UNIVERSITY OF BRITISH COLUMBIA

DEPARTMENT OF ANESTHESIOLOGY, PHARMACOLOGY & THERAPEUTICS

ANNUAL REPORT 2013
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VISION, PURPOSE AND VALUES

Vision:

We inspire and transform patient care in Anesthesiology, Pharmacology & Therapeutics through collaboration, leadership in patient safety, innovative research, and excellence in education.”

Purpose: To improve health care outcomes and patient safety by:

- Integrating pharmacology and therapeutics with excellence in anesthesia practice, pain management, critical care and perioperative medicine;
- Generating effective knowledge from our population, bedside, and bench research;
- Demonstrating excellence amongst our colleagues, students, and community in a manner that promotes collaboration, upholds integrity, and values compassion.

The values we embrace to make our vision and purpose a reality are:

Collaboration – exchanging ideas with openness and trust
Leadership – inspiring a shared vision and not afraid to reach
Integrity
Compassion – cherish others
Achievement – get better, get further, get recognized
Competence – be better
Message from the Department Head

Thank-you for taking a few minutes to go through this report; the second since I assumed the role of Department Chair. Please share with colleagues in your department, so they too can celebrate the successes of our colleagues as well as hopefully understand this diverse department a little better.

A departmental strategic engagement retreat was held at the end of September 2013, a first for the combined department. It was a very interesting, thought-provoking, and idea-generating couple of days. From this we developed a departmental vision and purpose statement as well as identified shared values to guide us, and from that a long list of strategic priorities. In big terms, these are what we will work on over the next few years:

**Our Strategic Priorities for the next few years:**
1. Fostering more collaboration within APT
2. Branding and identity
3. Relevance and value
4. People
5. Sustainability
6. Culture of Engagement

We have had some great successes over the last year and some good news items.

First, the Therapeutics Initiative funding was restored by the Ministry of Health in January 2014, and that group is very busy producing newsletters and educational outreach programs again, along with their ongoing research.

Second, we had another very successful Whistler Anesthesia Summit on the 3rd week of February 2014, with a star-studded list of anesthesia experts and some excellent workshops. The co-chairs, Dr. Cynthia Yarnold and Dr. Juliet Atherstone are truly
formidable organizers! In addition, there was a very successful GPA Conference in November 2013, organized by Dr. Jim Kim. It was so well attended that it may be a conference that will become an annual event instead of biannual.

The Anesthesia Residency program underwent Royal College Accreditation at the end of 2013 and received an excellent report which means the next accreditation is not for another 6 years! The Family Practice anesthesia program was also successfully accredited. Thank-you to Dr. Matt Klas and Dr. Jim Kim for all the hours of preparatory work – it paid off!

Dr. Laine Bosma has led the simulation group into producing a simulation program with vision, mission and objectives to lead our anesthesia simulation program forward over the next several years. The POEM course was held for a second year - incredibly successful and well attended by residents in surgery, anesthesia and emergency medicine. It is a resource-intensive program, but it leads the way in offering truly interdisciplinary crisis management training.

Research continues to flourish within the department. We have some very strong pharmacology researchers with well established careers, and some young researchers such as Tillie Hackett who is proving very successful in the highly competitive grant and scholarship opportunities available in Canada. On the anesthesia side, we have clinician-researchers such as Mark Ansermino, Don Griesdale, David Ansley and Alana Flexman whose work is making a difference in health outcomes.

Teaching is what connects our department, with passion amongst so many for teaching students of all levels and interests. I would like to thank everyone who engages in teaching undergraduates and medical students as I know how important it is for the future of the department to incite passion for our work in our learners. Those teaching in pharmacology receive consistently excellent teaching evaluations and our graduate programs in Pharmacology are highly competitive. Our anesthesia training core sites (VGH, SPH, BCCH, BCWH, RCH) and our affiliated sites (Lions Gate, Richmond, Burnaby, Surrey, Delta, Langley, Abbotsford, Chilliwack, Victoria, Nanaimo, Prince George, Kelowna Vernon, Kamloops, Penticton, Terrace/Mills, Kootenay) all have numerous trainees from various disciplines, and have constant pressure to take on more. As the medical school curriculum renewal project rolls along, we have a crunch period of medical students as the year 4 start date shifts. Dr. Oliver Applegarth has been working tirelessly to make this work for all the sites, thank-you to everyone who is helping to share the burden for the next couple of years.

Global health initiatives are a passion for several department members and our anesthesia residents are taking up the call and spending elective time in third world countries thanks to the efforts of faculty such as Randy Moore, Stephan Schwarz, Brian Warriner, Hamed Umedaly, Robert Purdy, Eleanor Reimer, Mark Ansermino. A future
project is having a better organized approach to departmental outreach, both close to home and further abroad.

We are planning our first Faculty Development Day in November 2014. Many thanks to Dr. Alana Flexman and the committee she has drawn together to plan the day. I look forward to seeing many of you there.

Another first for the Department is being involved in the UBC Summer Program. The Faculty of Medicine was invited to participate for the first time in this program which is designed for university students from Asia. Each course is held for 2-4 weeks and is worth credits for the students, who also enjoy a very full social program while in Vancouver. Dr. Andrew Horne pulled together a course entitled “Pharmacology of Everyday Life”, and course enrolment, planned at 30 students, ballooned to 85 students. We hope to add an introductory anesthesia course in 2015. We were one of only two departments to put forward a proposal for the inaugural year.

I would like to thank all of you for continuing to be generous with your time, your energy, your knowledge and your passion. We are in a very difficult financial position in the department, as is the Faculty of Medicine, and this does not allow me to reward you for all your contributed time and effort as I would like to be able to. Let us work on our strategic priorities together, of which the most important is fostering the strengths of our people.

Most appreciatively

Roanne Preston, MD FRCPC
Department Head
Department Overview

Department Leadership

Roanne Preston – Department Head
Cathy Pang – Associate Department Head
James Wright – Therapeutics Initiative Co-Managing Director
Ken Bassett – Therapeutics Initiatives Co-Managing Director

Site Chiefs:
Hamed Umehaly – Head, VGH Department of Anesthesia
Randy Moore – Head, St. Paul’s Hospital Department of Anesthesia
Norbert Froese – Head, BC Children’s Hospital Department of Anesthesia
Paul Sahota – Acting Head, BC Women’s Hospital Department of Anesthesia
Cedric Ho – Head, Royal Columbian Hospital Department of Anesthesia
Marshall Cheng – Head, Surrey Memorial Hospital Anesthesia Department
Tom Ruta – Head, Victoria General/Royal Jubilee Hospitals Department of Anesthesia
Rob Eger – Head, Kelowna General Hospital Department of Anesthesia
Pal Dhadly – Head, University Hospital of Northern BC Department of Anesthesia

Academic Leadership

Matt Klas – Anesthesia Residency Program Director
Peter Choi – Anesthesia Research Director
Sastry Bhagavatula – Director/Advisor, PCH Graduate Program
Oliver Applegarth – Medical Undergraduate Program Director
Jim Kim – Family Practice Anesthesia Residency Program Director
T. Laine Bosma – Simulation Program Director
Alana Flexman – Faculty Development Chair
James Price – Visiting Professor & Continuing Professional Development Program Director
Cynthia Yarnold and Juliet Atherstone - Whistler Anesthesia Conference co-chairs
Bernie MacLeod - Hugill Centre Chair
Stephan KW Schwarz – Hugill Centre Chair
Steve Head – Division Head, Regional Anesthesia
Bobby Lee – Division Head, Cardiac Anesthesia
Cynthia Henderson – Division Head, Neuroanesthesia
Michael Negraeff – Division Head, Pain Management
Norbert Froese – Division Head, Pediatric Anesthesia
Roanne Preston – Division Head, Obstetric Anesthesia
Jens Lohser – Division Head, Thoracic Anesthesia
Administrative Staff
Katharine Garcia – Executive Assistant
Aileen To – Administrative Manager
Susan vanBruggen – Residency Program Secretary
Jill Delane – Residency Program Coordinator
Winnie Yung – Reception/Medical Undergraduate Program Secretary
Jessica Yu – Associate Head Admin Assistant
Wynne Leung – PCTH Undergraduate and Graduate Program Coordinator
Andy Jeffries – Operations Manager
Objective: To review research currently conducted by graduate and post-graduate trainees and fellows in the Department of Anesthesiology, Pharmacology & Therapeutics at the University of British Columbia.

This event is an accredited group learning activity as defined by the Maintenance of Certification Program of the Royal College of Physicians and Surgeons of Canada (6.5 h under CPD Section 01).

Guest Judge
Dr. Hemal Patel - University of California, San Diego

Anesthesiology Judges
Dr. Carolyne Montgomery
Dr. Mark Ansemino
Dr. Raymond Tang
Dr. Alana Flexman
Dr. Peter Choi
Dr. Laura Duggan
Dr. Joanne Douglas
Dr. Juliet Atherstone
Dr. Cynthia Yarnold

Pharmacology Judges
Dr. Andrew Horne
Dr. Harley Kurata
Dr. Tillie Hackett
Dr. Colin Dormuth

The Research Day Organizing Committee:
Dr. Don Griesdale, Research Day Coordinator (Anesthesiology Section)
Dr. Pascal Bernatchez, Research Day Coordinator (Pharmacology & Therapeutics Section)
Dr. Matt Klas, Research Day Consultant (Anesthesiology Section)
Ms. Aileen To, Administrative Manager
Ms. Jill Delane, ANAE Residency Coordinator
Ms. Jessica Yu, PCTH Administrative Assistant
Ms. Susan van Bruggen, ANAE Residency Program Secretary
Oral Presentations:

Abstract 01 - Gan et al., Calibration and evaluation of a novel low-cost pulse oximeter sensor

Abstract 02 - Sellers et al., Angiotensin Receptor Inhibition and Genetic Ablation in the Treatment of Marfan Syndrome

Abstract 03 - Wilson et al., Effects of Hand Position on Ultrasound Needle Visibility in Trainees

Abstract 04 - Whitehead et al., Evaluation of the comparative efficacy and safety of isovaline and fentanyl as adjuvants in murine propofol anesthesia

Abstract 05 - Zakus et al., Mentorship Among Canadian Anesthesiology Residents

Abstract 06 - Zhang et al., The Catalytic Control of Kir Channels

Abstract 07 - Leung et al., Novel target to control lung tumor growth: Disruption of cell membrane remodeling by modulating Myoferlin expression

Abstract 08 - Ramsey et al., Flexion-Rotation Manoeuver Increases Dimension of the Target Window for Paramedian Thoracic Epidural Access

Abstract 09 - Trane et al., Generating and characterizing caveolin-1 derived peptides: Novel approach to promoting NO release in cardiovascular diseases

Abstract 10 - Shin et al., The effect of flow rate on warming efficacy and resistance of the Enflow fluid warmer in series and parallel configurations.

Abstract 11 - Wee et al., TGF-beta1-induced Epithelial-Mesenchymal Transition in Airway Epithelial Cells is influenced by Inflammatory Cytokines and Steroid or Beta-Agonist Treatment

Abstract 12 - Leung et al., Comparison of two techniques for ultrasound-guided saphenous nerve blockade in the distal thigh

Abstract 34 – Fisher et al., Combined oral contraceptive and venous thromboembolism – time does matter
AWARDS NIGHT

RESEARCH COMPETITION WINNERS:

Top Anesthesia Oral Presentation in the Fellows category:
Neil Ramsay

Top Anesthesia Oral Presentation in the Residents category:
Eric Shin

Top Pharmacology & Therapeutics Oral Presentation in the Graduate Student category:
Stephanie Sellers

Top Pharmacology & Therapeutics Oral Presentation in the Post-Graduate Student category:
Anat Fisher

Top Pharmacology & Therapeutics Oral Presentation in the Undergraduate category:
Rochelle Leung

Top Anesthesia Poster Presentation in the Fellows category:
Heng Gan

Top Anesthesia Poster Presentation in the Residents Category:
Brad Merriman

Top Pharmacology & Therapeutics Poster Presentation in the Graduate Student Category:
Stephanie Warner

Top Pharmacology & Therapeutics Poster Presentation in the Post-Graduate Student Category:
Stephan Pless

AWARDS

Dr. Dimitri Giannoulis Memorial Award in Regional Anesthesia – Dr. Steven Lee
Dr. John A. McConnell Memorial Award for Academic Excellence – Dr. Anton Chau
Dr. Derek Daniel Wolney Memorial Prize for Clinical Proficiency – Dr. Christopher Durkin
Dr. Jone Chang Memorial Award in Anesthesiology Excellence – Dr. Angineh Gharapetian

Dr. Jone Chang Memorial Prize in Chronic Pain – Dr. Jennifer Joo

Dr. Anthony Boulton Award for FPA Clinical Excellence – Dr. Henk Roos

Dr. James Kimme Golden Epidural Award
Dr. Sadiq Abdulla (Jr. Resident) and Dr. Anton Chau (Sr. Resident)

Dr. Michael Smith Award for Pediatric Anesthesia – Dr. Jacqueline Trudeau

RCH Resident Award for Clinical Excellence
Dr. Graham Noble (Jr. Resident) and Dr. Colleen Shamji (Sr. Resident)

Ken C.K. Wong Award for Clinical Teaching – Dr. Graham Noble

Kenny Wong Award for Clinical Excellence and Collegiality (Formerly “Resident Award for Clinical Excellence and Collegiality, Vancouver Hospital”) – Dr. Sean McLean

Pharmacology & Therapeutics Undergraduate Awards

Esther Anderson Memorial Prize (highest graduating average in Honors Pharmacology
Victoria Baronas

Prakish Gill Memorial Prize (highest graduating average in Majors Pharmacology
Ryan Lo

FROSST Medical Scholarship (final year medical student who has made achievement in Therapeutics
Sheng-Ping Billy Lin

Thomas L. Perry Memorial Prize in Medical Pharmacology & Therapeutics (best overall performance in Phase VI Therapeutics assignments)
Adrienne Montgomery

Merck, Sharp and Dohme Scholarship in Medicine
Blair Fulton

Pharmacology & Therapeutics Graduate Awards

Sacks Prize (Best presentations in 2011/12 PCTH 514)
PhD: Arpeeta Sharma
MSc: Jenny Bo Wen Li

*Academic Excellence (highest average average in 1st year graduate courses)*
Timothy Fung

New graduate students admitted into pharmacology in 2012-3:
Tim Fung (MacLeod)
Hyun-Kyoung Koo (Hackett)
Zachary WHITNEY (Barr)
Yue Wu (Fedida)

Incoming students (starting Sept 2013):
Logan MacDonald, Marijana Pavlovic, Vincent Suen.

PCTH Students graduated (2012/2013):
PhD:
Anat Fisher (Dormuth)
Maen Sarhan (Ahern),
Ricardo Rivera (Schwarz)

MSC:
Xinyang Huang (Kurata)
Jayant Shrawah (Ansley)

**FACULTY AWARDS**

*Master Teacher Awards:*
VGH – Dr. Alana Flexman
SPH – Dr. Laine Bosma
RCH – Dr. Keith Sun
BCCH – Dr. Yvonne Csanyi-Fritz
BCWH – Dr. Vit Gunka
Rural/Community – Dr. John Veall (LGH)
Medicine – Dr. Saul Isserow (Cardiology)
FPA Master Teacher Award – Anthony Boulton (VGH)
FPA Master Teacher Award – Paul Bach (SPH)

Dr. Dimitri Giannoulis Resident Appreciation Award
Dr. John Bowering
PROMOTIONS, RESEARCH AWARDS, SCHOLARSHIPS AND OTHER KUDOS
In 2013:

Promotions
1. Dr. James McLarnon to Professor Emeritus
2. Dr. Joanne Douglas to Clinical Professor Emeritus
3. Dr. Colin Dormuth to Associate Professor
4. Clinical Instructor to Clinical Assistant Professor:
   Dr. Cynthia Fan-Yarnold – St. Paul’s Hospital
   Dr. Trina Montemurro – St. Paul’s Hospital
   Dr. Gus Chan – St. Paul’s Hospital
   Dr. T. Laine Bosma – St. Paul’s Hospital
   Dr. Charles Lo – St. Paul’s Hospital
   Dr. Kallie Honeywood – Vernon Jubilee Hospital
   Dr. Randy Hewgill – Lions Gate Hospital
   Dr. Ken Harder – Penticton Regional Hospital

5. Clinical Assistant Professor to Clinical Associate Professor:
   Dr. Brenda Lau – Surrey Memorial Hospital
   Dr. Vit Gunka – BC Women’s Hospital
   Dr. Robert Eger – Kelowna Regional General Hospital

Research Awards and Scholarships
Dr. Paul Kliffer – Canadian Association for Medical Education (CAME) Merit Award
Dr. Mark Ansermino – CIHR/NSERC Collaborative Health Research Projects Grant
Dr. Mark Ansermino - CFRI Clinical Research Capacity Building Awards (CRCBA)
Dr. Stephan Schwarz – Canadian Anesthesiologists Society (CAS) Research Award in Neuroanesthesia
Dr. Harley Kurata – CIHR New Investigator Award
Tillie Hackett – Providence Health Care Research Institute New Investigator Award
Dr. Alasdair Barr – BC Mental Health Grant Award
Dr. Eleanor Reimer – co-recipient - Award of Merit for Top Innovation:
   CW Redevelopment Site
Dr. Roanne Preston – co-recipient - Award of Merit for Top Innovation:
   CW Redevelopment Site

Other Awards
CIHR Grant Research Award:
Dr. David Fedida      Dr. Pascal Bernatchez      Tillie Hackett
SECTION REPORT

ANESTHESIOLOGY
Department Statistics

Full-time faculty - 20
Clinical Faculty - 331
Fellows - 14
Residents - 54
Medical Students - 183
Number of ORs - 210
ANESTHESIOLOGY
SITE CHIEF REPORTS
EXECUTIVE SUMMARY

In 2013 the Department of Pediatric Anesthesia built on the priorities set out during our Annual General Meeting, November 2012. These were focused on research, teaching, and clinical care. The year continued with a strong and productive pediatric research activity.

The Department consolidated a policy of in house resident coverage and continued with a strong teaching commitment for anesthesia residents and fellows as well as medical students and off service trainees. A strong simulation program was established under the direction of Dr. Chris Chin. The anesthesia pre-anesthesia clinic was redesigned and relocated. Most families now are able to meet their assigned anesthesiologist in clinic. Department roles and responsibilities were re-evaluated and assigned.

The year 2013 also saw the Department consolidate its accounting for foundation accounts and the Departmental Budget. The Department continued to be heavily involved in development planning for the new acute care tower. In 2013 the Department underwent trials for new anesthesia workstations and the GE Aisys was chosen as the preferred platform. A complete replacement of current workstations is planned over the following two to three years. An urgent requirement for replacement of anesthesia monitors was identified.

The Department welcomed Dr. Zoe Brown as a new member to the group. The recruitment process for a new Director of Research to take over this administrative role from Mark Ansermino was begun.

The Department business group reached an agreement for a three year extension to the existing clinical services contract. On Nov 2nd 2013 our annual general meeting took place to provide direction for 2014.

PRELIMINARY 2013 ACUTE PAIN SERVICE REPORT

Gill Lauder, MB BCh, FRCA, FRCPC, CPE. Director, Acute Pain Service

The Anesthesiology-based Acute Pain Service (APS) has now completed its 24th year of operation, caring for a number of patients and families during 2013. The APS is currently
active in the management of acute medical and postoperative pain.

The APS falls under the mandate of the Department of Anesthesia. APS personnel include a Medical Director, Dr. G. Lauder July 2010 to date. 18 Pediatric Anesthesiologists provided rotating clinical coverage 24 hours per day, 7 days per week. 1.0 FTE Nurse Clinician (Sarb Randhawa) and a 0.6 FTE Administrative Assistant (Erin Lowe). Nursing and administrative FTE’s are shared with both the APS and the Complex Pain Service (CPS).

**APS STATS FOR 2013: Pending**

Database statistics are not available at the present time until Decision Support Services (DSS) provide APS data. Patient data, outcomes and complications are collected via point-of-care hard copy service record, and transposed to a database by the nurse clinician to enable DSS to analyse, develop and produce the yearly summary. The data/details for 2013 are pending.

**APS CRITICAL INCIDENTS IN 2013:**

A total of four self report critical incidents were reported to APS through PSLS for 2013. These have been presented during the 2013 APS rounds meetings and appropriate actions taken to prevent them in the future where deemed necessary. The only outstanding issue which has not been completely resolved is the ongoing concern with the paging system for the APS call team as presented at APS rounds in January 2013.

**APS SUCCESSES DURING 2013:**

**APS Physician Changes**

Following the Department of Anesthesia’s AGM in November 2012 changes were made to the Acute Pain Call rota such that all anesthesiaiology staff on the general anesthesia on-call rota will also cover pain call. The structure for the APS physician week on call has also changed alongside changes to the way pre-assessment for anesthesia is handled. This has resulted in a greater ability of the APS physician to be more responsive to the needs of the APS patients and APS consults.

**Implementation of Other Standard Opioid Orders**

BCCH Accreditation in June 2012 required compliance with standard concentrations throughout the institution, including continuous opioid infusions (COI). APS, pharmacy and the nurse educators undertook the requisite changes and education to ensure that this occurred smoothly without critical incidents. Since then other standardized Acute Pain Service order sets have been created and converted into the correct format and are now available on infosource under the order set tab.
Techniques:
Ongoing utilization of Ultrasound technology within the operating room (OR) environment for Continuous Peripheral Nerve Block (CPNB) analgesia has continued during 2013. Transversus Abdominal Plane (TAP) catheters continue to be used for unilateral urological surgery.

Anesthesia Residents On Call For the Pain Service:
The anesthesia resident’s role is as a first responder to gain APS experience and knowledge but ALL decisions re pain management are channelled through the APS physician or fellow. This continues to prove very successful. Residents report being more aware of pain issues and medications.

Epidurals on 3M CHU:
APS continues to support the cardiac anesthesiologists in implementation of epidurals on CHU 3M. Clinical epidural management, protocols and education for 3M staff continues to be the responsibility of the cardiac anesthesiologists/pain nurse clinician.

Education:
APS staff were involved with many institutional and external educational pain management lectures and educational projects throughout 2013.

List of Educational Activities Delivered by APS in 2013:

- Point of care teaching Medical students, Residents, Nurses in OR, on APS rounds.
- APS Departmental Rounds; 5 per annum.
- Pediatric Epidural Analgesia for Nurses; BCCH, Bi-annual sessions
- Pediatric Burn Pain Analgesia for Nurses; BCCH, Vancouver, Bi-annual sessions
- Pediatric Acute Pain Management for Oncology Fellows, BCCH, Annual
- Pediatric Pain Management for PICU Fellows; Annual
- Edu-Quicks on 3R for nurses on Pain management issues.
- PACU nurse pain teaching.
- Morning lectures to UBC residents; interventional pain management techniques.
- Review of antiseptic skin preparation prior to insertion of epidurals, APS rounds.
- Presentation of Topical agents in ongoing pain, APS rounds.
- Review of Recent legislation & Cannabanoids, APS rounds.
List of other Pain Management Educational Activities Delivered by Dr Lauder in 2013:

- Pain Management Following Tonsillectomy without Codeine International Otolaryngology Meeting, Vancouver Oct 2013.
- Point of care teaching Medical students, Residents during CPS clinic.
- Complex Regional Pain Syndrome Lecture to BCCH ER Physicians
- Complex Regional Pain Syndrome Provincial Pain Rounds Lecture
- Neuropathic Pain lecture for Certified Pain Educator Exam Preparation
- Complex Regional Pain Syndrome Lecture, Whistler Conference
- Pain and Anesthesia for Tonsillectomy Lecture, Whistler Conference
- The Pathophysiology of Chronic Pain, Departmental Academic Rounds
- Anesthesia for Children with Chronic Pain, APAGBI Annual meeting
- Naloxone Admixture with PCA Morphine, APAGBI Annual meeting
- Dexmedetomidine/Hydromorphone for Pain During Chimeric Infusion, Canadian Pain Society.
- Ongoing pain following Spine Surgery, Orthopedic Team meeting.

Research:
Research projects specifically designed to explore pediatric pain management issues are ongoing.

Publications:
Publications produced by the APS service specifically centred on pediatric pain management.

Pain BC Society:
The APS director is a board member of the Pain BC Society (www.painbc.ca). Pain BC Society is a non-profit organization made up of Healthcare providers, patients and others with a passion to reduce burden of pain and to make positive change in the health care system.
Pain BC has been the catalyst to a tremendous amount of growth and activity since inception in 2008. See APS Minutes for ongoing achievements for 2013.
**ONGOING APS CHALLENGES**

**Audit.**
There is no electronic database to easily analyze and implement improved quality control issues.
No resources are available to implement ongoing follow up of patients leaving hospital after discharge from day surgery exists in this institution. There is no tracking of the quality of pain management for non-APS patients within the institution nor after discharge.

**Personnel.**
The nurse clinician role is restricted to 0730-1630 Tuesday to Friday. The Nurse clinician has a significant commitment to the complex pain service and a large administrative minimizing time for APS point of care management and teaching on the wards.

**Lack of nursing resources prevents:**

- Change of the present referral practice where only physicians can refer children to the APS. Denies and ignores expertise of other clinicians and family members.
- Enhanced point of care management and education
- Enhanced continuity of patient care.
- Expansion/adoption of more non-pharmacological techniques for individual patients.
- Development of other pain management education packets/guidelines
- Enhance collaboration with other areas in the institution such as NICU and ER
- Development of ongoing quality of care projects
- Enhanced integration with Quality and Risk
- Enhanced integration with Childlife
- Expansion of invasive techniques to other wards
- Nurse led research projects.
- Nursing involvement in Provincial and National Pain Education Meetings

**Psychology.**
Lack of an APS dedicated psychologist ignores the fact that pain perception is a complex biopsychosocial problem (mix of nociceptive responses to the trauma of surgery and psychological components). In some APS patients postoperative pain control can be problematic, especially in children who are not opioid naïve, who have a history of chronic pain or who have an ongoing chronic disease process. Lack of trained psychological support causes persistence of psychological suffering and a maladaptive anxious response that worsens outcome.
QUALITY OF CARE
Dr. Simon D. Whyte

Departmental quality of care (QoC) meetings took place on 9 occasions in 2013, with 9 staff members reviewing 11 cases. 8/9 meetings were quorate and all department members bar two attended 50% or more of the meetings, confirming the value of these rounds to department members. This year also saw the presentation of a number of audits and quality improvement initiatives by department members, both in this forum and beyond, and ongoing department representation in Surgical Suite Rapid Process Improvement Workshops (RPIWs).

Practice and resource changes arising from QoC case reviews in 2013 (contributing department members):

- Formal time out before injecting any local anaesthesia, thus a formal time out for all regional blocks (SW)
- Tongue sutures for all cleft palate repair patients
- Updated and formalised requirements for processes for booking out-of-hours emergency DXT, transporting a child for DXT and documenting anesthesia for the DXT (SW)
- Updated paediatric crash cart at BCCA (SM)
- Recommendations from a CPSER regarding use of IV tubing for induction of anaesthesia, management of disconnected IV fluid lines in PACU, and the OR-PACU handover process were received late in 2013. These recommendations will be implemented in early 2014 (MC)

Other QoC Initiatives in 2013 (contributing department members):

- New guidelines for SDC management of children with IDDM (SW)
- Revision of the pre-anaesthesia clinic process, to include (JC, SW, AM)
  - screening and triage of all dental patients
  - triage of PAC referrals from other services, with phone consultations where indicated, to avoid unnecessary PAC visits
  - PAC consultations by the patient’s own anaesthetist
  - spine PAC consults by members of the spine anaesthesia team
- New guidelines for management of emergence delirium in PACU (CM/Fellow)
- Revised peri-operative normothermia guidelines (SW)
- New protocol for management of perioperative psychiatric emergencies, with CAPE support (NF/JC)
- New guidelines and processes for OR-NICU transfers and handovers (SW)
Departmental audit activity:

- Dr. K. Bailey presented her audit of postoperative tonsillectomy pain and its management in PACU.
- Dr. E. Reimer presented an iACT-funded QI project to evaluate the impact on perceived quality and value of pre-operative anaesthesia assessment visits of introducing a pre-operative anaesthesia screening questionnaire, and an anesthesia-team-led triaging process for determining the need for pre-operative anaesthesia assessment.
- Dr. S. Whyte continued and extended his work with Matthias Görges, presenting a 3rd audit cycle of intraoperative temperature profiles of scoliosis patients to the department, and presenting a retrospective audit of the incidence and severity of intraoperative hypothermia before and after the introduction of pre-operative warming at Surgical Suites Grand Rounds. This work was subsequently published in *Pediatric Anesthesia*.
- Dr. S. Whyte presented a second round audit of fluid fasting times in elective surgical patients, in conjunction with Jordan Cheng (OPSEI Quality Improvement Research Assistant) and Trish Page (SDCU CNC), following practice changes to shorten fluid fasting times. This work was presented, by Trish Page, at the Canadian Association of Paediatric Health Centres annual conference in Toronto.
- Dr S. Whyte presented a snapshot audit of the incidence of desaturation and the use of portable pulse oximetry monitoring during transport from the OR to PACU.
- Dr S. Malherbe is planning an audit of random blood glucose values after induction, in fasted infants undergoing anaesthesia. This will report in 2014.
- Dr. M. Cassidy is supervising a Fellow-led retrospective audit of Code Blue calls. This will report in 2014.
- Dr. R Purdy is undertaking a review of anaesthesia in instances of perioperative (30-day) mortality.

