FLEX Activity Day 2019

Life Sciences Centre
MONDAY JANUARY 28
1:00 - 2:00 PM  
Keynote (Dr. Allen Eaves)

2:00 - 2:10 PM  
Break & Posters

2:10 - 3:10 PM  
Student Talks (1 min)

3:10 - 3:40 PM  
Posters & Networking

3:40 - 4:40 PM  
Supervisor Talks (2 min)

4:40 - 5:00 PM  
Break, Raffles, & Posters
Welcome to the 4th annual FLEX Activity Day! FLEX activity day is an opportunity for current and past students to showcase the work they have done in their FLEX projects. Prepare to listen to a fabulous series of presentations and hear about the possibilities for your own FLEX projects. The day will begin with a keynote address by Dr. Allen Eaves. We will then hear from medical students about their past FLEX projects. There will also be an opportunity for current medical students to find FLEX activities – since activity supervisors will be on site to recruit students. Finally, students are encouraged to browse poster presentations in the atrium and network with activity supervisors.

We gratefully acknowledge StemCell Technologies for an unrestricted education grant provided to help support FLEX Activity Day at VFMP.
Keynote speaker - Dr. Allen C. Eaves (MD, PhD, FRCPC)

Our keynote speaker this year is Dr. Allen C. Eaves (MD, PhD, FRCPC). Dr. Eaves was the founding Director of the Terry Fox Laboratory for Hematology/Oncology Research, which over a 25-year period (1981–2006) he grew into an internationally recognized centre for the study of leukemia and stem cell research. His own research on chronic myelogenous leukemia (CML) has led the way to a new understanding of the disease. As Head of Hematology at the British Columbia Cancer Agency and the University of British Columbia for 18 years (1985–2003) he engineered the building of one of the first and largest bone marrow transplant programs in Canada.

In the 1980s, to raise money to support running the Terry Fox Laboratory, Dr. Eaves sold erythropoietin (purified from the urine of aplastic anemia patients) and tissue culture reagents to research colleagues around the world. By the early 1990s it became necessary to make the tissue culture media in a clean room. However, the BC Cancer Foundation did not have the $1 million needed to build such a facility and encouraged Dr. Eaves to buy the business from them and raise the money himself, which he did by fully mortgaging his home and obtaining a loan from Western Economic Diversification Fund. Starting with 8 employees in 1993, STEMCELL Technologies Inc is now the largest biotech company in Canada and employs over 1,000 people worldwide.

Dr. Eaves has received many recognitions of his research accomplishments and leadership in moving basic science discoveries in stem cell biology into the clinic, he was elected President of the International Society of Cellular Therapy (1995–1997), Treasurer of the Foundation for the Accreditation of Cellular Therapy (1995–2002) and President of the American Society of Blood and Marrow Transplantation (1999–2000). In 2003 he was awarded the prestigious R. M. Taylor Medal by the Canadian Cancer Society and the National Cancer Institute of Canada. In 2016 he was awarded the Order of British Columbia as well as named Ernst and Young’s Entrepreneur of the Year™ Pacific.
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Retrospective Chart Review: Documentation of Healthy Living Counselling in Two Outpatient Pediatric Subspecialty Clinics

Dhruv Pandey\textsuperscript{1}, Susan Pinkney\textsuperscript{2}, Shahzan Amed\textsuperscript{2}

\textsuperscript{1}MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
\textsuperscript{2}Division of Endocrinology & Diabetes, Department of Pediatrics, Faculty of Medicine, University of British Columbia

SUMMARY

Childhood obesity affects 15% of males and 10% of females in Canada and is associated with health complications such as diabetes and heart disease.

To support patients and families to adopt healthy lifestyles, we aim to develop a healthy living counselling toolkit for tertiary healthcare providers at BC Children’s Hospital. To understand the current practices around counselling on healthy living, we conducted a retrospective chart review examining documentation of lifestyle counselling.

The oncology and renal transplant follow up patients were selected as childhood cancer survivors are 4.5 times more likely to be obese as compared to age-matched controls, and pediatric renal transplant recipients are at increased risk of developing diabetes. A random sampling included 227 oncology long-term follow-up (OLTFU) and 37 renal transplant follow-up (RTFU) patients who had at least 1 visit in 2016. Data abstraction occurred via REDCap recording anthropometric measurements, discussions of healthy living and any referrals made to programs to address these behaviours.

In OLTFU patients who had 1 visit (n=151), 95% of height/weight measurements and 24% of BMI calculations were recorded. 62% of these measurements were plotted on WHO growth charts. In OLFU patients who had 2+ visit (n=71), these values decreased to 89% for height/weight measurements, 12% for BMI calculations, and 39% for growth chart plotting. In RTFU patients who had 1 visit (n=3), all anthropometric parameters were recorded and plotted. However, for RTFU patients who had 2+ visits (n=34), these values decreased to 88% height/weight measurements, 53% BMI calculations, and 56% growth chart plotting. In OLFU patients, 19% charts documented discussions of healthy living. Of these discussions, 3% received a referral to an organized centre to address these behaviours. In comparison, 92% of renal transplant charts documented discussions of healthy living. Of these discussions, 14% received a referral to an organized centre.

Our findings demonstrate that although anthropometric measurements are recorded, BMI calculations and plotting results on WHO growth charts occur less often. There is a significant difference between the amount of healthy living discussions documented between the two clinics. 15% of patients in both clinics who had a discussion on healthy living counselling received a referral to a centre or program to address healthy living behaviours.
The Efficacy of Topical Povidone-Iodine Rinses in the Management of Recalcitrant Chronic Rhinosinusitis: A Prospective Cohort Study

Rikesh Panchmatia1,2, Jennifer Payandeh1, Rami Al-Salman1, Emily Kakande1, Al-Rahim Habib1, Warren Mullings1, Amin Javer1

1Division of Otolaryngology, University of British Columbia and St. Paul’s Sinus Centre, Vancouver, BC, Canada
2MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada

SUMMARY

Objective: Recalcitrant chronic rhinosinusitis (CRS) is a persistent inflammatory condition of the sinonasal mucosa despite adequate medical therapy and sinus surgery. With limited alternatives, patients continue to experience a reduced quality of life. This study aimed to demonstrate the effectiveness of Povidone-Iodine (PVP-I) sinonasal rinses on endoscopic modified Lund-Kennedy (MLK) scores, while additionally determining its safety profile.

Design: Prospective cohort study.

Setting: St. Paul’s Sinus Center, Vancouver.

Participants: A total of 30 recalcitrant CRS patients were prescribed 0.08% PVP-I sinonasal rinses between August 2017 and December 2018 in conjunction to regular medical management.

Main outcome measures: Changes to endoscopic modified Lund-Kennedy (MLK) scores at seven weeks post-PVP-I rinsing.

Results: The median MLK-discharge score improved in all patients by 1.50 points post-PVP-I rinsing (95% CI=1.00,1.50; p<0.05). The total MLK score improved in all patients between baseline (mean=5.2; SD=2.0) and follow-up (mean=3.9; SD=2.4). Up to 17% improvement in serum inflammatory markers was measured post-PVP-I rinsing. Sinonasal culture revealed a shift from moderate-heavy growth to lighter bacterial growth. TSH levels increased within normal ranges between baseline (median=1.59 mU/L, IQR: 1.35,2.67 mU/L; n=15) and follow-up (median=1.92 mU/L, IQR: 1.51,2.71 mU/L) with decreases in 4 patients who stopped PVP-I thereafter. Mucociliary clearance time increased within normal ranges between baseline (median=9 min, IQR: 8,13 min; n=17) and follow-up (median=10 min, IQR: 5,19 min). Smell test Sniffin’ 16 scores decreased within age-related normal ranges between baseline (median=14, IQR: 8,15) and follow-up (median=13, IQR: 11,14). SNOT-22 scores improved by ≥1 minimal clinically important difference (MCID >9) between baseline (median=33; IQR: 17,46) and follow-up (median=20; IQR: 14,29).

Conclusion: An adjunctive 0.08% PVP-I sinonasal rinse in recalcitrant CRS significantly and safely reduces signs of infection along side a notable improvement in symptom reduction, without impairing thyroid function, mucociliary clearance or olfaction.
HoloBrain: An Interactive Tool for Learning 3D Neuroanatomy

HIVE (Hackspace for Immersive Virtual Experiences), Claudia Krebs

1MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada

SUMMARY

Neuroanatomy education is important for students in many fields, such as medicine, dentistry, and physiology. The gold standard for teaching neuroanatomy involves the use of human brain specimens and prosections; however, these models have limited interactivity and targeted dissections provide only limited exploration of internal structures. Cross-sectional imaging such as MRI and CT scans aid in learning but are limited by their two-dimensionality. The brain is an extremely complex organ, and students often struggle with integrating 2D images into an accurate understanding of a three-dimensional structure. There is a clear need for innovative and interactive visualization tools that supplement 2D images and cadaveric specimens to improve learning outcomes.

The Holographic Brain Project (HoloBrain) aims to develop a more effective and interactive teaching tool for students learning neuroanatomy. HoloBrain is an app developed for Microsoft HoloLens, a mixed reality headset that utilizes advanced augmented reality technology to blend virtual content with reality. It allows for maximum interactivity as it employs both gesture and voice recognition. 3D reconstructions of various brain structures (such as the cortex, basal ganglia, thalamus, brainstem, cerebellum, and vasculature) were traced from high quality MRI scans and built into the HoloBrain application through the game engine Unity. User experience was developed so structures can be highlighted, isolated, and observed from all angles for learners to improve their understanding of spatial relationships between anatomical structures. As well, these 3D reconstructions can be easily manipulated and compared with 2D MRI scans. The HoloBrain allows learners to see and interact with a virtual brain without the limitations of traditional neuroanatomy teaching methods.
Using Scent Detection Dogs to Identify Environmental Reservoirs of Clostridium difficile

Cheng Li¹, Teresa Zurberg³, Jaime Kinna³, Kushal Acharya⁴, Jack Warren³, Salomeh Shajari¹, Leslie Forrester³, Elizabeth Bryce¹²

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Division of Medical Microbiology and Infection Control, Vancouver Coastal Health, Canada
³Patient Quality and Safety, Vancouver Coastal Health, Canada

SUMMARY

Clostridium difficile remains one of the most common causes of nosocomial infections worldwide, with large cost to health care mainly due to recurrence of infection and hospitalization associated with infection. In addition to direct physical transmission via contact with infected surfaces, environmental reservoirs have been implicated in outbreaks both of which increase the risk of Clostridium difficile infection (CDI). The ability to perform rapid assessment of surfaces for potential reservoirs of C. difficile could greatly enhance cleaning efforts. Building upon a proof of concept article that used a beagle to detect C. difficile in patients, we trained a Springer Spaniel to detect C. difficile odours on equipment and environmental surfaces rather than on patients. Previous evaluation of the dog revealed an overall sensitivity of 92.3% and specificity of 95.4% for both odour recognition and search capability, and a canine scent detection program was established at the Vancouver General Hospital. The objective of this presentation is to describe the canine scent detection program and present the findings and lessons learned from 18 months (May 1, 2017 - October 31, 2018) of environmental detection in a tertiary care facility.
Case Study on the Development and Scalability of a WHO TDR Internship Program - Pilot Study on Zambia

Vivian W. L. Tsang¹, Pascal Launois², Béatrice Halpaap², Liz Charles², Michael Mihut²

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²UNICEF/UNDP/World Bank/WHO Special Programme for Research and Training in Tropical Diseases (TDR), World Health Organization, Geneva, Switzerland

SUMMARY

Every year, there are about 700 interns across the globe who work at the WHO - whether at various regional offices, or at headquarters in Geneva. Data from the past three months (March 15, 2018 until June 15, 2018) show a total of 6466 candidates who have applied for internships in the Regional Offices, Country Offices, or at Headquarters. Despite this list, intern projects have often remained as vague positions that can range from broad tasks such as helping respective departments prepare for upcoming conferences to working on building databases. While it is true that internships are beneficial simply because they allow students and young researchers to take part in the daily operations of a large-scale organization, it is also important to recognize the compelling need for international organizations to support research opportunities and educational experiences of interns. There is also a lack of published examples that outline the formation of longitudinal projects that can be scaled-up by future interns in WHO departments. In this study, the creation of a replicable and scalable internship programme is documented and discussed using the WHO Special Programme for Tropical Diseases Research (TDR) as an example. Each consecutive intern is required to liaise with their respective host country representatives as outlined above and make additions to the document with the replication of this project for each new member state. Future Interns are directly responsible for carrying out a pilot project and documenting protocols for expansion to the 105 other countries that constitute the TDR community. Evaluation measures are also written and will be completed by each consecutive intern to gauge the replicability and ultimate success of this project.
Exploring Health/Illness Narratives Through Art

Vivian Gu¹

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada

SUMMARY

This project uses art and reflection as a method to gain a deeper understanding of the patient perspective and the health/illness experience.

The patient perspective is explored via reading memoirs, which then informs the production of original art pieces and commentary. In this way, a collection of artwork is created throughout the medical education stages. So far, the collection consists of 4 pieces and their associated write ups.

This work is then presented in various outlets to foster conversation, self-critique, and gain feedback from peers, faculty, and members of the community; including artists as well as those with lived experience.

The goal moving forward is to continue to expand upon this collection, as well as draw patient perspective from clinical experience during the clerkship years.
The Impact of Elevated BMI on Infliximab Treatment Efficacy in Pediatric IBD

Isaac Rodin¹, Justin Chan¹, Kevan Jacobson²

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Division of Gastroenterology, Hepatology and Nutrition, Department of Pediatrics, Faculty of Medicine, University of British Columbia, B.C., Canada

SUMMARY

Inflammatory bowel disease (IBD) is a chronic disease characterized by inflammation of the gastrointestinal tract and comprises of two main types: Ulcerative Colitis and Crohn’s Disease. Various medications in various drug classes are used to induce and maintain remission for children suffering from IBD. More recently, biologics such as infliximab and other anti-TNF agents have been used to induce and maintain remission in the pediatric IBD population. Various factors may contribute to whether or not a child responds to infliximab treatment such as disease severity, complications such as strictures or fistulas, serum albumin level, and BMI of the patient. There is a dearth of research examining the impact an elevated BMI may have on the efficacy of infliximab in inducing and maintaining remission of children with IBD. To further that end we performed a retrospective study of 253 children and adolescents with IBD who received infliximab between July 2009 and September 2017 at BC Children’s Hospital. The aims of this retrospective cohort study were to: characterize and determine the incidence of weight gain while on maintenance infliximab therapy and evaluate the impact of elevated BMI on infliximab dosing and treatment characteristics, maintenance infliximab trough levels, the need for dose optimization, and ultimately, infliximab treatment failure. In our cohort, 10.3% of IBD patients treated with infliximab were reclassified from a normal BMI and became overweight or obese. Our findings suggest that high body mass index is not associated with increased incidence of dose optimization, treatment failure or low maintenance therapy trough levels. These conclusions suggest that although weight gain on biologic therapy is relatively common, it may not be an important predictor of whether or not treatment is successful.
Community Delivery and Uptake of Contraception and Gender-Based, Post-Violence Care Services Among Young Women at Pamoja Community Based Organization, Seme Sub-County, Kenya

Carlie Penner¹, Christina Botros¹, Kelsey Furk¹, Janet See², Patrick Mbullo³, Videsh Kapoor⁴

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Dietetics Program, Faculty of Land and Food Systems, University of British Columbia, B.C., Canada
³Director of Pamoja CBO, Kenya, PhD Candidate, Anthropology, Northwestern University, U.S.A.
⁴Department of Family Practice, Division of Global Health, University of British Columbia, B.C., Canada

SUMMARY

Globally, 36.7 million people are living with HIV, and adolescent girls and young women (AGYW) in sub-Saharan Africa are twice as likely to be infected as men this age. Kenyan AGYW (ages 15 to 24) experience higher mis-timed and unwanted pregnancies than women in other age groups, and 90% of women ages 15 to 19 and 58% of women ages 20 to 24 report not using any contraception method.

