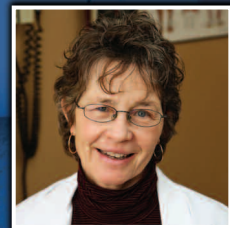
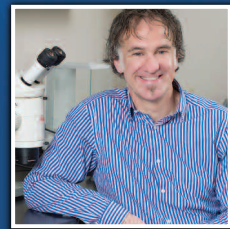
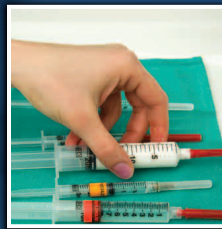


ACCOUNTABILITY REPORT 2012

OFFICE OF RESEARCH

Department of Anesthesia, Pain Management
& Perioperative Medicine

Dalhousie University



**DALHOUSIE
UNIVERSITY**

*Inspiring Minds
Faculty of Medicine*

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's **2012 Research Accountability Report** communicates the research-related achievements by research staff 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 2012 as well as data from previous years for comparative and trending purposes.

As a summary, the areas where targets were met or partially met as well as those targets that were not met in 2012 are outlined below.

AREAS IN WHICH THE DEPARTMENT **MET ITS TARGETS** IN 2012:

- Eight new research endeavors/projects were initiated in 2012.
- The number and value of grants and industry contracts (38 and \$2.3M, respectively) have increased with a significant increase in grant funded research of \$2.1M in 2012 compared to \$1.8M in 2011 (**Figure 1** and **Table 1**).
- The proportion of projects, proposals and manuscripts that are collaborative remain high at 82%.
- Ninety-three percent of researchers were invited to review, organize, chair and offer expert opinion in 2012.
- Eighty-seven researchers were invited to present their work at national (24%) and international (47%) forums (**Figure 4**).
- The proportion of researchers who serve as members or reviewers on research ethics boards, granting agencies and scientific journals for local, national and international organizations are 87%, 87% and 73%, respectively (**Table 6**).
- The total number of publications increased from 109 in 2011 to 131 in 2012 with significant increases in book chapters and abstracts (**Figure 3**).
- Eighty percent of researchers were involved in initiatives targeted at applying or translating research.
- Three national recognition awards were received in 2012 (**Table 4**) which is the same number of awards received in 2011.
- 51 of 53 of action items from the 2012 strategic plan were successfully completed (**Table 7**).
- Ninety-three percent of researchers were either very satisfied or satisfied with services provided by Office of Research.

AREAS IN WHICH THE DEPARTMENT **PARTIALLY MET ITS TARGETS** IN 2012:

- One researcher was successfully promoted to associate level. The proportion of associate and full professors are slightly below targets at 47% and 27%, respectively (**Table 3**).

The results of this report will be used in the implementation of the Research Accountability Framework's *Evaluation Strategy*.

INTRODUCTION

The Department of Anesthesia, Pain Management & Perioperative Medicine identified the need for a research accountability framework during a departmental strategic planning exercise. The research accountability framework was subsequently developed by a working group of departmental researchers and administrative staff using a collaborative process. Through it, the department attempted to recognize the value of the full scope of scholarly research activity, from engaging in the process of creativity, to implementing research projects, to communicating the results, and influencing clinical best practice. The **Research Accountability Framework** was adopted by the Department of Anesthesia in December 2008.

THE ACCOUNTABILITY FRAMEWORK HAS FOUR SECTIONS:

- 1. Profile** – Describes the need for an accountability framework in the context of our office of research and describe our governance structure.
- 2. Results chain** – Provides a flow chart that ties resources devoted to research to the outcomes through a logical sequence of activities and outputs.
- 3. Measurement and reporting plan** – Identifies most appropriate indicators of research activity and productivity, our current targets, how to measure the indicators and how to report the results (*accountability report*).
- 4. Evaluation strategy** – Outlines a cyclical, iterative strategy for on-going learning from our results and adjusts our strategy as required.

This **Research Accountability Report (2012)** covers the time period from January to December 2012. It is the product of the Framework's *Measurement and Reporting Plan* in which key indicators and targets were identified 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 information reports on the 2012 research-related results for each predetermined target and provides a comparison to the data from previous years, which is done in graphical and table formats. In addition, currently held research grants/contracts and peer-reviewed publications are listed in *Appendix B* and *C*, respectively.

Engage the process of creativity

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

TARGET: At least three new research endeavors/projects annually

RESULT: **Eight new research endeavors/projects are underway**

Residents have engaged in three new research endeavors

- Residents are expected to fulfill research requirements as part of their five-year residency program. The department has 24 residents (2012/2013).
- In 2012, two scientific abstracts were presented at national and international conferences; four peer reviewed papers were published; three new research projects were initiated and eight lectures were presented by residents.

