

Department of Anesthesia

# ANNUAL REPORT 2021



## TABLE OF CONTENTS

| MESSAGE FROM THE CHAIR                       | 1  |
|--|----|
| ROYAL VICTORIA HOSPITAL                      | 4  |
| JEWISH GENERAL HOSPITAL                      | 7  |
| MONTREAL NEUROLOGICAL INSTITUTE              | 11 |
| MONTREAL CHILDREN'S HOSPITAL                 | 14 |
| MONTREAL GENERAL HOSPITAL                    | 17 |
| INTELLIGENT TECHNOLOGIES IN ANESTHESIA GROUP | 22 |
| ALAN EDWARDS PAIN MANAGEMENT UNIT            | 24 |
| PERI-OPERATIVE PROGRAM                       | 29 |
| SAINT MARY'S HOSPITAL                        | 34 |
| ANESTHESIA RESEARCH UNIT HIGHLIGHTS          | 37 |
| RESIDENCY PROGRAM HIGHLIGHTS                 | 39 |
| CONTINUED MEDICAL EDUCATION                  | 43 |
| ANESTHESIA JOURNAL CLUB                      | 45 |
| PUBLICATIONS                                 | 48 |



## MESSAGE FROM THE CHAIR

Dear Colleagues,

For more than two years the COVID19 pandemic has been constraining and limiting our academic mission. The Department's educational events and activities including the Harold Griffith dinner, the Wesley Bourne dinner, Bromage Research Day, journal clubs, Grand Rounds, various lectures series, as well as the annual Resident Retreat were either held virtually or canceled. Many achievements in our Department could not be properly communicated and thus may have gone unnoticed. Hence, in this new time of reconnection, we've collected marvelous accomplishments across the McGill Anesthesia teaching sites and share them with you here.

Despite the ongoing crisis and accompanying challenges, 2021 was a successful academic year. Research in perioperative and pain medicine continues to blossom, large tri-agency grants were obtained, a slew of papers were published in high impact journals, new teaching opportunities were developed for our learners, and many of our colleagues hold leadership roles within the national and international anesthesia community.

Among many stellar accomplishments I would like to highlight that a number of talented academic staff members were recruited; a coordinator was hired to connect research projects across hospitals; and a new Competency Committee Chair was appointed to

further our successful residency program. Also, we have established an exciting partnership with the Department of Surgery to facilitate access to postgraduate studies for our students.

I thank all the contributors for their help in crafting this report, in particular Christina Raneburger, who replaced Sonia Nardini as the new director of our administrative Academic Excellence Cluster Unit.

I also congratulate all members on their successes making the McGill Department of Anesthesia one of the strongest academic departments of anesthesia in North America.

Best regards

**Thomas Schricker** 

## ROYAL VICTORIA HOSPITAL



## ROYAL VICTORIA HOSPITAL

## **LEADERSHIP POSITIONS**

Dr Goyer was appointed site Director (Interim) as Dr Daloze stepped down and moved to the MGH Dr Lash assumed the role of Director of the MUHC Department of Anesthesia (Interim)

## **NEW STAFF MEMBERS**

Dr Spencer Holowatschuk (Toronto) Dr Alya Nurmohamed (Toronto)

## **FELLOWS**

Dr Haifa Al Zaabi (Oman)

Dr Talal Aghambi (Saudi Arabia)

Dr Miquel Coca Martinez (Spain)

Dr Abdulwahaab Khaled Nooh (Saudi Arabia)

Dr Keisuke Omiya (Japan)

## **FUNDED RESEARCH PROJECTS**

## Canadian Institutes of Health Research (CIHR)

Anesthesia-induced memory impairment is mediated by a specific loss of inhibitory neurons March 2021 - March 2026 \$1,000,000

Principal Investigator: Schricker T

Co-Investigators: Khoutorsky A, Lacaille J, Wykes L

## Alzheimer Drug Discovery Foundation, USA

Does intranasal insulin administration preserve cognitive function after cardiac surgery?

July 2019 - June 2022 \$1,250,000

Principal Investigator: Sato H

Co-Investigator: Schricker T

## Canadian Institutes of Health Research (CIHR)

Impact of protein nutrition in critically ill patients

September 2018 - August 2021 \$400,000

Principal Investigator: Kristof A, Wykes L

Co-Investigators: Schricker T, Hatzakorzian R

## Canadian Liver Foundation (CLF), the Canadian Donation and Transplantation Research Program (CDTRP), Fonds de Recherche du Québec - Santé (FRQS)

Intraoperative hemodynamic management and postoperative outcomes

in liver transplantation (Elipto-2 study)

Principal Investigator: Carrier F (CHUM)
Co-Investigators: Kandelman S

## **NON-FUNDED PROJECTS**

CME Report for the Canadian Anesthesiologists' Society on Postpartum Hemorrhage Principal Investigators: Predescu O, Backman S and Brown R (Obs)

Retrospective analysis of epidural analgesia vs. TAP block in Gynecology Oncology laparotomies

Principal Investigators: Predescu O, Ducette A

Decision analysis of epidural analgesia vs. TAP block in laparotomies

Principal Investigators: Predescu O, Rotenberg C

Effect of hyperinsulinemic clamp (HINC) on infectious complications following major abdominal and

vascular surgery. A randomized controlled trial.

Principal Investigator: Schricker T

Co-Investigators: Sato, H, Metrakos P, Steinmetz O et al.

Serious adverse events in PACU: A quality assurance project
Principal Investigators:

Backman S and Schricker T

## JEWISH GENERAL HOSPITAL



## JEWISH GENERAL HOSPITAL

## **LEADERSHIP POSITIONS**

Dr Béïque – Board of Directors National Board of Echocardiography
NBE Chair Advanced PTE exam, NBE Certification Committee for Basic and Advanced PTE exam

Dr Fuda – AAQ vice-president, Member board of directors CAS, Member standards Committee CAS

Dr Yang - Canadian Critical Care Society (CCCS) representative at the Canadian Journal of Anesthesia Editorial Board

## **CONFERENCE / COURSE ORGANIZERS**

Dr Charghi – Chair of Canadian Interventional Pain Course Dr Wieczorek – Co-Director of LUCAS (McGill University) Dr Yang – LUCAS Perioperative Group (McGill University)

## **EDUCATION**

Dr Azzam, Dr Amir, Dr Yang – Perioperative Ultrasound in Anesthesia Fellowship Dr Charghi – Royal College Subspeciality Committee & Exam Committee Dr Hoffman – Royal College Examiner

## **INVITED SPEAKER**

Dr Baldry – "What's new in Sepsis" LUCAS – Virtual Lecture
Dr Kardash – "Opioid Reduction Strategies in Anesthesia" LUCAS – Virtual Lecture

## **FUNDED RESEARCH PROJECTS**

## Canadian Institute of Health Research (CIHR)

Vascular events in Noncardiac Surgery patients cohort evaluation study-2 (VISION-2)

Total Amount in CAD: \$1,105,000
Principal Investigator: McGillion M
Co-Investigator(s): Yang S et al.

