a wide variety of cases, including spine, cerebrovascular (CEAs, coil embolization, aneurysms/AVM), craniotomies (tumors/burr holes) and functional cases (SCS, transphenoidal, DBS). Other cases such as biopsies, trigeminal compression, shunts and vagal nerve are also performed. The team also provides care to patients needing MRI sedation/GA.

Many members of the neuroanesthesia group were involved in research, interdisciplinary clinics and teaching throughout the year. Researchers in the group, including **Drs. Orlando Hung, Adam Law, Christian Lehmann, Karim Mukhida and Michael Schmidt**, continued to publish heavily during the year.

Students flowed through the neuro ORs regularly, and teaching ranged from basic IV/airway skills to oral exam preps for the senior residents. With the introduction of the neuroanesthesia core case spreadsheet, the team was better able to track the procedures each resident was involved with, supporting improved evaluation.

Improving efficiency in the neuro OR continued to be a key goal of the team as it looks to perform more cases during the day and fewer at night and after hours. Changes and other actions were taken to achieve this, benefiting patients as well as staff. A planned addition of 24-hour anesthesia assistant coverage will also add to the care patients receive.



#### 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 Dickson Building and the Victoria Building of the QEII Health Sciences Centre. Inpatient consults, including palliative care, are held at the VG and HI sites as appropriate.

The team also provides care to patients at Hants Community Hospital in Windsor, N.S., and via satellite clinics at South Shore Community Hospital, Bridgewater, and the Cobequid Community Health Centre, Lower Sackville, as well as with Halifax's Mobile Outreach Street Health (MOSH) program.

Improving efficiency in the neuro OR continued to be a key goal of the team as it looks to perform more cases during the day and fewer at night and after hours.



**Dr. John Fraser's** work at MOSH, part of city's North End Community Health Centre serving vulnerable populations, contributed to a major difference to services provided addictions pain patients and their ability to access care. Dr. Fraser was also involved in two other noteworthy accomplishments: he and several anesthesia residents established a volunteer pain addictions inpatient consult service, and he and **Dr. Reza Mehrpooya** decreased the chronic pain "complex patient" waitlist substantially.

In keeping with their commitment to share expertise and grow knowledge in pain management, team members delivered 14 presentations and five abstracts at international, national and local levels. The team also hosted and delivered the 2019 Atlantic Pain Conference and served as the organization's experts for news media nationally and locally.

PMU members also led and/or participated in nine research studies and published eight articles. **Javeria Ali Hashmi, PhD**, secured several grants for her studies into chronic pain neuroimaging and pain perception.

↓ 8% 1,014 new patients

↓ 9.8% 7,461 clinic visits

↓ 1.2% 1,070 consults

#### Liver Transplantation Anesthesia

Led by Subspecialty Chief **Dr. Arnim Vlatton**, the transplantation anesthesia team provides high-quality, state-of-the-art care for patients undergoing liver and combined liver-kidney transplantation.

The group assigns two dedicated transplantation anesthesiologists for each case, consistent with most North American academic centres.

For the second year in a row, the number of liver transplantation increased, to 30 cases from 26. The number screened was 53, just slightly down from the previous year.

Liver transplantation, with its complex pathophysiological changes, provided excellent learning opportunities. Beginning in early 2019, senior anesthesiology residents have been involved during liver transplants to enhance their learning. Several members presented transplantation anesthesia topics during weekly postgraduate teaching sessions. During the year, no group member conducted research specific to transplantation anesthesia. However, several members were involved in numerous research activities in various other anesthesia fields.

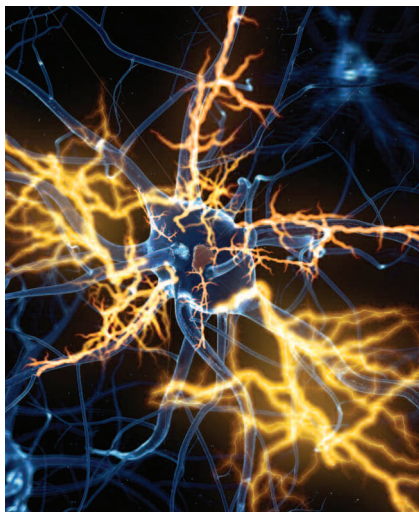
↑ 15.4% 30 cases

↓ 3.6% 53 patients screened

#### Pediatric Anesthesia

**Dr. Scott Drysdale**, Chief of Pediatric Anesthesia, leads the team at the IWK Health Centre responsible for providing anesthesia consultation and pain management services to neonates, infants, children and adolescents of the Maritime provinces. The group also provides anesthetic care for emergency procedures throughout the year.

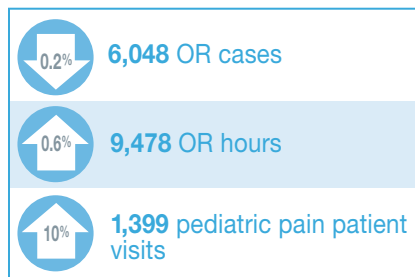
Among its accomplishments, Department of Pediatric Anesthesia noted the



successful, continued expansion of the pediatric cardiac surgery service.

Other successes targeted wait times: a partnership with the provincial Department of Health and Wellness focused on reducing waits for diagnostic imaging, and the group recorded a dramatic reduction in wait times for initial assessments at its Complex Pain Clinic.

As with other divisions, the pandemic will continue to impact the service in the next year as team members respond to uncertainty while maintaining skills, maximizing elective surgical OR use, and providing quality care.



### Pre-Anesthesia

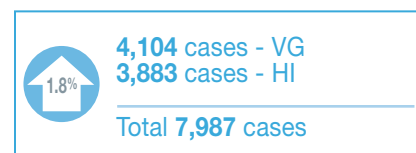
Pre-anesthesia clinics operate at both the HI and VG sites of the QEII Health Sciences Centre; anesthesiologists assigned to the clinic evaluate, stratify risk and optimize patients scheduled for elective surgery. Guided by Medical Director **Dr. David MacDonald**, staff at these clinics predominantly assess patients scheduled for admission following surgery (same-day admission). They also assess high-risk or medically complex ambulatory surgical patients based on screening. In addition to anesthesiologists, the team consists of nurses, pharmacy technologists and a ward clerk at each site.

