

# **Pediatric Anesthesia Research Team**

## **Annual Report**

### **January 2009 – December 2009**



Department of Pediatric Anesthesia, British Columbia Children's Hospital

Department of Anesthesiology, Pharmacology & Therapeutics, University  
of British Columbia

Vancouver, British Columbia, Canada





## Overview

Research in the Department of Pediatric Anesthesia at British Columbia Children's Hospital continues to flourish. The full cooperation and participation of all members of the staff and research team has created an environment where new ideas have been met with support and cooperation. Additionally, the tradition of successful transdisciplinary collaboration has continued with other medical departments (surgery, orthopedics, emergency medicine and perinatology), engineering, health informatics and psychology. We have strengthened our links with the Office of Pediatric Surgical Evaluation and Innovation (OPSEI) ([www.opsei.bc.ca](http://www.opsei.bc.ca)) and we are members of the iAct (Acute and Critical Care technologies) cluster at the Child & Family Research Institute (CFRI) ([www.cfri.ca](http://www.cfri.ca)).

This year, the Department has published or has in press, 26 peer reviewed manuscripts and submitted an additional 12 manuscripts for consideration. We have presented 14 abstracts and plan to present 11 more in the coming months.

A number of new grant applications were completed by team members this year as Principal Investigators (PI) and Co-investigators (CI). New grant funding this year totals over \$150,000 with another \$500,000 pending. This funding in addition to our ongoing PI and CI funding have, over the last 5 years, garnered over \$4 million. We have renewed our industry research partnership (with Dräger Medical) and look forward to making our research endeavours a clinical reality.

Our funded positions continue to include two anesthesia Clinical/Research Fellows, an anesthesia Research Fellow, three research assistants, a research manager, a new research engineer, research grant facilitator, post-doctoral Fellows and graduate students in engineering, and a number of undergraduate and summer students.

The Pediatric Anesthesia Research Team (PART) website ([www.part.cfri.ca](http://www.part.cfri.ca)) has proven to be a popular destination. If you do a Google search for "pediatric anesthesia research", the PART site is at the top of the list. The website provides information for patients on our current research projects and an introduction to the research team and investigators. The website continues to evolve and is frequently updated.

Our multi-disciplinary research collaboration with the UBC Electrical and Computer Engineering for Medicine (ECEM) group has grown in funding and productivity. ECEM had a number of their innovative devices showcased at an award winning Scientific & Educational Exhibit at the American Society of Anesthesiologists meeting in New Orleans and launched a new website (<http://ecem.ece.ubc.ca>).





## New Faces

The Pediatric Anesthesia Research Team (PART) welcomed new faces in 2009. Erin Cooke and Kate Hunc joined us as Research Assistants in January. Erin's science background and Kate's studies in the social sciences have helped them to integrate easily and quickly into the PART. Dorothy Myers also joined the team in July as our third Research Assistant. Dorothy recently completed her graduate studies in the sciences and relocated to Vancouver. They have each taken on their respective projects with enthusiasm to aid the investigators in all aspects of the research.

In February, we recruited our first full-time Research Engineer; Chris Petersen. Chris' education, academic achievements and extensive experience have made him an invaluable addition to the team. Having a full-time engineer on staff has led to many new and exciting developments at a rapid pace.

The summer of 2009, Eugene Choo and Jeremy Daniels returned to continue work on their respective projects. Both of these medical students have been productive student members and continue to work with us throughout the year. We always look forward to working with and fostering the interest of future student researchers.

Dr. John Chandler stayed with our team for a second year, beginning a Clinical Fellowship while continuing with his research projects on pulse pressure variation in the plethysmograph. We are very fortunate to get this continuation of a Fellow for two consecutive years. Dr. Katherine Brand also began her Clinical Fellowship for the 2009-10 year. She has spearheaded a new project and submitted a Canadian Anesthesiologist's Society grant on the pharmacogenetics of morphine.

Drs. Anton Chau and Francisco Ng continue their work with us through the UBC anesthesia residency program. Anton has worked with our team for a number of years and continues to pursue his academic research interests. Francisco's interest and background in biomedical engineering will aid his research into heart rate variability.

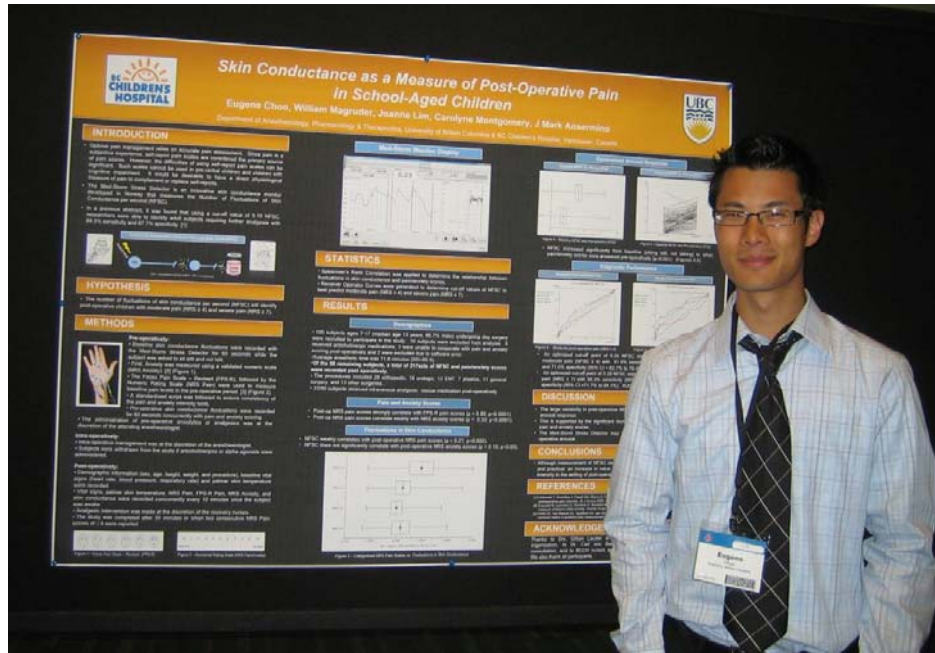
The PART also welcomed new engineering graduate student Sara Khosravi, and post-doctoral Fellows; Walter Karlen and Jin-Oh Hahn. The PART's close connection with the UBC Electrical & Computer in Engineering (ECEM) group provides us with a steady stream of exceptional engineers.

The plans for 2010 include three incoming summer students: Serena Shum – Queen's medical student, Eric Moulton – Queen's engineering student, and Srinivas Raman – UBC medical student. Frank Kloprogge, a pharmacology graduate student from the Netherlands, will join us for six months to help with anesthetic drug pharmacokinetic studies. Dr. Amelia Pickard, an anaesthesiologist from the UK, joins us as a part-time Research Fellow for a year. In the Fall, we will welcome Matthias Gorges from Germany via the University of Utah as another engineering post-doctoral Fellow.





This year, we also said good luck and farewell to Disha Mehta (Research Assistant) and Dina Shafey (Grant Facilitator). Disha began medical school at UBC but continues to work with our team finishing up projects. Dina's hard work for the last year has been a tremendous aid for all our investigators and team. She continues to pursue her Masters of Business Administration while currently working for the Fraser Health Authority.



