

Pediatric Anesthesia Research Team

Annual Report

January, 2008 – December, 2008



Department of Pediatric Anesthesia, BC Children's Hospital

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

Vancouver, British Columbia, Canada





Executive Summary

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) and have been included in the new iAct (Acute and Critical Care technologies) cluster at the Child & Family Research Institute (CFRI) (www.cfri.ca).

During 2008 the Department has published or has in press 31 peer reviewed manuscripts and submitted an additional 4 manuscripts for consideration for publication. We have presented 15 abstracts and plan to present 10 more in the coming months to national and international audiences. Dr. Lauder and Dr. Ansermino have contributed book chapters this year in their respective research areas.

A total of 9 new grant applications were completed by team members this year as Principal Investigators (PI). Three applications are pending notification (\$140,000). New Principal (\$172,909) and new Co-Investigator (CI) funding (\$665,342) were received this year. This funding in addition to our ongoing PI and CI funding have, over the last 5 years, garnered over \$4 million in grant funding. We have initiated a new industry research partnership (with Dräger Medical) and look forward to making our research endeavours a clinical reality.

Our funded positions this year include two anesthesia Clinical/Research Fellows, an anesthesia Research Fellow, three research assistants, a research manager, a research engineer, two science writers, two post-doctoral Fellows in engineering, six graduate students, two undergraduate students, and two summer students.

We held our first and very successful research retreat at Harrison Hot Springs resort in June 2008. We were honoured to have Dr Robin Cox (Associate Professor of Anesthesia from Alberta Children's Hospital) as an external facilitator. The retreat was funded by the Department and was attended by staff anesthesiologists, researchers, nursing, anesthesia assistants and students. The retreat has allowed us to formulate short and long term goals for our research program.

We have recently launched our Pediatric Anesthesia Research Team (PART) logo and website (www.part.cfri.ca). The website provides information for patients on our current research projects and an introduction to the research team and investigators.

Our multi-disciplinary research team, in collaboration with national and international partners, has led to significant advances in patient care, with each year being more productive and successful than the last in terms of publications, presentations, and recruitment of staff.

Our engineering graduate student, Chris Brouse, has received two prestigious awards in the past year. He received the Michael Smith Foundation for Health Research Trainee Award Senior Graduate Studentship and the Western Association of Graduate Schools Innovation in Technology Award. Congratulations on this well-deserved recognition.





New Faces

Our research team welcomed new faces in 2008. Dina Shafey started as a research grant facilitator in October 2008. Her extensive academic background and experience in grant writing during her graduate studies has been a great asset to the group. Erin Cooke and Kate Hunc will be joining us as research assistants in January 2009. They are both enthusiastic new researchers ready and willing to tackle new challenges.

In the summer of 2008, we continued our tradition of fostering young minds in research training with a number of student research projects.

Our collaboration with SFU Interactive Arts & Technology Program led to the recruitment of Matt Dolnik as a Flash software developer and he created a mock-up of a real clinical monitor. This application will help future studies that require clinical monitoring in a laboratory environment. Matt worked with Dustin Dunsmuir, an SFU graduate student who will continue to work with our team on the development of iAssist and iKnow. Jackie Tappan joined us again this summer from the University of Waterloo, Department of Systems Design Engineering, as a co-op student. Jackie's experience in engineering solutions helped to design new ecological displays for clinical monitoring. We wish Jackie all the best as she pursues her Masters at the Massachusetts Institute of Technology.

Jeremy Daniels (UBC medical student) continues to work with us throughout the year advising, and writing about the Bedside Observer project which aims to engage families in the reporting of adverse events. Eugene Choo (UBC medical student) went above and beyond to complete recruitment and data collection of over 100 subjects in 12 weeks in a study that investigates the links between skin conductance fluctuations and nociceptive intensity in the pediatric population. Eugene is currently working hard on completing the manuscript for publication. Genevieve Lennox (UBC medical student) joined the department in conjunction with the Department of Orthopedics to work on a project reviewing analgesia for pediatric scoliosis patients.

Our 2008-09 Clinical Fellows, Dr. Permendra Singh and Dr. Kawshala Peiris arrived in July 2008. Unfortunately, Permendra had to finish his Fellowship early and departed in December 2008. Kawshala continues her work on examination of the pressure exerted on the laryngeal mucosa by a Proseal Laryngeal Mask Airway. Dr. John Chandler arrived from Ireland in July 2008 to begin his Research Fellowship. He will stay on with our department as a Clinical Fellow for 2009-10. John's research interests include the study of pulse pressure variation measurements from the plethysmograph.

In the summer of 2009, we will welcome back Eugene and Jeremy. Eugene will be assisting with the second phase of the nociception study in the operating room environment. Jeremy will assist with a project investigating parental understanding of post-operative care instructions. We look forward to working with them again!





Drs. Anton Chau and Francisco Ng continue their work with us through the UBC anesthesia residency programs. 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 in his research into heart rate variability.

This year, we also say farewell to our research assistants Ashlee King and Maryam Dosani. They have been great additions and we wish Ashlee and Maryam the best of luck! William Magruder (grant facilitator) has spent the last few months telecommuting from Germany while pursuing graduate studies and will be missed when he officially finishes his term with us in the spring.



