



ACCOUNTABILITY REPORT

2017

Department of Anesthesia,
Pain Management
& Perioperative Medicine
OFFICE OF RESEARCH



**DALHOUSIE
UNIVERSITY**

VISION AND MISSION

Anesthesia, Pain Management and Perioperative Medicine Vision and Mission

Vision

A culture of excellence in anesthesia clinical practice and programs, research and education.

Mission

To deliver anesthesia services through up-to-date clinical care based on the latest evidence (research) and knowledge (education).

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EXECUTIVE SUMMARY

The Department of Anesthesia, Pain Management & Perioperative Medicine **2017 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 2017 as well as data from previous years for comparative and trending purposes.

Targets that were met, partially met, or not met in 2017 are outlined below in summary.

AREAS IN WHICH THE DEPARTMENT MET ITS TARGETS IN 2017:

- The proportion of collaborative projects and publications remains high at 92%.
- Eighty percent of researchers are members on research related administrative committees with 70%, 40% and 20% serving on local, national and international committees, respectively.
- Forty-five percent of researchers chair research related committees with 45%, 20% and 5% serving on local, national and international committees, respectively.
- Thirty-five percent of researchers perform editorial activities with 25% and 15% serving on national and international committees, respectively.
- The total number of publications reached is 127 in 2017 (Figure 3) with 100% of the publications peer reviewed.
- There were 43 abstracts accepted in 2017 with 30% of abstracts being podium.
- Fifty percent of researchers were invited to present their work in 2017 as a keynote, plenary and symposium speaker.
- One research recognition award was conferred in 2017.
- Sixty-five percent of researchers supervise learners as the primary supervisor and 20% supervise graduate students.

EXECUTIVE SUMMARY

AREAS IN WHICH THE DEPARTMENT IMPROVED BUT **DID NOT MEET** ITS TARGETS IN 2017:

- Sixty-five percent of researchers reviewed papers in 2017, whereas 45% of researchers reviewed journal papers for submission in 2016. The target is 80%.
- Forty-five percent of researchers reviewed funding applications in 2017, whereas 35% of researchers reviewed funding applications in 2016. The target is 80%.
- Eighty percent of all researchers presented an abstract in 2017, whereas 35% of researchers presented an abstract in 2016. The target is 100%.

AREA IN WHICH THE DEPARTMENT **DID NOT MEET** ITS TARGETS IN 2017:

- Twenty-two new research projects were initiated in 2017; whereas the target was 50 in 2016.
- The number and value of grants and industry contract funded research are 63 and \$8.1M, respectively (*Figure 1* and *Table 1*), a decrease from \$10.6M in 2016.
- Sixty 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.
- Five percent of researchers mentor research learners, whereas the target is 100% of researchers mentor research learners (*under review.*)

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 (2017)** covers the time period from January to December 2017 for all deliverables with the exception of funding which corresponds to the period of April 1, 2017 - March 31, 2018 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 2017 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 process of creativity

INDICATOR: Number of new proposals that are developed into research endeavours

TARGET: New research projects reflects maintenance or increase from previous year
(50 new projects in 2016)

RESULT: **Twenty- two (22) new research projects are underway (funded and unfunded)**

Twenty-two new research projects began in 2017; 20 funded and two unfunded (**Appendix B**).

Specifically:

1. Senior researchers contribute to the discovery of fundamental knowledge of health and disease. This basic science research focused on: cystic fibrosis transmembrane conductance regulation, interstitial cystitis and NaV1.8 role in arthritis pain. An Anesthesia Research Fund (ARF) supported project led to a \$360,000 grant from the Arthritis Society and a submitted paper to Pain, which is an international journal dedicated to advancing pain related knowledge.
2. The remaining researchers conduct clinical research.
 - a. One researcher is leading a national anesthesia/perioperative research priority planning exercise where involvement of patients is required.
 - b. One new project is translating evidence through care using ERAS in urogynecology surgery.
 - c. A 2016 ARF funded pilot project for healthcare workers to learn about autism is now adopted as part of standard orientation for all perioperative staff at the IWK.
 - d. Four projects highlight clinical care innovation: perioperative mobile app for cesarean deliveries, novel intubation device, environmentally sound anesthesia delivery, and novel treatment for interstitial cystitis.
 - e. Four research products are positioned for the commercial market – two medical devices, a topical treatment for pain and a mobile app for perioperative care.
 - f. There were four research/quality improvement projects presented as podiums for the 2018 Research Day. Topics included: international practice for drawing cardiac emergency medications, spinal anesthetic failure risk, review of unusual routine events recording process and audit of difficult airway carts.
 - g. One researcher is collaborating with a CIHR funded project investigating factors related to significant new disability after surgery. One researcher is investigating precision medicine using big data analytics. Two researchers are addressing opioid use for pain.
 - h. Reduced chronic pain is the focus of several researchers; five researchers are examining adult pain, four researchers are studying pediatric pain and four researchers are specializing in women's pain. The new CRC Tier 2 Chair in Pain researcher is examining brain neuroimages in patients with chronic low back pain and those with fibromyalgia.

- i. One research collaboration is examining marginalized children populations such as aboriginal children.

The annual Anesthesia Research Day saw 25 research studies presented. These were generated by a variety of trainees, including 11 residents/fellows; seven graduate/post doc students and seven undergraduate students.

Engage in the process of research

INDICATOR: Number & value (\$) of grants & industry contracts received

TARGET: Total funding (\$) reflects maintenance or increase from previous year
(60 funded projects totaling \$10.6M in 2016)

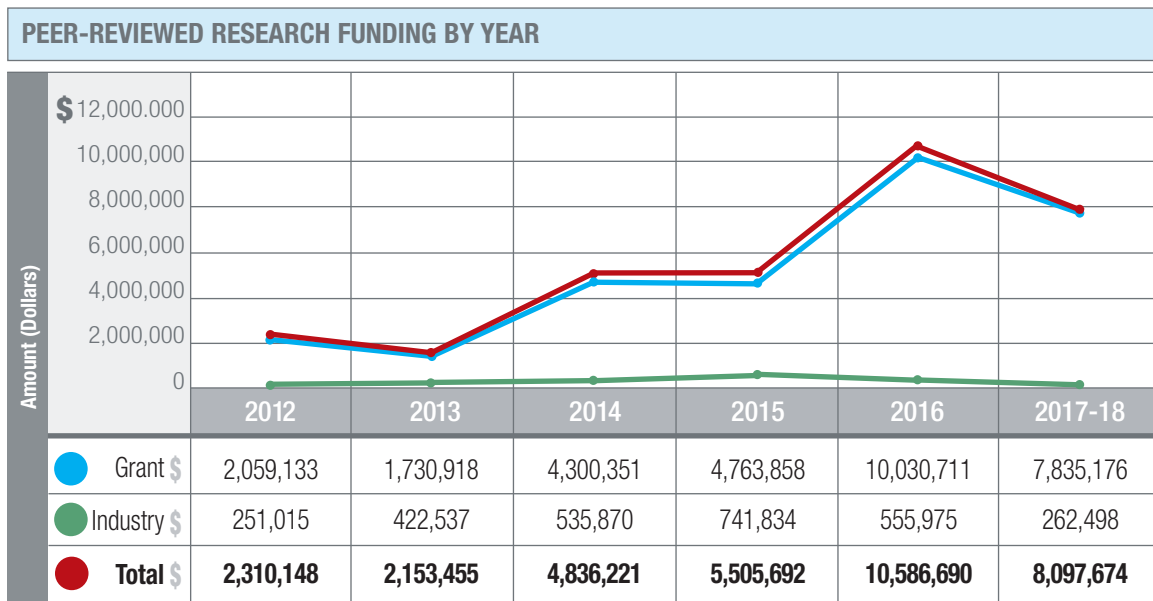
RESULT: **63 funded projects totaling over \$8.0M**

Please note for reporting purposes the fiscal calendar (April 1, 2017-March 31, 2018) is now used for research funding only based on Department of Health and Wellness requirements. Any grants awarded in January, February and March of 2018 were included in the presented 2017-18 numbers.

There are 63 ongoing and new grant/industry funded projects amounting to over \$8.0M (**Figure 1** and **Table 1**). National and international funds make up approximately 33% of this total with 67% 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 11 projects funded by the Tri-Council Agencies (CIHR, NSERC, SSERC), accounting for 90% of the total funds. Six Tri-Council funded projects are led by department members totaling over \$4.3M. A list of the grants is found in **Appendix B**.