Anesthesia residents rotate through the pre-anesthesia clinics to learn how to effectively assess and counsel patients before surgery. In addition, medical students and anesthesia assistant students also spend time in the clinics.

For the past year and a half, the team worked toward modernizing the clinics. This involved creating a new patient health history questionnaire, a new testing grid, and up-to-date indications for anesthesia consultation. In 2019, all of these documents were approved by the QEII Clinical Advisory Committee.

Also last year, government funding increased the hospital's capacity to perform major joint arthroplasty with four new orthopedic rooms each week. This meant a direct impact on the HI pre-anesthesia clinic as approximately 16 additional anesthesia assessments were needed weekly. To address the added demand, two physician days were regularly scheduled twice per week, and the physical space was optimized to improve patient flow and increase daily numbers on the two physician days.

After the start of COVID-19, the clinics continued to operate by providing phone assessments of patients undergoing cancer and other urgent surgeries. This assessment model was generally well received and will likely continue through the pandemic.



After the start of COVID-19, the clinics continued to operate by providing phone assessments of patients undergoing cancer and other urgent surgeries.



As thoracic surgery services continued to be consolidated provincially at the QEII, the demand for thoracic anesthesia services continued to increase.

### Thoracic Anesthesia

Members of the thoracic anesthesia subspecialty group are dedicated to the care of patients who arrive at the QEII Health Sciences, the Atlantic region's referral centre for adult thoracic surgery services. Led by Sub-specialty Chief **Dr. George Kanellakos**, the team addresses an array of complex cases. On average each year, there are approximately 250 major pulmonary resections and 40 esophagectomies. Procedures include lung resection, bronchoscopy, pleuroscopy, decortication surgery, esophageal surgery, mediastinal mass resection, hiatal hernia reduction surgery, and thymectomy.

The Department's continued leadership in advancing regional anesthesia services was reflected in thoracic surgical cases. For qualifying patients, post-operative pain management is achieved with surgically placed thoracic paravertebral catheter blocks. Dalhousie and the QEII lead nationally in developing and implementing these blocks.

As thoracic surgery services continued to be consolidated provincially at the QEII, the demand for thoracic anesthesia services continued to increase. After staffing challenges for a number of years, levels stabilized during the year and a succession plan put in place with thoracic anesthesia trained fellows present in early, mid- and late-career paths.



1,202 cases

### Women's and Obstetric Anesthesia

The IWK Women's and Obstetric Department of Anesthesia, led by Chief **Dr. Dolores McKeen**, provides obstetric and adult surgical (gynecology/urogynecology and breast health) care to patients at the IWK Health Centre and the QEII Health Sciences Centre. Ancillary perioperative services include an Acute Pain Service, a Pre-Admission Clinic, an Anesthesia Consultation Service, integral participation of the Cardiac Arrest Team, and urgent medical care. The group also supports and provides anesthetic services to other parts of Nova Scotia and the Maritimes in IWK's role as an obstetric and neonatal referral centre for tertiary high-risk cases.

During the year, a six-month sustainability audit was conducted to assess knowledge translation and implementation of the Enhanced Recovery After Surgery (ERAS) program of care. The IWK was the first hospital in the Maritimes to institute the program, starting in early 2018. ERAS is designed to change clinical care practices with the goal to improve overall perioperative patient outcomes. The 2019 audit showed more than 84 per cent adherence to the ERAS practice guidelines across 26 clinical care targets, indicating that the program of care has become embedded in practice.

The team continued to make significant contributions to the Department's overall education and research mandates. The Women's and Obstetric Research Unit is committed to improving perioperative and pregnancy-related outcomes of women and babies in the Maritimes through an evidence-based approach that prioritizes patient safety. During the year, 21 studies were underway. The team published 15 papers and eight abstracts and provided 22 presentations.

Of particular note, **Dr. Ana Sjaus** developed a curriculum, educational videos and course materials for an online learning course on TEE/PoCUS – Echocardiography for Anesthesiologists Blended Learning (EnABLE). Funding from the Royal College supported development and course accreditation. She taught the EnABLE course to 12 anesthesiologists in Women's and Obstetrics.



**4,534** live births



**3,745** surgical cases  
(Incl. obst, gyn & breast health)



# Excellence in Education

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

Throughout an academic year, there are many opportunities for education initiatives to occur and to share success within the Department. The 2019-20 year can easily be viewed through before-and-after lenses: before COVID-19 appeared in Nova Scotia in mid-March, and after, when many classes moved online and numerous activities were cancelled or curtailed.

The Department's Office of Education was called on to respond and adapt quickly to changing conditions to ensure the continued delivery of top-quality learning experiences to hundreds of learners. In addition to its undergraduate medical elective program and its post-graduate (residency) program and fellowships, the Department delivered training to, among others, respiratory therapists, anesthesia assistants, paramedics and practising clinicians.

**Dr. Narendra Vakharia**, Medical Director for the Office of Education, noted: *"Faculty and administrative staff have always been fully committed and engaged in the delivery of the education programming and initiatives with the Department. When COVID-19 arrived in the Maritimes, everyone remained steadfast in the delivery of needed programming through quick decisions and measures, while adhering to provincial guidelines."*

While occasionally challenging during a period of physical distancing, the Office of Education team maintained a high commitment to supporting anesthesiologists in enhancing and expanding their knowledge through grand rounds and other continuing professional development opportunities through the year. Numerous faculty members were engaged in the depart-



mental mentorship program, as were the residents.

The Department's advanced postgraduate curriculum continued to be highly regarded nationally. This past year, a high number of applicants – 130 – again sought one of the six residency positions. Also, in 2019-20, the Department welcomed its first cardiac anesthesia fellow, one of eight coveted sub-specialty fellowship positions. Applicants for both programs have indicated they are attracted to the learner-centric environment and the experience provided them by educational leaders in the Department. The fellowships are enriched by advanced clinical training and both teaching and research opportunities, which are customized to each program and each fellow.