With regard to the department’s role in QoC activities beyond anaesthesia services provision *per se*, Dr. S. Whyte continued in the roles of Co-Chair of the hospital’s Child Health Safety and Quality of Care (CHSQoC) committee; department representative on the QoC committees of Surgical Suites, and Surgery and Neurosciences; and at the P-NSQIP forum. Surgical Suites Grand Rounds, incepted in 2011, increased to 5 meetings in 2013, with ongoing good attendance and feedback; I’m grateful to Nathan O’Hara, Bindy Sahota and Damian Duffy of OPSEI for ongoing co-ordinating and advertising activities, and for financial support. Dr. Reimer continued as Chair of the Site Wide Sedation Committee, which reports to CHSQoC. Dr. Chen represented the department in an RPIW that focussed on re-organising the pre-anaesthesia clinic.

This is my annual opportunity to thank everyone who contributes to and facilitates the quality assurance and quality improvement work of this department, whether by
volunteering cases for discussion, contributing to the healthy debate that always accompanies case reviews, undertaking to implement actionable recommendations that arise from these reviews and from PSLS reports, or scheduling my time to undertake the QoC portfolio. The coming year will feature a drive to correct our ‘high-outlier’ status for surgical site infections and reports from a growing number of department-member led audits. I hope we will continue to support each other in performing continuous quality improvement in the care we provide.

CARDIAC ANESTHESIA
*Dr. Clayton C. Reichert, Head Cardiac Anesthesia*

The cardiac anesthesia providers were four in number for 2013 with Dr. Chris Chin joining the staff permanently. This number this was reduced to 3 for July to December as Dr. Clayton Reichert was on sabbatical. Dr. Nobert Froese and Dr. Louis Scheepers continue as valued team members.

Case volume in 2013 was 186 open including 21 neonates and 73 infants. We also provided care for 213 closed heart cases, including 79 neonates and 61 infants. I believe this volume continues to provide each anesthesiologist with adequate skills maintenance.

As well, we are involved in interventional procedures on a high frequency basis, and as requested for other diagnostic or therapeutic procedures on the children with congenital cardiac disease.

Educationally we continued to provide the BCCH fellowship pediatric anesthesiology trainees with one month core rotations in cardiac anesthesia and have had three fellow complete. Pediatric critical care fellows are also scheduled to experience a rotation through the cardiac operating suite.

We are planning ongoing meetings to coordinate care and provide similar anesthesia support for our two cardiac surgeons and cardiology colleagues.

PAEDIATRIC ANESTHESIA SPINE TEAM
*Dr Andrew B. Morrison, Spine Team Coordinator*

The Pediatric Anaesthesia Spine Team was formed three years ago with the intention of providing a specialized, consistent, and coordinated approach to the provision of anaesthesia for our scoliosis patients.
Scoliosis patients comprise of three groups based upon aetiology: congenital, neuromuscular, and idiopathic. They encompass a broad range of age groups from toddler to adult, occasionally with complex medical conditions. Our small expert group of anaesthetists is able to focus on the individual requirements of each patient while delivering a high level of care specific to the requirements of scoliosis surgery.

Communication, understanding and interaction between care providers in the operating room is essential in complex and lengthy surgery and these parameters have been improved with the move to a smaller team.

Quality of care indicators such as maintenance of patient temperature, time to incision, transfusion rates and others have been improved and the implementation of new policies such as patient prewarming, and streamlined pre operative clinic consultations have been facilitated.

The team comprises six members drawn from the Department of Paediatric Anaesthesia with rotation into and out of the team approximately every six months. Current members of the spine team are Andrew Morrison, Gillian Lauder, Simon Whyte, Eleanor Reimer, Myles Cassidy and Michael Barker. As part of the larger Paediatric Spine Team we are actively involved in ongoing multidisciplinary education sessions to maintain, advance and promote understanding of the challenges these patients face.

CLINICAL FELLOWSHIP PROGRAM
Dr Carolyne J Montgomery, Fellowship Director

Job Description and Fellowship Committee:
The current Fellowship Committee members are: Dr’s Froese (Chief), Ansermino (Research), Chin (Simulation, Cardiac), Lauder (APS), Traynor (Residency Training) and two members-at-large, Dr’s Bailey and Cassidy. The committee met in September 2013 to review Terms of Reference, Job Description and Fellowship Budget which was subsequently approved by the AEC and Business Group.
The department secretary, Ms D Taylor is responsible for the management of the applications, and provides assistance with immigration, provincial licensing, and hospital and university privileges. In addition, she maintains the annual information package, updates the Web Site and manages the Fellows schedules with respect to vacations, conference leave and specialty rotations. Mr D Duffy, OPSEI, has been essential in providing access to application for additional funding for the extended two year fellowship of Dr Gan through the Foundation Fellowship Committee of the BC Children’s Foundation.
Recruitment and Structure Update:
Dr Eding Mvilongo and Dr Heng Gan (July 2012- June 2013) completed our 12 month clinical fellowship program. Dr Heng Gan completed 6 months (July-Dec of 2013) of research under the supervision of the research director Dr J. Mark Ansermino.

The current 12-month fellow is (July 2013 – June 2014), Jeff Sampson, most recently from the Queen’s program. A Canadian trained graduate, Dr David Summerfreund, who was from the University of Western Ontario, was a late withdrawal. Within 6 weeks’ notice, we arranged two substitute Clinical Fellows, Dr’s Sonika Thukral (July – October 2014) and Gayatri Gopalakrishnan. (November 2013 – June 2014). Both are International Medical Graduates.

There is an arrangement with Calgary Children’s to provide one of their trainees, Dr Jon McMann to do a to a 3 block rotation including one month of cardiac. (Feb-May 2014). It is hoped that this will establish an ongoing relationship with Calgary with respect to clinical and research training opportunities.

Evaluation of current fellows has been updated and a Portfolio Style of evaluation is being encouraged using a MiniCEX tool. Meetings are held quarterly and as required to monitor progress. With an expanded staff the point-of-care, personalized evaluations are essential for accurate assessment rather than quarterly global assessment.

Clinical, Academic and Research:
Data from the 2012-2013 year based on data from Dr’s Heng and Mvilongo’s log-books showed a decrease in case load. A review of Dr Heng’s data support “out-of-house” call for the Fellows as less than 4% of the cases start after 23:30.

A universal Log-Book for staff and Fellows has not been established. Fellows are participating actively in APS including teaching the residents.

Formalized exposure to specific clinical scenarios is an ongoing challenge for the fellowship program. Specific scheduled 4-week blocks in PICU, Cardiac, and an experience in International Health have been well established over the last few years. Under the supervision of Dr Purdy, Dr Mvilongo participated in the Operation Rainbow Program to Cambodia in Feb 2013 and Dr Sampson will participate in Feb 2014. We are continuing to develop our relationship with Mulago Hospital in Uganda (through OPSEI and UBC with the leadership of Dr B Warriner). Dr Gan worked there with Dr Reimer and the OPSEI group in March 2013 providing clinical service and teaching. In addition, Dr Gan was involved in PART oximetry research internationally. We plan to continue our collaboration with the PART to further develop the research aspect of the Fellowship program.
Dr Chin has been instrumental in establishing Simulation experiences for the Fellows at both the learner and Train-the-Trainer level. Involvement in Simulation training (both Anaesthesia and Multidisciplinary) will become a core expectation of the Fellowship experience. With the help of Jonn McMann, Dr Chin is also developing an “Introduction to Pediatric Cardiac Anesthesia at BCCH” document which will help orient Anesthesia Fellows (and Residents) to their BCCH Anesthesia for Pediatric Congenital Heart Disease module. We remain challenged by adequate exposure to difficult airways, US guided blocks and epidurals. We have established a team of staff to teach/supervise blocks to facilitate learning. Spine Specialty Team Exposure continues but as for the Cardiac rotation, learning objectives need to be specified.

Administration projects were done including the development of an Emergence Delirium Protocol for PACU and an Ideal (Normal) Body Weight look-up tables. Please see the PART annual report of academic productivity.

Both Dr’s Heng and Mvilongo presented at the UBC academic day. Ongoing projects are limited this year due to the current learning needs of the trainees. Dr Gopalakrishnan has completed an audit of peri-operative cardiac arrest. Incoming Fellows will be encouraged to pursue a feasible audit project as a core requirement of the program. Dr Sampson is designing a Follow-up PANDA study. Dr Joy Dawes from 2012 has completed the Dexmedetomidine bolus study and will be presenting at both the CAS and the APAGBI. As Fellowship director, I use my academic time to actively participate in the PART and various projects.

**Challenges and Changes:**
The challenges remain to improve the relevance and quality of the candidates prior to formal application by pre-screening and counselling as to the appropriateness of the application to BCCH. Increased use of the Fellowship Committee and ongoing evaluation of the appropriate balance between clinical and research Fellowship. Continuity and productivity may further enhanced by the use of a 2-year fellowship model that combines a research year and a fellowship year. We are continuing to search for the exceptional candidates for that type of position and optimize use of the resources available at PART.

**Summary:**
The Fellowship program is healthy with a history of strong candidates who are excellent clinicians and reasonably productive with the support of PART and the BCCH clinical and academic staff. The anesthesiology staff have done an excellent job in this cycle supporting our more clinically orientated trainees. The Fellowship program director is deeply in debt to all the anesthesiology staff that contributes to the training and supervision of the fellows in all these activities.
RESIDENCY PROGRAM
Dr Michael Traynor, Residency Coordinator

In-hospital call
In-hospital call is now well-established at BCCH. Some concerns about the low volume of cases at night and on weekends were discussed by the RTC in early 2013. The conclusion was that the current in-hospital call system was enabling a superior educational experience overall and that it should continue without modification.

Out-of-OR experience
The experience offered at BCCH on the APS, in radiology, and other out-of-OR locations such as the oncology clinic continues to be well-received by residents. After-hours access to housestaff skilled in vascular access, including the use of ultrasound, has greatly enhanced patient care.

Our biggest concern at the moment is whether we will be able to continue to offer exposure to pediatric trauma to our residents. The intermittent nature of resident call coverage at BCCH is causing logistical difficulties for the trauma team and we have been informed that it may be preferable to provide no coverage at all, rather than unreliable coverage. We are hoping to address this issue by restructuring the way resident call-shifts are distributed UBC-wide, but discussions are still in the early stages.

Off-service residents
Our department continues to provide pediatric anesthesia rotations for pediatrics residents, PICU fellows, pediatric emergency medicine (EM) fellows, EM residents, family practice residents following the EM track as well as third-year medical students. In 2013, we reached an agreement with the department of pediatric dentistry to provide pediatric dental residents with a limited exposure to certain aspects of pediatric anesthesia. In addition, we are now providing elective rotations to fourth year medical students who have a specific interest in pediatric anesthesia. This elective rotation is administered by the UBC undergraduate office.

External anesthesia residents
We had the pleasure of welcoming three visiting residents this year: Dr. Genevieve Lalonde from Sherbrooke, Dr. Mancho Ng from Calgary and Dr. Fiorenzo Cusano from London each completed elective rotations in general pediatric anesthesia at BCCH in 2013.

PALS
Our long-term goal is to offer PALS provider courses specifically tailored to the unique skill sets of anesthesia residents, fellows, and staff. To this end, ten department members undertook PALS provider recertification followed by PALS instructor training in the fall of 2013.
Morning tutorials
As planned, the very successful morning tutorial program has been expanded and there are now tutorials four mornings per week.

Simulation
Dr. Chris Chin has begun running full-day simulator sessions for medical students, residents and fellows. The sessions are scheduled once per month and cover both pediatric airway management as well as perioperative pediatric emergencies. These days in the simulator environment have been very well received. The next logical step would be to integrate Dr. Chin’s pediatric sessions into the global simulator curriculum overseen by Dr. Laine Bosma at St. Paul’s Hospital.

Review of evaluation process
Daily paper evaluations have been in use since the beginning of 2013. As anticipated, this has enabled more reliable identification of residents who need mid-rotation feedback and has provided more comprehensive data upon which to base resident in-training evaluations. Although we had hoped to make progress on implementing some form of reverse evaluation process (evaluation of staff by residents), this has proven difficult and is still a work in progress.

Audits, research, and administrative experience
One of our objectives as a department is to increase our engagement in the audit process. We are hoping to involve residents in this endeavour as a way of exposing them to this essential part of clinical practice. The volume of audits will not likely allow all residents to participate, but there may be alternatives available such as involvement in formal research work with the pediatric anesthesia research team or in administrative projects. We anticipate that this will be an area of focus in 2014.

GLOBAL HEALTH
Dr. F. Robert Purdy

October through December 2013 Cambodia
Clayton Reichert one of our pediatric cardiac anesthesiologists from BCCH volunteered his time and expertise at Ankor Hospital for Children in Siem Reap Cambodia training anesthesia residents and hospital staff. This included mentoring of physicians and other medical staff at the hospital with the development of a new cardiac surgical program.
The dedication of Dr. Reichert to developing country medical education and clinical care over the past 15 years and his advice and support for ongoing surgical missions is exemplary much appreciated.

November 2013 Antigua Guatemala
Health for Humanity a non-profit volunteer run organization completed their 10th surgical mission in Central America. Dr. Bob Purdy joined the group to provide pediatric anesthesia for children having cleft lip and palate surgery. The group completed over 150 surgical procedures for adults and children during the 14 day mission. Health for Humanity was formed with the broad purpose of improving health in developing countries and in addition to their surgical work partner with Guatemalan NGO’s to support public health and education which includes providing potable water and safe cook stoves as well as HIV prevention.

CURRENT RESEARCH PROJECTS, COLLABORATIONS & PARTNERSHIPS

The Pediatric Anesthesia Research Team’s (PART) research projects continue to foster strong collaborations among anesthesiologists, as well as developing strong partnerships with other departments and disciplines within BC Children’s Hospital (BCCH) and beyond. Specifically, in 2013:

• We entered our 13th year of collaboration with the ECEM group, working to build safer clinical monitoring systems. This year, the PART/ECEM began the first clinical trials of our computer controlled anesthesia system, ‘iControl-RP’ (aka Jon 3.0) at Royal Columbian Hospital in New Westminster. This is our first trial in an adult population after the successful completion of the pediatric trials with Jon 2.0.

• The PART and ECEM continue to develop and test low-cost pulse oximeters. The Audio Oximeter and Camera Oximeter projects recruited healthy adult volunteers to spend a few hours in the altitude chamber at UBC, while wearing a variety of sensors on their fingers.

Eding and Heng in the Altitude Chamber
• We developed a respiratory rate measurement app (RRate). The RRate provides a more efficient method of measuring respiratory rate; estimated by measuring the median time interval between breaths obtained from tapping on the touch screen of a mobile device. A consumer version of RRate is available on the Apple App Store and Google Play.

![PART's RRate application](image)

• We established a platform ‘KidsCan’ to engage youth in research. For this project we are collaborating with the Youth Research Network (MICYRN). A smartphone game, ‘MobileKids’ was developed and pilot tested by our team in partnership with Ayogo Health, Inc. and Kineteks Corp., both Vancouver based companies.

• Our retrospective audit to examine the effectiveness of preoperative warming on reducing hypothermia in spine surgery patients, published in May 2013, has led to a collaboration with Dr Firoz Miyanji of the Department of Orthopedics at BCCH. We are now examining the effect of intraoperative hypothermia on postoperative outcomes (SHout).

• Our ‘Do I Wheeze?’ study aims to develop a step by step procedure for automatically distinguishing children with wheeze from children without wheeze. For this, we are taking short audio recordings of subjects with suspected wheezing in the BCCH Emergency Room and the Respiratory Clinic.

• With active collaboration from the 3R ward nursing team, we are conducting a study for respiratory acoustic monitoring of patients receiving postoperative opioid analgesics.

• This year we also conducted a study in the NICU, looking at comparing pulse rates obtained from pulse oximetry equipment in neonates. This study was conducted with Covidien Ltd. as industry partner.
**AWARDS**

The PART continues its success at local, national and international levels:

- Congratulations to Mark Ansermino for being one of the first recipients of the CFRI Member Recognition Award of Excellence for Clinical Research.

  ![Mark receiving his award from Dr. Howard Feldman](image)

  *Mark receiving his award from Dr. Howard Feldman (Executive Associate Dean Research, UBC Faculty of Medicine)*

- Matthias Gorges won the CFRI Outstanding Achievement by a Post Doctoral Fellow award. The award recognizes the outstanding academic achievement, personal leadership qualities and demonstrated research ability of a postdoctoral fellow who shows promise of becoming a future leader in health research.

- Walter Karlen won the 2013 Killam Post Doctoral Fellow Research Prize. This prize is awarded annually to two UBC PDFs in recognition of outstanding research and scholarly contributions while at UBC.

- Walter also won the 2\textsuperscript{nd} place in the Post Doctoral category at the ‘CFRI Minute and a Half to win it’ research presentation competition. Trainees have 1.5 minutes to describe their research.

- Heng Gan won the Best Poster presentation by a Clinical Fellow at the annual UBC Dept of Anesthesiology, Pharmacology & Therapeutics research day.

- Parastoo Dehkordi, Ainara Garde, Walter Karlen, Mark Ansermino and Guy Dumont won the Best Poster Award for ‘Pulse Rate Variability in Children with Sleep Disordered Breathing in Different Sleep Stages’ at the Computers in Cardiology conference in Zaragoza, Spain.
• Terri Sun, Mark Ansermino, Gill Lauder, Carolyne Montgomery, Nick West, Dorothy Myers and Carl von Baeyer won a Best Paper Award in Pediatric Anesthesia at the Canadian Anaesthesiologists’ Society (CAS).

• Our summer students Mazy Abulnaga and Michelle Chiu both won Best Poster Awards in their respective groups, at the CFRI Summer Student Poster Day.

• Congratulations to Nicholas West, Guy Dumont, Klaske van Heusden, Chris Petersen, Sara Khosravi, Kristian Soltesz, Aryannah Umedaly, Eleanor Reimer, and Mark Ansermino for receiving the Pediatric Anesthesia Editor’s Choice Article for ‘Robust closed-loop control of induction and maintenance of propofol anesthesia in children’

IN THE NEWS IN 2013

The Phone Oximeter™ Shines
The Phone Oximeter™ was named by PATH as one of the 10 breakthrough innovations to help to save the lives of women and children across the globe. The Phone Oximeter was represented by Tom Walker of LionsGate Technologies Inc at the United Nations General Assembly. The Phone Oximeter also featured as UBC’s Next Big Thing of 2014, among 10 others, picked from 80 entries.

KidsCan/Mobile Kids Spreads Wings

As part of our integrated Knowledge Translation (KT) plan for the project, PART and ECEM set the ball rolling on media outreach this year. The KidsCan/ MobileKids project
The KidsCan youth advisory group was invited by a project team at the Sick Kids Hospital in Toronto to advice in the development of their SPIRIT-C project. The SPIRIT-C is designed to establish protocols for randomized pediatric trials through evidence-based guidelines and to define terms aimed at improving protocols and results interpretation. The standards created by SPIRIT-C, will be used worldwide, extending the impact of KidsCan to international clinical research.

PART goes Open Source

We made our powerful platform for developing mHealth apps, LambdaNative, available as open source software for. To date we have used this platform for 45 mHealth apps including various Phone Oximeter apps, PIERS on the Move, Teleport and Panda. LambdaNative now has its own Wikipedia page and has been featured on CFRI news.

Research Environment

PART research meetings take place on the first and third Tuesday of each month in the Clinical Support Building. Wednesday morning Departmental Research Rounds are well attended and useful for the review of new study protocols, recruiting clinician subjects, and practicing presentations. This forum allows department members an opportunity to present study ideas and voice any concerns or questions that may arise from a research project.

PART is conducting studies in various areas of BCCH, in addition to the operating room. Due to our new collaborations in the orthopaedic clinic, we have been able to speak with potential subjects in advance of their surgery date, to pre-inform them of relevant studies. In 2013 we have recruited subjects and conducted studies in the emergency room, the respiratory clinic, 3R and the NICU.

We have extended our collaboration with Royal Columbian Hospital in New Westminster where we conducted an adult subject trial of ‘iControl-RP’ in collaboration with Dr Richard Merchant. We are now planning two more studies on that site.

The PART website is also linked from the main BCCH website, so patients and families are able to read about our current studies.
PART social activities continue to enrich our work environment and foster lasting friendships amongst team members and their families.

NEW FACES

We welcomed new faces in 2013. Suraaj Aulakh worked with the PART as a Research Assistant from September 2013 to January 2014. Suraaj’s background in biology and interactive arts & technology brought a new perspective to the team. We wish her all the best for her new endeavours.

Bradie Campbell worked with the team from January to May as an intern. She collated data from our international, global health collaborators, and reviewed it for quality. Braidie also assisted in the new sepsis/pneumonia project initiatives.
Mazy Abulnaga joined the team in May as a summer co-op student from the Electrical and Computer Engineering program at UBC. It was his second year with the team, helping us with the KidsCan/MobileKids project. Mazy is remembered for his untiring efforts to recruit wheezy kids in the summer for the DoI.Wheeze? project.

Michelle Chiu also joined us in May as a summer student from the MD program at UBC. Michelle’s work was funded by a highly competitive, CFRI summer studentship awarded to her. She performed the validation of our respiratory rate application (RRate). Dr. Eding Mvilongo completed her clinical fellowship in 2013. Her research contributions were greatly valued and we wish her every success. In July we were joined by Drs Jeff Sampson and Dr Sonika Thukral.

In November we were joined by Dr Gayatri Gopalakrishnan. In December, we bid a heavy-hearted farewell to Dr Heng Gan and his family, after 2 years of his, very productive clinical research fellowship.

**FUNDING**

The research team has grown to 11 full time research employees and more than 7 students. The lack of long-term, secure funding to maintain the key administrative and infrastructure support is risk to the viability of the PART. This year has seen an improvement over the last year in funding to support students and staff.

We submitted 14 grant and fellowship/studentship applications in 2013 (total money requested $3,479,570). We had a few key successes (success rate 6/19), including grants applied for in the last quarter of 2012, bringing us $336,856 in new funds for the year 2013.

We are very thankful for funding from the Safe and Comfy Kids fund, which was established by the physicians in the Department of Pediatric Anesthesia. This funding is crucial to our operations.

To compensate for the general decrease in the availability of tri-council supported grant funding, we have attempted to increase our level of industry collaboration. We will continue to explore all avenues to support students and key PART personnel within the coming year.
**SALARY AWARDS AND GRANTS**

**New Salary Awards**

<table>
<thead>
<tr>
<th>Recipient</th>
<th>Supervisor</th>
<th>Award</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ainara Garde</td>
<td>Guy Dumont</td>
<td>CFRI Post Doctoral Fellowship</td>
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</table>

**Current Salary Awards**

<table>
<thead>
<tr>
<th>Recipient</th>
<th>Award</th>
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<tbody>
<tr>
<td>Matthias Görges</td>
<td>CIHR Post-Doctoral Fellowship</td>
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<tr>
<td>Walter Karlen</td>
<td>Swiss National Science Foundation</td>
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**Grants Currently Held by PART Members**

<table>
<thead>
<tr>
<th>Project Title</th>
<th>PI(s)</th>
<th>Year Awarded</th>
<th>Granting Agency + Program Name</th>
<th>Amount Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed loop Control of Anesthesia</td>
<td>Dumont, Ansermino, Merchant, Mitchell</td>
<td>2013</td>
<td>CIHR CHRP + NSERC</td>
<td>637,000</td>
</tr>
<tr>
<td>Methodologies for Biomedical Signal</td>
<td>Dumont</td>
<td>2013</td>
<td>NSERC Discovery</td>
<td>300,000</td>
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<tr>
<td>Processing and Control</td>
<td></td>
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<tr>
<td>Project Title</td>
<td>PI(s)</td>
<td>Year Awarded</td>
<td>Granting Agency + Program Name</td>
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<tr>
<td>n/a</td>
<td>Mark Ansermino</td>
<td>2013</td>
<td>CFRI Clinical Research Capacity Building Award</td>
<td>$25,000</td>
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<tr>
<td>A mobile diagnostic and advisory device for management of children with sepsis in developing countries</td>
<td>Heng Gan</td>
<td>2012</td>
<td>Thrasher Foundation Research Fund</td>
<td>$26,750</td>
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<tr>
<td>Pre-Eclampsia Monitoring, Prevention and Treatment (PRE-EMPT) – mHealth application development</td>
<td>Mark Ansermino, Guy Dumont</td>
<td>2012</td>
<td>Gates Foundation</td>
<td>$250,000</td>
</tr>
<tr>
<td>KidsCan: Involving youth in research to create mHealth solutions for improved youth health</td>
<td>Mark Ansermino, Guy Dumont</td>
<td>2012</td>
<td>Peter Wall Solutions Initiative</td>
<td>$300,000</td>
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<tr>
<td>KidsCan: Knowledge Translation Supplemental Funding</td>
<td>Mark Ansermino, Guy Dumont</td>
<td>2012</td>
<td>Michael Smith Foundation for Health Research</td>
<td>$223,430</td>
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<tr>
<td>mHealth application development laboratory</td>
<td>Guy Dumont, Mark Ansermino</td>
<td>2012</td>
<td>NSERC</td>
<td>$46,000</td>
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<td>Camera Oximeter</td>
<td>Walter Karlen</td>
<td>2012</td>
<td>Rising Stars in Global Health, Grand Challenges Canada</td>
<td>$100,000</td>
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<tr>
<td>PIERS on the Move</td>
<td>Mark Ansermino</td>
<td>2011</td>
<td>Saving Lives at Birth, Grand Challenges Canada</td>
<td>$250,000</td>
</tr>
<tr>
<td>Project Title</td>
<td>PI(s)</td>
<td>Year Awarded</td>
<td>Granting Agency + Program Name</td>
<td>Amount Awarded</td>
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<tr>
<td>The Phone Oximeter: a simple, mobile device for respiratory disease management in the community</td>
<td>Mark Ansermino, Guy Dumont</td>
<td>2011</td>
<td>CHRP (CIHR/NSERC)</td>
<td>$360,000</td>
</tr>
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</table>

*Publications – please refer to page 125*
FRASER HEALTH AUTHORITY:
ROYAL COLUMBIAN & EAGLE RIDGE HOSPITALS

Cedric Ho  MD FRCPC
Head – Department of Anesthesia

EXECUTIVE SUMMARY

The Department of Anesthesiology and Perioperative Medicine for both the Royal Columbian and Eagle Ridge Hospitals comprises nearly 40 FRCPC consultants; over half have joined the combined department in the last 10 years. All recent additions have brought fellowship or valuable additional training to the department, adding to the existing expertise most notably in cardiac, neuro, regional, and chronic pain.

Royal Columbian Hospital

As the tertiary care centre for the entire Fraser Health Authority, which serves over one-third of the population of BC, the Royal Columbian Hospital provides a wide spectrum of surgical services. In fact, the range of surgical services provided at RCH is unmatched by any other site in British Columbia. RCH is the highest volume cardiac center in BC and also sees the most high-level trauma--it is by far the busiest trauma neurosurgery center in BC and is one of the top three centers in Canada for trauma orthopedics. Year after year RCH continues to have one of the highest risk-adjusted performing NICU; it is the one of the few centers in BC that can handle high-risk OB cases that require ICU and/or cardiac care. Interestingly, over 60% of the cases performed at RCH are classified as urgent/emergent. Over the last decade, NSQIP data has consistently ranked RCH surgical patients as having the highest acuity amongst the hundreds of North American hospitals participating in the study; at the same time, RCH has managed to have exemplary results.