FIGURE 1: The amount (\$) in external research grant/industry contract funding received (2012-2017).



Five large-scale grants ended in 2016 accounting 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 (2012-2017)

FUNDING GRANTS & INDUSTRY CONTRACTS BY YEAR						
	2012	2013	2014	2015	2016	2017
Grant	22	29	60	51	51	57
Industry	5	9	11	6	9	6
Total	27	38	71	57	60	63

There is consistent FTE assignment for research for the past two years (**Table 2**). While the FTE is stable, there is a slight decrease in funding dollars per FTE in 2017-18 (**Figure 2**). This downward slope may be related to two main reasons: 1) two multimillion dollar grants ended in 2016 and 2) with the combined AFP from three

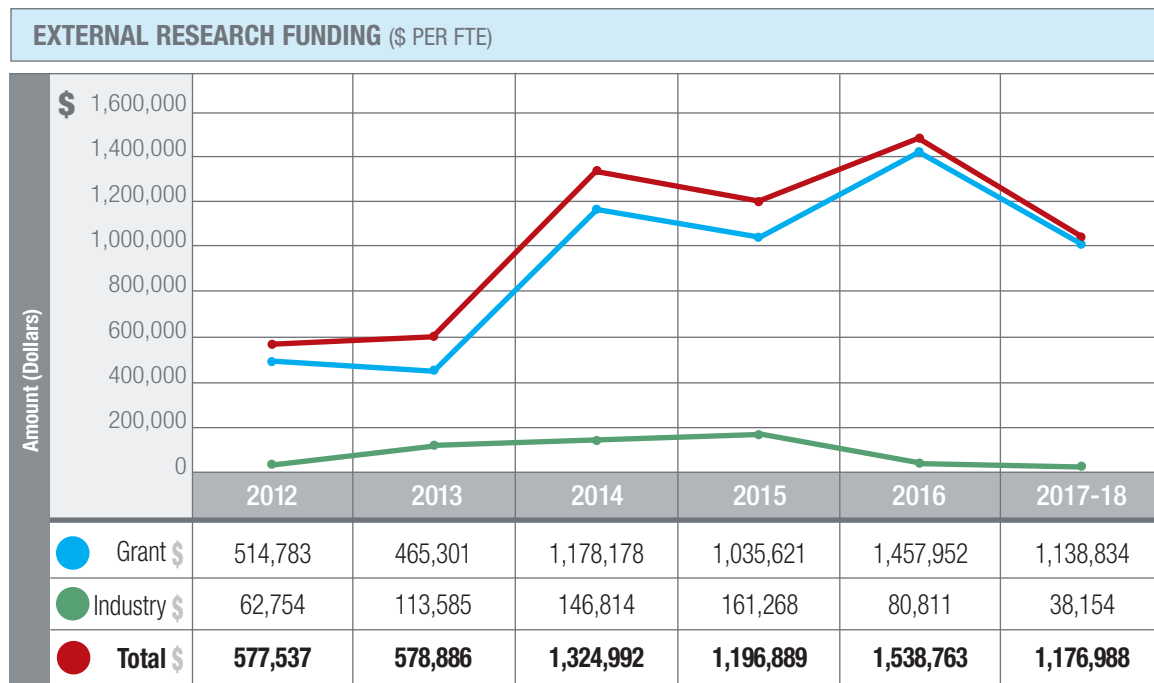
anesthesia groups (pediatric, women & obstetrics and Central zone adults), 30% of our combined researchers are considered 'junior investigators' and are just beginning to develop their research program and collaborations. See **Appendix A**.

TABLE 2: Protected time (FTE) for research activities (2012-2017)

FTE PROTECTED TIME FOR RESEARCH ACTIVITIES BY YEAR						
	2012	2013	2014	2015	2016	2017
Protected Time	4.0	3.7	3.7	4.6	6.5	6.9

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



SCHOLARLY CURIOSITY (CONT'D.)

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 (\$2.8M from department *Principal Investigators* in 2016)

RESULT: **\$2.4M was obtained by departmental principal investigators**

Nine of 20 researchers (45%) with protected time were designated as *principal investigators* for at least one grant or contract totaling over \$2.4M.

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 (\$7.7M from *co-investigators* in 2016)

RESULT: **\$5.7M was achieved by departmental co-investigators**

An additional \$5.7M in external grants and contract funding was achieved by researchers with protected time designated as co-investigators.

Actively seek collaborative opportunities with interdisciplinary colleagues

INDICATOR: Number of collaborative projects and publications

TARGET: 80% of all projects and publications are collaborative

RESULT: **92% of all projects and publications are collaborative**

Of 127 publications, 121 have co-authors (95%). Of 63 funded grants and industry contracts, 54 have co-investigators (86%). Therefore, 175 out of 190 projects and publications are collaborative (92%).

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: **80% of all researchers are members of research related administrative committees: 70% local, 40% national and 20% international**

Sixteen of 20 researchers are members of research related administrative committees (80%).

INDICATOR: Number of researchers who chair research related committees

TARGET: 25% chair research related committees

RESULT: **45% of researchers chair research related committees**

Nine of 20 researchers were invited to chair research related committees (45%): 30% local, 20% national and 5% international.

SCHOLARLY SYNTHESIS (CONT'D.)

INDICATOR: Number of researchers who review journal articles

TARGET: 80% review journal articles

RESULT: **65% of researchers review journal articles**

Thirteen of 20 researchers were invited to review journal manuscripts (65%).

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: **40% review funding applications: 10% local, 35% national**

Eight of 20 researchers were invited to review funding applications (40%).

INDICATOR: Number of researchers who perform editorial activities

TARGET: 25% perform editorial activities

RESULT: **35% of researchers perform editorial activities: 25% national and 15% international**

Seven of 20 researchers perform editorial activities (35%).

Engage in the administrative process

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

Cabinet developed a long-term plan that formed the basis for strategic planning session on November 26, 2017 where all Department members could contribute. The OoR leadership built on the Department members' feedback and Cabinet's long-term plan to develop a *Roadmap for Success* (**Appendix D**). For 2017-18, the key initiatives and priorities are outlined in **Table 3**.

TABLE 3: OoR Strategic priority alignment with relevant institutions' strategic plans.

PARTNER STRATEGIC PRIORITY ALIGNMENT			
Strategic Initiative and Priorities	Dal Med Forward	IWK	NSHA
1. Fostering clinical research/trial growth	Aligned	Aligned	Aligned
2. Engaging the patient perspective in research	Aligned	Aligned	Aligned
3. Capacity building in research education and mentorship	Aligned	Aligned	Aligned
4. Operation for a transparent and accountable OoR budget			
5. Supporting Med Ed Research	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: **60% of all researchers are ranked as associate professor or higher**

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

SCHOLARLY COMMUNICATION

Write and publish

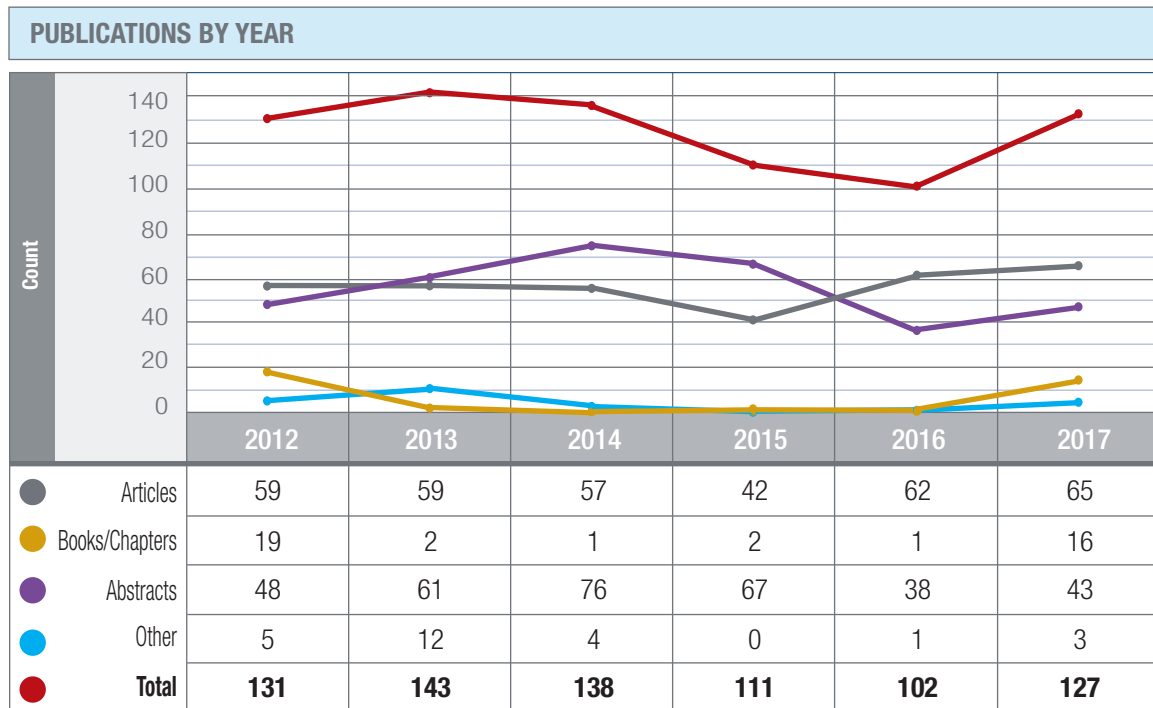
INDICATOR: Number of accepted and published publications (peer reviewed & non-peer reviewed)