## Canadian Institute of Health Research (CIHR)

Impact of Multimodal Prehabilitation Program on High Cardiovascular Risk Patients

Undergoing Noncardiac Surgery – Feasibility Study

Total Amount in CAD: \$130,050
Principal Investigator: Bessissow A
Co-Investigator(s): Yang S

## **CURRENT & RECENTLY COMPLETED STUDIES**

- Dr Cameron Benzodiazepine-free cardiac anesthesia for reduction of postoperative delirium (B-free)
- Dr Cameron and Dr Yang The use of transesophageal echo does not affect dysphagia after cardiac surgery
- Dr Cameron SUSTAIN CSx trial
- Dr Lacombe Long term complication of unintentional dural punction during labour epidural analgesia case control study
- Dr Yang Systematic review and meta-analysis of hemodynamic parameters in patients with IABP
- Dr Yang Dexmedetomidine is associated with postoperative hypotension in orthopaedic patients
- Dr Yang Predictors of postoperative hypotension in colorectal patients

## **UPCOMING STUDIES**

## **Projects at JGH**

- Dr Cameron and Dr Yang The use of maltodextrin prior to CABG surgery double-blinded pilot randomized controlled trial
- Dr Cameron, Dr Yang, and Dr Kardash Parasternal blocks for pain post-sternotomy: a double-blinded pilot randomized controlled trial
- Dr Yang and Dr Wieczorek Predictors of anesthetic complications in robotic gynecologic patients
- Dr Yang, Dr Beique, and Dr Cameron Hypotension prediction index in postoperative surgical patients in the post-anesthetic care unit a prospective feasibility cohort study (PACU HPI study)

## Collaboration with other sites

- Dr Cameron Brain blood flow optimization during cardiopulmonary bypass to prevent postoperative delirium (B-BOP)
- Dr Cameron and Dr Yang TRICS IV: currently projected to start in 2022

# MONTREAL NEUROLOGICAL INSTITUTE



## MONTREAL NEUROLOGICAL INSTITUTE

## LEADERSHIP POSITIONS

Dr Chartrand – Co-Chairman, "Comité pour l'amélioration de la qualité et la sécurité des soins", Fédération des médecins spécialistes du Québec (FMSQ) and a member and evaluator, "Oral Structured Evaluation" of anesthesiologists practicing in Quebec, Collège des médecins du Québec. Dr Chartrand is also a member of the Board of Directors, "Fondation d'anesthésiologie et de réanimation du Québec" and Chairman, CAS Archives and Artefacts Committee, Canadian Anesthesiologists' Society

Dr Letourneau – Head of the receiving area division in Neurosciences (MUHC) and Président comité des norms AAQ. Dr Letourneau is also a Neuro-executive committee member (MNH)

Dr Badawy – Neuro-executive committee member (MNH)

## **NEW STAFF MEMBERS**

Dr Bryan Glezerson (Ottawa)

## **CONFERENCE & COURSE ORGANIZERS**

Dr Chartrand - World Congress of anesthesia 2028 Planning Committee Canadian Anesthesiologists' Society (as a result, the CAS has been selected to host the 2028 WCA meeting!)

Dr Plourde – Bromage Day moderator (McGill University)

Dr Badawy - Advanced anaphylactic life support (FMSQ, JFI, centre de simulation du CHUM)

## **EDUCATION**

Dr Badawy – Neuro-critical care Fellowship program co-director

Dr Plourde - Neuro-anesthesia Fellowship program director

## **INVITED SPEAKERS**

Dr Chartrand – « Débuts de l'anesthésie au Québec (1608-1955) », Club de l'Histoire de l'Anesthésie et de la Réanimation (CHAR), Virtual Lecture in Paris, April

Dr Angle – "Use of milrinone in vasospasm after subarachnoid hemorrhage", 2nd Neurocritical Care Regional Meeting in the Middle East and Africa in conjunction with the 17th edition of the Emirates Critical Care Conference (ECCC), Virtual Lecture in Dubai, October

Dr Angle – "Status epilepticus, new treatment paradigm", society of critical care medicine - Virtual lecture, Abu Dhabi November

## **FUNDED RESEARCH PROJECTS**

## International Anesthesia Research Society (IARS)

Using anesthesia to predict recovery from disorders of consciousness

Total amount in USD: \$175,000

Principal Investigator: Blain-Moraes S

Co-investigators: Plourde G, Letourneau J, Badawy M

## **CURRENT & RECENTLY COMPLETED STUDIES**

- Dr Blain-Moraes, Dr Duclos, Dr Badawy, Dr Letourneau, Dr Plourde NET ICU study
- Dr Blain-Moraes, Dr Duclos, Dr Badawy, Dr Letourneau, Dr Plourde COVERT CONSCIOUSNESS study
- Dr Hannouche, Dr Badawy, Dr Letourneau, Dr Angle Prospective observation study in subarachnoid hemorrhage (POSH study)
- Dr Angle Outcomes after Intracerebral Hemorrhage, a Foregone Conclusion study completed, recently submitted to Neurology

# MONTREAL CHILDREN'S HOSPITAL



## MONTREAL CHILDREN'S HOSPITAL

## **NEW STAFF MEMBERS**

Dr Mathias Johansson

## **AWARDS**

Dr Paquet - Transition to Clinical Practice Teaching Award

The MCH Simulation-Based Interprofessional Team Training Course Committee received a 1000\$ bursary from Royal College of Physicians and Surgeons of Canada for interprofessional simulation activities: "Optimiser les soins aux patients grâce à la simulation in situ: une initiative interprofessionnelle pour améliorer le travail d'équipe et le système lors de situation de crise au bloc opératoire."

## **INVITED SPEAKER**

Dr Engelhardt – "Airway Management Nectarine" Kinderanästhesie Tag Zurich (KATZ), Zurich, March

Dr Engelhardt – "Neonate – Children study of anesthesia practice in Europe" Wissenschaftlicher Arbeitskreis Kinderanesthesi. Bonn, June (virtual)

Dr Engelhardt – "Safetots" Grand Rounds Children's Hospital, Vancouver, August (virtual)

Dr Engelhardt – "Safety for all children. Safetots" SCARE Bogota, August (virtual)

## **CURRENT & RECENTLY COMPLETED STUDIES**

- Morbidity and mortality after anaesthesia in early life: results of the European prospective multicentre observational study, neonate and children audit of anaesthesia practice in Europe (NECTARINE)
- Prevalence of perioperative childhood obesity in children undergoing general anaesthesia in the UK: a prospective, multicentre, observational cohort study (PEACHY)
- Complications associated with paediatric airway management during the COVID-19 pandemic: an international, multicentre, observational study

## **LECTURES**

The **14th Annual Peter & Arthur Sheridan Memorial Lecture** took place on September 14th in person and via Zoom with visiting professor from Stockholm:

Caudal block: an update with special focus on dosing, spread and effects on the cerebral circulation.