Fellows have engaged in three new research endeavors

- Fellows are expected to fulfill research requirements as part of their one-year fellowship program. The department has three fellows, one in each of the following programs: airway, obstetrics and regional.

Clinician scientists developed two additional research projects (unfunded) that are being conducted in the department. The focus of these projects includes chronic pain and airway.

For the third consecutive year the successful 2012 Anesthesia Research Day program was filled to capacity with research presentations from learners (residents, fellows and students).

Engage in the process of research

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

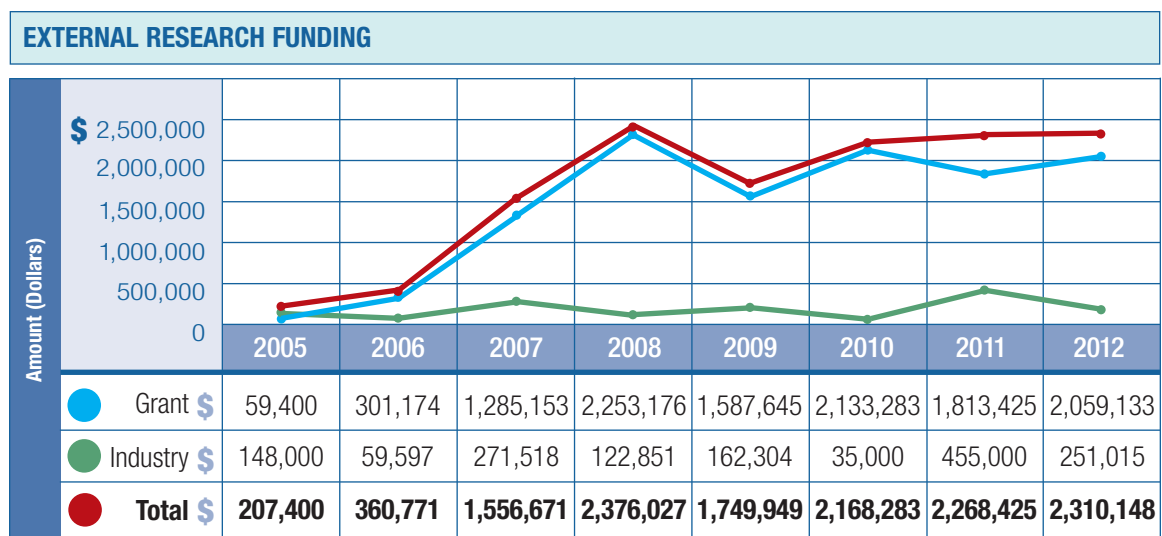
TARGET: Trending reflects maintenance or increase from previous years relative to protected research time

RESULT: **38 externally funded projects totaling over \$2.3M**

In 2012, the total amount and number of ongoing grant/industry funded projects demonstrate a consistent increase since 2009 (**Figure 1** and **Table 1**). Grant funded research accounts for almost 90% of the external support with the remaining 10% from industry contracts. A major contributor to this success is the consistent support of protected time for research (*Table 2*).

Grant funded research underway in the department in 2012 includes eight projects funded by the Canadian Institutes of Health Research (CIHR) totaling over \$750,000 with another seven grants totaling over \$700,000 from a variety of national agencies. This translates into 72% of the external support coming from the national level. Three projects are funded by Nova Scotia Health Research (NSHRF) for approximately \$150,000 with the remaining grants including local and international organizations.

FIGURE 1: The amount (\$) in external research grant and industry contract funding received (2005-2012)



Note that 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).