University of British Columbia students conducted an exploratory mixed-methods study in partnership with Pamoja, a non-profit, non-governmental, community-based organization in rural western Kenya. Low rates of contraceptive use and gender-based, post violence care (GBPVC) services use for AGYW in Pamoja’s operational region were identified. This study aimed to provide insight into the challenges that accompany delivery of contraception and gender-based, post-violence care as an HIV prevention strategy among a vulnerable population in rural Kenya where the HIV epidemic remains strong.

We conducted 5 focus group discussions (FGD) with 8 girls each (n=40) and 10 key informant interviews with health service providers, including nurses, counsellors, and field officers. A discussion guide was developed and used to ask questions regarding knowledge, attitudes, and availability and access of contraceptives and GBPVC. The questions were designed to determine what factors are involved in the decision by AGYW to use contraceptives, STI prevention methods, and gender-based, post-violence care services.

Qualitative data analysis using NVivo is still in progress and results are pending. This exploratory study helped to identify knowledge gaps and operational considerations that can be modified to improve contraception use, decrease STI transmission and increase provision of gender-based, post-violence care resources. Initial impressions include the need for continued community education as many myths, misconceptions, and stigma persist around contraception and gender-based violence.
Evaluation of Aortic Zone 2 Landing Accuracy During TEVAR with Current Imaging Techniques

Gary K Yang1, Sally Choi2, Keith Baxter1, Joel Gagnon1

1Division of Vascular Surgery, University of British Columbia, B.C., Canada
2MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada

SUMMARY

Background: Thoracic endovascular aortic repair (TEVAR) is a minimally invasive approach that employs stent grafts to treat a variety of thoracic aortic pathologies including aneurysms, dissections, and traumatic injuries and it has reduced morbidity and short-term mortality when compared to open repair.

The thoracic aorta distal to the left subclavian artery (LSA) is prone to dissection, aneurysmal degeneration and a common site of blunt traumatic aortic injury. Therefore, to ensure adequate endograft seal of minimum 1.5-2cm with current devices, the origin of the LSA will often have to be covered in order to allow zone 2 landing. Prior to zone 2 graft coverage, the LSA is often revascularized via transposition or bypass in order to reduce left arm, vertebrobasilar and spinal cord ischemia. Accurate TEVAR deployment following carotid-subclavian revascularization is desirable to ensure adequate proximal seal length while avoiding partial or complete coverage of the left common carotid artery (LCCA). Better understanding of the incidence of inaccurate stent deployment as well as the key factors that influence deployment accuracy could help improve TEVAR technical success and outcomes.

Purpose: The purpose of this study is to determine the proximal landing zone accuracy of zone 2-targeted TEVARs and to analyze the factors affecting this accuracy, in order to improve TEVAR deployment accuracy in the future.

Research Design and Procedure: We are currently in the process of conducting a retrospective review of all patients that underwent carotid-subclavian transposition or bypass for zone 2 delivery of thoracic endograft during the past 10 years. Primary outcome will be proximal TEVAR landing zone accuracy as reflected by the distance between the endograft and the LCCA both on the intraoperative aortogram and in the post-op CT scan. Secondary outcomes will evaluate whether various factors such as patient demographics, comorbidities and imaging characteristics influence proximal landing zone accuracy. Another secondary outcome will be proximal seal length and this will be correlated to the primary outcome, landing distance to LCCA as well. Various statistical analyses will be carried out to determine if any factors such as demographics, comorbidities, imaging or operation characteristics influence the deployment accuracy.
Ocular Adverse Events with Immune Check Point Inhibitors

Tony Fang¹, David A Maberley², Mahyar Etminan³,马

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Department of Ophthalmology and Visual Sciences, University of British Columbia, Vancouver, British Columbia, Canada
³Department of Anesthesiology, Pharmacology and Therapeutics, University of British Columbia, Vancouver, British Columbia

SUMMARY

Immune checkpoint inhibitors (ICIs) are becoming a popular class of drugs in the treatment for cancer. Although several studies have attempted to quantify adverse events secondary to ICIs, evidence on the risk of ocular adverse events with these drugs is scant. The goal of our study is to quantify the risk of ocular adverse events with ICIs as reported to the Food and Drug Administration (FDA). Using this data from the United States FDA’s Adverse Events Reporting System Database (FAERS) from 2003 to 2018, we performed a disproportionality analysis. Data from pharmaceutical manufacturers, healthcare providers, consumers in the United States and post-marketing clinical trial reports from U.S. and non-U.S. studies were included. We analyzed all cases of uveitis, dry eye syndrome, ocular myasthenia and eye inflammation with use of the following ICIs: atezolizumab, avelumab, cemiplimab, durvalumab, ipilimumab, nivolumab and pembrolizumab. Reported odds ratios (RORs) and corresponding 95% confidence intervals were computed for all drugs as a group or as individual agents. RORs were deemed significant if the lower bound of the 95% confidence interval exceeded a value of 1.0. We identified 113 ocular adverse events for all ICI drugs of interest including uveitis, dry eye, ocular myasthenia and eye inflammation. Nivolumab had the highest number of adverse events (N=68) associated with use of the ICI. Nivolumab had the highest association with ocular myasthenia (ROR = 22.82, 95% CI [7.18 - 72.50]) followed by pembrolizumab (ROR = 20.17, 95% CI [2.80 - 145.20]). Additionally, use of nivolumab had a high association with uveitis (ROR = 8.73, 95% CI [6.25 - 12.20]) and a moderate association with eye inflammation (ROR = 2.68, 95% CI [1.34 - 5.36]). Among all ICIs approved in North America, atezolizumab had the highest association with eye inflammation (ROR = 18.89, 95% CI [6.07 - 58.81]) and ipilimumab had the highest association with uveitis (ROR = 10.54, 95% CI [7.30 - 15.22]). The results of this disproportionality analysis suggest use of ICIs is associated with an increase risk for ocular adverse reactions including uveitis, dry eye, ocular myasthenia and eye inflammation. We believe future epidemiologic studies are needed to better quantify these adverse events.
Building Blocks to Sustainable Rural Maternity Care: Voices of the North Island

Joanna Ritson¹, Emily MacLean¹

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada

SUMMARY

Emily and I (Joanna) are working on a project for the Centre for Rural Health Research (CRHR), under the supervision of Dr. Jude Kornelsen. The overarching project is: Building Blocks to Sustainable Rural Maternity Care - The North Island Project, an initiative aimed at improving rural maternity services on northern Vancouver Island.

There is a clear disparity between the system goals of supplying maternity care within rural communities and the reality of providing these services on the northern island. Because of the geographic isolation and lack of availability of local services in these communities, the necessity travelling long distances for their baby's due dates has been realized by most mothers. This poses social and financial challenges associated with leaving a familiar environment and community supports. Additionally, compared to BC averages, a relatively large proportion of women on the north island experience heightened social vulnerability, including teen, substance using, single, and indigenous mothers. Providing culturally and socially responsible care for these women is of particular importance. Understanding the experiences of these high-risk mothers has been identified as a clear gap in current literature.

We have been conducting a participatory health research study, focused on hearing stories from mothers and families, facilitating the data feedback loop with communities, and documenting our findings into the literature. We have conducted interviews in many communities on in the north island region so far and are now analyzing our data. Our goal is to provide evidence to act as an instigator for change in community policy on maternal healthcare.
Investigating Alzheimer’s Disease in the Eye Through in vivo Human Imaging and ex vivo Post-Mortem Tissue Analysis

Qinyuan (Alis) Xu1, Sieun Lee2, Veronica Hirsch-Reinshagen3, Ian Mackenzie1, Robin Hsiung4, Geoffrey Charm4, Elliott To4, Alice Liu1, Kailun Jiang4, Marinko Sarunic2, Mirza Faisal Beg2, Jing Cui4, Eleanor To4, Joanne Matsubara4

1MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
2School of Engineering Science, Simon Fraser University, B.C., Canada
3Pathology, University of British Columbia, B.C., Canada
4Ophthalmology and Visual Sciences, University of British Columbia, B.C., Canada
5Neurology, University of British Columbia, University of British Columbia, B.C., Canada

SUMMARY

In many situations, the human eye serves as a window to look into the brain. Many brain diseases can manifest in the eye because they are made of similar tissues including cells of the nervous system. In this study, we look into this window to understand a common and devastating form of brain disease called Alzheimer’s disease, in which patients gradually lose brain function and ability to live independently. Using cell biology and human tissues, we were able to visualize defining features of Alzheimer’s disease in the eye. This provides an opportunity to develop new methods for early detection of Alzheimer’s disease.

We have collected pre- and post-mortem data from Alzheimer’s disease patients - cognitive skills measurements (Mini-mental state examination - MMSE), diagnosis by a neurologist, post-mortem neuropathology scores, and post-mortem retinal immunohistochemistry to measure retinal amyloid beta. Medical students would be able to consolidate and organize the data and perform data quality control and statistical analysis to investigate relationships between different parameters.

We have collected multi-modal retinal and brain data from control subjects and Alzheimer’s disease patients, including optical coherence tomography, optical coherence tomography angiography, magnetic resonance imaging, and positron emission tomography. Medical students would be able to consolidate and organize the data and perform data quality control and statistical analysis to investigate relationships between different parameters.
The Pocket Pelvis: Developing an Augmented Reality App for Better Understanding of Pelvis Anatomy

Ishan Dixit, Ratthamnoon Prakitpong, Connor Dunne, Ellen He, Eric Jeong, Jason Kim, Jueyong Oh, Mehrdad Ghomi, Dante Cerron, Claudia Krebs

MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada

SUMMARY

Our project, the Pocket Pelvis, aims to provide students with an interactive augmented reality (AR) learning tool to visualize the anatomy of the human pelvis. Currently available modalities of learning for human anatomy in UBC medical program is limited to 2D and 3D atlases and dissection. The pelvis is a complex and layered region that can be challenging to navigate in dissections, and difficult to conceptualize in atlases without being able to manipulate the individual structures. Implementing AR into our project addresses these limitations by combining the clearly delineated structures of atlases with the freedom of user interaction provided by dissections. Pocket Pelvis will project various pelvic structures such as nerves and muscles on top of a 3D printed pocket-sized pelvis and allow students to take charge of their own learning.

The Pocket Pelvis is supported by an interdisciplinary team consisting of engineers, computer scientists, and of course, medical students. The main role of the medical student is to apply their anatomical knowledge to refine and expand on the existing pelvic structures, determine relevant learning objectives to create a holistic learning tool beyond simple identification, and provide feedback to improve user experience. If desired the student may venture beyond anatomy and gain experience with coding, interface design, and 3D modelling.
One Year Mortality of Patients Treated in the Emergency Department for an Opioid Overdose: A Single-Centre Retrospective Cohort Study

Andy Jiang1, Jesse Godwin2, Jessica Moe1, Jane Buxton1, Alexis Crabtree3, Andrew Kestler2, Frank Scheuermeyer2, Shannon Erdelyi2, Amanda Slaunwhite3, Adrianna Rowe2, Christopher Cochrane1, Benjamin Ng1, Alessia Risi, Vi Ho2, Rupinder Brar2, Jeffrey Brubacher2, Roy Purssell2,3

1MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
2Department of Emergency Medicine, University of British Columbia, B.C., Canada
3British Columbia Centre for Disease Control, B.C., Canada

SUMMARY

Opioid overdoses have become a public health emergency in BC, yet little is known about the long-term outcomes of patients following an overdose. In particular, it is important to know the mortality rate among patients following a non-fatal opioid overdose in BC as this information can guide interventions and public policy to save lives. This project aimed to determine the one-year mortality rate and associated risk factors following an opioid overdose treated in the emergency department. To answer this question, patient records were retrieved for those who presented to St. Paul’s Emergency Department from Jan. 2013 - Aug. 2017. Patients identified as having a suspected opioid overdose were included in the study, with mortality determined by linking patient medical records with Vital Statistics. We calculated crude mortality rates and used Cox regression to identify risk factors for mortality at one year. Results indicated that 6% of patients treated in the emergency department for an opioid overdose died within one year, with advancing age and increasing calendar year of overdose in the study period being notable risk factors. Our study has shown that the mortality rate following an opioid overdose is high. The rising mortality risk with increasing calendar year may reflect the growing harms of fentanyl-overdoses. Patients visiting the emergency department for an opioid overdose should be considered high risk for mortality and be offered the necessary preventative treatment and referrals prior to discharge.
The Reading Bear Society - A Healthy Living Pamphlet for Vulnerable Populations

Jennifer Wildi\textsuperscript{1}

\textsuperscript{1}MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada

SUMMARY

The Reading Bear Society is a program whose goal is to foster a more conscientious and loving society by providing intergenerational mentorship and reading resources that encourage early literacy, social wellbeing, and emotional health across generations and communities. As a FLEX student with the Reading Bear Society, myself and my colleague Gabby Levesque from the Southern Medical Program are creating a pamphlet that includes healthy living guidelines and resources/services within the community that can be accessed to achieve these guidelines. The pamphlet is targeted towards preschool-aged children and their families in underprivileged communities in Vancouver and Kelowna. It encourages a healthy lifestyle with tips regarding nutrition, screen time, the importance of physical activity, and sleep guidelines. There are many community resources that are instrumental in helping families reach these healthy living goals, however families, particularly those new to the community, may not be aware of their existence. Therefore, we designed this pamphlet to unify these services into a simple and fun-to-read document to render them as accessible as possible.
Interface Keratitis Following Lamellar Keratoplasty: A Retrospective Case Series

Jennifer Ling¹, Grace Qiao², Titus Wong³, Sonia Yeung², Alfonso Iovieno²

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Department of Ophthalmology and Visual Sciences, University of British Columbia, BC, Canada
³Division of Medical Microbiology and Infection Control, Vancouver Coastal Health, BC, Canada

SUMMARY

Purpose: Interface keratitis following lamellar keratoplasty often requires significant intervention to prevent devastating outcomes; local information regarding this infection is lacking. This study is a retrospective case series to determine the incidence, clinical course, and management of interface keratitis in Canada.