2008 CFRI Summer Students Program
Left to right: Jackie Tappan, Genevieve Lennox, Eugene Choo





Collaborations & Partnerships

In clinical studies, Dr. Carolyne Montgomery and the oncology service have begun studying a ketamine-hydromorphone solution for treating mucositis pain. Dr. Norbert Froese and the cardiac surgeons will be looking at coagulation after cardiac surgery. The Bedside Observer project is well into data collection within the surgical wards 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 7th 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 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. We have also established a relationship with Locarna eye tracking, Sonosite ultrasound, Air-Q intubating laryngeal airway and Masimo plethysmography.

Research Retreat

Our first research retreat was held on June 20-21, 2008 at Harrison Hot Springs (harrisonresort.com/). Our attendees included many staff anesthesiologists, nursing staff (Pain, PACU, SDCU), CFRI research development facilitator, collaborators (OPSEI & iCARE), research staff, and students. On the first day, we had presentations on current and upcoming studies. This gave all attendees a chance to get acquainted with the research projects of our group. We spent the afternoon in a team building activity (aka Scaventure!) where we ran around the town looking for clues and completing challenges. After a restful night's sleep, the next morning was spent brainstorming and planning. Under the guidance of Dr. Robin Cox, who came from Alberta Children's Hospital to facilitate our strategic planning activity, we divided into small groups to continue the discussion. For these planning sessions, we were very fortunate to have Dr. Anne Junker (Associate Director, Clinical Research, CFRI) in attendance. Dr. Cox later sent a summary of the planning session for us to further refine our short and long term goals as a research team. We thank the Department of Pediatric Anesthesia for funding our first retreat as we now continue to reach toward our future goals.





Pediatric Pain Research Day

In October 2008, our first Pediatric Pain Research Day was held at the Chan Centre for Family Health Education Auditorium at the Child & Family Research Institute. Dr. Gillian Lauder, with help from Maryam Dosani, organized this event to bring research teams together to showcase current research projects, exchange knowledge about childhood pain research, explore opportunities for research collaboration, and facilitate the formation of collaborative relationships. The research day began with a seminar given by Dr. Stuart MacLeod. He spoke of policy directions toward research integration. Following Dr. MacLeod's seminar, short presentations of ongoing research projects and interests with emphasis on opportunities for collaboration were given. Dr. Mark Ansermino, Dr. Susan Bennett, Dr. Ken Craig, Dr. Ran Goldman, Dr. Ruth Grunau, Dr. Liisa Holsti, Dr. Osman Ipsiroglu, Dr. Tim Oberlander, Dr. Hal Siden, and Dr. Anne Synnes gave presentations about potential collaboration opportunities with their research groups. In the afternoon our attendees divided into groups for our Knowledge Café session and participated in interactive brainstorming discussions. These discussions were focused on determining key opportunities for collaborative research, key knowledge gaps to address, and infrastructure and/or resources needed for development. Following the smaller group brainstorming session, everyone joined together to share their ideas in a larger group discussion. Finally, the day ended on a high note with a social event in the Celebration Pavilion at Queen Elizabeth Park.

Awards

Continuing our success within the summer student program, Eugene Choo and Jackie Tappan received 2nd and 3rd place awards, respectively, for their posters at the Child & Family Research Institute's Summer Research Program Poster Day.

Our engineering graduate student, Chris Brouse, has received two prestigious awards in the past year. He received the Michael Smith Foundation for Health Research Trainee Award Senior Graduate Studentship and the Western Association of Graduate Schools Innovation in Technology Award.

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





2008 Fellows Farewell Dinner

Left to right: William Magruder, Mark Ansermino, Joanne Lim, Maryam Dosani

Research Environment

The biweekly research meetings now take place on the first and third Tuesday of each month. The Wednesday morning research rounds have again proved to be a productive ground for review of new study protocols, recruiting clinician subjects, and practicing presentations. This is a good time for any department members to bring up any 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.

New Website

Our new website has recently been launched (part.cfri.ca) and details our research projects, with the goal of increasing public awareness of the important studies being carried out in this department. The website also gives families a chance to learn about our studies before they come to the hospital.





Pediatric Anesthesiologists

Top left (going clockwise): Gillian Lauder, Simon Whyte, James Chen, Gerry Goresky, Richard Lee

New 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

Current Salary Awards

Mark Ansermino	Michael Smith Foundation for Health Research Scholar Award (2007-2012)
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2008 Research Retreat: Winning Scaventure! team
 Left to right: Susan Poitras, Gerry Goresky, Mark Ansermino, Claire Campbell, Jeremy Daniels

Publications from 2008/09 (clinicians are in bold; trainees and staff are underlined)