*Eugene Choo at the 2009 Canadian Anesthesiologists' Society Annual Meeting (Vancouver, BC).*

## Collaborations & Partnerships

Dr. Norbert Froese and the cardiac surgeons are more than halfway completed their investigation of coagulation after cardiac surgery. Dr. Simon Whyte and a team of nephrology investigators have begun a study investigating Vitamin D deficiency in children. Simon also completed a collaborative study with cardiology studying the effects of two drugs (droperidol & ondansetron) on the heart. The Bedside Observer (Dr. Mark Ansermino) project on the surgical ward 3R was completed in November. This was a monumental data collection task with over 500 subjects. We hope that this innovative reporting system will continue to be supported by the hospital administration to engage families with adverse event reporting. We have collaborated with other Anesthesia faculty at UBC, specifically Dr. Stephan Schwarz and Dr. Peter Choi, as well as many other faculty and residents who have participated in studies.

As we enter the 8<sup>th</sup> year of close collaboration with the Department of Electrical & Computer Engineering to build safer clinical monitoring systems, we have been further supported by psychology, computer science, and interactive arts and technology. Dr. Mark Ansermino's collaboration with the Canadian Neonatal Network (including





membership on the Informatics Research Committee), Canadian Perinatal Network, and The Pediatric Emergency Research Consortium has continued. We hope to establish an anesthesia research network as a component of the Perioperative Network for BC (PAN-BC).

In industry related partnerships, we continue our work with Dräger Medical. We are in talks with multiple other industry collaborators to sign research agreements in the upcoming months. We continue to work with a number of other monitoring companies who have shown interest in collaboration to further develop software solutions to enhance clinical monitoring.



*Mark Ansermino and ECEM collaborator, Guy Dumont, in the operating room during the filming of the "Tactile Belt" video in preparation for the 2009 American Society of Anesthesiologists Annual Meeting.  
Bottom right: Close-up of the Tactile Belt*

## **2009 American Society of Anesthesiologists Annual Meeting**

As part of a Canadian Institutes of Health Research (CIHR) Knowledge Translation grant, members of PART and ECEM travelled to the American Society of Anesthesiologists' (ASA – October 2009) annual meeting in New Orleans, LA. The ASA meeting is arguably the largest gathering of anesthesiologists worldwide with an attendance of over 15,000 delegates. Our goal was to demonstrate some of our current engineering research projects, namely components of the Intelligent Anesthesia





Navigator (IAN). We created a Scientific & Educational Exhibit which included live demonstrations of iKnow, iAssist and the Tactile Belt. Our hard work and preparation paid off, as our exhibit was well received and garnered the 2<sup>nd</sup> prize award over 60 other exhibits. This event also allowed us to network with industry and academic collaborators and because of this, we are now working on numerous formal research agreements.



*Members of PART/ECHEM at the 2009 American Society of Anesthesiologists Annual Meeting receiving the 2<sup>nd</sup> place award. (L to R: Chris Brouse, Joanne Lim, Dustin Dunsmuir, ASA committee member 1, ASA committee member 2, Mark Ansermino, Walter Karlen, Chris Petersen, Guy Dumont)*

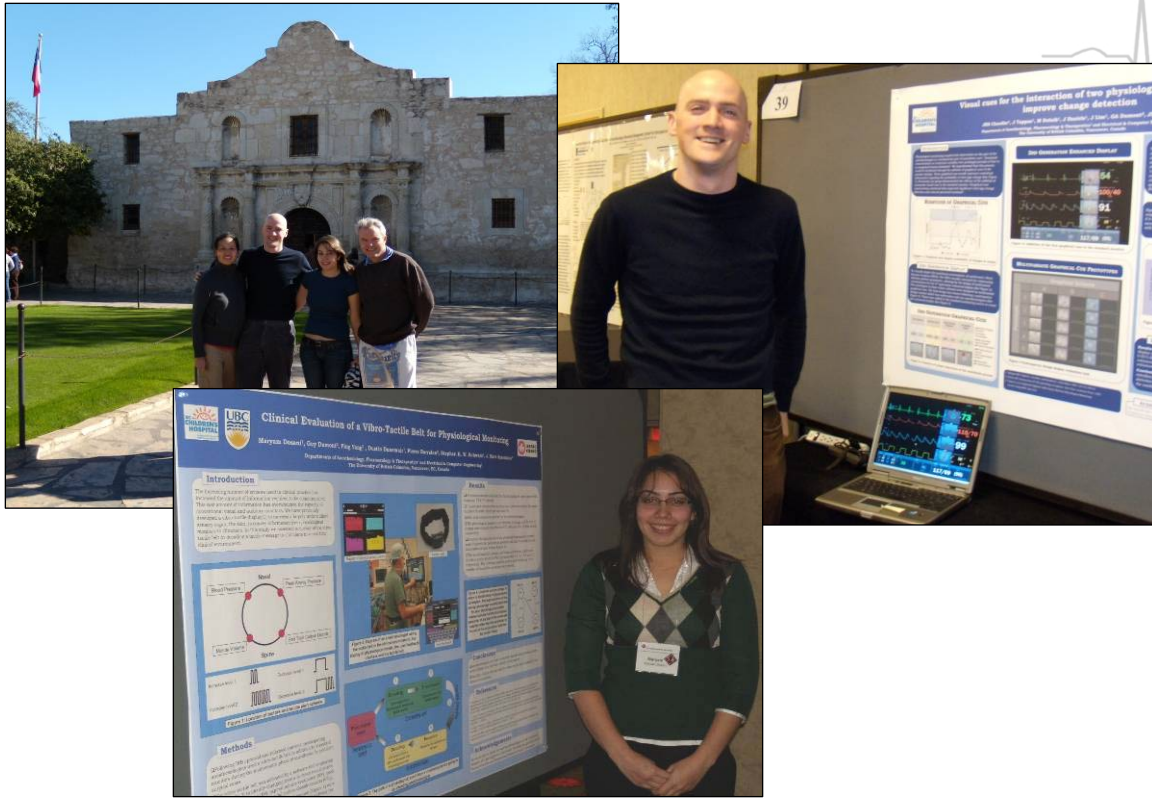
## Awards & Successes

Continuing our success within the summer student program, Jeremy Daniels received the Best Poster award for his poster at the Child & Family Research Institute's Summer Research Program Poster Day.

Our team's success is further highlighted by the new grants received this year, including funding from the Canadian Institutes of Health Research, the Canadian Anesthesiologists' Society and the BC Children's Hospital Telethon awards. This funding will lay the foundation for long-term research programs within the department.

As mentioned above, the ECHEM research group garnered the 2<sup>nd</sup> place award in the Scientific & Educational Exhibit competition at the 2009 American Society of Anesthesiologists Annual Meeting.