*The Education team (l-r above): Dr. Tim Mullen, Dr. Ben Schelew, Ms. Laura Harris Buffett, Dr. Robyn Doucet, Ms. Cyndi Lushman, Dr. Narendra Vakharia, Dr. Shannon Bradley, Ms. Jessie Purvis (absent: Dr. Adrienne Carr, Dr. Cathy Delbridge, Dr. Patty Livingston, Ms. Lisa Nardecchia)*

## Leadership Team

**Dr. Narendra Vakharia**, Medical Director, Education

**Dr. Robyn Doucet**, Program Director, Postgraduate

**Dr. Shannon Bradley**, Associate Program Director, Postgraduate

**Dr. Adrienne Carr**, Medical Director, Undergraduate

**Dr. Cathy Delbridge**, Medical Director, Simulation

**Dr. Patty Livingston**, Medical Director, Global Health

**Dr. Tim Mullen**, Medical Director, Fellowship and Continuing Professional Development

**Ms. Laura Harris Buffett**, Managing Director, Education



The VAST program allows for simulation training for perioperative skills to be more widely available in low-resource parts of the world.

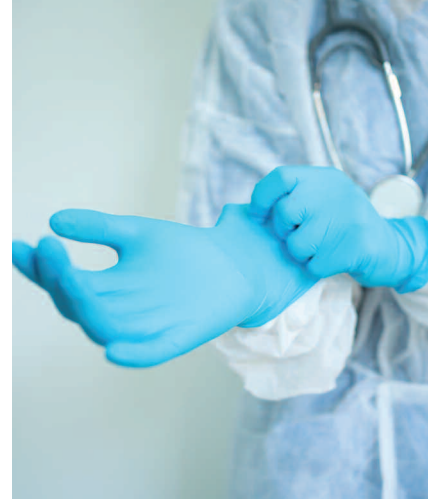
### Global Health makes a difference

The Global Health team continued to lead the way with its Vital Anesthesia Simulation Training (VAST) Course. **Dr. Patricia Livingston** received one of the first grants awarded by Royal College International (RCI) – the amount of \$30,000 annually for three years to support faculty development.

*“The RCI support is enormously important in allowing us to build a strong program for VAST facilitator training and simulation-based medical education globally,”* said Dr. Livingston, who co-created the VAST course in 2017 with **Dr. Adam Mossenson**, then a global health fellow at Dalhousie University, and Dr. Christian Mukwesi, a Rwandan anesthesiologist.

The VAST program allows for simulation training for perioperative skills to be more widely available in low-resource parts of the world. As the pandemic deepened, Drs. Livingston and Mossenson developed a COVID-19 simulation scenario and checklist, which was shared widely with colleagues abroad. Appreciation flowed from medical teams in Rwanda, Ethiopia, Uganda and India as they applied the scenario to their training and preparation.

Just prior to the RCI award, the Canadian Anesthesiologists’ Society announced that it was honouring Dr. Livingston with its Humanitarian Award for her global health work. The society praised her for the impact she has had, with her counterparts in Rwanda, on the development of a residency program and continuing professional development activities, as well as the development of the VAST Course.



### Simulations help to prepare for pandemic

Simulation training was also important closer to home as Department staff prepared for a possible surge in coronavirus cases through the spring. Led by **Drs. Carrie Goodine** and **Edmund Tan**, all anesthesia physicians and residents at the QEII Health Sciences Centre completed training for safe PPE donning and doffing and COVID-19 airway management.

At the women’s site of the IWK Health Centre, **Dr. Narendra Vakharia** and **Dr. Ana Sjaus** were recognized for their leadership in developing, within weeks, COVID-19 simulations and care pathways. Sessions were delivered to multiple interdisciplinary teams throughout the IWK over five days in March 2020.

The simulation centre continued to address the availability of personnel during the academic year. Despite challenges, all simulation sessions within the residency program were delivered. Due to COVID-19, some sessions were postponed to the 2020-21 academic year.

## Focusing on member wellness

The Department's Wellness Committee, chaired by **Dr. Tracy Kok**, had barely launched when the pandemic took hold in Nova Scotia. The committee immediately identified the need to support members through this stressful period, as many faced self-isolation and other challenges.

The committee noted higher rates of depression, anxiety, insomnia and substance use are associated with public health crises, and health care workers and others in quarantine are at increased risk of mental health effects.

The Wellness Committee researched and shared with members strategies to mitigate the effects of the stresses many faced, including a parent/caregiver guide to help families cope. It also gathered and curated a list of health and wellness resources, providing web links to local supports for mental health and fitness and to online entertainment and food/drink sources.



The committee also launched a private Facebook group to support Department members' efforts to stay connected and informally share information.

## Excellence recognized by students

The challenges of teaching during a most unusual academic year did not faze the Department's faculty members. Student evaluations ranked four members of the Department among the top 10 per cent of all undergrad medical educators. Recognized for teaching excellence were **Drs. Carrie Goodine, Andrew Jarvie, Andrei Khorovets** and **Hilary MacCormick**.

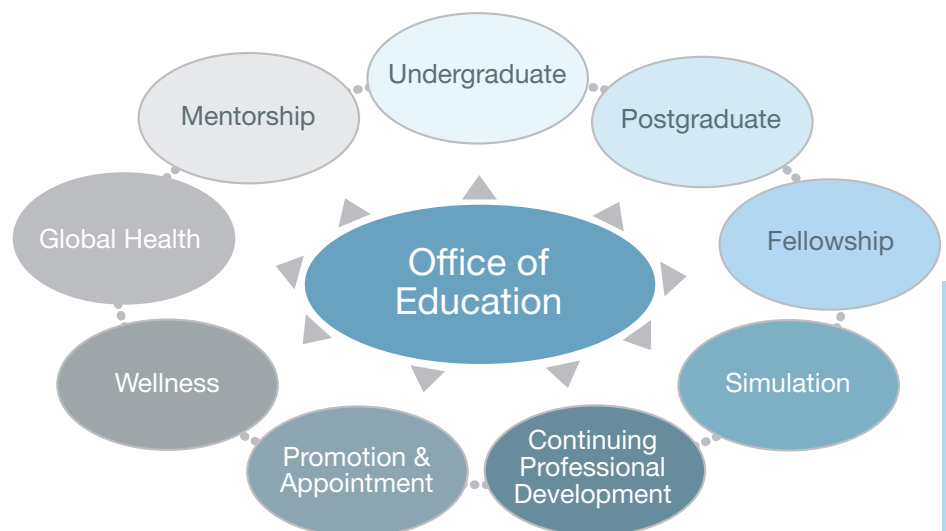
The four achieved the high ranking for the 2019-20 academic year when compared with evaluations of all instructors in the Faculty of Medicine. In a letter of appreciation, Dr. Evelyn Sutton, associate dean of undergraduate medical education, thanked each for their hard work, time commitment and excellence.