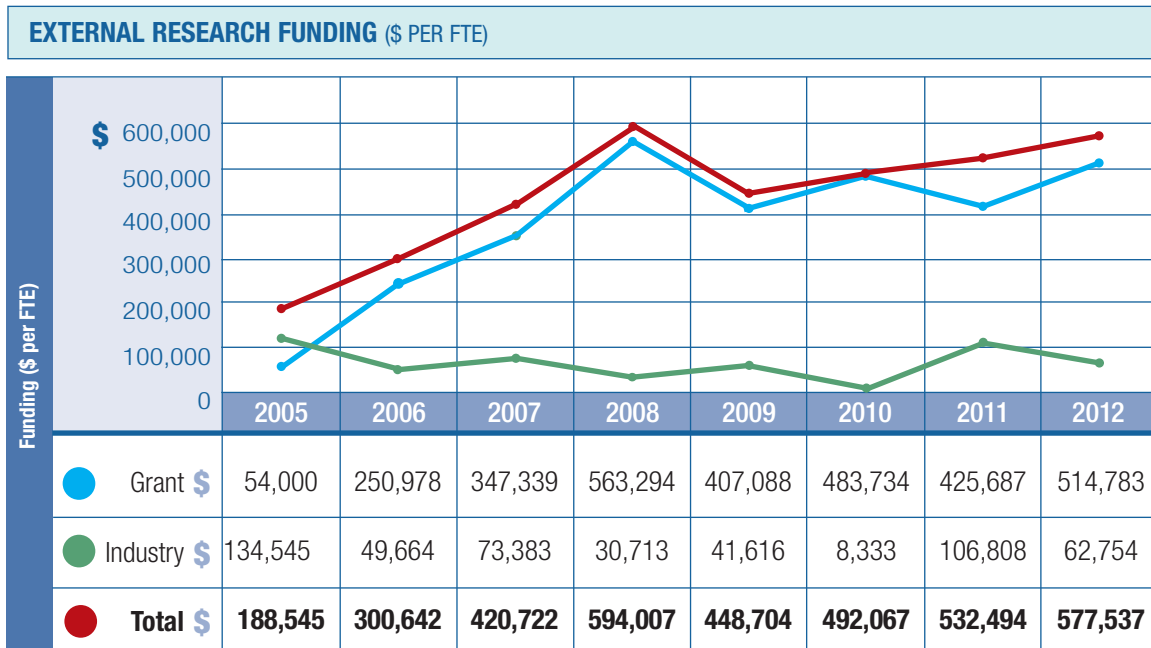
TABLE 1: Number of grants & industry contracts received

FUNDING GRANTS & INDUSTRY CONTRACTS								
	2005	2006	2007	2008	2009	2010	2011	2012
Grant	2	5	10	23	17	24	27	31
Industry	2	3	4	3	2	1	6	7
Total	4	8	14	26	19	25	33	38

TABLE 2: Protected time for research activities (2005-2012)

FTE PROTECTED TIME								
	2005	2006	2007	2008	2009	2010	2011	2012
Protected Time	1.4	1.5	3.8	4.2	4.2	4.2	4.26	4.0

FIGURE 2: Value of grants received relative to FTE of protected time for research



In **Figure 2**, the value of grants and industry contracts received relative to FTE (**Table 2**) of protected time for research is illustrated. While the protected time for research has slightly decreased for 2012 compared to the previous four years, the total dollar amount relative to the FTE has increased, indicating that researchers have remained successful in obtaining funding despite the reduced amount of protected time.

SCHOLARLY CURIOSITY (CONT'D.)

INDICATOR: Number of associate and full professors

TARGET: 50% of researchers will be at professor level, 30% at associate level; with 60% of research related promotion applications being successful

RESULT: **47% at professor level, 27% at associate level; and 100% applications successful**

TABLE 3: Number and percentage of appointments in the Department of Anesthesia

NUMBER AND PERCENTAGE OF APPOINTMENTS		
Rank	Number (#)	Percent %
Professor	7	47%
Associate Professor	4	27%
Assistant Professor	4	27%

There was one successful promotion to an Associate designation (R. George) in 2012 indicating a 100% success rate in the 2012 promotion applications.

In general, the proportion of researchers at the various ranks is consistent with their academic profile and status (e.g. seniority, terms of appointment).

INDICATOR: Number of recognition awards

TARGET: Trending reflects maintenance or increase from previous years relative to protected research time

RESULT: **Three recognition awards**

Three recognition awards for achievements in 2012 were conferred (**Tables 4 and 5**). This is consistent with the number of awards for the previous two years. Two awards reflect recognition from a national professional association and one from The Mayday Fund (New York).

Congratulations to **Dr. Jason McDougall** for receiving The Mayday Fellowship, a prestigious award that provides communications and leadership training to become effectively skilled in reaching the broader public, and ultimately have real impact on the lives of people in pain. As well, congratulations to **Dr. Jill Chorney** as the recipient of the 2012 Canadian Psychological Association's Scientist-Practitioner Early Career Award and to **Dr. Peter MacDougall** as the recipient of the Canadian Association for Medical Education Certificate of Merit.