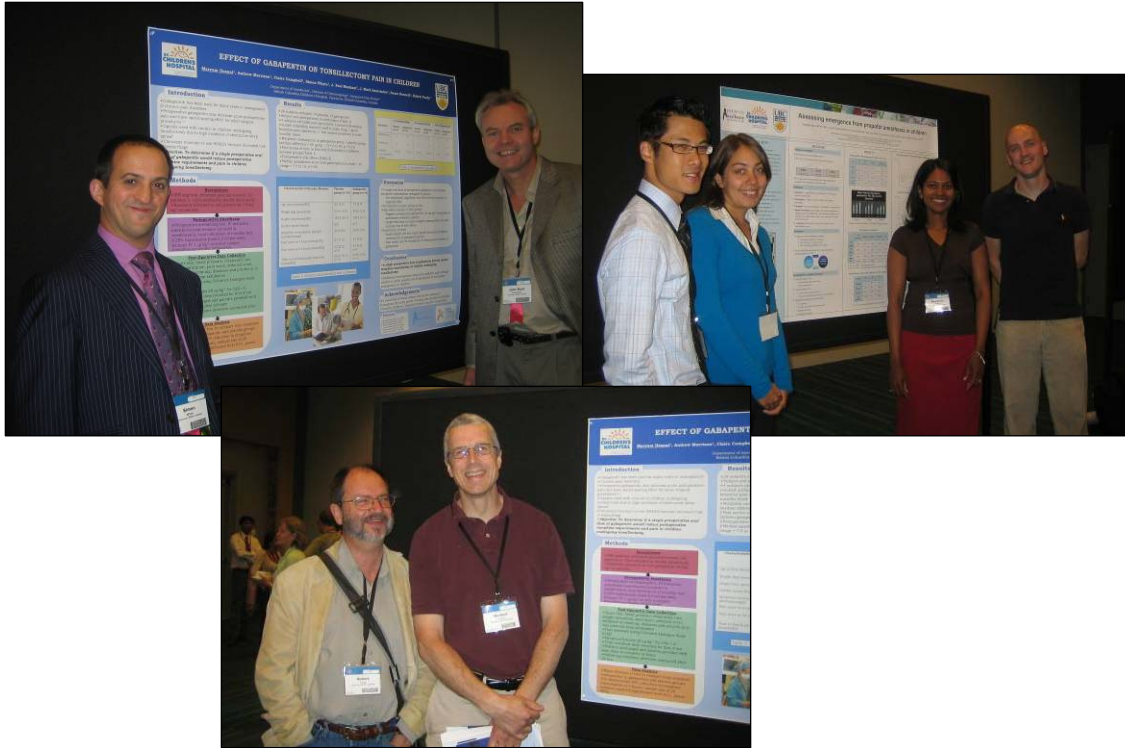


*PART at the Society for Technology in Anesthesia Annual Meeting (January 2009) in San Antonio, TX. Clockwise from top left: Group picture at The Alamo (L to R: Joanne Lim, John Chandler, Maryam Dosani, Mark Ansermino); John Chandler; Maryam Dosani.*

## Research Environment

Biweekly PART research meetings take place on the first and third Tuesday of each month. The Wednesday morning departmental research rounds are well attended and useful for review of new study protocols, recruiting clinician subjects, and practicing presentations. Department members can voice concerns or questions that may arise from any research project.

We have begun to recruit subjects in areas other than the Surgical Daycare Unit with the goal of increasing our recruitment rates. We will be working with departments such as ophthalmology, dentistry, and the endoscopy clinic. In conjunction with the Pre Admission Clinic (PAC), we have also been able to contact potential subjects earlier to better inform them of research studies. The PART website is also linked from the main hospital website, so patients are able to see our current research studies.



2009 Canadian Anesthesiologists' Society Annual Meeting (June 2009, Vancouver, BC). Clockwise from top left: Simon Whyte, Mark Ansermino; Eugene Choo, Maryam Dosani, Kawshala Peiris, John Chandler; Bob Purdy, Norbert Froese.

## New Salary Awards

Recipient	Supervisor	Award
Chris Brouse	Mark Ansermino, Guy Dumont	Michael Smith Foundation for Health Research Trainee Award Senior Graduate Studentship – \$67,500 over three years
Jeremy Daniels	Eleanor Reimer	2009 UBC Summer Student Research Program Award – \$3,200
Eugene Choo	Carolyne Montgomery, Mark Ansermino	2009 UBC Summer Student Research Program Award – \$3,200

## Current Salary Awards

Mark Ansermino	Michael Smith Foundation for Health Research Scholar Award (2007-2012)
----------------	--







PART lunch. Clockwise from bottom left: Kate Hunc, Joanne Lim, Maryam Dosani, John Chandler, Bill Magruder, Mark Ansermino, Chris Petersen, Disha Mehta, Erin Cooke, Dina Shafey, Eugene Choo.

## Publications from 2009 (clinicians are in bold; trainees and research staff are underlined)

<p><u>McCormack J</u>, <u>Mehta D</u>, <u>Peiris K</u>, Dumont G, <u>Fung P</u>, <u>Lim J</u>, <b>Ansermino JM</b>. The effect of a target controlled infusion of propofol on predictability of recovery from anesthesia in children. <i>Paediatr Anaesth</i>. 2010 Jan; 20(1):56-2. Epub 2009 Nov 23.</p>
<p><u>Hume-Smith H</u>, <u>McCormack J</u>, <b>Montgomery C</b>, Brant R, <b>Malherbe S</b>, <u>Mehta D</u>, <b>Ansermino JM</b>. The effect of age on the dose of remifentanyl for tracheal intubation in infants and children. <i>Paediatr Anaesth</i>. 2010 Jan; 20(1):19-27 Epub 2009 Nov 23.</p>
<p><u>Ford S</u>, <u>Dosani M</u>, Robinson AJ, <u>Campbell GC</u>, <b>Ansermino JM</b>, <u>Lim J</u>, <b>Lauder GR</b>. Defining the reliability of sonoanatomy identification by novices in ultrasound-guided pediatric ilioinguinal and iliohypogastric nerve blockade. <i>Anesth Analg</i>. 2009 Dec;109(6):1793-8.</p>
<p><u>Daniels JP</u>, <b>Ansermino JM</b>. Introduction of new monitors into clinical anesthesia. <i>Curr Opin Anaesthesiol</i>. 2009 Dec; 22(6):775-81. Epub 2009 Sep 10.</p>
<p><b>Froese NR</b>, Sett SS, Mock T, Krahn GE. Does troponin-I measurement predict low cardiac output syndrome following cardiac surgery in children? <i>Crit Care Resusc</i>. 2009 Jun;11(2):116-21.</p>
<p>Skippen P, Sanatani S, <b>Froese N</b>, Gow RM. Pacemaker therapy of postoperative arrhythmias after pediatric cardiac surgery. <i>Pediatr Crit Care Med</i>. 2010 Jan; 11(1):133-8. Epub 2009 Jul 1.</p>
<p>Levin R, Kisson N, <b>Froese N</b>. Fiberoptic and videoscopic indirect intubation techniques for intubation in children. <i>Pediatr Emerg Care</i>. 2009 Jul;25(7):479; quiz 480-2. Review.</p>
<p>Skippen PW, Sanatani S, Gow RM, <b>Froese N</b>. Diagnosis of postoperative arrhythmias following paediatric cardiac surgery. <i>Anaesth Intensive Care</i>. 2009 Sep;37(5):705-19.</p>
<p><u>Yang P</u>, Dumont GA, <b>Ansermino JM</b>. A generalized hidden Markov model based online pattern recognition algorithm for intraoperative vital sign monitoring. <i>Int J Adapt Control Signal Process</i>, 2009; 23(5):435-454.</p>
<p><u>Tappan JM</u>, <u>Daniels J</u>, <u>Slavin B</u>, <u>Lim J</u>, Brant R, <b>Ansermino JM</b>. Visual cueing with context relevant physiological monitoring for overcoming change blindness. <i>J Clin Monit Comput</i>, 2009; 23(4): 223-32.</p>