Prof. Per-Arne Lönnqvist Professor of Pediatric Anesthesia and Intensive Care, Department of Physiology & Pharmacology, Karolinska Institute

## MONTREAL GENERAL HOSPITAL



## MONTREAL GENERAL HOSPITAL

## REPORT FROM SITE CHIEF

Dr Francesco Donatelli

## **NEW STAFF MEMBERS**

Dr Maggie McLellan - Completed ICU fellowship and cross appointed as a member of the Department of Critical Care at the RVH.

Dr Johnathan Yen - Cross appointed member with the Chronic Pain Unit.

Dr Janius Tsang - Perioperative Medicine and Prehabilitation Clinic.

## **LEADERSHIP**

CMQ Member : Comite d'admission à l'exercice du CMQ - Dr Asenjo

CAS Chair awards committee meeting - Dr Asenjo

Scientific Advisory committee, annual meeting, CAS - Dr Asenjo

Elected Member of the Enhanced Recovery Canada (ERC): National Board Committee Committee Member, Enhanced Recovery Canada Board of Directors, Enhanced Recovery Canada. Member of Board of directors of the Enhanced Recovery Canada (ERC) Society – Dr Baldini

## **HONOURS AND AWARDS**

Deirdre M.M Gillies Award for Excellence in the Teaching of Anesthesia - Dr Amir

Transition to Clinical Practice teaching award in Anesthesia - Dr Shafiepour

Nesbitt-McMaster Award for Excellence in Medicine and Surgery - Dr Amir

## **ADMINISTRATIVE**

Dr Amir appointed as Director of Acute Pain Services

Dr Ah-kye appointed as Director of Preoperative Clinic, scheduling coordinator and business group Director

Anesthesia in Charge daily assignments coordination - Drs Owen, Donatelli, Amir, Gordon, Costescus

M&M rounds Rotation schedule - Drs Bracco, Shafiepour, Rodelo, Dalouze

## **GRANTS**

Financing program for medical teaching in clinical setting CAD \$22,684.53 for simulation Dr Shafiepour

Canadian Institute of Health Research (CIHR), Impact of Multimodal Prehabilitation Program on High Cardiovascular Risk Patients Undergoing Noncardiac Surgery Feasibility Study CAD \$130,050 Dr Baldini

## **FELLOWS**

Dr Ahmad Banjar (Saudi Arabia)
Dr Mohammed Aljahdali (Saudi Arabia)
Dr Daniela Rondanelli (Chile)
Dr Abhishek Lonikar (India)
Thoracic Fellow
Dr Amjad Shah (Saudi Arabia)

## **EDUCATION**

Dr Amir appointed co-director of Perioperative ultrasound fellowship

Dr Rodelo appointed co-director of Regional Anesthesia and Pain Fellowship and continues as regional anesthesia resident coordinator

Ultrasound workshop for Fellows - Dr Asenjo, Dr Rodelo, Dr Amir

We were sad to see the departure of Dr Guzzo who was an important contributor over the years to the residency program

Dr Gordon replaced Dr Guzzo as interim resident coordinator

Dr Owen continues as coordinator of thoracic anesthesia resident rotation, Director of thoracic fellowship, coordinator airway/thoracic resident seminar series, and McGill anesthesia resident Journal club director

Dr Avisnash Sinha continues as M2 Medical Student Coordinator

This year we have fellows in sub-specialty areas of Regional Anesthesia and acute pain and Thoracic Anesthesia

## **GUEST SPEAKER**

Perioperative Cardiopulmonary Exercise testing (CPET). What does an anesthesiologist need to know? Visiting Professor Department of Anesthesia Queen's University, Canada. Dr Baldini

Bolusing intravenous (IV) fluids. Are we measuring the right physiologic endpoint? Visiting Professor Department of Anesthesia Queen's University, Canada. Dr Baldini

ERAS 2.0 in Orthopedic surgery. Pain Update-SIAARTI, Milano, Italy. Dr Baldini

Hot topics in Prehabilitation. Perioperative Italian Society (POIS), Torino, Italy. Dr Baldini

Preoperative Optimization of the Geriatric Patient. American Society of Enhanced Recovery (ASER)-Virtual meeting. Dr Baldini

ERAS for Major Ambulatory Surgery?. Major Ambulatory Surgery, Chile VIII Jornadas de Anestesióloga a de la Universidad de Valparaiso. Dr Baldini

Prehabilitation for the high risk patient undergoing major ambulatory surgery. Major Ambulatory Surgery, Chile VIII Jornadas de Anestesiología a de la Universidad de Valparaiso. Dr Baldini.

How to prepare for an elective surgery. Colombian Consulate in Montreal. Dr Rodelo Ceballos

Upper extremity blocks: sparing phrenic nerve techniques. CLASA-LASRA: Confederation of Latin American Societies of Anesthesiology: Dr Rodelo Ceballos

Pain and master's degree at the Catholic University at Santiago de Chile: Visiting Professor: Dr Asenjo

Enhanced recovery Canada Webinar on ERAS arthroplasty. Dr Sinha

Covid Projects, facesheild for frontline workers. Dr Sinha

COVID collaboration COSMIC, Bubble helmet design & feasibility publication. Dr Sinha

FEDELAT Webinars on Vertebral Fractures and Osteoporosis. Lecture on Xifoplasty and Stentoplasty. Dr Asenjo

## **QUALITY-PATIENT SAFETY**

M&M OM3 Model - Dr Shafiepour

M&M Quality Improvement, Incident Analysis, Canadian Incident Analysis framework: Ribs fracture protocol - Dr Rodelo Ceballos

## **GREEN OR**

Dr Bracco has held several presentations and meetings

## **SIMULATION**

Multidisciplinary in situ simulation to focus on team communication and equipment issues in a trauma setting for OR personnel – Dr Shafiepour and Valerie Weagle (RT)

## **CLINICAL PATHWAYS**

Day surgery pathway for Hip and Knee Arthroplasty - Dr Sinha

Esophagectomy pathway - Dr Costescus

## INTELLIGENT TECHNOLOGIES IN ANESTHESIA GROUP



## INTELLIGENT TECHNOLOGIES IN ANESTHESIA GROUP

Dr Hemmerling has been selected as Associate Editor (Technology) of the journal, Anesthesia&Analgesia

## **STAFF**

Lab manager - Dr Cyr

Research assistants - Joshua Morse, Yichen Wu, Ayden Watt

Masters' students - Robert Harutyunyan, Noam Suissa, Sean Jeffries

COPSE students - Hongtao Xu, Zheyan Tu, Mostafa Abdelwahab, Veduren Rajaratnam

## **GRANTS & PROJECTS**

MITACS Research-business development Grant 'Automated fat detection using AI'