TABLE 4: Number of recognition awards (2005-2012)

AWARDS								
	2005	2006	2007	2008	2009	2010	2011	2012
No. of Awards	7	6	7	3	7	3	3	3

TABLE 5: Number of recognition awards relative to FTE of protected time for research (2005-2012)

RECOGNITION AWARDS RELATIVE OF FTE PROTECTED TIME								
	2005	2006	2007	2008	2009	2010	2011	2012
Recognition Awards	5.0	4.0	1.9	0.7	1.7	0.7	0.7	0.8



Illustration 1:

2012-2013 Mayday Fellows starting on the left:

Renee C.B. Manworren, PhD, APRN, PCNS-BC; **Aaron Gilson**, MS, MSSW, PhD; **Lisa M. Peters**, MN, RN-BC; **Jason McDougall**, PhD; **Christine Chambers**, PhD, RPsych; **Seddon Savage**, MD, MS

SCHOLARLY SYNTHESIS

Actively seek out collaborative opportunities with interdisciplinary colleagues

INDICATOR: Number of collaborative projects, proposals and manuscripts

TARGET: 80% of all projects are collaborative

RESULT: **82% of all projects and publications are collaborative**

Of 131 publications, 120 have co-authors (92%). Of 38 funded grants and industry contracts, 18 have co-investigators (47%). Therefore, 138 out of 169 projects and publications are collaborative (82%).

Sit on scientific organizing committees

INDICATOR: Number of researchers who serve as members or reviewers for research ethics boards, editorial boards, professional associations, granting agencies, scientific journals

TARGET: 40% of researchers are reviewers/members locally, 30% nationally, 10% internationally

RESULT: **87% of researchers are reviewers/members locally, 87% nationally, 73% internationally**

TABLE 6: Number and percentage of participating researchers in the Department of Anesthesia

PARTICIPATING RESEARCHERS		
	Number of Researchers	Percent
Local	13 / 15	87%
National	13 / 15	87%
International	11 / 15	73%

INDICATOR: Number of researchers invited to review, organize, chair and offer expert opinion

TARGET: 50% of researchers invited to review, organize, chair and offer expert opinion

RESULT: **93% review, organize, chair and offer expert opinion**

Fourteen out of fifteen researchers were invited to review, organize or chair (93%).

Engage in the administrative process

INDICATOR: Engage in planning activities to advance the research mission

TARGET: 80% of action items completed from strategic plan each year

RESULT: **96% of action items completed from the 2012 strategic plan**

The strategic plan is reported based on the academic year (September 2011 to August 2012).

TABLE 7: Status of action items for the 2012 Strategic Plan

STATUS OF ACTIONS			
Status	# Actions	% Actions	
Completed	13	25%	96 %
Ongoing (never completely done)	35	66%	
Progress underway	3	6%	
No progress	2	4%	4 %
TOTAL	53		

The Office of Research updated its strategic plan on October 25, 2012. Five priority actions were identified:

1. Develop relationships with Dalhousie Industry Liason and Innovation Office
2. Establish a Dalhousie Pain Institute and Endowed Chair for Pain
3. Explore methods to incentivize academic accomplishments
4. Evaluate/Update CV capture and output on the Internal Information System (IIS)
5. Renovate new Perioperative Research Team research space (14th floor of the Tupper)

SCHOLARLY SYNTHESIS (CONT'D.)

INDICATOR: Researcher satisfaction with services provided by Office of Research

TARGET: 90% researcher satisfaction rate with services provided by Office of Research

RESULT: **93% researcher satisfaction with services provided by Office of Research**

Surveys were sent to all the researchers with protected time (15). Of the responses received (53%), the majority indicated that they were either very satisfied or satisfied (93%) with the services provided by the Office of Research.

TABLE 8: Researcher Satisfaction

OVERALL RESEARCHER SATISFACTION			
Criteria	Very satisfied/Satisfied	Neutral	Unsatisfied/Very unsatisfied
Knowledge/skill of staff	100%	-	-
Communication	100%	-	-
Leadership/innovation	87.5%	12.5%	-
Strategic Planning/organization	87.5%	12.5%	-
Events/Meetings	87.5%	12.5%	-

SCHOLARLY TRANSLATION

Linking theory to practice activities

INDICATOR: Number of initiatives (presentations) targeted at applying or translating research

TARGET: 30% of researchers are engaged in knowledge translation activities

RESULT: **80% engaged in knowledge translation activities**

Twelve out of 15 researchers engaged in knowledge translation activities (80%).

SCHOLARLY COMMUNICATION

Writing and publishing

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

TARGET: Trending reflects maintenance or increase from previous years relative to protected research time

RESULT: **131 publications have been submitted and accepted**

There was a significant increase in the total publications in 2012 compared to the previous year. While the number of articles was similar to 2011, there are notable increases in the number of publications of abstracts and book chapters (**Figure 3**). Of note, the total number of publications in 2012 doubled from 2010. **Table 9** shows that relative to protected time researchers achieved an all time high in the total number of publications.