*"We are fortunate that you are willing to share your expertise in contributing to the education of the physicians of tomorrow,"* said Dr. Sutton.



## Dr. Kitt Turney remembered

The Department was saddened to learn of the sudden passing of **Dr. Kitt Turney**, an anesthesiologist who completed her residency at Dalhousie in 2018. She was a well-loved and respected member of staff at Lions Gate Hospital in North Vancouver, B.C., which she joined after residency. An accomplished athlete as well as musician, singer and songwriter, she had an effervescent, uplifting way and was a bright light who worked at bringing people together, at work and outside for fun. Dr. Turney died in North Vancouver on Dec. 10, 2019, at age 37.

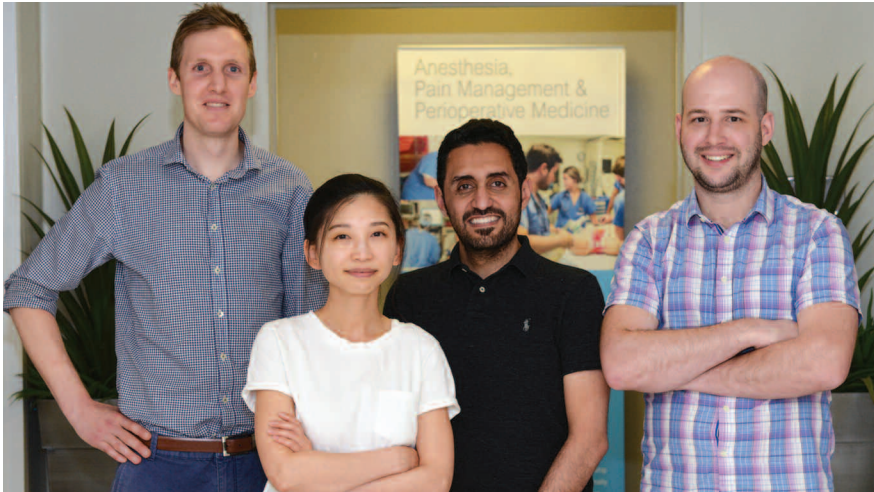


## Residents and Fellows

In 2020, seven residents and four fellows completed learning milestones with the Department.

### CONGRATULATIONS TO:

#### FELLOWS



*Pictured left to right:*

**Dr. Tom Druitt**  
Global Health

**Dr. Sherry Jin**  
Women's and Obstetric Anesthesia

**Dr. Faisal Alzahrani**  
Cardiac Anesthesia

**Dr. Sean Donald**  
Regional Anesthesia and Acute Pain

#### RESIDENTS



Dr. Ben Cairns



Dr. Janny Ke



Dr. Jason Meisner



Dr. François Michaud



Dr. Vivian Wang



Dr. Derek Wong



Dr. Mike Wong

All seven were successful on their  
FRCPSC exams in August 2020.