Massey KA, Ansermino JM , von Dadelszen P, Morris TJ, Liston RM, Magee LA. What is SNOMED CT® and why should the ISSHP care? <i>Hypertension in Pregnancy</i> , 2009; 28(1): 119-12
Whyte SD . Perioperative fluid and electrolyte balance in children. <i>Anaesthesia & Intensive Care Medicine</i> , 2009; 10 (2): 93-7.
Murphy J, Swanson T, Ansermino JM , Milner R. The frequency of apneas in premature infants after inguinal hernia repair: do they need overnight monitoring in the intensive care unit? <i>Journal of Pediatric Surgery</i> ,. 2008; 43 (5): 865-868.
<u>Hume-Smith HV</u> , Sanatani S, <u>Lim J</u> , <u>Chau A</u> , Whyte SD . The effect of propofol concentration on dispersion of myocardial repolarization in children. <i>Anesthesia and Analgesia</i> , 2008; 107(3):806-10.
Lam CW, Klassen AF, Montgomery CJ , LeBlanc JG, Skarsgard ED. Quality of life outcomes following surgical correction of pectus excavatum: A comparison of the Ravitch and Nuss Procedures. <i>J Pediatric Surg</i> , 2008; 43 (5):819-25.
<u>McCormack J</u> , Purdy R . Airway complication related to an electromyography tracheal tube. <i>Paediatr Anaesth</i> , 2008; 18(6):572-3.
<u>Chou E</u> , <u>Lim J</u> , Brant R, <u>Ford S</u> , Ansermino JM . Accuracy of detecting changes in auditory heart rate in a simulated operating room environment. <i>Anaesthesia</i> , 2008; 63 (11): 1181-1186.
<u>Dunsmuir D</u> , <u>Daniels J</u> , <u>Brouse C</u> , <u>Ford S</u> , Ansermino JM . A knowledge authoring tool for clinical decision support. <i>Journal of Clinical Monitoring and Computing</i> , 2008; 22(3): 189-198.





Ansermino JM , <u>Dosani M</u> , <u>Amari E</u> , Choi PT, Schwarz S. Defining rules for the identification of significant ventilatory events. <i>Canadian Journal of Anesthesia</i> , 2008; 55:702-714.
<u>McCormack J</u> . Total Intravenous Anesthesia in Children. <i>Current Anaesthesia and Critical Care</i> , 2008; 19 (5), 309-314.
<u>Ng G</u> , <u>Barralon P</u> , Schwarz SKW, Dumont G, Ansermino JM . Evaluating a tactile display around the waist for physiological monitoring under different clinical workload conditions. <i>Conf Proc IEEE Eng Med Biol Soc</i> 2008; 1: 1288-1291.
<u>Barralon P</u> , Dumont G, Schwarz SKW, Ansermino JM . Autonomic Nervous System Response to Vibrating and Electrical Stimuli on the Forearm and Wrist. <i>Conf Proc IEEE Eng Med Biol Soc</i> 2008; 1: 931-934.
<u>Ng F</u> , Wong S, Gomis P, <u>Lim J</u> , Passariello G, Ansermino JM . Probabilistic assessment of autonomic nervous system fluctuations during tilt table tests. <i>Conf Proc IEEE Eng Med Biol Soc</i> 2008; 1: 4692-4695.
<u>Mehta D</u> , <u>McCormack J</u> , <u>Fung P</u> , Dumont G, Ansermino JM . Target Controlled Infusion for Kids: Trials and Simulations. <i>Conf Proc IEEE Eng Med Biol Soc</i> 2008; 1: 5818-5821.
Ansermino JM . Can technology further improve the safety of anesthesia? <i>Conf Proc IEEE Eng Med Biol Soc</i> 2008; 1: 1026-1027.
<u>Ng F</u> , Wong S, Gomis P, <u>Lim J</u> , Passariello G, Ansermino JM . Probability trends in the assessment of cardiovascular autonomic fluctuations during cold pressor tests. <i>Computers in Cardiology</i> 2008; 35: 981–984.
<u>Hume-Smith H</u> , Lauder G . Anaesthesia for Specialist Surgery in Infancy. <i>Anesthesia and Intensive Care Medicine</i> , 2008; 9 (4): 133-141.
<u>McCormack J</u> , Malherbe S . Applications of ultrasound in paediatric anaesthesia. <i>Curr Anaesth Crit Care</i> , 2008; 19: 302-8.
<u>Campbell C</u> . Fluid prescription in children. Where are we now? <i>Curr Anaesth Crit Care</i> , 2008;19:299-301.
Whyte SD . Editorial. <i>Curr Anaesth Crit Care</i> , 2008; 298.

Submitted / Accepted Publications

Ansermino JM , <u>Magruder W</u> , <u>Dosani M</u> . Spontaneous respiration during intravenous anesthesia in children. <i>Current Opinions in Anesthesiology</i> , accepted January 2009.
<u>Yang P</u> , Dumont GA, Ansermino JM . Sensor fusion using a hybrid median filter for artifact removal in intraoperative heart rate monitoring. <i>Journal of Clinical Monitoring and Computing</i> , accepted January 2009.
<u>Barralon P</u> , <u>Ng G</u> , Dumont G, Schwarz S, Ansermino JM . 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> , accepted December 2008.
<u>Dosani M</u> , <u>Lim J</u> , <u>Yang P</u> , <u>Brouse C</u> , <u>Daniels J</u> , Dumont G, Ansermino JM . Clinical evaluation of algorithms for context-sensitive physiological monitoring in children. <i>British Journal of Anaesthesia</i> , accepted December 2008.