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

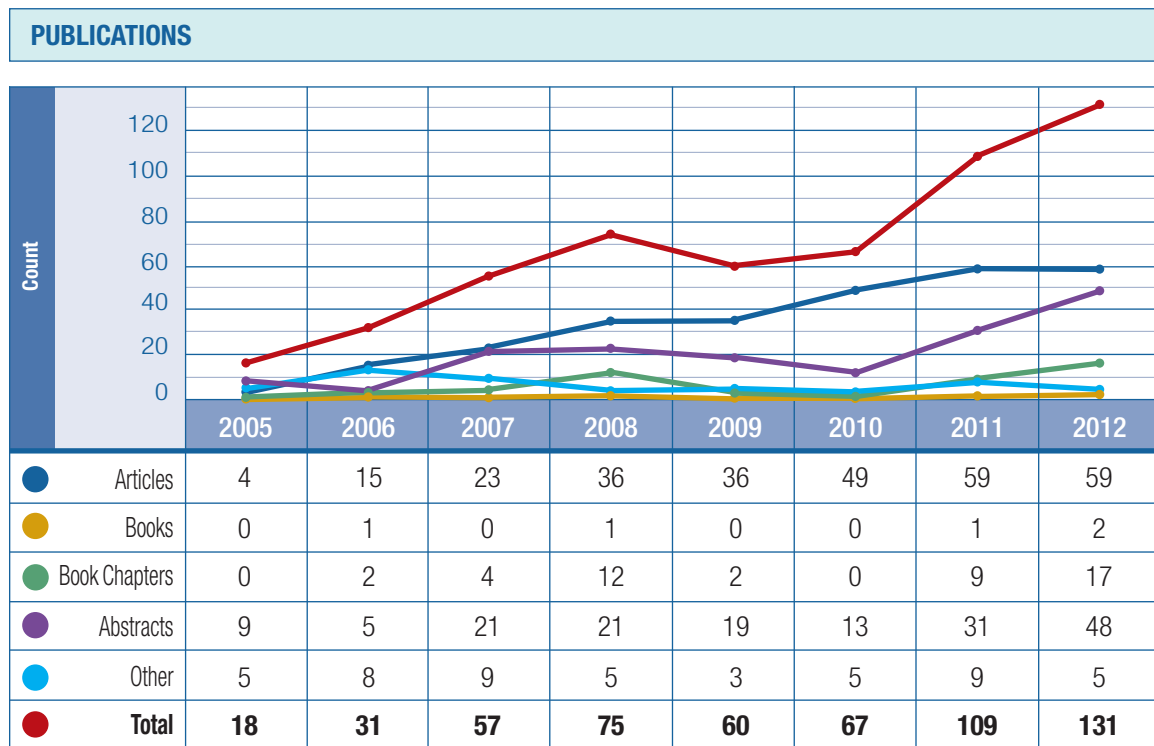


TABLE 9: Number of submitted and accepted publications (peer reviewed & non-peer reviewed) relative to FTE of protected time for research

PUBLICATIONS PER FTE PROTECTED RESEARCH TIME								
	2005	2006	2007	2008	2009	2010	2011	2012
Articles	4	13	6	9	9	11	14	13
Books	0	1	0	0	0	0	0	0
Book Chapters	0	2	1	3	1	0	2	4
Abstracts	8	4	6	5	5	3	7	11
Other	5	7	2	1	1	1	2	1
Total	17	27	15	18	16	15	26	30

Preparing and delivering presentations

- INDICATOR:** Number of presentations (local, national, international)
- TARGET:** Trending reflects maintenance or increase from previous years relative to protected research time
- RESULT:** **25 local, 21 national and 41 international invited presentations**

The total number of presentations by researchers has remained high and relatively consistent over the past three years (**Figure 4**). The number of international presentations made by the researchers continues to be almost double of either local or national presentations. Also, the total number of presentations relative to protected time for research has also remained consistently high (**Table 10**).

