

OFFICE OF RESEARCH

**2020 ACCOUNTABILITY REPORT**

## Table of Contents

<b>EXECUTIVE SUMMARY</b>	<b>3</b>
<b>INTRODUCTION</b>	<b>4</b>
<b>ENGAGE IN THE PROCESS OF CREATIVITY</b>	<b>5</b>
<b>ENGAGE IN THE PROCESS OF RESEARCH</b>	<b>6</b>
<b>ACTIVELY SEEK COLLABORATIVE OPPORTUNITIES WITH INTERDISCIPLINARY COLLEAGUES</b>	<b>8</b>
<b>MEMBERS OF SCIENTIFIC AND ORGANIZING COMMITTEES</b>	<b>9</b>
<b>ENGAGE IN THE ADMINISTRATIVE PROCESS</b>	<b>10</b>
<b>WRITE AND PUBLISH</b>	<b>11</b>
<b>PREPARE AND DELIVER PRESENTATIONS</b>	<b>13</b>
<b>STRATEGICALLY ENGAGING WITH EXTERNAL STAKEHOLDERS</b>	<b>15</b>
<b>MENTORING, TEACHING AND SUPERVISION</b>	<b>16</b>
<b>APPENDIX A – 2020 PROTECTED TIME FOR RESEARCH</b>	<b>17</b>
<b>APPENDIX B – 2020-21 RESEARCH PROJECTS</b>	<b>18</b>
<b>APPENDIX C – 2020 PUBLICATIONS</b>	<b>26</b>

## Executive Summary

The Department of Anesthesia, Pain Management & Perioperative Medicine **2020 Research Accountability Report** includes research-related achievements with respect to established targets and goals stated in the *Research Accountability Framework*. The information in this report highlights research productivity from January to December 2020 as well as data from previous years for comparative and trending purposes. Targets that were met, partially met, or not met in 2020 are outlined below in summary.

---

### Areas in which the department *met its targets* in 2020:

- The number and value of grants and industry contract funded research are 44 and \$9.8M, respectively (Figure 1 and Table 1), an increase from \$9.0M in 2019.
- The proportion of collaborative projects and publications remains high at 90%.
- Ninety percent of researchers are members on research related administrative committees with 85%, 55% and 30% serving on local, national and international committees, respectively.
- Fifty-five percent of researchers chair research related committees with 40%, 25% and 0% serving on local, national and international committees, respectively.
- Thirty percent of researchers perform editorial activities with 20% and 20% serving on national and international committees, respectively.
- Eighty percent of researchers reviewed papers in 2020.
- Fifty-two percent of abstracts were presented as a podium.
- Seventy percent of researchers supervise learners as the primary supervisor and 15% supervise graduate students.
- Five recognition awards were conferred in 2020.

---

### Area in which the department *did not reach its targets* in 2020:

- Thirty-three *new* research projects were initiated in 2020.
- Sixty-one percent of researchers are at the rank of Associate Professor or higher, whereas *the target is 75% of researchers have academic rank of Associate or higher*.
- The total number of publications reached is 82 in 2020 (Figure 3), whereas 96 publications were published in 2019. All publications were peer reviewed.
- There were 27 abstracts accepted in 2020, whereas 36 abstracts were accepted in 2019.
- Sixty-five percent of all researchers presented an abstract in 2020, whereas 75% of researchers presented an abstract in 2019. *The target is 100%*.
- Thirty-five percent of researchers reviewed funding applications in 2020, whereas 40% of researchers reviewed funding applications in 2019. *The target is 80%*.
- Thirty percent of researchers were invited to present their work in 2020 as a keynote, plenary and symposium speaker. *The target is 50%*.

## Introduction

The annual **Research Accountability Report** reports on the Department's research activities in relation to predetermined targets outlined in the Anesthesia, Pain Management & Perioperative Medicine Research Accountability Framework. The **Research Accountability Framework** was developed by a working group of departmental researchers and administrative staff. Through it, the Department attempted to structure the ongoing measurement of the value of the full scope of scholarly research activity, from engaging in the process of creativity to implementing research projects, communicating the results, and influencing clinical best practice.

The framework ties resources devoted to research to the outcomes; identifies the most appropriate indicators of research activity and productivity, identifies current targets and how to measure indicators as well as how to report the results. It also outlines an evaluation strategy.

This Research Accountability Report (2020) covers the time period from January to December 2020 for all deliverables with the exception of funding which corresponds to the period of April 1, 2020– March 31, 2021 based on Department of Health and Wellness new documented requirements. It is the product of the Framework's *Measurement and Reporting Plan* in which key indicators and targets were identified in 2010 and revised in 2014 for subsequent measurement and reporting. The results of this report will be used in the implementation of the *Evaluation Strategy*. Consistent with the *Results Chain*, this report reflects the activity of research-oriented clinicians or other professional faculty with protected time (time funded by the department) for research.

The following outlines the 2020 research-related results for each predetermined target. It also provides a comparison to the data from previous years. This is done in graphical and table formats. Lists of protected time for research (FTE), currently held, research grants/contracts and peer-reviewed publications are found in **Appendix A, B and C**, respectively.

## Engage in the process of creativity

<b>Indicator:</b>	Number of new proposals that are developed into research endeavours
<b>Target:</b>	New research projects reflects maintenance or increase from previous year (37 new projects in 2019)
<b>Result</b>	Thirty-three (33) <i>new</i> research projects are underway (funded and unfunded)

Thirty-three new research projects began in 2020; 19 funded and 14 unfunded. In general, these studies examined important questions in health research. (**Appendix B**).

To summarize:

1. Ten research projects responded to the COVID-19 pandemic by developing innovative protective devices and equipment as well as assess the impact of the pandemic on chronic pain management, substance abuse and mental health of adults and youth.
2. Nine studies focused on chronic pain. Five projects examined COVID impacts on chronic pain management with a focus on socioeconomic and substance abuse factors. Additional studies explored nonattendance to pain clinics, effectiveness of cinema-education for chronic pain, preoperative cannabis use on pain and review of civil legal cases for interventional pain management.
3. Several research innovations stimulated development of an airborne pathogen containment device for airway intubation, a plant-based meal replacement beverage as well as cannabinoid formulations for inflammatory urinary and bowel conditions.
4. Four studies focus on airway management during direct laryngoscopy, awake tracheal intubations, with an international airway registry examining PPE use and patient outcomes.
5. Two studies include collaboration with the Canadian Sepsis Research Network that focuses on improvement of perioperative care for sepsis patients and another focuses on translational research using preclinical models of sepsis.
6. One project is contributing to build local and global capacity for sustainable delivery of simulation-based medical education in resource-limited and remote environments without the need for a dedicated simulation center.
7. One study involves an interdisciplinary research team including researchers and health care practitioners together with key health administrators funded to explore the optimal clinical approach to assess Post-operative Cognitive Dysfunction in surgical patients.
8. One team of researchers and health care practitioners are collectively developing a Transitional Pain Program to improve the care of patients at risk of persistent postoperative pain with a continuum of care involving the acute and chronic pain teams.
9. Of note, several ongoing projects focus on the fundamental study of inflammatory mechanisms of pain-related diseases and other projects examining novel clinical interventions and treatments for optimal pain management using neuroimaging approaches with the departmental CRC Tier II in pain as the Principal Investigator or a co-Principal Investigator.

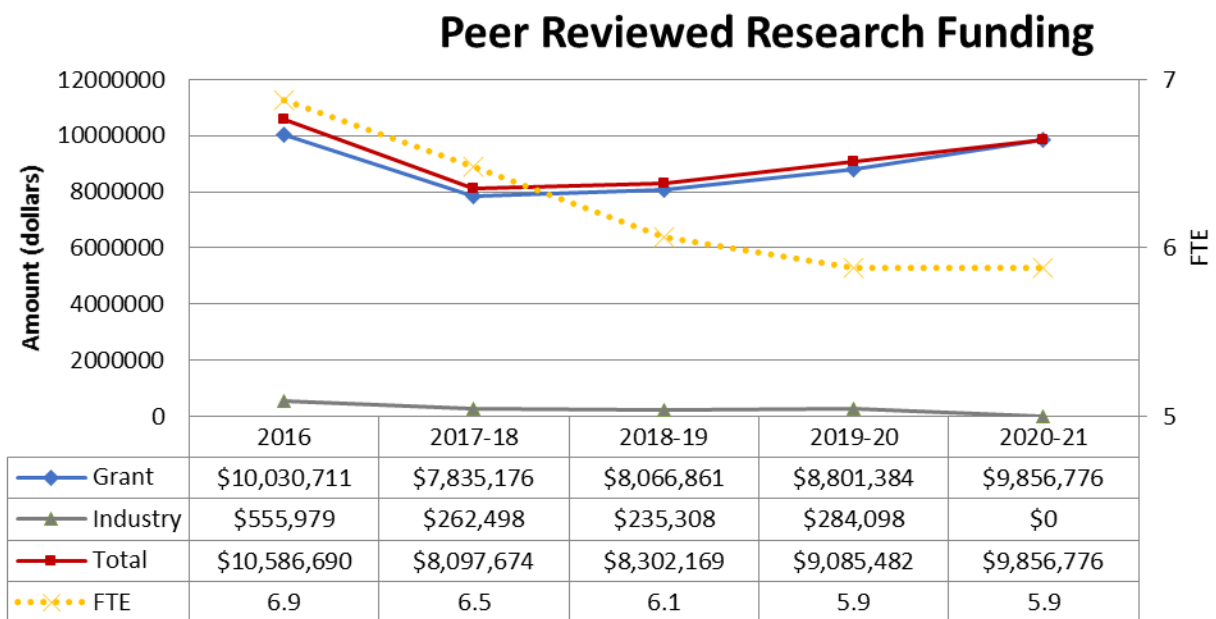
The 2021 Anesthesia Research Day saw 17 research studies presented. These were generated by a variety of trainees, including six residents/fellows; five graduate/post doc students and five undergraduate students. The presentation topics were 71% clinical and 29% fundamental research.