Ensom MHH, Decarie D, Leung K, <b>Montgomery C</b> . Stability of Hydromorphone–Ketamine Solutions in Glass Bottles, Plastic Syringes, and IV Bags for Pediatric Use. <i>Can J Hosp Pharm</i> , 2009; 62(2): 112–118.
<u>Barralon P</u> , Dumont GA, Schwarz SKW, <u>Magruder W</u> , <b>Ansermino JM</b> . Comparison between a dorsal and a belt tactile display prototype for decoding physiological events in the operating room. <i>J Clin Monit Comput</i> , 2009; 23:137–147.
<u>Massey KA</u> , <b>Ansermino JM</b> , von Dadelszen P, Morris TJ, Liston RM, Magee LA. What is SNOMED CT® and why should the ISSHP care? <i>Hypertens Pregnancy</i> , 2009; 28(1): 119-12
<u>Massey KA</u> , Magee L, Dale, S, Claydon J, Morris TJ, von Dadelszen P, Liston RM, <b>Ansermino JM</b> . A Current Landscape of Provincial Perinatal Data Collection in Canada. <i>J Obstet Gynaecol Can</i> 2009; 31(3):236–246.
<b>Whyte SD</b> . Perioperative fluid and electrolyte balance in children. <i>Anaesthesia &amp; Intensive Care Medicine</i> , 2009; 10 (2): 93-7.
Singh P and <b>Whyte SD</b> . Anaesthesia for elective ear, nose and throat surgery in children. <i>Anaesthesia &amp; Intensive Care Medicine</i> 2009; 10 (4): 186-90.
<u>Dosani M</u> , <u>Lim J</u> , <u>Yang P</u> , <u>Brouse C</u> , <u>Daniels J</u> , <u>Dumont GA</u> , <b>Ansermino JM</b> . Clinical evaluation of algorithms for context-sensitive physiological monitoring in children. <i>Br J Anaesth</i> , 2009; 102(5): 686-91.
<u>Yang P</u> , <u>Dumont GA</u> , <b>Ansermino JM</b> . Sensor fusion using a hybrid median filter for artifact removal in intraoperative heart rate monitoring. <i>J Clin Monit Comput</i> , 2009; 23(2): 75-83.
<b>Ansermino JM</b> , <u>Daniels J</u> , <u>Hewgill R</u> , <u>Yang P</u> , <u>Brouse C</u> , <u>Dumont G</u> , <u>Bowering J</u> . An evaluation of a novel software tool for detecting changes in physiological monitoring. <i>Anesth Analg</i> 2009; 108(3): 873-880.
Bhatt M, Kennedy R, Osmond M, Krauss B, McAllister J, <b>Ansermino JM</b> , Evered L, Roback M. Consensus-based recommendations for standardizing terminology and reporting adverse events for emergency department procedural sedation and analgesia in children. <i>Ann Emerg Med</i> , 2009; 53 (4): 426-435.
<b>Ansermino JM</b> , <u>Magruder W</u> , <u>Dosani M</u> . Spontaneous respiration during intravenous anesthesia in children. <i>Curr Opin Anaesthesiol</i> , 2009; 22:383–387.
Dumont GA, Martinez A, <b>Ansermino JM</b> . Robust control of depth of anesthesia. <i>Int J Adapt Control Signal Process</i> , 2009; 23(5): 435-454.
<b>Ansermino JM</b> . The future of intelligent monitoring. <i>International Hospital Equipment and Solutions</i> , 2009; 35(2): 24-25.
<b>Froese NR</b> , Sett SS, Mock T, Krahn GE. Does troponin-I measurement predict low cardiac output syndrome following cardiac surgery in children? <i>Crit Care Resusc</i> . 2009; 11(2):116-21.
<u>Barralon P</u> , <u>Ng G</u> , <u>Dumont G</u> , <u>Schwarz S</u> , <b>Ansermino JM</b> . Design of rhythm-based vibrotactile stimuli around the waist: proposition of two encoding parameters. <i>IEEE Transactions on Systems, Man, and Cybernetics Part A: Systems and Humans</i> , 2009; 39(5): 1062-1073.
<u>Trudeau JD</u> , <u>Lamb E</u> , <u>Gowans M</u> , <b>Lauder G</b> . Quality of Pain Control in Pediatric Patients in the Immediate Postoperative Period: A Prospective Audit at British Columbia's Children's Hospital. <i>AORN Journal</i> 2009; 90 (4): 531-42.

## Submitted / Accepted Publications

<u>Peiris K</u> , <u>Traynor M</u> , <b>Whyte, S</b> . Intubation via the intubating laryngeal airway in two pediatric patients with predicted difficult airways. <i>Pediatric Anesthesia</i> , accepted November 2009. Published 2010 Feb;20(2):202-4.
<u>Mehta D</u> , <u>Sanatani S</u> , <b>Whyte SD</b> . The effects of droperidol and ondansetron on dispersion of myocardial repolarization in children. Submitted to <i>Pediatric Anesthesia</i> January 2010.





<p><u>Dosani M</u>, <u>Campbell C</u>, <b>Morrison A</b>, <b>Whyte S</b>, Moxham JP, <u>Lim J</u>, <b>Ansermino JM</b>, <b>Purdy R</b>. The effect of gabapentin on postoperative pain following tonsillectomy in children: A randomized, double-blinded, placebo-controlled trial. Submitted to <i>Pediatric Anesthesia</i> January 2010.</p>
<p><u>King A</u>, <u>Daniels J</u>, <u>Lim J</u>, Cochrane DD, Taylor A, <b>Ansermino JM</b>. Time to listen: a review of methods to solicit patient reports of adverse events. Accepted to <i>Quality and Safety in Healthcare</i>, March 2009.</p>
<p><u>Amari E</u>, <u>Vandebeek C</u>, <b>Montgomery CJ</b>, Skarsgard E, Warnock F, <b>Ansermino JM</b>. Comparison of web-based and telephone questionnaires for assessing pediatric day surgery. <i>International Journal of Healthcare Quality Assurance</i>, to be published February 2010.</p>
<p><b>Ansermino JM</b>, <u>Lim J</u>, Dumont GA, <u>Brouse C</u>, <u>Yang P</u>, <u>Dunsmuir D</u>, <u>Daniels J</u>, Schwarz SKW. Clinical decision support in physiological monitoring. <i>International Journal of Biomedical Engineering and Technology</i>, accepted September 2008</p>
<p><b>Malherbe S</b>, <u>Chau A</u>, <b>Whyte S</b>, <b>Ansermino JM</b>. Total intravenous anesthesia and spontaneous respiration for airway endoscopy in children – a review of 220 cases. Submitted to <i>Journal of Clinical Anesthesia</i>, November 2008</p>
<p><u>Yang P</u>, Dumont GA, <b>Ansermino JM</b>. A Cusum-based multilevel alerting method for physiological monitoring. Submitted to <i>Transactions on Information Technology in BioMedicine</i>, March 2009.</p>
<p><b>Malherbe S</b>, <b>Whyte S</b>, Singh P, <u>Amari E</u>, <u>King A</u>, <b>Ansermino JM</b>. Total intravenous anesthesia and spontaneous respiration for airway endoscopy in children – a prospective evaluation. Submitted to <i>Pediatric Anesthesia</i>, June 2009.</p>
<p><u>Ford S</u>, Birmingham E, <u>King A</u>, <u>Lim J</u>, <b>Ansermino JM</b>. At-a-glance monitoring: Covert observations of anesthesiologists in the operating room. Accepted to <i>Anesthesia and Analgesia</i> January 2010.</p>
<p><b>Ansermino JM</b>, <u>Vandebeek C</u>, <u>Myers D</u>. An allometric model to estimate fluid requirements in children following burn injury. Accepted to <i>Pediatric Anesthesia</i> December 2009.</p>
<p><u>Choo E</u>, <u>Magruder W</u>, <b>Montgomery C</b>, <u>Lim J</u>, Brant R, <b>Ansermino JM</b>. Skin Conductance Fluctuations Correlate Poorly with Postoperative Self-Report Pain Measures in School-Aged Children. Accepted to <i>Anesthesiology</i>, January 2010.</p>



*iAssist in the operating room. L to R: Stephan Malherbe; Stephan Malherbe, Dorothy Myers.*