Methods: This is a retrospective multicentric medical chart review of patients that underwent lamellar keratoplasty, in which the donor cornea had a positive microbiological culture report. Descemet Membrane Endothelial Keratoplasty (DMEK), Deep Anterior Lamellar Keratoplasty (DALK), and Descemet Stripping Automated Endothelial Keratoplasty (DSAEK) were included. Positive microbiological culture was defined as the growth or detection of any bacterial, fungal or parasitic species. Medical charts of patients with positive cultures were reviewed.

Results: To date, this study included 3727 corneal transplants from 1997 to 2018, from a tertiary care centre in Vancouver, British Columbia. Of the 43 (1.2%) culture positive donor corneal rim reports, 8 (19%) reports belonged to patients undergoing lamellar keratoplasty. These 8 patients, involving 9 eyes, underwent DALK (1), DMEK (5) or DSAEK (2). The 9 eyes consisted of 5 (56%) left and 4 (44%) right eyes. Indications for lamellar keratoplasty included: Fuch’s dystrophy (6), keratoconus (1), and pseudophakic bullous keratopathy (1). Three keratoplasties were combined by cataract extraction and intra-ocular lens placement. Candida albicans (37.5%) and Enterococcus faecalis (37.5%) were the most common species, while Rhodotorula mucilaginosa (12.5%), Candida glabrata (12.5%), and Candida dubliniensis (12.5%) were also isolated.

Despite the positive rim cultures, there have been no clinical cases of interface keratitis. The DALK patient had a small inferior opacity and loose suture 4 days post-keratoplasty, but this resolved quickly with suture removal and topical moxifloxacin, and was not felt to be clinically significant.

Conclusion: Interface keratitis following lamellar keratoplasty is an emerging problem in modern corneal surgery. The microbiological results observed are consistent with those seen in reported series of interface keratitis, the majority of which implicate Candida species. The rarity of the condition requires a multicentric study design. This study seeks to include data from other Canadian provinces.
Expanded analysis: Comparison of Piggyback Versus End-to-End and Side-to-Side Technique in Orthotopic Liver Transplantation - A Retrospective Review

Valeriya Zaborska¹, Xiu Qing Wang¹, Mitchell Webb², Andrzej Buczkowski², David Youssef², Michael Bleszynski², Tiffany Chan², Maja Segedi²

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Division of General Surgery, Department of Surgery, Vancouver, BC, Canada

SUMMARY

Liver transplantation surgery is complicated by many hemodynamic changes. Classic description of caval reconstruction during orthotopic liver transplantation involves a retrohepatic caval resection. This requires complete cross-clamping of the inferior vena cava (IVC), followed by interposition of the donor IVC and liver graft. The duration of cross-clamping required to complete the vascular anastomosis before reperfusion can contribute to many complications such as portal venous congestion, decreased venous return, and reduction in cardiac output. In comparison, there are other techniques that do not require complete cross-clamping and preservation of the IVC. These techniques include piggyback (PB) to the hepatic veins, or side-to-side (SS) caval anastomosis. These techniques allow maintenance of some venous return during caval anastomosis. The avoidance of complete cross-clamping may carry benefits for hemodynamic stability, blood loss, and transfusion requirements. Chan et. al. recently published a retrospective review in comparison of three caval reconstruction techniques in orthotopic liver transplantation at a single institution. This analysis ranged from 2007-2011 and involved 200 deceased-donor transplants performed in 191 patients. No significant differences were observed in intra-operative blood loss or resuscitation volume between the three techniques. However, the PB technique was faster and used less cell saver return, FFP and platelets, despite similar blood loss. This study is an expansion the Chan et. al study that will include patients that have undergone liver transplantation from January 2012 to January 2017. The expansion of the study period to 10 years will increase the sample size and improve statistical power. Additionally, the 10-year span will elicit any trends in outcomes since 2007 compared to 2017. Should any new trends arise, this will contribute new information to the field of Surgery. My role was to assist in extracting the retrospective data from patient charts, learn more about the surgical procedures and how surgical consult notes are done, and learn more about outcomes of liver transplantation. The goal of the project is to contribute to the body of knowledge about which surgical procedures may be more suitable in specific, patient unique contexts.
**Naloxone Distribution, Trauma, and Supporting Community-Based Overdose Responders**

**Daniel Shearer**¹,², Taylor Fleming², Al Fowley², Jade Boyd²,³, Ryan McNeil²,³

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²British Columbia Centre on Substance Use, Vancouver, B.C., Canada
³Department of Medicine, University of British Columbia, B.C., Canada

**SUMMARY**

North America is in the midst of a growing overdose epidemic. The dramatic rise in overdose deaths experienced over the last five years can primarily be attributed to increases in the distribution and use of illicitly-manufactured fentanyl. As a response, community-based harm reduction interventions aimed at both overdose prevention and response, such as naloxone distribution and training, are being scaled up. Peers (i.e., people who use drugs who are members of the affected community) have been critical to the successful expansion of these interventions, in part because pre-existing social networks can be leveraged to deliver timely interventions to those who are frequently missed by harm reduction efforts. However, it has been increasingly recognized that risks of burnout and vicarious traumas are considerable for peers working on the front-lines of the overdose epidemic, with reports of stress, trauma, and grief being commonplace for those responding daily to overdoses. Although peers comprise the main target of community-based naloxone distribution programs, there has been a remarkable lack of public discourse on the necessary resources and supports needed, as well as traumas experienced by peers acting as first-responders in overdose events. As the overdose epidemic continues and peers are tasked to respond again and again, they risk burnout. Moreover, trauma brought on by overdose response may both interact with and reinforce the multiple intersecting structural vulnerabilities of people who use drugs, thereby contributing to a cascade of negative health and social outcomes. Provision of supports for peers assuming first-responder positions is critical to the sustainability of community-based overdose response interventions. Resources dedicated to providing integrated support services and remuneration for peer responders should be a priority to ensure sustainability of such programs in the face of an expanding crisis.
Primary Admissions to Child and Adolescent Psychiatric Emergency: Prior Access to Psychiatric Care in First- and Second-Generation Patients

Nancy Lum¹, Sinead Nugent², Ali Eslami²

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Department of Psychiatry, University of British Columbia, B.C., Canada

SUMMARY

The Child and Adolescent Psychiatric Emergency (CAPE) unit at BC Children’s Hospital provides acute stabilization and assessment to patients undergoing psychiatric crises; approximately 30% of these patients are first- or second-generation Canadians (FSGCs). Our study examined the prevalence of patients’ access to psychiatric care prior to their first presentation to CAPE and their admission and discharge diagnoses, comparing FSGCs to patients with Canadian parents. FSGCs patients were less likely than patients born to Canadian parents to have been treated by psychiatric medication, hospitalized for non-emergent psychiatric reasons, or treated through any modality of psychiatric care. They were also more likely to have been diagnosed with a psychotic disorder. This may suggest that FSGCs are a potentially vulnerable cohort; targeted public health interventions are needed to destigmatize the use of psychiatric care, promote engagement with the mental health system, and prevent escalation to psychiatric crisis.
Skeletal Changes Due to Syphilis and Leprosy

Ali Azari-pour¹, Maria Monsalve²

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Department of Pathology and Laboratory Medicine, University of British Columbia, B.C., Canada

SUMMARY

Excavation of ancient human skeletons can often reveal aspects of medicine that are not usually apparent in clinical practice. This project consisted of reviewing images of human skeletal remains and diagnosing pathologies of the bones. Tertiary stage of syphilis can manifest as destructive bone lesions on the skull, called caries sicca. Such lesions carry out specific and exclusive features, such as only affecting the outer surface of the bone, with a sclerotic (irregular and lumpy) pattern. Leprosy on the other hand can cause destruction of maxillary bones, and cause truncation of the fingers. Recognition of such diseases in human skeletal remains not only allows a deeper understanding of medicine and disease in ancient times, but can give us a holistic perspective of many illnesses.
Patient Reported Outcomes (PROs) from Renal Transplant Donors and Recipients: Initial Results from Single Centre

Keesha Khehra¹, Rohit Singla¹, Angela Cho², Christopher Nguan²

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Department of Urological Sciences, Vancouver General Hospital, Vancouver, BC, Canada

SUMMARY

Patient reported outcomes (PROs) are gaining popularity in various medical disciplines as a mechanism to improve accountability and overall quality of health care services. PROs involve "the report of any status of a patient’s health condition that comes directly from the patient without interpretation from the clinician or anyone else". PROs can be useful and effective tools for characterizing symptom burden and health-related quality of life. Medical guidelines for many treatments do not account for variation in patients and provide large ranges for recovery and potential symptoms. By using PROs in post-operative renal transplant patients, it can thus provide useful clinical findings and help establish a more accurate estimation of expected symptoms. The patient population of this study are those undergoing a kidney transplant at Vancouver General Hospital. After their operation, patients are asked to complete the post-operative recovery survey daily on the ward until they were discharged. The intent is to follow the progress of the patient after the operation and identify whether or not the patient is recovering as expected. Patients then complete the survey twice a week at the postoperative care clinic at Diamond Health Center, and then once a week for the next 6 months. Since the initiation of the study in June 2018, 40 eligible patients have been recruited. Initial results from the first 6 months show that recipients are most concerned about the operation going well, graft rejection, sleep, pain, fluid overload, and bowel movements. Donors are most concerned about pain and bowel movements. Some key findings include majority of recipients will not have an elevated temperature after day three, a third of recipients have a bowel movement by post-op day two, and 70% recipients are able to do short walks by day two. PROs are playing an increasing role in patient-centered care, as well as in supporting important research. Longer term analysis is needed to evaluate the usability and applicability of the PRO tool into clinical practice. Next steps are to increase recruitment, reduce variance through increased compliance, and compare the results with clinical guidelines.
MEDamorphosis Podcast: A UBC MultiMEDia Project

Faizan Bhatia, Tina Lu

MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada

SUMMARY

UBC Medical students are distributed across 4 sites and as a result it is difficult to foster a sense of community amongst students. UBC MultiMEDia aims to bring students together through media. Having conducted a narrative review to justify the need for UBC MultiMEDia, the first project, MEDamorphosis was created. Throughout medical school we are taught incredible content, anatomy, and physiology but rarely do we take out the dedicated time to talk about the specialties we might be interested in. This gap in medical education needs to be addressed. The MEDamorphosis podcast interviews various physicians across British Columbia about their chosen specialty, why they do what they do, what they love about it and how they navigated their journey to it. This podcast assists students in making this monumental decision and will act as an excellent resource and archive for years to come.
Community Health Initiative by University Students: Three Bridges

Leo Yefet¹, Matthew Madsen¹, Kevin Hong², Angela Wagner³, Carrie Krekoski³, Todd Sakakibara⁴

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²PharmD Program, University of British Columbia, B.C., Canada
³University of British Columbia Health, B.C., Canada
⁴Three Bridges Community Health Centre Physician Mentor

SUMMARY

Community Health Initiative by University Students (CHIUS) is a team of students, faculty and community members that develops clinical and social opportunities for the Vancouver population. For our FLEX project, we collaborated with the Three Bridges Community Health Centre to provide care to individuals in downtown Vancouver who often face barriers to health care. Students work on interdisciplinary health teams including medicine, nursing, occupational therapy, social work, and pharmacy to guide the patients in their interaction with supervising health care practitioners.

I worked as a Clinic Coordinator in which, alongside my colleagues, I recruited students and supervising professionals to participate in the student-led clinic that takes place once a week. Additionally, I attend the clinics to supervise students and ensure they understand and are given the opportunity to participate in their assigned roles. Finally, we support students throughout their commitment to CHIUS by serving as a point-of-contact for any questions or concerns that they may have. The CHIUS Three Bridges initiative provides students with a unique opportunity to support marginalized populations while developing their inter-professional, communication, and leadership skills.
Improvement During Crisis: Preliminary Results from the BOOST Quality Improvement Collaborative

Cole Stanley\textsuperscript{1}, Laura Beamish\textsuperscript{2}, Zach Sagorin\textsuperscript{2}, Jano Klimas\textsuperscript{3}, Rolano Barrios\textsuperscript{1,2}, Rana Garelnabi\textsuperscript{2}, Valeria Gal\textsuperscript{2}

\textsuperscript{1}Vancouver Coastal Health, Vancouver, B.C., Canada
\textsuperscript{2}The British Columbia Centre for Excellence in HIV/AIDS, Vancouver, B.C., Canada
\textsuperscript{3}The British Columbia Centre on Substance Use, Vancouver, B.C., Canada

SUMMARY

Since 2016, there have been over 3000 opioid-related overdose deaths in British Columbia, with 600 occurring in Vancouver. The Best Practices in Oral Opioid AgoniSt Therapy (BOOST) is a joint initiative of the BC Centre for Excellence in HIV/AIDS and Vancouver Coastal Health that aims to improve care for people living with opioid use disorder (OUD) in Vancouver by implementing, measuring and sharing best practices in opioid agonist therapy (OAT) - methadone, suboxone and slow release oral morphine. In BOOST, our 17 teams utilize an adapted 16-month Breakthrough Series Collaborative that utilizes Learning Sessions (LS) to share progress and develop quality improvement skills and Acton Periods (AP) where teams run multiple rapid tests of change and participate in support activities. Changes implemented include standardized data entry to identify clients with OUD, improved care for clients via changes in diagnosis and treatment initiation, treatment retention, and quality of life surveying and education.

By December 6th, 2018, we aimed to implement and share best-practice in OUD care to help our population of clients reach: 95% Initiated on OAT, 95% Retained on OAT for greater than 3 months, 50% Improvement in overall Quality of Life scores.

After data standardization, 4371 clients with suspected OUD history were identified based on EMR problem list, 3574 (82\%) clients had an accurate OUD diagnosis code, 2668 (75\%) clients with a standard OUD encounter documented since April 2018 (OUD form created). Of those with Active 304.0 OUD: 57\% have an active OAT prescription. Of those with an active prescription, 90\% have a start date entered, 83\% retained >30 days, 73\% retained >90 days.

In contrast to not knowing our list of clients with OUD at the start of the Collaborative, teams are now able to manage their lists on a daily basis and measure OAT access and retention. To achieve our 95\% goal, we will continue to focus on engagement, social determinants, enhanced outreach, and overall high-quality care for our clients with OUD.
Reducing the Volume of Low-Value Outpatient MRI Joint Exams in Patients ≥ 55 Years of Age

Joshua W. Kandiah1, Vivian W. Y. Chan2, Jing Luo2, Flora Wong2, James P. Nugent1, Bruce B. Forster1

1University of British Columbia, Vancouver, Canada
2Vancouver Coastal Health, Vancouver, Canada

SUMMARY

MRI is not beneficial in patients with joint pain and concomitant osteoarthritis (OA). We attempt to determine if evaluation of OA via X-rays can reduce inappropriate MRI and CT arthrogram use. In our jurisdiction, CT arthrograms are used as surrogate tests because of MRI wait times.