The Acute Pain Service under the direction of Dr. Tony Tran provides care to approximately 3000 patients annually. Daily rounds conducted by a dedicated department member in conjunction with Ms. Brenda Poulton, the APS full-time Nurse Practitioner, help ensure an on-going high quality of care that consistently receives positive feedback from patients and staff. Dr. Tran has recently joined Dr. Dean Burriill in caring for FHA patients in their Chronic Pain Clinic at RCH.

The case load of cardiac surgery patients continues to increase at RCH. Over the last fiscal year, RCH handled nearly 1000 cases (including TAVI) representing a substantial increase from the previous fiscal period. In fact RCH has managed to consistently increase case loads over the last 15 years and yet is still not fully meeting the needs of the patients within their rapidly growing catchment area. It appears likely that the current growth trajectory will continue.
**Eagle Ridge Hospital**
The six operating rooms at ERH provide space for nearly 10000 surgical cases a year, the majority of which are Surgical Day Care cases. Most of the pediatric cases done by the Department are performed at ERH.

**Research**
The department has gained a number of new members in recent years with an interest in research and has a number of studies ongoing at this time. The Department sets aside special funds to enable ordinary members to do self-audits or practice-improvement initiatives.

**Teaching**
Our entire department plays an active role in the perioperative clinical instruction of both medical and paramedical personnel. This includes teaching airway management to members of the BC Ambulance Training Program, Military Search and Rescue Teams, Dental Residents and Fellows, and Respiratory Therapy students. The wide variety of surgical cases that occur at our two hospitals enriches the learning experience for our residents and medical students. Dr. Ken Ryan is our current Residency Training Coordinator

**Committee Membership**
The Department has had a strong tradition of filling the ranks of the BCAS especially at the leadership level. Drs. Orfaly, Brar, and Mohamedali currently continue in this vein.

- Ramsden: Regional Department Head, FHA
- Ho: Local Department Head RCH, Chair of Executive
- Johnson: Local Department Head ERH, Vice-chair of Executive
- Carrie: Westminster Anesthesia Group chairman, Member of Executive
- Phu: Member of Executive
- Mohamedali: Member of Executive
- MacLeod: Member of Executive
- Law: Director of Perioperative Echocardiography
- Warnick: Director of Technology in Anesthesia
- Ryan: Site-coordinator for the UBC Residency Program; Member of Executive
- Meyler: Site-coordinator for Anesthesia Education of undergraduates and para-medical personnel
- Baker: Ombudsman
- Sveinbjornsen: Director, Trauma Anesthesia
- Lipson: Director, Ambulatory Anesthesia
- Hodgson: Director of Informetics
- Sun: FHA Director of Cardiac Anesthesia
- Sharpe: Co-director of RCH CSICU
Lim: Director Neuro-anesthesia
Tran: Director APS service
Burrill: Director Chronic Pain service
MacLennan: Director, Perioperative Care
Merchant: Director of Research

Publications – please refer to page 125
ST. PAUL’S HOSPITAL  
Providence Health Care  

Randell L Moore MD FRCPC  
Head – Department of Anesthesia  

EXECUTIVE SUMMARY  

St. Paul’s is a Clinical Medical Academic Centre in downtown Vancouver that is integral to the University of British Columbia Faculty of Medicine. It is part of Providence Health, which comprises St. Paul’s Hospital, Mt. St. Joseph’s Hospital, and a number of residential facilities. The main foci of tertiary care is in Cardiac Sciences, Respiratory, HIV, and Renal disease. The Department of Medicine houses major initiatives in Respiratory, Cardiac, HIV, and Nephrology areas. The Department of Surgery aside from Cardiac sciences also has components including Urology, Otolaryngology, General, Gynecologic, Plastic, and Orthopedic surgery as well as Thoracic and Vascular surgery.

Anesthesiology at St. Paul’s Hospital is a major Department comprising 40 anesthesiologists. The Department also delivers anesthetic services at Mt. St. Joseph’s hospital (a community hospital) where 4 Operating Rooms and 3 Ophthalmology Procedure Rooms are in operation. The Department supports a Trans-esophageal Echo Program as well as various initiatives in interventional cardiology and radiology. At present 2 anesthesiologists have sub-specialty training in Intensive Care as the Department continues to evolve care in the Cardiac Surgery Intensive Care Unit, and increase connections with ICU. Recruitment has resulted in two anesthesiologists with fellowships in regional anesthesia advancing the regional anesthesia program.

A number of divisions within the department of anesthesia will be highlighted.

1. **Cardiac Anesthesia:**  

Dr. John Bowering continues as Head of the UBC Division of Cardiac Anesthesia and directs the Cardiac Anesthesia program at St. Paul’s Hospital. The Cardiac Anesthesia Fellowship program continues to attract good interest. 2013 has seen the ongoing development of a research program in percutaneous endovascular aortic valves, and trans-apical aortic valves, where Anesthesia has participated both in the combined interventional and cardiac OR and post-operative care. There continues to be a number of research initiatives in the planning phase in Cardiac
Anesthesia. Cardiac transplantations and heart failure devices continue to evolve and increase.

In the past fiscal year there were 801 Open Heart Procedures with 20 Cardiac Transplants, 189 percutaneous valves and 19 VADs. The Trans-esophageal Echocardiography group comprises 7 anesthesiologists who cover a call group in conjunction with Cardiology. This multi-disciplinary approach to Trans-Esophageal Echo has proven to be useful. TEE rounds have become increasingly popular with Surgeons and Cardiologists joining Anesthesia for these. Anesthesiologists continue to play a crucial role within the Cardiology/Cardiac surgery combination of care.

Anesthesia involvement with Electrophysiology procedures has resulted in 295 Cardiac Defibrillators, 365 Pacemakers and 905 Electrophysiology procedures. As well Laser Lead Extraction continues to increase.

2. **Division of Acute and Interventional Pain Management:**

This division is staffed by Dr. Bill McDonald as Division Head, as well as Dr. Colm Cole, Dr. Clinton Wong, Dr. Jill Osborn, and Dr. Brenda Lau. The Acute Pain service portion of this division treated over 1000 inpatients with PCA, regional and epidural analgesia in the last year. Increasing use of various nerve catheters continues to grow.

The chronic pain diagnosis and management portion of this division had over 425 fluoro assisted and over 1500 non-fluoro injections in the last year. Increasing numbers of Spinal Cord Stimulators are being inserted in conjunction with Neurosurgery, and 416 intrathecal pumps. Neuromodulation is becoming a growth industry. This is the only multidisciplinary chronic pain clinic in the province, and provides services with outreach to many areas outside the lower mainland. Given its unique and well-planned efficiency this is hoped to be used as a model for the evolution of various chronic pain programs in the province. Dr. McDonald is co-director of the St. Paul’s Hospital Chronic Pain Program along with Dr. Roger Shick from Psychiatry. Resident involvement in this division continues at regular intervals with all anesthesia residents spending at least 1 month at time in the program. Dr. Christine Cleary has been recruited to do a Fellowship in Acute Pain Research.

3. **Regional Anesthesia:**

In an attempt to fast track Orthopedics peripheral procedures, the Department is participating in the operation of 2 minor OR’s created in the Outpatient area at SPH, as well as 2 surgical OR’s. This novel approach with anesthesiologists and anesthesia assistants has shown promise in safety improvements and the throughput of patients.
This is being led by three Anesthesiologists with regional training to allow for the evolution of regional anesthesia as part of the fast track approach. The general level of Regional anesthesia expertise continues to rise in the Department along with interest in ultrasound as an aid to nerve/catheter localization

4. **Obstetrics:**

The department participates in the care of obstetrical patients. The number of obstetrical patients continues to be 1700 per year at St. Paul’s with some increased pressure to monitor high risk pregnancies and pregnancies with coexisting cardiac disease. An epidural PCEA service has now been implemented. Anesthesia continues its involvement with the perinatal services committee.

5. **Pre-Admission Clinic:**

The Department continues to evolve a state of the art Pre-Admission Clinic. The latest initiatives include website development with patient education being a focus. A LEAN process has completely revamped this area leading to improvements in patient flow and care. Over 3000 anesthetic consults occurred in the last year.

6. **High Acuity Beds:**

The Development of four high acuity beds using a unique blend of medical-surgical nurses and Par nurses is slated to start soon. This helps address the need for some type of surgical step-down beds. Management by anesthesia should allow an increase in numbers of patients flowing through the PACU as well as an opportunity to improve patient care peri-operatively.

7. **CSICU:**

The CSICU continues to evolve under a small subset of anesthesiologists including 2 with intensivist backgrounds. The increasing number of heart failure patients receiving surgical intervention continues to increase. This change in the demographics of the cardiac patients is a particular challenge given the workload in the CSICU. This is a fruitful area of research. The major research focus in the CSICU however continues to be that of delirium and to that end a significant research group has evolved. They are in the process of creating a retrospective data base that will hopefully inform future prospective trials.

8. **Fellowships: Cardiac Pain/Regional:**

2013 has had 2 Resident Regional Anesthesia Fellowships and 1 in Clinical Anesthesia. Increasing interest in Fellowships from outside the program continues to grow.
9. **Research Activity:**

Dr. Stephan Schwarz as Research Director continues to bring a rigorous rational approach to the department. His association with our Pharmacology colleagues has resulted in cooperation and joint research interest. The department now has 2 graduate students in its employ as well as a cardiac anesthesia fellowship candidate.

**Teaching**

All members of the Department are actively involved in the teaching of medical students and residents. By necessity most of this takes place in the OR, however there are also many sessions outside of the OR especially for oral exam practices. This now involves third and fourth year students rotating through the department. Dr. John Bowering has finished his last year as Royal College Examiner. The anesthesia residents have uniformly found the teaching experience at St. Paul’s Hospital valuable. Dr. Clinton Wong continues as Program Director for the UBC Department of Anesthesia Residency Program as does Dr. Matt Klas as Program Director for Resident training at SPH. Various members participate in the residency selection process.

Members of the department are also involved in teaching residents from Medicine, Emergency Medicine, and Family Practice in addition to respiratory therapists and OR nursing students. Dr. Scott Bell and Dr. Kevin Rondi coordinate the Anesthesia CME Program given to GP Anesthetists each year.

**Anesthesia Assistants**

The Anesthesia Assistants at St. Paul’s now consist of 9 members with seven being certified and 2 are in process. Dr. Jim Prentice continues in his role as a liason with Tri-Rivers University, which administers a course for anesthesia assistance, and he continues to provide guidance for the anesthesia assistance who are part of the St. Paul’s Hospital Department of Anesthesia.

**Quality Assurance**

Under Dr. Trina Montemurro: Quality Assurance within the Department is increasing in both nature and scope to reflect the changes that the organization is going through and to support the initiatives of the BC Anesthetists’ Society. Regular Quality Assurance meetings occur at least 4 times yearly, with review of critical incidents and morbidity led by Dr. Bobby Lee.
Future Directions

The Department of Anesthesia at St. Paul’s Hospital will continue to develop as one of the larger departments in Providence Health Care. This will certainly bring changes to the department both as a result of external pressures as well as internal changes within the organization. Expansion of the Cardiac Surgery Program into trans-apical values has resulted in an endovascular OR suite where Trans-femoral aortic valves are also performed. This also supports vascular surgeries involved in endovascular stents. The CSICU continues to evolve under a small subset of departmental anesthesiologists. Future evolution of the surgical approach to heart failure as well as research initiatives in delirium promise to take it in new directions.

The Department continues to explore opportunities in alternative funding of anesthesia delivery. It views itself as a leader in innovative solutions and is attempting to work within the greater provincial funding to find new ways of allowing anesthesiologists to practice.

The Department therefore continues to recruit and energize its membership. Despite continuing changes the next year or two should show great evolution in our involvement with UBC, hospital and research.

COMMITTEE MEMBERSHIPS

UNIVERSITY

Dr. John Bowering  
Research Committee  
Residency Training Committee

Dr. Randell Moore  
Clinical Promotions Committee, UBC  
Executive Committee, UBC

Dr. Matthew Klas  
UBC Resident Program Director  
Resident Selection Committee  
Residency Training Committee

Dr. Stephen Head  
Division Head, UBC Regional Anesthesia

Dr. Bobby Lee  
Division Head, UBC Cardiac Anesthesia

Dr. Laine Bosma  
Director, UBC Anesthesia Simulation Program  
Residency Site Supervisor

Dr. Cynthia Yarnold  
Chair, UBC Anesthesiology Whistler Conference  
Residency Site Supervisor

Dr. Trina Montemurro  
Chair, Residency Selection Committee

Dr. Brian Warriner  
Professor and former Head  
UBC Department of Anesthesia
Dr. Ron Ree  Director, R5 Seminar Series  
Dr. Jennifer Berezowskyj  UBC Discipline-Specific Site Leader - SPH  
Medical Undergraduate Students  

HOSPITAL  
Dr. Brian Warriner  Professor  
UBC Department of Anesthesia  
Dr. John Bowering  Director of Cardiac Anesthesia  
Co-Director of CSICU  
Dr. Randell Moore  Chair, Department of Anesthesia  
Medical Advisory Committee  
Surgical Areas Committee  
Pharmacy and Therapeutics Committee  
Dr. Ioana Dumitru  Transfusion Committee  
Dr. Matt Klas  Echo Rounds Coordinator  
Dr. William McDonald  Pain Advisory Committee  
Subcommittee on Pain  
Dr. Jim Prentice  Technical Officer  
Coordinator, SPH/Cariboo College Anesthesia Assistants Program  
Anesthesia Assistants Program  
Dr. Paul Bach  Director of the Pre-Admission Clinic  
Dr. Matthew Coley  Perinatal Care Committee  
Dr. Stephan Schwarz  Research Director  

OTHER  
Dr. Randell Moore  BCMA Tariff Committee  
Transfusion Medical Advisory Group (TMAG)  
Provincial P & T Committee  
Dr. S. Head  BCAS Exec Committee  
Dr. T. Montemurro  BCAS Safety Committee  
Dr. Brian Warriner  Reviewer, Canadian Journal of Anesthesia,  
Surveyor, Accreditation Canada  
Consultant, Non-Hospital Medical & Surgical  
Facilities Program – College of Physicians &  
Surgeons of BC  
Dr. Clinton Wong  ACUDA  

Publications – please refer to page 125
EXECUTIVE SUMMARY

In 2013, members of the Department of Anesthesiology and Perioperative Care were engaged in clinical, didactic and interactive teaching as well as mentorship of medical students, residents and fellows. Members of the department continue to develop the clinical and academic capability, lenses on perioperative care, quality improvement, safety, as well as tertiary referral and community levels of care in subspecialized areas including neuroanesthesia, trauma, solid organ transplantation, cardiac and thoracic anesthesia, spinal injury and reconstruction, vascular anesthesia, complex and hepatobiliary general surgery, and ambulatory anesthesia. With the aforementioned clinical substrate, the department’s 58 committed anesthesiologists, with a focus on quality, and dedication to teaching and research, the department continues to provide outstanding learning opportunities.

Strong academic activity supported by resources and the strong commitment of the newly formed academic group has culminated in a highly productive and superb peer reviewed and book chapter publication output, a significant proportion of which were collaborative.

The introduction of dedicated perioperative anesthesiologists has enhanced the quality and efficiency of patient care in managing complex and critical postoperative patients, as well as timely preoperative assessment, and stabilization and resuscitation of perioperative patients. Enhanced exposure of trainees, in particular to the consultation, investigations and optimization of complex preoperative patients has been achieved, allowing for improved teaching on the care of patients in these environments.

A highlight in 2013 was the department’s strong representation (Dr Kelly Mayson) in the National Surgery Quality Improvement Program (NSQIP), which revealed several collaborative opportunities to strategically improve outcomes. These included perioperative hypothermia, surgical site infection and ventilator associated pneumonia were acting upon and showed improvement. The anesthesia equipment and technology development continued with near completion of updating the anesthesia workstation fleet, as well as enhanced monitoring capability for assessing and guiding fluid replacement and cerebral function.

Collaboration was enhanced by joint education and visiting professors with the surgical teams, focusing on enhanced recovery after surgery, surgical site infections and perioperative management of patients with obstructive sleep apnea. The planning is
moving forward to enhance the scope and complexity of work at the UBCH site, with the support of a high acuity unit.

We are fortunate to recruit exceptional talent in 2013 with Drs Angineh Gharapetian and Christopher Durkin. Drs David Malm’s and Peter McGinn’s strong 32 year careers and dedication in clinical anesthesia and education were celebrated.

The Anesthesia Assistant (AA) program, while challenged with recruitment, retention and a robust training program, was further developed by a group of excellent and committed staff with excellent leadership, and the new appointment of professional development educator.

In 2013 the department initiated and invested in a 5 year (2013-2018) strategic planning mission to further develop our vision and strategic priorities with the support of an organizational psychologist, Dr Jennifer Newman. The input from the department has been rich and has provided the executive with focus areas to further and sustainably develop the department’s clinical and academic mission.

With the goal of the department being the identification of quality improvement and safety opportunities in perioperative care, with emphasis on the importance of care outside the operating room, the department was officially renamed the Department of Anesthesiology and Perioperative Care. Our department’s expertise and leadership in pre-operative and post-operative care, perioperative pain management and critical care will be leveraged toward achieving the goal of improved quality improvement and safety.

**Quality Assurance**
(Head Dr Kelly Mayson)
Review of Critical Incidents continues to be major QA focus, with a group of reviewers—Drs Stuart Herd, Mitch Giffin, Mike Moult, Jon Harper and Kelly Mayson responsible for chart review and presentation of the cases.

**NSQIP**
Twenty percent of cases at VH and UBC are retrospectively reviewed to assess for 30 day morbidity and mortality. QA initiatives have been started in areas where VH has been noted to be an outlier. Anesthesia has participated in the iCOUGH initiative.

**Enhanced Recovery After Surgery Program**
Colorectal surgical cases were identified through NSQIP as having an increased incidence of complications and longer length of stays. In the spring of 2013, a subgroup of anesthesiologists (Oliver Applegarth, Kevin Froehlich, Bali Dhaliwal, Pamela Lennox, Neil Ramsay, Andrew Sawka, Mitch Giffin, Rael Klein, Peter Choi, Patrick Yu, Bjorn Bittersuerman. & Kelly Mayson) was created to improve the Intraoperative management of these cases. Suggested protocols were developed with the focus on
perioperative normothermia, goal-directed fluids management, PONV prophylaxis, and opioids-sparing pain management techniques. In November the preoperative and postoperative components were integrated into patient management. These patients are identified as ERAS and compliance of all the ERAS components are tracked and entered into a database. These results are reviewed monthly.

Normothermia Initiative
Review of NSQIP data identified that a significant percentage of patients undergoing non-cardiac surgery at VH were arriving in PACU hypothermic (21%). An active pre-warming initiative was commenced on May 2013. A Surgical Quality Action Network (SQAN) summer studentship award was obtained by Kelly Mayson to collect data on the effect of pre-warming. Over 600 patients under major non-cardiac surgery lasting 90 minutes or longer were tracked over a 3.5 month period of time. The mean length of pre-warming was 68 minutes, and the incidence of PACU hypothermia was significantly decreased (5%). The student also completed a questionnaire administered to OR nurses and anesthesiology staff. The interview had two objectives: firstly, to determine what is currently being done to reduce the incidence of hypothermia intraoperatively, and what we can improve on. Secondly, to gauge OR staff opinion on the forced-air warming gowns and assess if and how they may be used going forward. This audit, indicated that our average OR temperature was 19.95 degrees, so OR temperature could be raised, and that anesthesiologist could use active fluid warmers more frequently and that patient’s temperature was not tracked in 30% of cases. Although, the majority of these cases that had no intraoperative temperature charted, had spinal anesthetics, there were still cases that had a general anesthesia, or a combined GA and thoracic epidural which is a known risk factor for hypothermia were not monitored. This information was presented at the annual SQAN meeting in October 2013.

Perioperative Myocardial Morbidity and Mortality
The NSQIP database identified 23 cases out of 2222 cases in 2012 that had a presumed diagnosis of perioperative MI (1%). A retrospective chart review was performed on these 23 cases. The focus was to review whether the patients had been seen in ACC, and if they had sufficient investigations, been medically optimized, and been given appropriate medication instructions. The Intraoperative management and postoperative management and treatment were reviewed. And were there any obvious demand ischemia events in the perioperative period. Many patients (55%) had their ASA inappropriately discontinued prior to surgery. Treatment of an increase in troponins was not treated consistently by cardiology. Thirty percent of patients were not started on statins. Drs Graham Wong and Kenneth Gin were invited to rounds when this information was presented to discuss how risk patients could be better managed.
Future Plans
The department is keen to work with the hospital IT department throughout the implementation of AIMS and CST/enterprise systems to allow ongoing data collection of information specifically of interest to the department of anesthesia. There will be opportunities for system customization/configuration. There is also desire to work with Decision Support to identify the feasibility, cost and benefit of creating an “anesthesia cube”.

The Quality Assurance team is engaging the department in the undertaking of defining what aspects of care and outcomes should be tracked. Data will need to be collected for multiple purposes, including:

a) To track provider experiences and case volumes for more intelligent slating, subspecialty membership allocation and for possible future regulatory requirements
b) Quarterly reporting – QA/QI dashboards for anesthesia
c) Data to support and evaluate QI projects and to augment NSQIP
d) Data for comparative outcomes research
e) Data to inform SCAMPS (Standardized Clinical Assessment and Management Plan)

Education
The Quality Assurance team organized and presented the Junior Anesthesia Resident Lecture entitled Quality Assurance in Anesthesia. Critical incidents rounds are held for the Department approximately five to six times per year. Nursing In-Services are also provided.

Equipment and Technology Report (Heads Dr Mitch Giffin and Dr Michael moult)

Overview
New technology in the Operating rooms improves patient care while increasing teaching opportunities. Technology is an integral part of anesthesia practice and technological advances in monitors and diagnostics improves patient care and facilitates teaching practical application of physiological principles and understanding pathology. New anesthesia workstations in use at VGH and soon to be deployed at UBCH have several features which demonstrate this. These anesthesia machines have ventilation capability to minimize ventilator induced lung injury and include modes of ventilation which provide a framework for discussion of the ventilation strategies students will encounter in all areas of critical care. These machines integrate electroencephalogram (EEG) monitoring into the anesthesia workstation through the Entropy™ module and allow residents and medical students to learn about depth of anesthesia and its effects on the EEG and awareness. This integrated approach is also seen in the neuromuscular monitor used in measuring depth of muscle relaxation and displayed in on the physiologic monitor.
Fluid Management
Resuscitation during surgery and critical care requires providing the right fluid in the correct volume to prevent and treat deficits while guarding against fluid overload. Several new monitors help to guide decision making in fluid management and residents use these tools to determine effectiveness of their interventions. The FloTrac and LiDCO are now in widespread use at VGH and are part of the integrated, multidisciplinary effort to reduce morbidity and mortality in surgical patients. ERAS (Enhanced Recovery after Surgery) is the acronym for this initiative involving selected procedures but these devices are used in other cases where significant volume replacement is required. Besides adequacy of intravascular volume, the FloTrac and LiDCO are also capable of calculating continuous cardiac output, stroke volume and systemic vascular resistance using a relatively non-invasive technology. These indices further help “fine tune” intraoperative hemodynamics and residents and students experience the effect of surgery, positioning, fluid changes etc. has on these parameters and take steps to maintain and restore homeostasis.

Echocardiography
The department acquired a 2nd 3D capable Echo platform as well 2 ultra portable transthoracic echo devices called V Scans for focused emergent perioperative diagnosis and intervention.

Ultrasound
Ultrasound has become a standard in many areas of anesthesia practice. Ultrasound is used in venous and arterial access (Sonosite and Nanomax), to facilitate regional anesthesia (Edge ultrasound systems) and is critical in the cardiac surgery program and in evaluating patients cardiovascular status before non-cardiac surgery (Philips transesophageal ultrasound). Because these procedures are no longer done “blind”, anesthesiologists can supervise these procedures with confidence knowing the trainee is in the correct plain or correct vessel.

Airway Management
Increasingly, airway management uses video systems which facilitate safe, atraumatic intubation and, like the ultrasound in regional anesthesia, allows the anesthesiologist to see what the resident or student is doing. These devices include the Cobalt and CMac blades which improve safety by providing direct vision conditions and giving the anesthesiologist confidence in the student’s real time progress.

Division of Trauma Anesthesia (Head Dr Mark Vu)

Education
Members of the Division of Trauma Anesthesia participate in providing educational courses including UBC POEM (Perioperative Emergency Management) course and the UBC Surgery CRASH course.
Supervised videolaryngoscopy training for Critical Care Paramedics in the operating room is also provided, through the BC Ambulance Critical Care Paramedic advanced airway management training mentorship program.

Future Plans
Integration of Anesthesiology into Trauma team is planned, with stakeholders including Trauma Services, Emergency Medicine, and Anesthesiology. This will introduce a collaborative approach to augment advanced airway management and resuscitative responsiveness for major trauma patients in the Emergency Department Trauma Bays at VGH. The goal is for the D1/N1 anesthesiologist and anesthesia resident on call to carry a trauma pager, and an anesthesiologist will respond to trauma team activations in the Emergency Department. The Division of Trauma Anesthesiology plans to review and develop the Code Pink response for VGH. Stakeholders for this initiative are Trauma Services, Emergency Medicine, BC Women’s Hospital Maternity Services, BC Childrens Hospital Neonatal Anesthesiology. A collaborative approach to the Code Pink response will ensure coordinated, tertiary care support for the pregnant trauma patient brought to VGH. Integrated resuscitative plan lead by anesthesiology, and supported by BCCH Neonatology and BCWH High Risk Obstetrical Unit.
Blood product access for trauma resuscitation in angiography and interventional radiology is to be reviewed. The division aims to augment resuscitative capacity and rapid access to blood products for trauma patients in Interventional Radiology, improving clinical practice.

Division of Neuroanesthesia (Head Dr Cynthia Henderson)
Please refer to Division Report on page 85

Division of Regional Anesthesia (Head Dr Ray Tang)

Volume and Case Types
Primarily upper limb blocks with shoulder surgery, AVF surgery, and plastics hand surgery. Some lower limb blocks with foot and below knee amputations and some occasional rescue blocks for knee arthroplasty. Based on the returned block forms, there are about 250 blocks done annually.

Novel Approaches
The planning of a formal block room for VA has been initiated to improve the efficiency in the OR. The block room is to be in the PACU starting in 2015. It will require modification of the space and acquisition of more monitors and ultrasound machines. Staffing will need to be increased to include a nurse and an anesthesia assistant. Funding has been applied for through the Specialist Service Committee to start the program.
The plan is to have epidurals, regional blocks, and arterial lines placed in this area preoperatively such that the anesthesia control time may be reduced. The endpoint will be to reduce the incidence and frequency of late running operating rooms. A side benefit will be that residents and fellows assigned to this role will have an intensive session of procedures without the time pressures. It will also be an area for conducting research studies.

Education
The majority of residents now go through St. Paul’s Hospital for their regional rotation. However, we have involved several residents in the past year involved in our research projects. Jason Wilson continues to be involved in the PICRA vs stump catheter study for BKA. Jason Wilson has also presented his work on optimal hand positioning for ultrasound guided blocks at ASRA 2014. Perseus Missirlis was involved in a lumbar spine positioning study to look at the effect of rotation.

There is a yearly regional day for residents at the CESEI and last year’s event was well received, particularly the workshop component where Dr Meikle and I participated. Fellows Silke Brinkmann, Genevieve Germain, Neil Ramsay, and Ilana Sebbag have all been involved in the performance of regional blocks. All have also been involved in research with publications with our group which have been accepted or in progress.

Research
For completed projects, please see publication list. Currently, there are a number of projects ongoing, including collaborations several other departments:

1. Perineural catheter vs stump catheter study with Drs Tang, Sawka, Vaghadia and involving Jason Wilson in collaboration with Keith Baxter. We are determining if one modality is superior to the other in regards to post-operative pain control and prevention of phantom limb pain.

2. Spine positioning study in parturients with Sawka, Tang, Vaghadia, Preston, Gunka, Sahota and Ilana Sebbag. We have replicated the study looking at the effect of rotation on the lumbar spine in term parturients. Data collection has been difficult owing to the population and a high refusal rate to participate. However, Dr. Sebbag has continued to work closely with the BCWH staff to complete the study.