MITACS Research-business development Grant 'Machine learning for automated nerve recognition'

Automated sedation for ICU

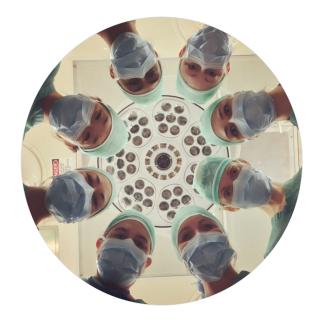
Carbon footprint of anesthesia-related OR items

New simulator for bariatric surgery

## **LECTURES**

Use of NMB in times of COVID - India

# ALAN EDWARDS PAIN MANAGEMENT UNIT



## ALAN EDWARDS PAIN MANAGEMENT UNIT

## **NEW STAFF MEMBERS**

Dr Jonathan Yen (Toronto)
Dr Ning Nan Wang

## **FELLOWS**

Dr Waleed Janjua

Dr Marie Pierre Gagné

Dr Chakthip Suttinarakorn

Dr Tali Sahar

Dr Abdulaziz Elkheriji

## **EDUCATION**

## Undergraduate pain medicine education

Multidisciplinary members of the pain management unit teach a total of 130 hours over the course of the program. The result is 42 hours per student of pain medicine education at the undergraduate medical school curriculum level. 13 students completed electives at the unit and were trained in theory and practical pain medicine.

## Postgraduate Medical Education

## **Rotations**

24 residents from anesthesia, family medicine, psychiatry, palliative care, neurology / internal medicine, physiatry, and emergency medicine were trained in theory and practical pain medicine and completed rotations at the unit.

## **Observerships**

One observer from Spain was trained in theory and practical pain medicine and completed a three-month observership at the unit.

## **Pain Medicine Fellowships**

The fellowship program is growing. Three clinical pain fellows were admitted to the program, two research pain fellows were admitted into the program and one Cancer Pain Fellows admitted to the program.

## **Psychology Internships & Practicum Program**

Two trainees were fully trained in theory and practical pain psychology at the unit and completed the psychology internship program.

## **Cannabinoids Course**

In partnership with PGME, the pain unit participated in the development of a 10 module Cannabinoids course in (2021). This course is complete and will be a required course for PGME students.

## **Other Scholarly Activities**

The unit organizes and supervises trainee presentations on Mondays at 12pm and other academic activities on Wednesdays at 2:30.

## Continuing Medical Education

## **Multidisciplinary Pain Medicine Rounds**

The multidisciplinary team presents, reviews, and discusses patient cases twice weekly.

These rounds are a self-approved group learning activity (Section 1) as defined by the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada.

## Interventional Rounds

Monthly presentations on interventional pain medicine treatments. These rounds are a self-approved group learning activity (Section 1) as defined by the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada.

## **Psychology Rounds**

Bi-monthly journal club and teaching on psychological aspects of pain assessment and treatment.

## **FUNDED RESEARCH PROJECTS**

## The Louise and Alan Edwards Foundation

Microbiome correlates of dietary interventions in patients with fibromyalgia and their association with symptom modification

Total Amount in CAD: \$48,650
Principal Investigator: Shir Y

Co-Investigator(s): Chevalier S et al.

## The Louise and Alan Edwards Foundation

Comparison of gut microbial composition and function in CRPS patients vs. healthy individuals

Total Amount in CAD: **\$50,000**Principal Investigator: **Shir Y** 

Co-Investigator(s): Minerbi A et al.

## **CURRENT & RECENTLY COMPLETED STUDIES**

## FUSMobile Inc.

Clinical Trial For Safety and initial feasibility of using the Neurolyser XR device for the treatment of facet related low back pain

Total Amount in CAD: \$60,000

Principal Investigator: Jordi Perez

Co-Investigator(s): Minerbi A

## MELZACK LECTURE SERIES

## **Chair - Dr Perez**

The unit hosted ten accrediated lecturers for thus years' series.

## **JANUARY**

"The Chronic Pain Peer Mentorship Program"
Ashley Reynolds PhD

## **FEBRUARY**

"What is pain-related suffering? Exploration of perspectives and areas of uncertainty"

Peter Stilwell BKin, MSc, PhD

## **MARCH**

"Implementation of the Canadian Adult Pain Registry at the Alan Edwards Pain Management Unit"

Manon Choinière PhD

## APRIL

"Psycheldelic-Assisted Psychotherapy"
Ann Gamsa PhD

### MAY

"Central Sensitisation, practical tips for pain clinicians" Jordi Perez MD, PhD, FIPP

## **JUNE**

"Reviewing a Website Based Resources for Patients with Chronic Pain"
Gaurav Gupta MD

## **SEPTEMBER**

"The Specifics of Nonspecific Low Back Pain" Byron J. Schneider MD

## **OCTOBER**

"The Discrediting of People Who Talk About Their Pain: the sources of an epistemic inequality" Estelle Carde PhD

## **NOVEMBER**

"Psychedelics for Pain Management? A Multidisciplinary Approach"

Jodi B. & Benjamin Malcolm PharmD MPH BCPP

## **DECEMBER**

"Clinical Applications of a Multidisciplinary Approach to Pain Management in Two Clinical Settings (Public & Private)" Dominique Gilbert PT

## PERI-OPERATIVE PROGRAM



## PERI-OPERATIVE PROGRAM

## MESSAGE FROM THE DIRECTOR

In June 2021 the MUHC mandated the prehabilitation clinic to conform to the MUHC norms and as such have a structure like other clinics with personnel employed by the MUHC. As a result, since October 2021, the clinic has one full time administrative assistant, one full time physiotherapist/ kinesiologist and a half-time dietitian. A project manager has also been appointed via the RI MUHC to oversee research and clinical activities at the clinic. In addition, it was decided to grant a three year evaluation period to determine the effectiveness of the Clinic's activities. The Clinic is now functioning daily and receives referrals from surgery, oncology and internal medicine. It is located at the MGH (L10.105) adjacent to the Peri-Operative Clinic and the Central OR Booking. This facilitates the interactions between the units. The number of referrals received in 2021 was 279, a 28% increase from 2020.

## Franco Carli

## **SET UP**

The prehabilitation clinic has two assessment rooms, one fully equipped large gym and one small gym for research, one administrative office, one office for doctors and one for residents, fellows and students. Equipment includes: a body impedance to measure body composition and a cardiopulmonary exercise test.

New activities include: a perioperative nutrition class for non-malnourished patients offered every Friday at noon.

## **EDUCATION**

Two prehabilitation workshops, one in March and one in November, were well attended by over 25 participants from Canada, USA and Europe. In addition, a series of webinars on various aspects of prehabilitation were organized and the average attendance was 25 participants. Wednesday team lunch meetings continue to review clinical cases and host invited national and international speakers.