Our intervention required recent, weight bearing X-rays (within one year) for patients ≥ 55 years of age who were scheduled for outpatient MRI of the knee/hip/shoulder at an urban hospital. Red flags (i.e. neoplasm, infection) were identified for which MRI would be indicated regardless. Through review of radiographs on PACS/digital media and use of the validated Kellgren-Lawrence (KL) OA scale, radiologists assessed the presence and degree of OA. A finding of significant OA (KL > 2) without red flags would preclude MRI. Monthly averages of MRI and CT arthrogram exams were measured 33 months before and 23 months following introduction of the intervention.

The proportion of protocolled MRI requisitions that were avoided was 16%. If extrapolated to the province of British Columbia, 1872/11700 exams could have been prevented in the past year. The average monthly number of knee/hip/shoulder MRI exams as a percentage of total MRI exams decreased from 4.9% to 4.3% (P < 0.02) following the intervention. The average monthly number of knee/hip/shoulder CT arthrogram exams decreased from 20.6 to 12.1 (P < 0.0001).

We were able to decrease the number of MRI and CT arthrogram exams in patients ≥ 55 years of age with joint pain by implementing an evaluation for OA via recent X-ray imaging.
Choosing Wisely: Management of Infants with Bacterial Meningitis

Stephanie Bourne¹, Hana Mijovic², Jennifer Smitten³, Mia Remington³

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Pediatric Infectious Diseases, BC Children’s Hospital, B.C., Canada
³Pediatrician, BC Children’s Hospital, B.C., Canada

SUMMARY

Bacterial meningitis is an important cause of morbidity and mortality in hospitalized children, especially in neonates and young infants as meningitis is most common in this population. Because of the seriousness of bacterial meningitis, infants and children with suspected infection must be recognized and treated in a timely manner to reduce the chance of mortality or permanent sequelae. Currently at BC Children’s and Women’s Hospitals, there is wide variation in the management of neonates and infants with bacterial meningitis regarding the timing and number of lumbar punctures, duration and choice of antibiotics, and timing/modality/indications for neuroimaging. The goals of this project are to assess the current practices in the management of neonates and young infants (<90 days old) with bacterial meningitis at our institution and to develop and implement an evidence-based pathway to reduce variation in practice. The first phase of the project involved performing a literature review, as well as reviewing current guidelines at other Canadian pediatric centers, to gather evidence to help inform the new BC Children’s and Women’s Hospitals guidelines. The second phase of the project involves performing a retrospective chart review to assess current practice & outcomes of infants with bacterial meningitis at BC Children’s and Women’s Hospitals.
A Train-the-Trainer Approach to Mental Health Community Education in Kisumu, Kenya

Wayne Leung1, Kaity Lalonde1, Kyla Freeman1, Jovi Wong1, Videsh Kapoor2

1MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
2Department of Family Practice, Division of Global Health, University of British Columbia, BC, Canada

SUMMARY

Purpose: This project was designed to establish sustainability of mental health education workshops using a “train-the-trainer” approach. As part of a multi-year initiative, collaborators from UBC and a community NGO, Pamoja, provided WHO inspired mental health education workshops to Community Health Workers (CHWs) in rural Kisumu. They evaluated the effectiveness of knowledge transfer after these workshops and found the majority of participating CHWs had improved their knowledge between pre- and post-test scores. In 2017, we assessed one-year knowledge retention and the utility of this training in the community. Refresher CHW training was also provided.

Methods: During this phase of the project, CHWs participated in focus group discussions (FGDs). This allowed the team to assess retention from previous workshops, gain feedback and learn what other tools CHWs would find helpful. The CHWs were given refresher courses based on the previous workshops, as well as the opportunity to practice delivering workshops.

Workshop delivery skills were transmitted to CHWs through the observation of peer-teaching presentations aimed at the community level. Community member FGD’s were held prior to conducting two educational workshops with five communities, to determine how mental health was perceived and understood. Workshops were concluded with a large group FGD to elicit what the community had learned.

Results: Qualitative data from the FGDs allowed the team to gauge their effectiveness in providing education. Our results show that key learning has occurred around the understanding that mental illness is a medical concern, it can be treated and how to care for someone with mental illness. Those engaged in the process felt more confident with their knowledge and their ability to recognize mental illness. Furthermore, CHWs retained knowledge from their previous teachings trainings.

Conclusion: Continuous education over the years has been successful and has provided a good foundation for mental health discussion in a culturally sensitive manner. Our partner NGO will continue to work with the local health care providers to improve mental health treatment in this region.
Health Navigators: Supporting and Learning from Transitioning Youth in Care

Maya Rosenkrantz¹, Tanyss Knowles¹, Eva Moore²

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²British Columbia Children’s Hospital, B.C., Canada

SUMMARY

Health Navigators is a program that connects medical students with youth transitioning out of government care, or independent youth, and other marginalized youth, with the aim of helping bridge the gaps preventing youth from engaging with healthcare. Youth, in general, is a particularly vulnerable age group, where social determinants of health and adverse childhood events have an especially significant impact on both physical and mental health. Marginalized youth, specifically those who have aged out of the foster care system, face a unique set of barriers to accessing the health resources they might need. Some lack a BC health card, are not enrolled in Pharmacare, or are unable to connect with primary care. Many others have had negative past experiences with the medical system due to their vulnerable circumstances or as a result of systemic or personal discrimination. The Health Navigators program was designed as a two-way street - putting an approachable face to the healthcare system for youth by connecting them with medical students who may help them navigate the intimidating system, as well as facilitating experiential learning for medical students to better understand the challenges marginalized youth might face.

After 5 weeks of comprehensive training, in October 2017, ten medical students were partnered with a variety of community agencies supporting marginalized youth for seven months. One of those placements was Broadway Youth Resource Centre (BYRC), where four students fostered relationships with youth, engaged youth in discussions about a variety of health-related topics, aimed to connect them with resources, and learned from their life experiences about their strength, resilience, and the daily challenges they must overcome. Through this project, students reflected on a variety of injustices including the disproportionate marginalization of indigenous youth and effects of inter-generational trauma, the profound impact of mental illness on marginalized youth, and the barriers youth aging out of foster care face in accessing healthcare.
Child Development in HIV Exposed, Uninfected Children: Challenges with Accessing Services

Lulu Yang1, Nora Penty1, Ariane Alimenti2,3, Alisa Lipson2, Nancy Lanphear2, Laura Sauvé2,3

1MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
2Department of Pediatrics, University of British Columbia, B.C., Canada
3Oak Tree Clinic, BC Children’s Hospital, B.C., Canada

SUMMARY

HIV exposed, uninfected (HEU) children have higher incidences of neurodevelopmental delay and diagnoses, which has largely been attributed to social determinants that impact HIV affected families. These same social determinants also impact their access to the necessary developmental services. The Oak Tree Clinic is a provincial women-and-family-centered HIV clinic at BC Children’s Hospital. This quality assurance review aimed to assess the developmental needs of HEU children at Oak Tree and the effects of strategies aiming to improve their access to developmental services. A retrospective chart review of social and developmental factors was performed for 169 HEUs born between 2008-2016 followed at Oak Tree. The children were divided into older (n=112) and younger (n=57) cohorts depending on whether they were 18 months of age before or after strategies targeting developmental follow-up were implemented. These strategies included early referral, frequent and regular developmental screening, and monitoring of the referral progress, which we found successfully increased the number of children connected to developmental services (88.5% vs 63.3%). Many of the children had significant social vulnerabilities, including MCFD involvement (37.3%), financial (37.8%) or housing (17.1%) instability, and adverse childhood experiences (70.4%). Nearly half of children in both cohorts had a documented developmental concern (45.6%, 42.9%), with a higher proportion of developmental concerns in those who were socially vulnerable. The results of our study show that HEU children have significant social risk factors that impact their development and access to early interventions; having explicit mechanisms in place to recognize challenges and support development can significantly improve access to developmental services. In order to apply these results, semi-structured interviews were conducted with Oak Tree staff to determine what barriers to accessing developmental services exist and what strategies could be used to further increase accessibility and acceptability of such services. While a number of ideas were discussed, including pamphlets, videos, and a peer support program, it was determined that future discussions directly with these families will yield more practical solutions that will hopefully encourage more families to participate in necessary developmental programs.
Bringing the Community to the Legislature: Lessons in Advocacy for Marginalized Youths

Devon Mitchell¹, Eva Moore², Tanyss Knowles²

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Division of Adolescent Medicine, BC Children’s Hospital, B.C., Canada

SUMMARY

The Health Navigator program is a program run by the Division of Adolescent Medicine at BC Children’s Hospital that recruited 10 medical students to act as mentors to marginalized youth in the community. Medical students were given skills in adolescent development and mentorship before being placed with one of four community agencies that works with marginalized youth. While there, they worked with youth to build relationships of trust, and to work towards identifying barriers that prevent marginalized youth from accessing medical and social services. The goal of this project was not only to give medical students the experience of working with youth who are facing challenges, but also to provide the youth with role models within the medical system who were able to give advice and begin to try and dismantle the negative perception many youth feel regarding the health care system.

Furthermore, within this project students were encouraged to develop their own academic interests. One of the academic pursuits was collecting information from community partners to inform lobbying efforts performed by the UBC Political Advocacy Club (PAC) surrounding youth mental health. Students met with local representatives of community and youth groups to gather on-the-ground information regarding gaps in services, or ways in which services could be improved. Students were uniquely positioned to collect this information because they were already imbedded in the community. This information was then used to inform a policy paper that was written with the larger PAC, ensuring that community voices were places front and centre in advocacy asks. This paper was then taken to Victoria by a group of students and presented to MLAs and Ministers of the Provincial Government, and specific policy asks were lobbied for. The communication loop was then closed when the community partners were updated on the results of the lobbying efforts, and presented with the final policy paper. This represents experiential learning surrounding effective, evidence-based ways to advocate for marginalized communities.
Influence of Ethnicity on Diagnosis, Treatment, OCD Characteristics, and Family Function for Pediatric OCD

Joanne Wang¹, Evelyn Stewart²

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Department of Psychiatry, Division of Clinical & Behavioural Neurosciences, University of British Columbia, B.C., Canada

SUMMARY

Till now, the association between culture and obsessive-compulsive disorder (OCD) has been a not-well researched field and even less so in the pediatric population. This project aims to determine if there is a cultural difference in terms of OCD characteristics, time to and delay to diagnosis and treatment, and family function among the UBC Pediatric OCD Clinic population between 2011 to 2018. Among the 218 participants, children were divided into Caucasian (n=183) and Asian (n=35). Currently, results have shown insignificant difference in OCD characteristics, severity, and comorbidities. While the Caucasian onset age and treatment offered age is one year before their Asian counterpart, there is no significant difference in delay to diagnosis nor treatment. Upon further analysis, Caucasians are shown to be more likely to accept any form of OCD treatment. Additionally, family cohesion has shown to be lower in Asian families through the FEBAS scale. With our current data, future steps to forward this project is to identify reasons for Asian children to decline treatment to better offer options for these families in the future. Furthermore, children and families of mixed Asian-Caucasian ethnicity will be analyzed to see if there are any notable differences in this population.
Transitions in Care for Hospitalized Individuals who are Homeless

Alec Chu Ming Yu, Anne Gadermann, Anita Palepu

1 MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
2 School of Public and Population Health, University of British Columbia, B.C., Canada
3 Centre for Health Evaluation and Outcome Sciences, B.C., Canada
4 Department of Medicine, University of British Columbia, B.C., Canada

SUMMARY

Individuals who are homeless in the Canadian city of Vancouver, British Columbia have an increasing burden of chronic medical conditions, resulting in rising use of hospital services. This has largely been driven by an unprecedented population growth in those individuals aged 55 or older, with a 50% increase from 371 to 556 persons over just 3 years. In this landscape, the Emergency Department has become the most frequently accessed public service for the homeless, outstripping primary care clinics, meal programs, and food banks.

Although continued efforts have been made to improve accessibility, barriers to primary care linkage and utilization still exist. We explored the strengths, barriers, and gaps in how patients who are homeless are connected to primary care through semi-structured qualitative interviews with patients (n=22) and healthcare providers (n=7) with experience in caring for patients who are homeless. From this research, we discovered that cell phone ownership and the use of various intrinsic and extrinsic commitment devices were key strengths to both patients and providers, and that clinic settings proximal to areas of prevalent drug use and homelessness were a barrier to several of the patients we interviewed. Patients also noted that communication around anticipated discharge dates was lacking, and the timing or logistics around discharge was often a barrier to securing a shelter bed. Furthermore, when we asked participants for suggestions on how to improve transitions from hospital, patients strongly favored having a health system navigator with lived experience of homelessness, while providers favored having earlier communication between hospital staff and primary care teams on the care and discharge plan for a patient who is homeless.

In light of the findings from this study, our team has partnered with St. Paul’s Hospital and the Canadian Mental Health Association to establish a Peer Navigation program for patients who are identified as homeless and discharged from the Medicine program at St. Paul’s. We have also conducted an audit to identify opportunities to improve the discharge process within the Medicine program.
Testicular Cancer Patient Information: An Evaluation of the Quality of Information Resources Available

Sarah Yeo¹, Paris Ann Ingledew²

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²BC Cancer Agency Vancouver Radiation Oncology, B.C., Canada

SUMMARY

Purpose: The continuous growth of the internet has allowed increasing amounts of information to be available to the public, including medical information. Testicular cancer is the most common solid malignancy diagnosed in young men aged 15-29. This population is also the age group that searches most actively for health information online. Despite patients increasingly using the internet as an important resource, little is known about the quality of testicular cancer information online. This study looks to systematically evaluate the quality of websites available to patients with testicular cancer.

Methods: The search term “testicular cancer” was inputted into the search engine Google and metasearch engine Dogpile and Yippy. The top 100 websites intended for the purpose patient education were compiled. A previously validated structural rating tool was used to evaluate the websites with respect to attribution, currency, disclosure, interactivity, readability and content.

Results: Of the top 100 websites, less than half (44) disclosed authorship. 61 websites provided a last modified date, and of those websites 46 were updated in the last 2 years. The average readability level was 11.01 using the Flesh Kincaid grade level system. The most accurately covered topics were etiology/risk factors and treatment. The least accurate topics were prognosis and prevention, as a majority of websites simply did not cover these topics or were missing essential information.