## Abstracts

Title	Authors	Presented at
Airway surgery with TIVA and spontaneous ventilation in children.	<b>Ansermino JM, Whyte S, Amari E, King A, Malherbe S</b>	American Society of Anesthesiologists' Annual Meeting; New Orleans, USA, Oct 17-21, 2009.
Safe administration of propofol in children	<u>Dosani M, McCormack J,</u> <b>Reimer E, Brant R, Ansermino JM</b>	American Society of Anesthesiologists' Annual Meeting; New Orleans, USA, Oct 17-21, 2009.
Safe administration of propofol in children	<u>Dosani M, McCormack J,</u> <b>Reimer E, Brant R, Ansermino JM</b>	International Society of Anaesthetic Pharmacology 18 <sup>th</sup> Annual Meeting; New Orleans, USA, Oct 16, 2009
The Bedside Observer: Using families to accelerate patient safety.	<u>King A, Daniels D,</u> <u>Lim J, Ansermino JM.</u>	4th International Conference on Patient-and-Family-Centered Care: Partnerships for Enhancing Quality and Safety, Philadelphia, PA, August 17-19, 2009
Skin conductance correlates weakly with pain in children.	<u>Choo E, Magruder W,</u> <b>Montgomery CJ, Ansermino JM.</b>	Canadian Anesthesiologists' Society 2009 Annual Meeting, Vancouver, Canada, June 26-30, 2009.
Physiological visual cues improve change detection.	<u>Chandler JRS,</u> <u>Tappan J, Dolnik M,</u> <u>Lim J, Daniels J,</u> Dumont GA, <b>Ansermino JM.</b>	Canadian Anesthesiologists' Society 2009 Annual Meeting, Vancouver, Canada, June 26-30, 2009.
Assessing emergence from propofol anesthesia in children.	<u>Peiris K,</u> <u>McCormack J,</u> <u>Mehta D, Fung P,</u> Dumont GA, <b>Ansermino JM.</b>	Canadian Anesthesiologists' Society 2009 Annual Meeting, Vancouver, Canada, June 26-30, 2009.
Effect of gabapentin on tonsillectomy pain in children.	<u>Dosani M, Morrison A,</u> <u>Campbell GC,</u> <b>Whyte SD, Moxham JP, Ansermino JM, Purdy R.</b>	Canadian Anesthesiologists' Society 2009 Annual Meeting, Vancouver, Canada, June 26-30, 2009.





Title	Authors	Presented at
Effect of gabapentin on tonsillectomy pain in children.	<u>Dosani M</u> , <b>Morrison A</b> , <u>Campbell GC</u> , <b>Whyte SD</b> , Moxham JP, <b>Ansermino JM</b> , <b>Purdy R</b> .	8 <sup>th</sup> International Symposium on Pediatric Pain, Acapulco, Mexico, June 8-11, 2009. (Conference cancelled)
Predicting emergence from anesthesia using a propofol target controlled infusing of propofol in children.	<u>McCormack J</u> , <u>Mehta D</u> , <u>Peiris K</u> , <u>Fung P</u> , Dumont GA, <b>Ansermino JM</b> .	World Society of Intravenous Anaesthesia; Berlin, Germany, April 23-25, 2009.
Total intravenous anesthesia and spontaneous respiration for airway endoscopy in children – a prospective study in neonates, infants and children.	<b>Malherbe S</b> , Singh P, <b>Whyte SD</b> , <b>Ansermino JM</b> .	Association of Paediatric Anaesthetists of Great Britain and Ireland Annual Meeting, Brighton, UK, March 12-13, 2009.
Does the mode of post-operative opioid infusion affect patient outcome after surgical correction of Adolescent Idiopathic Scoliosis?	<u>Lennox G</u> , <b>Lauder G</b> , <u>Court C</u> , <u>Dosani M</u> , Blewett C, Perdios A, Reilly C.	Western Society for Pediatric Research Meeting; 2009 January 29-31; Carmel, California
Visual cues for the interaction of two physiological parameters improve change detection.	<u>Chandler JRS</u> , <u>Tappan J</u> , <u>Dolnik M</u> , <u>Daniels J</u> , <u>Lim J</u> , Dumont GA, <b>Ansermino JM</b> .	Society for Technology in Anesthesia 2009 Annual Meeting, San Antonio, USA, January 14-17, 2009
Clinical evaluation of a vibro-tactile belt for physiological monitoring	<u>Dosani M</u> , Dumont GA, <u>Yang P</u> , <u>Dunsmuir D</u> , <u>Barralon P</u> , Schwarz SKW, <b>Ansermino JM</b> .	Society for Technology in Anesthesia 2009 Annual Meeting, San Antonio, USA, January 14-17, 2009

Title	Authors	To be presented at
CapnoBase: Signal database and tools to collect, share and annotate respiratory signals	<u>Karlen W</u> , Turner M, <u>Cooke E</u> , Dumont G, <b>Ansermino JM</b> .	Society for Technology in Anesthesia 2010 Annual Meeting, West Palm Beach, FL USA, January 13-16, 2010
Closed-loop compartmental drug concentration estimation	<u>Hahn J</u> , Dumont G, <b>Ansermino JM</b> .	Society for Technology in Anesthesia 2010 Annual Meeting, West Palm Beach, FL USA, January 13-16, 2010
Propofol pharmacodynamics in children using state entropy	<u>Khosravi S</u> , <u>Hahn J</u> , Dumont G, <b>Ansermino JM</b> .	Society for Technology in Anesthesia 2010 Annual Meeting, West Palm Beach, FL USA, January 13-16, 2010





Title	Authors	To be presented at
A passive network tap for wireless display of physiological data in multi-bed environments	<u>Petersen C</u> , <b>Ansermino JM.</b>	Society for Technology in Anesthesia 2010 Annual Meeting, West Palm Beach, FL USA, January 13-16, 2010
Are respiratory induced changes in pulse pressure and pulse oximeter plethysmograph wave amplitude related in ventilated children?	<u>Chandler JRS</u> , <u>Cooke E</u> , <u>Petersen C</u> , <b>Froese N</b> , <u>Lim J</u> , <b>Ansermino JM.</b>	International Anesthesia Research Society Annual Meeting; Honolulu, HI, USA, March 20-23, 2010.
A web-based tool for family-initiated adverse event reporting: An end-user investigation of usability and reliability	<u>Daniels JP</u> , <u>King A</u> , <u>Hunc K</u> , <u>Cochrane DD</u> , <u>Taylor A</u> , <u>Heathcote S</u> , <u>Lim J</u> , <b>Ansermino JM.</b>	Canada's Forum on Patient Safety and Quality Improvement, Toronto, ON, Canada, April 12-14, 2010
The effectiveness of standard pediatric daycare surgery discharge communication: A quality improvement gap analysis	<u>Daniels JP</u> , <u>Elston BM</u> , <u>Balka E</u> , <u>Chow ES</u> , <u>Lim J</u> , <b>Reimer EJ</b> , <b>Ansermino JM.</b>	Canada's Forum on Patient Safety and Quality Improvement, Toronto, ON, Canada, April 12-14, 2010
Airway surgery with TIVA and spontaneous ventilation in children	<b>Ansermino JM</b> , <u>Whyte S</u> , <u>Amari E</u> , <u>King A</u> , <b>Malherbe S.</b>	Submitted to Canadian Anesthesiologists' Society 2010 Annual Meeting, Montreal, QC, Canada, June 25-29, 2010
Safe administration of propofol in children	<u>Dosani M</u> , <u>McCormack J</u> , <b>Reimer E</b> , <u>Brant R</u> , <u>Dumont G</u> , <u>Lim J</u> , <b>Ansermino JM.</b>	Submitted to Canadian Anesthesiologists' Society 2010 Annual Meeting, Montreal, QC, Canada, June 25-29, 2010
Arterial & oximeter wave relationship in ventilated children	<u>Chandler JRS</u> , <u>Cooke E</u> , <u>Petersen C</u> , <b>Froese N</b> , <u>Lim J</u> , <b>Ansermino JM.</b>	Submitted to Canadian Anesthesiologists' Society 2010 Annual Meeting, Montreal, QC, Canada, June 25-29, 2010
Evaluation of the intubating laryngeal airway in children	<u>Cooke E</u> , <b>Whyte S</b> , <b>Malherbe S</b> , <b>Morrison A</b> , <u>Lim J</u> , <u>Mehta D.</u>	Submitted to Canadian Anesthesiologists' Society 2010 Annual Meeting, Montreal, QC, Canada, June 25-29, 2010

## Current Projects

	Project Title	PI(s)	CI(s)	Description
1	Relationship between respiratory induced variation in pulse oximetry plethysmogram and arterial pulse pressure waveforms in ventilated children, an observational study	Mark Ansermino	John Chandler, Horacio Osivich, David Wensley	Our main objective is to investigate whether the respiratory induced changes in arterial and plethysmograph waveforms are related in children.