TARGET: Trending of accepted and published peer and non-peer review papers reflects maintenance or increase from previous year (102 publications in 2016)

RESULT: **127 publications have been submitted and accepted**

Since January, 127 publications have been submitted and accepted (**Figure 3**) with 65 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)



Note: Previous to 2015 invited presentations were categorized as abstract presentation, which may explain the decline in the overall publications category in 2015 and 2016.

TABLE 4: Number of submitted and accepted publications (peer reviewed & non-peer reviewed) relative to FTE of protected time (Table 2) for research

PUBLICATIONS PER FTE PROTECTED RESEARCH TIME						
	2012	2013	2014	2015	2016	2017
Articles	13	16	16	9	9	9
Book/Chapters	4	1	0	0	0	2
Abstracts	11	16	21	15	6	6
Other	1	3	1	0	0	0
Total	30	36	38	24	15	18

INDICATOR: Number of peer-reviewed publications

TARGET: 90% of publications are peer-reviewed

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 (38 abstracts accepted in 2016)

RESULT: **43 abstracts were accepted**

Prepare and deliver presentations

INDICATOR: Number of all presentations (local, national, international)

TARGET: Trending of presentations reflects maintenance or increase from previous year (49 local, 12 national and 24 international invited presentations in 2016)

RESULT: **58 local, 19 national and 24 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 5**. While the number of international presentations stayed relatively the same, presentations at the local and national level have noticeably increased.

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

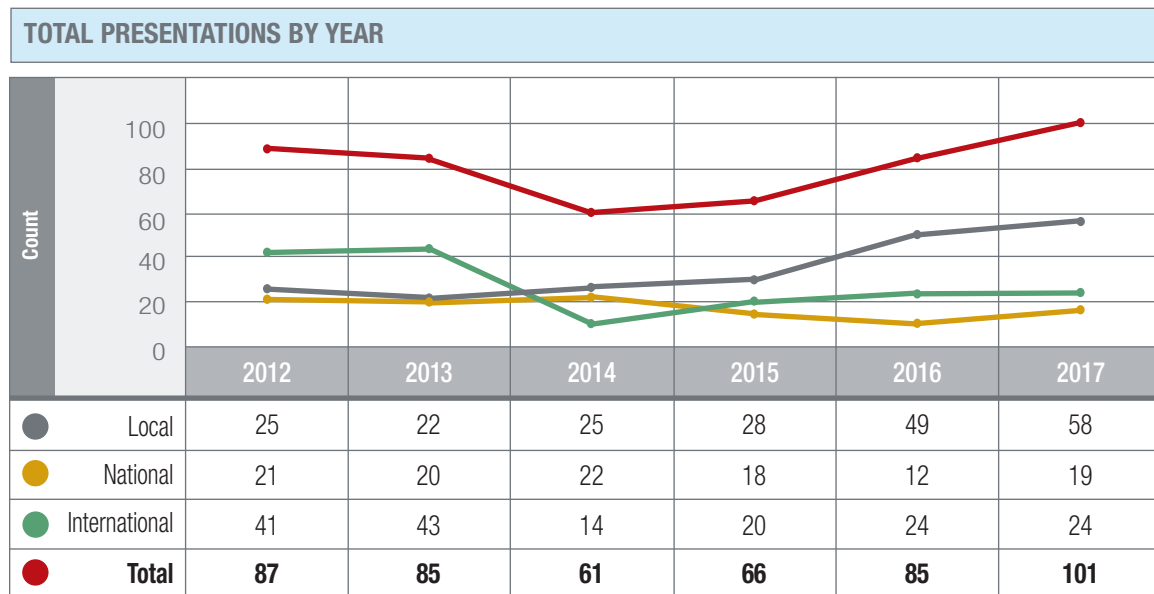


TABLE 5: Number of presentations relative to FTE protected time (Table 2) for research

PRESENTATIONS RELATIVE TO FTE PROTECTED TIME						
	2012	2013	2014	2015	2016	2017
Local	2	6	7	6	8	8
National	4	5	6	4	2	3
International	5	12	4	4	4	3
Total	11	23	17	14	13	15

INDICATOR: Number of invited presentations

TARGET: 50% of all researchers are invited to present (plenary, keynote or symposium)

RESULT: **50% of all researchers are invited to present (plenary, keynote or symposium)**

Many researchers (50%) were invited to present their work in 2017 as a keynote, plenary and symposium speaker.

INDICATOR: Number of abstracts presented annually

TARGET: 100% of all researchers have an abstract presented annually

RESULT: **80% of all researchers presented an abstract in 2017**

INDICATOR: Number of abstracts presented as a podium

TARGET: 20% of abstracts are invited to present a podium

RESULT: **30% of abstracts were invited to present a podium**

Forty-five percent of all researchers presented an abstract in 2017. There were 43 abstracts accepted in 2017 with 30% of abstracts invited to present as a podium.

Strategically Engaging with External Stakeholders

INDICATOR: Number of interviews provided to the media

TARGET: Number of media interviews reflects maintenance or increase

RESULT: **No media interviews were provided by the researchers**

INDICATOR: Number of recognition awards

TARGET: FTE reflects maintenance or increase of research recognition awards from previous year

RESULT: **One research recognition award was conferred in 2017**

TABLE 6: Number of recognition awards (2012-2017)

RECOGNITION AWARDS BY YEAR						
	2012	2013	2014	2015	2016	2017
Awards	2	1	1	2	1	1

TABLE 7: Number of recognition awards relative to FTE of protected time for research (2012-2017)

RECOGNITION AWARDS RELATIVE TO FTE BY YEAR						
	2012	2013	2014	2015	2016	2017
Awards	0.45	0.3	0.3	0.4	0.15	0.15

Mentoring, Teaching and Supervision

INDICATOR: Number of researchers mentor research learners

TARGET: 100% of researchers mentor research learners

RESULT: **5% of researchers mentor research learners**

(Note: Discussions planned to better clarify the definition of this target and understand the current discrepancy.)