## Engage in the process of research

- Indicator:** Number & value (\$) of grants & industry contracts received
- Target:** Total funding (\$) reflects maintenance or increase from previous year (50 funded projects totaling \$9.0M in 2019-20)
- Result:** **44 funded projects totaling over \$9.8M**

Please note for reporting purposes the fiscal calendar (April 1, 2020 – March 31, 2021) is used for research funding only based on Department of Health and Wellness requirements.

There are 44 ongoing and new grant/industry funded projects amounting to over \$9.8M (**Figure 1** and **Table 1**). National and international funds make up approximately 43% of this total with 57% of funds from regional, institutional and department organizations. Major contributors to this success are the availability of protected time (**Table 2** and **Appendix A**), national collaborations as well as the support provided by the Office of Research. Grant funded research underway in the Department includes 12 projects funded by the Tri-Council Agencies (CIHR, NSERC, SSERC), accounting for 81% of the total funds. Five Tri-Council funded projects are led by department members totaling over \$3.2M. A list of the grants is found in **Appendix B**.



**Figure 1:** The amount (\$) in external research grant/industry contract funding received (2016-2020). Five large scale grants ended in 2016 accounts for the decrease in funding for 2017-18: three collaboration grants and two grants led by department members.

*\*Note: The value of research funding each year includes revenue from all research awards generating funds in that year (for multi-year awards, the revenue is reported in the year it is budgeted). All research projects in which a Department researcher is a team member are included. Also, the number of grants received reflects the number of grants and contracts generating funds that year (which may be continuing from earlier years).*

**Table 1:** Number of grants and industry contracts received (2016-2020)

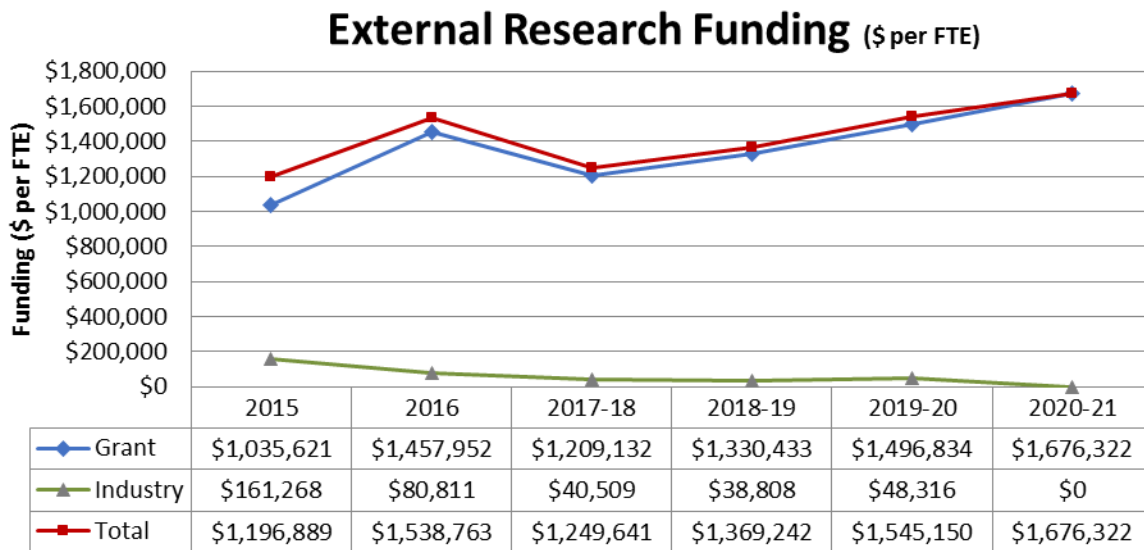
	2016	2017-18	2018-19	2019-20	2020-21
Grant	51	57	48	47	44
Industry	9	6	4	3	0
Total	60	63	52	50	44

While there is consistent FTE assignment for research for the past two years (**Table 2**), there is a notable increase in funding dollars per FTE for 2020-21 (**Figure 2**). See **Appendix A**.

**Table 2:** Protected time (FTE) for research activities (2016-2020)

	2016	2017-18	2018-19	2019-20	2020-21
Protected Time	6.5	6.9	6.1	5.7	5.9

\*Note: In 2016 total FTE includes all Anesthesia researcher protected time at Central zone-adult, Pediatrics and Women and Obstetrics (Appendix A).



**Figure 2:** The amount (\$/FTE) in external research grant/industry relative to FTE (**Table 2**) of protected time for research

---

**Indicator:** Annual value (\$) of grants and industry contracts received by departmental principal investigators  
**Target:** External funding dollars obtained as a *principal investigator* reflects maintenance or increase from previous year (\$2.1M from department Principal Investigators in 2019-20)  
**Result:** **\$1.7M was obtained by departmental principal investigators**

Twelve of 20 researchers (60%) with protected time were designated as principal investigators for at least one grant or contract totaling almost \$1.7M.

---

**Indicator:** Annual value (\$) of grants & industry contracts received by departmental co-investigators  
**Target:** External funding obtained as a *co-investigator* reflects maintenance or increase from previous year (\$7.0M from co-investigators in 2019-20)  
**Result:** **\$8.1M was achieved by departmental co-investigators**

An additional \$8.1M in external grants and contract funding was achieved by researchers with protected time designated as co-investigators.

## SCHOLARLY SYNTHESIS

### Actively seek collaborative opportunities with interdisciplinary colleagues

**Indicator:** Number of collaborative projects and publications  
**Target:** 80% of all projects and publications are collaborative  
**Result:** **90% of all projects and publications are collaborative**

Of 82 publications, 80 have co-authors (98%). Of 44 funded grants and industry contracts, 34 have co-investigators (77%). Therefore, 114 out of 126 projects and publications are collaborative (90%).



## Members of scientific and organizing committees

**Indicator:** Number of researchers who participate in research committee work

**Target:** 80% of all researchers are members of research related administrative committees: 50% local, 40% national and 10% international

**Result:** **90% of all researchers are members of research related administrative committees: 85% local, 55% national and 30% international**

Eighteen of 20 researchers are members of research related administrative committees (90%).

---

**Indicator:** Number of researchers who chair research related committees

**Target:** 25% chair research related committees

**Result:** **55% of researchers chair research related committees**

Eleven of 20 researchers were invited to chair research related committees (55%); 40% local, 25% national and 0% international.

---

**Indicator:** Number of researchers who review journal articles

**Target:** 80% review journal articles

**Result:** **80% of researchers review journal articles**

Sixteen of 20 researchers were invited to review journal manuscripts (80%).

---

**Indicator:** Number of researchers who review funding applications

**Target:** 80% review funding applications: 50% at the local, 40% at national level and 10% at international level

**Result:** **35% review funding applications: 10% local, 20% national and 5% international**

Seven of 20 researchers were invited to review funding applications (35%).

---

**Indicator:** Number of researchers who perform editorial activities

**Target:** 25% perform editorial activities

**Result:** **30% of researchers perform editorial activities: 20% national and 20% international**

Six of 20 researchers perform editorial activities (30%).

---

## Engage in the administrative process

**Indicator:** Engage in planning activities to advance the research mission of excellence

The department strives for a culture of excellence in our clinical practice and programs, research, and education. In supporting this, the Office of Research (OoR) and its researchers strive for research excellence through working together with patients to find evidence-based solutions leading to the best possible pain management and perioperative care for our families and global communities.

The 2018-21 research strategic plan is an integration of effort and feedback from working groups focused on 1) enhancing research growth and collaboration, 2) building research capacity and 3) fostering patient engagement in the research process (**Appendix D**). For 2020, the research priorities are outlined in Table 7.

**Table 7:** OoR Strategic priority alignment with relevant institutions’ strategic plans.

2020-21 Strategic Priorities	Dal Med Forward	IWK	NSHA
1. Take advantage of funding opportunities for building collaborative research teams, emphasizing internal collaborations	Aligned	Aligned	Aligned
2. Cultivate junior investigator research partnerships for enhanced national/international clinical trial participation	Aligned	Aligned	Aligned
3. Implement targeted research training opportunities and mentorship support for junior investigators and trainees	Aligned		
4. Advocate with key stakeholders for integrating research into optimal HR, space and information management decision-making	Aligned	Aligned	Aligned
5. Integrate patient advisors into the department’s research activities while nurturing uptake from investigators	Aligned	Aligned	Aligned

**Indicator:** Number of associate and full professors

**Target:** 75% of all researchers are associate professor or higher and 60% of research related promotions are successful

**Result:** 61% of all researchers are ranked as associate professor or higher

There are seven full, four associate and seven assistant professors who receive protected time to conduct research in the Department of Anesthesia, Pain Management and Perioperative Medicine.