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

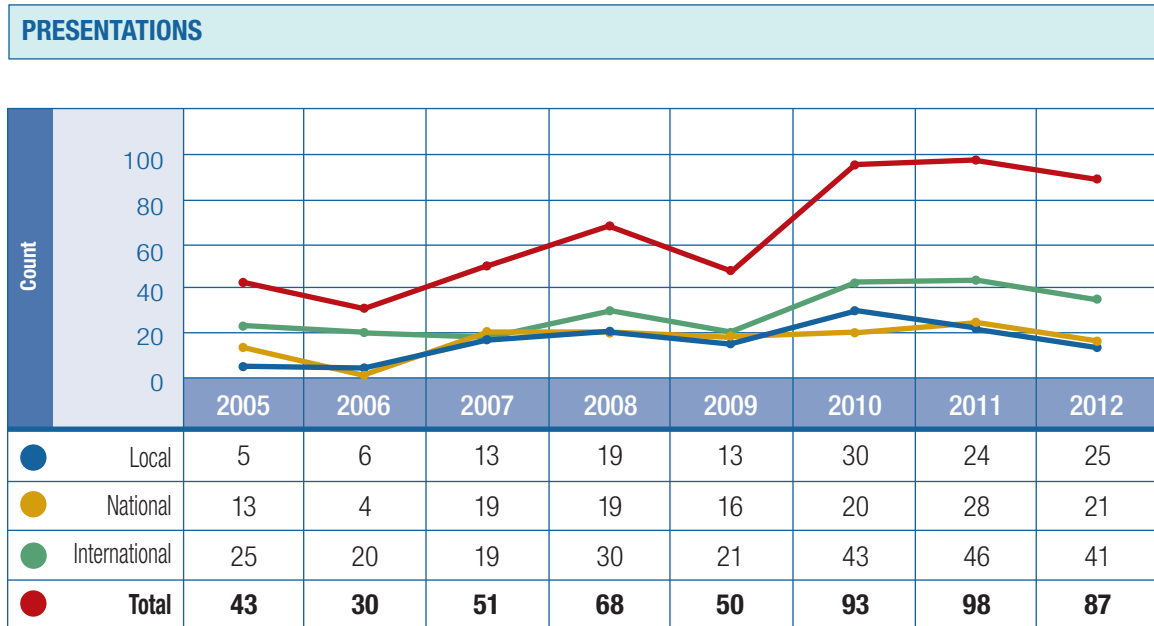


TABLE 10: Number of presentations (local, national, international) relative to FTE protected time for research

PRESENTATIONS RELATIVE TO FTE PROTECTED TIME

	2005	2006	2007	2008	2009	2010	2011	2012
Local	5	5	4	5	3	7	6	6
National	12	3	5	5	4	5	7	5
International	0	17	5	8	5	10	11	10
Total	17	25	14	18	12	22	23	22

APPENDIX A – PROTECTED TIME FOR RESEARCH

2012 PROTECTED TIME FOR RESEARCH

RESEARCHER	PROTECTED TIME	RESEARCHER	PROTECTED TIME
J. Chorney	0.17	M. Lynch	0.60
A. J. Clark	0.20	P. MacDougall	0.20
A. Finley	0.20	J. McDougall	0.33
R. George	0.20	D. McKeen	0.20
D. Henzler	0.07	A. Milne	0.20
O. Hung	0.40	M. Schmidt	0.20
C. Lehmann	0.60	A. Vlatten	0.10

TOTAL PROTECTED TIME

4.0

Individuals with protected time for anesthesia related research work on national organizations also include **Drs. Richard Hall** (0.1) and **Adam Law** (0.2), but are not included in the total FTE calculation.

Others engaged in research related activities without Anesthesia-funded protected time include **Dr. Jill Chorney** (0.5) in 2012.

APPENDIX B – 2012 RESEARCH PROJECTS

FUNDED PROJECTS (38). NOTE THAT THE BRACKETED DOLLAR AMOUNT IS THE TOTAL VALUE OF THE AWARD WHEREBY ANNUAL AMOUNTS ARE PROVIDED IN **FIGURE 1**.