<p><u>Yang P</u>, Dumont G, Ansermino JM. A generalized hidden Markov model based online pattern recognition algorithm for interoperative vital sign monitoring. <i>International Journal of Adaptive Control and Signal Processing</i>, special issue "Signal processing and diagnosis: biomedical applications," accepted January 2008.</p>
<p><u>Barralon P</u>, Dumont GA, Schwarz SKW, <u>Magruder W</u>, Ansermino JM. Comparison between a dorsal and a belt tactile display prototype for decoding physiological events in the operating room. <i>Journal of Clinical Monitoring and Computing</i>, accepted January 2009.</p>
<p>Dumont G, Martinez A, Ansermino JM. Robust control of depth of anesthesia. <i>International Journal of Adaptive Control and Signal Processing</i>, accepted August 2008</p>
<p>Bhatt M, Kennedy R, Osmond M, Krauss B, McAllister J, Ansermino JM, Evered L, Roback M. Consensus-based recommendations for standardizing terminology and reporting adverse events for emergency department procedural sedation and analgesia in children. <i>Annals of Emergency Medicine</i>, accepted November 2008.</p>
<p><u>Amari E</u>, Vandebeek C, Montgomery CJ, Skarsgard E, Warnock F, Ansermino JM. Comparison of web-based and telephone questionnaires for assessing pediatric day surgery. <i>International Journal of Healthcare Quality Assurance</i>, accepted October 2008.</p>
<p>Ansermino JM, <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>Ansermino JM, <u>Daniels J</u>, Hewgill R, <u>Yang P</u>, <u>Brouse C</u>, Dumont G, Bowering J. Evaluation of iAssist: A novel software tool for detecting changes in physiological monitoring. <i>Anesthesia & Analgesia</i>, accepted September 2008.</p>
<p><u>Tappan JM</u>, <u>Daniels J</u>, <u>Slavin B</u>, <u>Lim J</u>, Brant R, Ansermino JM. Visual cueing with context relevant physiological monitoring for overcoming change blindness. Submitted to <i>Anaesthesia</i>, February 2009</p>
<p>Malherbe S, <u>Chau A</u>, Whyte S, Ansermino JM. 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>Hume-Smith H</u>, <u>McCormack J</u>, <u>Montgomery CJ</u>, Brant R, Malherbe S, <u>Mehta D</u>, Ansermino JM. The effect of age on variability of the dose of remifentanyl for tracheal intubation in infants and children. Submitted to <i>Pediatric Anesthesia</i>.</p>
<p><u>King A</u>, <u>Daniels J</u>, <u>Lim J</u>, Cochrane DD, Taylor A, Ansermino JM. Time to listen: a review of methods to solicit patient reports of adverse events. Submitted to <i>Quality and Safety in Healthcare</i>, January 2009.</p>

Published Book Chapters

<p>Lauder G. "Anaesthesia for Orthopaedic Surgery." In Hatch and Sumner's Textbook of Paediatric Anaesthesia. Bingham, Lloyd-Thomas, and Sury, eds. Edward Arnold Publishers Ltd, 2008.</p>
<p>Ansermino JM. "Cleft lip and Palate." In Hatch and Sumner's Textbook of Paediatric Anaesthesia. Bingham, Lloyd-Thomas, and Sury, eds. Edward Arnold Publishers Ltd, 2008.</p>





Massey KA, Morris TJ, Liston RM, von Dadelszen P, **Ansermino JM**, Magee LA (2008). “Building knowledge in maternal and infant care.” In: Parry D, Parry E (eds.) Medical Informatics in Obstetrics and Gynecology. Medical Information Science Reference. Hershey, PA, USA.



*2008 Fellows Farewell Dinner
Left to right: Carlyne Montgomery,
Claire Campbell, Jon McCormack*



*2008 Research Retreat
Left to right: Prasad
Shrawane, Eugene
Choo*



*2008 Research Retreat
Left to right: Joanne Lim,
Maryam Dosani, Disha
Mehta*

Abstracts

Title	Authors	Presented at
From expert knowledge to a real-time expert system for physiological monitoring	Ansermino JM , <u>Lim J</u> , <u>Dunsmuir D</u> , <u>Donsani M</u> , <u>Brouse C</u> .	American Society of Anesthesiologists Annual Meeting; 2008 October 18-22; Orlando, USA
Probability trends in the assessment of cardiovascular autonomic fluctuations during cold pressor tests.	<u>Ng E</u> , Wong S, Gomis P, <u>Lim J</u> , Passariello G, Ansermino JM .	IEEE Conference on Computers in Cardiology; 2008 September 14-17, Bologna, Italy