SCHOLARLY COMMUNICATION

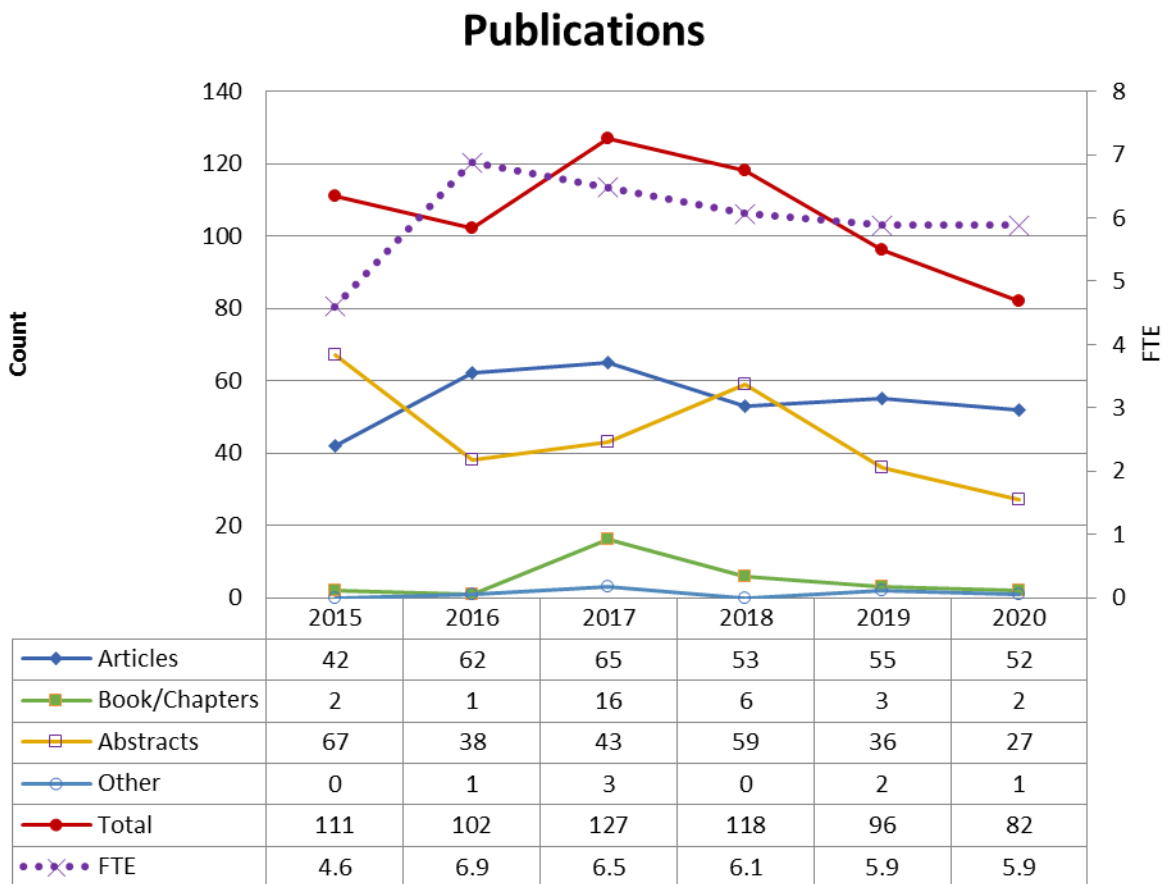
## Write and publish

**Indicator:** Number of accepted and published publications (peer reviewed & non-peer reviewed)

**Target:** Trending of accepted and published peer and non-peer review papers reflects maintenance or increase from previous year  
(96 publications in 2019)

**Result:** **82 publications have been submitted and accepted**

In 2020, 82 publications have been submitted and accepted (**Figure 3**) with 52 peer-reviewed manuscripts published online (**Appendix C**). **Table 8** shows the relative protected time with respect to number of publications.



**Figure 3:** Number of submitted and accepted publications (peer reviewed & non-peer reviewed)

**Table 8:** Number of submitted and accepted publications (peer reviewed & non-peer reviewed) relative to FTE of protected time (**Table 2**) for research

	<b>2016</b>	<b>2017</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
Articles	9	9	9	10	9
Books/Chapters	0	2	1	1	0
Abstracts	6	6	10	6	5
Other	0	0	0	0	0
<b>Total</b>	<b>15</b>	<b>18</b>	<b>19</b>	<b>17</b>	<b>14</b>

---

**Indicator:** Number of peer-reviewed publications  
**Target:** 90% of publications are peer-reviewed  
 (100% publications were peer reviewed in 2019)  
**Result:** **100% of the publications were peer reviewed**

---

**Indicator:** Number of accepted abstracts  
**Target:** Trending of accepted abstracts reflects maintenance or increase from previous year  
 (36 abstracts accepted in 2019)  
**Result:** **27 abstracts were accepted**

---

**SCHOLARLY COMMUNICATION**

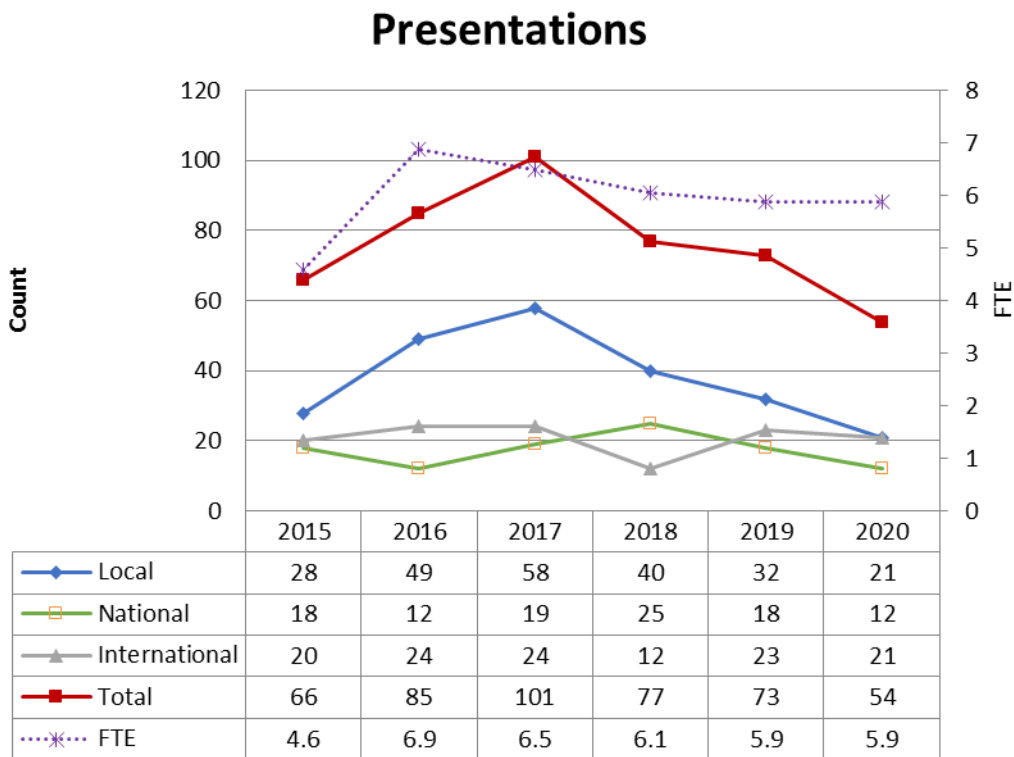
## Prepare and deliver presentations

**Indicator:** Number of all presentations (local, national, international)

**Target:** Trending of presentations reflects maintenance or increase from previous year (32 local, 18 national and 23 international invited presentations in 2019)

**Results:** **21 local, 12 national and 21 international invited presentations**

The total number of presentations by researchers is found in **Figure 4** with adjustments relative to protected time for research shown in **Table 9**. While the number of local and national presentations slightly decreased, international level presentations have noticeably increased.



**Figure 4:** Presentations (count) for local, national and international audiences

**Table 9:** Number of presentations relative to FTE protected time (**Table 2**) for research

	2016	2017	2018	2019	2020
Local	8	8	7	6	4
National	2	3	4	3	2
International	4	3	2	4	4
<b>Total</b>	<b>13</b>	<b>15</b>	<b>13</b>	<b>13</b>	<b>10</b>

**Indicator:** Number of **invited presentations**

**Target:** 50% of all researchers are invited to present (plenary, keynote or symposium)  
(35% of researchers were invited to present in 2019)

**Result:** **30% of all researchers are invited to present (plenary, keynote or symposium)**

Several researchers (30%) were invited to present their work in 2020 as a keynote, plenary or symposium speaker.

---

**Indicator:** Number of abstracts presented annually

**Target:** 100% of all researchers have an abstract presented annually  
(75% of all researchers presented an abstract in 2019)

**Result:** **65% of all researchers presented an abstract in 2020**

---

**Indicator:** Number of abstracts presented as a podium presentation

**Target:** 20% of abstracts are invited to present a podium  
(44% of abstracts were podium presentations in 2019)

**Result:** **52% of abstracts were invited to present a podium presentation**

Fifty two percent of all researchers presented podium abstract presentation in 2020. There were 27 abstracts accepted in 2020 with 52% of abstracts invited to present as a podium presentation.