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

RESULT: **65% 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 (35% reported in 2016)

RESULT: **20% of researchers are supervising graduate students**

APPENDIX A – PROTECTED TIME FOR RESEARCH

2017 PROTECTED TIME FOR RESEARCH

CENTRAL ZONE - ADULT	FTE	PEDIATRIC	FTE	WOMEN & OB	FTE
J. Chorney	0.60	J. Chorney	0.20	R. George	0.50
A. Finley	0.20	A. Finley	0.20	D. McKeen	0.20
J. Hashmi	1.00	T. Hackman	0.10	A. Munro	0.10
O. Hung	0.50	A. Vlatten	0.10	V. Uppal	0.10
K. Kwofie	0.20	S. Wright	0.10		
A. Law	0.20				
C. Lehmann	0.60				
M. Lynch	0.40				
J. MacDougall	0.33				
D. McKeen	0.20				
A. Milne	0.20				
T. Mullen	0.10				
K. Mukhida	0.20				
M. Schmidt	0.40				
A. Vlatten	0.05				
V. Uppal	0.10				
TOTAL	5.3	TOTAL	0.7	TOTAL	0.9

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

APPENDIX B – 2017 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 IN 2017

1. Chappe V, Anini Y, Croll R, Lehmann C, Pelis R, Xu Z (2017-2019). CFTR regulation by VIP: molecular basis and therapeutic potential [Grant] - American Cystic Fibrosis Foundation - \$107,379.
2. Chen JX, George RB, Wozney L (2017-2018). Patient-centered perioperative care through mobile application; feasibility and patient engagement pilot in cesarean delivery patients [Grant] - APMPM - \$5,000.
3. Hashmi, J.A, Lynch, M, Beaupre I, Mukhida, K. (2017-2021). Brain mechanisms of expectation and their role in pain sensitivity and hypervigilance in fibromyalgia [Grant] - NSHA QEII Health Sciences Centre, Fibromyalgia Funding Competition. - \$175,000.
4. Hashmi, J.A, Beyea, S, Matwin, S, Lynch, M. (2017-2019). Role of brain mechanisms of learning and expectation in chronic back pain [Grant] - NSHA QEII Health Sciences Centre - \$99,588.
5. Hashmi, J.A (2017-2018). Internal award. Department of Anesthesia, Pain Management and Perioperative Medicine - \$5,000.
6. Hung O, Milne A, d'Entremont M (2017-present). Development of a lightwand tracheal intubation device [Grant] - Nova Scotia Business Inc. - \$25,000.
7. Lehmann C, Lynch M, Arora N, Xia Y, Zhou J, Kelly M (2017-2018). Novel formulation for the treatment of interstitial cystitis [Grant] - Innovacorp - \$50,000.
8. MacCormick H, George RB, Munro A, Nash C (2017-2018). A retrospective cohort assessment of the impact of programmed intermittent epidural bolus compared to continuous epidural infusion for labour analgesia [Grant] - APMPM - \$4,950.
9. McDougall J (2017-2022). Contribution of proteases and protease activated receptors to joint neuropathy and arthritis pain [Grant] - CIHR - \$761,175.
10. McDougall J (2018-2020). Sex differences in joint neuropathic pain involve Nav1.8 ion channels [Grant] - The Arthritis Society - \$351,100.
11. McKeen D, Dryden T, Snelgrove-Clarke E, Van Eyk N (2017-2019). Research translated into Evidence based Care: imprOVing outcomes in urogynecology surgery through Enhanced Recovery: The RECOVER study [Grant] - QE II Health Sciences Centre Foundation & IWK Foundation Nova Scotia's Healthcare Improvement Research Program - \$136,960.
12. McKeen D, McIsaac D, Laupacis A, Earle MA (2017-2019). A Canadian Anesthesia Research Priority Setting Partnership [Grant] - Association of Canadian University Departments of Anesthesia, Dalhousie University, University of Manitoba - \$98,643.
13. Roda RD, Uppal V, McKeen D, Allen V, Woolcott C (2017-present). Postoperative analgesia with Quadratus Lumborum Blockade for elective caesarean delivery: A retrospective study with propensity adjustment [Grant] - IWK - \$5,000.
14. Rosen NO, Chorney JE, George RB, Lee-Baggley DL, Pukall CF, Snelgrove-Clarke EE (2017-present). Biopsychosocial predictors of postpartum genito-pelvic pain: A two-year follow-up [Grant] - CIHR - \$256,274.
15. Schmidt M, Roach DC (2017). Simulation and prediction of final product performance cases [Industry Contract] - BioNOVA - \$5,000.
16. Schmidt M, Roach DC (2018). memsorb: CO2 filter for safe, environmentally sound anesthesia [Modification] [Grant] - Sustainable Development Technologies Canada (SDTC) - \$245,336.
17. Schmidt M, Roach DC (2017-2018). Productivity & Business Skills Initiative [Grant] - Atlantic Canada Opportunities Agency - \$48,875.
18. Uppal V, Ke J, Shanthanna H, Kwofie K, Trenholm A (2017-2019). Preventing Rebound Pain after Arthroscopic Rotator Cuff Repair under General Anesthesia and Interscalene Block: A Randomized Controlled Trial of Pre-emptive Opioid Treatment Compared to Placebo (\$24,353) [Grant] - NSHRF - \$24,353.
19. Wijeyesundera DN, Alibhai S, Jüni P, McIsaac DI, Scott Beattie W, Breau R; Chan V, Choi P, Choi S, Clarke H, Dhalla I, El Beheiry H, George RB, Isaranuwachai W, Johnson S, Kennedy E, Ladha K, Lalu M, Lebovic G, Mazer D, McCluskey S, Puts M, Wei A, Herridge M, Morris W, Nathens A (2018-2021). The Functional Improvement Trajectories After Surgery (FIT After Surgery) Study: A Multicentre Prospective Cohort Study to Evaluate the Incidence, Trajectories, Risk Factors, Impact and Healthcare Costs Related to Significant New Disability after Major Elective Surgery [Grant] - CIHR - \$1,388,474.
20. Juan Zhou, Ian Burkovskiy, Christian Lehmann (2017-2018). Novel formulation for the treatment of interstitial cystitis [Grant] - Mitacs - \$45,000.

NEW SCHOLARLY PROJECTS (UNFUNDED)

1. 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]
2. Chorney J, Howlett M (2017-present). The MRI Self-Efficacy Scale for Children: Scale Development and Preliminary Validation [Development and Innovation]