Title	Authors	Presented at
Evaluating a tactile display around the waist for physiological monitoring under different clinical workload conditions.	<u>Ng G</u> , <u>Barralon P</u> , Schwarz SKW, Dumont G, Ansermino JM .	30th Annual Conference of the IEEE Engineering in Medicine and Biology Society, Vancouver, Canada, August 20-24, 2008
Autonomic nervous system response to vibrating and electrical stimuli on the forearm and wrist	<u>Barralon P</u> , Dumont G, Schwarz SKW, Ansermino JM	30th Annual Conference of the IEEE Engineering in Medicine and Biology Society, Vancouver, Canada, August 20-24, 2008
Evaluations of tactile displays of physiological monitoring.	<u>Barralon P</u> , <u>Ng G</u> , Dumont G, Schwarz SKW, Ansermino JM	30th Annual Conference of the IEEE Engineering in Medicine and Biology Society, Vancouver, Canada, August 20-24, 2008
Probabilistic assessment of autonomic nervous system fluctuations during tilt table tests.	<u>Ng E</u> , Wong S, Gomis P, <u>Lim J</u> , Passariello G, Ansermino JM	30th Annual Conference of the IEEE Engineering in Medicine and Biology Society, Vancouver, Canada, August 20-24, 2008
Target controlled infusion for kids: trials and simulations	<u>Mehta D</u> , <u>McCormack J</u> , Fung P, Dumont G, Ansermino JM	30th Annual Conference of the IEEE Engineering in Medicine and Biology Society, Vancouver, Canada, August 20-24, 2008
Remifentanil for tracheal intubation in infants and children.	<u>Mehta D</u> , <u>McCormack J</u> , <u>Hume-Smith H</u> , Brant R, Ansermino JM .	The IX th World Conference on Clinical Pharmacology and Therapeutics; 2008 July 27-August 1; Quebec, Canada.
Remifentanil for tracheal intubation in infants and children.	<u>McCormack J</u> , <u>Hume-Smith H</u> , Mehta D, Brant R, Ansermino JM .	Canadian Anesthesiologists' Society Annual Meeting; 2008 June 13-17; Halifax, Canada.
Context sensitive physiological monitoring in children.	Ansermino JM , <u>Daniels J</u> , <u>Lim J</u> , <u>Yang P</u> , <u>Brouse C</u> , Dumont G.	Canadian Anesthesiologists' Society Annual Meeting; 2008 June 13-17; Halifax, Canada.





Title	Authors	Presented at
Defining rules for the identification of ventilatory events.	<u>Dosani M, Amari E, Choi PT, Schwarz SKW, Ansermino JM.</u>	Canadian Anesthesiologists' Society Annual Meeting; 2008 June 13-17; Halifax, Canada.
Identification of the ilioinguinal and iliohypogastric nerves using ultrasound guidance: what is the reality for the non-expert sonographer?	Lauder G, Ansermino JM, <u>Ford S, Campbell C, Lim J, Dosani M.</u>	37th UBC Research Day, June 2008, Vancouver, Canada.
Identification of the ilioinguinal and iliohypogastric nerves using ultrasound guidance: what is the reality for the non-expert sonographer?	Lauder G, Ansermino JM, <u>Ford S, Campbell C, Lim J, Dosani M</u>	Association of Paediatric Anaesthetists of Great Britain and Ireland Annual Scientific Meeting; 2008 May 8-10; London, UK.
Improved vigilance with context relevant physiological monitoring.	<u>Tappan J, Daniels J, Slavin B, Lim J, Ansermino JM.</u>	Society for Technology in Anesthesia Annual Meeting; 2008 January 16-19; San Diego, USA (Honorable Mention).
Accuracy of detecting a change in the auditory heart rate in a simulated operating room environment.	<u>Chou E, Slavin B, Ford S, Daniels J, Lim J, Ansermino JM.</u>	Society for Technology in Anesthesia Annual Meeting; 2008 January 16-19; San Diego, USA.

Title	Authors	To be presented at
Visual cues for the interaction of two physiological parameters improve change detection.	<u>Chandler JRS, Tappan J, Dolnik M, Daniels J, Lim J, Dumont GA, Ansermino JM.</u>	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, Dumont GA, Yang P, Dunsmuir D, Barralon P, Schwarz SKW, Ansermino JM.</u>	Society for Technology in Anesthesia 2009 Annual Meeting, San Antonio, USA, January 14-17, 2009
Does the mode of post-operative opioid infusion affect patient outcome after surgical correction of Adolescent Idiopathic Scoliosis?	<u>Lennox G, Lauder G, Court C, Dosani M, Blewett C, Perdios A, Reilly C.</u>	Western Society for Pediatric Research Meeting; 2009 January 29-31; Carmel, California





Title	Authors	To be presented at
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, Ansermino JM.	World Society of Intravenous Anaesthesia; Berlin, Germany, April 23-25, 2009.
Effect of gabapentin on tonsillectomy pain in children.	<u>Dosani M</u> , Morrison A , <u>Campbell GC</u> , Whyte SD , Moxham JP, Ansermino JM , Purdy R.	8 th International Symposium on Pediatric Pain, Acapulco, Mexico, June 8-11, 2009.
Skin conductance correlates weakly with pain in children.	<u>Choo E</u> , <u>Magruder W</u> , Montgomery CJ , Ansermino JM.	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</u> , <u>Dolnik M</u> , <u>Lim J</u> , <u>Daniels J</u> , Dumont GA, Ansermino JM.	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</u> , Fung P, Dumont GA, Ansermino JM.	Canadian Anesthesiologists' Society 2009 Annual Meeting, Vancouver, Canada, June 26-30, 2009.
Effect of gabapentin on tonsillectomy pain in children.	<u>Dosani M</u> , Morrison A , <u>Campbell GC</u> , Whyte SD , Moxham JP, Ansermino JM , Purdy R.	Canadian Anesthesiologists' Society 2009 Annual Meeting, Vancouver, Canada, June 26-30, 2009.