3. Inferior alveolar nerve block study with Tang, Sawka, Vaghadia and collaborating with a dentist, Brian Chanpong. We plan on conducting a randomized crossover effect to look at the use of ultrasound in the performance of this block vs. traditional landmarking.

4. Drs Sawka and Tang are content supervisors for a Biomedical Communication student, Ashley Hui at the University of Toronto. She is working on creating a virtual 3D model of the spine and with simulated needle insertion using LeapMotion technology.
Quality Improvement

The Division of Regional Anesthesia continues to follow up with all the block patients through the block forms. For this reason, it has been reinforced to all members that a form be filled out for all blocks. At a later date, we intend on performing a chart review of all documented blocks note any issues that arise. Currently, if there are any issues, the anesthesia assistant alerts the anesthesiologist to determine if any interventions are necessary.

Challenges

The issue with the orthopedics athletics department interfering with the anesthetic plan for patients has been formally discussed with their division head, Bill Regan. He is committed to resolving this issue with his group, with the aim of improving the OR environment to provide optimal care for the patients.

Establishing the block room will be an ongoing challenge. Securing funding and resources may be difficult. Funding has been applied for as mentioned above. The current shortage of nurses and anesthesia assistants may be problematic in staffing the block room. The OR management is very supportive of this model which is encouraging.

Events

The annual regional day for residents, organized by Drs Tang and Meikle, will take place on May 7th, 2014

Because there are so few residents that come to VGH for their regional rotation, regional rounds have not been regularly taking place. The possibility of holding joint rounds with St Paul’s Hospital has been discussed, and may occur during in the summer of 2014

Presentations have been also given to the postoperative nurses at VGH and UBC, and most recently to British Columbia’s Operating Room Nurses Association of Canada (ORNAC BC) about regional anesthesia topics.

Division of Anesthesia for Spine Surgery (Head Dr Jonathan McEwen)

Clinical Activity

The spine program at Vancouver Acute is the provincial adult referral centre for spine trauma, spine tumours, and major deformity correction. For the period January 1, 2013 to December 31, 2013, the spine program cared for 917 patients (note that most, but not all involved operative management). Of these cases, 432 were classed as urgent/emergent, with the balance classed as elective. Trauma accounted for 169 patients, 74 were oncology cases, 148 classed primarily as deformity, and the balance made up primarily of degenerative pathology. The team at Vancouver Acute continues to undertake a growing number of particularly complex and extensive spine surgeries that span more than one operative day.
Education
Members of the spine division continue to be active in teaching roles for medical students, residents, and fellows. In addition to daily supervision of trainees in the operating room, members participate in the anesthesia resident academic day sessions giving lectures and facilitating case discussions focused on the care of patients with spinal cord pathology.
A recent initiative has been proposed to combine spine and neuroanesthesia rounds, with a focus on discussing common topics and issues in a format accredited by the Royal College of Physicians and Surgeons.

Research
Three Projects are currently ongoing within the Division of Anesthesia for Spine Surgery:
3. Kwon, B and members of anesthesia spine division: A Double-Blind, Placebo-Controlled Study of AC105 in Patients with Acute Traumatic Spinal Cord Injury (A phase 2 trial set to launch with Vancouver Acute as a study site)

Quality Improvement
Dr. McEwen (division head) is currently in communication with critical care colleagues and nursing leadership in the spine stepdown unit regarding quality assurance and initiatives to improve patient care in the transition from operating room to post anesthesia care and the ward.

Cardiac Surgery Intensive Care Unit: (Medical Director Dr Rael Klein)
Clinical Practice
During the Academic Year 2013 seven hundred and fifty Cardiac Surgical cases were recovered in the CSICU. These cases included coronary bypass, valve replacement/repair surgery and major thoracic aortic surgery (including endovascular stents). A number of patients required left ventricular assist devices and few required support with extracorporeal membrane oxygenation.
Education
Residents and fellows were exposed to the management of the acute post cardiac surgical patient, focusing on hemodynamic and arrhythmia management, correction of bleeding and coagulation as well as post ventilation strategies and weaning. There is also significant exposure to patients with existing or acquired renal dysfunction requiring renal replacement therapy. Both residents and fellows were exposed to PRISMA therapy, which was successfully introduced this past year. The residents and fellows were encouraged to spend time in the operating room during their rotations to achieve a better understanding of the intraoperative management of this surgical population.

During the year we had two ICU fellows, three cardiology residents, two anesthesia residents and one cardiac anesthesia fellows rotate through the unit. They were expected to partake in formal morning rounds which included x-ray and lab review. Each patient was individually assessed by the resident and daily progress notes documented in the patients’ charts. The resident and fellows were also encouraged to partake in echocardiographic assessment of the patients under the supervision of the attending CSICU Director. Cardiac fellow was encouraged to develop basic skills in trans-thoracic echocardiography. Informal teaching sessions are held on a daily basis in the unit where relevant topics pertaining to post cardiac surgical management are covered.

Research
The following research projects were undertaken during the year with the involvement of our Cardiac Anesthesia Fellow under the supervision of the co-investigators (CSICU Directors):

1. 2013 saw the completion of “An Open-Label Study Evaluating the Hemodynamic Effect of Differing Loading Regimens of Dexmedetomidine in a Post-Surgical Intensive Care Patient Population”. The results of this study were presented as a poster presentation at the CAS in 2013.

2. The Normosat Trial was completed in 2013. This study examined the ability to correct decreases in brain oxygen saturation levels using a near-infrared monitor (NIRS) in Cardiac Surgical patients with Euroscore > 3.

3. Cerebral Oximetry has become an integral part of our management of brain preservation during cardiac surgery.

4. A multicentre randomized controlled trial was completed, comparing the efficacy and safety of perioperative infusion of 6% hydroxyethyl starch 130/0.4 in an
isotonic solution using (Volulyte™) versus 5% human serum albumin as volume replacement therapy during cardiac surgery in adult patients.

5. The TRIC III trial was initiated to be undertaken in 2014: This trial is a CIHR funded Trial that will look at safety triggers for transfusion in Cardiac Surgical Patients both during Cardio-Pulmonary Bypass and postoperatively.

Quality Assurance
Active participation in the National Surgical Quality Improvement Program (NSQIP) led to a reduction of in the incidence of Ventilator acquired pneumonia and surgical site infections. This initiative was presented in ACS NSQIP news letter in April 2014: “Reducing SSI Rates by Introducing the CLEAN program at a British Columbia Collaborative Hospital- Vancouver Costal Health- Vancouver General Hospital”.

New Programs
During 2013 academic year, a continuous veno-hemodialysis “PRISMA” program was introduced to the CSICU to improve the current management strategies for patients with acute kidney injury. This program reduced our reliance on the general ICU to manage Acute Kidney Injury in the Vancouver Acute patient population requiring renal replacement therapy.

Division of Cardiac Anesthesia
(Head Dr Calvin Au)
Members
All members of this division have advanced qualifications in Transesophageal Echocardiography. Many have also fulfilled a specialized cardiothoracic fellowship following their residency training. A third of the membership have a cross-appointment with the division of thoracic anesthesia and two have specialized intensive care medicine training.

Clinical Practice
The practice of Cardiac Anesthesiology at Vancouver Acute has evolved from the standard operating-room open-heart case to procedures that could only have occurred in dreams a decade ago. Examples include:
1. Robotic Surgery
2. Minimally Invasive Valve Repair/Replacement
3. Major Aortic Reconstruction
4. Thoracic Aortic Endovascular Repair

Division members also provide a full-time presence in the Cardiac Catheterization Lab where such varied cases such as AICD implantation, Arrhythmia Mapping for Ablation,
PFO Closure, Left Atrial Appendage Closure, and Transcatheter Aortic Valve Replacement occur. Caseload for the cardiac anesthesiologists is now rebounding to levels to close to that prior to the recent drop due to the opening of the BC Interior Cardiac Centre. The rapid climb in number of cases is due to a combination of demographic pressures and the realization in cardiac literature of the staying success of operative therapy. Cardiac anesthesia has had an enormous contribution to the successful long-term outcome of these critically ill patients.

Education
As in years past, the division maintains its status as one of the highest-ranked educators across the entire Faculty of Medicine. We continue to train fellows who take their newfound expertise across the globe. In addition to the day-to-day training of students, residents, and fellows, members of our division have been invited as guest speakers/presenters at many meetings and conferences, some at the national level.

Research
There continues to be a clinical research focus in areas of blood conservation and the recent controversy surrounding starch-based colloids. Some of the studies the division is involved in are large multi-centre trials.

Quality Assurance
There is full participation in Morbidity and Mortality rounds both within the Department of Anesthesiology and the larger Cardiac Sciences group. The division is fully engaged in the National Surgical Quality Improvement Program (NSQIP) where cardiac patients “flow through” the operating room and into the Cardiac Surgery Intensive Care Unit for ongoing care. Within NSQIP, there have been targeted areas and goals for all operative cardiac patients including reduction in wound infection rate, reduction in post-operative pneumonia, and reduction in urinary catheter related infection.

Division of Thoracic Anesthesia (Head Dr Jens Lohser)
Please refer to Division Report on page 86

Perioperative Blood Management Program (Head Dr Terry Waters)
Clinical Practice
VA has an active Perioperative Blood Management Program (PBMP) (formerly the Blood Utilization Program). This is run by a group of anesthesiologists (Drs Atherstone, Flexman, Froehlich, Kapnoudhis and Waters) and dedicated nurses based in the Pre-admission clinic, with contribution from Drs Chipperfield and Roland of the Transfusion Service. Patients at risk of requiring a blood transfusion are referred to the program based on referral criteria (i.e. preop anemia and high risk surgery), as well as patients who refuse blood product transfusion are assessed and a treatment plan made to
reduce the need for transfusion as well as the case of refusal, risk of severe anemia and the ensuing morbidity.

Preoperative management strategies include oral / IV Fe, erythropoietin and autologous donation. Intraoperative strategies include cell salvage, antifibrinolytics and acute normovolemic hemodilution. The program is in the process of developing a database, with which the benefits of the program will be better quantified. By reducing transfusion, the program reduces transfusion related morbidity, mortality and cost along with reduced LOS.

Liver Transplantation and Hepatobiliary anesthesia

VA has a world class liver transplant program, with 61 transplants, including 3 LRD organs being done in 2013. Anesthesia for these procedures has been provided by a group of 13 anesthesiologists. This group takes call for and manages these difficult cases, most of which occur after-hours. For 2014, a subspecialty group of “hepatobiliary anesthesia” is planned, with the subgroup of the liver transplant call anesthesiologists. This group will manage most hepatobiliary anesthesia at VA along with the liver transplants.

The Perioperative Anesthesia Service (Head Dr Kevin Froehlich)

The Perioperative Anesthesia Service was a new service to Vancouver Acute that started in April 2013. Our goal for initiating the position was to enhance our ability to provide intensive post-anesthesia management of our complex post surgical population in the PACU and to provide timely and thorough assessment and follow-up of surgical inpatients awaiting surgery at VGH. The Perioperative Anesthesiologist (POA) also acts as the departmental representation for Complex Patient Care Conferences; interdisciplinary conferences to establish a plan to best care for complex patients presenting for surgery. Members of this group spend time in our Anesthesia Consult Clinic on days when Internal Medicine physicians are present to see complex pre-operative patients. Other clinical responsibilities include difficult airway management outside of the OR, and attendance at trauma codes to facilitate a timely transfer to the OR for complex trauma victims.

Education
Fortunately, residents are frequently scheduled to assist with the days we provide the perioperative anesthesia service. The POA position has been beneficial to residency education in that there is a specific focus on perioperative issues that are not as heavily emphasized when the residents are working in the OR. Working alongside the POA, the resident has more time to deal with complex post-operative problems than they may if they were assigned to the OR. The position also permits residents of varying levels to take time to thoroughly evaluate preoperative anesthesia consultations on complex surgical inpatients and present an anesthetic management plan to the POA. There has been excellent feedback from the residents. As the position evolves, we will consider
offering a Perioperative Anesthesia Fellowship. A small committee has been established to develop a fellowship plan which we hope to offer in July 2015.

New Changes
The POA service is relatively new and constantly evolving. The position has been well received from the department’s anesthesiologists, the PACU nurses, and from our surgical colleagues. The POA service is currently working with colleagues in the ICU to establish guidelines to assist clinicians in making the decision to consult the ICU. It is the desire of the service to build on relationships with the department of critical care medicine, in order to better serve our patients. A new method by which the Department of Anesthesia and Perioperative Care receive anesthesia consultations is being established. The current system is dependent on time of day and provides very little information about each patient consulted on. The service aims to have a system in place that works 24 hours a day, 7 days a week. The new system will allow for the receipt of consults in a timely manner, and for information provided by surgical colleagues to enable prioritization of consultations.

Challenges
The POA service is new and has been well received by all. The group is currently small and would certainly benefit from expansion. The hours of work (from 13:00 until 21:00) are not particularly desirable to many members of the department. We would like to add new members to the group who have an interest in perioperative anesthesia. We will continue our efforts to recruit interested department members into our group.

The Post Anesthetic Care Unit (Medical Director Dr Pieter Swart)
Clinical Practice
The primary mandate of the VGH PACU is to provide phase 1 recovery after therapeutic or diagnostic procedures under general or spinal anesthesia, as well as for higher risk patients after other anesthetic techniques. Critical Care is also provided to postoperative patients where that level of care is projected to not be required for more than 24 hours.
In addition, elective electrocardioversions are also performed in a suitably separated, and appropriately monitored environment within the VGH PACU. Perioperative anesthesia procedures, including placement of regional anesthetic blocks, and epidural blood patches are also performed in the PACU.
Commensurate with our Anesthesia Department’s mandate and vision to promote excellence in perioperative care, preoperative patients now access the OR through the PACU when the PCC is closed, promoting safe and appropriate preoperative monitoring. A Pain Clinician rotation has also been introduced for some members of PACU nursing staff, ensuring cross pollination from pain management experience gained from working with the anaesthesiologist on the Perioperative Pain Service on the wards.
Education
With the introduction of the Perioperative Anesthesia program in 2013, anesthesiology residents have benefitted from dedicated, supervised consultant teaching in PACU patient management. This new program continues to be very well received by our anesthesia residents and the PACU nursing staff.
The Vancouver Acute PACU sleep apnea protocols have been recognized and posted on sleep apnea expert websites - www.stopbang.ca and the website of the Society of Anesthesia and Sleep Medicine, providing an up-to-date and practical framework for appropriate resident teaching on the subject matter.
The Management of Complications in the PACU is one of the introductory Summer Lecture presentations given to our new anesthesia residents every year. The VGH Anesthesia Staff also provide presentations to the VGH PACU Nursing Staff on selected clinical management topics.
The Perioperative Pain Service (POPS) (co-directors Drs Raymond Tang and Kevin Froehlich)

Volume and Case Types
On average, the Perioperative Pain Service (POPS) cares for 80 patients a week with PCA, epidurals, paravertebral catheters, and perineural catheters. In addition, POPS is involved in providing sedation and analgesia to patients in the Burns/Plastics/Trauma Unit undergoing skin debridements and dressing changes.

Education
Teaching sessions have been provided to several groups. A presentation on perioperative pain management was given to the surgical residents, as well as a presentation on considerations of regional blocks and catheters for the nurses in the UBC PACU. A plan is in development stages to involve UBC anesthesia residents with the Perioperative Pain Service by the fall of 2014.

New Changes
Much work was done revamping the structure of POPS in 2013. In particular, a decision was made to proceed with hiring 2 nurse clinicians in the upcoming year. The plan is to have the nurse clinician work with the POPS anesthesiologist in the conduct of rounding, act as a liaison with the PACU and ward nurses and assist in educational and administrative endeavors of POPS and the PACU. It is believed that the implementation of these new positions will enhance patient care, promote consistency in the care provided by the POPS anesthesiologists and encourage further development of the Perioperative Pain Service as a collaborative team.

Challenges
The high volume of patients coming through the Perioperative Pain Service has been an on-going challenge. The creation of the new POPS order set in 2012 has vastly improved the anesthesiologist’s ability to provide effective care of patients followed by POPS. As
the number and complexity of patients on POPS continues to increase the department has responded with advanced and multimodalities and interventional strategies. It is believed that the addition of the nurse clinicians will assist in the efficiency of the service and allow the anesthesiologists the capability to address the more complex patients.

The service continues to provide care for managing the anesthesia and analgesia of severe burn patients on the burn plastic trauma unit.

**Fellowship Education Program** (Co-directors Dr Kelly Mayson and Dr John Dolman)

**Overview**

Early in 2013, John Dolman took over from Dr Bevan Hughes, who is now involved in our Department’s scheduling. Dr Dolman’s efforts lie mostly in fielding applications to the program and in correspondence, while Dr Mayson is largely responsible for the scheduling of our fellows through their various rotations. Other directorship roles are shared.

The Department continues to provide Cardiac anesthesia (1), Neuroanesthesia (1), and General Clinical Fellowships (3). The 5 funded positions are now formally accounted for within our academic and administrative budget. Beginning in January 2013, formal “regional” and “ambulatory” fellowships were disbanded, although experience in these areas is still very much available. Many General fellowship applicants express a particular interest in regional anesthesia. General fellows otherwise rotate through emergency cases, major plastics/burns, hepatobiliary, vascular, major urology and major ENT; they may also choose a particular area of interest in which to gain further experience. Our Cardiac fellowship continues to provide clinical experience in the OR, CSICU, catheterization lab, and transesophageal echocardiography. The Neuroanesthesia fellowship provides clinical exposure to all facets of neurosurgery and major spine surgery.

The Department continues to receive applications from all over the world, with greatest interest from the UK, Australia and New Zealand. Surprisingly few applications come from within Canada, and none from the US. There are increasing numbers of applicants from South America, India, Egypt and the Middle East, and South East Asia. There continues to be an occasional application (self-funded) from Thailand, a country with which the department has had a regular affiliation in the past. The requirement to pass an English literacy exam produces a significant hurdle for many of these applicants.

The structure of our fellows’ work-week is similar regardless of their area of concentration: two days are devoted to subspecialty work, and one day is available for research or other academic activity. Two days are designated as “service days”, in which the fellow is assigned to a staff member with nonclinical duties; the fellow has the opportunity to develop their skills and responsibilities at an independent junior consultant’s level, as well as providing teaching experience to medical students or junior residents. The fellows take regular day call at both VGH and UBCH sites, and participate
in Perioperative anesthesia roles – the department hopes to afford fellowship experience in this area in the future.

Cardiac Fellowship
Dr James Drew completed his fellowship in June 2013. Dr Abigail Walsh (Ireland) began a year long Cardiac Fellowship in July 2013, accompanied by her husband, who has also been doing a fellowship in Radiology. She has been fortunate enough to also acquire more time in Thoracic anesthesia than most!
An application, coordinated by Dr. Ivan Iglesias of Western University, Ontario, was made last year to the Royal College of Physicians and Surgeons of Canada to establish a Diploma in Cardiac Anesthesia. This Diploma program is designed to establish guidelines for clinical case and echocardiographic exposure, as well as contents of a computer-based didactic program (with contributions from cardiac surgical centres across the country). The Royal College’s approval of this application is pending.

Neuroanesthesia Fellowship
Dr Julian Barnbrook from the UK completed his fellowship in February 2013, although he continued to work in the VGH ICU thereafter. Dr Greg Krolczyk of Ottawa completed his fellowship in June 2013. He presented a paper at the CAS meeting. He also managed to gain considerable experience in transesophageal echocardiography during his time here.
Unfortunately, his intended replacement decided in the last minute to take a position in Neuroanesthesia at UCSF, leaving us without a Neuroanesthesia fellow for the balance of the year.

General Clinical Fellowship
Dr. Genevieve Germain (Montreal) completed a very successful and prolific year in June 2013, having concentrated on regional anesthesia. She has since returned to Quebec. Dr Neil Ramsay completed his second year with us in December 2013, and was recruited to join our Department. Dr Ilana Sebbag (Brazil) joined us in July 2013 after completing an OB Anesthesia Fellowship at BCWH. She is hoping to remain in Canada on completion of her fellowship in 2014.

Resident Education Program
Overview
Vancouver Acute continues to provide General Anesthesia and Subspecialty Anesthesia education and rotations in Neuroanesthesia, Cardiac anesthesia and CSICU, Transesophageal Echocardiography, Vascular anesthesia, Regional anesthesia and Airway management. Residents are invited to participate in and give lectures during subspecialty rounds when in that rotation. The department also hosts multiple academic days throughout the year, providing lectures and problem based learning supervision for residents. Members of our department participate in the second year resident introductory lecture/simulator series.
Residents rotating through their Transfusion Medicine Rotation participate in our daily Blood Utilization Meetings and learn about perioperative blood conservation.

New Changes
In 2012, the additional assignment for residents at Vancouver Acute in Perioperative Anesthesia was solidified. The residents now have an expanded role caring for postoperative patients and assessing inpatients coming for emergency surgery. This continues to be very well received by residents and is seen as a great learning opportunity.

Anesthesia Residents on call at Vancouver Acute are also now carrying an airway pager and are participating on the Code Blue Team as an airway and resource member, every day, except when at dedicated academic day. This has vastly improved their exposure to emergency airway management and improved patient care by having an airway expert available.

With the ongoing emphasis in exposure to preoperative care, in 2013 the resident assignments to the Anesthesiology Consult Clinic and the Perioperative Pain Service were formalized to ensure more consistent exposure of residents to this area.

In addition, the division has collaborated with the trauma team, and in 2013 received approval for anesthesia residents to do electives in Trauma. Trauma is an area that the Royal College had identified as an area of knowledge deficit among anesthesia residents in the past.

Members of our department, including Drs Juliet Atherstone, Gord Finlayson, Peter Choi and George Isac are members of the Residency Training Committee. Dr Finalyson also sits on the Selection Committee and Dr Dolman and Dr Isac participate in Royal College Examinations.

Dr Atherstone and Dr Finlayson are VGH Site Coordinators for the UBC Department of Anesthesiology Residency program and, besides duties above, are responsible for overseeing scheduling of all residents (internal and external to our program), evaluations of residents (both online and end of rotation feedbacks), communicating with the VA Department of Anesthesiology resident issues during department meetings, being advocates for the residents, ensuring that resident concerns are dealt with appropriately, organizing appropriate speakers and supervisors for resident academic days hosted at VGH etc.

The goals and objectives for all resident rotations were updated in 2013 by a committee with input from various subspecialty contributors including Dr Atherstone and Dr Alana Flexman. In addition, in 2013, Dr Atherstone created introductory documents for internal and external residents to ensure they had clearly outlined expectations for our site as well as some idea for those new to the site on the workings of the department.

Multiple members of our department provide support and education for the fifth year residents preparing for Royal College Examinations by participating in their annual Seminar Series. During these sessions, staff provide expertise and formalized oral exam practice sessions. In addition, members of the department participate in the twice
yearly Department of Anesthesia Oral Examinations as examiners, as well as provide multiple fifth year residents oral exam practice sessions outside of work hours. Evaluation forms have also been improved upon and standardized and there is improved compliance with completion and timeliness of resident evaluations.

2013 was a year for Royal College Accreditation of the UBC Department of Anesthesiology Residency Program and members of the department attended meetings for the site and program. Accreditation was renewed without reservation.

VA Department of Anesthesiology and Perioperative Care member Dr Alana Flexman initiated a mentorship program for UBC Residents in 2013 for the incoming 2nd year residents. This is thought to be a very valuable program which will continue each year for incoming residents. The goals of this program are to increase support and wellbeing of residents while having someone to guide them in their future career and research goals.

Dr Alana Flexman also heads UBC Anesthesia Journal Club, which occurs every month of the academic year for residents and staff, during which residents analyze important papers and learn critical thinking and evaluation of research methods. Members of the department participate in hosting these events and supervising residents in their analyses.

Dr Flexman and Dr Peter Choi participate in organizing Resident Research Day and members of the department help to judge that event. We also have new research coordinators in the department, Dr Flexman and Dr Donald Griesdale who provide support for residents doing research.

In 2013, Drs Juliet Atherstone, Alana Flexman and Ray Tang once again participated on the Organizing Committee for the UBC Whistler Anesthesiology Summit 2014. We have over 200 participants and help run workshops and speaker sessions. In addition, we have faculty speakers and workshop supervisors from our department, as well as session moderation by Dr Umedaly. This year, Resident Academic Day was incorporated into the program and resident participation in the conference was subsidized by the conference. New for 2013 is the addition of a Poster Session, allowing residents the opportunity to present their research.

**VGH Anesthesia Research Program** (Co-Directors Drs Don Griesdale and Alana Flexman)

Overview

Research activities in the department have continued to be productive in 2013. Dr Craig Ries stepped down from the role of Research Director after many years of excellent service. The new structure of the research group includes the Research Co-Directors, Dr. Don Griesdale and Dr. Alana Flexman, and the Research Manager, Dr. David Parsons. Departmental research has several areas of focus. The Regional Anesthesia Research Team (RART) (Drs Ray Tang, Andrew Sawka and Himat Vaghadia) is developing novel methods to use ultrasound to image the spine and other peripheral nerves. Dr Griesdale and Dr Flexman have focused their research on Neuroanesthesia and Neurocritical Care.
Dr Mayson is leads the Quality Assurance program. Dr Ansley continues to focus on the pharmacology of propofol with a focus on cardiac protection in the diabetic heart. Dr Rael Klein has successfully completed two large multi-center industry-funded clinical trials and as well as bringing VGH into future CIHR multi-center clinical trials. Dr Jens Lohser has continued to pursue a research interest in Thoracic Anesthesia. Dr Mark Vu has focused his research interests on trauma, emergency airway management and resuscitation. Dr Terry Waters collaborated with on a national level in the area of transfusion medicine. Other department members continue to collaborate on projects with other departments, both within locally and nationally.

The Regional Anesthesia Research Team (RART) comprised of Drs Ray Tang, Andrew Sawka and Himat Vaghadia supervised several residents (Drs Jason Wilson, Pereus Missirlis and Eric Shin) and fellows (Drs Neil Ramsay, Ilana Sebbag and Abigail Walsh) on a variety of projects related to regional anesthesia. Dr Tang and Dr Sawka supervised a Master’s candidate (Ashley Hui). Dr Kelly Mayson supervised medical student Dan Werry during a summer project on Intraoperative Hypothermia. Dr Alana Flexman supervised medical student Dmitry Mebel on a project entitled “The efficacy and safety of tranexamic acid in complex skull base neurosurgical procedures: a retrospective cohort study” and supervised a variety of residents on projects related to neuroanesthesia (Drs Pooya Kazemi, Brad Merriman) and resident mentorship (Dr Paul Zakus) and a fellow project (Dr Gregory Krolczyk). Dr Don Griesdale supervised several medical students on a project relating to neurocritical care (Victoria Örtenwall, Leif Kolmodin) and a master’s student (Andrea Wnuk). In addition Dr Griesdale was a co-investigator on a CIHR-funded project “H1N1 (Swine flu) ICU Study.” In 2013, Dr. David Ansley supervised and graduated a Master’s student and co-supervised and graduated a PhD student in UBC Chemistry. Dr Vu supervised a resident (Dr Colleen Shamji) on the STAT Anesthesia Audit.

Collaborations

VADA Department members have increased research collaboration in the past year. For example, Dr Tang has worked with Dr Brian Chanpong from the Faculty of Dentistry to develop ultrasound imaging of alveolar nerves. RART is also involved in a collaboration with BC Women’s Hospital regarding ultrasound imaging of the spine in pregnant patients. Several of our neurosurgeons (Drs Brian Toyota, Rjoyo Akagami and Peter Gooderham) are involved in research projects with Dr Flexman. Dr Griesdale collaborates with colleagues from both Anesthesia and Critical Care. Dr Mark Vu collaborated with the Department of Emergency Medicine in developing the pre-hospital use of tranexamic acid and with the Trauma Surgeons.

Awards and Honours

VGH was involved in UBC APT Research Day in 2013. Don Griesdale did an excellent job of organizing and leading this event with and VGH made a substantial contribution and
was responsible for the vast majority of the Anesthesia oral presentations (5/6) and poster presentations (7/10). Dr Neil Ramsay won 1st place for the Fellow Oral Presentation competition, Dr Eric Shin won 1st place for the Resident Oral Presentation competition and Dr Brad Merriman won 1st place for the Resident Poster competition.