CONTINUING ONGOING FUNDED PROJECTS

1. Allen VM (PI), Attenborough R, Brock JK, Brown M, Carson G, Hewitt B, LeDrew M, Loring S, McKeen D, Haugh Prosser H, Saunders D, Simpson CD, Tulipan T, Woolcott C Yazbeck S (2017-2018). Pregnancy and opioid dependency: The influence of opioid agonist therapy for women with substance use disorders on maternal and perinatal outcomes in Nova Scotia [Grant] - IWK - \$3,000.
2. Beyea S, Hashmi JA (2016-2017). Creating a new algorithm for data-driven processing of resting-state fMRI Networks [Grant] - Radiology Research Foundation - \$5,000.
3. 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.
4. Chambers CT, Barwick M, Witterman H, George RB, Benchimol E, Tutelman P, Parker J (2017-2018). A Social Media Kit for Health Researchers [Grant] - NSHRF - \$9,991.
5. Chorney J, Doucet C, Hong P, Muirhead J (2017-2018). Designing a Pre-op Prep Tool for Parents [Grant] - IWK - \$3,000.
6. Chorney J., Allen S., Smith I (2016-2017). Identifying Ways to Improve the Perioperative Experience for Children with Autism Spectrum Disorder [Grant] - Department of Anesthesia, Pain Management and Perioperative Medicine - \$5,000.
7. Curran J, Chorney J, Ritchie K, Lawrence L, Helwig M (2016-2017). Mapping the evidence supporting parent engagement in designing health interventions for a paediatric context [Grant] - NSHRF - \$14,996.
8. Curran J, Klassen T, Chorney J, Colwell J, Fitzpatrick E, Jabbour M, MacPhee S, Murphy A, Petrie D (2014-2017). Understanding discharge communication in the context of paediatric emergency care in regional and community emergency departments in Nova Scotia [Grant] - NSHRF - \$146,000.
9. Hanly J, Hashmi JA (2016-2017). Cognitive dysfunction in systemic lupus erythematosus: a pilot neuroimaging study [Grant] - NSHRF - \$15,000.
10. Hashmi JA (2015-2018). Start-up funds [Grant] - Dalhousie - \$150,000.
11. Hashmi JA (2016-2021). Canada Research Chair Tier II (Pain) [Grant] - CIHR - \$500,000.
12. Hashmi JA (2016-2021). Predictive role of brain networks in pain modulations [Grant] - Natural Sciences and Engineering Research Council (NSERC) Discovery Grants Program - \$159,000.
13. Hashmi JA (2017-2021). Title [Grant] - CFI - \$364,599.
14. Hong P, Chorney J, Bezuhly M, Roma R, El-Hawary R (2016-2018). Shared Decision Making in Pediatric Surgery: Development, Testing and Implementation of Decision Aids [Grant] - Department of Surgery, Dalhousie University - \$150,000.
15. Hung O, Mariotti C, Eichhorn V, Bernard A, Mullen T, Brousseau P, Wood L (2014 - present). A new and innovative method for CO2 removal in anesthesia circuits: Replacing chemical granulate absorbers [Industry Contract] - DMF Medical (Michael Schmidt).
16. Hung O, Milne A, d'Entremont M (2016-present). Lightwand prototype [Industry Contract] - Innovacorp Early Stage Venture Capital (Productivity and Innovation Voucher) - \$15,000.
17. Kocum L, Loughlin C, Robinson L, Kehoe S, Maheu C, Mukhida K, Parkinson M, Younis T (2016-2018). Partnership for a Healthy Workplace Response to Breast Cancer [Grant] - CIHR - \$140,823.
18. LeBlanc J, & ASDIT Investigators [Including George RB] (2015-2020). Accessing safe deliveries in Tanzania [Grant] - International Development Research Centre (IDRC) - \$168,390.
19. Lehmann C (2015-2019). Strategies of Lung Protection in Acute Lung Injury [Grant] - CFI - \$308,467.
20. Lehmann C (2016-2017). pulmoPROTECT - Multimodal concepts for pulmonary protection and treatment of lung injury [Grant] - Department of Anesthesia - \$15,000.
21. Lehmann C, Zhou J, Hoskin DW (2016 - 2019). Iron-related mechanisms in immune cell function [Grant] - NSERC CRD - \$478,602.
22. McDougall J (2017-2018). Assessment of sea cucumber extracts in the control of joint inflammation and pain [Grant] - NSBI Productivity & Innovation Programme - \$22,282.
23. McDougall J (2017-2018). Exploring sex differences in joint neuropathic pain and the contribution of Nav1.8 ion channels [Grant] - Department of Anesthesia, Pain Management and Perioperative Medicine - \$5,000.
24. McDougall JJ (2015-2018). Exploring A Neuroprotective Effect of Cannabinoids to Mitigate Osteoarthritis Pain [Grant] - The Arthritis Society - \$360,000.
25. McDougall JJ, Marshall J, Bezuhly M, Legare JF, Lin TJ (2014-2019). Restitution Enhancement in Arthritis and Chronic Heart Disease [Grant] - CIHR - \$2,337,154.
26. McKeen D, Dryden T (2017). Implementation of Guidelines for Enhanced Recovery After Surgery (ERAS) pathway for urogynecology surgery at the IWK Health Centre [Grant] - Translating Research into Care (TRIC), NSHA & IWK - \$3,000.
27. McKeen D, Snelgrove-Clarke E, Dryden T, Vandale T, Van Eyk N, Waterfield R (2016-2017). Person-centered care (PCC) in the Post Anesthetic Care Unit (PACU) [Grant] - Department of Anesthesia, Pain Management and Perioperative Medicine - \$5,000.
28. Mullen TJ, Law JA, Malpas G, Tan CH (2016-2017). Apneic Oxygenation via Nasal Cannulae: 15 L/min vs High-Flow [Grant] - Dalhousie - \$5,000.
29. Noel M, Chorney J, Graham S, Rasic N. (2016-2017). The Sociolinguistic Context of Pain Memory Development in Young Children [Grant] - American Pain Society (Future Leaders in Pain Research Grant) - \$33,333.
30. Parker JA, Chambers CT, Campbell-Yeo M, Corkum P, Filliter J, George RB, Otley A, Rosen NO, Smith I (2017-2018). Harnessing the Potential of Social Media in Children's and Women's Health Research - IWK Research Associateship [Grant] - IWK - \$45,000.

APPENDIX B – 2017 RESEARCH PROJECTS (CONT'D.)

31. Ritchie K, Snelgrove-Clarke E, Murphy A, George RB, MacPhee S, Versnel J, Matte M (2015-2018). Evidence informed practice-related knowledge, attitudes and practices (KAP): Describing nursing, pharmacy, occupational therapy, and medicine [Grant] - NSHRF - \$148,260.
32. Rosen N, George RB, Chorney J, Snelgrove-Clarke E, Pirece M, Andreou P, Binik Y (2014-2017). A Prospective Study of the Trajectory and Biopsychosocial Determinants of Postpartum Genito-pelvic Pain [Clinical] CIHR-NSHRF RPP - \$227,364 NSHRF - \$145,000
33. Rosen N, George RB, Chorney J, Snelgrove-Clarke E, Pirece M, Andreou P, Binik Y (2016-2019). A longitudinal study of biopsychosocial predictors of postpartum genito-pelvic pain: 12 and 24 months later [Grant] - NSHRF - \$150,000.
34. Schmidt M, Roach D (2015-2017). Membrane Optimization [Industry Contract] - Atlantic Canada Opportunities Agency - \$499,995.
35. Schmidt M, Roach D (2015-2017). memsorb: CO2 filter for safe, environmentally sound anesthesia [Grant] - Sustainable Development Technologies Canada - \$686,575.
36. Schmidt M, Roach DC (2016-2017). Technical verification of memsorb device performance against industry standard devices [Industry Contract] - NRC-IRAP - \$47,097.
37. Stinson J, Campbell F, Chorney J, Clark AJ, Dick B, Forgeron P et al (2014-2017). ICanCope with pain: A integrated smartphone and web self-management program for adolescents and young adults with chronic pain [Grant] - CIHR - \$383,884.
38. Uppal V, Kwofie K, Retter S, Ke J, Trenholm A (2016-2017). Single dose controlled release hydromorphone as preemptive analgesia to prevent rebound pain after single shot interscalene block for rotator cuff repair surgery: a randomized placebo controlled trial [Grant] - Central Zone - \$5,000.
39. Uppal V, McKeen D, Doyle P, Allen V, Kwofie K (2017). A randomized controlled trial comparing intrathecal morphine with quadratus lumborum block as part of a multimodal analgesia strategy for post-caesarean delivery analgesia [Grant] - Dalhousie - \$5,000.
40. Uppal V, Sancheti S, Retter S, Kwofie MK, Szerb J (2016-2017). A Phase 3, Randomized, Double-Blind, Placebo-Controlled, Multicenter, Evaluation of the Safety of N1539 Following Major Surgery [Industry Contract] - Recro Pharma - \$25,000.
41. Uppal V, Shanthann H, Prabhakar C, McKeen DM (2016-2017). Intrathecal Hyperbaric Versus Isobaric Bupivacaine for Adult Non-Caesarean Delivery Surgery: Systematic Review and Meta-Analysis [Grant] - Dalhousie - \$1,500.
42. Uppal V, Shanthann H, Prabhakar C, McKeen DM (2016-2017). Intrathecal Hyperbaric Versus Isobaric Bupivacaine for Adult Non-Caesarean Delivery Surgery: Systematic Review and Meta-Analysis [Grant] - IWK - \$3,000.
43. Wozney L, Hong P, Chorney J (2016-2018). Tonsil-Text-To-Me (Tonsillectomy): utilizing a short message service (SMS) to improve perioperative tonsillectomy care [Grant] - IWK - \$60,000.

CONTINUING SCHOLARLY PROJECTS (UNFUNDED)

1. Bailey J, Morgan C, Hayden C, McKeen DM, Kwofie K (2016-2017). Pain control with peripheral nerve regional anesthetic techniques compared to thoracic epidurals for abdominal surgery: a systematic review [Clinical]
2. Casey M, Sancheti S, Retter S, Uppal V, McKeen DM (2016-2017). Efficacy and safety of intrathecal fentanyl for caesarean delivery: A systematic review and meta-analysis of randomized controlled trials [Clinical]
3. Chorney J, Howlett M (2016 - present). Understanding the Needs and Interest in Preparation for Pediatric MRI: A Needs Assessment Study [Development and Innovation]
4. Chorney J, Howlett M (2017-present). The MRI Self-Efficacy Scale for Children: Scale Development and Preliminary Validation [Development and Innovation]
5. Dunn M, George RB, Matwin S, Wang X, Doyle P, Munro A, Haji Soleimani B, (2015-2018). A Novel Method for Predicting Normal Labor Progression in Nulliparous Women using Machine Learning Techniques [Clinical]
6. Foss M, Lynch ME (2013-2017). Patient-Controlled Analgesia versus Continuous Opioid Infusion for the Treatment of Pain Caused by Oral Mucositis Following Myeloablative Chemotherapy for Hematopoietic Stem Cell Transplantation: A Retrospective Review [Clinical]
7. George RB, Carvalho B, Chorney J, Eghan E, Snelgrove-Clarke E, Doyle P, Uppal V (2016-2017). Are women having a cesarean delivery interested and engaged in shared decision-making regarding postoperative analgesia? An exploratory survey study [Clinical]
8. George RB, Chorney J, Munro A, Doyle P, Ke XC (2016-2017). A Patient Responsive Analgesia (PRA) Tool to Assess Pain in Women with Epidural Analgesia during Labour [Clinical]
9. 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]
10. Groleau C, Wong M, Morin S, Vautour L, Yip C, Hung O, Bessissow A (2016-2017). Perioperative corticosteroid administration: a survey of internists, endocrinologists, and anesthesiologists [Clinical]
11. Jewer JK, Wong MJ, Bird SJ, Habib AS, George RB (2015-2017). Supplemental perioperative intravenous crystalloids for postoperative nausea and vomiting [Clinical]
12. Jewer K, Bird SJ, Habib AS, George RB, Scott J (2013-2017). Supplemental perioperative intravenous crystalloids for postoperative nausea and vomiting - Cochrane Systematic Review [Database]
13. MacGregor J, Woolcott C, George RB, Allen V (2017-2019). The effect of nitrous oxide for pain management during labour and delivery on maternal outcomes in a population of Nova Scotian women [Clinical]