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.
2	Emergence delirium (ED) in children: total intravenous anesthesia with propofol-remifentanil versus inhalational sevoflurane anesthesia	Carolyne Montgomery	John Chandler Disha Mehta	This study will compare the recovery profile of sevoflurane with that of propofol-remifentanil and their associated incidence of ED.





	Project Title	PI(s)	CI(s)	Description
3	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.
4	Evaluation of the intubating laryngeal airway in children	Simon Whyte	Disha Mehta	The aim is to rigorously evaluate the Air-Q [®] intubating laryngeal airway (Air-Q [®] ILA). This LMA has features that encompass the characteristics of the ideal LMA.
5	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 Disha Mehta Erin Cooke	This study measures the pressure exerted on the walls of the trachea by the ProSeal™ LMA.
6	Real Time Assessment of the Intelligent Anesthesia Navigator	Mark Ansermino	Guy Dumont Chris Brouse Dustin Dunsmuir Maryam Dosami Joanne Lim Kate Hunc	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 Simon Ford 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	Ketamine and hydromorphone PCA analgesia for anti-neoplastic induced pediatric mucositis	Carolyne Montgomery	Caron Stralendorf Gillian Lauder Robert Purdy Mark Ansermino Colleen Court Joanne Lim	An investigation into the efficacy of a hydromorphone-ketamine drug mixture in the control of pain and symptoms associated with mucositis.
9	Touch your patient: Tactile display of physiological monitoring	Guy Dumont	Mark Ansermino Sidney Fels Stephan Schwarz Maryam Dosani	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.
10	Storage bank of monitored physiological clinical events	Mark Ansermino	Guy Dumont Jeff Kobe	To collect a sample of significant clinical events to evaluate the performance of the physiological monitoring systems that detect them.
11	Physiological candidates for measuring responses to painful stimuli in volunteers	Mark Ansermino	Craig Ries Joanne Lim Chris Brouse	Using moderately painful stimuli to monitor change in physiological parameters from baseline. The goal of this study is to apply this data to anesthetized patients to better determine level of analgesia.
12	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.





	Project Title	PI(s)	CI(s)	Description
13	Informatics: Enhancing the clinical experience?	Nicola Shaw	Mark Ansermino	To investigate the impact of using an electronic health record in primary care.
14	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.
15	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.
16	The effect of femoral nerve block on opioid requirements following anterior cruciate ligament reconstruction in the pediatric population: a double blind, prospective, randomized controlled trial	Chris Reilly	Simon Whyte Robert Purdy Mark Ansermino Bronwyn Tritt	To determine if the use of a femoral nerve block decreases the amount of post-operative pain in children undergoing anterior cruciate ligament reconstruction.
17	The effect of femoral nerve block on opioid requirements following femoral fracture fixation with flexible nails in the paediatric population: a double blind, prospective, randomized controlled trial	Kishore Mulpuri	Robert Purdy Simon Whyte	To determine if the use of a femoral nerve block decreases the amount of post-operative pain in children undergoing flexible nailing surgery following femoral fracture.





	Project Title	PI(s)	CI(s)	Description
17	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	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.
18	Pediatric caudal epidural anesthesia: Ultrasonic evaluation of local anesthetic spread	Gillian Lauder	Mark Ansermino Claire Campbell Ashley Robinson	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.



Vibro-tactile belt research project with Dr. Richard Lee





Recently Completed Projects

Project Title	PI(s)	CI(s)	Description
1 Safe administration of propofol for sedation in children	Mark Ansermino	Jon McCormack Eleanor Reimer Maryam Dosami	To develop a safe dosing schedule for propofol administration in children that will ensure spontaneous ventilation is maintained in at least 95 % of subjects.
2 Does a single preoperative dose of Gabapentin reduce postoperative tonsillectomy pain and subsequent morphine requirement in children?	Robert Purdy	Mark Ansermino Andrew Morrison Carolyne Montgomery Simon Whyte Helen Hume-Smith Maryam Dosani	Examining the efficacy of a single preoperative dose of Gabapentin in the reduction of morphine use and post operative pain from tonsillectomy.
3 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.
4 The effect of a target controlled infusion of propofol on predictability in recovery from anesthesia in children	Mark Ansermino	Simon Whyte Jon McCormack Randy Hewgill Joanne Lim Guy Dumont Disha Mehta	To determine the predicted effect site concentration on emergence from anesthesia in children following a target-controlled infusion of propofol.
5 Skin conductance fluctuations compared to self-report pain scales for the assessment of postoperative pain in children	Carolyne Montgomery	Mark Ansermino Gillian Lauder Joanne Lim Rollin Brant	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