**SCHOLARLY COMMUNICATION**

**Strategically Engaging with External Stakeholders**

**Indicator:** Number of interviews provided to the media  
**Target:** Number of media interviews reflects maintenance or increase  
 (Six media interviews were provided in 2019)  
**Result:** **Two media interviews were provided by researchers**

Uppal, V. ASRA Abstracts Day 4. 2020-04-23

Uppal, V. Discussion on Regional Anesthesia Practice Recommendations during the COVID-19 Pandemic. 2020-04-04

**Indicator:** Number of recognition awards  
**Target:** FTE reflects maintenance or increase of research *recognition awards* from previous year  
**Result:** **Five research recognition awards were conferred in 2020**

Members	Name	Type	Scope	OrgName
Uppal V	Internal Individual Award of Excellence	Honorary Award	Department	Department of Anesthesia, Pain Management and Perioperative Medicine
Bailey JG	Resident Advocate of the Year Award	Honorary Award	Department	Dalhousie Department of Anesthesiology, Pain Management & Perioperative Medicine
Bailey JG	Mentor/Role Model of the Year Award Nominee	Honorary Award	Department	Dalhousie Department of Anesthesiology, Pain Management & Perioperative Medicine
Law JA	2019 CJA reviews rated in top 5%	Honorary Award	National	Can J Anesth
Uppal V	Top reviewer 2019	Honorary Award	National	Canadian Journal of Anesthesia

**Table 10:** Number of recognition awards (2015-2020)

2016	2017	2018	2019	2020
<b>1</b>	<b>1</b>	<b>1</b>	<b>0</b>	<b>5</b>

## Mentoring, Teaching and Supervision

**Indicator:** Number of researchers supervising trainees (undergraduate, graduate, postgraduate students and research projects for residents and fellows)

**Target:** 50% of researchers supervise trainees as the primary supervisor (80% reported in 2019)

**Result:** **70% of researchers supervise trainees as the primary supervisor**

---

**Indicator:** Number of researchers supervising graduate students (MSc and PhD)

**Target:** Number of graduate students reflects maintenance or increase (20% reported in 2019)

**Results:** **15% of researchers are supervising graduate students.**

---



## Appendix A – 2020 Protected Time for Research

Central Zone - Adult	FTE	Pediatric	FTE	Women & Obstetrics	FTE
J. Bailey	0.20	T. Dumbarton	0.10	D. McKeen	0.20
A. Finley	0.20	A. Finley	0.20	A. Munro	0.20
J. Hashmi	1.00	A. Vlatten	0.10	A. Sjaus	0.20
O. Hung	0.40	S. Wright	0.10	V. Uppal	0.10
K. Kwofie	0.20				
A. Law	0.20				
C. Lehmann	0.60				
M. Lynch	0.40				
J. McDougall	0.33				
D. McKeen	0.20				
A. Milne	0.20				
K. Mukhida	0.10				
M. Schmidt	0.40				
E. Tan	0.10				
V. Uppal	0.10				
A. Vlatten	0.05				
<i>Total</i>	<b>4.68</b>		<b>0.50</b>		<b>0.70</b>

*Please note the research deliverables captured in this report include 20 researchers (5.88FTE) that have protected time to conduct research in the Department of Anesthesia, Pain Management and Perioperative Medicine.*

## Appendix B – 2020-21 Research Projects

**Funded Projects:** Note that the bracketed dollar amount is the total value of the award whereby annual amounts are provided in Figure 1.

### NEW Funded Projects (19)

1. D'Entremont M, Milne AD (2020 - 2021). COVID Intubation Hood [Grant] - Springboard - \$25,000.
2. Fok P, Dahn T, Campbell S, Kwofie MK, MacDonald K, Avery H, Coles C (2021 - 2023). A quality improvement (QI) initiative to increase the performance of femoral nerve blocks for acute hip fracture patients in the emergency department [Grant] - NSHA - \$3,000.
3. Fox-Robichaud A, Mark Ansermino, Catherine Cook, Kirsten Fiest, Patricia Fontela, Allan Garland, Michelle Kho, Paul Kubes, Manoj Lalu, Francois Lamontagne (Co-Director), Osama Loubani, Claudio Martin, Bradeon McDonald, Lauralyn McIntyre, Melissa Parker, Jeanna Parsons-Leigh, Jeff Perry, Bram Rochweg, Lisa Schwartz, Diana Sherifali, Orla Smith, Elizabeth Wilcox, Bryan Yipp, Lehmann C, Zhou J et al and the Canadian Sepsis Research Network (2020 - 2025). Canadian Sepsis Research Network: Improving care before, during and after sepsis [Grant] - CIHR - \$6,789,630.
4. Lalu MM, Fergusson DA, Fiest K, Gill S, Macala K, McDonald B, Fox-Robichaud A, Liaw P, Mendelson A, Lehmann C, Arora J, Bourque S, Cailhier J-F, Cepinskas G, Charbonney E, Ellis C, Kristof A, Kubes P, Marshall J, Mawdsley L, Medeiros S, Sharma N, Sohrabipour S, Stewart D, Tieu A, Vazquez-Grande G, Veldhuizen R, Welsh D, Winston B, Zarychanski R, Zhang H, Griffin G, Hendrick K, Kowalewska P, Sunohara-Neilson J, Zhou J (2020 - 2021). Sex differences in preclinical models of sepsis: a systematic review [Grant] - CIHR - \$112,500.
5. Livingston P, Mossenson A, Bailey J (2020 - 2023). VAST faculty development: building capacity for sustainable delivery of simulation-based medical education in low-resource and remote settings [Grant] - Royal College International - \$90,000.
6. Lynch M (2020). Annual Atlantic Pain Conference (virtual) [Donation] - Exhibitor support and registrations - \$9,462.
7. Lynch M, Curwin G (2020 - 2021). Identifying Sensory Properties of meal replacement beverage [Grant] - NSBI Productivity Innovation Voucher Program - \$15,000.
8. Lynch M, Curwin G (2020 - 2021). Sterile Plant Based Beverage [Grant] - IRAP/NRC IRAP Program - \$78,805.
9. Lynch M, Curwin G (2020). Plant Based Meal Replacement Beverage Consultation [Grant] - ACOA/CEED Consultant Advisory Services (CAS) - \$5,000.
10. Lynch M, Curwin G (2020). Website & E-Commerce platform development [Grant] - Natural Products Canada Fast Track to Financing - \$11,250.
11. Milne AD, Uppal V, Gillis A, Brousseau P (2021 - 2022). A comparative cost analysis of Memsorb and Dragorsorb for routine anesthesia use at NSHA: A pragmatic observational study [Grant] - NSHARF - \$25,104.
12. Mukhida K (2020). Chronic pain management for patients with addictions [Grant] - Royal College of Physicians and Surgeons of Canada - \$1,500.
13. Ricciotti S, French D, Crocker C, Bailey JG, Simon P, Tibbo P (2021 - 2022). Investigation of outcomes after thoracic surgery for malignancy in patients with severe and persistent mental illness [Grant] - NSHRF - \$6,885.
14. Schmidt M, Dunnington J, Eskes G (2021 - 2023). Computerized Assessment for Post-Operative Cognitive Decline (POCD) in Elderly Populations [Grant] - NSHA - \$59,771.
15. Sjaus A, d'Entremont M, Haelssig J (2020 - 2021). Development of airborne pathogen containment device for airway instrumentation [Grant] - Nova Scotia Health Research Funding Coalition - \$30,000.

16. Sjaus A, Munro A, D'Entremont M, Hung O, McKeen D (2020 - 2022). Preliminary evaluation of a novel COVID-19 containment device design: safety and acceptability during aerosol generating medical procedures [Grant] - Department of Anesthesia, Pain Management and Perioperative Medicine - \$24,961.
17. Sjaus A, Munro A, d'Entremont M, Hung O, McKeen D (2020 - 2022). Preliminary evaluation of a novel COVID-19 containment device design: safety and acceptability during aerosol generating medical procedures [Grant] - IWK - \$20,000.
18. Sjaus A, Munro A, Hung O, d'Entremont M, McKeen D (2020 - 2022). Preliminary evaluation of a novel airborne pathogen containment device; reduction of ambient contamination during aerosol generating medical procedures [Grant] - Canadian Anesthesiologists's Society - \$20,000.
19. Stinson J, Noel M (Co-PI), Birnie K, Chonière M, Poulin P, Lalloo C, Campbell F, Finley A, Lamontagne C, Ali S, Nicholas D, Oberlander T, Dick B, Rasic V, Baerg K, Findlay S, Baerveldt A, Poolacheria R, Doré M, Ingelmo P, Pagé G, Swidrovich J, Montgomery L, Mesaroli G, Killackey T, Kelly L, Smith A, Szatmari P, Battaglia M, Kopala Sibley D, Bélanger R, Victor C, Singh M, Mohabir V, Marianayagam J, Jordan I, Benayon M, Taylor A (2020 - 2021). Stepped care solutions to reduce the impact of the COVID-19 pandemic on pain, mental health, and substance use in youth living with chronic pain and their families: A pan-Canadian study [Grant] - CIHR - \$200,000.