Other Activities
Other activities in 2013 include increasing the visibility and exposure of our work both within the department and externally. This has been accomplished through 1) distributing new publications to the department via email and 2) installation of a cabinet in the hallway outside our department offices to display departmental publications and announcements.

Future Directions
The Research Group is continuing to actively develop research support for department members. The goals for 2014 include continuing to support non-clinical funding (Merit Awards). In addition, we hope to offer modest operational research grants and increase access to a Research Assistant.

Staff Division Memberships

Cardiac Anesthesia
Drs. Au (Head), Ansley, Atherstone, Brodkin, Dolman, Finlayson, Fitzmaurice, Giffin, Harper, Herd, Hughes, Isac, Kapnoudhis, Kim, Lampa, Lohser, Tholin, Umedaly, Waters

Cardiac Surgery Intensive Care (CSICU)
Drs. Klein (Head), Atherstone, Au, Brodkin, Harper, Hughes, Kapnoudhis, Lampa, Umedaly

Neuroanesthesia
Drs. Henderson (Head), Applegarth, Dhaliwal, Flexman, Griesdale, Huttunen, Mayson, McEwen, Page, Ries

Thoracic Anesthesia
Drs. Lohser (Head), Finlayson, Fitzmaurice, Hughes, Kapnoudhis

Lung Transplant Group
Drs. Lohser (Head), Finlayson, Fitzmaurice, Hughes, Kapnoudhis, Harper, Umedaly

Spine Anesthesia
Drs. McEwen (head), Choi, Giffin, Gofton, Grant, Henderson, Huttunen, Lennox, White
Regional Anesthesia
Drs. Tang (Head), Bitter-Suermann, Blachut, Froehlich, Lennox, Meikle, Sawka, Swart, Vaghadia, Yu

Vascular Anesthesia
Drs. Bitter-Suermann (Head), Au, Applegarth, Osborne, Sawka, Swart, Tang, Vu, Weiderman

Ambulatory Anesthesia
Drs. Lennox (Head), Blachut, Grant, Malm, Mayson, Moult, Page, Ries, Tang, Vaghadia

Liver Transplant
Dr Waters (Head), Bitter-Suermann, Boulton, Brodkin, Dolman, Giffin, Isac, Klein, Osborne, Parsons, Randall, Sawka, Sung, Vu

Critical Care
Drs. Finlayson, Griesdale, Isac

Trauma Group
Drs. Vu (Head), Ansley, Applegarth, Choi, Dhaliwal, Meikle, Randall, Weiderman, Vaghadia

Perioperative Anesthesiologists (POA)
Drs. Froehlich (Head), Bitter-Suermann, Choi, Durkin, Griesdale, Mayson, Parsons, Price, Sawka, Swart, Vu, Umedaly

Memberships

University of British Columbia
Dr. Oliver Applegarth Director, UBC Anesthesia Medical Undergraduate Program
Dr. John Dolman Member, RC Written/Oral Examination Committee
Dr. Gord Finlayson Anesthesia Resident Selection Committee
Dr. Alana Flexman Residency Site Coordinator for VGH UBCH
Dr. Raymer Grant UBC Anesthesia City-Wide Journal Club Coordinator
Dr. George Isac Royal College Examiner
Dr. Peter Choi UBC Anesthesia Clinical Research Director
Dr. Donald Griesdale Member, UBC Anesthesia Journal Club Committee
Dr. Cynthia Henderson Head, Division of Neuroanesthesia
Dr. Stuart Herd Visiting Professors Committee
Dr. James Price  Chair, Visiting Professors Committee  
Coordinator, UBC Anesthesia Undergraduate Program  
Chair, Continuing Professional Development Committee

Dr. Jens Lohser  Head, Division of Thoracic Anesthesia

Dr. Penny Osborne  Anesthesia Resident Selection Committee

Dr. David Parsons  Clinical Faculty Implementation Committee

Dr. Jon McEwen  Anesthesia Resident Selection Committee

VGH/UBCH

Dr. Juliet Atherstone  Member, PBMP  
Acting Head, Perioperative Echo Service

Dr. Bali Dhaliwal  Co-director Perioperative Pain Service

Dr. Jon McEwen  Member, Pharmacy & Therapeutics Committee  
Medical Director Anesthesia Assistant Program  
Head, Division of Spine Anesthesia

Dr. Michael Moult  Head, Anesthesia Technologies

Dr. Calvin Au  Head, VA Division of Cardiac Anesthesia,

Dr. Stuart Herd  Critical Incident Committee

Dr. George Isac  Chair, Resuscitation Committee  
Chair, Organ Donation Committee

Dr. Rael Klein  Chair, Executive Committee, Department of Anesthesia  
Medical Manager, CSICU  
Member, PMBP  
Member, Cardiac Surgery Advisory Committee

Dr. Martin Lampa  Head, VA TEE Group  
Member, PBMP

Dr. Pamela Lennox  Head, Ambulatory and Short Stay Anesthesia  
Co-director, UBC Operating Rooms

Dr. Andrew Meikle  Member, Resuscitation Working Group

Dr. Peter McGinn  Anesthesia Liaison Eye Care Centre

Dr. Michael Negraeff  Member, VA Acute Pain Steering Committee

Dr. Tom Randall  Medical Director, Perioperative Services  
Member, Surgical Executive Team  
Member, Medical Advisory Committee  
Member, Senior Leadership Team

Dr. Pieter Swart  Medical Manager, PACU

Dr. Lynn Martin  Chair, VA Anesthesia Services  
Member, Resuscitation Committee  
Member, Credentials Committee

Dr. Raymond Tang  Head, Section of Regional Anesthesia  
Associate Director, Perioperative Pain Service
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<tr>
<td>Dr. Hamed Umedaly</td>
<td>Head, Department of Anesthesiology and Perioperative Care</td>
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<td>Member, VA Executive Committee</td>
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<td>Member, Medical Advisory Committee</td>
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<td>Dr. Mark Vu</td>
<td>Member, VGH Trauma Advisory Committee</td>
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<td>Dr. Terry Waters</td>
<td>Chair, Blood Transfusion Service Committee</td>
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<td>Head, Liver Transplant Anesthesia</td>
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<td>Dr. Patrick O’Connor</td>
<td>Vice President, Medicine, Clinical Quality and Safety</td>
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<td>Chair, Quality of Care, VCH HAMAC</td>
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<td>Chair, VCH Executive Medical Group</td>
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<td>Dr. Terry Waters</td>
<td>Chair, Regional Blood Transfusion Committee</td>
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<td>Dr. Mark Vu</td>
<td>Member, Burns and Trauma Advisory Committee</td>
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**Vancouver Coastal Health**

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<td>Dr. Calvin Au</td>
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<td>Associate Medical Director, CSICU</td>
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<td>Member, Staff Selection Committee</td>
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<td>Dr. Bjorn Bitter-Suermann</td>
<td>Head, Section of Vascular Anesthesia</td>
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<td>Dr. Igor Brodkin</td>
<td>Associate Medical Director, CSICU</td>
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<td>Staff Computing Resources</td>
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<td>Dr Alana Flexman</td>
<td>Member at Large VA Anesthesia Executive</td>
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<td>Member selection committee</td>
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<td>Associate Director Research</td>
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<td>Dr. Mitch Giffin</td>
<td>Critical Incident Committee</td>
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<td>Co-Director, Anesthesia Technology and Systems/Equipment</td>
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<td>Dr Donald Griesdale</td>
<td>Director VA Department of Anesthesia Research</td>
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<tr>
<td>Dr. Jon Harper</td>
<td>Grand Rounds Coordinator</td>
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<td>Critical Incident Committee</td>
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<td>Associate Medical Director, CSICU</td>
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<td>Member, Executive &amp; Selection Committees</td>
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<tr>
<td>Dr. Cynthia Henderson</td>
<td>Head, Division of Neuroanesthesia</td>
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<td>Member, Staff Selection Committee</td>
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<td>Lead, VA ECT Anesthesia Program</td>
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**VA Department of Anesthesia**
Dr. Bevan Hughes  Associate Medical Director, CSICU  
Call schedule Author  
Dr. Henrik Huttunen  Vacation schedule Coordinator  
Dr. Paul Kapnoudhis  Associate Medical Director, CSICU  
Member, Staff Selection Committee  
Dr. Rael Klein  Medical Director, CSICU  
Chair VA Department of Anesthesia Executive  
Member Staff Selection Committee  
Dr. Martin Lampa  Head, Perioperative Echocardiography  
Associate Medical Director, CSICU  
Medical Staff Executive  
Dr. Pamela Lennox  Member, Staff Selection Committee  
Head, Division of Ambulatory and Regional Anesthesia  
Dr. Jens Lohser  Head, Division of Thoracic Anesthesia  
Dr. Kelly Mayson  Chair, QI Committee  
Member, Staff Selection Committee  
Co-Director Fellowship Program  
Dr. Peter McGinn  Anesthesia Allergy Clinic, Coordinator  
Dr. Jon McEwen  Head, Section of Spine Anesthesia  
Dr. Andrew Meikle  Medical manager, Anesthesia Consult Clinic and  
VGH Perioperative Care Center  
Dr. Michael Moult  Co-Director, Anesthesia Technology and  
Systems/Equipment  
Critical Incident Committee  
Dr. Michael Page  Radiology Liaison  
Dr. David Parsons  VA Research Administrator  
Dr. Andrew Sawka  Clinical Director, Department of Anesthesia  
Call Schedule Administrator  
Dr. Hamed Umedaly  Head Department of Anesthesia  
Associate Medical Director, CSICU  
Chair Staff Selection Committee  
Dr. Mark Vu  Head, Trauma Anesthesia  
Member, Staff Selection Committee  

Other
Dr. David Ansley  CJA Guest Reviewer  
Dr. Calvin Au  CJA Guest Reviewer  
Dr. Igor Brodkin  CJA Guest Reviewer  
Dr. Peter Choi  CJA Guest Reviewer  
Dr. John Dolman  CJA Guest Reviewer  
Dr. Alana Flexman  Society for Neuroscience in Anesthesia and Critical Care  
Education Committee Member  
CJA Guest Reviewer
Dr. Cyndi Henderson  Chair, CAS Neuroanesthesia Section
Dr. Pamela Lennox  CJA Guest Reviewer
Dr. David Malm  CJA Guest Reviewer
Dr. Lynn Martin  CJA Guest Reviewer
Dr. Kelly Mayson  CJA Guest Reviewer
Dr. Peter McGinn  CJA Guest Reviewer
Dr. Andrew Meikle  CJA Guest Reviewer
Dr. Michael Negraeff  Chair, Pain BC Society
                  Member, BC Provincial Pain Initiative Committee
Dr. Patrick O’Connor  CJA Guest Reviewer
                  Member, BC Quality Council Advisory Group (MoH)
                  Member, Physicians Services Advisory Group (MoH)
Dr. David Parsons  Member, Royal College Credentials Committee
Dr. Craig Ries  CJA Guest Reviewer
Dr. Andrew Sawka  Chair, CAS Regional Anesthesia Section
Dr. Hamed Umedaly  CJA Guest Reviewer
Dr. Himat Vaghadia  CJA Guest Reviewer

Publications – please refer to page 125
Vancouver Island Health Authority

Sites

Victoria General Hospital,
Royal Jubilee Hospital
Saanich Peninsula Hospital
Cowichan District Hospital
Westcoast General Hospital
Nanaimo Regional Hospital
St. Josephs General Hospital
Campbell River Hospital

Tom Ruta, MD FRCPC
Department Head and Medical Director for Vancouver Island Health Authority

Site Chiefs

VGH  Terence Murphy
RJH  Maureen Murray
SPH  Karam Chana
CDH  Ken Pettapiece
WCGH  Marek Rowzadowski
NRGH  Georgia Hirst
SJGH  Wayne Gornall
CRH  Sean Gill

EXECUTIVE SUMMARY

Human Resources:
The South Island department has a shortage of manpower and has been unable to cover slates. Locum relief is scarce compounding the problem. Dr. Gus Chan joined the department in January 2013, Dr. Laura Wakely October 2013, and Dr’s Richard Gardiner, Pooyah Kazemi, Alex Blais, Logan Lee will join the south island department by September 2014. We should be fully staffed at that time. We expect by the summer of 2015 we will need another 4-5 anesthesiologists.

CRH has had a shortage of anesthesiologists as well. After a long recruitment campaign, two anesthesiologists will be joining the department by the summer of 2014.
Education:
Dr Trevor Herrmann continues as the undergraduate medical student and resident coordinator. He is assisted by Drs Kim Stevenson and Paul Serowka. In addition to the mandatory rotation in anesthesia for IMP students, we continue to host many medical students for electives. We also provide a thoracic/vascular anesthesia rotation for senior anesthesia residents from UBC who spend 1 month at Royal Jubilee Hospital. We also continue to accept senior residents from other programs for elective rotations and residents report good exposure to interesting cases and teaching. The department was awarded a teaching excellence award from the Island Medical Program in 2013.

CME:
Dr Shuen Tan organizes our CME rounds. We also participate when possible, with the Visiting Professor Program from UBC. The department has an island wide anesthesia forum to discuss interesting cases and exchange information. Dr. Evan Effa has organized this forum. Dr. Enright and Atherstone have organized two simulations with the OR team which has been well received. We expect the simulation lab to be ready some time in 2015.

QA/QI:
Dr Paul Serowka is the chief. The committee meets monthly to review problems as well as quality initiatives. Members include Dr. Murray, Murphy, Tan, Wollach, Courtice, Wood, Ruta

Dedicated Obstetric Anesthesia Service:
DOBA has been in place since February 2012. Dr’s Pattee, Stevenson and Vuksic have been the departmental leads. Drs Vuksic and Pattee have been active participants in the perinatal review committee. A recent survey of the DOBA service has been very positive. DOBA has increased the frequency of call at VGH.

Equipment update and EHR
Our department chose the Drager Zeus machine for the island as a replacement for our aging GE ADU’s. Implementation has begun and will be completed by the fall 2014. The machine has many unique features including enhanced ventilation capabilities as well as reduced volatile gas use creating cost savings.

VIHA will be working with Cerner to create a paperless EHR island wide. Dr. s Effa and Dallen are representing the department and channeling significant time and energy to help achieve this ambitious goal. The hope is to have this up and running sometime in 2015.
Subspecialty Groups

Cardiovascular Anesthesia:
Brent Caton-Chief Cardiac Anesthesia
Craig Bosenberg
Gillian Moll
Paul Serowka
Mike Kinahan
Mike Van Der Wal
Nick Fenje

Pediatric Anesthesia
Peter Duncan
Des Sweeney
Stan Vuksic
Callie Leipoldt

Individual Member Activities:

Angela Enright
Publications: Please refer to page 124.

Lectures, Workshops & Symposia:
2013: Burkina Faso Society of Anesthesia
Ougadougou & Bobo-Dioulasso, BF
Workshops on the use of Oximetry & the Surgical Safety Checklist

American Society of Anesthesiologists
San Francisco, Ca
Back to the beginning: Is Ether still an option?

ASAP Today 2013
Duke University, North Carolina
Coordination & cooperation: are we doing enough?
The SAFE Course: a new approach to teaching obstetric anesthesia

Bangladesh Society of Anesthesiologists
Dinajpur, Bangladesh
The SAFE Obstetric Anesthesia Course
Can-AM meeting  
Niagara Falls, Ontario
Anesthesia in an asymmetrical world
Short term missions: amateur aid hour or professionalism at its best

Society of Anesthesiologists of Nepal
Katmandhu, Nepal
The Lifebox Project

Rwanda Society of Anesthesia
Kigali, Rwanda
The SAFE Obstetric Anesthesia Course

Victoria:
I have been part of the group developing simulation in Victoria, representing anesthesia. I have now instituted simulation sessions for all medical students rotating through anesthesia. These have been well received.
With the assistance of some anesthesia colleagues, I have also been holding inter-professional simulation sessions within the operating rooms involving nurses, anesthesiologists, surgeons and anesthesia assistants. These have been very popular and the feedback has been very positive.
As part of this exercise, we are using Crisis Checklists. The aim is to develop checklists for use in emergency situations and have them available for use in each operating room. As a result of one simulation exercise, we now have an anaphylaxis kit available in the OR at the RJH. We will shortly have one at the VGH.
We are liaising closely with Dr Laine Bosma and his team in Vancouver and have participated in exercises held for residents in Vancouver. With our crisis checklist work, we are also working with the team at the Brigham and Women’s Hospital in Boston.
The simulation centre in Victoria should open in June of 2015 which will make things much easier. Currently we are using shared space within the Island Medical Programme.

Gordon Wood
Local:
Member Island Health HAMAC (Health Authority Medical Advisory Committee)
Medical Director and Department Head, Adult Intensive Care, Island Health
Member South Island Operations Council
Director of Clinical Research Adult Intensive Care Island Health
Co-Chair of Adult Intensive Care Program Quality Council, Island Health

Provincial
Member of the Provincial Critical Care Working Group affiliated with the BC Patient Safety and Quality Council
National Member of the Canadian Critical Care Trials Group

Committee Memberships

Craig Bosenberg
South Island Credentialing Committee – CQC; HAMQC

Nick Fenje
PACU rep RJH

Peter Duncan
Peds ICU Committee (VIHA committee of the Dept of Pediatrics)
Pediatric Surgical Committee (a division on the VIHA Department of Surgery)
Tiers of Service Committee for Pediatric Surgery (Provincial Advisory Committee)

Anne Webster
Educational Mentor and BCAS Rep

Leo Quon
HSSBC regional anesthesia kit rep and Dept Scheduler

William Davis
Medical Director Pain Program, RJH Victoria

Alan Berkman
Medical Director Pain Program, NRGH Nanaimo

Anna Sylwestrowicz
Medical Student Lecturer

Mike Atherstone
UBC Resident Selection Committee Simulation

Larry Kahn
Member of the College of Dental Surgeons of BC Sedation and Anesthesia Committee providing input from an anesthesiologist perspective inspecting dental facilities providing sedation and anesthesia lecture to the UBC dental students through the UBC Dept of Anesthesiology, Pharmacology & Therapeutics

Lorne Porayko
Vietnam EM Project 2011 and 2012
ICU/Anesthesia/TTL elective for medical school
Co-chair of Parenteral Subcommittee of P&T
Developed the aneurysmal Subarachnoid Hemorrhage order set
ICU and Trauma Services QI committees
Member Provincial Accidental Hypothermia Working Group
Taught hands on Ultrasound Skills seminars for the house physicians

Ian Courtice
Departmental QA
SSC member (Doctors of BC)
Negotiations Forum member (Doctors of BC)
UBC Faculty of Medicine Alumni rep for Vancouver Island
AVA Negotiations Chair/member AVA executive

Gavin Sapsford: President AVA

Larry Dallen: Chair, PAN-BC Steering Committee
Director for Anesthesia Information & Technology, BCAS Board
Member, Anesthesia & Respiratory Equipment Clinical Liaison
Committee, Health Supply Services BC.
Consultant to Health Pro Group Purchasing Organization for
Anesthesia & Respiratory Equipment.
VIHA CPOE/EHR Committee

Evan Effa VIHA Perioperative EHR representative
BCAS Rep

Kalina Popova Resident Oral Exams

Jacques Smit ERAS

Gus Chan Acute Pain Clinical Order Sets

Trevor Herrmann Island Medical Program Coordinator
UBC resident coordinator

Carol Pattee: Perinatal Review Committee

Stan Vuksic Perinatal Review Committee

Maureen Murray Preadmission Clinic Redesign

Terry Murphy Preadmission Clinic Redesign

Shuen King CME representative

South Island Department QA/QI Committee
Paul Serowka Chair
Tom Ruta
Maureen Murray
Terry Murphy
Shuen King
Jeff Wollach
Ian Courtice
Trever Herrmann
Gordon Wood

South Island Department Executive Committee
Tom Ruta
Gavin Sapsford
Maureen Murray
Terry Murphy
Carol Pattee
Leo Quon
Larry Dallen:
Trevor Herrmann
Paul Serowka
NANAIMO REGIONAL GENERAL HOSPITAL

Sarah Hall  MD FRCPC
Discipline Specific Site Leader
Vancouver Island Medical Expansion Program

EXECUTIVE SUMMARY

Nanaimo Regional General Hospital (NRGH) has 288 acute-care beds and serves as a regional referral centre for mid and upper Vancouver Island. A broad range of surgical specialties is offered with the exception of neurosurgery, cardiac, thoracic and vascular. There are 8 operating rooms in the main surgical suite with approximately 13,000 surgeries performed per year. The Anesthetic Department covers a busy Obstetric ward (more than 1200 deliveries per year) where approximately 34% patients receive epidurals. Residents can experience pediatric anesthesia with ENT and dental cases. A wide range of general, urologic, plastic, maxillofacial and orthopedic surgeries is performed with an emphasis on regional and neuraxial techniques. Department members staff a weekly Preadmission Clinic and monthly Morbidity and Mortality rounds are held. Three anesthesiologists are involved in the Interventional Interdisciplinary Pain Program where 7000 patients are seen annually.

Our staff includes 14 members: Drs. Alan Berkman, Hans Babst, John Riendl, Scott Neilson, Frank McCormack, Paul Castner, Sarah Hall, Judy Coursley, James Lindsay, Bob Gaultois, Georgia Hirst, Michael Seltenrich, Jim Capstick and Trevor VanOostrom. Dr. Karl Muendel is an anesthesiologist with a fellowship in chronic pain and works exclusively in the pain clinic. In addition, we have a full-time Anesthesia Assistant, Paul Gear, for technical support. Dr. Hirst has taken on the challenge of Department Head in a turbulent time.

Initiatives:

- NRGH hosts a Renal Dialysis unit, bringing interesting and complex patients to the operating room on a regular basis.
- A state-of-the-art Emergency department opened its doors September 2012.
- The modern 15 bed Maternity wing is attached to the OR complex. It has a 9 bed-level 2b neonatal unit, which can manage short-term ventilation or CPAP.
- A Sonosite ultrasound machine for regional anesthesia is available for ultrasound guided regional techniques.
- NRGH is one of three centres in the province to perform spinal cord stimulator implantation for the management of complex pain.
Monthly Morbidity and Mortality/Quality Assurance Rounds are co-ordinated by Dr. Hall.

Plans are underway to add two additional operating rooms in the main OR. Once the new ORs have been installed, trauma time, currently allocated to the orthopedic room between 13:00 and 18:00, will be expanded to a full day of emergencies for all specialties.

New anesthesia machines/work stations will be installed to replace our current equipment in March 2014. An Anesthesia Information Management System (AIMS) is likely to follow the arrival of the new machines.

Funding has been applied for a second Anesthesia Assistant to expand the coverage to afternoon/evenings and weekends.

A Family Practice Residency has been in place since 2007 with eight residents per year.

Dr. Hall oversees both medical students and residents doing rotations in Anesthesiology.

**Teaching Involvement**
The department continues to enjoy the presence of residents and students at our institution. We welcome students from all over the world for a 4-week period rotations through our hospital. We tend to host final year medical students doing electives in anesthesia as well as Anesthesiology residents in various stages of training, however we welcome anyone who wishes to apply.

Specific areas of teaching and learning opportunities:

- Dr. Hall oversees both medical students and residents doing rotations in Anesthesiology.
- On site teaching of BCIT and Vancouver Island University nurses.
- Airway management: Awake intubations as well as multiple airway adjuncts are employed routinely. Dr. Alan Berkman has been involved in the Resident Airway Day at VGH from its inception.
- A wide range of regional anesthesia techniques is employed at NRGH and residents rotating through the hospital will gain valuable experience.
- Drs Alan Berkman, Scott Neilson, Jim Capstick and Sarah Hall participate as examiners for in-house resident exams.
- Videoconference link with UBC for the Visiting Professor lecture series.
- Comprehensive anesthesia library that is regularly updated, including textbooks and journal subscriptions.
- “Topics of the Day” have been introduced for medical students rotating through anesthesia.
- Supplemental areas of exposure to complement the experience in the operating room can include ICU, Emergency, Obstetrics, Preadmission Clinic and Pain Clinic.
Interventional Pain Clinic: Exposure to both acute and chronic pain including fluoroscopy-assisted procedures, chronic back and neck pain, complex regional pain syndromes and management of patients on intrathecal pumps and spinal cord stimulators.

A simulation lab is available and simulation scenarios are held weekly for the Family Practice residents, which Anesthesiology students are welcome to attend. A simulation program for Anesthesia is being developed by Dr. Sarah Hall.
University Hospital of Northern BC
(Prince George Regional General Hospital)

Dr. Pal Dhadly MBChB BMedSci FRCA
Head, Department of Anesthesia

EXECUTIVE SUMMARY

The University Hospital of Northern BC is a 220 bed acute care facility and is the regional referral centre for Northern BC. Last year we performed approximately 8000 surgical procedures. The surgical specialties consist of general, vascular, obstetrics and gynaecology, orthopaedics, urology, plastics, otolaryngology, maxillo-facial, dental and ophthalmology. The Department of Anesthesia at UHNBC consists of 12 specialist anesthetists. Two share their time between anesthesia and critical care and one exclusively does chronic pain.

An anesthetic pre-assessment clinic is held twice a week, staffed by department members in rotation. Northern Health covers a large geographical area and, as the regional centre for the north we have patients travelling large distances to us. We are therefore examining the potential for telehealth consultations. The medical, administrative and IT resources have been determined. Unfortunately anesthesia is one of the few specialties that do not yet have a fee code for telehealth consultations. The BC Anesthesia Society is working to rectify this.

The Chronic Pain service is staffed by one anesthetists with dedicated clinic space, clerk and an RN. I am pleased to report that Northern Health has agreed to undertake a comprehensive assessment of the current provision of chronic pain services within NH and construct a coherent plan for the future.

Last year we began implementation of Surginet AIMS. Unfortunately our older anesthesia delivery units would not transfer data to the AIMS reliably and we therefore have a partial implementation until all of pir equipment is replaced.

Dr. Marshall Richardson continues in his role as DSSL. We teach 3rd year medical students from the NMP for their mandatory anesthesia rotation, as well as many 4th years for electives, both from within BC and from other provinces. UBC anesthesia residents join us for one month rotations. They have been of a high standard and the department members continue to appreciate their presence at our facility. We also participate in the training of family practice residents.
The Northern simulation centre at UHNBC has enabled us to utilise high fidelity simulation for teaching airway management to medical students and family practice residents. Construction of a new learning and development centre is underway. It will provide an improved facility for simulation as well as space for other educational activities.

**Department Members:**

Jamil Akhtar  Pejman Davodian  Richard Kraima  Lucy Pearmain  
Jason Cronje  Pal Dhadly  Shehzad Mehmood  Marshall Richardson  
Olu Bamgbade  Petar Georgyev  Nazar Murad  Leon Terblanche
KELOWNA GENERAL HOSPITAL

Dr. Robert P. Eger  B.Sc., M.D., FRCPC
Head, Department of Anesthesia

Dr. Mark Yudin MD FRCPC
Discipline-Specific Site Leader

EXECUTIVE SUMMARY
Kelowna General Hospital has enjoyed another year of further expansion in 2013. The Centennial building has had its first full year of operation and continues to gain ground in efficiencies and throughput. The cardiac program also continues to grow as 550 cardiac cases were done at KGH in 2013. The intensive care unit has expanded and anesthesia has taken on a larger role in that setting. As such we have recruited two new full time anesthesiologists bringing our department to 26 members.

We are looking forward to the opening of the new IHSC tower in 2015. This will give us new surgical suites and allow for the further expansion of surgical services.

The Southern Medical Program is now in its third year of operation. As such, this year was the first year medical students trained entirely in Kelowna entered clinical clerkship. We saw 24 third year medical students doing their two week core anesthesia rotation. They have been a pleasure to teach and created a more academic environment within our department. We also continue to teach family practice residents for one week as part of their four week ICU rotation. We have also seen a number of clinical clerks, family medicine residents and anesthesia residents come through for electives.

We continue to work with UBC in an attempt to increase the frequency with which senior anesthesia residents visit the Okanagan for electives/core rotations. In particular, we feel we have a lot to offer in the subspecialty of thoracic anesthesia. We have a very active service with 4.5 days a week of thoracic surgery.

Kelowna General Hospital remains one of the very few hospitals in Canada that has every surgical specialty represented in our 13 OR's. We have a well functioning preoperative consultation clinic that sees a lot of internal medicine being done as well as active acute and chronic pain services. It is all here in one place.