Doctor

Healthy

$H_2O$

Anesthesia

DNA

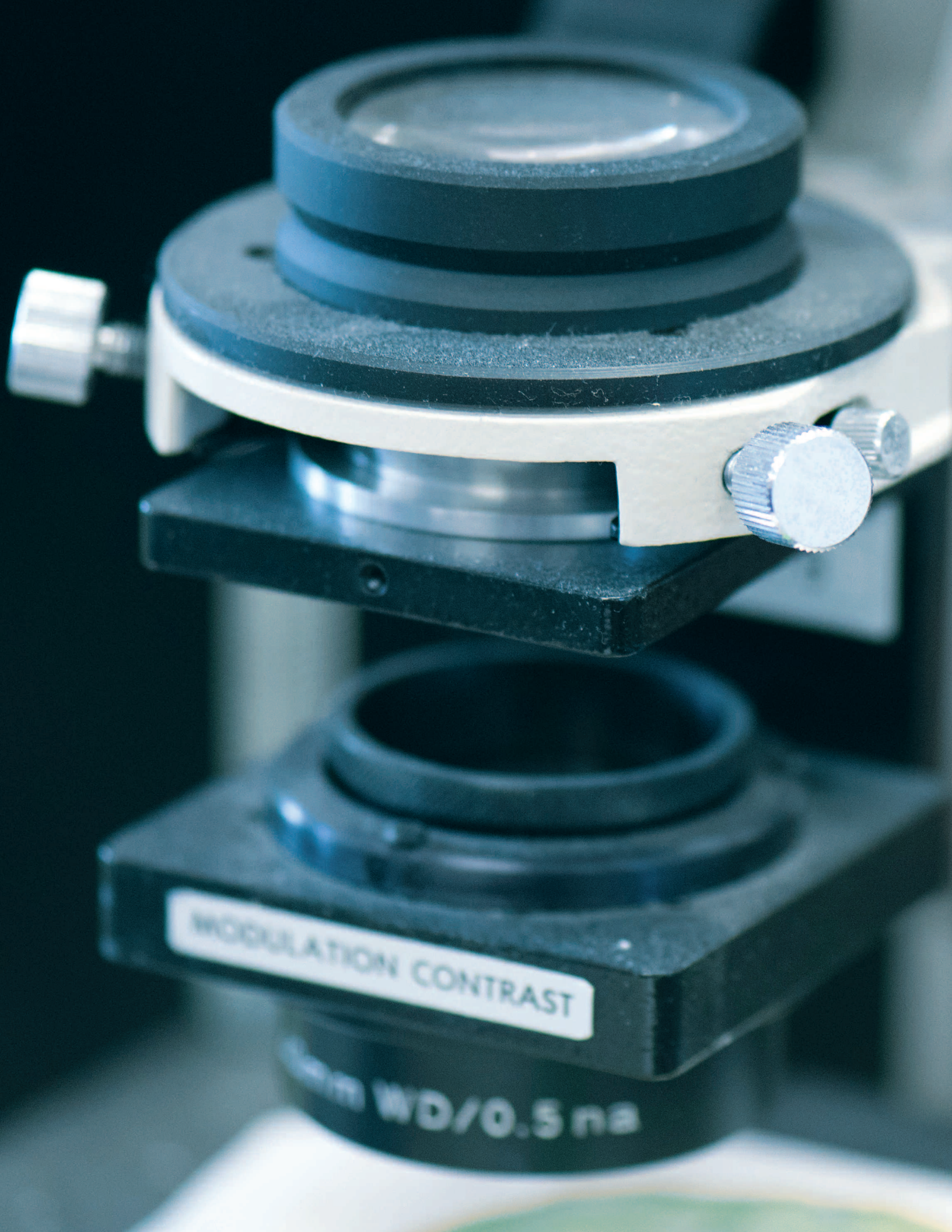
Medical

Hospital

Healthy

$H_2SO_4$

He



MODULATION CONTRAST

WD/0.5 nA

# Excellence in Research

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

The Department's researchers found themselves well positioned to quickly shift research priorities to address pressing global concerns as the pandemic expanded into Nova Scotia late in the 2019-20 fiscal year. A collaborative mindset was fundamental to that "pivot" – a mindset and approach the Office of Research has encouraged and supported over the past few years.

**Dr. Orlando Hung**, Medical Director for the Office of Research, said that while a lot of activity was suspended or curtailed at the pandemic's onset, research in the Department dramatically increased. *"In our Department, we have a lot of ideas that flourish in collaboration with other people. When COVID came, we were able to refocus very readily because of those relationships built over time."*

Researchers quickly refocused on areas related to and impacted by COVID-19. Some combined forces with researchers in the fields of clinical, social and organizational psychology, statistics and epidemiology to investigate rates of physician burnout during the pandemic (page 28). Another joined a colleague in Ontario to assess the impact of the pandemic on pain clinics nationally (page 28). Anesthesiologists who previously worked with biomedical engineers now teamed up to develop improved protective barrier and equipment. While still others teamed up with international colleagues to determine the effectiveness of hydroxychloroquine or to update guidelines to improve safety in regional anesthesia.

These ready alliances were extensions of earlier collaborative efforts. They align with the Office of Research's strategic focus on growing research by fostering relationships among researchers and different disciplines and participation in national and international studies. In 2019-20, the Department's proportion of collaborative research projects and publications was 91 per cent, above its target of 80 per cent.

*"At the end of the day, success comes from interaction and integration between different areas,"* said Dr. Hung. *"Working together, we can create something remarkable and make a difference."*



## Leadership Team

**Dr. Orlando Hung**  
Medical Director, Research

**Dr. Scott Drysdale**  
Associate Director, Pediatric Anesthesia

**Dr. Christian Lehmann**  
Associate Director, Central Zone-Adult

**Jason McDougall, PhD**  
Associate Director, Tupper site

**Dr. Allana Munro**  
Associate Director, Women's and Obstetric Anesthesia

**Heather Butler, PhD**  
Managing Director, Research



Burnout, depression and suicide are more common among physicians than most people realize, even at the best of times.

### Physician burnout and the pandemic

**Dr. Jon Bailey** is nurturing a program of research in regional anesthesia. However, the onset of COVID-19 compelled him to follow his passion for physician well-being by leading a project to investigate burnout among physicians nationally during the pandemic.

Joining him on the multidisciplinary team from Anesthesia were **Drs. Michael Wong, Garrett Barry** and **Allana Munro** and **Jillian Banfield, PhD**, as well as expert colleagues from the fields of psychology and epidemiology.\*

In assessing burnout, the COVID Pandemic short Interval National survey Gauging psychological distress among physicians (COPING survey) also explored how mitigating and exacerbating factors influenced those rates. These include the level of pandemic preparedness, risk perception, patient numbers and organizational factors.

*"Burnout, depression and suicide are more common among physicians than most people realize, even at the best of times," said Dr. Bailey. "This pandemic represents a serious threat to the mental health of our friends and colleagues. We hope this survey will help us understand how to maintain a healthy physician workforce."*

\* Michael Leiter, PhD, is a professor emeritus in social psychology and world-renowned expert in burnout; he co-developed the *Maslach Burnout Inventory* and authored numerous papers and books on burnout. Susan Kirkland, PhD, is the head of the Dalhousie Department of Epidemiology and Community Health, bringing experience with national longitudinal survey administration. Two psychology team members, Sean MacKinnon, PhD, and Kristen Bailey, have experience with statistics for longitudinal data.

### COVID's impact on pain clinic patients

**Dr. Mary Lynch, Jillian Banfield, PhD**, and colleague Dr. Owen Williamson, of McMaster University, surveyed pain clinic directors across Canada to assess the impact of cancelled or curtailed in-person appointments with the arrival of COVID-19.

The study, [\*COVID-19 Impact and Response by Canadian Pain Clinics: A National Survey of Adult Pain Clinics\*](#), sought to identify what changes to clinic practices might be maintained post-pandemic. The research was published in the *Canadian Journal of Pain*.



Clinic directors found that patients were waiting longer and had lost access to usual care. They reported increased levels of pain, stress, and medication use, particularly opioids and cannabinoids.

The researchers concluded: "Access to adaptable and innovative technologies, such as Telehealth, can assist in the care of the one in five Canadians living with chronic pain during times of crises, and must be included as a vital component of a comprehensive Canadian Pain Strategy."

## Studies focus on sexual and gender minorities

**Dr. Hilary MacCormick** cares deeply about diversity, equity and inclusion. She has turned that enthusiasm into a research program focused on under-represented sexual and gender minorities (SGM) patient groups.

*"Sexual and gender minorities represent a wide variety of marginalized populations," she noted. "How well health providers interact with them as patients can influence health outcomes, and that means having appropriate training."*

In the study, [\*Sexual and gender minorities educational content within obstetric anesthesia fellowship programs: a survey\*](#), Dr. MacCormick and co-author Dr. Ronald George of the University of California, San Francisco (and formerly with Dalhousie University), undertook an environmental scan of the content of North American obstetric anesthesia fellowship programs. The study was published in the *Canadian Journal of Anesthesia*.

*"Our results suggest that, although curriculum leaders appreciate that SGM patients are encountered within the practice of obstetric anesthesia, most fellowship programs do not explicitly include SGM curricular content," the researchers concluded. "Nevertheless, there appears to be interest in developing SGM curricular content for obstetric anesthesia fellowship training. Future steps should include perspectives of trainees and patients to inform curricular content."*

To further curriculum development, Dr. MacCormick began a qualitative study in early 2020 to describe the lived experiences of transgender and non-binary persons in the perioperative context.