Conclusion: These results show that authorship and currency are lacking in many online testicular resources. Missing information such as this can make it difficult for patients to validate the reliability of information they find online. The high average readability of testicular cancer websites may make it difficult for patients to comprehend the information available. An average target readability grade level of 6 is recommended by the AMA and NIH. However only 1 of the websites evaluated was written at an FK grade level of 6. Additionally, topics such as prognosis were infrequently covered although represent an area for which patients often seek more information. The results of this study can be used to counsel patients on the strength and weaknesses of online testicular cancer resources.
Rituximab in Idiopathic Retroperitoneal Fibrosis

Veronika Boyeva, Hatim Alabsi, Michael Seidman, Ryan Paterson, Jason Kur, Luke Chen, Silvia Chang, Mollie Carruthers

SUMMARY

Retroperitoneal fibrosis (RPF) is a rare disease characterized by the proliferation of fibrous tissue in the retroperitoneum, most commonly surrounding the aorta from the renal vessels to the branching of the iliac arteries. RPF has a number of etiologies, which include idiopathic, IgG4-related, infectious, malignant, and drug-induced. However, the majority of cases are of either idiopathic or IgG4-related disease. Recent studies on IgG4-related disease have shown rituximab to be an effective treatment. The current first-line treatment for idiopathic RPF (iRPF) is glucocorticoid therapy. Relapse rates vary widely in the literature after discontinuation of treatment, and DMARDs remain poorly studied. We sought to evaluate the efficacy of rituximab in idiopathic RPF by quantifying changes in iRPF diameter on imaging pre- and post-rituximab therapy in ten iRPF patients.

All ten patients had clinical and imaging features consistent with iRPF and have been previously treated with rituximab (1000mg) in two doses approximately 2 weeks apart. Pre- and post-therapy contrast enhanced cross-sectional abdomen and pelvis imaging were compared, of which 19 were CTs and one was an MRI. In all patients, the thickest portion of the peri-aortic disease was measured in the axial plane. The presence of acute and/or long standing unilateral or bilateral back pressure related renal findings were also documented. Details of clinical visits including patient demographics, symptoms, biopsies and laboratory evaluations were also collected pre- and post-therapy. Statistical analysis was performed using a Student’s t-test.

A comparison of pre and post-rituximab imaging studies revealed a statistically significant decrease in iRPF diameter following treatment with rituximab. Rituximab requires further study to establish its role in treating idiopathic RPF.
Population-Based Outcomes of Paragangliomas in British Columbia

Michael Waine1, Eric Berthelet2,3, Jonn Wu2,3, Sarah Hamilton2,3, Karen Goddard2,3, Sophie Sun2,4, Tony Ng5,6, Eric Tran2,3

1MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
2British Columbia Cancer Agency – Vancouver Centre, B.C., Canada
3Department of Surgery, Radiation Oncology, University of British Columbia, B.C., Canada
4Department of Medicine, Medical Oncology, University of British Columbia, B.C., Canada
5Vancouver General Hospital, B.C., Canada
6Department of Pathology and Laboratory Medicine, University of British Columbia, B.C., Canada

SUMMARY

Pheochromocytomas and paragangliomas are rare neuroendocrine tumours of chromaffin cells or related cell lineages. Pheochromocytomas are located in the adrenal medulla while paragangliomas are located in extra-adrenal sites. Because of the rarity of these type of tumours, it is difficult for individual physicians to establish clear, consistent management approaches and to determine what treatment strategies work best. Our goal was to examine the various management approaches used by physicians treating pheochromocytomas and paragangliomas across British Columbia and determine what strategies proved most effective. We also used this as an opportunity to identify the patient population that developed these types of tumours at a province-wide level. This study involved a chart review of 138 cases of pheochromocytomas and paragangliomas documented in the British Columbia Cancer Agency Information System from the years 1998 to 2018. We examined patient-specific details (for example: age at diagnosis, sex distribution), tumour details (anatomic site distribution, rates of metastases), treatment details (initial treatment used, treatment outcomes), as well as genetic details (rates of hereditary tumours, hereditary marker results). Results showed that 59% of patients were female, 16% of cases involved benign recurrences, and 17% of cases involved invasive metastases. Of the 31 cases that were tested for hereditary markers, positive genetic results were found in 20 cases, and 3 cases showed variants of unknown significance. In terms of treatment details, 54% of cases involved surgery and 72% of cases that involved surgery eventually resulted in successful tumour management. Radiation therapy was used in 57% of cases (radiation was used for paraganglioma cases only, as surgery is typically the only practical treatment option for pheochromocytomas), and 94% of cases that involved radiation therapy eventually resulted in successful tumour management. We found that radiation therapy was very effective in the management of paragangliomas in our patient population.
**Surgery and Society: Emerging Trends in the Social Determinants of Health Among the Pediatric Patient Population in British Columbia**

**Bonnie He¹, Tanjot Singh¹, Tongtong Zhai², Mathilda Silk², Hayley Eng², Rebecca Courtemanche², Damian Duffy², Douglas Courtemanche², Christine Loock²**

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²British Columbia Children’s Hospital, B.C., Canada

**SUMMARY**

Social determinants of health (SDoH) play a significant role to one’s overall health, and children from low socioeconomic backgrounds are at a higher risk of poor physical and mental health compared to children from high income households. While much of the research examining the effects of SDoH is in primary care, there is limited data in the literature on its impact in specialties such as surgery or complex care. The aim of this project is to gain a broader perspective of the social and financial needs of families of pediatric patients in British Columbia, and thereby identify resources to address those needs. Families of pediatric patients from across nine different clinics at BC Children’s Hospital were invited to voluntary complete a confidential questionnaire during their visit. The questionnaire comprised of questions adapted from studies examining the effects of social determinants of health on marginalized populations. A total of 343 families participated in the project. Only 8% of the families were able to answer “Yes” to having a healthcare provider (HCP), ability to turn to their HCP for assistance, and easy to see their HCP for healthcare concerns. 36% of the families live below the BC poverty line (annual income of $60k for a family of four), which is twice the BC poverty rate of 13.2% in the general population. Almost 53% of the families indicated that they had difficulty in accessing nutritious foods, living in a secure and stable place and/or making ends meet at the end of each month. The findings from this study not only highlight just some of the social, financial and healthcare access challenges that families of pediatric patients face, they also help healthcare providers and key stakeholders better understand what changes need to be implemented to mitigate such socioeconomic challenges. Future work is directed at examining what effects SDoH have on health outcomes, particularly in patients with complex needs.
Rate of Treatment Discontinuation Following the Initiation of Lumacaftor-Ivacaftor in Adults with CF: A Single Center Experience

Sergeev, V.1,2; Flores, E.1; Kerr, J.1; Su, V.1; Wilcox, P.1,3; Quon, B.S.1,3

1Adult Cystic Fibrosis Program, St. Paul’s Hospital, B.C., Canada
2MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
3Centre for Heart Lung Innovation, University of British Columbia, B.C., Canada

SUMMARY

Background: Recently, orally bioavailable molecules targeting dysfunction of the Cystic Fibrosis Transmembrane Conductance Regulator (CFTR) protein have been discovered. Two of these CFTR modulators, lumacaftor (LUM) and ivacaftor (IVA), have been approved in combination (LUM-IVA) for clinical use in Canada in January 2016. LUM-IVA showed benefit in CF patients homozygous for the ΔF508 mutations in clinical trials, although subsequent observational studies have reported a higher incidence of adverse events (AEs) leading to treatment discontinuation compared to the pivotal phase 3 clinical trials. Here, we report variable efficacy and long-term rate of discontinuation consistent with other observational studies but with a higher rate of HTN leading to treatment discontinuation, including one severe AE in the form of a hypertensive emergency.

Methods: To assess the long-term rate of LUM-IVA treatment discontinuation, we conducted a single-center retrospective cohort study at St. Paul’s Hospital (Vancouver, Canada). We tracked changes in FEV1 % predicted (ppFEV1), BMI, sweat chloride concentration, and rate of pulmonary exacerbations pre- and post-initiation of LUM-IVA. We noted treatment discontinuations and the reasons for discontinuation.

Results: Of 22 who started LUM-IVA, 10 (45%) discontinued after a median of 3.3 months. Respiratory related symptoms were the most common AE (59%). Respiratory-related symptoms (30%) and increased blood pressure (40%) were the most common reasons for discontinuation, including one instance of hypertensive urgency characterized by thunderclap headache.

Conclusion: Our rate of treatment discontinuation was consistent with other real-world observational studies but with a higher rate of increased blood pressure leading to discontinuation.
Considering the Use of Patient Centered Technologies to Improve Journeys in the Emergency Department

Azzra Mangalji¹, Nooshin Jafari², Michael Lim², Kendall Ho²,³

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Digital Emergency Medicine, Faculty of Medicine, University of British Columbia, B.C., Canada
³Department of Emergency Medicine, Faculty of Medicine, University of British Columbia, B.C., Canada

SUMMARY

The nature of the overcrowded, fast-paced Emergency Department (ED) during a time of heightened stress for patients and their caregivers can lead to an overwhelming ED visit. Invariably, the journey to and through the ED is anxiety provoking. Common questions include: What is my diagnosis? Am I too sick to go home? How can I prevent having to return to the ED? Meanwhile, ED health professionals are time constrained limiting their ability to tend to individual patient needs and expectations. The Digital Emergency Medicine group at UBC is aiming to develop a patient-centered mobile Application (App.) in an attempt to help patients better retain the information and advice they receive in the ED thereby improving their ability to recover and access support after their visit. In order to inform the requirements of the App., a mixed methods study was conducted with an online survey (n=125), focus groups (n=16), and individual interviews (n=14) with patients and caregivers who have visited EDs in B.C. in the past 5 years. Participants were asked open- and closed- ended questions about their experiences during defined intake, throughput, discharge and admission (if applicable) components of their ED visits. The pain points and App. recommendations brought forth were coded and analyzed. The key factors contributing to decreased experiences in the ED were categorized into five overarching categories: overall experience (communication, respect...etc.), wait times, process flow, information sharing, and the discharge process. The patients and caregivers expressed a desire for this initiative, and the next step is to use the priority pain points identified to inform the development of a proof-of-concept mobile App.
Association of High Occupancy During Admission to the Intensive Care Unit and Mortality

Nicholas A. Fergusson¹, Steve Ahkioon², Mahesh Nagarajan³, Eric Park⁴, Yichuan Ding⁵, Najib Ayas⁵, Vinay Dhingra⁵, Dean R. Chittock⁵, Donald E.G. Griesdale⁶-⁷

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Vancouver Coastal Health, Vancouver, BC, Canada
³Sauder School of Business, University of British Columbia, Vancouver, BC, Canada
⁴Faculty of Business & Economics, University of Hong Kong, Pokfulam, Hong Kong
⁵Department of Medicine, Divisions of Critical Care Medicine & Neurology, University of British Columbia
⁶Department of Pharmacology, Therapeutics & Anesthesiology, University of British Columbia, Vancouver, BC, Canada
⁷Center for Clinical Epidemiology & Evaluation, Vancouver Coastal Health Research Institute, Vancouver, BC, Canada

SUMMARY

Outcomes in critically ill patients are broadly dependent on three factors: (1) inherent patient characteristics (age, sex, acuity), (2) the specific therapies/interventions provided (medications, mechanical ventilation), and (3) process-of-care factors (capacity strain, delayed admission, worker fatigue). Process-of-care factors describe the larger organizational structure and environment to which a patient is admitted. Of these process-of-care factors, there is growing interest in assessing the impact of intensive care unit (ICU) occupancy on patient outcomes. The objective of this analysis was to characterize the relationship between ICU occupancy at the time of ICU admission and subsequent mortality. We conducted a single-center, historical cohort study including all patients admitted to the ICU at Vancouver General Hospital between April 1st, 2010 and August 10th, 2017. Occupancy was defined as the number of hours of patient care delivered in a day divided by the total amount of hours of care available for that day (number of funded beds x 24 hours). Data were divided into quintiles (Quintile 1-5) based on the ascending occupancy percentages for admission day. We constructed mixed-effects logistic regression models controlling for relevant covariates (age, sex, acuity etc.) to assess the impact of admission occupancy quintiles on mortality. Our final analysis included 10,396 ICU admissions representing 8,593 unique patients. We found that compared to ICU admissions in the median occupancy quintile, admissions in the highest occupancy quintile were associated with a statistically significant increase in the odds of inpatient mortality (unadjusted odds ratio 1.24, 95% confidence interval 1.07-1.45, p-value 0.006; adjusted odds ratio 1.33, 95% confidence interval 1.12-1.59, p-value 0.001). No association between admission occupancy and early (72hr) ICU mortality was observed. Timing of ICU admission (afterhours, weekend, season), delayed ICU admission, and the number of additional admissions were not associated with mortality (total inpatient and early ICU). In conclusion, we found that at our center, admission to the ICU on days of high occupancy were associated with an increase in inpatient mortality but not early ICU mortality. Capacity strain on the ICU may result in significant negative consequences for patients but further research is needed to fully characterize this complex topic.
Impact of the Human Papillomavirus Immunization Program on Rates of Anogenital Warts in British Columbia, Canada 2000-2017

Christine Lukac¹, Robine Donken¹,²,³, Michael Otterstatter¹,⁴, Olga Mazo⁴, Stanley Wong⁴, Fawziah Marra⁵, Laurie Smith²,⁶, Monika Naus¹,⁴, Deborah Money¹, Mel Krajden¹,⁴, Troy Grennan¹,⁴, Mark Gilbert¹,⁴, Jason Wong¹,⁴, Gina Ogilvie¹,²,⁴

¹Faculty of Medicine, University of British Columbia, Vancouver, British Columbia, Canada
²Women’s Health Research Institute, BC Women’s Hospital, Vancouver, British Columbia, Canada
³Vaccine Evaluation Center, BC Children’s Research Institute, Vancouver, British Columbia, Canada
⁴BC Centre for Disease Control, Vancouver, British Columbia, Canada
⁵Faculty of Pharmacy, University of British Columbia, Vancouver, British Columbia, Canada
⁶BC Cancer, Vancouver, British Columbia, Canada

SUMMARY

Background: In 2008, British Columbia (BC), Canada, implemented a provincially-funded school-based quadrivalent human papillomavirus (HPV-4) vaccine program for girls born in 1994 or later. In 2015, the program was expanded to include men who have sex with men (MSM) born in 1989 or later. To determine the impact of the vaccine on anogenital warts (AGW), diagnosis rates were measured among women who have sex with men (WSM), men who have sex with women (MSW), and MSM.

Methods: AGW diagnoses were ascertained from an electronic medical record system used at 16 geographically dispersed high volume sexually transmitted infection (STI) clinics across BC. Clients aged 14-46 years, born between 1970-1999 who accessed services from 2000-2017 were included. Rates were calculated as new AGW diagnoses over person-years (PY) at risk, and stratified by age group, period of clinic visit, and birth cohort. Age-period-cohort Poisson modeling produced adjusted relative rates (aRR).

Results: There were 204,832 clinic visits by 85,158 unique individuals: 28,366 (33%) WSM, 35,688 (42%) MSW and 14,534 (17%) MSM. After adjusting for age and period, overall AGW rates were 56% lower among the birth cohorts 1994-1996 compared to 1991-1993 (1.21 vs. 2.72 cases/100PY, aRR: 0.44, 95%CI: 0.34, 0.59). AGW rates in the 1991-1993 cohort were 65% lower among WSM (0.97 vs. 2.77 cases/100PY, aRR: 0.35, 95%CI: 0.22, 0.57), 58% lower among MSW (1.60 vs. 3.78 cases/100PY, aRR: 0.42, 95%CI: 0.28, 0.65) and 41% lower among MSM (1.14 vs. 1.19 cases/100PY, aRR: 0.59, 95%CI: 0.38, 0.91) versus the 1994-1996 cohort.