	Project Title	PI(s)	CI(s)	Description
2	Emergence delirium (ED) in children: total intravenous anesthesia with propofol-remifentanyl versus inhalational sevoflurane anesthesia	Carolyne Montgomery	John Chandler, Kate Hunc, Dorothy Myers	This study will compare the recovery profile of sevoflurane with that of propofol-remifentanyl and their associated incidence of ED.
3	Cardiac preload indicators in children, evaluation of invasive and non-invasive markers of fluid responsiveness	Norbert Froese	Martin Hosking, Mark Ansermino, John Chandler, Erin Cooke, Manraj Heran	To examine the ability of dynamic preload indicators: PPV, PlethV and PVI to predict the cardiac output response to fluid bolus administration in anesthetised, ventilated children.
4	Evaluation of the intubating laryngeal airway in children	Simon Whyte	Erin Cooke	The aim is to rigorously evaluate the Air-Q <sup>®</sup> intubating laryngeal airway (Air-Q <sup>®</sup> ILA). This LMA has features that encompass the characteristics of the ideal LMA.
5	Skin conductance fluctuations and heart rate variability as measures of intraoperative nociception in children	Mark Ansermino	Chris Brouse, Joanne Lim, Dorothy Myers	To determine a threshold in the number of skin conductance fluctuations (NFSC) that will identify children who may require rescue anesthetic intervention.
6	Real-time assessment of the Intelligent Anesthesia Navigator	Mark Ansermino	Guy Dumont, Chris Brouse, Dustin Dunsmuir, Joanne Lim, Dorothy Myers	The overall purpose of this study is to contribute to the development of a decision support system for clinical anesthesiologists that integrates the steady stream of data produced by patient monitoring systems. The objective in this study is to conduct a real time assessment of the Intelligent Anesthesia Navigator (IAN).
7	iKnow: A knowledge authoring tool for clinical decision support during anesthesia	Mark Ansermino	Dustin Dunsmuir, Jeremy Daniels, Chris Brouse, Joanne Lim	iKnow is a software application that is being developed to allow expert clinicians to develop and collaborate on a knowledge base without requiring an expert programmer.





	Project Title	PI(s)	CI(s)	Description
8	iControl: Interface Usability Evaluation	Mark Ansermino	Guy Dumont, Chris Petersen, Jin-Oh Hahn, Joanne Lim, Simon Whyte	To evaluate the usability of the interface of a control prototype (iControl) in the hands of expert anesthesiologists to determine areas of improvement for the interface.
9	Development and evaluation of a wireless pulse oximeter on a cell phone (iPleth), for safe perioperative care in Uganda	Mark Ansermino	Erik Skarsgard, Geoffrey Blair, Chris Petersen, Joanne Lim, Guy Dumont, Sidney Fels, Walter Karlen, Srinivas Raman	To evaluate the usability of the interface of a wireless pulse oximeter prototype (iPleth) in the hands of expert anesthesiologists and non-anesthesiologists to determine areas for improvement for the interface.
10	Storage bank of monitored physiological clinical events	Mark Ansermino	Guy Dumont, Erin Cooke	To collect a sample of significant clinical events to evaluate the performance of the physiological monitoring systems that detect them.
11	Comparison of an automated calculation of capillary refill time with a standard clinical measurement – a pilot study	Mark Ansermino	Amelia Pickard, Chris Petersen	To compare a standard clinical measurement of CRT with an automated, calculation of CRT.
12	Pharmacokinetics of oral morphine and pharmacogenomics of CYP2D6 and UGT2B7, in an urban pediatric population (2 – 6 years of age) presenting for elective surgery	Carolyne Montgomery	Gideon Koren, Michael Rieder, Katharine Brand, Gillian Lauder, Bruce Carleton	To determine the pharmacokinetic properties of morphine, following the oral administration of one of three recommended doses, in a cohort of 2 – 6 year old, healthy children undergoing elective surgery under general anesthesia.
13	Naloxone for the treatment of opioid-induced pruritus: A double-blind, prospective, randomized, controlled study	Gillian Lauder	Mark Ansermino, Roxane Carr, Joanne Lim, Colleen Court, Boris Kuzeljevic, Kate Hunc	To determine the efficacy of naloxone simultaneously administered with PCA basal and bolus morphine in the treatment of opioid-induced pruritus in a tertiary care pediatric patient population.







	Project Title	PI(s)	CI(s)	Description
14	eVENT: an expert system for detecting ventilatory events during anesthesia	Mark Ansermino	Guy Dumont, Nicola Shaw, Peter Choi, Sidney Fels	This study has several specific goals. Primarily, through structured interviews with anesthesiologists, we will generate specific rules for identifying 3 dangerous ventilatory events. Secondly, we hope to reach a consensus among a panel of expert anesthesiologists over the rules for identifying the three critical events using the Delphi method.
15	Informatics: Enhancing the clinical experience?	Nicola Shaw	Mark Ansermino	To investigate the impact of using an electronic health record in primary care.
16	Quality of care ICE (QC-ICE) team in neonatal-perinatal care	Shoo Lee	Mark Ansermino	To establish an interdisciplinary team of researchers to set up two new research networks Canadian Perinatal Network (CPN) and Canadian Pediatric Surgery Network (CAPSNet) for knowledge translation to improve quality of neonatal care nationally and internationally.
17	A quality assurance audit of pain management after discharge from day surgery	Gillian Lauder	Mark Ansermino, Joanne Lim, Michelle Gibson, Eugene Choo, Serena Shum	To determine which pharmacological agents and at what dose are prescribed for analgesia on discharge from pediatric day case surgery.





	<b>Project Title</b>	<b>PI(s)</b>	<b>CI(s)</b>	<b>Description</b>
18	Root cause analysis of critical incidents in pediatric patients receiving parenteral opioid infusions in the acute care setting at BC Children's Hospital	Gillian Lauder	Mark Ansermino, Kate Hunc, Kevin Yee	To conduct a retrospective chart review of critical incidents related to morphine and hydromorphone infusions at BCCH and employ a modified root cause analysis (RCA) methodology to evaluate factors that led to critical incidents in patients receiving PCA or COI opioids infusions.
19	Is the current standard of information transfer between parent and health care providers adequate?	Eleanor Reimer	Jeremy Daniels, Joanne Lim, Mark Ansermino	To demonstrate the face validity and reliability of our survey instrument, and determine a baseline of parents' comprehension of discharge instructions.
20	Post cardiac surgery blood loss: Effect of washing residual cardiopulmonary bypass circuit blood red cells prior to re-infusion	Norbert Froese	Norbert Froese, Andrew Campbell, Jacques Leblanc, Doug Salt, John Wu, Kate Hunc	To compare whether re-infusion of residual CPB blood, re-infusion of only the red cell component of residual CPB blood, causes a lesser defect in clotting, leading to decreased hemorrhage and less post-operative blood loss.
21	Pediatric caudal epidural anesthesia: Ultrasonic evaluation of local anesthetic spread	Gillian Lauder	Mark Ansermino, Ashley Robinson, Katherine Brand, Kate Hunc	To visualize the spread of a standard dose of local anesthetic injected into the caudal epidural space and determine the spread in the cephalad direction; to correlate results to age, height, weight, and body surface area.
22	Online monitoring of physiological parameters in critical care: iAssist	Mark Ansermino	Guy Dumont, Dustin Dunsmuir, Chris Brouse, Chris Petersen, Dorothy Myers	To use data from 200 children and 100 adults undergoing routine surgery to produce software algorithms to automatically highlight significant changes to the overall trend of physiological parameters (such as BP, HR, SpO2, ETCO2, etc.).