Project Title	PI(s)	CI(s)	Description	
6	Online monitoring of physiological parameters in critical care: iAssist	Mark Ansermino	Guy Dumont	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.).
7	Snowstorm or Structures: Identification of the ilioinguinal & iliohypogastric nerves using ultrasound guidance	Gillian Lauder	Mark Ansermino Simon Ford Joanne Lim	Delineating the optimal endpoint for ultrasound guided blockade of the ilioinguinal and iliohypogastric nerve.
8	Functional residual capacity in children aged 2-10 years	Mark Ansermino	Valerie Milot-Roy Nigel Baker	This study is evaluating the impact of two different anesthetics, Sevoflurane (inhaled) and Propofol (IV), on FRC. Secondly, they are looking to see if there is a difference in FRC 20 minutes after induction when compared to baseline, as well as whether reference values for FRC taken from the literature can replace measured awake values.
9	Let's face it: improved vigilance in physiological monitoring using a partial ecological display	Mark Ansermino	Stephan Schwarz Guy Dumont Simon Ford Jeremy Daniels Joanne Lim	To determine whether a partial ecological display improves vigilance in a simulated clinical monitoring task.





2008 Research Retreat: Brainstorming session with Robin Cox

Successful and Unsuccessful Grant Applications

Project Title	PI	Date of Application	Granting Agency	Status
Evaluation of the Intubating Laryngeal Airway.	Simon Whyte	January 9, 2009	Canadian Anesthesiologists' Society	\$40,000 (pending)
Evaluation of the Intubating Laryngeal Airway.	Simon Whyte	January 9, 2009	Canadian Anesthesiologists' Society	\$60,000 (pending)
Emergence delirium in children: total intravenous anesthesia with propofol-remifentanyl versus inhalational sevoflurane anesthesia	Carolyne Montgomery	January 9, 2009	Canadian Anesthesiologists' Society	\$40,000 (pending)
Knowledge Translation Grant: eVENT	Mark Ansermino	June, 2008	Canadian Institutes of Health Research	Successfully awarded \$18,180
eVENT: an expert system for detecting ventilatory events during anesthesia	Mark Ansermino	March, 2008	Canadian Institutes of Health Research	Successfully awarded bridge funding of \$100,000





Project Title	PI	Date of Application	Granting Agency	Status
Canadian Pediatric Anesthesia Investigations Group	David Rosen	10/2009	Maternal, Infant, Child, and Youth Network	Successfully awarded \$27,942
Safe administration of propofol for sedation in children	Mark Ansermino	June, 2008-2009	Canadian Anesthesiologists' Society – Open Award, Dr. RA Gordon Patient Safely Award	Successfully awarded \$39,389
Integrating Teams: Pediatric Pain Research Workshop	Gillian Lauder	February 1, 2008	Canadian Institutes of Health Research: Institute of Human Development Child and Youth Health	Successfully awarded \$8,140
Does the mode of post-operative systemic opioid infusion in pediatric idiopathic scoliosis patients affect patient outcome?	Gillian Lauder	January 21, 2008	University of British Columbia Faculty of Medicine Summer Student Research Program	Successfully awarded \$3,200
Skin conductance fluctuations compared to self-report pain scales for the assessment of postoperative pain in children	Mark Ansermino	January 21, 2008	University of British Columbia Faculty of Medicine Summer Student Research Program	Successfully awarded \$4,000
Closed-loop control of anesthesia	Guy Dumont	April 1, 2008	Natural Sciences and Engineering Research Council of Canada/CHRP	Successfully Awarded \$412,400
Ketamine and hydromorphone PCA analgesia for anti-neoplastic induced pediatric mucositis	Carolyne Montgomery	March 30, 2007	BCCH Telethon Awards Competition	Successfully Awarded \$25,750
The effects of droperidol and ondansetron on the dispersion of myocardial repolarization in children	Simon Whyte	March 30, 2007	BCCH Telethon Awards Competition	Successfully Awarded \$27,110





Project Title	PI	Date of Application	Granting Agency	Status
Post cardiac surgery blood loss: Effect of washing residual cardiopulmonary bypass circuit blood red cells prior to re-infusion	Norbert Froese	March 30, 2007	BCCH Telethon Awards Competition	Successfully Awarded \$26,908
PIERS: Pre-eclampsia integrated estimate of risk for mothers): Validation across conditions and clinical settings	Peter von Dadelszen	March 1, 2007	Canadian Institutes of Health Research: Operating Grant	Successfully awarded \$774,495
The Bedside Observer: Using patient and family observations to enhance patient safety	Mark Ansermino	March 1, 2007	Canadian Institutes of Health Research: Operating Grant	Successfully awarded \$194,964
Infrastructure program Health Innovation Design and Evaluation (HeIDE) Research Unit	Ellen Balka	03/30/2007	Michael Smith Foundation for Health Research	Successful \$225,000 (over 3 years)
Career Investigator Program: eVENT	Mark Ansermino	November 28, 2006	Michael Smith Foundation for Health Research	Successful Awarded \$555,000 (over 6 years)
eVENT: An expert system for detecting ventilatory events during anesthesia	Mark Ansermino	March 2006-2008	Canadian Institutes of Health Research	Successfully Awarded \$280,000
Birth under 29 weeks: Improving outcomes for mothers and babies	Robert Liston	Sept 2004-2008	Canadian Institutes of Health Research: operating grant	Successfully Awarded \$490,360
Touch your patient: A tactile display of physiological monitoring	Guy Dumont	Sept 2004-2008	Natural Sciences and Engineering Research Council of Canada/CHRP	Successfully Awarded \$499,355
eVENT: An expert system for detecting ventilatory events during anesthesia	Mark Ansermino	June, 2008-2012	CIHR Operating Grant Renewal	Unsuccessful