## **AWARDS**

Dr Gillis – T.H.P. Molson Fellowship Montreal General Hospital Foundation

Dr Gillis – PhD Dissertation Award "Recovery Begins Before the Surgical Incision", Canadian Nutrition Society

Dr Gueorguieva - Mitacs Accelerate Fellowship

Jade St Pierre - Gold award - Best Proffered Paper, European Society of Surgical Oncology 40<sup>th</sup> Congress Lisbon, Portugal

## FUNDED RESEARCH PROJECTS

## **European Society for Clinical Nutrition & Metabolism,**

Is correction of malnutrition sufficient to improve low physical function before elective colorectal cancer surgery? A randomized controlled trial of nutrition vs nutrition and exercise prehabilitation

Principal Investigator: Gillis C Euro 42,760

## Louise and Alan Edwards Foundation Grants in Pain Research

Multimodal prehabilitation and analgesia: A pragmatic randomized controlled trial on the effect of preoperative exercise with nutrition optimization on postsurgical pain intensity in vulnerable populations Principal Investigator: **Carli F \$ 50,000** 

## Canadian Institutes of Health Research (CIHR)

An umbrella review of prehabilitation interventions in surgery to inform policy and practice

Principal Investigator: McIsaac D, Gillis C \$ 120,000

## Canadian Institutes of Health Research (CIHR)

Impact of Multimodal Prehabilitation Program on High Cardiovascular Risk Patients Undergoing Noncardiac Surgery - Feasibility Study

Noncardiac Surgery - Teasibility Study

Principal Investigator: Bessissow A, Baldini G \$ 150,000

## Canadian Institute of Health research (CIHR)

A novel multimodal intervention for surgical prehabilitation of patients with lung cancer Principal Investigator Chevalier S, Carli F, Morais J, Schede C \$800,000

## **Rossy Cancer Network**

Personalized prehabilitation for older patients with colorectal cancer surgery and low physical performance: understandingwhich factors influence functional capacity

Principal Investigator: Carli F, \$ 91,847

## Canadian Donation and Transplantation Research Program Canadian Association for the Study of Liver

Can a structured and individualised multimodal prehabilitation program improve frailty and muscle mass in patients with cirrhosis awaiting major non-urgent and non-cardiac surgery? A feasibility study

Principal Investigator: Benmassaoud A \$75,000

## **GRADUATE STUDENTS LEADING PROJECTS**

- Teleprehabilitation. A feasibility study on the applicability of distant prehabilitation and impact on patients ' quality of life and engagement. (Funded by MGH Foundation to Genevieve Lambert)
- Prehabilitation and sleep. RCT on the impact of prehabilitation on sleep pattern. (Funded by MITACS to Sarah Atoui, PhD candidate)
- Prehabilitation and esophageal resection. RCT on prehabilitation for patients undergoing neoadjuvant therapy and resection of esophageal cancer. (Funded by KUOK foundation to Kenith Drummond, MSc and Jade St Pierre PhD)
- Prehabilitation and malnutrition. RCT on the impact of structured personalized intervention to mitigate the impact of malnutrition on functional capacity. (Funded by Rossy Cancer Network to support Natalia Tomborelli Bellafronte, Post Doc).
- Prehabilitation for cardiovascular disease. Feasibility study on the impact of prehabilitation on patients with high BNP. (Funded by CIHR to support IM fellow)

- Prehabilitation and nutrition for lung cancer. RCT on impact of novel nutrients on outcome in patients with lung cancer (Funded by CIHR to support MSc)
- Multimodal prehabilitation and analgesia: A pragmatic randomized controlled trial on the effect of preoperative exercise with nutrition optimization on postsurgical pain intensity in vulnerable populations (Funded by MITACS to Vanessa Gueorgueva MSc)
- Development of an Onco-Surgical Specific Diet Quality Index for Rapid Dietary Assessment in Preoperative Care (*Jade Corriveau*)

## SAINT MARY'S HOSPITAL



## SAINT MARY'S HOSPITAL

The department is collaborating with the orthopedics department in a RCT comparing periarticular infiltration versus two different regional blocks for pain control after total hip arthroplasty.

We've also started a "Green Committee" in our department, due to the efforts of Dr Lyndia Dernis. This initiative aims to reduce the environmental imprint of our anesthesia practice and, eventually, that of the entire operating room. We are collecting data on the amount of garbage that is generated and implementing new methods of recycling and are using specific disposal for medications that can have a negative impact on animal life. Other strategies:

We eliminated desflurane and reduced significantly our consumption of Sevo by reducing the gas flows to less than 0.5 l/min

We are working with the hospital's acquisition service to see which single-use items can be replaced by reusable ones. One example is the Bairhugger that we are trying to replace by a new system that can be used for 30 months and does not use forced air

We are lobbying the hospital to buy equipment that can help us use more TIVA, such as Sedline monitors and target-controlled infusion pumps

## **Marcelo Lannes**

#### INTRANET

## Making the world a greener place

Few people are aware that healthcare institutions generate significant amounts of waste and greenhouse gas emissions. Previous studies have shown that healthcare in Canada is responsible for 4.6% of the total national greenhouse emissions, and for producing 200,000 tons of other pollutants per year and hundreds of thousands of tons of waste per day.

As much as 33% of this waste is generated by the operating rooms. Some common surgical procedures can produce for a single patient the amount of waste produced by one family during a whole week. Besides, only a small volume of anesthetic gases is actually absorbed by a patient during surgery, the rest being vented to the atmosphere as medical waste. Some of these gases have a global warming potential thousands of times higher than carbon dioxide.

In view of this sad reality and inspired by other initiatives in Canadian and international hospital, the Department of Anesthesia at St. Mary's Hospital Center (SMHC) created an Anesthesia and Environment Committee or Green Committee in May. Under the stewardship of Dr Lyndia Dernis, Anesthesiologist, this committee established several objectives targeting the reduction of the usage of anesthetic gases, and the three "Rs" of waste management: reduce waste production, reuse when feasible (avoid single-use items) and increase recycling.

"These initiatives will not only lead to the reduction of our hospital environmental footprint, but also to significant cost savings, explains Dr Marcelo Lannes, Anesthesiologist and Critical Care Medicine Chief, Department of Anesthesia, SMHC. From 2018 to 2019 our department was able to decrease the consumption of anesthetic gases used by a quantity equivalent to 203 tons of CO2 and to save over \$15,000 dollars. We will certainly see further savings and improvements when we review the more recent data and encourage other hospital departments to implement such initiatives." concludes Dr Lannes.

#### **EXPRESS**

# Making the World a greener place

Few people are aware that healthcare institutions generate significant amounts of waste and greenhouse gas emissions. As much as 33% of this waste is generated by the operating rooms. In view of this sad reality the Department of Anesthesia at St. Mary's Hospital Center created a Green Committee under the stewardship of Dr Lyndia Dernis, Anesthesiologist. From 2018 to 2019 they were able to decrease the consumption of anesthetic gases used by a quantity equivalent to 203 tons of CO2 and to save over \$15,000 dollars!