1. Ahmed Sara, Ware MA, MacDougall P, Radhakrishnan A, Visca R. Mentorship in chronic pain: implementation and evaluation of a novel clinical knowledge transfer and exchange program [Grant] McGill University School of Physical & Occupational Therapy. Jul 2012. (\$10,195)
2. Chorney J, Andreou Pantelis, El-Hawary Ron, Finley GA, Howard Jason, McGrath Patrick JA, Valois Teresa. Pain at Home in Children following Major Surgery: Physical, Psychological, and Economic Consequences [Grant] Canadian Institutes of Health Research. Jun 2010. (\$724,991)
3. Chorney J. Establishment of the Child Health and Perioperative Care Laboratory [Grant] Canadian Foundation for Innovation (CFI). Jan 2012. (\$312,177)
4. Chorney J. Pain in Children at Home Following Major Surgery: New Investigator Award [Grant] CIHR. Jul 2012. (\$300,000)
5. Chorney J, Chambers CT, Finley GA, Latimer M, McGrath PJ. Support for the International Pain Forum on Pediatric Pain [Grant] Canadian Pain Society. Jan 2012. (\$5,000)
6. Chorney J, Chambers CT, Finley GA, Latimer M, McGrath PJ. Support for the International Forum on Pediatric Pain [Grant] IWK. Jan 2012. (\$3,000)
7. Clark AJ, Lynch ME. National Neuropathic Pain Database - Extension [Grant] CPS NeP SIG. Jun 2012. (\$10,000)
8. Finley GA. IASP grant to ChildKind International [Educational Grant] International Association for the Study of Pain (IASP). Jan 2010. (\$50,000)
9. George RB. Enhancing analgesia and anesthesia for women and high-risk pregnancies. [Grant] Canadian Anesthesiologists' Society. Jul 2012. (\$120,000)
10. Henzler D. The influence of transpulmonary pressure on ventilator associated lung injury during partial ventilatory support with bi-level positive airway pressure (BIPAP) [Grant] CDHA Research Fund. Jan 2012. (\$15,000)
11. Hung O. A comparative study of the Glidescope® and King Vision™ video laryngoscopes with and without cervical spine immobilization in cadavers [Industry] Kings System Corporation, Noblesville, TN. Jun 2012. (\$13,248)
12. Kain ZN, Chorney J, Blount RL. Improving pain and anxiety in children undergoing surgery: Changing Healthcare Provider Behavior [Grant] National Institutes of Health. Jan 2012. (\$2,730,034)
13. Latimer M, Rudderham S, Finley GA, Inglis S, Hutt-McLeod D. Understanding pediatric pain in aboriginal communities: Children's project [Grant] Nova Scotia Health Research Foundation. Jan 2011. (\$150,000)
14. Latimer M, Rudderham S, Finley GA, Inglis S, Hutt-McLeod D. Understanding pediatric pain in aboriginal communities: Youth project [Grant] Atlantic Aboriginal Health Research Program. Jan 2011. (\$30,000)
15. Latimer MA, Finley GA, Inglis S, Rudderham SE, Young S. Understanding pain in Aboriginal children: moving forward in Central and Eastern Canada [Grant] CIHR. Sep 2012. (\$22,369)
16. Lehmann C. Iron removal in vivo study (IRIS) [Industry] Mitacs. Jun 2012. (\$119,999)
17. Lehmann, C. Iron Removal Study in Vivo Study (IRIS) [Industry] Chelation Partners. Jun 2012. (\$39,444)
18. Lehmann C. Modulation of the immune response after stroke by manipulation of cannabinoid receptor 2 signaling [Grant] Clinician Scientist Program (CS). May 2012. (\$19,120)
19. Lehmann C, Hall R, Henzler D. Impact of Activated Protein C Therapy on the Intestinal Microcirculation in Clinical Sepsis [Grant] Nova Scotia Health Research Foundation (NSHRF). Oct 2010. (\$93,624)
20. Lynch ME, Clark AJ, Flowerdew G, Moulin D, Toth C. A double blind randomized controlled trial examining the efficacy of methadone in treatment of chronic neuropathic pain [Grant] CIHR NSHRF Dal. Oct 2010. (\$502,633)
21. Lynch ME. Clinical Scholar Program, Matching Funds, Dalhousie Faculty of Medicine [Grant] Dalhousie University. Jan 2012. (\$82,949)
22. Lynch ML, Clark, AJ, et al. Infrastructure Operating Fund (CFI): Canadian Pain Trials Network [Grant] CFI-IOF. Mar 2010. (\$105,580)
23. MacDougall P, Chorney J, Jill Hachette. Enhancing Residents' Research Training Experience: Testing an Applied Research Curriculum [Grant] IWK Health Centre. Dec 2012. (\$15,000)
24. MacDougall P, Andrea Furlan. A systematic review of long-term use of opioids for chronic non-cancer pain [Grant] CIHR. Jan 2012. (\$77,986)
25. MacDougall P. NSCPCCN workshop [Industry] Industry. Feb 2012. (\$10,000)
26. MacDougall P. The relationship between outpatient opioid utilization and surgery of the chest: A retrospective review of the combined opioid anesthesia perioperative (COAP) dataset [Grant] Capital Health. Jan 2012. (\$14,542)
27. McDougall J. The relationship between proteases, protease activated receptors and cytokines in mediating osteoarthritis pain [Grant] Canadian Institutes of Health Research (CIHR). Jan 2012. (\$601,280)
28. McDougall J. Therapeutic potential of lysophosphatidic acid antagonism to control OA pain [Industry] Canadian Arthritis Network/Eli Lilly & Company Industry Research Programme Grant. Jan 2011. (\$200,000)
29. McDougall J. Effect of cannabinoids and opioids in the control of arthritis pain [Grant] Nova Scotia Health Research Foundation (NSHRF). Aug 2012. (\$149,790)