Conclusion: The HPV-4 vaccine program had a significant impact on lowering AGW rates in BC, specifically among WSM born after 1994 who had access to the school-based program, and MSW born after 1994 likely from herd immunity. A smaller reduction in AGW rates among MSM may reflect delayed access to provincially-funded HPV-4 vaccine.
**Philippine Remote Island Medicine: WHO Smoking Cessation Guidelines in Practice**

**Bavenjit Cheema¹, Jobin Maestro²**

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada  
²Municipal Health Officer, Philippine Department of Health

**SUMMARY**

I partnered with Child Family Health International, an organization providing community based global health education programs for students and institutions, for both an immersive experience in rural island medicine and a quality improvement project in smoking cessation. I both discovered this organization and initiated the study via my own research, thus creating a great example of how students can pave their own pathway in global medicine projects for MED 419.

My study centered around the World Health Organization’s MPOWER measurements created to assist in effective interventions to reduce tobacco demand and use globally. The measurements are as follows: monitor tobacco use and prevention policies, protect people from tobacco smoke, offer help to quit tobacco use, warn about the dangers tobacco, enforce bans on tobacco advertising, promotion and sponsorship and raise taxes on tobacco.

The municipality of Alcantra, in Romblon, Philippines adopted an Anti-Smoking Ordinance in September 12, 2011 based on the WHO MPOWER Measurements. The municipality had many successes, including receiving a spot in the Hall of Fame from the Department of Health in November 2017.

This qualitative study conducted semi structured interviews with the local community members and the Smoking Task Force, a community group ensuring adherence to local laws and monitoring of smoking behaviours in the community. The goals of the project were to understand the effectiveness of the MPOWER measurements at a grassroots level and to provide recommendations for each MPOWER measurement to guide future improvements in Tugdan, Alcantra.

The results concluded that the strongest MPOWER techniques were warning the community about the dangers of tobacco and protecting people from tobacco smoke, whereas more support was needed in the area of monitoring tobacco use and prevention policies, and offering help to quit tobacco use. This study proved to be ill equipped to fully analyze the effects of enforcing bans on tobacco advertising, promotion and sponsorship and raising tobacco taxes.

This project not only demonstrates how policy can manifest and maintain itself at a grassroots level, but also deepens understandings of rural and global health from the perspective of the field.

Ian Wilson¹, Seth Bluman², Farris Kassam², Nelson Greidanus³

¹Clinical Fellow, Adult Hip & Knee Joint Reconstruction, Concordia Hospital, Division of Orthopaedic Surgery, University of Manitoba
²MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
³Assistant Professor, Orthopaedics Department, Faculty of Medicine, University of British Columbia, Vancouver, B.C., Canada

SUMMARY

Multiple studies demonstrate that operative delay in hip fracture patients leads to increased morbidity, mortality, and occurrence of complications. This has led to the development of policies throughout North America and Europe mandating that hip fractures be treated surgically on an urgent basis unless patient comorbidities put them at significant risk. Similar attention is not paid to periprosthetic fractures of the hip and knee, and patients experiencing these injuries often wait for prolonged periods of time prior to operative intervention and transfer to facilities able to manage complex reconstructions. There are few studies that address this issue and analyze, in particular, the effect of time to operative intervention on morbidity and mortality. A literature review was conducted to determine there was a knowledge gap. A retrospective chart review will be performed of cases involving periprosthetic fractures over the past ten years from the relevant arthroplasty and trauma databases. Data regarding time of fracture, time of operative intervention, morbidity, mortality, relevant patient-specific factors, outcomes, and other interventions will be collected. Study is currently in the data collection phase and preliminary results are pending. An analysis of time from periprosthetic hip and knee fracture incident to operative intervention and its effect on 30 day and 1 year morbidity and mortality will be performed. This is something the minimal current literature on the topic does not address sufficiently. Information gathered and conclusions reached could potentially be used to determine policies and guidelines to facilitate and expedite the transfer of these patients to centres able to manage these complex cases.
Radial Palsy in an Individual with High Level Chronic Spinal Cord Injury

Nathan Hitchman¹, Heather Finlayson², Andrei Krassioukov²,³

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Physical Rehabilitation and Medicine, University of British Columbia, B.C., Canada
³GF Strong Rehabilitation Centre, B.C., Canada

SUMMARY

Prolonged compression is a common cause of radial neuropathy in able-bodied individuals but has not been reported in individuals with chronic spinal cord injury (SCI). This is despite the fact that individuals with SCI may be at increased risk of these and other peripheral nerve injuries due to wheelchair mobility and transfers, and because of baseline sensory deficits. Furthermore, diagnosis of peripheral nerve injury poses a unique challenge in this population because symptoms and signs are superimposed on pre-existing central deficits. We present a case of a 48-year-old man with a C6 AIS A SCI from a motor vehicle accident 22 years earlier who had a new onset compressive radial neuropathy. At first assessment 7 days after an incident in which he fell forwards in his wheelchair and was stuck with his right knee pressed into his right axilla for 7 hours, he complained of significant pain and tingling running down the lateral aspect of his right arm from axilla to wrist, accompanied by new wrist extensor weakness. On clinical examination sensory and motor findings were found to overlap with existing deficits, but a notable new wrist-drop was detected (MRC grade 2/5; previous baseline 4/5). At a follow-up visit 4 weeks later, nerve conduction studies revealed severe reductions in action potential amplitude of the right radial nerve, with normal conduction velocities and latencies. Needle EMG of the right triceps and extensor carpi radialis longus revealed changes demonstrating active denervation. The patient was managed with mobility exercises and Vitamin B supplementation and showed full recovery of motor and sensory function to baseline levels on follow-up 4 months after the injury. Unlike able-bodied individuals who can reposition themselves to alleviate nerve compression, individuals with SCI may be unaware of nerve compression or may be unable to reposition themselves, as was the case with our patient. This highlights the need for precautionary measures in this population, which may include the combination of maneuvers and devices to provide trunk and limb stability, along with the use of medical alert devices that allow individuals to access timely help when unattended.
The Utility of Instructional Videos in Reducing Central Line Associated Complications in Children with Intestinal Failure

August Pierik¹, Hannah G Piper²

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Department of Pediatric Surgery, University of British Columbia, BC, Canada

SUMMARY

Background: Children with intestinal failure (IF) often require prolonged parenteral nutrition (PN) through a central venous line (CVL) to support normal growth and development. Complications associated with the CVL are a significant cause of morbidity for these children and the most frequent reason for hospital re-admission after discharge. Currently at BC Children’s Hospital, parents and caregivers learn the skills to care for their child’s CVL and administer PN at home through printed materials and one-on-one teaching. The objective of this study is to evaluate the effect of incorporating teaching videos into the current education program on CVL associated complication rates.

Methods: A retrospective review of children with IF on home PN who are part of the BC Children’s Hospital Intestinal Rehabilitation Program was performed to determine CVL associated complication rates over the past 2 years. Family members who had received training in the past 4 years were surveyed regarding their level of interest in educational videos. Instructional videos were created, incorporating input from stakeholders (families, IV access team, patient experience specialist). Families will have access to the teaching videos for 12 months, at which point CVL complication rates will be re-calculated and compared to pre-video implementation rates.

Results: 24 Children with IF on home PN between 2016-2018 were reviewed, accounting for 7238 catheter days. 75% had at least 1 CVL associated complication, and 63% had 2 or more. Complication rates were 5.4 per 1000 catheter days for line breakages, 1.4 per 1000 catheter days for line occlusions, and 1.1 per 1000 catheter days for bloodstream infections. 12 parents who had received home PN training in the past 3 years were surveyed. 80% believed teaching videos would have been helpful for them. 30% reported feeling uncertainty performing required skills upon arriving home.

Conclusion: Children with IF on home PN are at high risk for CVL associated complications. Parents expressed interest in video-based teaching tools. Completion of this study will include re-evaluating complication rates following introduction of teaching videos to the education program and soliciting family feedback.
Chronic Aromatase Inhibition Increases Hippocampal Neurogenesis in Middle-Aged Female Mice

Jessica A Chaiton¹³, Sarah J Wong¹⁴, Liisa AM Galea¹²⁴

¹Department of Psychology, University of British Columbia, Vancouver, B.C., Canada
²Graduate Program in Neuroscience, University of British Columbia, B.C., Canada
³MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
⁴Djavad Mowafaghian Centre for Brain Health, Vancouver, B.C., Canada

SUMMARY

Letrozole, a third-generation aromatase inhibitor, prevents the synthesis of estrogens in the final step in their conversion from androgens. Due to its efficacy at suppressing estrogens, letrozole has recently taken favor as a first-line adjuvant treatment for hormone-responsive breast cancer in middle-aged women. Though patient response to letrozole has generally been positive, there is conflicting evidence surrounding its impact on the development of depression. It is possible that the potential adverse effects of letrozole on mood are a result of the impact of hormonal fluctuations on hippocampal neurogenesis - a domain heavily involved in cognition and mood regulation. Thus, to clarify the effects of letrozole on the hippocampus and behavior, we examined how chronic administration affects hippocampal neurogenesis and depressive-like behavior in middle-aged, intact female mice.

Mice were given either letrozole (1mg/kg) or vehicle by injection (ip) daily for 3 weeks. Depressive-like behavior was assessed during the last 3 days of treatment using the forced swim test, tail suspension test, and sucrose preference test, and the production of new neurons was quantified using the immature neuronal marker, doublecortin (DCX), and a marker of cell proliferation, ki67. We found that letrozole increased Ki67 and DCX expression and maturation in the dentate gyrus, but had no significant effect on depressive-like behavior. Our findings suggest that a reduction in circulating estrogens in middle-aged females increases hippocampal neurogenesis without any adverse impact on depressive-like behavior; as such, this furthers our understanding of how estrogens modulate neurogenesis, and to the rationale for the utilization of letrozole in the clinical management of breast cancer.
Reliability of Cognitive Measures in Individuals with Chronic Spinal Cord Injury

Chloe A. Lim, Tom E. Nightingale, Rahul Sachdeva, M.M.Z. Zheng, Aaron A. Phillips, Andrei V. Krassioukov

1International Collaboration on Repair Discoveries (ICORD), University of British Columbia, B.C., Canada
2Department of Medicine, Division of Physical Medicine and Rehabilitation, University of British Columbia, B.C., Canada
3MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
4Departments of Physiology and Pharmacology, Cardiac Sciences, and Clinical Neurosciences, Libin Cardiovascular Institute of Alberta, Hotchkiss Brain Institute, University of Calgary, Alberta, Canada
5GF Strong Rehabilitation Center, Vancouver Coastal Health, B.C., Canada

SUMMARY

Cognitive deficit is a common impairment in individuals with spinal cord injury (SCI), with an incidence of up to 64%. However, the reliability of commonly used neuropsychological tests is currently unknown in this population. Therefore, this FLEX project was designed to evaluate the test-retest reliability of cognitive measures in individuals with SCI. Across three visits (separated by ~16 days), 22 participants with chronic (>2 years) SCI completed a neuropsychological battery evaluating memory [Rey Auditory-Verbal Learning Test (RAVLT)], attention/concentration/psychomotor speed (Digit Span Task, Stroop Test), and executive function (Trail Making Test A&B, Symbol Digit Modalities Test, Controlled Oral Word Association Test). Coefficients of variation (CV_{intra}) and intraclass correlation coefficients (ICCs) were calculated to determine the reliability of each test between visits. Linear regressions were performed to assess the associations between variability (CV_{intra}) and participant characteristics, such as age or highest education level attained. Repeated-measures, one-way analysis of variance (ANOVA) were conducted to determine any significant practice effects, and smallest real differences (SRD) were calculated. ICCs ranged from 0.77-0.93, with the exception of RAVLT recognition score (ICC=0.27). Age showed a moderate association with CV_{intra} in RAVLT interference recall scores (r=0.43, p=0.047), but was not a confounding factor for other measures. Education was not associated with CV_{intra}. Significant practice effects were noted for most of the cognitive tests assessed. Besides the RAVLT recognition score, these cognitive measures demonstrated good-to-excellent reliability. While this is encouraging, test-retest variability should be considered when interpreting the efficacy of various cognitive training strategies to mitigate cognitive decline in this population. Thus, SRD values presented herein will allow researchers and clinicians to identify ‘true’ changes in cognitive function with repeated testing.
Physical Activity and Its Determinants in Pediatric Post Solid-Organ Transplant Population in BC

S Lui¹, A De Souza¹, J Fairbairn¹, K Armstrong¹, T Blydt-Hansen¹

¹Pediatric Multi-Organ Transplant Program, BC Children’s Hospital Research Institute, B.C., Canada

SUMMARY

Physical activity (PA) is an important predictor of cardiovascular, skeletal and mental health in children and adolescents. Only 30% of Canadian youth meet PA guidelines of at least 60 minutes of daily moderate-to-vigorous PA. Little is known about PA levels in pediatric solid organ transplant recipients (SOT). Our aim was to examine PA levels and PA determinants in a pediatric SOT population.

A retrospective, cross-sectional analysis of children following heart, liver or kidney transplant at BC Children’s Hospital. Patients who were ≥9yrs, post-transplant and had completed the self-report Physical Activity Questionnaire (PAQ) were included. The Child/Adolescent versions were used and the PAQ score (combined) was tested for univariate association with clinical characteristics of patients at the time of PAQ completion to identify risk factors for low physical activity. Median and interquartile ranges are reported.

Fifty children (31 male, 19 female) with heart (n=14), kidney (n=26) and liver (n=10) transplant completed the PAQ. Age at survey was 15.2yrs (12.3-17.3), z-score for height (z) was -0.77 (-1.88-0.84), weight (z) was -0.34 (-1.35-0.44), and BMI (z) was -0.19 (-0.85-0.40). There were 14 heart, 26 kidney, and 10 liver transplants. Liver transplants were younger (liver=10.2yrs, heart=15.2yrs, kidney=16.0yrs). Age at transplant was 8.0yrs (1.8-13.3).

The PAQ score was 2.26 (1.74-2.94), with only 21% of females and 26% of males meeting the PAQ score cut-off points for adequate PA (males≥2.9; females≥2.7). PAQ scores were 2.65 (2.09-3.19) for liver, 2.13 (1.87-2.95) for heart and 2.21 (1.87-2.95) for kidney, but this difference was not significant. PAQ score was associated with current age, BMI, and was lower in those with a sensory disability. There was no association with race, distance from hospital, learning/cognitive disability, height (z), weight (z), time since transplant, co-morbidities (i.e. cardiorespiratory, metabolic syndrome, hypertension, mineral bone disease, anemia), number of medications, number of hospitalizations, number of rejection episodes post-transplant.