Visit the Success stories we share / Achievements and innovations to read the full story.

# RESEARCH UNIT HIGHLIGHTS



# ANESTHESIA RESEARCH UNIT HIGHLIGHTS

This past year, the Anesthesia Research Unit published peer reviewed articles in high impact journals, including *Nature Medicine*, *British Medical Journal*, *Nature Neuroscience*, *Nature Communications*, and the *Proceedings of the National Academy of Sciences (USA)*.

Etienne Vachon-Presseau was awarded two Canadian Institute of Health Research grants, a Canadian Foundation for Innovation grant, and was selected as a William Dawson Scholar.

Luda Diatchenko was awarded Canada Research Chair - Tier 1 upon completion of the Canada Excellence Research Chair.

Arkady Khoutorsky was awarded a CIHR project grant, as co-Investigator with Thomas Schricker and received the Azrieli Award in Neurodevelopment for his research on elevated protein synthesis in microglia in fragile X syndrome pathophysiology

Marc O. Martel was promoted to Associate Professor and awarded a Canada Research Chair - Tier 2.

Jeff Mogil was awarded NC3R CRACK IT! Challenge funding.

Reza Sharif Naeini was appointed as the new Director of the Alan Edwards Centre for Research on Pain.

#### Terence J. Coderre

# RESIDENCY PROGRAM HIGHLIGHTS



# RESIDENCY PROGRAM HIGHLIGHTS

As I write this recap amid our 5th COVID wave and resident redeployment, I'd like to thank all our residents who have supported each other through this pandemic. Your efforts and hard work is appreciated and I am looking forward to our retreat in May!

This year, PGY1 and PGY5 anesthesia residents were happy to connect and enjoy a combination welcome picnic and graduation ceremony that bookended the first and last years of residency in 2021. After a 3rd wave of COVID and resident redeployment, all were happy to celebrate together.

Once again, Dr Shafiepour led the Junior Resident Orientation Program, fondly known as JROP, at the SIM centre with impeccable organization and unbelievable energy. So nice to be able to be back IN-PERSON!

Our first CBD cohort of residents sat their Royal College written component exams and all passed! Congratulations to our PGY5s: Soula, Annick, Mayuri, Marissa, Basia, Aleks K and Alex GT who are all proceeding to the oral exam component in May.

This year, McGill was well-represented at LUCAS resident competition by Esther Kang and Alexandre Gosselin-Tardif who won 3rd prize! with talks about perioperative medical ethics and cost-effectiveness in anesthesia.

Residents were busy presenting at various conferences: Charles Gelinas presented research on dexmedetomidine and postoperative hypotension in hip and knee arthroplasties at CAS & ASA. Tony Weingartshofer presented research on risk factors for hypotension postoperative colorectal surgery at ASA and Latifa Al Kharusi presented on iron supplementation for patients undergoing cardiac surgery at AUA, IARS, SCA, and SCCA.

Congratulations also go to Brian Tran and Catherine Paquet who both received the Anesthesia Transition to Clinical Practice Award!

The Residency Program would be impossible without the dedication and motivation of the staff and residents on the Residency Program (RPC) and Competence (CC) Committees. The work of the following people, often very much behind the scenes, must be recognized. I want to thank them all.

Chief resident: Billy He

Junior resident representative: Cyrus Matheson

Resident member at large: Brian Tran

Simulation and JROP Lead: Danielle Shafiepour

CanNASC representative, JROP coordinator: Vesselina Koeva

Curriculum Lead: Murray Yazer

QI Lead: Erika Nguyen

Oral Exam Lead: Alex Petre

Resident Research Director: Gilles Plourde

Site Coordinators: JGH Milene Azzam, St Mary's Gina Wu, MGH Aida Gordon, RVH Oana Predescu,

MCH Catherine Paquet, MNH Daniel Chartrand, Community Anesthesia Scott Nordstrom

2021-22 CC: Chair - Catherine Paquet

Alexander Amir, Matthew Cameron, Yaroslava Chtompel, Rachel Fisher, Vesselina Koeva, Erika Nguyen, Oana Predescu, Karoll Rodelo, Danielle Shafiepour, Murray Yazer, Natalie Buu

#### Natalie Buu

#### **AWARDS**

Trainee: Dr Gelinas - Ted Hunter Resident Academic Bursary

Supervisor: Dr Yang

CanMEDS Roles Awards (Faculty) – Medical Expert: Dr Yang, Communicator: Dr Shafiepour, Collaborator: Dr Fuda, Leader: Dr Buu, Health Advocate: Dr Wieczorek, Scholar: Dr Badawy,

Professional: Dr Buu

CanMEDS Roles Awards (Residents) – Medical Expert: Dr Bousquet-Dion, Communicator: Dr Alexopoulos, Collaborator: Dr Saczek, Leader: Dr Wassila Ait Igrine, Health Advocate: Dr Prylutskyy, Scholar: Dr Alexopoulos, Professional: Dr Gottesman

## PRIZE WINNERS (BROMAGE ANESTHESIA RESEARCH DAY)

First Prize Clinical – Dr Ait Igrine
Incidence of perioperative respiratory adverse events in pediatric anesthesia

First Prize Basic Science - Dr Tansley

Microglia-mediated removal of perineuronal nets on lamina projection neurons in the development of neuropathic pain

First Prize Overall – Dr Roque

Prolonged anesthesia induces preferential apoptosis of parvalbumin neurons with enduring changes in cognition and synaptic transmission

# CONTINUED MEDICAL EDUCATION



# CONTINUED MEDICAL EDUCATION

The 6th annual LUCAS conference was held in January / February 2022. For a second year in a row, this was a virtual event spread over 3 subspecialty evenings and a main LUCAS day. Hosting almost 400 attendees, the 4-University joint conference (McGill, University of Ottawa, Queen's, and NOSM) continues to be one of the largest premier anesthesia conferences in Canada, covering a wide range of general and subspecialty anesthesia topics. Looking towards LUCAS 2023, the anticipation is to return to an in-person event with a hybrid component, to be hosted in Ottawa.

For the first time since the start of the pandemic, our annual McGill Anesthesia CME events were re-initiated, with the 2022 Harold Griffith visiting professorship held in April 2022 virtually.

Dr. Lucie Filteau, vice-president of the CAS, presented on the topic of patient quality and safety, with a focus on building a QPS program and managing issues surrounding patient positioning. As a leader in anesthesiology at the national level, she also gave a 2 hour lecture to the anesthesia residents on building a career in leadership. Looking towards the Wesley Bourne in the fall of 2022, we are hoping to return to an in-person event.