- 30.** McDougall J. Start-Up Funds [Grant] Dalhousie University, Department of Anesthesia. Jan 2012. (\$20,000)
- 31.** McDougall J. Start-Up Funds [Grant] Dalhousie University, Department of Pharmacology. Feb 2012. (\$100,000)
- 32.** McDougall J. Host-parasite interactions alter joint inflammation in mouse model systems [Grant] Canadian Institutes of Health Research (CIHR). Jan 2010. (\$424,248)
- 33.** McGrath PJ, Craig KD, Finley GA, Grunau RE, Johnston C, Stevens BJ, von Baeyer CL. Pain in child health, an innovative, international, trans-disciplinary research training consortium - Phase II [Grant] CIHR. May 2009. (\$1,950,000)
- 34.** McKeen D and George R. REsidual Curarization and its Incidence at Tracheal Extubation (ReCITE) [Industry] Merck Canada. Jan 2012. (\$133,471)
- 35.** Milne AD, Hung O. Development of a LED Based Intubating System for Airway Management [Grant] IRAP. Jan 2012. (\$5,000)
- 36.** Owen M, Olufolabi Y, George RB. Improved anaesthetic, maternal and neonatal healthcare in two major teaching hospitals in Ghana via an educational partnership [Grant] World Federation of Societies of Anaesthesiologists Education Committee. Sep 2012. (\$5,000)
- 37.** Schmidt M. Neuroprotection and Anesthesia [Industry] Abbott Laboratories, Limited. May 2012. (\$30,000)
- 38.** Schmidt M. Commercialization of CO2 removal device for anesthesia circuits [Grant] Atlantic Canada Opportunities Agency. Jun 2012. (\$1,245,617)

Unfunded Projects (12)

- 1.** Dick B, Bardouille T, D'Arcy R, Clark AJ, Lynch ME, McGrath P. Functional mapping of the effects of experimental and chronic pain on working memory networks. [Unfunded] Jun 2012.
- 2.** Milne AD, Brousseau P, Brady James (OMF Resident), Goodday Reginald. Effects of Orthognathic Surgery on Airway Grade [Unfunded] May 2012.

APPENDIX C – 2012 Publications

Note that this list of publications only includes those *peer-reviewed* articles that are currently *published* and *accessible online* (43).

1. Al-Banna NA, Pavlovic D, Grundling M, Zhou J, Kelly M, Whynot S, Hung O, Johnston B, Issekutz TB, Kern H, Cerny V, Lehmann C. Impact of antibiotics on the microcirculation in local and systemic inflammation. *Clin Hemorheol Microvasc*, 2012. PubMed ID: [22975936](#).
2. Chorney J, Tan E, Martin S, Fortier M, Kain ZN. Children's behavior in the Post-Anesthesia Care Unit: The development of the child behavior coding system-PACU (CBCS-P) *Journal of Pediatric Psychology*, 2012; 37(3):338-47. PubMed ID: [22167123](#).
3. Christian Lehmann, Andreas Nowak. The Hawthorne effect – can it be measured and utilized? *British Journal of Anaesthesia*, 2012. [doi: [10.1093/bja/aes352](#)].
4. Christian Lehmann, Juan Zhou, Dragan Pavlovic. Imaging of the intestinal microcirculation. *Applied Cardiopulmonary Pathophysiology*, 2012; 16:264-269.
5. Dai Y, Lei D, Huang Z, Yin Y, Allen Finley G, Zuo Y. Estimation of the minimum effective dose of tramadol for postoperative analgesia in infants using the continual reassessment method. *Front Med*, 2012; 6(3):288-95. PubMed ID: [22886233](#).
6. Fitzcharles MA, McDougall J, Ste-Marie PA, Padjen I. Clinical implications for cannabinoid use in the rheumatic diseases: Potential for help or harm? *Arthritis & Rheumatism*, 2012; 64:2417-25.
7. Gadsden J, Kwofie K, Shastri U. Continuous intercostal versus paravertebral blockade for multiple fractured ribs. *J Trauma Acute Care Surg*, 2012; 73(1):293-4. PubMed ID: [22743402](#).
8. Gagliese L, Katz L, Gibson M, Clark AJ, Lussier D, Gordon A, Salter M. A brief educational intervention about pain and aging for older members of the community and health care workers. *The Journal of Pain*, 2012; 13:849-56. PubMed ID: [22841472](#).
9. Habib AS, George RB, McKeen DM, White WD, Ituk US, Megalla SA, Allen TK. Antiemetics Added to Phenylephrine Infusion During Cesarean Delivery: A Randomized Controlled Trial. *Obstetrics & Gynecology*, 2012. IF 4.73: 2012.
10. Ismaiel NM, Chankalal R, Zhou J, Henzler D. Using remifentanyl in mechanically ventilated rats to provide continuous analgo-sedation. *J Am Assoc Lab Anim Sci*, 2012; 51(1):58-62. PubMed ID: [22330869](#).
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