#### **NEW Scholarly Projects (unfunded)**

1. Atkins N, Mukhida K (2020 - 2022). The effect of socioeconomic status and COVID-19 on chronic pain management in Nova Scotia [Clinical]
2. Bailey JG, Banfield J, Bailey K, Wong M, Barry G, Munro A, Kirkland S, & Lieter M (2020 - 2022). COVID Pandemic short interval National Survey gauging psychological distress among physicians (COPING survey): A longitudinal survey [Clinical]
3. Bonin K, Oprea A, Mukhida K (2020 - 2021). The effects of COVID-19 on chronic pain management for patients with addictions [Clinical]
4. King A, Mukhida K (2021). Patient Perspectives on Contributory Factors to Non-attendance at a Tertiary Academic Chronic Pain Clinic in Halifax, Nova Scotia [Clinical]
5. Kovacs GK, Goldstein J, Campbell S, Baro B, Sowers N, Law JA, Walker M, DeMone C, Hebert S (2021 - 2022). The Use of Tracheal Clicks During Direct Laryngoscopy: A Cadaveric Simulated Study [Clinical]
6. Kwofie MK (2020 - 2022). COVID Airway Provider PPE Use and Outcomes Registry (IntubateCOVID.org) [Database]
7. Law JA, Thana A, Milne A (2021 - 2022). Use of awake tracheal intubation in anesthetic practice is [decreasing?]: a database review of years 2011-2020 at a single tertiary-care institution [Database]
8. Lynch M (2020 - 2021). Development of a Transitional Pain Service [Development and Innovation]
9. Lynch M (2020 - 2021). National survey of pain clinic responses during Covid-19 [Clinical]
10. Poltarowicz J, Mukhida K (2021). Airway management for patients undergoing surgery for cervical myelopathy [Database]
11. Sedighi S, Mukhida K (2020 - 2021). Cinemeducation and chronic pain [Medical Education or Training]
12. Verge A, Mukhida K (2021). Analysis of closed civil legal cases involving interventional pain management in Canada [Clinical]
13. Ward C, Munro A, Houser C, Brousseau P (2020 - 2021). A Survey of the Anesthesia Assistant Profession in Canadian Teaching Hospitals: 12 Years Later [Clinical]
14. Wiseman L, Mukhida K (2020 - 2021). The effect of preoperative cannabis use on postoperative visceral pain [Clinical]

### CONTINUING Ongoing Funded Projects (34)

1. Ricciotti S, French D, Crocker C, **Bailey JG**, Simon P, Tibbo P (2021 - 2022). Investigation of outcomes after thoracic surgery for malignancy in patients with severe and persistent mental illness [Grant] - NSHRF - \$6,885.
2. **Milne AD**, **Uppal V**, Gillis A, Brousseau P (2021 - 2022). A comparative cost analysis of Memsorb and Dragorsorb for routine anesthesia use at NSHA: A pragmatic observational study [Grant] - NSHARF - \$25,104.
3. Fok P, Dahn T, Campbell S, **Kwofie MK**, MacDonald K, Avery H, Coles C (2021 - 2023). A quality improvement (QI) initiative to increase the performance of femoral nerve blocks for acute hip fracture patients in the emergency department [Grant] - NSHA - \$3,000.
4. **Schmidt M**, Dunnington J, Eskes G (2021 - 2023). Computerized Assessment for Post-Operative Cognitive Decline (POCD) in Elderly Populations [Grant] - NSHA - \$59,771.
5. **Lynch M** (2020). Annual Atlantic Pain Conference (virtual) [Donation] - Exhibitor support and registrations - \$9,462.
6. Lalu MM, Fergusson DA, Fiest K, Gill S, Macala K, McDonald B, Fox-Robichaud A, Liaw P, Mendelson A, **Lehmann C**, Arora J, Bourque S, Cailhier J-F, Cepinskas G, Charbonney E, Ellis C, Kristof A, Kubes P, Marshall J, Mawdsley L, Medeiros S, Sharma N, Sohrabipour S, Stewart D, Tieu A, Vazquez-Grande G, Veldhuizen R, Welsh D, Winston B, Zarychanski R, Zhang H, Griffin G, Hendrick K, Kowalewska P, Sunohara-Neilson J, Zhou J (2020 - 2021). Sex differences in preclinical models of sepsis: a systematic review [Grant] - CIHR - \$112,500.
7. Stinson J, Noel M (Co-PI), Birnie K, Chonière M, Poulin P, Lalloo C, Campbell F, **Finley A**, Lamontagne C, Ali S, Nicholas D, Oberlander T, Dick B, Rasic V, Baerg K, Findlay S, Baerveldt A, Poolacheria R, Doré M, Ingelmo P, Pagé G, Swidrovich J, Montgomery L, Mesaroli G, Killackey T, Kelly L, Smith A, Szatmari P, Battaglia M, Kopala Sibley D, Bélanger R, Victor C, Singh M, Mohabir V, Marianayagam J, Jordan I, Benayon M, Taylor A (2020 - 2021). Stepped care solutions to reduce the impact of the COVID-19 pandemic on pain, mental health, and substance use in youth living with chronic pain and their families: A pan-Canadian study [Grant] - CIHR - \$200,000.
8. **Mukhida K** (2020). Chronic pain management for patients with addictions [Grant] - Royal College of Physicians and Surgeons of Canada - \$1,500.
9. **Sjaus A**, **Munro A**, D'Entremont M, **Hung O**, **McKeen D** (2020 - 2022). Preliminary evaluation of a novel COVID-19 containment device design: safety and acceptability during aerosol generating medical procedures [Grant] - Department of Anesthesia, Pain Management and Perioperative Medicine - \$24,961.
10. **Sjaus A**, **Munro A**, d'Entremont M, **Hung O**, **McKeen D** (2020 - 2022). Preliminary evaluation of a novel COVID-19 containment device design: safety and acceptability during aerosol generating medical procedures [Grant] - IWK - \$20,000.
11. D'Entremont M, **Milne AD** (2020 - 2021). COVID Intubation Hood [Grant] - Springboard - \$25,000.
12. Fox-Robichaud A, Mark Ansermino, Catherine Cook, Kirsten Fiest, Patricia Fontela, Allan Garland, Michelle Kho, Paul Kubes, Manoj Lalu, Francois Lamontagne (Co-Director), Osama Loubani, Claudio Martin, Bradeon McDonald, Lauralyn McIntyre, Melissa Parker, Jeanna Parsons-Leigh, Jeff Perry, Bram Rochweg, Lisa Schwartz, Diana Sherifali, Orla Smith, Elizabeth Wilcox, Bryan Yipp, **Lehmann C**, Zhou J et al and the Canadian Sepsis Research Network (2020 - 2025). Canadian Sepsis Research Network: Improving care before, during and after sepsis [Grant] - CIHR - \$6,789,630.
13. **Sjaus A**, **Munro A**, **Hung O**, d'Entremont M, **McKeen D** (2020 - 2022). Preliminary evaluation of a novel airborne pathogen containment device; reduction of ambient contamination during aerosol generating medical procedures [Grant] - Canadian Anesthesiologists's Society - \$20,000.
14. **Lynch M**, Curwin G (2020). Website & E-Commerce platform development [Grant] - Natural Products Canada Fast Track to Financing - \$11,250.
15. **Lynch M**, Curwin G (2020 - 2021). Identifying Sensory Properties of meal replacement beverage [Grant] - NSBI Productivity Innovation Voucher Program - \$15,000.

16. **Sjaus A**, d'Entremont M, Haelssig J (2020 - 2021). Development of airborne pathogen containment device for airway instrumentation [Grant] - Nova Scotia Health Research Funding Coalition - \$30,000.
17. Livingston P, Mossenson A, **Bailey J** (2020 - 2023). VAST faculty development: building capacity for sustainable delivery of simulation-based medical education in low-resource and remote settings [Grant] - Royal College International - \$90,000.
18. **Lynch M**, Curwin G (2020). Plant Based Meal Replacement Beverage Consultation [Grant] - ACOA/CEED Consultant Advisory Services (CAS) - \$5,000.
19. **Lynch M**, Curwin G (2020 - 2021). Sterile Plant Based Beverage [Grant] - IRAP/NRC IRAP Program - \$78,805.
20. **Schmidt M**, Roach D (2020 - 2021). Greening anaesthesia: reducing anaesthetic vapour use and release in a perioperative hospital setting through manufacturing scale-up of membrane based CO2 filter, memsorb™ [Grant] - Sustainable Development Technologies Canada (SDTC) - \$598,447.
21. **Lehmann C** (2020 - 2022). Novel treatments for inflammatory bowel disease [Grant] - MITACS - \$100,000.
22. **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.
23. **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.
24. **Hung OR** (2020). Management of the Difficult and Failed Airway 4th Edition [Grant] - McGraw-Hill Book Grant (Editor Grant) - \$5,000.
25. 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.
26. 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.
27. 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.
28. **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.
29. **Lynch M**, Curwin G (2020 - 2021). Product Development [Grant] - ACOA Productivity and Business Skills Program - \$50,000.
30. **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.
31. 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.
32. 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.
33. Juan Zhou, **Christian Lehmann**, (2019 - 2021). Novel Treatments for bladder inflammation and pain [Grant] - Mitacs - \$186,666.
34. Calkin C, Friedman A, **Hashmi J** (2019 - 2023). Neuroanatomical and neurofunctional assessment in acquired brain injury [Grant] - Global Affairs Canada - \$3,600,000.
35. **Lehmann C** (2019 - 2021). Interstitial Cystitis and IBD research [Grant] - CRA with Tetra Bio-Pharma - \$489,195.