She leads the collaborative effort with co-investigators including Department colleague **Dr. Allana Munro**, Dr. George from UCSF and other colleagues at Dalhousie, University of Ottawa, University of Toronto and University of Wisconsin.\*

*"Lack of education among health-care providers is one of the barriers to care for sexual and gender minorities," said Dr. MacCormick. "By detailing the lived experiences of trans and non-binary patients in the perioperative context, we hope to guide further research to create curricular content and, ultimately, improve care for gender minorities."*

\*Additional co-investigators are Dr. Dylan Bould (U of Ottawa), Dr. Gianni Lorello (U of Toronto), Dr. Yonah Krakowski (U of Toronto), Sarah Morgan, RN (U of Wisconsin) and Les T. Johnson, PhD (unaffiliated).

## Year Marks Steady Growth

Before the shift to COVID in mid-March, the Department was recording steady growth in its research agenda in a number of areas.

The work of the 20 researchers with protected time drew \$9 million in grants and industry funding during the 2019 calendar year, up from \$8.3 million the previous year.

Twenty-two new funded research projects were launched, up from 17. And 68 publications were submitted and accepted, including 55 peer-reviewed articles.

*See Appendix A for the 2019 new funded research projects, and Appendix B for a list of the 2019 publications.*



# Celebrating Excellence

## Teaching Awards

### Dr. Ben Schelew

Undergraduate Teacher of the Year

### Dr. Ben Schelew

Clinical Teacher of the Year Award

### Dr. Amanda Smitheram

New Brunswick Clinical Teacher of the Year Award

### Dr. David MacDonald

Mentor/Role Model

### Dr. Jon Bailey

Resident Advocate

### Dr. Mike Wong

Resident Teacher

### Dr. Tricia Doyle

Certificate of Appreciation – ITER/ITAR

### Dr. Mallory Garza

Certificate of Appreciation – DEC

Due to the pandemic, the Department held an online get-together this year instead of its annual celebratory dinner to recognize the dedication of these members.

Thank you to them and also to all members of the Department whose commitment and hard work are fundamental to the Department's ability to deliver high-quality training and education.

## Special Recognition

In 2019-20, several Department members were singled out for their expertise and leadership:

### Dr. Patricia Livingston

CAS Humanitarian Award,  
Canadian Anesthesiologists' Society

### Dr. Haotian Wang

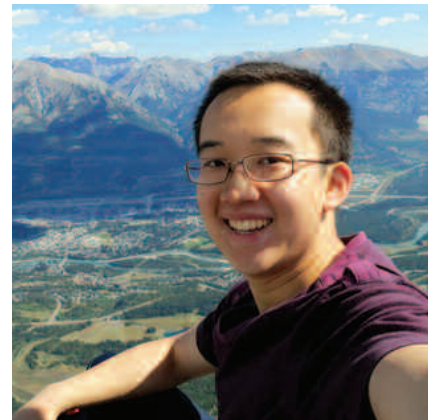
Resident of the Month,  
Maritime Resident Doctors

### Dr. Brendan Morgan

Dr. TJ (Jock) Murray Resident Award  
for Leadership in Global Health,  
Dalhousie Medical School



Dr. Patricia Livingston



Dr. Haotian Wang



Dr. Brendan Morgan

# Appendices

# Appendix A

## 2019 New Funded Research Projects

1. Bailey JG, Uppal V, Dib K (2020-2022). Continuous Serratus Anterior Blockade for Sternotomy Analgesia following Cardiac Surgery: A pilot feasibility study [Grant] – NSHARF – \$23,561.
2. Bailey J, Uppal V, Neira V, Hendy A, Chadrawy E, Hammond P, Langille L, Mills V (2020-2021). Continuous serratus anterior blockade for sternotomy analgesia following cardiac surgery: A pilot feasibility study [Grant] – Department of Anesthesia, Pain Management and Perioperative Medicine – \$19,894.
3. Bessissow A, Baldini G, Minnella E, Fiore JF, Merrett P, Morley E, Sloan E, Wong M, Hung O, et al (2020). Towards National Recommendations for Perioperative Corticosteroids Stress Dose Administration [Grant] – CIHR – \$15,000.
4. Calkin C, Friedman A, Hashmi J (2019-2023). Neuroanatomical and neurofunctional assessment in acquired brain injury [Grant] – Global Affairs Canada – \$3,600,000.
5. Chambers CT, Ali S, Barwick M, Campbell F, Campbell-Yeo M, Finley A, Jordan I, Orji R, Stevens B, Stinson J, Taddio A, Witteman H (2019-2020). "It Doesn't Have to Hurt": Towards a Patient – and Family-Focused Digital Health Tool to Improve Children's Pain Management – A Consensus Conference. CIHR Planning and Dissemination Grant – Institute Community Support [Grant] – CIHR – \$10,000.
6. Cheng Zhenyu, Lehmann Christian (2019-2023). *Pseudomonas aeruginosa* protease promotes chronic inflammation and immune evasion [Grant] – CIHR – \$963,900.
7. Donald S, Uppal V, Bailey J, Sandeski R (2020). A cadaver investigation assessing the needle path of the costoclavicular brachial plexus block [Grant] – Department of Anesthesia, Pain Management and Perioperative Medicine – \$4,904.
8. Hashmi J, Cane D, Matwin S, Beauprie I, Fisk J, Kelland A, Lynch M, Mukhida K, Beyea S, Bowen C, Matharoo G (2020-2023). Strategy for understanding how expectations interfere with chronic pain management: a multi-modal neuroimaging study [Grant] – CIHR – \$466,651.
9. Juan Zhou, Christian Lehmann, (2019-2021). Novel Treatments for bladder inflammation and pain [Grant] – Mitacs – \$186,666.
10. Kelly L, Chambers CT, Finley GA, Lacaze T, Oberlander T, Huntsman R, Alcorn J (2020-2023). Cannabis for chronic daily headaches in adolescents [Grant] – SickKids Foundation – \$293,335.