Interestingly, our department has a number of residents per year from east of the Rockies but very few from UBC. We want our home grown trainees to come to Kelowna and benefit from our expertise and clinical material. Come to the beautiful Okanagan!
EXECUTIVE SUMMARY
At Vernon Jubilee hospital, we have 8 full-time FRCPC anesthesiologists providing perioperative care, consultation, obstetrical analgesia/anesthesia, acute pain services and 3rd and 4th year medical student as well as elective anesthesia resident training in the OR. We also have Locum coverage by 2 local FRCPC physicians to provide flexibility in scheduling and CME opportunities. We run 4 operating rooms per day and 24/7 on call service for urgent and emergent surgeries. Surgical specialties include: general surgery, orthopedics, spine surgery, gynecology, urology, ENT, and dental. We also provide anesthesia for ECTs and cardioversions. Ongoing initiatives in our department include ERACS, postoperative apnea/O2 saturation monitoring, and obstetrical emergency simulation. We have a full time respiratory therapist who works in the OR as an anesthesia assistant.

We are part of the UBC Faculty of Medicine Southern Medical Program, which is based in Kelowna. As such, we have elective 4th year students from UBC come for a 2-4 week rotations, and also two ICC 3rd year students who do two one-week rotations during their year in Vernon.

For CME, we have 4-6 M&M rounds per year, as well as occasional didactic presentations from one of our group. We are generally able to attend other CME meetings with the use of our regular locums, who live locally and are greatly appreciated for this service.

The future plans for the department are to continue our teaching as part of the Southern Medical Program, and recruitment to build our department as OR capacity increases. Our hospital is going ahead with the finishing of 2 additional floors for medical and surgical inpatients, but two additional ORs, though shelled-in, are not yet scheduled for completion.

Department Members:
Dr. Kevin Smith
Dr. Erik Lemay
Dr. Jennifer Green
Dr. Alex Wedensky
Dr. Tom Cull
Dr. Richard Marks
Dr. Dan Viskari
Dr. Kallie Honeywood

Portfolios:
Schedule – Dr. Erik Lemay
UBC Academic Liaison – Dr. Tom Cull
Treasurer – Dr. Kevin Smith
CME Lead- Dr. Alex Wedensky
BCAS Liaison- Dr. Kallie Honeywood
DIVISION REPORTS

DIVISION OF CARDIAC ANESTHESIA
Head, Bobby Lee MD FRCPC

Resident Training

The UBC anesthesia residents complete a two month cardiac anesthesia rotation at SPH and/or VGH, where both sites offer the opportunity to gain experience in the surgical contexts of: CABG, valve repair/replacement, and transcatheter aortic valve implantation. VGH offers exposure to manage patients undergoing major thoracic aortic vascular surgery. In contrast, SPH offers the experience of caring for patients with cardiomyopathies who require ventricular assist devices and/or heart transplantation. With the advent of newer percutaneous cardiac procedures, SPH also offers exposure to managing patients undergoing transcatheter mitral valve replacements/MV rings, and percutaneous ASD closures.

CSICU

Final year UBC anesthesia residents complete a one month rotation in the CSICU, either at VGH or SPH. Given the increasing complexity of cardiac surgery patients over the past 10 years, this has resulted in an excellent learning experience for residents in managing complex patients with a variety of mechanical assist devices such as ECMO as well as challenging medical conditions often seen in the ICU such as septic shock. On occasion at SPH, we have had ICU fellows also rotate through the CSICU, a positive development resulting in bi-directional flow of knowledge between the ICU and CSICU.

TEE

For those final year residents with an interest in TEE, a one month rotation has been established at SPH. I believe that there is also an opportunity at RCH for a two month rotation to be spent with cardiologists. Though the objectives of the rotation are for residents to be able to conduct a detailed exam of cardiac and valvular function independently, most realistically, residents become comfortable with the basic TEE exam within this one month period.
Fellowship Training

A 1 - 2 year cardiac anesthesia fellowship is offered at SPH and at VGH. In the next year, I would like to open a discussion between SPH, VGH, and possibly RCH regarding the potential for starting a combined cardiac anesthesia/TEE/CSICU fellowship program where the fellow would spend time training at each hospital. I believe the fellowship would be stronger in the clinical material offered and would benefit from each hospital’s strengths ie VAD/transplant at SPH, thoracic aortic/arch repairs at VGH. Also, given that Kelowna has come online with its cardiac program, the amount of clinical material likely will continue to decrease for both, if not all three hospitals.

**DIVISION OF NEUROANESTHESIA**

*Head, Cynthia Henderson MD FRCPC*

The Division of Neuroanesthesia has been active in providing education of the Residents and Fellows in the subspecialty of Neuroanesthesia, continuing medical education for staff members and expert clinical care for neurosurgical cases. Residents in their R4 year spent one month in Neuroanesthesia at Vancouver General Hospital gaining expertise in routine and unusual cases in Neurosurgery, Neuroradiology, and Major Spine Surgery. During their Neuroanesthesia rotation, each resident made a presentation of an interesting case or topic at Neuroanesthesia Rounds which are held monthly and attended by members of the Department of Anesthesia. In 2013, discussions began with Drs Brian Toyota and Peter Gooderham of the Division of Neurosurgery to organize quarterly joint Neuroanesthesia and Neurosurgery Rounds in 2014.

In 2013, there were six core members in the Division of Neuroanesthesia - Dr. Cynthia Henderson (head), Dr. Bali Dhaliwal, Dr. Alana Flexman, Dr. Donald Griesdale, Dr. Henrik Huttunen and Dr. Jon McEwen. There were four non-core members in the Division of Neuroanesthesia – Dr Oliver Applegarth, Dr Kelly Mayson, Dr Michael Page, and Dr Craig Ries, which provided increased exposure and resulting expertise to other members of the Department of Anesthesia. The non-core appointments are two years in length and are re-evaluated every two years. In 2013, Drs Kelly Mayson and Cynthia Henderson were nominated for promotion to Clinical Professor, Faculty of Medicine at the University of British Columbia.

The collection of relevant Neuroanesthesia articles and Neuroanesthesia Rounds distributed to residents and Fellows has been expanded and placed on the G-drive for staff access. Guidelines and summaries of Neuroanesthesia considerations for various cases are being developed for residents and staff anesthesiologists assigned to the Neurosurgical theatre.
The biennial Residents’ Academic Days in Neuroanesthesia and Anesthesia for Spine Surgery were presented on November 21 and 27, 2013 and lectures were given and supervised by Drs Bali Dhaliwal, Alana Flexman, Donald Griesdale, Henrik Huttunen, and Jon McEwen. Members of the Division of Neuroanesthesia were actively involved in the R5 Senior Anesthesiology Residents’ Preparatory Course and UBC Anesthesia Departmental Residents’ Oral exams.

University of British Columbia City Wide Journal Club took place on November 25, 2013 with the theme of Neuroanesthesia. Journal Club was hosted by Dr Kelly Mayson and supervised by Drs Alana Flexman, Jon McEwen and Don Griesdale.

DIVISION OF THORACIC ANESTHESIA
Head, JENS LOHSER MD FRCP

Members
The division currently consists of five members with advanced training in thoracic or cardio-thoracic anesthesia.
Dr. Gord Finlayson (cross appointment in intensive care)
Dr. Brett Fitzmaurice (previous Head)
Dr. Bevan Hughes
Dr. Jens Lohser (current Head)
Dr. Paul Kapnoudhis

Past-Members
Dr. Jon Harper (continues to provide lung transplantation coverage)
Dr. Hamed Umedaly (continues to provide lung transplantation coverage)

All members of the thoracic division participate in lung transplantation. Due to the highly specialized care required, which entails aspects of thoracic and cardiac anesthesia, as well as transesophageal echocardiography, the division is made up entirely of members of the division of cardiac anesthesia. All members of the division of thoracic anesthesia therefore carry a cross-appointment in the division of cardiac anesthesia.

The Vancouver Acute anesthesia department has recruited three individuals from the UBC residency program, who will be joining the thoracic division after completion of their respective fellowships. Dr. Chris Durkin is currently undertaking a Cardiothoracic Fellowship in Australia and will return in January 2015. Drs. Travis Schisler and Sean McLean are currently completing their residency and are planning fellowships in lung transplantation and cardiothoracic anesthesia, respectively in the ensuing years.
As part of a redistribution of subspecialty assignments among the anesthesia staff at Vancouver General Hospital, the division now staffs 80 percent of the 200-220 annual thoracic surgical days (an increase from about 60 percent). With the arrival of our new recruits we will be able to staff all thoracic surgical slates and provide stable lung transplantation coverage.

Clinical Practice
Thoracic surgery at VGH performs the full complement of thoracic surgical procedures, including lung, esophageal and mediastinal surgery as well as lung transplantation. Annually, we perform about 600 lung resections, of which half are major lung resections (lobectomy, pneumonectomy). There is an increasing focus on minimally invasive techniques, with approximately half of all major lung resections being performed with thoracoscopy. The number of esophageal resections and mediastinal tumor resections has been stable around 50-70 and 30-40, per year respectively. A significant volume of thoracic surgical cases are performed at Surrey Memorial Hospital and Kelowna General Hospital. There is minimal interaction between surgical and anesthetic programs across the various sites.

Vancouver General Hospital is the only site in British Columbia, which performs lung transplantations. The number of transplants is variable but has been steadily increasing over the last 5 years, in part related to surgical personnel changes. Over the last two years we have seen a further increase in the number of transplants, likely due to the increasing practice of Donation after Cardiac Death. As a result, we performed 25 lung transplants annually in the last 2 years, which is the highest ever for our program. The division of cardiac surgery has recruited Dr. Ghorpade from Edmonton, who is cross-appointed to thoracic surgery as a lung transplant surgeon. Dr. Ghorpade is also expected to help facilitate the setup of an ex-vivo transplant organ perfusion program. This would greatly benefit the safety of and the expansion of the lung transplantation program, but also benefit other solid organ transplant programs.

Lung transplant anesthesiologists are a part of a multidisciplinary transplant program and regularly invited to partake in lung transplant rounds to discuss preoperative and postoperative issues whenever feasible.

Thoracic surgery at VGH previously acted as the first Canadian site for diaphragmatic pacemaker implantations for patients with severe neuromuscular disorders.

Education
Thoracic anesthesia is an advanced subspecialty within anesthesia. As such we do not routinely participate in the education of medical students.
All Anesthesia residents rotate through thoracic anesthesia at VGH during their senior years, and may receive additional exposure at other sites (Surrey, Kelowna). As part of their VGH rotation, all residents receive pre-rotation suggestions regarding reading materials. Selected articles are available as PDF files on a resident-maintained website and on the departmental hard drive. All members of the division take an active role in resident education.

Residents are required to present thoracic rounds during their subspecialty rotation. The focus of the thoracic rounds is on interests common to residents and anesthesiologists, and not necessarily subspecialty members.

Residents are welcome to attend lung transplantations. However, due to the significant perioperative risks and time pressures, resident involvement is limited to primarily observation (which is communicated to residents at the beginning of the rotation). Participation in lung transplants is therefore not mandatory.

Within the last two years we have sought the feedback of senior residents on their educational experience during the thoracic rotation. All residents ranked their rotation as one of the best educational experiences during their residency. The teaching by thoracic subspecialty members was rated as very good to excellent. We hope that the increased exposure to thoracic subspecialty members will further solidify the educational experience of the residents.

A fellowship is currently not offered. We did have a foreign research fellow in 2010-2012 who actively participated in research in thoracic anesthesia. A clinical fellowship is not currently offered for logistic reasons, however a thoracic experience is provided to our cardiac anesthesia fellows.

Research
With the help of a foreign research fellow (Dr. Ishikawa) we have completed a number of studies on perioperative renal dysfunction amongst patients undergoing thoracic surgery. One study focused on lung resection surgery and was published in Anesthesia & Analgesia in 2012 (Dr. Lohser). The second study, which focused on lung transplantation was recently published in the Journal of Cardiothoracic and Vascular Anesthesia 2013 (Dr. Lohser).

We recently completed an in-vitro experiment to elucidate the downstream effect of applying positive or negative pressure to lung isolation devices (Dr Lohser). The study has been accepted in abstract format for presentation at the Society of Cardiothoracic Anesthesiology meeting in New Orleans 2014 and we intend to submit it for publication subsequently.
Quality Assurance
The division fully supports and participates in departmental quality assurance initiatives, including morbidity and mortality rounds. The division meets regularly for discussion of aspects of lung transplant care.

DIVISION OF REGIONAL ANESTHESIA
Head, Steve Head, MD FRCPC

I am pleased to provide the inaugural division head report on behalf of the UBC APT Division of Regional Anesthesia.

The growing practice of ultrasound-guided regional anesthesia has led to exciting changes in perioperative care delivery at several hospitals in BC over the past several years. At St Pauls Hospital (SPH), a “block room” was developed in 2009 which is staffed by a dedicated “out-of-OR” Anesthesiologist. The ability to place nerve blocks for extremity surgery preoperatively has several potential advantages over the traditional practice of placing such blocks intraoperatively: First, it can improve OR efficiency, since the vast majority of patients are delivered to the OR with surgical anesthesia in place. In addition, the increased availability of regional anesthesia services results in many benefits to our patients, including less post-operative nausea and vomiting, faster discharge times, and improved pain control.

The block-room concept is also being embraced at several other BC hospitals. In particular, over the past year Lions Gate Hospital has developed a dedicated block room, as well as an “out-of-OR” Anesthesiology position, which has improved the availability of regional anesthesia services to patients there. Over the past few years, the regional anesthesia group at St Pauls Hospital has hosted several Anesthesiologists from across the province in the SPH block room in order to share knowledge related to regional anesthesia. In this capacity, the SPH block room continues to serve as a resource for anesthesiologists province-wide.

Improving collaboration and communication among regional Anesthesiologists province-wide in order to facilitate and support the practice of regional anesthesia across all UBC APT-affiliated sites is an important goal of ours. With the help of Dr Roop Randhawa, the former regional anesthesia fellow at St Pauls Hospital, we have taken the first step in this regard by developing a strong presence for regional anesthesia on the APT website (apt.med.ubc.ca/anesthesiology/divisions/division-of-regional-anesthesia). Here, we have collated information describing clinical services and academic activities of APT-affiliated regional anesthesiologists from across the province. I hope this will lead to more sharing of information across our departments.
Regarding research activities, many of our members continue to be active in the field of regional anesthesia research, with VGH leading the way in terms of published peer-reviewed papers (see APT website for a specific list of recent publications). At SPH, there is a growing interest in regional anesthesia research, with several members beginning to take an active role in developing projects and mentoring residents. The development of block rooms staffed by dedicated regional anesthesiologists provides an excellent environment for the development of randomized controlled trials in the field of regional anesthesia, and we hope that research activities continue to grow across UBC APT-affiliated sites.

In terms of continuing education in regional anesthesia, our flagship event, the annual Whistler Anesthesia Summit was held February 21 – 24, 2013, was a great success. Many thanks to Drs Ray Tang, Ron Ree, and Cynthia Yarnold for organizing the regional anesthesia workshops, which were very well received by participants.

UBC APT continues to offer a dedicated regional anesthesia fellowships. At St Pauls Hospital, Dr Steven Pretrar completed his regional anesthesia fellowship in July 2013. In addition, he completed a research project which examined the incidence of phrenic nerve blockade following infraclavicular versus supraclavicular nerve blocks. This is currently in submission to a peer reviewed journal. Dr Petrar is now a Staff Anesthesiologist at St Pauls Hospital. Dr Roop Randhawa also successfully completed his fellowship in 2013, and during this time he developed the division of regional anesthesia web pages on the UBC APT website. VGH continues to offer an ambulatory anesthesia fellowship which includes an emphasis on regional anesthesia. For 2013, 3 fellows were enrolled: Neil Ramsay, Silke Brinkmann, and Genevieve Germain. One of our future goals is to develop a shared fellowship experience, whereby a fellow may work at several different sites (e.g. SPH, VGH, LGH), in order to broaden their clinical experience further.

The division of regional anesthesia continues to provide a dedicated one-month rotation in regional anesthesia for our residents. This is completed at either VGH or SPH. An additional one-month elective is also offered (depending on site availability) to R5 residents who have completed their mandatory rotation, and who have a special interest in regional anesthesia. In addition, an increasing number of residents are choosing to do research projects related to regional anesthesia. The regional anesthesiologists at VGH and SPH continue to act as research mentors to our residents and medical students as they complete their research projects and prepare for the annual residents’ research day presentations.

In summary, our regional anesthesia programs continue to thrive, with an expansion in clinical services, research, and teaching-related activities. We expect this to continue in the years to come!
DIVISION OF PAIN MANAGEMENT
Head, Michael Negraeff MD FRCPC

The Pain Management Division was created in 2013.

The Role Description of the Pain Management Division Head is as follows:
1. Provide leadership in the area of the subspecialty practice of Pain Management within the Department APT including both residency subspecialty training activities and ongoing medical education for those faculty who have a practice in management of pain in the academic department.
2. Create a link with Pain BC and with new Pain Medicine Residency Program to facilitate sharing of information, guidelines and expertise to assist education activities in pain management within the Department APT.
3. Ensure there are both formal and informal mechanisms for anesthesiologists in BC to access the expertise in management of pain available in the lower Mainland, to support patient care and academic learning.
4. Facilitate and support CME activities in pain management in BC.
5. Provide expert opinion and advice as may be requested from time to time by the Department Head APT in the field of pain management. This may include requests to sit on ad hoc committees or make presentations to the university, health authority, or Ministry of Health if these activities are requested via the Department of APT.

Activities to Date:
1. Met with Residency Program Director, Matt Klas, to discuss the Chronic Pain Rotation for Anesthesiology residents in the R4-R5 year. Issues identified:
   a. Field and knowledge in pain management continues to expand. More than can be reasonably achieved by residents in 4 week required RCPSC block. What are the absolutely essential core knowledge and skills in pain management that every resident graduating from UBC to become RCPSC certified needs to have? What can be left out of core rotation and put into electives or left to be pursued in the new RCPSC Pain Residency?
   b. Does the current clinical rotation meet the needs of the residents to develop those core skills?
   c. Is there too much fragmentation of time spent in the 4 week block?
   d. Is there enough acute pain management exposure?
   e. What evaluation process is best for the rotation – electronic, or paper?
   f. Role of coordinating the residents in rotation should remain separate person from Division Head with Division Head providing leadership in goals of rotation.
ACTION: set up a meeting with physicians involved with coordinating the rotation to discuss the above and come up with recommendations for Residency Training Committee (RTC).

2. Dr. Paul Etheridge, GP-Anesthesia, has created an Ultrasound Pain Management Skills Elective Rotation for consideration by the UBC Dept of APT. It would take place at the clinic in Kelowna that Dr. Etheridge has created – The Okanagan Interventional Pain Clinic. Dr. Etheridge has become expert in the use of ultrasound for MSK diagnosis and treatment of various pain conditions. He has mentored many post graduate physicians currently in practice. He has participated in the Canadian Pain Society’s annual Interventional Pain Management Course as an instructor. The proposed elective has been described in the CanMeds roles and will be put forward to the RTC in April 2014.

3. The Canadian Interventional Pain Course from the Canadian Pain Society will be in Vancouver April 4-5, 2014. Information on the course was put up on the UBC APT website and circulated to clinical members.

4. I have advocated for the creation of a Pain Clinic, of some yet undetermined nature, to exist in the new Centre for Brain Health building at UBC, which is the new home of the Brain Research Centre. (http://www.centreforbrainhealth.ca/) The CBH will be a collaboration between the clinical services VCH provides in the areas of multiple sclerosis, ALS, Alzheimer’s disease and dementia, movement disorders, concussion and head injury (new, not committed) and pain (new, not committed) and the existing basic science and clinical research already happening in these fields. There is tremendous support and interest to have pain be a part of the new CBH by its current director, Dr. Max Cynader, and the incoming director, Dr. John Stoessl (Neurology). The issue will be to find operating dollars as it would be new. Secondly, to define the scope and intent of the clinic. Discussions will be ongoing.

Pain BC Society Activities of Potential Relevance to APT Department Members:

1. Pain BC Society urged for the creation of a GP education and mentoring program to increase skills and capacities of GPs to manage chronic pain in their practices. The program is called Managing Pain Practice Support Program (PSP). The PSP is a tested, multi-stakeholder and effective model employed by the BCMA (now Doctors of BC DoBC) that has increased capacity and quality of care by GPs for a number of chronic diseases, including COPD, CHF, Adult Mental Health, Child and Youth Mental Health, etc. The Pain PSP began training GP champions December 5, 2013 and will finish April 30, 2014 with the champions then carrying on training their colleagues across the province indefinitely. The Pain PSP is jointly
funded by the Ministry of Health and the DoBC through funds held at the Specialist Services Committee (SSC) and Shared Care Committee (SCC) which hold funds as part of the negotiated contract between MoHS and DoBC.

2. As part of the Pain PSP, Pain BC urged that system redesign activities needed to occur to support the spectrum of care of people with chronic pain across sites and time frames. The current inadequate resources and fragmented care is not sufficient to support the growing population of people with chronic pain. Training GPs is necessary but not sufficient to create this support. As a result, a proposal is in front of the SSC and SCC to undertake a Pain System Redesign Collaborative that would involve various stakeholders including, one or more willing Health Authorities, specialists, GPs, non-MD health care professionals, DoBC representatives, MoHS representatives, patients and community groups. The decision to move forward with the funding for this initiative rests with the decision of the SCC, expected in March-June quarter of 2014. I have strongly urged that given how little research is conducted on pain in Canada, and how many unanswered questions we have about how best to deliver services, that there should be a strong research component built into any clinical redesign work undertaken.

3. Pain BC has undertaken co-created Pain Education modules with the BC Pharmacy Association to educate and mentor 200 pharmacists to become “pain experts” through a multidisciplinary pain education program and mentoring. The objective is to create pharmacists with a broader understanding of the impacts and various ways to treat and self manage chronic pain so they can be better team members in the support of their clients. Pain BC will begin to undertake a similar collaboration with the Canadian Physiotherapy Association to train and mentor physiotherapists. The overarching goal of Pain BC in these activities is to create greater education and skill based knowledge in the various healthcare professions that are already involved with the care of people with chronic pain by providing the same scope of training in pain concepts, impacts, and various management strategies to all the professionals. This will help create a common language and knowledge base.

4. Every year, Pain BC holds an Interdisciplinary Pain Conference that all healthcare disciplines are invited to attend including members of UBC APT. Various topics of interest are covered with a theme prominent each year. The 2013 conference was in October 2013 in Burnaby and featured content around the theme “Pain and the Brain”. Overall, the conference has been very successful in attracting a wide range of health care professionals and is highly evaluated. The theme of the 2014 conference, to be held in Burnaby is “Confronting the Challenges of Chronic Pain”.
5. All UBC APT members are urged to be aware of the resources for patients with pain available through the Pain BC website (painbc.ca) or Facebook page and to refer patients to them. A wide ranging menu of content is available in webinars, audio programs and workshops, as well as direction to support groups, self management training, and social supports available.

Activities planned for near future:

1. Host a teleconference/webinar meeting of pain thought leaders within the UBC APT department to discuss further role and activities of Pain Management Division; discuss direction of Pain Management education and awareness opportunities within Department; and discuss linkage with the RCPSC Pain Residency Program.

2. Setup a meeting with Anesthesia Pain Rotation coordinators to discuss concerns of the rotation as set out above.

3. Setup a meeting with Program Director of new UBC Pain Medicine Post Graduate Residency when it is finalized.
As part of the Department of Anesthesiology, Pharmacology & Therapeutics (APT), we are committed to excellence in Pharmacology and Anesthesiology education and research through creativity and dedication. Our present research strength is in areas of neural, cardiovascular, respiratory, ion channels, and clinical pharmacology as well as drug development. We have strong collaborations within the Department in Anesthesiology, Pharmacology and the Therapeutics Initiative as well as outside of the Department.

In addition to research efforts, we have maintained our excellence in teaching at the undergraduate, graduate and postgraduate levels in both pharmacology and therapeutics. The department has been offering degree programs in undergraduate and graduate pharmacology. The PCTH 514 seminar series, led by Bernie MacLeod, continue to provide opportunities for our students to share their research interests and accomplishments; and the Department Seminar Series, organized by Harley Kurata, continue to provide an opportunity for faculty and students to be exposed to other related research areas from within and outside the university.

Faculty members have received research and/or personal awards as follows:

Tillie Hackett - New Investigator Award, St Paul’s Hospital Fdtn, Providence Health Care Research Institute, $130,000/year for 6 years.

Stephan Schwarz - Winner of the 2013 Canada Anesthesiologists’ Soc. (CAS) Award (in memory of Adrienne Cheng) for the proposal “Thalamic mechanisms of pregabalin in fibromyalgia and chronic pain: effects on the hyperpolarization-activated mixed cationic pacemaker current (\(I_h\))”, $10,000.

Harley Kurata - CIHR New Investigator Award: “\(K_{ATP}\) Channel: Electrical Transduction of Cellular Metabolism”, $60,000/year for 5 years.

Postdoctoral Awards

Samuel Goodchild (Mitacs Elevate Fellowship for 1 year, supervisor David Fedida)

Christopher Murray (CIHR Award, supervisor David Fedida).
New research grants

David Fedida - Cardiome Corp., Discovery & development of novel small molecule inhibitors of viroporin proteins for the treatment of acute & chronic viral infections, $273,750/y for 3 years.

David Fedida: CIHR, $570,000 over 3 years (matching the above).

David Fedida: Cardiome Corp., Late $I_{Na}$ is a therapeutic target for improvement of diastolic function, $70,000.

Pascal Bernatchez, CIHR, Novel compounds for treatment of pulmonary hypertension, $158,389 for 1 year.

Pascal Bernatchez received funding of $150,000 from CIHR

Alasdair Barr - Bristol-Myers Squibb, A longitudinal comparison of aripiprazole vs. higher metabolic risk antipsychotic drugs on adiposity using MRI, $137,000.

Alasdair Barr, BC Mental Health, Pharmacokinetics in psychiatry, $300,000

Tillie Hackett: CIHR, Molecular determinants of small airway obstruction in chronic obstructive pulmonary disease, $709K for 5 years.

Medical Undergraduate Teaching – Dr. Jennifer Shabbits

The Autonomic Pharmacology workshops held on November 13$^{th}$ for the first year MD students was once again a great success, thanks in large part to the significant contribution made by faculty members, residents and graduate students from our department who facilitated these small group tutorials. Students passed along many comments of appreciation for the clinical pearls and practical examples that the facilitators shared during these sessions.

Pharmacology Week, co-Chaired by Drs. Jennifer Shabbits and Stan Bardal, was held the week of November 18$^{th}$ and was very well received by the first year MD/DMD class.

It was recently announced that the timeline for implementing the renewed undergraduate medical curriculum has been delayed by one year. The current plan will see the general curriculum framework submitted to Senate in February 2014, followed by detailed course syllabi and assessment plans in fall 2014. Pending senate approval, the new curriculum will formally begin with the 1$^{st}$ year class in fall 2015. Dr. Dawn Dewitt is no longer leading the curriculum renewal, but will continue in her role as Regional Associate Dean Vancouver Fraser Program.

Postdoctoral fellows and Research Associates

There are currently 8 Postdoctoral fellows and 11 Research Associates in the Department.
**Pharmacology Graduate Program – Dr. Sastry Bhagavatula**

During the year 2013, 9 graduate students were admitted into our graduate program. The total number of graduate studies in the department in 2013 is 30 (14 MSc and 16 PhD).

Two students graduated in May 2013 (1 MSc and 1 PhD) and 4 graduated in November 2013 (2 MSc and 2 PhD).

The students received a total of 29 awards (3 CIHR doctoral awards; 1 Brain Canada Mental Health Training award; 5 UBC 4-Year-Fellowships; 1 China Industrial Scholarship; 2 Saudi Arabia Govt. Scholarships; 17 UBC Graduate Studies Initiative awards; and 4 travel awards).

The students published 12 papers in peer-reviewed journals and presented abstracts at 12 scientific conferences.

**BSc Pharmacology and undergraduate courses in pharmacology**

The Department has been offering a B.Sc. Pharmacology program (Honours & Major) for over 30 years. Students are accepted into the program after completion of year 2 in the Faculty of Science. For 2013-4, 25 students were accepted into third year Pharmacology, and the academic standing of the students remained strong. Over 30 pharmacology students have been designated as Science Scholars (>90% average) in 2013, and this represents over 20 percent of the total number of Science Scholars in the Faculty of Science (with about 7,000 students).