36. **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 equip [Grant] - Department of Anesthesia, Pain Management and Perioperative Medicine - \$12,592.
37. Cheng Zhenyu, **Lehmann Christian** (2019 - 2023). Pseudomonas aeruginosa protease promotes chronic inflammation and immune evasion [Grant] - CIHR - \$963,900.
38. 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.
39. 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.
40. **McDougall J** (2019 - 2023). Regulation of microglial pannexin-1 channels in arthritis pain [Grant] - CIHR - \$875,925.
41. **Lynch M**, Curwin G (2019 - 2020). Product Formulation, Physiology and Sensory Testing 1 [Grant] - IRAP/NRC Science & Technology Assistance Program - \$5,000.
42. Chambers, CT & Maynard DJ (co-Directors), & Ali S, Barwick M, Campbell F, Campbell-Yeo M, Carter N, **Finley GA**, Jordan I, Larocque L, Mogil J, Noel M, Oberlander T, Stevens B, Stinson J, Taddio A (2019 - 2023). Solutions for Kids in Pain (SKIP) [Grant] - Networks of Centres of Excellence: Knowledge Mobilization initiative (NCE-KM) - \$1,600,000.
43. Saciragic L, Saxe Braithwaite M, **McKeen D**, MacDonald D, Van Eyk N (2019 - 2020). GO TIME! Transforming care and improving quality in gynecologic oncology (GO) with implementation of an Enhanced Recovery program [Grant] - QEII HSC Foundation and IWK Foundation TRIC grant - \$156,310.
44. **Munro A**, Randle E, Dryden T (2019 - 2021). Interdisciplinary approach to managing Chronic Pelvic Pain [Grant] - TRIC IWK - \$3,000.
45. **Schmidt M**, Eskes G, Roach DC, George R, MacDonald D, Matwin S, **Hung O** (2018 - 2020). Computerized assessment for Post-Operative Cognitive Decline (POCD) in elderly surgical populations [Grant] - Centre for Aging and Brain Health Innovation (CABHI) - \$349,947.
46. **Munro A**, George R, Andreou P (2018 - 2020). A novel approach to optimize Programmed Intermittent Epidural Bolus (PIEB) delivery for labour analgesia [Grant] - Dalhousie - \$19,918.
47. Allen VM, Beach L, Brock JK, Attenborough R, Campbell B, Fahey J, Filliter C, Gibson R, Graham J, **McKeen D**, Randle E, Woolcott C (2018 - 2020). Laboratory Test Utilization for Maternal-Fetal Health Surveillance in Nova Scotia [Grant] - Atlee Foundation - \$5,791.
48. Hanly JG, Beyea S, Fisk JD, Friedman A, **Hashmi JA** (2018 - 2021). Characterization of brain dysfunction with multi-modal functional neuroimaging in patients with SLE and cognitive impairment [Grant] - NSHA - \$615,826.
49. **McDougall J** (2018 - 2020). Sex differences in joint neuropathic pain involve NaV1.8 ion channels [Grant] - The Arthritis Society - \$351,100.
50. **Hashmi JA, Lynch M**, Beaupre I, **Mukhida K** (2017 - 2021). Brain mechanisms of expectation and their role in pain sensitivity and hypervigilance in fibromyalgia [Grant] - CDHA - \$175,000.
51. **McDougall J** (2017 - 2022). Contribution of proteases and protease activated receptors to joint neuropathy and arthritis pain [Grant] - CIHR - \$761,175.
52. **Hashmi JA**, Beyea S, Matwin S, **Lynch M** (2017 - 2020). Role of brain mechanisms of learning and expectation in chronic back pain [Grant] - CDHA - \$99,588.
53. **Hashmi JA** (2017 - 2021). Title [Grant] - CFI - \$364,599.
54. **Hashmi JA** (2016 - 2021). Canada Research Chair Tier II (Pain) [Grant] - CIHR - \$500,000.

55. **Lehmann C**, Zhou J, Hoskin DW (2016 - 2021). Iron-related mechanisms in immune cell function [Grant] - NSERC CRD - \$574,800.
56. Buckley DN, Hudspith M, Choinière M, Davis K, Diatchenko L, **Finley GA**, Fréchette P, Gilron I, Iorio A, Latimer M, MacDermid J, Poulin P, Schneider C, Stevens B, Stinson J (2016 - 2021). SPOR Network: Caring for patients with chronic pain: Connecting patient needs with research and treatment across the lifespan [Grant] - CIHR - \$25,000,000.

### CONTINUING Scholarly Projects (unfunded)

1. Poltarowicz J, **Mukhida K** (2021). Airway management for patients undergoing surgery for cervical myelopathy [Database]
2. King A, **Mukhida K** (2021). Patient Perspectives on Contributory Factors to Non-attendance at a Tertiary Academic Chronic Pain Clinic in Halifax, Nova Scotia [Clinical]
3. Kovacs GK, Goldstein J, Campbell S, Baro B, Sowers N, **Law JA**, Walker M, DeMone C, Hebert S (2021 - 2022). The Use of Tracheal Clicks During Direct Laryngoscopy: A Cadaveric Simulated Study [Clinical]
4. **Law JA**, Thana A, **Milne A** (2021 - 2022). Use of awake tracheal intubation in anesthetic practice is [decreasing?]: a database review of years 2011-2020 at a single tertiary-care institution [Database]
5. Verge A, **Mukhida K** (2021). Analysis of closed civil legal cases involving interventional pain management in Canada [Clinical]
6. Bonin K, Oprea A, **Mukhida K** (2020 - 2021). The effects of COVID-19 on chronic pain management for patients with addictions [Clinical]
7. **Lynch M** (2020 - 2021). Development of a Transitional Pain Service [Development and Innovation]
8. Wiseman L, **Mukhida K** (2020 - 2021). The effect of preoperative cannabis use on postoperative visceral pain [Clinical]
9. Sedighi S, **Mukhida K** (2020 - 2021). Cinemedication and chronic pain [Medical Education or Training]
10. Atkins N, **Mukhida K** (2020 - 2022). The effect of socioeconomic status and COVID-19 on chronic pain management in Nova Scotia [Clinical]
11. **Bailey JG**, Banfield J, Bailey K, Wong M, Barry G, **Munro A**, Kirkland S, & Lieter M (2020 - 2022). COVID Pandemic short interval National Survey gauging psychological distress among physicians (COPING survey): A longitudinal survey [Clinical]
12. Ward C, **Munro A**, Houser C, Brousseau P (2020 - 2021). A Survey of the Anesthesia Assistant Profession in Canadian Teaching Hospitals: 12 Years Later [Clinical]
13. **Lynch M** (2020 - 2021). National survey of pain clinic responses during Covid-19 [Clinical]
14. **Kwofie MK** (2020 - 2022). COVID Airway Provider PPE Use and Outcomes Registry (IntubateCOVID.org) [Database]
15. Wafa K, **Mukhida K** (2020 - 2021). Emergency department management of patients with chronic pain [Clinical]
16. **Lynch M** (2020). Rapid review - represented Canada and what happens when we don't treat [Clinical]
17. Fomer D, Rigby M, Wiemer H, **Bailey JG**, Smyth D (2020 - 2021). Medical versus surgical treatment for peritonsillar abscesses [Clinical]
18. **Schmidt M** (2020). Sterilization of membranes using the vPRO (hydrogen peroxide) method for memsorb [Development and Innovation]
19. **Schmidt M** (2020). Sterilization/Recycling of membranes using the vPRO (hydrogen peroxide) method for N95 Masks [Development and Innovation]