APPENDIX B – 2017 RESEARCH PROJECTS (CONT'D.)

14. Maguire E, Chorney J (2013-2017). How does perceived parental involvement and actual involvement in decisions concerning ENT surgery for their child contribute to parental decisional conflict? [Clinical]
15. McKeen DM (2016-2017). A Canadian National Anesthesia Research Priority Setting Exercise Identification of Clinically Important Questions in Anesthesia and Perioperative Medicine [Development and Innovation]
16. Mukhida K (2016-present). An examination of the portrayal of pain in Hollywood films [Clinical]
17. Mukhida K, (2014-present). The influence of Wilder Penfield's research experiences in Spain and Germany on the development of his surgical techniques for epilepsy [Clinical]
18. Mukhida K, Annan H (2015-present). The neuroscientific basis of art therapy for chronic pain: a review [Clinical]
19. Mukhida K, Carroll W (2017). A systematic review of the literature examining the effects of fibromyalgia on the working experience [Clinical]
20. Mukhida K, Meisner J (2016-present). A survey of natural health product use amongst chronic pain patients [Clinical]
21. Munro A, George RB, Habib A (2016-2017). Determination of the optimal next bolus interval for programmed intermittent bolus epidural analgesia: A randomized controlled trial [Clinical]
22. Panzarasa J, Woolcott C, George RB, Allen V, MacGregor J (2017-2019). The association between the use of nitrous oxide during labor and delivery and neonatal outcomes [Clinical]
23. Pike M, Lynch ME (2013-2017). Observational Trial of Qigong as a Complementary Therapy in a Chronic Pain Clinic [Clinical]
24. PS Myles, O Boney, M Botti, AM Cyna, TJ Gan, MP Jensen, H Kehlet, A Kurz, GS De Oliveira Jr, P Peyton, DI Sessler, MR Tramèr, CL Wu the StEP-COMPAC Group [Including George RB], Paul Myles, Michael Grocott, Bruce Bickard, Jane Blazeby, Oliver Boney, Matthew Chan, Elisabeth Diouf, Lee Fleisher, Cor Kalkman, Andrea Kurz, Ramani Moonesinghe, Duminda Wijeyesundera (2016-2020). Systematic review and consensus definitions for the Standardised Endpoints in Perioperative Medicine (StEP) initiative [Clinical]
25. Roda R, Uppal V, McKeen D, Allen V, Woolcot C (2016-2017). Postoperative analgesia with Quadratus Lumborum Blockade for elective caesarean delivery: A retrospective study [Clinical]
26. Sancheti S, Uppal V, Sandeski R, Kwofie MK, Szerb J (2016-2018). A Cadaver Study Investigating Structures Encountered by The Needle During a Retroclavicular Approach to Infraclavicular Brachial Plexus Block [Development and Innovation]
27. Schep L, Chorney J (2013-2017). Child and parent involvement in decision-making for otolaryngology procedures [Clinical]
28. Snelgrove-Clarke E, McKeen D, VanEyck N, West J, Mann C, Hewitt B, Greene E, Langley J, LeDrew M, Boutilier L (2016-2017). Lego Serious Play; An evidence-based approach to team building [Development and Innovation]
29. Stephanie Snow, Jill Chorney, Sally Bird, Stuart Wright (2016-2019). B.A.L.A.N.C.E, Building Alliances for Autism Needs in Clinical Encounters: Surgery Edition [Medical Education or Training]
30. Uppal V, Retter S, Casey M, McKeen D (2016-2017). Systematic review and metaanalysis of the effects of intrathecal fentanyl and morphine for cesarean delivery surgery [Database]
31. Vlaten A (2016-2017). Current concepts in liver transplantation anesthesia. A comparison between Europe and Canada [Clinical]
32. Vlaten A (2017). Survey: Availability of airway devices and management of the difficult pediatric airway in lifeflight helicopters in Germany, Austria, Switzerland and Canada [Clinical]
33. Vlaten A, Bird S, Law A, Hung O (2015-2017). A randomized comparison of the STORZ Miller CMAC to direct laryngoscopy in a Pierre Robin manikin [Clinical]
34. Vlaten A, Bird S, Law A, Hung O (2016-2017). A comparison of the STORZ CMAC DBlade versus direct laryngoscopy in a restricted access pediatric motor vehicle accident victim [Clinical]
35. Vlaten A, Bird S, Law A, Hung O (2016-2017). A randomized comparison of the AIRTRAQ versus direct laryngoscopy in a Pierre Robin manikin [Clinical]
36. Vlaten A, Jagannathan N (2017-2018). Evaluation of the STORZ pediatric DBlade in 20 consecutive pediatric patients with difficult direct laryngoscopy [Clinical]
37. Wong MJ, Wong D, Hung O, Yip CE (2015-2017). Perioperative stress dosing for patients taking exogenous corticosteroids: A systematic review [Clinical]

Appendix C – 2017 Publications

Note that this list of publications only includes those *peer-reviewed* articles that are currently *published* and *accessible online* (65).