In addition to the 3rd and 4th year Pharmacology courses that form the core of our B.Sc. program, the Department has been offering two pharmacology 3rd year courses to students in other Science departments and one to Midwifery students.

**New undergraduate courses:**

1. We started a new pharmacology course (PCTH 201) in September 2014. This course is offered to 2nd year students in the Faculty of Education and Faculty of Arts in addition to those in the Faculty of Science.

Several faculties/Schools in UBC (namely, Arts, Business, Kinesiology, Forestry and Law) have been offering 4-week summer courses to undergraduate students from top tier universities in China. In response to Faculty of Medicine’s invitation to participate, APT submitted a proposal entitled “Pharmacology of Everyday life” which was accepted by the Faculty of Medicine and the Provost’s of
The Therapeutics Initiative (TI) was established in 1994 by the Department of Pharmacology and Therapeutics in cooperation with the Department of Family Practice at The University of British Columbia with its mission to provide physicians and pharmacists with up-to-date, evidence-based, practical information on prescription drug therapy. To reduce bias as much as possible, the TI is an independent organization, separate from government, pharmaceutical industry and other vested interest groups. We strongly believe in the need for independent assessments of evidence on drug therapy to balance the drug industry sponsored information sources.

Over the years the TI has substantially enhanced its ability to assess the clinical evidence presented in published articles, meta-analyses by the Cochrane Collaboration and scientific material presented by the pharmaceutical industry. In pace with the extensive assessment of clinical evidence, the TI has developed effective ways of knowledge translation and dissemination of this evidence to all active players involved in drug therapy: physicians, pharmacists, nurses and policy-makers (Ministry of Health) and is committed to analyzing its own impact.

Limited activities in 2013 due to cancellation of funding from the Ministry of Health. Funding was restored in 2014.
Filling the Evidence Gap
Pragmatic Randomized Controlled Trials in British Columbia

Randomized controlled trials are the cornerstone of medical evidence but there are systematic gaps in this evidence, which need to be filled. This letter discusses some of these gaps, outlines the global need for more pragmatic trials and describes a new British Columbian organization that is attempting to help fill the need.

What is a pragmatic trial?¹
Most randomized controlled trials (RCTs) are “explanatory” or “efficacy” trials, designed to answer whether a treatment can demonstrate benefit in a select population. Such trials normally compare an intervention to placebo or to another active intervention that may not be standard of care. They also focus on a narrow set of outcomes to which the intervention is targeted. In contrast, “pragmatic” or “effectiveness” trials: 1) examine interventions in a broader population representative of those who will be treated; 2) report outcomes of importance to patients that are intended to capture global benefit and harm; and 3) often compare the intervention in question to standard therapies. Compared to efficacy trials, pragmatic trials are intended to answer the questions that clinicians and patients have regarding therapy.

The need for more representative subjects
Most RCTs use narrow inclusion and exclusion criteria to select the participants most likely to benefit from an intervention and least likely to experience harm (e.g. targeting those at high cardiovascular risk but excluding those with renal insufficiency). This approach maximizes the likelihood of observing benefit. However, this practice also results in many trials excluding subjects similar to the patients most commonly encountered in clinical practice. In a systematic sampling of RCTs published in high impact journals, 38.5% of RCTs excluded older adults, 81.3% excluded individuals with common medical conditions, and 54.1% excluded individuals receiving commonly prescribed medications.²

Considering the multiple morbidities present in 71% of diabetics, 82% of osteoarthritis, 83% of chronic obstructive pulmonary disease sufferers, and 92% of those with coronary artery disease,³ such trials are clearly not representative of real world populations.

Of 20,388 US Medicare patients ≥ 65 years of age, only 1 in 5 patients discharged from an acute care hospital with a diagnosis of congestive heart failure (CHF) met the criteria for enrollment in 3 landmark trials that guide the treatment of all CHF patients.⁴ As a general rule, although older adults and patients with multiple co-morbidities are often the target of clinical practice guidelines, they are poorly represented in the evidence-generating trials upon which clinical guidelines are based. This is especially important for the frail elderly, who fall into both categories. There are observational data raising questions as to the value of lowering blood pressure and blood sugar in the frail elderly.⁵ ⁶ Such studies are only hypothesis generating but clinical trials in this traditionally understudied population are clearly needed.

The need for better assessment of harm
The use of highly selected and generally healthier patients in efficacy trials increases the likelihood such trials will fail to adequately predict harm in a population with a broader spectrum of disease.
This was well demonstrated following publication of the Randomized Aldactone Evaluation (RALES) trial when, coincident with increasing use of spironolactone in the general population, rates of hospitalization for hyperkalemia in Ontario rose from 2.4 per 1000 patients in 1994 to 11.0 per 1000 patients in 2001. The potential for adverse drug-drug or drug-disease interactions increases exponentially with each additional co-morbidity and each additional medication. It is reasonable to question whether the risk-benefit ratio of a new medication might differ meaningfully when that drug becomes the 7th or 8th in use by a patient with 4 co-morbidities as compared to a single drug in an uncomplicated patient. Efficacy trials at times also employ run-in periods to exclude subjects who do not tolerate the drug, thus reducing the chances of detecting poor tolerability or harm. Given that clinical trials place less emphasis on the evaluation of adverse effects than on primary outcomes, and given that adverse drug reactions are more rarely in presentation (often mimicking medical diseases), harmful effects of drugs may not be detected until years after a drug is approved for use.

**The need for patient-oriented outcomes that matter**

Much of the evidence in support of common interventions is based on surrogate outcomes such as HbA1c. This is problematic since recent studies challenge the assumption that surrogates can reliably predict the effect an intervention will have on “hard” outcomes. For example rosiglitazone lowers HbA1c but increases cardiovascular events. Complex clinical scales come somewhat closer to measuring the patient’s experience but these, often arbitrary combinations of clinical signs and symptoms, are also problematic in that their clinical meaning is often difficult to determine. As much as possible, outcome measures should be highly objective (e.g. mortality, disabling stroke, hospitalization, nursing home admission, hip fracture) and resonate with patients and clinicians alike (e.g. falls, cognitive impairment, independence, quality of life).

**A British Columbia solution**

It is perhaps no surprise that the need for pragmatic trials would resonate with primary care physicians, nor that part of the solution, the BC Pragmatic Trials Collaborative, might arise from their ranks. This grassroots group of family physicians, with members from across the province and sponsorship from the BC Divisions Innovation Fund, believes that “large scale pragmatic trials can be conducted with no impact on physician workflow by using electronic health data, which is already collected on all residents of BC”.

For more information visit the website: https://www.divisionsbc.ca/richmond/BCtrials

The next year will see this group approaching the BC Ministry of Health about the utilization of electronic outcome data for the analysis of their randomized controlled trials. The two trials planned to date are 1) a comparison of the effect of medication minimization in frail elderly with standard care, using primarily mortality and nursing home admission as outcomes and 2) a comparison of morning antihypertensive drug dosing with evening antihypertensive drug dosing using primarily mortality and hospitalization for stroke as outcomes.

**The BC Pragmatic Trials Collaborative is actively looking for more members.** If you are interested or would like more information go to the website or send an e-mail to BCtrials@DivisionsBC.ca.

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**B.C. Pragmatic Trials Collaborative**

**Measuring What Matters**

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ANESTHESIA SIMULATION PROGRAM

T. Laine Bosma, MD FRCPC
Program Director

Vision:
Our Vision is to establish the University of British Columbia, Department of Pharmacology Anesthesiology, and Therapeutics Simulation Program as the premier program in Canada.

Mission:
To use high fidelity simulation, task training, lectures, and debriefings to instruct undergraduate, postgraduate, and consultant Anesthesiologists in:
- a. Crisis resource management as it relates to the practice of anesthesia and critical care medicine.
- b. Management of crisis related to the administration of anesthesia.
- c. Management of rare conditions which might not be experienced in the clinical environment.

Goals & Objectives:
1. To continue to provide a high standard of training to our undergraduate and postgraduate trainees in the simulation environment
2. To create a safe learning environment for all participants
3. To develop a curriculum for simulation training that is;
   - a. Comprehensive, varied, interesting, and appropriate.
   - b. Tailored to the level of skill expected of the trainee as they progress through the program.
   - c. Challenging to the extent that it will stimulate an effective learning experience for our residents.
   - d. Provides a bridge between cognitive knowledge and clinical practice while encouraging the development of clinical judgement and decision making
4. To continue to assess and where appropriate evolve our program, guided by course evaluations completed by the trainees and Anesthesiologists that pass through our program
5. To encourage those responsible for the development of medical simulation technology to continue to refine their products in order to improve the fidelity of experience that we can deliver.
6. To continue a program of research into matters related to the use of simulation training in medical education.
7. To monitor developments in the field of medical simulation.
8. To establish a liaison with the Royal College of Physicians of Canada and such other national and international bodies as may have an interest in the use of medical simulation for training and/or evaluation purposes.

Current Action Plan

1. Immersive High-fidelity Postgraduate Anesthesia Simulation Program
   a. Biannual immersive simulation day for R2 - R5 Anesthesiology Residents
   b. Novel scenarios focused on technical skills, current medical management, and non-technical crisis resource management skills
   c. Video assisted debriefing following each scenario

2. Train-the-trainer Simulation Instructor Program
   a. Multidisciplinary two day simulation instructor course directed by Dr. Chris Chin, UBC Clinical Instructor, BC Children’s Hospital Department of Anesthesiology
   b. Provides learners with the opportunity to:
      i. Develop a foundational knowledge of simulation based education strategies
      ii. Identify elements of effective teamwork and incorporate those elements into simulation based learning objectives
      iii. Learn the foundations of debriefing skills and their application in simulation based learning
      iv. Plan and develop a simulation scenario
      v. Facilitate a simulation scenario
   c. Provides a mixture of theory and practice and emphasizes debriefing/feedback relevant for learning

3. Obstetrical Anesthesia Simulation Rounds
   a. Regular morning Simulation Rounds where Obstetrical Cases are simulated in a multidisciplinary environment (Nursing, Anesthesia Obstetrics) followed by intensive debriefing

4. Pediatric Simulation Program
   a. Multidisciplinary simulation day exposing senior Anesthesia Residents and Pediatric ICU fellows to varied Pediatric Critical Care emergencies

5. Introduction to Anesthetic Emergencies
   a. One day, hands on simulation based introduction to common Anesthetic Emergencies for new (R2) Anesthesia Residents
   b. focused practical approach to:
      i. recognition of the abnormalities
      ii. formulation of a relevant differential diagnosis
      iii. hands on approach to managing the abnormalities and working through the differential while maintaining patient homeostasis

6. POEM Course
   a. Multidisciplinary simulation course delivered by UBC Department of
Anesthesiology, Pharmacology and Therapeutics, Medical Simulation Program and the Department of Surgery
b. Two day course for approximately 50 junior Anesthesia, Surgery, and Emergency Medicine residents
c. Curriculum includes:
   i. two case based learning sessions
   ii. two airway task training sessions (including tissue simulation)
   iii. three medical emergency simulations
   iv. a five-part immersive high-fidelity trauma simulation with staged debriefing

7. **Surgical Airway Simulation Lab**
   a. One day surgical airway lab attended by senior Anesthesia Residents
   b. curriculum includes:
      i. didactic instruction and demonstration of emergency surgical airway techniques
      ii. Tissue task trainer (Pig model) for technical skill development
      iii. Practical Surgical airway techniques in a euthanized pig model

8. **Distributed Multidisciplinary in situ Simulation**
   a. In situ (hospital based) simulation experiences incorporating Nursing, as well as residents and consultants in Anesthesia, Obstetrics and Surgery have been initiated at several sites including St. Paul’s Hospital, BC Women’s Hospital, BC Children’s Hospital, and Victoria
   b. Simulation curriculum includes multidisciplinary management of medical and surgical crisis with a specific focus on team dynamics and non-technical skills

9. **RCPSC CanNASC task force**
   a. UBC Anesthesiology, Pharmacology and Therapeutics has representation on the RCPSC Canadian National Anesthesiology Simulation Curriculum task force
   b. this task force is working to develop a standardized national simulation curriculum for RCPSC training programs

10. **Anesthetic Crisis CME Program**
    a. Ongoing pilot program exploring the use of Simulation as a method of Consultant Anesthesiologist Continuing Medical Education

11. **Research**
    a. There are a number of ongoing research studies, all involving UBC Anesthesiology, Pharmacology, and Therapeutics residents, researching simulation and medical education

**Future Plans**

1. **UBC Anesthesia Resident Simulation Rotation**
   a. Longitudinal Anesthesia Resident rotation (1 yr) exposing R3 residents to simulation education including:
      i. Simulation technology
      ii. Crisis Resource Management Theory
iii. Scenario development and delivery
iv. Debriefing

2. Expanded Multidisciplinary in situ Simulation
   a. There are plans to increase the delivery of in situ multidisciplinary simulation in Victoria, St. Paul’s Hospital, and BC Children’s Hospital
   b. Expansion to Nanaimo Hospital is currently being explored

3. Undergraduate Simulation Program
   a. Preliminary discussions have occurred with the idea of developing a standardized simulation curriculum for undergraduate medical students during their mandatory Anesthesiology rotation

Simulation Activities – Academic Year 2013-2014
Scenarios Presented on behalf of Sim Team by David J Steward:
Endotracheal tube cuff leak with simultaneous arrhythmias.
Sudden onset AF in the PACU with hypotension.
Intraoperative anaphylaxis.
Incompetent attending choosing spinal anesthesia despite low platelets and LMA despite aspiration risk in urgent LSCS.
Long Qtc with sudden ventricular tachycardia.
Delayed recovery following anesthesia.
Bupivacaine toxicity.
Oxygen pipeline failure.

During the second session of the academic year a video presentation was introduced into the pre-simulation lecture session. Residents were also familiarized with the ANTS system (for scoring non-technical skills) prior to the simulation sessions. The residents were surveyed for their opinions on the value of these preparations versus the traditional introductory lecture, and on how the knowledge gained may have influenced their performances. The results of this survey are contained in this report.
In this report the bar graph results presented are for the second half of the academic year after an augmented questionnaire had been introduced for the Spring term. The written evaluation comments from the residents include those given throughout the whole of the academic year 2013-2014.

*The Sim Team 2013-2014:*
T. Laine Bosma (Director)
Glen Manning
Christine Roston
Lalitha Rupesighe
David Steward
Ken Turnbull
David Wong
MEDICAL UNDERGRADUATE PROGRAM

Oliver Applegarth BSc MD MEd FRCPC
Program Director

It takes a lot of commitment on the part of British Columbia’s anesthesiologists to ensure that all our medical students receive the high caliber of training that they do. The medical school is large, and distributed province-wide. There is the “classic” mode of delivery, and the longitudinal mode. Even with these potential challenges, feedback from students remains strong and the curriculum is well appreciated. Thanks to everyone for their ongoing dedication. In the first two years of the medical school we continue to have committed practitioners who dedicate a lot of their time to PBL. Once again, we receive very strong feedback due to these individuals. The students truly appreciate PBL teaching that comes from experienced clinicians who can inject practicality to the discussions.

The main challenge within the whole medical school over the last two years has been the move to “curriculum renewal”. This represents the biggest shift in medical education at UBC since the introduction of problem-based learning in 1997. The basis for curriculum renewal is easy enough to attempt to digest. It is a move away from isolated learning and a dis-connected curriculum. It is a move towards learning in groups (academic learning communities), longitudinal knowledge acquisition, the use of a spiral curriculum (re-exploring concepts over and over as knowledge/experience increases) and evaluation based on exit-competencies (what students can do, on top of what they know). If my description of curriculum renewal leaves you wondering how it can be implemented in real terms, with limited resources, you are not alone. It is still not clear what the curriculum will look like “in the trenches”, and this has lead to the delay of the rollout while kinks are being sorted out. We now anticipate the start in 2015, meaning the third and fourth year program will be affected in 2017. We are committed to quality anesthesia education for our students and will continue to advocate for that no matter what curriculum renewal asks of us.

So for the moment we forge ahead with an anesthesia 430 program that has been effective in its current form for many years. This year has seen the creation of an educational portal for all things anesthesia. Located at www.periopdoc.ca, it currently houses the undergraduate case-based learning modules, but plans are afoot to add videos, links, and online resources. Stay tuned.
The fourth year program remains solid due to the fine efforts of Dr. James Price. Special accolades must go to both Dr. Price (for delivering a wonderful and effective lecture/mock-code) and Dr. Peter Choi (for lectures in epidemiology) to the fourth year students during this year’s Preparing for Medical Practice course.

Capacity in the 4th year system is always a problem, but those students that we do see get a wonderful experience and emerge with a strong foundation in our specialty. We have been very fortunate over the years to welcome many of these strong students into our residency program. This speaks well for the future of our specialty, which is one of the key reasons that we must continue to advocate for the strong undergraduate program we are all building.
CONTINUING PROFESSIONAL DEVELOPMENT

VISITING PROFESSOR PROGRAM

James W. Price MMEd, FRCP(C)
Program Director

CPD within the Department of Anesthesiology Pharmacology and Therapeutics includes both our Visiting Professor Program and the Whistler Anesthesiology Summit (WAS).

Visiting Professor Program

The goal of the Visiting Professor program is to provide anesthesiologists from around the province stimulating and thought provoking speakers throughout the academic year. Each regional hospital (Vancouver General Hospital, St. Paul’s Hospital, Royal Columbian Hospital, BC Children’s Hospital, BC Women’s Hospital) selects a speaker which best reflects that hospital’s interests at that particular time.

Our visiting professor committee consist of: Dr(s). Stephan Malherbe (BCCH), Alyssa Hodgson (RCH), Giselle Villar (BCWH), Cynthia Yarnold (SPH) and Stuart Herd (VGH).

Our speakers this academic year have included:

Dr(s) Sachin Kheterpal, David Caraway, Anthony M. Roche and Paloma Toledo

We continue to video-conference the visiting professor lecture series with multiple sites now having access to our speakers in real time. Sites involved via video-conference link include Lions Gate, Nanaimo, Port Alberni, Prince George, Nanaimo, Vernon and Victoria. Feedback from the program has been very positive. Our video library of speakers continues to grow and is available on our website below. The UBC department website is now linked to the Canadian Anesthesiology Society Continuing Professional Development website so that interested anesthesiologists can access our departmental website and visiting professor videos.
Our videos can be found at:

http://www.apt.ubc.ca/anesthesiology/Video_Lectures.htm

This year, we again thank Abbvie and Noushin Vahabzadeh (who has replaced Anne Stoll) for their continued support of the visiting professor program through an unrestricted educational grant. We also thank Winnie Yung for her ongoing work and assistance in organizing the program.

BCWH was unable to invite a speaker due to funding issues so this year BCWH will be inviting 2 speakers. BCWH’s second speaker is yet to be named, however, will likely be invited in March or April 2014. At the time of writing this report, the BCCH speaker has made a last minute cancellation and we will be unable to find a replacement for the February, 2014 speaker. There is an option of supporting a speaker in association with the CAS in June which will be decided upon by the visiting professor committee.

Whistler Anesthesiology Summit (WAS)

The WAS held its third annual conference in Whistler on February 21-24, 2013. The conference has a variety of local and international speakers as well as a regional anesthesia workshop. Our out of town guest speakers this year included: Dr(s) Eric Jacobsohn, Tony Roche, Patrick MacQuillan and Andre Denault.

The conference has very good pre-registration numbers and good weather on the mountain so attendees had a great time on the slopes and also in the classroom. We are continuing to offer UBC anesthesiology residents special pricing for both conference registration and the ultrasound guided regional anesthesiology workshop.

The CPD Advisory Committee meets 2-3 times/ year. Dr. Bourgeois-Law oversees CPD, Faculty Development and Faculty Career Development. Dr. Ran Goldman is the current chair of the Advisory Committee.

You can view the CPD website www.cpd.med.ubc.ca for information about upcoming UBC sponsored conferences and CME events.
POST-GRADUATE MEDICAL EDUCATION PROGRAM
ANESTHESIA RESIDENCY

Matthew Klas MD FRCPC
Program Director

New Department Head

2013 saw the first full year of Dr. Roanne Preston’s term as head. She has been an excellent leader and advocate for the residency program. She has been extremely supportive to all aspects of our residency training program.

Royal College Accreditation

The residency program underwent a successful Royal College Accreditation in 2013. In November 2013 Royal college surveyors visited all UBC Post Graduate programs for review. There was excellent input from all faculty and residents which was a great asset in the review process. The surveyor was impressed with most aspects of the residency program and a subsequent review will not be required for 6 years. This is the best result that could have been achieved. Deficiencies were identified in the areas of evaluation of staff and residents. This will be worked on and improved in the coming years and a full day retreat took place in 2013 to start this process.

Training Positions

As of July 1, 2013, a total of 52 residents were registered in the 5-year Royal College Physicians & Surgeons program. All of these 52 were funded by the B.C. Ministry of Health, including our one IMG-BC resident. Nine of these residents are scheduled to complete their residency during the 2013 calendar year and eight will be taking their RCPSC examinations in anesthesia in the spring of 2014. The number of CaRMS positions has remained stable at ten or eleven for the last few years after the initial increase from seven several years ago.

Nine of our PGY5 residents were successful in the 2013 RCPSC specialty examinations in Anesthesiology. This is due to their hard work and the dedication of our teaching faculty.
Admissions
A sub-committee of the Residency Training Committee (RTC) reviewed all applicants. The Selection Committee was chaired by Trina Montemurro, with committee members representing all of the major BC teaching hospitals: Bob Purdy, Yvonne Cysani-Fritz, Penny Osborne, Naomi Kronitz, Vit Gunka, Farah Valimohamed, Gord Finlayson, Aeron Doyle, Ron Ree, Matt Coley, Cynthia Yarnold, Laura Duggan, Brian Saunders, Mike Atherstone, Hazhir Ahmadi, Mike Atherstone, Jon McEwen and Peiter Swart. Also resident members Sean MacLean, Patrick Hecht, Graham Noble, Sara Waters and Brad Merriman contribute to the committee.

Under the Association of Canadian Medical Colleges (ACMC) agreement, all entry positions were filled through the Committee in Canadian Resident Matching Service, CaRMS. Our CaRMS match was again successful, of the 106 applicants 20 were from UBC. This high level of interest in anesthesia as a residency from UBC medical students is most likely attributed to the high quality educational experience they receive as organized by Dr. Oliver Applegarth. For the 2013 CaRMS match, the eleven CaRMS PGY1 positions were filled with excellent candidates, 7 of the successful candidates matched from UBC, 1 from Calgary, 1 from the University of Saskatchewan, 1 from McGill University and 1 from MacMaster. These residents began their residency on July 1, 2013 at one of the three PGY 1 sites: Victoria General Hospital/Royal Jubilee Hospital, St. Paul’s Hospital, or the Royal Columbian Hospital.

There was one re-entry residency position in 2013 that was filled by Dr. Don Young, a practicing Family Practice Anesthetist. For the 2014 CaRMS match we will select the 11 residents through the CaRMS selection process.

Academic Program
The full day academic program involving active participation from each of the teaching hospitals was very successful. The new format and curriculum developed in 2012 continues be very successful and get excellent reviews from the residents. The feedback form residents and faculty has been very positive and the day is felt to be more interesting and interactive. It is more in line with the newly developed National Curriculum of the Royal College Specialty Committee in Anesthesiology.

The Residency Training Committee continues to support the autonomy of each participating UBC teaching hospital in delivering their contribution to the residents’ educational program. Program content was tailored to match the area of clinical expertise of each site. The participating sites are Vancouver General, St. Paul’s, Royal Columbian, British Columbia Children’s and British Columbia Women’s Hospitals and Lions Gate Hospital. The Case-Based Learning portion of the academic day continues to be very successful in providing excellent educational experience. Resident coordinators
and faculty members at each site demonstrated creativity and commitment in delivering the educational program. In particular, Drs. Jacqui Trudeau, Travis Schisler, Brad Merriman, and Sean McLean, the co-chief residents for the academic year 2012 and the new chief resident leaders Perseus Missirlis, Sara Waters, Patrick Hecht and Lindi Thibodeau, took a leadership role in making the academic days a success. The academic days use videoconferencing from all sites for out of town residents.

The RTC decided that either the Advanced Trauma Life Support course or something equivalent would continue to be provided to the anesthesia residents. The Fundamentals of Critical Care Support course continues to be provided to all the PGY 1 Anesthesia residents and is a very useful course in teaching the fundamentals of critical care. All PGY 5 residents completed the Advanced Cardiac Life Support refresher course specifically designed for anesthesia. All courses (Neonatal Resuscitation Providers course (NRP), ATLS, ACLS update, and PALS) will now be provided to residents by PGY level instead on a 3 yearly cycle in order to provide more predictable numbers for planning, from educational and financial perspectives. PGY 2 residents again took part in a full day of the surgical CRASH course in October of 2013 focused on trauma and Perioperative Emergency Management (POEM) along with all junior Surgical and Emergency Residents. Feedback been excellent on this collaborative day and there was excellent input from many Anesthesiology faculty members. Special thanks go out to Dr. Laine Bosma the APT Simulation director for his work developing an excellent curriculum that received excellent reviews from all attendees. We will continue to provide this course annually.

The Summer Lecture Series (Basics of Anesthesia) continues to evolve and during 2013 sessions on POEM (Perioperative emergency Management) were added along with some Simulation with great input from faculty and residents. Resident led CBL’s along with lectures on basic science topics were also incorporated. One of our pharmacology colleagues, Dr. David Godin provided two of the lectures on a review of pharmacologic principles as part of the summer lecture series and this was very favorably received by the residents. In addition, Dr. Kate Chipperfield (VGH hematopathologist) provided a lecture on transfusion medicine which was also very well received.

In May 2013, the Airway academic day, coordinated by Dr. Theo Weideman with participation from faculty from various sites and in collaboration with the Department of Otolaryngology (both faculty and residents), provided both didactic sessions and small group hands-on sessions. In addition, there was a Regional Anesthesia Academic day, coordinated by Dr. Ray Tang also with the participation of faculty from various sites, and with support from the UBC Department of Anatomy for providing anatomical specimens to demonstrate the relevant anatomy. Dr. Peter Choi also delivered a full day on Research fundamentals in May 2013.
In June 2013, the annual residents’ retreat was held at Whistler. This included lectures on various topics relevant to CanMEDS roles.

Dr. Jamie Renwick was instrumental in leading a group of interested and committed faculty in the very successful weekly R5 Seminar Series designed to allow residents to review topics to help them approach clinical problems at the consultant level, and to ensure they had consultant-level knowledge in the various areas.

This year, all of the PGY 2-5 residents went to the high fidelity UBC Anesthesia Simulator housed in the CESEI (Center of Excellence for Surgical Education and Innovation) at VGH. Dr. Laine Bosma, as the Director of the anesthesia simulation program and their group of dedicated faculty (“Sim Docs”), ran the highly successful simulations for the UBC anesthesia residents. Each UBC anesthesia resident from PGY 2 to 5, including the FPA residents, was exposed to the UBC Anesthesia Simulator twice during the academic year. Some improvement in the capital equipment has occurred. There are ongoing challenges with resources and faculty involvement in the area of Simulation. Dr. Roanne Preston is actively involved in helping to improve this area of residency training. I also want to thank Dr. Lalitha Rupesinghe for her many years of dedicated leadership to Anesthesia Simulation.

Journal Club
Journal Club remains an integral part of the academic program and a change in format was implemented due to the increase in membership. Meetings occur monthly at faculty members’ homes or other venues. Dr. Alana Flexman has done an excellent job in the coordinator role for 2013. Three separate residents act as moderators for each article presented. They continue to provide the residents with an excellent educational opportunity to learn about critical appraisal skills.

Clinical Program
The clinical program continues to be a strong element of the UBC Anesthesiology training program. The regional anesthesia rotation provides very good educational experience under the direction of Dr. Steve Head, SPH. The mandatory community anesthesia rotations in Nanaimo and Prince George have received positive reviews by residents. The four week anesthesia rotation at Victoria General Hospital/RJH under the direction of Dr. Trevor Herrmann has now evolved into a mandatory Victoria anesthesia rotation at the PGY 4 level, with residents able to choose either pediatric anesthesia, adult general anesthesia, or subspecialty cardiac, neuro, thoracic or vascular anesthesia. BCCH has moved to 4 consecutive mandatory pediatric rotations with 24 hour call to give better exposure to after-hours cases as well as out of OR care such as the Pain Service and Trauma calls. Many of the larger teaching hospitals continue to have increasing resident experience out of OR/Perioperative Medicine days which have been
favorably viewed by residents and faculty. Residents are also on the Code Blue team at VGH and SPH.