11. Kelly L, tJong, Moore, Hepburn, Alcorn, Finkelstein, Lacaze, Oberlander T, Rassekh, Tsang, Balneaves, Balshaw, Burns, Crooks B, Drogemoller, Dupuis, Dyson, Finley GA, et al (2020-2024). Cannabis for symptom management in children with cancer: a demonstration project by the Canadian Childhood Cannabinoid Clinical Trials (C4T) platform [Grant] – CIHR – \$1,499,000.
12. Lalu MM, Mendelson AA, Fox-Robichaud AE, Kubes P, McIntye M; Co-Is: Cepinskas G, Dos Santos C, Ellis C, Fergusson D, Fiest K, Gill S, Kowalewska P, Krewulak K, Lehmann C, Liaw P, Macala K, Marshall J, McDonald B, Mei S, Presseau J, Vazquez-Grande G, Veldhuizen R, Winston B, Zarychanski R, Zhou J (2019-2020). National Preclinical Sepsis Platform: Developing a framework for accelerating innovation in Canadian sepsis research [Grant] – CIHR – \$9,995.
13. Lehmann C (2019-2020). Interstitial Cystitis and IBD research [Grant] – CRA with Tetra Bio-Pharma – \$489,195.
14. Lynch M (2019). Annual Atlantic Pain Conference [Donation] – Industry support and registrations – \$24,500.
15. Lynch M, Curwin G (2019-2020). Product Formulation, Physiology and Sensory Testing 1 [Grant] – IRAP/NRC Science & Technology Assistance Program – \$5,000.
16. Lynch M, Curwin G (2019-2020). Product Formulation, Physiology and Sensory Testing 2 [Grant] – IRAP/NRC Science & Technology Assistance Program – \$5,000.
17. Lynch M, Curwin G (2020-2021). Product Development and Regulatory approval of a plant-based meal replacement beverage [Grant] – ACOA Business Development Program – \$300,000.
18. MacCormick H, Johnson LT, Cyr JD, George RB, Bould MD (2020-2021). Lived experiences of transgender and nonbinary persons in the perioperative context: a qualitative study [Grant] – Department of Anesthesia, Pain Management and Perioperative Medicine – \$20,002.
19. Munro A, Randle E, Dryden T (2019-2021). Interdisciplinary approach to managing Chronic Pelvic Pain [Grant] – TRIC IWK – \$3,000.
20. Sjaus A, Tan E (2019-2020). The impact of expertise and equipment on point of care ultrasound (POCUS) in term pregnancy: Inferior vena cava imaging by non-experts using hand-held point-of-care ultrasound device – a comparison with expert operator and full size ultrasound equipment [Grant] – Department of Anesthesia, Pain Management and Perioperative Medicine – \$12,592.
21. Tuyishme J, Szerb J, Whitfield K, Bianco J (2020-2021). Nutritional Status Among Critically Ill Patients in Rwanda: Is It Feasible to Take a Novel Approach to Enteral Feeding? [Grant] – Jewish Community Foundation Montreal – \$12,904.
22. Zhou J, Lehmann C, Chappe V (2019-2020). Targeting iron for modulation of inflammation and infection in cystic fibrosis [Grant] – The Lung Association of Nova Scotia (LANS) Legacy Research Grant – \$25,000.

# Appendix B

## 2019 Publications

Note: This list of publications includes 55 peer-reviewed articles that were published by researchers with protected time; the articles are accessible online. An additional 13 peer-reviewed articles were published by other Department members, for a total of 68 publications.