*Anton Chau presenting at the UBC Department of Anesthesiology, Pharmacology & Therapeutics Annual Research Day*

## Recently Completed Projects

Project Title	PI(s)	CI(s)	Description
1 The Bedside Observer: using patient and family observations to enhance patient safety	Mark Ansermino	Roxanne Carr, Doug Cochrane, Annemarie Taylor, Nicola Shaw, Jeremy Daniels, Joanne Lim, Dina Shafey, Kate Hunc	The Bedside Observer is a survey tool that allows families to identify errors or adverse events during their child's stay on the ward 3R at BCCH.
2 Touch your patient: Tactile display of physiological monitoring	Guy Dumont	Mark Ansermino, Sidney Fels, Stephan Schwarz	The aim is to develop a working vibrotactile belt prototype. This belt will signal adverse events to the clinician through a novel format, with the goal of allowing for a decreased cognitive workload.





3	Project Title	PI(s)	CI(s)	Description
	The effects of droperidol and ondansetron on the dispersion of myocardial repolarization in children	Simon Whyte	Mark Ansermino, Shubhayan Sanatani, Disha Mehta	Droperidol and ondansetron are both effective in the reduction of PONV. The findings from this study will increase the evidence base for clinical decision-making when selecting peri-operative anti-emetic therapy in children, with a view to preventing the incidence and impact of peri-operative morbidity.
	Safe administration of propofol for sedation in children	Mark Ansermino	Jon McCormack, Eleanor Reimer, Maryam Dosani	To develop a safe dosing schedule for propofol administration in children that will ensure spontaneous ventilation is maintained in at least 95 % of subjects.
	Comparison of pharyngeal mucosal pressure induced by the pediatric ProSeal™ LMA with two techniques of cuff inflation: manufacturer recommended maximum volume vs. seal pressure guided inflation	Simon Whyte	Kawshala Peiris, Erin Cooke	This study measures the pressure exerted on the walls of the trachea by the ProSeal™ LMA.
	Spontaneous ventilation using total intravenous anesthesia for endoscopy in children	Stephan Malherbe	Mark Ansermino, Simon Whyte	The aims of this study are three fold i) to conduct a retrospective review on current clinical practice for airway endoscopy, ii) formulate clinical guidelines for anesthetic management of endoscopy, and iii) to assess the efficacy and safety of using TIVA with propofol and remifentanyl to perform this procedure in spontaneously breathing patients.





Project Title	PI(s)	CI(s)	Description
7 Skin conductance fluctuations compared to self-report pain scales for the assessment of postoperative pain in children	Carolyn Montgomery	Mark Ansermino, Gillian Lauder, Joanne Lim, Rollin Brant, Eugene Choo	The purpose of this study is to find out whether changes in sweating in the skin can accurately assess the intensity of a child's pain after surgery



Mark Ansermino and Jeremy Daniels at the 2009 CFRI Trainee Research Day receiving the Best Poster Award.

### Grant Applications

Project Title	PI	Date of Application	Granting Agency	Status
Intelligent pulse oximetry on a personal communication device (cellular phone or laptop)	Mark Ansermino	January 2010	World Health Organization – Innovative Health Technologies	\$0 (non-monetary) (pending)
Naloxone for the treatment of opioid-induced pruritus: A double-blind, prospective, randomized, controlled study	Gillian Lauder	January 2010	Canadian Anesthesiologists' Society	\$38,500 (pending)





<b>Project Title</b>	<b>PI</b>	<b>Date of Application</b>	<b>Granting Agency</b>	<b>Status</b>
Pharmacokinetics of oral morphine and pharmacogenomics of CYP2D6 and UGT2B7, in an urban pediatric population (2 – 6 years of age) presenting for elective surgery	Carolyne Montgomery	January 2010	Canadian Anesthesiologists' Society	\$39,300 (pending)
Evaluation of the intubating laryngeal airway	Stephan Malherbe & Simon Whyte	October 2009	BCCH Telethon Awards Competition	Successfully awarded \$30,000
Emergence delirium in children: total intravenous anesthesia with propofol-remifentanyl versus inhalational sevoflurane anesthesia	Carolyne Montgomery	October 2009	BCCH Telethon Awards Competition	Successfully awarded \$29,970
Development and evaluation of a wireless pulse oximeter on a cell phone (iPleth), for safe perioperative care in Uganda	Mark Ansermino	October 2009	UBC Martha Piper Research Fund	Successfully awarded \$24,991
eVENT: an expert system for detecting ventilatory events during anesthesia	Mark Ansermino	September 2009	Canadian Institutes of Health Research Operating Grant	\$353, 669 (pending)
Handovers in care: A multi-disciplinary study to identify barriers to achieving safer handovers, medico-legal barriers to improving feedback to care providers, and to improve epidemiological data	Ellen Balka	September 2009	Canadian Institutes of Health Research Operating Grant	\$240,000 (pending)
The effects of droperidol and ondansetron on dispersion of myocardial repolarization in children	Simon Whyte	June 2009	Rare Disease Foundation Microgrant	Successfully awarded \$3,500





<b>Project Title</b>	<b>PI</b>	<b>Date of Application</b>	<b>Granting Agency</b>	<b>Status</b>
Cardiac preload indicators in children: evaluation of invasive and non-invasive markers of fluid responsiveness.	Norbert Froese	June 2009	Child and Family Research Institute: iACT Synergy Grant	Successfully awarded \$8,400
An integrated expert system for physiological monitoring	Mark Ansermino	April 2009	Natural Sciences and Engineering Research Council of Canada / Discovery Grant	Successfully awarded \$15,000
PIERS: Pre-eclampsia integrated estimate of risk for mothers): Validation across conditions and clinical settings (renewal)	Peter von Dadelszen	March 2009	Canadian Institutes of Health Research Operating Grant	\$1,039,732 (pending)
Electrical and Computing Engineering in Medicine	Mark Ansermino	February 2009	Institute for Computing, Information and Cognitive Systems (ICICS)	Successfully awarded \$400
PHAC/CIHR Influenza Research Network	Scott Halperin	2009-2012	Canadian Institutes of Health Research –Team Grant	Successfully awarded \$10,890,377
Evaluation of the intubating laryngeal airway	Simon Whyte	January 2009	Canadian Anesthesiologists' Society	Successfully awarded \$20,000
Canadian Pediatric Anesthesia Investigations Group	David Rosen	December 2009	Maternal, Infant, Child, and Youth Network	Successfully awarded \$27,942
Closed-loop control of anesthesia	Guy Dumont	April 2008	Natural Sciences and Engineering Research Council of Canada/CHRP	Successfully Awarded \$412,400
Infrastructure program: Health Innovation Design and Evaluation (HeIDE) Research Unit	Ellen Balka	March 2007	Michael Smith Foundation for Health Research	Successful \$225,000 (over 3 years)
Career Investigator Program: eVENT	Mark Ansermino	November 2006	Michael Smith Foundation for Health Research	Successful Awarded \$555,000 (over 6 years)