A number of new electives have proved to be popular, for example, palliative care medicine, Air Transport/Evac medicine, Burnaby General Anesthesia, Richmond Hospital, Comox Hospital on Vancouver Island, RCH ICU, RCH echocardiography, and Kelowna. Residents also continue to go to Uganda for research projects or electives and enjoy the experience.

**In-House Examinations**
The written examination for PGY 2 residents included the Anesthesia Knowledge Test, AKT 1, held in July and August 2013. In December 2013 the PGY 2 residents sat the AKT 6 exam. The AKT 24 exam, testing subspecialty anesthesia knowledge, is taken by PGY 5’s. UBC residents continue to perform very well and compare very favorably with our national colleagues.

PGY 3-4 residents wrote the American Board of Anesthesiologist in-training examination in March 2013. The ABA Exam allows for more individual feedback and ranks the candidates with all trainees at their level.

The May and December in-house oral examinations continued with the Royal College format. All residents were examined in one day by faculty volunteer examiners. Each resident received two half-hour exams. Residents generally found the experience stressful but educational.

The PGY 5’s continue to have the Seminar Series to help in preparation for Royal College exams. These sessions are very well received thanks to the dedication of all faculty members involved. This series is a big reason for the UBC residency’s high success rate at the Royal College exams.

**7th Annual UBC Anesthesiology, Pharmacology and Therapeutics Research Day and Awards Night**
Anesthesia residents, anesthesia clinical fellows, pharmacology graduate students, and pharmacology post-doctoral fellows presented their research papers in the competition held on June 19, 2013. Awards for research, academic excellence and clinical proficiency were presented. (Award winners are listed separately in the report). The evening was a success as evidenced by the attendance and the quality of research presentations.
Residency Training Committee (RTC)
This committee met every 2 months during 2013 and as always was very effective in guiding the activities of the residency training program. Committee members include hospital program coordinators from each site: Drs. Laine Bosma and Cynthia Yarnold SPH, Mike Wong BCWH, Gord Finlayson and Juliet Atherstone VGH, Mike Traynor BCCH, Kenneth Ryan RCH, Marshall Richardson Prince George, Sarah Hall Nanaimo, our Royal College Examiners, Dr. George Isac and Mike Barker, Roanne Preston Professor and Head, Dr. Peter Choi Research Coordinator, and Dr. Matthew Klas, Chair and Program Director.

Resident members on the RTC include the PGY 5 representatives Drs. Jacquie Trudeau, Travis Schisler, Sean McLean, and Brad Merriman, co-chief PGY 4 residents Lindi Thibodeau, Perseus Missirlis, Patrick Hecht and Sara Waters. Also there the PGY 3 rep Steven Green, PGY 2 rep Peter Rose and PGY1 site reps.

Website
The new departmental website is a reality and continues to grow. The plan is for this to be a key resource for the program. Residents and Faculty alike will be able to source all information relevant to the program, from academic articles and rotation schedules to vacation forms and program policies.

Administration
Ms. Jill Delane continued in her role as the Program Coordinator. Ms. Susan Van Bruggen continues to be an excellent Program Secretary. Both have been invaluable in the administration of the program.

Summary
Overall, this has been a successful year for the UBC Anesthesiology Residency Training Program. This is due to the many hours of hard work on the part of our clinical faculty working with our residents, taking part in the academic program, as well as helping senior residents prepare for the oral exam and to become skilled anesthesiology consultants. The goodwill and high level of commitment to residency training is a credit to this department.
We also continue to attract high quality students to our program.
**UBC ANESTHESIA RESIDENTS 2012-2013**

**PGY 1**

<table>
<thead>
<tr>
<th>Tonia Berg</th>
<th>Michael Chuang</th>
<th>Reza Faraji</th>
<th>Miguel Fernandez</th>
<th>Carrie Goodine</th>
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<td><img src="#" alt="Reza Faraji" /></td>
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<tr>
<th>Anne-Marie Madden</th>
<th>Steven Moore</th>
<th>François Pomereau</th>
<th>Alison Read</th>
<th>Peter Rose</th>
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**UBC ANESTHESIA RESIDENTS 2012-2013**

**PGY 2**

<table>
<thead>
<tr>
<th>Sadiq Abdulla</th>
<th>Steven Green</th>
<th>Alexandra (Sandy) Kisilevsky</th>
<th>Pierre-Paul Lizotte</th>
<th>Charles Lamb</th>
<th>Su-Yin MacDonell</th>
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<thead>
<tr>
<th>Bruce McKnight (FPA)</th>
<th>Habib Moshef Razavi</th>
<th>Graham Noble</th>
<th>Timothy Oliveira</th>
<th>Jei Eung Park</th>
<th>Henk Roos (FPA)</th>
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<tr>
<td><img src="#" alt="Bruce McKnight" /></td>
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<td><img src="#" alt="Henk Roos" /></td>
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<table>
<thead>
<tr>
<th>Nadia Salvaterra (FPA)</th>
<th>Parisa Soltani</th>
<th>Sarah Thompson</th>
<th>Alexander Wong</th>
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<tr>
<td><img src="#" alt="Nadia Salvaterra" /></td>
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<td><img src="#" alt="Sarah Thompson" /></td>
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### UBC Anesthesia Residents 2012-2013

#### PGY 3

<table>
<thead>
<tr>
<th>Claire Fast</th>
<th>Mario Francispragasam</th>
<th>Patrick Hecht</th>
<th>Cristin McRae</th>
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<tr>
<td><img src="image1" alt="Claire Fast" /></td>
<td><img src="image2" alt="Mario Francispragasam" /></td>
<td><img src="image3" alt="Patrick Hecht" /></td>
<td><img src="image4" alt="Cristin McRae" /></td>
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<tr>
<td>Perseus Missirlis</td>
<td>Julie Paget</td>
<td>Cheryl Peters</td>
<td>Lindi Thibodeau</td>
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<tr>
<td><img src="image5" alt="Perseus Missirlis" /></td>
<td><img src="image6" alt="Julie Paget" /></td>
<td><img src="image7" alt="Cheryl Peters" /></td>
<td><img src="image8" alt="Lindi Thibodeau" /></td>
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<tr>
<td>Sara Waters</td>
<td>Jason Wilson</td>
<td>Siu-Kae Yeong</td>
<td>Paul Zakus</td>
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<tr>
<td><img src="image9" alt="Sara Waters" /></td>
<td><img src="image10" alt="Jason Wilson" /></td>
<td><img src="image11" alt="Siu-Kae Yeong" /></td>
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### UBC Anesthesia Residents 2012-2013

#### PGY 4

<table>
<thead>
<tr>
<th>Alex Blais</th>
<th>Pocya Kazemi</th>
<th>Sean McLean</th>
<th>Brad Merriman</th>
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<td><img src="image13" alt="Alex Blais" /></td>
<td><img src="image14" alt="Pocya Kazemi" /></td>
<td><img src="image15" alt="Sean McLean" /></td>
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<tr>
<td>Travis Schisler</td>
<td>Eric Shin</td>
<td>Jacqueline Trudeau</td>
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<tr>
<td><img src="image17" alt="Travis Schisler" /></td>
<td><img src="image18" alt="Eric Shin" /></td>
<td><img src="image19" alt="Jacqueline Trudeau" /></td>
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# UBC Anesthesia Residents 2012-2013
## PGY 5

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<thead>
<tr>
<th>Name</th>
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<th>Duration</th>
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<tbody>
<tr>
<td>Mike Atherstone</td>
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<td>(until 1 Aug 2012)</td>
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<tr>
<td>Anton Chau</td>
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<td>(until 29 Jul 2012)</td>
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<tr>
<td>Jennifer Demarty</td>
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<td>(until 29 Jul 2012)</td>
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<tr>
<td>Christopher Durkin</td>
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<td>(until 26 Aug 2012)</td>
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<tr>
<td>Richard Gardiner</td>
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<td>(until 29 Aug 2012)</td>
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<tr>
<td>Angineth Gharapetian</td>
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<tr>
<td>Jennifer Joo</td>
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<td>Steven Lee</td>
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<td>Lisa Li</td>
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<td>Paul Mercereau</td>
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<tr>
<td>Chris Prabhakar</td>
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<td>(until 29 Jul 2012)</td>
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<tr>
<td>Roop Randhawa</td>
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<tr>
<td>Colleen Shamji</td>
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<tr>
<td>Shelley Tweedle</td>
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<td>(until 26 Aug 2012)</td>
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<tr>
<td>Clara Wong</td>
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POST-GRADUATE MEDICAL EDUCATION PROGRAM
FAMILY PRACTICE ANESTHESIA

James Kim MD FRCPC
Program Director

The year was started with the successful graduation of 3 Family Practice anesthesia residents; Dr. Henk Roos, Dr. Bruce McKnight and Dr. Charles Lamb. Dr. Henk Roos received the inaugural Dr. Anthony Bolton Award for excellence in FP anesthesia. Through the continued support of REAP, the residents attended an innovative conference/simulation training in Ontario at the Northern Ontario Medical School Department of Anesthesia. This FPA ‘bootcamp’ was a week in duration and comprised many hours of simulation sessions and lectures. It is anticipated that all new residents will participate in this program.

Much time and energy was spent on the accreditation process which occurred in November 2013 through the College of Family Physicians of Canada. The program was given accreditation with an internal review in 2 years.

November was a busy month as this was also the time of the UBC GP Anesthesia Refresher Course. This year there was record attendance which was partially due to the inclusion of an ultrasound workshop. There was a pre-conference GP Anesthesia Workshop that examined the work and CME opportunities of GP anesthetists. This was incredibly successful and drew the collective thoughts and wisdom of over 50 participants. Implementation of the recommendations should occur in coming year.

The membership of the 2013 FPA-RTC included:

Dr. James Kim, MD, FRCPC  FPA Program Director, Chair
Dr. Mathew Klas, MD, FRCPC  Royal College Anesthesia Program Director
Dr. John Veall, MD, FRCPC  Lion’s Gate Hospital Site Coordinator
Dr. Ron Ree, MD, FRCPC  St. Paul’s Hospital Site Coordinator
Dr. Pieter Swart, MD, FRCPC  Vancouver Acute Site Coordinator
Dr. Mitch Giffin, MD, FRCPC  Vancouver Acute Site Coordinator
Dr. Michael Traynor, MD, FRCPC  BC Children’s Hospital Site Coordinator
Dr. Michael Wong, MD, FRCPC  BC Women’s Hospital Site Coordinator
Dr. Giselle Villar, MD, FRCPC  BC Women’s Hospital Site Coordinator
Dr. Kathleen Dalinghaus, MD, FRCPC  White Horse Site Coordinator
Dr. Charles Lamb, MD, CCFP  FPA resident member
Corresponding Members:
Dr. Diana Chang, MD, CCFP  
FP Enhanced Skills Program Director

The membership of the 2012 FPA-Resident Selection Committee included:
Dr. James Kim  
Dr. Mathew Klas  
Dr. Ron Ree  
Dr. Pieter Start  
Dr. John Veall  
Dr. Charles Lamb  
Dr. Rob Fingland

Three new residents were selected for the 2013-2014 program.
Dr. Chelsey Richetts  
Dr. Eric Latta  
Dr. Shu Fung
Research programs in our department focus on the physiology and pharmacology of the cardiovascular, respiratory, and central nervous systems; outcomes research in cardiothoracic anesthesia, critical care, neuroanesthesia, obstetric anesthesia, pediatric anesthesia, perioperative medicine, and regional anesthesia; patient safety and quality improvement; clinical monitoring; medical education and simulation; and therapeutics, evidence-based prescribing practice, and pharmacoepidemiology. With the strengths of three related but different sections in our department, our diversity enables us to build partnerships between the sections, which allow us to pursue investigations from the bench to the bedside to the population. Furthermore, our department has a long-standing tradition of collaboration with other groups within the UBC Faculty of Medicine (Critical Care, Neurology, Population and Public Health, Psychiatry) and other UBC faculties (Electrical and Computer Engineering). As you glance at our publications, you will see that research in the Department of Anesthesiology, Pharmacology, and Therapeutics is more than just drugs and putting people to sleep!

Peter Choi
Clinical Research Director (Anesthesiology)

PUBLICATIONS January 1, 2013 – December 31, 2013*

Peer-reviewed publications
Journal articles


* Faculty members holding a primary or an affiliated appointment in the UBC Department of Anesthesiology, Pharmacology & Therapeutics (during this time period) are in bold. List does NOT include any presentations.


12. Boyda HN, Procyshyn RM, **Pang CC, Hawkes E, Wong D, Jin CH, Honer WG, Barr AM.** Metabolic side-effects of the novel second-generation antipsychotic drugs


83. Rivera-Acevedo RE, Pless SA, Schwarz SK, Ahern CA. Expression-dependent pharmacology of transient receptor potential vanilloid subtype 1 channels in


**Book chapters**

**Invited journal articles and editorials**


**Commentaries and letters**


**Abstracts, posters, and conference proceedings (national & international meetings)**


2. Boyda HN, Tse L, Bates AT, Agha A, Barr AM, Honer WG, Vila-Rodriguez F. Promoting health through the beautiful game: healthcare workers’ views on


Figure. Annual number of journal articles, books, book chapters, editorials, invited commentaries, and letters published by section (ANAE or PCTH) and the overall totals since the start of this department. (PCTH numbers are only available since the merger.) Abstracts are not included in the totals.
ACADEMIC STAFF LISTING (JANUARY – DECEMBER 2013)

Vancouver-Fraser Medical Program

BC CHILDREN’S HOSPITAL

Norbert Froese (Head)
ANSERMINO, Mark
BAILEY, Katherine
BARKER, Michael
BROEMLING, Natasha
BROWN, Zoe
CASSIDY, Myles
CHEN, James
CHIN, Christopher
CSANYI-FRITZ, Yvonne
GORESKY, Gerald
KAHWAJI, Raymond
LAUDER, Gillian
LEE, Richard
MALHERBE, Stephan
MONTGOMERY, Carolyne
MORRISON, Andrew
PURDY, Bob
REICHERT, Clayton
REIMER, Eleanor
SCHEEPERS, Louis
TRAYNOR, Mike
WHYTE, Simon

Clinical Fellows:
MVILONGO, Eding
(July 1, 2012 – June 30, 2013)
THUKRAL, Sonika
(July 1, 2013 – Sept 30, 2013)
GAN, Heng
(July 1, 2012 – Dec 31, 2013)
SAMPSON, Jeffrey
(July 2013 – June 2014)
GOPALAKRISHNAN, Gayatri
(Oct 2013 – June 2014)

BC WOMEN’S HOSPITAL

Paul Sahota (acting Head)
BRIGHT, Susan
BROWN, James
CHOW, Frances
GUNKA, Vit
KAMANI, Ali (on leave)
KILPATRICK, Nevin
KLIFTER, Paul
KRONITZ, Naomi
LEA, David
MASSEY, Simon
MONEY, Phyllis
PRESTON, Roanne
VILLAR, Giselle
WONG, Michael

Clinical Fellows:
KAVANAGH, Trevor
(July 1, 2012 – June 30, 2013)
JEE, Robert
(July 2012 – June 2013)
SEBBAG, Ilana
(Jan 1, 2012 – June 30, 2013)
RETNASINGHAM, Branavan
(Jan 1, 2013 – Dec 31, 2013)
MALENFANT, Paul
(July 1, 2013 – June 30, 2014)
MATHESON, Kirsten
(July 1, 2013 – June 30, 2014)
ST. PAUL'S HOSPITAL

MOORE, Randy (Head)
ABBOTT, Bill
BACH, Paul
BELL, Scott
BEREZOWSKYJ, Jennifer (DSSL)
BOSMA, T. Laine
BOWERING, John
COLE, Colm
COLEY, Matthew
DEL VICARIO, Joe
DOYLE, Aeron
DUMITRU, Ioana
ELLIOTT, Mark (MSJ)
HEAD, Stephen
HELLIWELL, James
KLAS, Matt
KLIMEK, Alex
LEE, Bobby
LEE, Steven (July 1, 2012 – June 30, 2013)
MCDONALD, Ken
McDIARMID, Adam (Head)
Montemurro, Trina
Osborn, Jill
PHILLIPS, William
PRASLOSKI, Bruce
PRENTICE, Jim
REE, Ron
RUPESINGHE, Lalitha
SCHWARZ, Stephan
SETTON, Debbie
SIROUNIS, Demetrios
WARRINER, Brian
WONG, Clinton
WOODHOUSE, Dorothy
YARNOLD, Cynthia

Clinical Fellows:
PETRAR, Steven
RICHMOND GENERAL HOSPITAL

DRAPER, Paul
LEE, Laurence (on leave)
NAVSARIKAR, Anup
TANG, Samuel

LIONS GATE HOSPITAL

McDIARMID, Adam (Head)
AHMADI, Hazhir
CHATTERSON, Kelly
FINGLAND, Robert
HEWGILL, Randy (DSSL)
KIM, James
KUBLIK, Harry
LIPOWSKA, Magda
McALPINE, John
McCARTER, Bryon
MORRISON, Clare
PANTAL, Richard
RIPLEY, Teresa
ROOS, Martin
THOBANI, Shafik
VRANA, Andrea
VEALL, John (DSSL)
WALKER, Jamie M

VANCOUVER GENERAL HOSPITAL

UMEDALY, Hamed (Head)
ANSLEY, David
APPLEGARTH, Oliver
ATHERSTONE, Juliet
AU, Calvin
BITTER-SUERMANN, Bjorn
BLACHUT, Jan
BOULTON, Tony
BRODIN, Igor
BROVENDER, Andrea
CHOI, Peter
DHALIWAL, Baljinder

(Oct 1, 2012 – June 30, 2013)
DOLMAN, John
DURKIN, Chris
FLEXMAN, Alana
FINLAYSON, Gordon
FITZMAURICE, Brett
FROEHLICH, Kevin
Giffin, Mitch
GRANT, Raymer
GRIESEDALE, Donald E.G.
HARPER, Jon
HENDERSON, Cyndi
HERD, Stuart
HUGHES, Bevan
HUTTUNEN, Henrik
ISAC, George
KAPNOUDHIS, Paul
KLEIN, Rael
LAMPA, Martin
LENNOX, Pamela
LOHSER, Jens
MALM, David
MARTIN, Lynn
MAYSON, Kelly
McEWEN, Jonathan
McGINN, Peter
MEIKLE, Andrew
MOULT, Michael
NEGRAEFF, Michael
O'CONNOR, Patrick
OSBORNE, Penny
PAGE, Michael
PARSONS, David
PRESTON, Roanne
PRICE, James
RANDALL, Tom
RIES, Craig
SAWKA, Andrew
SUNG, Henry
SWART, Pieter
TANG, Raymond
THÖLIN, Mats
VAGHADIA, Himat
VU, Mark
WATERS, Terry
WEIDEMAN, Theo

WHITE, Adrian
YU, Patrick
Clinical Fellows:
J Barnbrook
(G March 2011 – March 2013)
G Germain
(July 2012 – June 2013)
G Krolczyck
(July 2012 – June 2013)
J Drew
(July 2012 – June 2013)
N Ramsay
(Jan 2012 – Dec 2013)
I Sebbag
(July 1, 2013 – June 30, 2014)
A Walsh
(July 1, 2013 – June 30, 2014)

ROYAL COLUMBIAN HOSPITAL
EAGLE RIDGE HOSPITAL

HO, Cedric (Head)
BAKER, Paul
BANNO, Dean
BOISVENU, Guy
BURRILL, Dean
CARRIE, Doug
DUGGAN, Laura (on leave)
FOULKES, Ellen
HODGSON, Alyssa
HOSKIN, Rob
JOHNSON, Patricia
LAW, Michael
LIM, Hooi Ben
LIPSON, Adrienne
LOW AH KEE, Patrick
MACLENNAN, David
MacLEOD, Wendy
MERCHANT, Richard
MEYLER, Paula (DSSL)
MOHAMEDALI, Feisal
NICKEL, Krista
ORFALY, Roland
PHU, Tom
RAMSDEN, John
RYAN, Kenneth (DSSL)
SCOATES, Peter
SVEINBJORNSON, Tim
SHARPE, Robert
VALIMOHAMED, Farah
VONGUYEN, Lan
WARNICK, brady

BURNABY GENERAL HOSPITAL
GRACIAS, Gavin

SURRY MEMORIAL HOSPITAL

CHENG, Marshall (Head)
BENNETT, Kate
CARRUTHERS, Robert
FINDLAY-SHIRRAS, Nigel
JOINER, Ross
KARWA, Laila
KELLY, Pat
KETABI, Salma
KINDOPP, Shawn
LING, Rassamee
LAU, Brenda
MacINNES, Aaron
McNEELY, David
NANAYA, Neil
TWIST, David
VESELY, Alexander (DSSL)

DELTA HOSPITAL
HORNSTEIN, Jeffrey
JONES, Dean

LANGLEY MEMORIAL HOSPITAL
RANKIN, Colin
WU, Stephen C K

CHILLIWACK GENERAL HOSPITAL
BREDEN, Michael
LIM, Gerald
SULEMAN, Arif

ABBOTSFORD REGIONAL HOSPITAL & CANCER CARE CENTRE (MATSQUI, SUMAS, ABBOTSFORD)
BOLDT, Charles
LAVIN, Patrick
LOKE, Julian
PALMER, Christopher

ISLAND MEDICAL PROGRAM

NANAIMO REGIONAL GENERAL HOSPITAL
BERKMAN, Alan
CAPSTICK, Jim
CASTNER, Paul
HALL, Sarah (DSSL)
MUENDEL, Karl
NEILSON, Scott
RIENDL, John
SLETENRICH, Michael

VICTORIA GENERAL HOSPITAL
ROYAL JUBILEE HOSPITAL
SAANICH PENINSULA HOSPITAL
ATHERSTONE, Michael
BOSENBERG, Craig
CATON, Brent
CHAN, Peter (Gus)
CHANA, Karam Singh
COURTICE, Ian
DALLEN, Larry
DAVIS, William
DUNCAN, Peter
EFFA, Evan
ENRIGHT, Angela
FENJE, Nicholas
FERREIRA, Susan
HERRMANN, Trevor (DSSL)
KAHN, Larry
KINAHAN, Mike
KING, Wei-Shuen
LEACOCK, Susan
MOLL, Gillian
MURPHY, Terence (Chief)
MURRAY, Maureen (Chief)
PATTEE, Carol
PORAYKO, Lorne
QUON, Leo
RELF, Tim
RUTA, Thomas (Chief)
SEROWKA, Paul
SHAW, Lorne
STEVENSON, Kim
SVORKDAL, Nelson
SYLWESTROWICZ, Anna
TAGGESELL, Richard
TOWNSEND, Gary
VAN DER WAL, Michael
WEBSTER, Anne
WOLLACH, Jeffrey
WOOD, Gordon

TERRACE/MILLS MEMORIAL HOSPITAL

Gunter, Heinz
Butler, Patrick

SOUTHERN MEDICAL PROGRAM

KELOWNA GENERAL HOSPITAL-

EGER, Robert (Head)
BADNER, Neal
COLLINS, Ron
DE SOUZA, Gregory
JEFFERYS, Stephen
KUZAK, Nick
LUTSCH, Peter
MAJKA, Marek
MASTERSON, Mark
YUDIN, Mark (DSSL)

VERNON JUBILEE HOSPITAL

SMITH, Kevin (Head)
GREEN, Jennifer
HONEYWOOD, Kallie
KENNEDY, David
LEMAIY, Eric
MARKS, Richard
SMITH, Andre
VISKARI, Dan
VvEDENSKY, Alex

PENTICTON REGIONAL HOSPITAL

HAMilton, Andrew
HARDER, Kenneth

ROYAL INLAND HOSPITAL

(Kamloops)

CAMERON, Roderick J. (Head)
DIEHL, Eberhard
GUY, John
JADAVJI, Nadeem

NORTHERN MEDICAL PROGRAM

UNIVERSITY HOSPITAL OF NORTHERN BC
(Pr. George Regional General Hosp)

DHADLY, Pal (Head)
AKHTAR, Muhammad Jamil
ASCAH, John
BARDHAN, Ashit
GEORGYEV, Petar
MEHMOOD, Shehzad
MURAD, Nazar
RICHARDSON, Marshall (DSSL)
KOWBEL, Michael
MANS, Pierre
SAAYMAN, Marius
TAKEUCHI, Lawrence
WHITEHEAD, Michael

OTHER FACULTY

CALVERT, Tigger
Vernon

KOOTENAY BOUNDARY REGL HOSP

McCASKILL, Kenneth R

ASSOCIATE MEMBERS

CHEUNG, Anson Wai-Chung
Department of Surgery

GODLEY, Mark Brian
Vancouver

CHURCH, John
Department of Cellular & Physiological Sciences

GORCHYNSKI, Zen
Vancouver

DUMONT, Guy
Dept. of Electrical & Computer Engineering

HOLMES, Stuart
Comox

EICH, Eric
Department of Psychology

MORTON, Roy
Vancouver

LEPAWSKY, Michael
Department of Family Practice

NEITZEL, Andrew
Vancouver

TSANG, John
Intensive Care Unit
Vancouver General Hospital

RENWICK, Jamie
Vancouver

HONORARY PROFESSORS

DONEN, Neil

Vancouver

STEWARD, David

VRETNAR, Doris
Vancouver

PACEY, John

WAECHTER, Jason
Vancouver


**EMERITUS FACULTY**

RLD Adams MD FRCPC  
*Clinical Associate Professor*

JR Crosby MBBS D Obst FRCPC  
*Clinical Associate Professor*

JA Dowd MD FRCPC  
*Professor*

MJ Douglas MD FRCPC  
*Clinical Professor*

S Karim PhD DSc LLB  
*Clinical Professor*

EA Gofton MD FRCPC  
*Clinical Professor*

AP Goumeniouk BSc MD FRCPC  
*Clinical Professor*

TM Lau MB CRCPC FRCPC  
*Clinical Associate Professor*

GT Manning MD LMCC CRCP FRCPC  
*Clinical Associate Professor*

JG McLarnon BSc MSc PhD  
*Professor Emeritus*

GAR O’Connor MB ChB FRCPC  
*Clinical Associate Professor*

DV Godin BSc PhD  
*Professor*

BM Olson BSc MD FRCPC  
*Clinical Associate Professor*

E Puil BSc MSc PhD  
*Professor*

DMJ Quastel BSc MD CM PhD  
*Professor*

TC Queree LRCP MRCS FRCPC  
*Clinical Associate Professor*

RE Rangno MD FRCPC  
*Associate Professor*

B Saunders, MD FRCPC  
*Clinical Professor*

CA Stephenson MD FRCPC  
*Clinical Associate Professor*

MC Sutter BSc MD PhD  
*Professor Emeritus*

JE Swenerton MD FRCPC  
*Clinical Associate Professor*

KW Turnbull BASc MD FRCPC  
*Clinical Professor*

C van Breemen DVM PhD  
*Professor*

RA Wall AB PhD  
*Associate Professor*

MJA Walker BSc PhD  
*Professor*

DHW Wong MB BS FRCPC  
*Clinical Professor*
PHARMACOLOGY & THERAPEUTICS

CCY Pang BSc PhD
Professor and Associate Head
AM Barr BA PhD
Associate Professor
PN Bernatchez BSc MSc PhD
Associate Professor
SSR Bhagavatula MSc PhD
Professor
SL Borgland BSc MSc PhD
Adjunct Professor
CR Dormuth MA SM ScD
Assistant Professor
D Fedida PhD MB ChB
Professor
A Horne PhD
Instructor
D Knight, PhD
Adjunct Professor

H Kurata BS MSc PhD
Assistant Professor
I Laher BSc MSc PhD
Professor
BA MacLeod, BSc MD FRCPC
Associate Professor
Jean Templeton Hugill Chair
B Mintzes BA PhD
Associate Member
V Musini MBBS DPH MSc
Assistant Professor

T Perry MD FRCPC
Clinical Assistant Professor
J Shabbits PhD
Senior Instructor
JM Wright MD PhD FRCPC
Professor
Director-Therapeutics Initiative