The majority of our SOT population does not meet the established PA recommendations. Age at transplant and at survey and sensory disability may influence PA levels in pediatric SOT recipients.
Making a Legacy Palliative Care Project

Kate Koh¹, Gaby Eirew², Pippa Hawley³

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Director of Recordmenow.org Society
³Division Head of Palliative Care, Department of Medicine, BC Cancer, Vancouver Centre, B.C., Canada

SUMMARY

Making a Legacy Palliative Care Project involves working with hospice patients to create a legacy project in the form of a scrapbook, a recipe book, a voice recording through the RecordMeNow App, etc. Students will work individually or in pairs with hospice/palliative care patients across the Greater Vancouver Area. The student’s role in the project is to engage patients and to help them construct a legacy project to be gifted to their loved ones at their discretion. The RecordMeNow App can be used to make video recordings of the patients as they share their life stories and reflect on their experiences. Topics include their biggest regret, their happiest memory, their travel experiences, their childhood etc. The project will benefit both the patient and the student by providing opportunities for open communication and self-reflection in an end-of-life setting. This project will also shape a medical student’s attitude and approach to medicine, especially with regards to end-of-life care, which will benefit future patients.
The Effect of Pre-Surgical Depression and Anxiety on Intra- and Post-Operative Complications: A Single-Center Cohort Study

Mei Mu Zi (Annie) Zheng¹, Nicole Koenig², Roxana Geoffrion²

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Department of Obstetrics & Gynaecology, Faculty of Medicine, University of British Columbia, B.C., Canada

SUMMARY

Background: Depression and anxiety are common in the general population, with a lifetime prevalence of 17% and 29%, respectively. Both conditions are associated with increased risk of complications after surgery. This study aims to determine the degree to which pre-surgical depression and anxiety are associated with an increase in intra-operative and post-operative complications.

Methods: In this prospective cohort study, patients undergoing inpatient surgery at St Paul’s Hospital were recruited prior to surgery and were asked to complete a questionnaire with demographic information, social history, and validated Beck Depression Inventory (BDI-II) and Beck Anxiety Inventory. Post surgery, medical records were accessed to collect information regarding the procedure and in-hospital recovery, to identify intra-operative complications (i.e. excessive bleeding, need for transfusion, organ damage, or conversion of laparoscopy to laparotomy) and post-operative complications (i.e. visual analogue scale for pain, length of stay in hospital, delayed discharge, or re-admission within 30 days after surgery).

Results: Patients with moderate or severe depression (BDI-II score >19) prior to surgery had a 20.1% increase in intra-operative complications (p=0.01). Those with mild depression (BDI-II score >13) or mild anxiety (BAI score >9) reported higher pain perception by 1.17 and 0.60, respectively, using the visual analog scale (VAS) for pain in the first 48 hours post-surgery. Depression and anxiety symptoms do not seem to correlate with length of stay in hospital, delayed discharge, or re-admission after surgery.

Conclusion: The results of this study suggest that pre-surgical depression and anxiety, as well as smoking and recreational drug use, are correlated with higher intraoperative complications and higher pain perception post-surgery. This study provides evidence to help direct future studies on the implementation of programs to reduce depression and anxiety, in order to improve intra- and post-surgical outcomes.
Long-Term Outcomes of Patients with Unresectable Arteriovenous Malformations: A 27-Year Chart Review

Nancy Duan¹, Harjot Bedi², Jasmine Tang¹,², Jugpal S. Arneja¹,², Douglas J. Courtemanche¹,²

¹Faculty of Medicine, Faculty of Medicine, University of British Columbia, B.C., Canada
²Division of Plastic Surgery, BC Children’s Hospital, B.C., Canada

SUMMARY

Purpose: Arteriovenous malformations (AVMs) are vascular lesions characterized by abnormal connections between arteries and veins, progressive ectasia, high flow, and dysfunction. Curative treatment requires complete excision of the AVM, but some are unresectable and require life-long management. This study aims to determine the patterns of management that contribute to positive long-term outcomes for patients with unresectable AVMs.

Methods: A 27-year retrospective chart review (1991-2018) of patients with unresectable AVMs seen at our centre was conducted. Data collected included: demographics, AVM characteristics, clinical presentation, investigations, treatment modalities, outcomes, and complications.

Results: We identified 12 unresectable AVMs amongst 78 AVMs from 3273 patients with vascular anomalies. Five pediatric and 7 adult patients received care from on average 4 different medical specialties. Average length of follow-up was 5 years (ranged 1-12 years). Adult patients had more severe presenting symptoms such as ulceration, pain, and functional impairment compared to pediatric patients. There were 49 courses of treatment among all 12 patients (average 4 per patient): endovascular (24), surgical partial resection (14), and combination (11). Treatment indications included AVM progression, cardiac stress, bleeding, pain, wounds, cosmetic deformity, and symptom prevention. 60% of treatments improved symptoms, 30% resulted in no change, and 10% worsened symptoms. 13 out of 49 treatment courses resulted in a complication such as skin breakdown or significant perioperative or postoperative bleeding.

Conclusion: Patients with unresectable AVMs were able to achieve positive outcomes through endovascular therapy and partial resection aimed at symptom alleviation and prevention. Regardless of symptom severity, small changes in symptoms initiated action from the medical team. Future work should be aimed at studying a larger population of patients with unresectable AVMs to better understand the patterns of management and outcomes.
Clinical Utility of C-Reactive Protein to Diagnose Pulmonary Exacerbations in Cystic Fibrosis Patients

David Jung¹, Jiah Jang², Eugenie Kwong³, Jia Tong Song³, Bradley Quon²,³

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Centre for Heart Lung Innovation, St. Paul’s Hospital, University of British Columbia, B.C., Canada
³Division of Respiratory Medicine, Department of Medicine, University of British Columbia, B.C., Canada

SUMMARY

Background: Pulmonary exacerbations (PEx) can be debilitating for cystic fibrosis (CF) patients. A gold standard definition does not exist, creating variability in identifying and treating PEx with systemic antibiotics. This study aims to investigate the variability in C-reactive protein (CRP) measurement, its correlation with pulmonary function and symptoms, and its clinical utility in identifying PEx.

Methods: 21 patients from St. Paul’s Hospital CF Clinic were included if they were enrolled in CF Biomarker Study and had at least three stable and one PEx visit blood sample collected. Patients were determined to be exacerbating if they required oral/intravenous antibiotics due to increased respiratory symptoms. Coefficients of variation (CV) were used to examine intra- and inter-individual variability in baseline CRP measurements. Spearman’s correlations were performed to evaluate the relationship between CRP and FEV1 % predicted (ppFEV1) and chronic respiratory infection symptom scores (CRISS) in stable and PEx states. Paired t-test was performed to compare changes in CRP levels between stable and PEx states.

Results: Baseline CRP showed intra- and inter-individual CV of 65.7%, and 99.4%, respectively. During stable state, CRP showed a nonsignificant inverse association with ppFEV1 (r=-0.416, p=0.062). Relative CRP change from stable to PEx state significantly correlated with the absolute CRISS change (r=0.495, p=0.024). CRP significantly increased from stable to PEx state (p=0.01).

Conclusion: CRP levels are highly variable between and within individuals even when patients are clinically stable. However, intra-individual CRP changes are still capable of discriminating stable and PEx states and those with larger relative increases in CRP experience larger increases in respiratory symptoms. Our findings indicate the importance of evaluating individual and relative changes in CRP as opposed to applying population-based absolute cut-offs for the interpretation of CRP in clinical practice.
An Evaluation of the Provincial Infectious Syphilis Partner Notification Program Among Men Who Have Sex with Men in British Columbia, Canada

Christine Lukac¹, Theodora Consolacion², Venessa Ryan², Emma Cumming², Geoffrey Ford², Bobbi Brownrigg², BCCDC Syphilis Nurses², Gina Ogilvie¹,²,³, Mark Gilbert¹,², Troy Grennan¹,², Jason Wong¹²

¹Faculty of Medicine, Faculty of Medicine, University of British Columbia, B.C., Canada
²BC Centre for Disease Control, Vancouver, British Columbia, Canada
³Women’s Health Research Institute, BC Women’s Hospital, Vancouver, British Columbia, Canada

SUMMARY

Background: Infectious syphilis rates have been increasing in British Columbia (BC), primarily among gay, bisexual, and other men who have sex with men (gbMSM), among who over 40% are living with HIV. Partner notification (PN) is one strategy to address this increase by ensuring sexual partners are notified of possible exposure, and referred for testing and treatment. We sought to compare the outcomes of patient-initiated versus provider-initiated PN.

Methods: PN of infectious syphilis is centrally coordinated at the BC Centre for Disease Control. We evaluated PN outcomes along a cascade-of-care: the proportion of partners notified, tested or treated, and diagnosed with infectious syphilis. The numerator of each indicator is the denominator of the subsequent indicator where the first denominator is the number of notifiable partners reported. Chi-square tests compared PN outcomes of patient-initiated versus provider-initiated PN.

Results: In 2016, 648 gbMSM were diagnosed with infectious syphilis, of which 568 (88%) discussed PN with providers and 281 (50%) named at least one partner. 161 (57%) gbMSM chose patient-initiated PN for 235 partners (mean 1.5, standard deviation [SD] 1.0 partners/case), and 179 (64%) gbMSM chose provider-initiated PN for 817 partners (mean 4.7, SD 6.5 partners/case). For patient-initiated compared to provider-initiated PN, a greater proportion of partners were notified of syphilis exposure (211/235 90% vs. 573/817 70%; P = 1.9x10-9). There was no difference in the proportion tested or treated (183/211 87% vs. 517/573 90%; P = 2.0x10-1), or diagnosed with syphilis (30/183 16% vs. 66/517 13%; P = 2.7x10-1).

Conclusion: Patient-initiated and provider-initiated PN showed similar outcomes. However, a greater proportion of partners were notified by patients compared to providers. These findings highlight the need to support both methods of PN to manage increased work load arising from increases in incidence of infectious syphilis.
Evaluation of Pediatric Donor Product High in IFN\gamma, Th1 Cells Associated with Low Incidence of Chronic Grafts-versus-Host Disease

Aryan Riahi\textsuperscript{1}, Kirk Schultz\textsuperscript{2}, Amina Kariminia\textsuperscript{2}

\textsuperscript{1}UBC Summer Studentship and Research Program
\textsuperscript{2}BC Children’s Hospital Research Institute Summer Studentship and Education Program

SUMMARY

When children battle with leukemia, treatment called bone marrow transplants (BMT) involves transplanting blood or bone marrow from a donor. This “cure” can lead to a fatal disease. An estimated 25% of children and 60% of adults receiving BMT will develop a disease where the recipient’s tissue is rejected by the donor’s immune system, called chronic Grafts-versus-Host Disease (cGvHD). The effects of cGvHD are multi-systemic. With approximately 22,000 pediatric BMT survivors, novel approaches to eliminate cGvHD are direly needed.

The Schultz Research Team has previously found a negative correlation between IFN-gamma producing helper T (Th1) cells and CD56\textsuperscript{bright} NKreg cells. This opens the potential for ex vivo expansion of these cell populations post BMT to lower rates of cGvHD after performing BMT. This association was previously found in adults. We aim to find the same association in 64 pediatric donor samples. Also, we are currently uncertain of the specific type of IFNgamma Th1 cell subpopulation responsible for the association. While previous literature suggests that IFNgamma-secreting Th1 cells play a pro-inflammatory role, we hypothesize that it plays a regulatory role.

Conclusively, the differences seen in adults for IFNg secreting Th1 cell populations in patients with and without cGVHD was not reproducible in a pediatric cohort. The experiment conducted last year demonstrated a negative correlation between IFN-gamma producing helper T (Th1) cells and the incidence of cGvHD in recipients. Interestingly, the adult population was not replicated. An opposite trend was found in the small pediatric population tested. One possible reason for this may be differences in the immune system of pediatric vs. adult populations. T cell development in children is a dynamic process that answers the demands of a maturing and proliferating immune system. The role of Th1 cells may differ in the two populations for similar reasons.
Outcome of Using Vaginal Misoprostol for Treatment of Retained Products of Conception After First Trimester

Kathy Pan¹, Kimberly Stewart¹, Shaina Lee², and Stephanie Fisher²

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Department of Obstetrics & Gynaecology, University of British Columbia, B.C., Canada

SUMMARY

Retained products of conception (RPOC) is defined as pregnancy tissue remaining in the uterus after spontaneous miscarriage, dilation and curettage (D&C), or after preterm or term delivery. Diagnosis of RPOC is controversial; it is suggested when clinical symptoms (such as prolonged vaginal bleeding, lower abdominal pain, delayed return of menses, and positive pregnancy test after spontaneous abortion) present along with findings of an echogenic mass or low resistance Doppler flow within the endometrium using transvaginal ultrasound. Diagnosing and treating RPOC is important as untreated RPOC is associated with delay in return to fertility and increased risk of infection, in turn leading to endometritis, sepsis, and Asherman syndrome. Currently, although vaginal misoprostol is the first line medical treatment, there is limited data on the effectiveness of using misoprostol for RPOC after initial management of first trimester miscarriage.

The primary objective of this study is to determine the effectiveness of misoprostol for management of RPOC after spontaneous abortion, which was initially managed with either misoprostol, D&C or expectant management, at the Early Pregnancy Assessment Clinic (EPAC) in BC Women’s Hospital. The secondary objectives of this study include looking at the clinical and radiological presentation of RPOC and comparing the outcomes in the groups of women who had undergone expectant, medical, or surgical management. Due to its controversial diagnostic criteria, we included women who satisfied either the clinical symptoms or sonographic findings suggestive of RPOC.

We reviewed the charts of women who presented to EPAC in 2015-2016 and were subsequently diagnosed with RPOC as per our inclusion criteria. Variables concerning the demographics, diagnosis, and treatment were collected and analyzed using SPSS.

189 women were diagnosed with having RPOC as per our criteria: 37 of them chose expectant, 65 chose misoprostol, and 87 chose D&C. Bleeding was the most common clinical symptom women presented with (78.3%). Ultrasound proven RPOC was only seen in 88.4% of cases. Out of the 61 women who chose misoprostol and had follow up, 64% (39) reported success with misoprostol management.