1. Aali M, Caldwell A, House K, Zhou J, Chappe V, Lehmann C. Iron chelation as novel treatment for lung inflammation in cystic fibrosis. *Med Hypotheses*. 2017 Jul; 104:86-88.
2. Arora N, Islam S, Wafa K, Zhou J, Toguri JT, Cerny V, Lehmann C (2017). Evaluation of iris functional capillary density in experimental local and systemic inflammation. *Journal of Microscopy*. [Published] PubMed ID: [28102536](#).
3. Brindley PG, Beed M, Law JA, Hung O, Levitan R, Murphy MF, Duggan LV (2017). Airway management outside the operating room: how to better prepare. *Canadian Journal of Anaesthesia = Journal canadien d'anesthésie*, 64(5), 530-539. [Published] PubMed ID: [28168630](#).
4. Cerny V, Astapenko D, Brettner F, Benes J, Hyspler R, Lehmann C, Zadak Z (2017). Targeting the endothelial glycocalyx in acute critical illness as a challenge for clinical and laboratory medicine. *Critical Reviews in Clinical Laboratory Sciences*, 54(5), 343-357. [Review - Published] PubMed ID: [28958185](#).
5. Cerny V, Astapenko D, Burkovskiy I, Hyspler R, Ticha A, Trevors MA, Lehmann C (2017). Glycocalyx in vivo measurement. *Clinical Hemorheology and Microcirculation*, 67(3-4), 499-503. [Published] PubMed ID: [28922148](#).
6. Chen J, Zhou J, Kelly M, Holbein BE, Lehmann C (2017). Iron chelation for the treatment of uveitis. *Medical Hypotheses*, 103, 1-4. [Review - Published] PubMed ID: [28571790](#).
7. Curran JA, Bishop A, Plint A, MacPhee S, Zemek R, Chorney J, Jabbour M, Porter S, Sawyer S (2017). Understanding discharge communication behaviours in a pediatric emergency care context: a mixed methods observation study protocol. *BMC health services research*, 17(1), 276. [Published] PubMed ID: [28412951](#).
8. Doca FNP, Costa AL, Finley GA, Linhares MBM (2017). Pain in pediatric inpatients: Prevalence, characteristics, and management. *Psychology & Neuroscience*, 10(4), 394-403. [Published] DOI: [10.1037/pne0000094](#).
9. Doyle JM, Merovitch N, Wyeth RC, Stoyek MR, Schmidt M, Wilfart F, Fine A, Croll RP. A simple automated system for appetitive conditioning of zebrafish in their home tanks. *Behav Brain Res*. 2017 Jan 15;317:444-452. doi: [10.1016/j.bbr.2016.09.044](#). Epub 2016 Sep 19. PubMed PMID: [27659557](#).
10. Dumbarton TC, Maxam A, Farah N, Zhou J, Shawary N, Nantais J, Lehmann C (2017). Tetrahydrobiopterin Improves Intestinal Microcirculation in Experimental Sepsis in the Rat. *Clin Hemorheol Microcirc*. [Published].
11. Ferland CE, Saran N, Valois T, Bote S, Chorney JM, Stone LS, Ouellet JA (2017). Preoperative Distress Factors Predicting Postoperative Pain in Adolescents Undergoing Surgery: A Preliminary Study. *Journal of Pediatric Health Care: Official Publication of National Association of Pediatric Nurse Associates & Practitioners*, 31(1), 5-15. [Published] PubMed ID: [26852092](#).
12. George RB (2017). Obstetrics and Gynecology in Low-Resource Settings: A Practical Guide. *Anesthesia and Analgesia*. [Review - Published] PubMed ID: [28857801](#).
13. George RB, Lozada MJ (2017). Anesthesiologists, it's time to get social! *Canadian Journal of Anaesthesia = Journal canadien d'anesthésie*, 64(12), 1169-1175. [Published] PubMed ID: [28936589](#).
14. George RB, McKeen DM (2017). We must ask relevant questions and answer with meaningful outcomes. *Canadian Journal of Anaesthesia*. [Editorial - Published] PubMed ID: [28623501](#).
15. George RB, McKeen DM, Dominguez JE, Allen TK, Doyle PA, Habib AS (2017). A randomized trial of phenylephrine infusion versus bolus dosing for nausea and vomiting during Cesarean delivery in obese women. *Canadian Journal of Anaesthesia*. [Published] DOI: [10.1007/s12630-017-1034-6](#).
16. Gu Y, Robert JM, Kovacs G, Milne AD, MacQuarrie K, Hung OR, Morris IR, Law JA (2017). Restricted vs. full video-laryngoscopic view to facilitate GlideScope®-assisted tracheal intubation: a randomized clinical trial. *Canadian Journal of Anesthesia*, 63(8), 928-37. [Published] PubMed ID: [27090535](#).
17. Haider A, Scott JW, Gause CD, Mehes M, Finley GA, et al (2017). Development of a unifying target and consensus indicators for global surgical systems strengthening: Proposed by the Global Alliance for Surgery, Obstetric, Trauma and Anaesthesia Care (The G4 Alliance). *World J Surg*, 41(10), 2426-2434. [Published] DOI: [10.1007/s00268-017-4028-1](#).
18. Hashmi, J.A, Loggia, M, Khan, S, Gao, L., Kim J, Napadow, V, Brown E.N, Akeju OJ. Dexmedetomidine Disrupts the Local and Global Efficiencies of Large-scale Brain Networks. Commentary by George Mashour. Title: Network Inefficiency: A Rosetta Stone for the Mechanism of Anesthetic-induced Unconsciousness. 2017. *Anesthesiology – The Journal of the American Society of Anesthesiologists*. 126(3): 419-430. [Published]. PubMed ID: [27910247](#)
19. Hong P, Maguire E, Purcell M, Ritchie KC, Chorney J (2017). Decision-Making Quality in Parents Considering Adenotonsillectomy or Tympanostomy Tube Insertion for Their Children. *JAMA Otolaryngology – Head & Neck Surgery*, 143(3), 260-266. [Published] PubMed ID: [27930764](#).
20. Hung O, McKeen D, Huitink J (2017). In defense of succinylcholine. *Canadian Journal of Anesthesia*, 64, 107-8. [Letter to the Editor - Published].
21. Johnston DF, Sondekoppam RV, Uppal V, Howard JL, Ganapathy S (2017). Hybrid Blocks for Total Knee Arthroplasty: A Technical Description. *The Clinical Journal of Pain*. [Published] PubMed ID: [28617716](#).
22. Jung F, Connes P, Lehmann C (2017). A.L. Copley Best Paper Prize 2016. *Clinical Hemorheology and Microcirculation*, 66(3), 185-186. [Editorial - Published] PubMed ID: [28671109](#).

Appendix C – 2017 Publications (CONT'D.)

23. Kern H, Sharawy N, Sardinha J, Lehmann C (2017). Microcirculation research in community hospitals - challenges and chances. *Clinical Hemorheology and Microcirculation*, 67(3-4), 511-514. [Published] PubMed ID: [28922147](#).
24. Khadra C, Le May S, Ballard A, Thérault J, Charette S, Villeneuve E, Parent S, Tsimicalis A, Chorney J (2017). Validation of the scale on Satisfaction of adolescents with postoperative pain management - idiopathic scoliosis (SAP-S). *Journal of Pain Research*, 10, 137-143. [Published] PubMed ID: [28138264](#).
25. Krustev E, Muley M, McDougall JJ (2017). Endocannabinoids inhibit neurogenic inflammation in murine joints by a non-surgical cannabinoid receptor mechanism. *Neuropeptides*, 64, 131-135. [Published].
26. Lafreniere JD, Lehmann C (2017). Parameters of the Endocannabinoid System as Novel Biomarkers in Sepsis and Septic Shock. *Metabolites*, 7(4). [Review - Published] PubMed ID: [29104224](#).
27. Law JA, Morris IR, Malpas G (2017). Obstructing pathology of the upper airway in a post-NAP4 world: time to wake up to its optimal management. *Canadian Journal of Anaesthesia = Journal canadien d'anesthésie*. [Editorial - Published] PubMed ID: [28695449](#).
28. Lee J, George RB, Habib AS (2017). Spinal induced hypotension: incidence, mechanisms, prophylaxis and management: summarizing 20 years of research. *Best Practice & Research: Clinical Anaesthesiology*. [Review - Published].
29. Lehmann C (2017). New developments in clinical microcirculation imaging. *Clinical Hemorheology and Microcirculation*, 67(3-4), 487-488. [Editorial - Published] PubMed ID: [28922145](#).
30. Lovas DA, Pajer K, Chorney JM, Vo DX, Howlett M, Doyle A, Huber A (2017). Mindfulness for adolescent chronic pain: a pilot feasibility study. *Journal of Child and Adolescent Mental Health*, 29(2), 129-136. [Published] PubMed ID: [28974167](#).
31. Lynch ME (2017). The opioid pendulum and the need for better pain care. *Pain Medicine*. [Published] DOI: [10.1093/pm/pnw085](#).
32. Lynch ME, Katz J (2017). "One size fits all" doesn't fit when it comes to long term opioid treatment for people with chronic pain. *Canadian Journal of Anesthesia*. [Published] Available [here](#).
33. Mai LM, Clark AJ, Gordon A, Lynch ME, Morley-Forster PK, Nathan H, Smyth C, Stitt LW, Toth C, Ware MA, Moulin DE (2017). Long-term outcomes in the management of painful diabetic neuropathy. *Canadian Journal of Neurological Sciences*, 44, 337-342. [Published] PubMed ID: [28065184](#).
34. Malpas G, Phipps S, Hung O, (2017). Tips & Tricks for successful flexible bronchoscopic intubation under general anesthesia. *The Airway Gazette* [Internet]. [Published] Available [here](#).
35. Mamashli, F., Khan, S., Bharadwaj, H., Michmizos, K., Ganesan, S., Garel, K.-L. A., Hashmi, JA, Herbert, M. R., Hämäläinen, M. and Kenet, T. Auditory processing in noise is associated with complex patterns of disrupted functional connectivity in autism spectrum disorder. 2017. *Autism Research*. 4: 631-647. [Published]. PubMed ID: [27910247](#).
36. McDougall JJ, Albacete S, Schuler N, Mitchell PG, Lin C, Oskins JL, Bio H, Chambers MG (2017). Lysophosphatidic acid provides a missing link between osteoarthritis and joint neuropathic pain. *Osteoarthritis & Cartilage*, 25, 926-934. [Published].
37. McDougall JJ, Muley M, Philpott HT, Reid A, Krustev E (2017). Early blockade of joint inflammation with a fatty acid amide hydrolase inhibitor decreases end stage osteoarthritis pain and peripheral neuropathy in mice. *Arthritis Research & Therapy*, 19, 106-115. [Published].
38. McLellan M, Poulton A, Hung O (2017). The clinical utility of the Fluid IV Alert (FIVA) monitor. *J Clin Anesth*, 35, 293-4. [Published].
39. Miro J, McGrath PJ, Finley GA, Walco GA (2017). Pediatric chronic pain programs: Current and ideal practice. *PAIN Reports*, 2(5), e613. [Published].
40. Muley M, Krustev E, Reid A, McDougall JJ (2017). Prophylactic inhibition of neutrophil elastase prevents the development of chronic neuropathic pain in osteoarthritic mice. *Journal of Neuroinflammation*, 14, 168-180. [Published].
41. Munro A, George RB (2017). Programmed Intermittent Epidural Boluses (PIEB) for Maintenance of Labor Analgesia: A Superior Technique and Easy to Implement (Debate - Part 2). *Turkish Journal of Anaesthesiology and Reanimation*, 45(2), 70-72. [Review - Published] PubMed ID: [28439435](#).
42. Munro A, George RB (2017). Programmed Intermittent Epidural Boluses (PIEB): A Superior Technique for Maintenance of Labor Analgesia (Debate - Part 1). *Turkish Journal of Anaesthesiology and Reanimation*, 45(2), 67-69. [Review - Published] PubMed ID: [28439434](#).
43. Munro A, George RB, Chorney J, Snelgrove-Clarke E, Rosen NO (2017). Prevalence and Predictors of Chronic Pain in Pregnancy and Postpartum. *Journal of Obstetrics and Gynaecology Canada*, 3(9), 734-741. [Published] PubMed ID: [28624445](#).
44. Noel M, Rabbitts JA, Fales J, Chorney J, Palermo TM (2017). The influence of pain memories on children's and adolescents' post-surgical pain experience: A longitudinal dyadic analysis. *Health Psychology: Official journal of the Division of Health Psychology, American Psychological Association*, 36(10), 987-995. [Published] PubMed ID: [28726472](#).
45. O'Brien M, Philpott HT, McDougall JJ (2017). Understanding osteoarthritis pain through animal models. *Clinical and Experimental Rheumatology*, 35, S47-S52. [Published].
46. Pelland A, George RB (2017). Safe obstetric anesthesia in low -and middle -income countries. *BJA Education*, 17(6), 194-7. [Review - Published] Available [here](#).
47. Philpott HT, O'Brien M, McDougall JJ (2017). Attenuation of early phase inflammation by cannabidiol prevents pain and nerve damage in rat osteoarthritis. *Pain*, 158, 2442-2451. [Published].
48. Phipps S, Malpas G, Hung O (2017). A technique for securing the Aintree intubating catheter to a flexible bronchoscope. *Can J Anesth*. [Letter to the Editor - Published] DOI: [10.1007/s12630-017-1015-9](#).
49. Pool O, Vargo M, Zhang J, Hung OR (2017). A comparison of three techniques for cricothyrotomy on a manikin. *Journal of Respiratory Care*, 53(2), 29-32. [Published].