### Anesthesia Fellows

<u>Name and Yrs. Supervised:</u>	<u>Dr. Katherine Brand, 2009 - Present</u>
Title of Project:	Pharmacokinetics of oral morphine and pharmacogenomics of CYP2D6 and UGT2B7, in an urban pediatric population (2 – 6 years of age) presenting for elective surgery
Present Position:	Clinical Fellow (BCCH Dept of Anesthesia)
<u>Name and Yrs. Supervised:</u>	<u>Dr. Amelia Pickard, 2009 - Present</u>
Title of Project:	Comparison of an automated calculation of capillary refill time with a standard clinical measurement – a pilot study
Present Position:	Research Fellow (BCCH Dept of Anesthesia)
<u>Name and Yrs. Supervised:</u>	<u>Dr. John Chandler, 2008 - Present</u>
Title of Project:	Relationship between respiratory induced variation in pulse oximetry plethysmogram and arterial pulse pressure waveforms in ventilated children, an observational study
Present Position:	Clinical & Research Fellow (BCCH Dept of Anesthesia)

### Graduate Student Research Projects

<u>Name and Yrs. Supervised:</u>	<u>Sara Khosravi, 2009 – Present</u>
Title of Project:	Safe administration of propofol for sedation in children
Present Position:	PhD Candidate (UBC Dept of Electrical and Computer Engineering)
<u>Name and Yrs. Supervised:</u>	<u>Dustin Dunsmuir, 2006 - present</u>
Title of Project:	iKnow: An authoring tool for clinical decision support in anesthesia
Present Position:	MSc Candidate (SFU School of Interactive Arts & Technology)
<u>Name and Yrs. Supervised:</u>	<u>Prasad Shrawane, 2007 - Present</u>
Title of Project:	The effect of a target controlled infusion of propofol on predictability in recovery from anesthesia in children
Present Position:	PhD Candidate (UBC Dept of Electrical and Computer Engineering)
<u>Name and Yrs. Supervised:</u>	<u>Chris Brouse, 2004 - Present</u>







Title of Project:	Online monitoring of physiological parameters in critical care
Present Position:	PhD Candidate (UBC Dept of Electrical and Computer Engineering)
<u>Name and Yrs. Supervised:</u>	<u>Frank Kloprogge (2010)</u>
Title of Project:	To be determined
Present Position:	Graduate student - Netherlands

### Medical/Undergraduate Research Projects

<u>Name and Yrs. Supervised:</u>	<u>Anton Chau, 2005 - Present</u>
Title of Project:	The effects of three effect-site-targeted propofol concentrations on dispersion of myocardial repolarization in children
Present Position:	Anesthesiology resident (UBC)
<u>Name and Yrs. Supervised:</u>	<u>Eugene Choo, 2008 - Present</u>
Title of Project:	Skin conductance fluctuations compared to self-report pain scales for the assessment of postoperative pain in children
Present Position:	Medical student (UBC)
<u>Name and Yrs. Supervised:</u>	<u>Jeremy Daniels, 2006 - Present</u>
Title of Project:	The Bedside Observer: using patient and family observations to enhance patient safety
Present Position:	Medical student (UBC)
<u>Name and Yrs. Supervised:</u>	<u>Eric Moul (2010)</u>
Title of Project:	To be determined
Present Position:	Medical student (Queen's)
<u>Name and Yrs. Supervised:</u>	<u>Srinivas Raman (2010)</u>
Title of Project:	Development and Evaluation of a Wireless Pulse Oximeter on a Cell phone (iPleth), for safe Perioperative Care in Uganda
Present Position:	Medical student (UBC)
<u>Name and Yrs. Supervised:</u>	<u>Serena Shum (2010)</u>
Title of Project:	A quality assurance audit of pain management after discharge from day surgery





Present Position:	Medical student (Queen's)
-------------------	---------------------------

### Engineering Post-Doctoral Fellows

<u>Name and Yrs. Supervised:</u>	<u>Walter Karlen, 2009 – Present</u>
Title of Project:	Development and Evaluation of a Wireless Pulse Oximeter on a Cell phone (iPleth), for safe Perioperative Care in Uganda
Present Position:	Post-doctoral Fellow (UBC Dept of Electrical and Computer Engineering)
<u>Name and Yrs. Supervised:</u>	<u>Jin-Oh Hahn, 2009 – Present</u>
Title of Project:	iControl: Interface Usability Evaluation
Present Position:	Post-doctoral Fellow (UBC Dept of Electrical and Computer Engineering)
<u>Name and Yrs. Supervised:</u>	<u>Matthias Gorges (2010)</u>
Title of Project:	To be determined
Present Position:	Post-doctoral Fellow (UBC Dept of Electrical and Computer Engineering)

### Research Personnel

<u>Name and Yrs. Supervised:</u>	<u>Joanne Lim, 2004 - Present</u>
Title of Project:	Development and Evaluation of a Wireless Pulse Oximeter on a Cell phone (iPleth), for safe Perioperative Care in Uganda
Present Position:	Research Manager (UBC Department of Anesthesiology, Pharmacology & Therapeutics)
<u>Name and Yrs. Supervised:</u>	<u>Chris Petersen, 2009 – Present</u>
Title of Project:	iControl: Interface Usability Evaluation
Present Position:	Research Engineer (UBC Department of Anesthesiology, Pharmacology & Therapeutics)
<u>Name and Yrs. Supervised:</u>	<u>Kate Hunc, 2009 – Present</u>
Title of Project:	Pediatric caudal epidural anesthesia: Ultrasonic evaluation of local anesthetic spread





Present Position:	Research Assistant (UBC Department of Anesthesiology, Pharmacology & Therapeutics)
<u>Name and Yrs. Supervised:</u>	<u>Erin Cooke, 2009 – Present</u>
Title of Project:	Comparison of Pharyngeal Mucosal Pressure Induced by the Pediatric ProSeal™ LMA with Two Techniques of Cuff Inflation: Manufacturer Recommended Maximum Volume vs. Seal Pressure Guided Inflation
Present Position:	Research Assistant (UBC Department of Anesthesiology, Pharmacology & Therapeutics)
<u>Name and Yrs. Supervised:</u>	<u>Dorothy Myers, 2009 – Present</u>
Title of Project:	Emergence delirium (ED) in children: total intravenous anesthesia with propofol-remifentanyl versus inhalational sevoflurane anesthesia
Present Position:	Research Assistant (UBC Department of Anesthesiology, Pharmacology & Therapeutics)
<u>Name and Yrs. Supervised:</u>	<u>Dina Shafey, 2008 – 2009</u>
Title of Project:	The bedside observer: family reporting of adverse events
Present Position:	Research Ethics Coordinator (Fraser Health Authority)
<u>Name and Yrs. Supervised:</u>	<u>Disha Mehta, 2007 – 2009</u>
Title of Project:	The effect of droperidol and ondansetron on myocardial repolarization in children
Present Position:	Medical student (UBC)
<u>Name and Yrs. Supervised:</u>	<u>Maryam Dosani, 2007 – 2009</u>
Title of Project:	eVENT: An expert system for detecting ventilatory events during anesthesia
Present Position:	Medical student (UBC)
<u>Name and Yrs. Supervised:</u>	<u>Parry Fung, 2004 – Present</u>
Title of Project:	Storage bank of monitored physiological clinical events
Present Position:	Software Consultant