20. **Vlatten A**, Jagannathan N (2020 - 2021). Evaluation of the STORZ pediatric DBlade in 20 consecutive pediatric patients with difficult direct laryngoscopy [Clinical]
21. **Munro A, McKeen D** (2020). A New and Innovative Method for CO2 Removal in Anesthetic Circuits: Replacing Chemical Granulate Absorbers [Development and Innovation]
22. Mossenson A, **Bailey J**, Tuyishime E, Livingston P (2020 - 2021). 4. Competency-based performance assessment of simulation facilitation in health professional education: a narrative review [Medical Education or Training]
23. Latimer M, **Finley GA** (2020). The Indigenous Youth and Pain Program of Research (Aboriginal Children's Hurt & Healing - ACHH) [Development and Innovation]
24. **Finley GA** (2020). Effect of COVID on Pediatric Chronic Pain [Clinical]
25. Kelly L, **Finley GA** (2020). Cannabinoids in Children research program: 1) Chronic daily headache in children; 2) Cancer [Development and Innovation]
26. **Finley GA** (2020). Epidemiology of chronic pain in children - systematic review [Database]
27. Cheung C, MacCormick H, **Munro A**, George RB (2020). Education About Sexual and Gender Minorities Within Canadian Anesthesia Residency Programs: Where Do We Stand? [Clinical]
28. Jin S, **Munro A, Uppal V, McKeen D** (2019 - 2020). The incidence and predictors of failed spinal anesthesia in caesarean delivery: a single centre retrospective review [Clinical]
29. **Munro A**, George RB, Rosen N, MacKinnon S (2019 - 2020). The Association between Labour Epidural Analgesia and Postpartum Depression: A Longitudinal Cohort Study [Clinical]
30. Ke J, George RB, Wozney L, **Munro A** (2019 - 2020). Perioperative Mobile Application for Mothers Undergoing Caesarean Delivery: A Prospective Cohort Study on Patient Engagement [Development and Innovation]
31. **Sjaus A**, Ritchie K (2019 - 2021). Cognitive skills for decision making in anesthesiology: Qualitative analysis of structured oral examinations [Medical Education or Training]
32. **Dumbarton T** (2019 - 2020). Pediatric Difficult Airway Management Database [Database]
33. **Schmidt M** (2019 - 2021). Real-Time Detection and Automated Prediction of Apnea and Hypopnea Events by Measuring Airway Impedance via the Forced Oscillation Technique in an Observational Study [Clinical]
34. Ellis M, Meisner J, **Mukhida K** (2019 - 2021). Chronic pain post-craniotomy [Clinical]
35. MacDonald S, **Mukhida K** (2019 - 2021). Pneumorrhachis complicating acute pain management using a thoracic epidural catheter [Clinical]
36. **Vlatten A, Dumbarton T** (2019 - 2021). A comparison of the STORZ CMAC DBlade versus direct laryngoscopy in a restricted access pediatric motor vehicle accident victim [Clinical]
37. **Mukhida K** (2019 - 2022). iCanCope with Pain: an integrated smartphone and web-self-management program for adolescents and young adults with chronic pain [Clinical]
38. Harding A, George RB, **Munro A**, Coolen J, Snelgrove-Clarke E, Carvalho B (2018 - 2020). Patient preferences for outcomes associated with a labour epidural analgesia [Clinical]
39. Jin S, **Munro A**, George RG, Wolcott C (2018 - 2020). A retrospective cohort study of the association between labour epidural analgesia and postpartum depression in primiparous women [Clinical]
40. Verge A, Kocum L, **Mukhida K** (2018 - 2022). Barriers to and facilitators of workplace accommodation for patients with complex regional pain syndrome [Clinical]
41. Stanzel R, Chedrawy E, **Schmidt M**, Dulong B, Henderson M (2018 - 2021). Transcranial Doppler Assessment of Cerebral Gaseous Microemboli During Cardiopulmonary Bypass: Quality Assurance Initiative [Clinical]
42. George RB, **Munro A**, Nash CM, Carvalho B (2018 - 2022). A pragmatic single centre randomized controlled trial of programmed intermittent epidural bolus (PIEB) compared to continuous epidural infusion (CEI) for labour analgesia [Clinical]
43. Stanzel R, Chedrawy E, Sardiwalla Y, Hirsch G, Dulong B, Henderson M, **Schmidt M** (2017 - 2021). The impact of deviations of mean arterial pressure during surgery on neurological/renal outcomes [Database]



44. **Law JA** (2016 - 2021). Project for the Universal Management of Airways (PUMA) [Clinical]
45. **Mukhida K** (2014 - 2022). The influence of Wilder Penfield's experiments in Europe on the development of his surgical techniques [Clinical]

## Appendix C – 2020 Publications

Note that this list of publications includes *peer-reviewed* articles that are currently *published* and accessible online by researchers with protected time (52).

1. Aali M, Caldwell A, Li A, Hobein B, Chappe V, Lehmann C (2020). DIBI, a novel polymeric iron chelator modulates IL-6 and IL-8 secretion from cystic fibrosis airway epithelial cells in response to endotoxin induction. *Journal of Cellular Biotechnology*, 1-10. [Published].
2. Abadesso C, Pacheco S, Machado MC, Finley GA (2020). Pain in children and adolescents with sickle cell disease: multidimensional assessment. *Journal of Pediatric Hematology and Oncology*, 42(8), 455-462. [Published] DOI: 10.1097/MPH.0000000000001941.
3. Alizadeh-Tabrizi N, Hall S, Lehmann C (2020). Intravital Imaging of Pulmonary Immune Response in Inflammation and Infection. *Frontiers in cell and developmental biology*, 8, 620471. [Published] PubMed ID: 33520993.
4. Bailey JG, Morgan C, Christie R, Ke J, Kwofie MK, Uppal V (2020). Continuous peripheral nerve blocks (CPNBs) compared to thoracic epidurals or multimodal analgesia for midline laparotomy: a systematic review and meta-analysis. *Korean journal of anesthesiology*. [Published] PubMed ID: 32962328.
5. Barry G, Bailey JG, Sardinha J, Brousseau P, Uppal V (2020). Factors associated with rebound pain after peripheral nerve block for ambulatory surgery. *British Journal of Anaesthesia*. [Published] DOI: 10.1016/j.bja.2020.10.035.
6. Barry G, Uppal V (2020). Management of pain after Cesarean delivery without intrathecal morphine: networking for the best answer. *Canadian journal of anaesthesia = Journal canadien d'anesthésie*. [Editorial - Published] PubMed ID: 33021726.
7. Choinière M, Peng P, Gilron I, Buckley N, Williamson O, Janelle-Montcalm A, Baerg K, Boulanger A, De Renna T, Finley GA, Intrater H, Lau B, Pereira J (2020). Accessing care in multidisciplinary pain treatment facilities continues to be a challenge in Canada. *Regional Anesthesia and Pain Medicine*, 45, 943-948. [Published] DOI: 10.1136/rapm-2020-101935.
8. Chrimes N, Higgs A, Law JA, Baker PA, Cooper RM, Greif R, Kovacs G, Myatra SN, O'Sullivan EP, Rosenblatt WH, Ross CH, Sakles JC, Sorbello M, Hagberg CA (2020). Project for Universal Management of Airways - part 1: concept and methods. *Anaesthesia*, 75(12), 1671-1682. [Published] PubMed ID: 33165958.
9. d'Eon B, Hackmann T, Wright S (2020). The Addition of Intravenous Propofol and Ketorolac to a Sevoflurane Anesthetic Lessens Emergence Agitation in Children Having Bilateral Myringotomy with Tympanostomy Tube Insertion: A Prospective Observational Study. *Children (Basel, Switzerland)*, 7(8). [Published] PubMed ID: 32824173.
10. Dickson K, Malitan H, Lehmann C (2020). Imaging of the intestinal microcirculation during acute and chronic inflammation. *Biology (Basel)*, 9(12), 418. [Published] DOI: 10.3390/biology9120418.
11. Eccleston C, Blyth FM, Dear BF, Fisher EA, Keefer FJ, Lynch ME, Palermo TM, Reid MC, Williams AC de C (2020). Managing patients with chronic pain during Covid-19 outbreak: considerations for the rapid introduction of remotely supported (e-health) pain management services. *Pain*, 161(5), 889-893. [Published] DOI: doi: 10.1097/j.pain.0000000000001885.
12. Fokam D, Aali M, Dickson K, Scott C, Holbein B, Zhou J, Lehmann C (2020). The novel iron chelator, DIBI, attenuates inflammation and improves outcome in colon ascendens stent peritonitis-induced experimental sepsis. *Clinical hemorheology and microcirculation*, 76(2), 241-261. [Published] PubMed ID: 32925011.
13. Fokam D, Dickson K, Kamali K, Holbein B, Colp P, Stueck A, Zhou J, Lehmann C (2020). Iron Chelation in Murine Models of Systemic Inflammation Induced by Gram-Positive and Gram-Negative Toxins. *Antibiotics (Basel, Switzerland)*, 9(6). [Published] PubMed ID: 32466384.