#### **Paul Wieczorek**

# MCGILL ANESTHESIA JOURNAL CLUB

# ANESTHESIA JOURNAL CLUB

#### Dr A Owen

#### January 13

"Association between complications and death within 30 days after noncardiac surgery"

Jessica Spence MD, Yannick LeManach MD PhD, Matthew T.V. Chan MBBS PhD, et al CMAJ July 29, 2019 Volume 191 Issue 30, p E830-837

Presenter: **Dr Annick Bérard-Giasson**Supervisor: **Dr Stephen Yang** 

#### **FEBRUARY 10**

"Effect of Intraoperative Low Tidal Volume vs Conventional Tidal Volume on Postoperative Pulmonary Complications in Patients Undergoing Major Surgery: A Randomized Clinical Trial"

Dharshi Karalapillai MD, Laurence Weinberg MD, Philip Peyton MD, et al

JAMA, September 1, 2020, Volume 324, Number 9, p 848-858

Presenter: **Dr Alexandre Gosselin-Tardif**Supervisor: **Dr Alexander Amir** 

#### MARCH 10

"Association Between Epidural Analgesia During Labor and Risk of Autism Spectrum Disorders in Offspring" Chunyuan Qiu, MD, MS; Jane C. Lin, MS; Jiaxiao M. Shi, PhD, et al JAMA Pediatrics, December 2020, Volume 174, Number 12, p 1168-1175

Presenter: **Dr Mayuri Manogaran**Supervisor: **Dr Albert Moore** 

#### **SEPTEMBER 8**

"Intravenous lidocaine to prevent postoperative airway complications in adults:
a systematic review and meta-analysis"

Stephen S. Yang, Ning-Nan Wang, Tatyana Postonogova, Grace J. Yang,
Michael McGillion, Françcois Béïque, Thomas Schricker
BJA Volume 124, Issue 3, p 314-323, March 2020

Presenter: **Dr Tony Weingartshofer**Supervisor: **Dr Stephen S. Yang** 

#### **OCTOBER 13**

"Inhalation or total intravenous anaesthesia and recurrence after colorectal cancer surgery:
a propensity score matched Danish registry-based study"
Rune P. Hasselager, Jesper Hallas and Ismail Gögenur
BJA, 126 (5): 921-930 ((2021))

Presenter: **Dr Mariam Khebir** Supervisor: **Dr Oana Predescu** 

#### **NOVEMBER 10**

"Balanced Opioid-free Anesthesia with Dexmedetomidine versus Balanced Anesthesia with Remifentanil for Major or Intermediate Noncardiac Surgery"

Helene Beloeil, M.D., Ph.D., Matthias Garot, M.D., Gilles Lebuffe, M.D., Ph.D. et al
Anesthesiology (2021); 134:541-51

Presenter: **Dr Charles Gélinas** Supervisor: **Dr Stephen Yang** 

#### **DECEMBER 8**

"Spinal Anesthesia or General Anesthesia for Hip Surgery in Older Adults"
M.D. Neuman, R. Feng, J.L. Carson, et al
N Engl J Med. (2021) Nov 25;385(22):2025-2035

Presenter: **Dr Alexandre Gosselin-Tardif**Supervisor: **Dr Stephen Yang** 

# **PUBLICATIONS**



# **PUBLICATIONS**

#### **ROYAL VICTORIA HOSPITAL**

Omiya K, Sato H, Sato T, Wykes L, Hong M, Hatzakorzian R, Kristof A, Schricker T: Albumin and fibrinogen kinetics in sepsis: a prospective observational study. Crit Care (in press)

Roque P, Hooshmandi M, Neagu-Lund L, Yin S, Yousefpour N, Sato H, Sato T, Nakadate Y, Kawakami A, Ribeiro-da-Silva A, Gkogkas C, Prager-Khoutorsky M, Schricker T, Wykes L, Khoutorsky A: Intranasal insulin rescues repeated anesthesia-induced deficits in synaptic plasticity and memory and prevents apoptosis in neonatal mice via mTORC1. Sci Rep 11: 15490.

Roque P, Nakadate Y, Sato H, Sato T, Wykes L, Kawakami A, Matsukawa T, Schricker T: Intranasal administration of 40 and 80 units of insulin does not cause hypoglycemia during cardiac surgery: a randomized controlled trial. Can J Anesth 68: 991-999.

Kawakami A, Sato H, Sato T, Schricker T: Continuous glucose measurement in surgical patients: a brief review of the accuracy of current devices. Can J Anesth (submitted)

Codere-Maruyama T, Sato H, Sato T, Hatzakorzian R Schricker T: Perioperative intravenous amino acid supplementation decreases insulinsensitivity in non-diabetic patients undergoing cardiac surgery. JPEN (submitted)

Hong M, Manjrekar A, Roque P, Nitschmann E, Lattermann R, Schricker T, Wykes L: Perioperative nutrition with amino acids alone avoids hyperglycemia in surgical patients with good glycemic control, but not with poorly controlled diabetes. Clin Nutr (submitted)

#### JEWISH GENERAL HOSPITAL

McGillion MH, Dvirnik N, Yang S, Belley-Côté E, Lamy A, Whitlock R, Marcucci M, Borges F, Duceppe E, Ouellette C, Bird M, Carroll SL, Conen D, Tarride JE, Harsha P, Scott T, Good A, Gregus K, Sanchez K, Benoit P, Owen J, Harvey V, Peter E, Petch J, Vincent J, Graham M, Devereaux PJ: Continuous non-invasive remote automated blood pressure monitoring with novel wearable technology. A Preliminary Validation Study. JMIR mhealth & uhealth. (in press)

Kardash K, Harvey E, Payne S, Yang SS: Single-dose premedication enhances multimodal analgesia after knee arthroplasty. Journal of Perioperative Practice. (in press)

Simard C, Yang S, Koolian M, Shear R, Rudski L, Lipes J: The role of echocardiography in amniotic fluid embolism: a case series and review of the literature. Le rôle de l'échocardiographie dans l'embolie de liquide amniotique: une série de cas et une revue de la littérature. Can J Anaesth. 68(10):1541-1548

Yang SS, Al Kharusi L, Gosselin A, Chirico A, Baradari PG, Cameron MJ: Iron supplementation for patients undergoing cardiac surgery: a systematic review and meta-analysis of randomized controlled trials. Supplémentation en fer pour les patients bénéficiant d'une chirurgie cardiaque: une revue systématique et une méta-analyse d'études randomisées contrôlées. Can J Anaesth. 10.1007/s12630-021-02113-z.

Mah J, Lieu A, Palayew M, Alipour P, Kong LY, Song S, Palayew A, Tutt-Guerette MA, Yang SS, Wilchesky M, Lipes J, Azoulay L, Greenaway C: Comparison of hospitalized patients with COVID-19 who did and did not live in residential care facilities in Montréal: a retrospective case series. CMAJ Open. 9(3):E718-E727.

Cameron MJ, Al Kharusi L\*, Gosselin A, Gholipour Baradari P, Chirico A, Amar-Zifkin A, Yang SS: A protocol for a systematic review and meta-analysis of randomized controlled trials. CMAJ Open. 9(2):E623-E626.