Appendix C – 2017 Publications (CONT'D.)

50. Prabhakar C, Uppal V, Sondekoppam R (2017). Effect of beam steering on echogenic and non-echogenic needle visibility at 40, 50 and 60-degree needle insertion angles. *Anesthesia & Analgesia*. [Published] PubMed ID: [29116966](#).
51. Sawynok J, Lynch ME (2017). Qigong and Fibromyalgia circa 2017. *Medicines*, 4(37). [Published] DOI: [10.3390/medicines4020037](#).
52. Sharawy N, Mahrous R, Whynot S, George R, Lehmann C (2017). Clinical relevance of early sublingual microcirculation monitoring in septic shock patients. *Clinical Hemorheology and Microcirculation*. [Published] PubMed ID: [29036793](#).
53. Sharawy N, Mukhtar A, Islam S, Mahrous R, Mohamed H, Ali M, Hakeem AA, Hossny O, Refaa A, Saka A, Cerny V, Whynot S, George RB, Lehmann C (2017). Preliminary clinical evaluation of automated analysis of the sublingual microcirculation in the assessment of patients with septic shock: Comparison of automated versus semi-automated software. *Clinical Hemorheology and Microcirculation*, 67(3-4), 489-498. [Published] PubMed ID: [28922146](#).
54. Sondekoppam R V, Ip V, Johnston D , Uppal V, Johnson M, Ganapathy S, Tsui B (2017). Ultrasound guided transmuscular quadratus lumborum block for analgesia following anterior iliac crest bone graft harvesting: An anatomical and clinical study. *Canadian Journal of Anesthesia*. [Case Series - Published] PubMed ID: [29164530](#).
55. Song JSA, Wozney L, Chorney J, Ishman SL, Hong P (2017). Design and validation of key text messages (Tonsil-Text-To-Me) to improve parent and child perioperative tonsillectomy experience: A modified Delphi study. *International Journal of Pediatric Otorhinolaryngology*, 102, 32-37. [Published] PubMed ID: [29106872](#).
56. Stoyek MR, Schmidt MK, Wilfart FM, Croll RP, Smith FM (2017). The in vitro zebrafish heart as a model to investigate the chronotropic effects of vapor anesthetics. *American Journal of Physiology – Regulatory, Integrative, and Comparative Physiology*, 313. [Published] DOI: [10.1152/ajpregu.00467.2016](#).
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Appendix D – 2018-21 RESEARCH ROADMAP FOR SUCCESS

	ENHANCE RESEARCH AND COLLABORATIONS	BUILD RESEARCH CAPACITY	FOSTER PARTICIPATORY GOVERNANCE & ENGAGEMENT
AIMS	<ol style="list-style-type: none"> 1. Support collaborative research teams 2. Provide opportunities for research collaborative events both internally and externally 3. Communicate research successes 	<ol style="list-style-type: none"> 1. Develop research continuing education initiatives 2. Foster trainee & junior investigator mentoring 3. Support advanced research degree attainment 	<ol style="list-style-type: none"> 1. Implement and sustain OoR new governance structure 2. Encourage engagement in OoR operations and decision making 3. Strengthen stakeholder engagement in research
MEASURES	#teams, #new collaborations, #events, #team grants/pubs, #recognition postings, #new trials, #prestigious awards, h-index, alignment with strategic plans (DAL/IWK/NSHA)	#CPD events, #degrees, #education postings, #junior investigator that receive funding, #new projects, #workshops, #attendees, #peer review activities, #attendance, FTE amount	#reports, #engagement initiatives, ambassador group, #stakeholder meetings, #PE consultations, implementation of PE plans, balanced budget
IMMEDIATE SUCCESS	<ul style="list-style-type: none"> • Advancing research teams e.g. medical education research • Increased participation in clinical research e.g. trials • Increased invitation to academically prestigious research activities 	<ul style="list-style-type: none"> • Enhanced research knowledge and skills • Supportive colleagues • Optimized relationship in shared priorities with key stakeholders (e.g. OoE) 	<ul style="list-style-type: none"> • Improved communication to stakeholders • Integration of patient voices in research • Appreciation for diversity
MEDIUM-TERM SUCCESS	<ul style="list-style-type: none"> • Recognized globally as leader in APMPM research • Coordinated efforts addressing priority research areas 	<ul style="list-style-type: none"> • Recognized as a top training destination for trainees and junior faculty • Supportive academic environment for investigators 	<ul style="list-style-type: none"> • A committed and engaged group of stakeholders advancing OoR priorities • An engaged group of patients to support research endeavors
ENDURING SUCCESS	Vibrant research culture Research excellence	Vibrant research culture Research excellence	Vibrant research culture Research excellence
ULTIMATE INTENTION	RESEARCHERS COMMITTED TO WORKING TOGETHER WITH PATIENTS TO FIND EVIDENCE-BASED SOLUTIONS LEADING TO THE BEST POSSIBLE PAIN MANAGEMENT & PERIOPERATIVE CARE FOR OUR FAMILIES AND GLOBAL COMMUNITIES		



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