1. Astapenko D, Benes J, Pouska J, Lehmann C, Islam S, Cerny V (2019). Endothelial glycocalyx in acute care surgery – what anaesthesiologists need to know for clinical practice. *BMC Anesthesiology*, 19(1), 238. [Review – Published] PubMed ID: 31862008.
2. Astapenko D, Ticha A, Tomasova A, Hyspler R, Zadak Z, Lehmann C, Cerny V (2019). Evaluation of endothelial glycocalyx in healthy volunteers – An observational study. *Clinical Hemorheology and Microcirculation*, 30(10), 3233/CH-190581. [Published] PubMed ID: 31683466.
3. Astapenko D, Turek Z, Dostal P, Hyspler R, Ticha A, Kaska M, Zadak Z, Skulec R, Lehmann C, Cerny V (2019). Effect of short-term administration of lipid emulsion on endothelial glycocalyx integrity in ICU patients – A microvascular and biochemical pilot study. *Clinical Hemorheology and Microcirculation*, 73(2), 329-339. [Published] PubMed ID: 31306112.
4. Barnes J, Hunter J, Harris S, Shankar-Hari M, Diouf E, Jammer I, Kalkman C, Klein AA, Corcoran T, Dieleman S, Grocott MPW, Mythen MG, the StEP-COMPAC group [including George RB] (2019). Systematic review and consensus definitions for the Standardised Endpoints in Perioperative Medicine (StEP) initiative: infection and sepsis. *British Journal of Anaesthesia*, 122(4), 500-508. [Published] PubMed ID: 30857606.
5. Bauchat JR, Weiniger CF, Sultan P, Habib AS, Ando K, Kowalczyk JJ, Kato R, George RB, Palmer CM, Carvalho B (2019). Society for Obstetric Anesthesia and Perinatology Consensus Statement: Monitoring Recommendations for Prevention and Detection of Respiratory Depression Associated With Administration of Neuraxial Morphine for Cesarean Delivery Analgesia. *Anesthesia and Analgesia*. [Published] PubMed ID: 31082964.
6. Bautista L, George RB (2019). Dexmedetomidine for every Cesarean delivery... maybe not? *Canadian Journal of Anesthesia = Journal canadien d'anesthésie*, 66(7), 751-754. [Editorial – Published] PubMed ID: 30919235.
7. Berger G, Arora N, Burkovskiy I, Xia Y, Chinnadurai A, Westhofen R, Hagn G, Cox A, Kelly M, Zhou J, Lehmann C (2019). Experimental Cannabinoid 2 Receptor Activation by Phyto-Derived and Synthetic Cannabinoid Ligands in LPS-Induced Interstitial Cystitis in Mice. *Molecules* (Basel, Switzerland), 24(23), 4239. [Published] PubMed ID: 31766439.
8. Chinnadurai A, Berger G, Burkovskiy I, Zhou J, Cox A, Lynch M, Lehmann C (2019). Monoacylglycerol lipase inhibition as potential treatment for interstitial cystitis. *Medical Hypotheses*, 131, 109321. [Published] PubMed ID: 31443753.
9. Colish J, Milne AD, Brousseau P, Uppal V (2019). Factors Associated With Failure of Spinal Anesthetic: An 8-Year Retrospective Analysis of Patients Undergoing Elective Hip and Knee Joint Arthroplasty. *Anesthesia and Analgesia*. [Published] PubMed ID: 31306240.
10. Curry L, Pike M, Lynch M, Marcon D, Sawynok J (2019). Case Series of multiple health benefits in those undertaking extended Qigong practice as a complementary self-care practice in an outpatient pain clinic. *OBM Integrative and Complementary Medicine*, 4(2). [Case Series – Published] DOI:10.21926/obm.icm.1902040.
11. Dickson K, Lehmann C (2019). Inflammatory Response to Different Toxins in Experimental Sepsis Models. *International Journal of Molecular Sciences*, 20(18), 4341. [Published] PubMed ID: 31491842.
12. Dol J, Tutelman PR, Chambers CT, Barwick M, Drake EK, Parker JA, Parker R, Benchimol EI, George RB, Witterman HO (2019). Health Researchers' Use of Social Media: Scoping Review. *Journal of Medical Internet Research*, 21(11), e13687. [Published] PubMed ID: 31719028.
13. Fergusson DA, Avey MT, Barron CC, Bocock M, Bieffer KE, Boet S, Bourque SL, Conic I, Chen K, Dong YY, Fox GM, George RB, Goldenberg NM, Gragasin FS, Harsha P, Hong PJ, James TE, Larrigan SM, MacNeil JL, Manuel CA, Maximos S, Mazer D, Mittal R, McGinn R, Nguyen LH, Patel A, Richebé P, Saha TK, Steinberg BE, Sampson SD, Stewart DJ, Syed S, Vella K, Wesch NL, Lalu MM (2019). Reporting preclinical anesthesia study (REPEAT): Evaluating the quality of reporting in the preclinical anesthesiology literature. *PLOS One*, 14(5), e0215221. [Published] PubMed ID: 31120888.
14. Friedman A, Calkin C, Adams A, Suarez GA, Bardouille T, Hachohen N, Green LA, Gupta RR, Hashmi JA, et al (2019). Havana Syndrome in Canadian Diplomats: Brain Imaging reveals acquired neurotoxicity. Preprint: *medRxiv*. [Published].
15. George RB, Boyd C, McKeen D, Abdo IS, Lehmann C (2019). Possible Impact of Spinal Anesthesia and Phenylephrine on Sublingual Microcirculation of Cesarean Delivery Patients. *Journal of Clinical Medicine Research*, 11(8), 543-549. [Published] PubMed ID: 31413765.
16. Goel A, Azargive S, Weissman JS, Shanthanna H, Hanlon JG, Samman B, Dominicus M, Ladha KS, Lamba W, Duggan S, Di Renna T, Peng P, Wong C, Sinha A, Eipe N, Martell D, Intrater H, MacDougall P, Kwofie K, St-Jean M, Rashiq S, Van Camp K, Flamer D, Satok-Wolman M, Clarke H (2019). Perioperative Pain and Addiction Interdisciplinary Network (PAIN) clinical practice advisory for perioperative management of buprenorphine: results of a modified Delphi process. *British Journal of Anaesthesia*. [Published] PubMed ID: 31153631.
17. Hagn G, Westhofen R, Burkovskiy I, Holbein B, Zhou J, Lehmann C (2019). Iron Chelation as Novel Treatment for Interstitial Cystitis. *Pharmacology*, 103(3-4), 159-162. [Published] PubMed ID: 30695781.
18. Haller G, Bampoe S, Cook T, Fleisher LA, Grocott MPW, Neuman M, Story D, Myles PS on behalf of the StEP-COMPAC Group [including George RB] (2019). Systematic review and consensus definitions for the Standardised Endpoints in Perioperative Medicine initiative: clinical indicators. *British Journal of Anaesthesia*, 123(2), 228-237. [Published] PubMed ID: 31128879.
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21. Harris EP, MacDonald DBS, Boland L, Boet S, Lalu MM, McIsaac DI (2019). Personalized perioperative medicine: a scoping review of personalized assessment and communication of risk before surgery. *Canadian Journal of Anesthesia*, 66(9), 1026-1037. [Published] PubMed ID: 31240608.
22. Hatheway, OL, Dobson GR, Milne AD (2019). A survey of anesthesia quality programs in Nova Scotia community hospitals. *Canadian Journal of Anesthesia*. [Published] PubMed ID: 31845293.
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28. Husbands-Anderson D, Szerb J, Harvey A (2019). Improving the Quality of Care for Acute Pain Management in Recovery Room at the Georgetown Public Hospital Corporation. *Journal of Advances in Medicine and Medical Research*, 30 Issue (12), 13-14. [Published] DOI: 10.9734/jamr/2019/v30i1230258.
29. Islam S, Ahmed N, Rivu SF, Khalil M, Tanjia N, Lehmann C (2019). Challenges for microcirculation research in developing countries. *Clinical Hemorheology and Microcirculation*, 73(4), 599-607. [Published] PubMed ID: 31156150.
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35. Ke JXC, George RB, Wozney L, Chorney JL (2019). Patient-centred perioperative mobile application in Cesarean delivery: needs assessment and development. *Canadian Journal of Anesthesia = Journal canadien d'anesthésie*, 66(10), 1194-1201. [Published] PubMed ID: 31087270.
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39. Kwofie MK, Wilson JA (2019). A potential risk from under-recognized perioperative anticoagulation from dalteparin used for extracorporeal circuit anticoagulation during hemodialysis. *Canadian Journal of Anesthesia = Journal canadien d'anesthésie*. [Letter to the Editor – Published] PubMed ID: 31396861.
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49. Moonesinghe SR, Jackson AIR, Boney O, Stevenson N, Chan MTV, Cook TM, Lane-Fall M, Kalkman C, Neuman MD, Nilsson U, Shulman M, Myles PS on behalf of the STEP-COMPAC Group [including George RB] (2019). Systematic review and consensus definitions for the Standardised Endpoints in Perioperative Medicine initiative: patient-centred outcomes. *British Journal of Anaesthesia*. [Published] PubMed ID: 31493848.
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