14. Higgins KS, Chambers CT, Rosen NO, Sherry S, Mohammadi S, Lynch ME, Campbell-Yeo M, Clark AJ (2020). Child catastrophizing about parent chronic pain: A potential child vulnerability factor. *Br J Health Psychology*. [Published].
15. Hung O (2020). Can't see for looking: Tracheal intubation using video-laryngoscopes. *Canadian Journal of Anesthesia*, 67, 505-510. [Editorial - Published] DOI: 10.1007/s12630-020-01585-9.
16. Hung O, Hung D, Hung C, Stewart R (2020). A simple negative pressure protective barrier for extubation of COVID-19 patients. *Canadian Journal of Anesthesia*, 67(10), 1478-1480. [Published] DOI: 10.1007/s12630-020-01720-6.
17. Hung O, Lehmann C, Coonan T, Murphy M, Stewart R (2020). Personal protective equipment during the COVID-19 pandemic (Letter #2). *Canadian journal of anaesthesia = Journal canadien d'anesthésie*, 67(11), 1649-1650. [Letter to the Editor - Published] PubMed ID: 32779004.
18. Johnston DF, Sondekoppam RV, Uppal V, Litchfield R, Giffin R, Ganapathy S (2020). Effect of combining peri-hamstring injection or anterior obturator nerve block on the analgesic efficacy of adductor canal block for anterior cruciate ligament reconstruction: a randomised controlled trial. *British journal of anaesthesia*. [Published] PubMed ID: 31980156.
19. Ke JXC, Kothari R, McKeen D, Bainbridge D (2020). Assessing resident member needs at the Canadian Anesthesiologists' Society: a national survey. *Canadian journal of anaesthesia = Journal canadien d'anesthésie*. [Published] PubMed ID: 32803469.
20. Kothari R, Ke J, McKeen DM, Bainbridge D (2020). Professional advocacy and citizenship: a continuing journey that begins during residency. *Canadian Journal of Anesthesia*, 1-4. [Published] PubMed ID: 32794064.
21. Kwofie MK (2020). Effective Treatments for Pain in the Older Patient (Book Review). *Anesthesia & Analgesia*, 130(5), 128. [Published] DOI: 10.1213/ANE.0000000000004685.
22. Kwofie MK, Uppal V (2020). Wrong-site nerve blocks: Evidence-review and prevention strategies. *Current Opinion in Anesthesiology*. [Review - Published] PubMed ID: 32826627.
23. Latimer M, Sylliboy JR, Frances J, Amey S, Rudderham S, Finley GA, MacLeod E, Paul K (2020). Co-creating better healthcare experiences for First Nation Children & Youth: the FIRST approach emerges from Two-Eyed Seeing. *Paediatric & Neonatal Pain*, 2, 104-112. [Published] DOI: 10.1002/pne2.12024.
24. Lim M, O'Grady C, Cane D, Goyal A, Lynch M, Beyea S, Hashmi JA (2020). Schemas induce enduring perceptual bias in pain perception. *Journal of Neuroscience*, 40(7), 1538-1548. [Published].
25. Lucena F, McDougall JJ (2020). Pain responses to protease-activated receptor-2 stimulation in the spinal cord of naive and arthritic rats. *Neuroscience Letters*, 739. [Published].
26. Lynch ME, Williamson OD, Banfield JC (2020). COVID-19 Impact and Response by Canadian Pain Clinics: A National Survey of Adult Pain Clinics. *Canadian Journal of Pain*, 4(1), 204-209. [Published] DOI: 10.1080/24740527.2020.1783218.
27. Malpas G, Kovacs G, Mackinnon SP, Hung O, Phipps S, Kovac G, Law JA (2020). The videoscopic view may not be significantly superior to the directly sighted peroral view during Macintosh-style videolaryngoscopy: a randomized cadaver trial. *Canadian journal of anaesthesia = Journal canadien d'anesthésie*, 67(7), 827-835. [Published] PubMed ID: 32291634.
28. McKeen DM, Banfield JC, McIsaac DI, McVicar J, McGavin C, Earle MA, Ward C, Burns KK, Penner D, Blaise G, de Greef T, Cowan K, Laupacis A (2020). Top ten priorities for anesthesia and perioperative research: a report from the Canadian Anesthesia Research Priority Setting Partnership. *Canadian journal of anaesthesia = Journal canadien d'anesthésie*, 67(6), 641-654. [Published] PubMed ID: 32157588.
29. McKenna MK, McDougall JJ (2020). Cannabinoid control of neurogenic inflammation. *British Journal of Pharmacology*, 177, 4386-4399. [Published].
30. Milne AD, D'Entremont MI, Law JA (2020). COVID-19 Airway Management Enclosure Evacuation Flow Rates and Post-Aerosol Pause Times. *Canadian Journal of Anesthesia*, 67(11), 1670-72. [Letter to the Editor - Published] PubMed ID: 32588271.

31. Mosier JM, Sakles JC, Law JA, Brown CA, Brindley PG (2020). Tracheal Intubation in the Critically Ill: Where We Came From and Where We Should Go. *American journal of respiratory and critical care medicine*, 201(7), 775-788. [Published] PubMed ID: 31895986.
32. Mukhida K, Carroll W, Arseneault R (2020). Does work have to be so painful? A review of the literature examining the effects of fibromyalgia on the working experience from the patient perspective. *Canadian Journal of Pain*, 268-286. [Review - Published] DOI: 10.1080/24740527.2020.1820858.
33. Mukhida K, Stewart J, Mehrpooya R, Fraser J (2020). Virtual care for patients with chronic pain and addictions during the COVID-19 pandemic. *Canadian Journal of Pain*. [Letter to the Editor - Published] DOI: 10.1080/24740527.2020.1785856.
34. Munro A, MacCormick H, Sabharwal A, George RB (2020). Pharmacologic labour analgesia and its relationship to postpartum psychiatric disorders: a scoping review. *Canadian journal of anaesthesia*. [Published] PubMed ID: 32020416.
35. Neira VM, Fagan B, Milne AD (2020). Valve Failure in the Gas Monitor. An Unusual Case of Falsely Low Capnography Values Under General Anesthesia. *Anesthesia and Analgesia Practice*, 14, e01173, 1-3. [Case Report - Published] PubMed ID: 32132358.
36. O'Brien MS, McDougall JJ (2020). Neurophysiological assessment of joint nociceptors in the rat medial meniscus transection model of post-traumatic osteoarthritis. *Osteoarthritis & Cartilage*, 28, 1255-1264. [Published].
37. Panchaud A, Favre G, Pomar L, Vouga M, Aebi-Popp K, Baud D, COVI-Preg group [Including Sjaus A] (2020). An international registry for emergent pathogens and pregnancy. *The Lancet*, 395, 1483-1484. [Published] DOI: 10.1016/s0140-6736(20)30981-8.
38. Philpott HT, McDougall JJ (2020). Combatting joint pain and inflammation by dual inhibition of monoacylglycerol lipase and cyclooxygenase-2 in a rat model of osteoarthritis. *Arthritis Research & Therapy*, 22, 9. [Published].
39. Ritchie KC, Sjaus A, Munro A, George RB (2020). An interpretive phenomenological analysis of formative feedback in anesthesia training: the residents' perspective. *BMC medical education*, 20(1), 493. [Published] PubMed ID: 33287808.
40. Saghayi M, Varno F, Matwin S, Greenberg J, Bracken B, Hashmi A, Lazar S, Hashmi JA (2020). Resting brain connectivity states predict participant adherence to mental training programs. *Network Neuroscience*, 1-28. [Published].
41. Scott CR, Holbein BE, Lehmann CD (2020). Iron should be restricted in acute infection. *Frontiers in bioscience (Landmark edition)*, 25, 673-682. [Review - Published] PubMed ID: 31585910.
42. Shanthanna H, Uppal V (2020). Surgery during the COVID-19 pandemic. *Lancet (London, England)*, 396(10261), e74. [Letter to the Editor - Published] PubMed ID: 33160574.
43. Sharawy N, Lehmann C (2020). Molecular mechanisms by which iNOS uncoupling can induce cardiovascular dysfunction during sepsis: Role of posttranslational modifications (PTMs). *Life sciences*, 255, 117821. [Review - Published] PubMed ID: 32445759.
44. Sjaus A, d'Entremont M (2020). Measurement of airborne particle exposure during simulated tracheal intubation using various proposed aerosol containment devices during the COVID-19 pandemic. *Anaesthesia*. [Letter to the Editor - Published] PubMed ID: 32737982.
45. Uppal V, McKeen DM (2020). In Response. *Anesthesia and Analgesia*. [Letter to the Editor - Published] PubMed ID: 32250981.
46. Uppal V, Retter S, Kehoe E, McKeen DM (2020). Quadratus Lumborum Block for Postoperative Analgesia: A Systematic Review and Meta-analysis. *Canadian Journal of Anesthesia*. [Review - Published] PubMed ID: 32808097.
47. Uppal V, Sondekoppam RV, Landau R, El-Boghdadly K, Narouze S, Kalagara HKP (2020). Neuraxial anaesthesia and peripheral nerve blocks during the COVID-19 pandemic: a literature review and practice recommendations. *Anaesthesia*. [Review - Published] PubMed ID: 32344456.
48. Verge A, Mukhida K (2020). Patient perceptions of pain assessment questionnaires. *Dalhousie Medical Journal*, 46(2). [Published].

49. Verret M, Lauzier F, Zarychanski R, Perron C, Savard X, Pinard AM, Leblanc G, Cossi MJ, Neveu X, Turgeon AF, and PACT group, McKeen D (2020). Perioperative Use of Gabapentinoids for the Management of Postoperative Acute Pain: A Systematic Review and Meta-analysis. *Anesthesiology*, 133(2), 265-279. [Published] PubMed ID: 32667154.
50. Vlatten A, Hanley M, Grudzinski A, Drysdale S (2020). Comparison of the STORZ CMAC Video Laryngoscope to standard direct laryngoscopy in a Pierre Robin manikin. Randomised crossover trial. *European Journal of Anaesthesiology*, 37, 504-506. [Published].
51. Wang H, Ford RZ, Milne AD (2020). Differences in aerosol flow rates between disposable and reusable atomisers used for airway topicalization: implications for local anesthetic toxicity. *Canadian Journal of Anesthesia*. [Published] DOI: 10.1007/s12630-020-01856-5.
52. Wilfart FM, McNeil M, Haelssig J, Hanafi H, Roach DC, Maksym G, Schmidt M (2020). Validation and Optimization of a Novel Membrane System for Carbon Dioxide Removal in Anesthesia Circuits Under Realistic Patient Scenarios. *Journal of Membrane Science*, 601. [Published].