Project Title	PI	Date of Application	Granting Agency	Status
Harmonizing the healthcare safety spectrum: Bridging the gap between clinical care and clinical research	JP Collet	May, 2008–December, 2009	Canadian Patient Safety Institute – Applied Health Services Research	Unsuccessful \$118,000
Improved visualization of multivariate physiological monitoring using adaptive feature extraction	Mark Ansermino	June, 2008	Anesthesia Patient Safety Foundation	Unsuccessful \$149,921



Dr. John Chandler



Dr. Kawshala Peiris

Anesthesia Fellows

<u>Name and Yrs. Supervised:</u>	<u>Dr. Kawshala Peiris, 2008 - 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:	Anesthesia Fellow (BCCH Dept of Anesthesia)
<u>Name and Yrs. Supervised:</u>	<u>Dr. Permendra Singh, 2008</u>
Title of Project:	Spontaneous ventilation using total intravenous anesthesia for airway endoscopy in children
Present Position:	Anesthesia 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:	Anesthesia Fellow (BCCH Dept of Anesthesia)

Graduate Student Research Projects

<u>Name and Yrs. Supervised:</u>	<u>Elina Birmingham, 2006 - Present</u>
Title of Project:	Touch your patient: A tactile display of physiological monitoring
Present Position:	Post-doctoral Fellow (California)
<u>Name and Yrs. Supervised:</u>	<u>Pierre Barralon, 2005 - 2008</u>
Title of Project:	Touch your patient: A tactile display of physiological monitoring
Present Position:	Engineering consultant, Spain
<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>Ping Yang, 2003 - Present</u>
Title of Project:	Online monitoring of physiological parameters in critical care
Present Position:	Engineering consultant (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>Ginna Ng, 2005 - 2008</u>
Title of Project:	Touch your patient: A tactile display of physiological monitoring
Present Position:	Recent graduate





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>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>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>Matt Dolnik, 2008</u>
Title of Project:	Let's face it: improved vigilance in physiological monitoring using a partial ecological display
Present Position:	Undergraduate student (SFU School of Interactive Arts & Technology)
<u>Name and Yrs. Supervised:</u>	<u>Jackie Tappan, 2007 - 2008</u>
Title of Project:	Let's face it: improved vigilance in physiological monitoring using a partial ecological display
Present Position:	MSc Candidate (Massachusetts Institute of Technology)
<u>Name and Yrs. Supervised:</u>	<u>Eric Chou, 2007 - 2008</u>
Title of Project:	Accuracy of detecting a change in the auditory heart rate in a simulated operating room environment
Present Position:	Medical student (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>Genevieve Lennox, 2008</u>





Title of Project:	Does the mode of post-operative systemic opioid infusion in pediatric idiopathic scoliosis patients affect patient outcome?
Present Position:	Medical student (UBC)

Research Personnel

<u>Name and Yrs. Supervised:</u>	<u>Joanne Lim, 2004 - Present</u>
Title of Project:	Touch your patient: A tactile display of physiological monitoring
Present Position:	Research Manager (UBC Department of Anesthesiology, Pharmacology & Therapeutics)
<u>Name and Yrs. Supervised:</u>	<u>Erica Amari, 2005 – 2007</u>
Title of Project:	Measuring the quality of day case surgery
Present Position:	Research Coordinator (UBC Department of Psychology)
<u>Name and Yrs. Supervised:</u>	<u>Reid Chambers, 2007</u>
Title of Project:	Remifentanyl for intubation in children
Present Position:	Medical student (UBC)
<u>Name and Yrs. Supervised:</u>	<u>Disha Mehta, 2007 – Present</u>
Title of Project:	The effect of droperidol and ondansetron on myocardial repolarization in children
Present Position:	Research Assistant (UBC Department of Anesthesiology, Pharmacology & Therapeutics)
<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:	n/a
<u>Name and Yrs. Supervised:</u>	<u>Ashlee King, 2008</u>





Title of Project:	The bedside observer: family reporting of adverse events
Present Position:	Medical student (UBC)
Name and Yrs. Supervised:	<u>William Magruder, 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:	Science Writer/Research Grant Facilitator (UBC Department of Anesthesiology, Pharmacology & Therapeutics)
Name and Yrs. Supervised:	<u>Dina Shafey, 2008 – Present</u>
Title of Project:	The bedside observer: family reporting of adverse events
Present Position:	Science Writer/Research Grant Facilitator (UBC Department of Anesthesiology, Pharmacology & Therapeutics)
Name and Yrs. Supervised:	<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)
Name and Yrs. Supervised:	<u>Kate Hunc, 2009 – Present</u>
Title of Project:	The bedside observer: family reporting of adverse events
Present Position:	Research Assistant (UBC Department of Anesthesiology, Pharmacology & Therapeutics)
Name and Yrs. Supervised:	Parry Fung, 2004 – Present
Title of Project:	Storage bank of monitored physiological clinical events
Present Position:	Software Consultant