Lipes J, Yang SS.: Re: Clinical course and outcomes of critically ill patients with COVID-19 infection: a systematic review by Serafim et al. Clin Microbiol Infect. 27(6):938-939.

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## **Book Chapter**

Denault A, Halwagi A, Bernard F, Langevin S, Couture E, Azzam M, Beaubien-Souligny W, Robillard P. Transcranial Doppler (TCD/TCCS) Monitoring in the Intensive Care Unit: Usefulness of Two-Dimensional Ultrasound (2D) to Guide Neuromonitoring. Chapter 13. Neurosonology in Critical Care.

#### **Podium Presentations**

Boudreau C, McClure G, D'Astous J, Polok K, Fronczek J, Tom A, Yang S, Elias F, Szczeklik W, Duceppe E: Endovascular Aneurysm Repair versus Open Surgical Repair: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. Perioperative Care Congress. Virtual Meeting November.

Al Kharusi L, Cameron MJ, Gosselin A, Chirico A, Gholipour-Baradari P, Yang SS: Iron Supplementation for patients undergoing cardiac surgery: A systematic review and meta-analysis of randomized controlled trials. Society of Cardiovascular Anesthesiologist Annual meeting and Workshops Day Virtual Meeting April.

Al Kharusi L, Cameron MJ, Gosselin A, Chirico A, Gholipour-Baradari P, Yang SS: Iron Supplementation for patients undergoing cardiac surgery: A systematic review and meta-analysis of randomized controlled trials. Society of Critical Care Anesthesiology. Virtual Meeting May.

Gelinas C, Yim E, Li M, Cameron M, Yang SS: Dexmedetomidine is associated with postoperative hypotension in hip and knee arthroplasties. Philip R. Bromage Anesthesia Research Day. Virtual Meeting May.

Al Kharusi L, Cameron MJ, Gosselin A, Chirico A, Gholipour-Baradari P, Yang SS: Iron Supplementation for patients undergoing cardiac surgery: A systematic review and meta-analysis of randomized controlled trials. Philip R. Bromage Anesthesia Research Day. Virtual Meeting May.

#### Poster Presentations

Weingartshofer A, Kostenko O, Boutros M, Yang SS: Risk Factors for Postoperative Hypotension in Colorectal Surgery Patients: a retrospective study. American Society of Anesthesiologists (ASA) Virtual Meeting October.

Gelinas C, Yim E, Li M, Cameron M, Yang SS: Dexmedetomidine is strongly associated with postoperative hypotension in hip and knee arthroplasties. American Society of Anesthesiologists (ASA) Virtual Meeting October.

Gelinas C, Yim E, Li M, Cameron M, Boudjemai R, Yang SS: Dexmedetomidine is a strong risk factor of postoperative hypotension in hip and knee arthroplasties. Canadian Anesthesiologists' Society (CAS) Virtual Meeting June.

Gholipour-Baradari P, Cameron MJ, Al Kharusi L, Gosselin A, Chirico A, Yang SS: Iron Supplementation for patients undergoing cardiac surgery: A systematic review and meta-analysis of randomized controlled trials. Association University Anesthesiologist. Virtual Meeting May.

Chirico A, Cameron MJ, Al Kharusi L, Gosselin A, Gholipour-Baradari P, Yang SS: Iron Supplementation for patients undergoing cardiac surgery: A systematic review and meta-analysis of randomized controlled trials. International Anesthesia Research Society. Virtual Meeting May.

#### MONTREAL NEUROLOGICAL INSTITUTE

Catherine Duclos, Charlotte Maschke, Yacine Mahdid, Danielle Nadin, Alexander Rokos, Caroline Arbour, Mohamed Badawy, Justin Létourneau, Adrian M Owen, Gilles Plourde, Stefanie Blain-Moraes: Brain Responses to Propofol in Advance of Recovery From Coma and Disorders of Consciousness: A Preliminary Study. American Journal of critical care medicine.

Guay CS, Khebir M., Shiva Shahiri T, Szilagyi A, Cole EE, Simoneau G, Badawy M: Evaluation of automated microvascular flow analysis software AVA 4: a validation study. Intensive Care Medicine Experimental. April 2.

Abulhasan YB, Ortiz Jimenez J, Teitelbaum J, Angle MR: Role of Induced Hypertension and Intravenous Milrinone After Aneurysmal Subarachnoid Hemorrhage: Is it Time to Shift the Paradigm? Neurocrit Care. Dec;35(3):920-921.

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\*NB: Please note that Dr Angle's article about using milrinone in refractory cerebral vasospasm was chosen as one of the top 10 articles published in JNS in 2020.

#### MONTREAL CHILDREN'S HOSPITAL

McArdle, A.J., Vito, O., Patel, H., Withington, D. et al.: Treatment of Multisystem Inflammatory Syndrome in Children. New England Journal of Medicine, 385(1) 11-22.

Disma, N., Veyckemans, F., Virag, K., Hansen, T.G., Becke, K., Harlet, P., Vutskits, L., Walker, S.M., de Graaff, J.C., Zielinska, M., Simic, D., Engelhardt, T et al.: Morbidity and mortality after anaesthesia in early life: results of the European prospective multicentre observational study, neonate and children audit of anaesthesia practice in Europe (NECTARINE). British Journal of Anaesthesia, 126(6) 1157-1172.

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van Hoorn, C.E., Flint, R.B., Skowno, J., Davies, P., Engelhardt, T., Lalwani, K., Olutoye, O., Ista, E., de Graaff, J.C.: Off-label use of dexmedetomidine in paediatric anaesthesiology: an international survey of 791 (paediatric) anaesthesiologists. European Journal of Clinical Pharmacology,77(4) 625-635.

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Johansen, M., Classen, V., Muchantef, K.: Long-term IV access in paediatrics - why, what, where, who and how. Acta Anaesthesiologica Scandinavica,65(3) 282-291.

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Noutsios, C.D., Boisvert-Plante, V., Perez, J., Hudon, J., Ingelmo, P.: Telemedicine applications for the evaluation of patients with non-acute headache: A narrative review. Journal of Pain Research,141533-1542.

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Bardai, G., Ouellet, J., Engelhardt, T., Bertolizio, G., Wu, Z., Rauch, F.: Prevalence of SARS-CoV-2 infections in a pediatric orthopedic hospital. Paediatric Anaesthesia, 31(2) 247-248.

McHugh, T., Brown, K.A., Daniel, S.J., Balram, S., Frigon, C.: Parental engagement of a prototype electronic diary in an ambulatory setting following adenotonsillectomy in children: A prospective cohort study. Children,8(7).

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Hsu, G., von Ungern-Sternberg, B.S., Engelhardt, T.: Pediatric airway management. Current opinion in anaesthesiology,34(3) 276-283.

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### **ANESTHESIA RESEARCH UNIT**

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