In conclusion, misoprostol is a safe and effective way of managing RPOC after first trimester spontaneous abortion.
A Prospective One-Year Observation of Variables Related to Menstrual Cramps

Sewon Bann1, Jerilynn Prior2

1MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
2Department of Medicine, Division of Endocrinology, University of British Columbia, B.C., Canada

SUMMARY

Menstrual cycle-related problems not only affect women in their personal and professional lives, but also has a negative socioeconomic impact on society. Of such, primary dysmenorrhea (cramps) is the most prevalent menstruation related condition, affecting up to 95% of menstruating women. Despite its high prevalence, there is a lack of scientific understanding on the parameters, risk factors, and treatment for primary dysmenorrhea. In particular, longitudinal population-based studies that can investigate within-woman changes in dysmenorrhea over time are in need. The aim of the present study was to investigate longitudinal characteristics and prevalence of cramps in healthy, normally menstruating/ovulating women, as well as their relationships with parity, ovulation, and physical activity. Data were obtained from a primary 1-year observational study conducted from 1985-87 at the University of British Columbia, Canada of 62 women screened to be ages 20-42, normal BMI, non-smoking, no endocrine disorders or hormonal contraceptive use, and no recent weight changes. The women completed daily Menstrual Cycle Diary©, recording flow parameters, physical/emotional changes, basal temperature measurements for validated quantitative basal temperature analysis (QBT), and cramp severity on a scale of 0-4. Preliminary analysis shows that the odds ratios between cramp intensity scores and parity, physical activity, and ovulation are 0.825, 1.212, 1.212, respectively. This suggests a negative association between cramp intensity and parity and a positive association between cramp intensity and ovulation, in keeping with existing literature. Interestingly, this suggests a positive association between physical activity and cramp intensity, compared to no association between the two variables in existing literature. Next, we will calculate the within-woman and between-woman variance in cramp severity. A principle components analysis will be performed to investigate risk factors for severe dysmenorrhea. This will be compared to the odds ratio analysis. Based on existing literature, we hypothesize that the prevalence and severity of cramps will vary considerably within-woman and between-woman, with women experiencing more severe and longer cramps to be more likely to experience long and severe cramps in subsequent cycles. We also expect to find, in the principle components analysis, a positive association between ovulation and cramps, and a negative association between parity and cramps.
Biosimilar Medications in Psoriasis: A Review

Harman Toor\textsuperscript{1}, Stanley Bardal\textsuperscript{2}

\textsuperscript{1}MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada

SUMMARY

My project was a pharmacology and drug policy review of biosimilar medications in psoriasis. Psoriasis is an immune mediated chronic inflammatory condition typically affecting the skin and joints. Several monoclonal antibody biologic medications have revolutionized treatment for the condition. However, cost is a large barrier to access to these medications as they are $20,000-25,000 per year. Furthermore, their price also puts a large burden on drug expenditures by public payers like BC PharmaCare.

As many of these medications are now coming off patent, several analogues have been developed known as “biosimilars”. Biosimilars are unique compared to conventional medications in that exact generic versions of the active molecule cannot be synthesized. This is due to the size, complexity, and synthesis which creates variability among biologic drugs despite having identical amino acid sequences. Thus, biosimilar drugs can be shown to be similar but not identical to the reference biologic drug. These medicines undergo a different regulatory approval pathway compared to conventional drugs in order to show similarity and extrapolation for therapeutic indications. As biologic drugs become more and more common for a variety of different medical conditions, more biosimilars will also come on to the Canadian market.

My review focused on TNF-alpha inhibitors like infliximab, etanercept, and adalimumab and their biosimilar versions, their efficacy, safety, cost savings, and regulatory status in the world.

With respect to these biosimilars in psoriasis studies done in Europe have shown non-inferiority in efficacy and similar rates of adverse events like immunogenicity when compared to originator biologic drugs. Cost savings of up to 66% have been reported in Europe with the uptake of biosimilars. This could improve access to these innovative medications and help reduce costs on the health care system.
Approach to Using Video Technology in Teaching the Neurological Exam

Siyoun Lee², Yue Yuen², Ge Shi², John Liu², Chris Calvin¹, Vincent Soh¹, Alexandre Henri-Bhargava¹,³, and Zachary Rothman⁴

¹MD Undergraduate Program (Island Medical Program), University of British Columbia, Victoria, B.C., Canada
²MD Undergraduate Program (Vancouver Fraser Medical Program), Faculty of Medicine, University of British Columbia, B.C., Canada
³Island Health, Victoria, B.C., Canada
⁴MedIT, University of British Columbia, B.C., Canada

SUMMARY

Online learning is becoming increasingly popular and effective. Many post-secondary courses utilize online modalities of learning as core or supplemental material. The UBC MD program incorporates online modules to teach pathophysiology and videos to demonstrate clinical exams. However, many of the available videos are outdated and not of contemporary quality.

Drawing upon the Cognitive Theory of Multimedia Learning (CTML) from Mayer and Moreno (2003) which describes methods to maximize learning by minimizing cognitive load, we developed a tool to systematically assess pedagogical videos. We inventoried twelve existing neurology videos and analyzed their use of methods such as weeding (removing extraneous information), signaling (visually highlighting important information), and chunking (grouping similar information together).

Generally, older videos had poor audiovisual quality that introduced extraneous load, while more current videos had higher production value, albeit inconsistent with the depth of their content. We therefore produced a new three-part neurological exam video series. We wrote storyboards, filmed with a focus on visually depicting the exam and findings, and edited to elucidate relevant physiological concepts.

In the first weeks after uploading the video on YouTube, each of these videos was viewed over 100,000 times by people in more than 200 different countries. Feedback on the videos was positive and viewers have indicated that they have helped with knowledge retention. Feedback from students of the UBC MD program has also been positive. We hope that our deliberate attention to pedagogical and technical aspects in creating educational videos can serve other content creators create more impactful videos in the future.
Challenges with Managing Acute Episodes of Presumed Malaria in Very Young Children in Rural and Remote Uganda: A Head of Household Perspective

Rahimi, A1; Kassam, R2; Sekiwunga R3

1 MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
2 School of Population and Public Health, Faculty of Medicine, University of British Columbia
3 Child Health and Development Centre, School of Medicine, Makerere University

SUMMARY

Background: Malaria remains one of the leading causes of morbidity and mortality in children five years and younger. The 2018 national target is to have 90% of suspected cases receive diagnosis and appropriate treatment within 24-hours of fever onset. Despite national initiatives to increase the availability of the first line antimalarial therapy (artemisinin-based combination therapy – ACT) from public health facilities (PHF) and the formal private sector, the literature suggests that Uganda remains below this target for children under five years of age. Furthermore, the impact of such initiatives remains unclear among the poorest families who live in remote areas. As part of a larger effort, the objective of this study was to understand the challenges faced by households when managing acute episodes of fever for their very young children presumed to be malaria.

Methods: This six-week qualitative study took place in the district of Butaleja. Focus groups (FG) were held with heads of households from five sub-counties located across the district. FG discussions were recorded, translated, and transcribed, and the data analyzed using acceptable qualitative research protocols.

Results: The study identified four major challenges, these included: (1) difficulty accessing PHFs, (2) poor quality of care at PHF - denial of care, delay in receiving care, and negative experiences with staff, (3) prohibitive cost and untrained personnel at private drug shops, and (4) difficulties with managing the child’s illness at home.

Conclusion: This study suggests that inadequate provider behaviors and household capacity are important elements limiting timely care for young children. While efforts to improve ACT market share are important, a multi-level system strengthening approach targeting all stakeholders, including households, is necessary to improve care for the very young.
Prenatal Exposure to Substances and Its Relation to Trauma in Child and Adolescent Psychiatric Emergency

Hunt Giselle¹, Nugent Sinead², Eslami Ali²

¹ MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
² Department of Psychiatry, University of British Columbia, B.C., Canada

SUMMARY

In BC, children deemed to be experiencing a psychiatric crisis are admitted to emergency inpatient units such as the Child and Adolescent Psychiatric Emergency (CAPE) Unit at BC Children's Hospital. Currently, multiple research studies are being conducted in CAPE to explore certain predictors and risk factors related to admission and ultimately how admission can be prevented. One such study was a retrospective chart review of all admissions over the course of 18 months to examine prenatal exposure - i.e. in utero exposure to alcohol and other substances - and whether this is a predictor of specific trauma. While previous studies have noted that the combination of prenatal exposure and trauma have detrimental long-term effects, there is no existing literature investigating the predictive nature of prenatal exposure in relation to subsequent trauma. Demographics and detail of admissions were collected, as well as history of trauma, family history of substance abuse, current living situations and involvement of the Ministry of Children & Family Development (MCFD). The initial results did show that children and adolescents with a history of prenatal exposure had higher rates of past trauma, specifically neglect, however, a predictive relationship was not found. While the results highlight a need for increased monitoring of children with prenatal exposure to substances, as well as trauma-informed interventions and social supports in inpatient psychiatry, a future study with a larger cohort should be done to evaluate if prenatal exposure is predictive of neglect as this finding could impact management of these patients. Starting January 2018, a medical student during FLEX will expand the number of patients in the study and write up the results in a manuscript.
Long Term Outcome of Anterior Chamber, Iris-Sutured, and Scleral-Sutured Posterior Compartment Intraocular Lenses

Qinyuan (Alis) Xu¹, Alice Mui², and James T Handa³

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Department of Surgery, University of British Columbia, B.C., Canada
³Wilmer Eye Institute, Johns Hopkins University, MD, USA

SUMMARY

Purpose: Cataract surgery is an effective and commonly performed procedure worldwide. It involves implantation of an artificial intraocular lens (IOL) to replace the crystalline lens, which usually has undergone age-related changes causing a decline in visual function. In some cases, it is not possible to safely place the IOL in its typical location in the capsular bag. Thus, different lens fixation and suturing techniques are used. However, long-term outcomes comparing these techniques are unknown. This multi-center, retrospective study aims to evaluate the long-term success of three lens fixation techniques, including anterior chamber IOLs (ACIOLs), iris-sutured posterior compartment IOLs (PCIOLs) and scleral-sutured PCIOLs.

Methods: We evaluated charts from patients who had one or more IOL implantations from both Johns Hopkins University in Baltimore, Maryland, USA, and University of British Columbia, in Vancouver, BC, Canada. Charts were pulled by searching through diagnostic codes for IOLs and lens dislocations. We compared the visual outcomes (best corrected visual acuity) and intra- or post-operative complications after IOL implantation employing one of these three techniques: ACIOL, iris-sutured PICOL or scleral-sutured PCIOL.

Results: From the database of Johns Hopkins University (JHU), charts of 192 eyes from 123 patients were reviewed and recorded. Among these, there are 35 iris-sutured PCIOL, 19 scleral-sutured PICOL, 6 ACIOL and 59 iris hook/retractor cases. The remainder are non-sutured cases serving as controls. The average follow up time is 4.0 years.

From the database of the University of British Columbia (UBC), charts of 43 eyes from 34 patients were reviewed and recorded. Data collection at UBC is still ongoing. So far, all charts from UBC are cases with dislocated lenses. Among these, there are 21 scleral-sutured PCIOL and 1 ACIOL. The remainder are non-sutured cases serving as controls.

Conclusion: This study started as a FLEX project in 2017 and is currently ongoing. We have since obtained ethics approvals and data access for both JHU and UBC. We successfully identified methods for retrieving relevant medical records through searching diagnostic codes. Charts were reviewed and complications were recorded. Future directions include increasing sample number by including more UBC charts and statistical analysis of the data.
Evaluation of a New Definition of Ventilator-Associated Pneumonia (VAP) in a Tertiary Neonatal Intensive Care Unit

Destiny Lu-Cleary¹, Shevaun Hughes², Horacio Osiovich³, Ashley Roberts³, Joseph Ting³

¹University of British Columbia, Vancouver, B.C., Canada
²BC Children’s Hospital, Vancouver, B.C., Canada
³Department of Pediatrics, University of British Columbia, Vancouver, B.C., Canada

SUMMARY

Neonatal ventilator-associated pneumonia (VAP) has been associated with increased morbidity, length of stay, and health care costs. The CDC has announced a new paradigm on Ventilator-Associated Events in Neonates and Children in 2016, with implementation in 2018. Until now, the diagnosis of VAP in neonates has lacked clarity and has been controversial especially among preterm infants who may have non-infective respiratory complications with clinical features similar to those with VAP. The objective of the study is to compare the rates of VAP according to the new CDC criteria vs. physicians’ discretion in a retrospective cohort.

Medical records were reviewed for infants who were born between Jan 2010 - Dec 2014 in our tertiary neonatal intensive care unit (NICU) being evaluated for possible VAP. We reviewed clinical, laboratory and ventilation criteria, particularly the change in FiO2 and mean airway pressure, to see if infants managed as VAP per physicians’ discretion met the new CDC criteria for VAP.

There were 266 evaluations for VAP in 159 patients, as per physician discretion, with mean GA and birth weight of 29.3 ± 5.4 weeks and 1419 ± 1024 grams, respectively. Only 17/266 (6.4%) episodes in 9/159 (5.7%) patients fulfilled the new CDC criteria, resulting in a VAP incidence of 1.4 per 1000 ventilator-day and VAP prevalence of 2.9% on average over the 5-year period. There were no significant differences in demographic characteristics and neonatal morbidities among infants fulfilling and not fulfilling VAP criteria, though the former group had longer high frequency ventilation and non-invasive ventilation days during their hospital stay. They were also more likely to have VAP caused by resistant gram-negative bacilli (GNB, 71.4% vs. 28.6%, p=0.036).

In our retrospective cohort, most patients diagnosed with and treated for suspected VAP as per physicians’ discretion did not fulfill the new CDC diagnostic criteria for VAP. Those fulfilling the new CDC VAP criteria were more likely to have longer duration of ventilation duration and resistant GNB. Given this discrepancy, education about and evaluation of this new diagnostic criteria will be important for clinicians.
Analysis of Patients with Coronary Artery Anomalies by Fractional Flow Reserve from Computed Tomography (FFRCT)

Eric Esslinger¹, Jonathon Leipsic¹, Stephanie Sellers¹, and Robert Safian²

¹MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada
²Beaumont Academic Heart & Vascular Group, Beaumont Health, M.I., U.S.A

SUMMARY

The aim of this project is to contribute to the FACTS (FFRCT of Anomalous Coronary Arteries using Computed Tomography Study) Registry. This multi-centre registry is being formed to study patients with coronary artery anomalies (CAAs).

Over the past decade, fractional flow reserve (FRR) has been developed as a measure stenotic lesions in coronary artery disease (CAD). FRR is defined as the blood pressure of the narrowed artery divided by the maximal blood pressure if the artery were normal. It quantifies blood flow distal to the lesion and is obtained by a pressure sensitive catheter during an invasive coronary angiogram (ICA). In the FAME trial, using FFR in place of coronary angiography to guide stenting decisions led to a reduction in adverse events. This supports the current thinking that characterizing stenotic lesions by an anatomical approach (luminal narrowing) is inferior to a physiologic approach (blood flow) for predicting ischemia.

With recent technological advancements, it is now possible to determine FFR from coronary CT angiogram scans (FFRCT). In particular, HeartFlow uses advanced computation to build a personalized, 3D model of the coronary tree with FFR values throughout. With FFRCT, physicians can easily determine the impact of blockages from a non-invasive CT scan. This avoids the adverse risks of ICA as well as reduces the burden of time and resources on the healthcare system.

Here, FFRCT is being used to study CAAs. These are rare congenital abnormalities of the coronary arteries; for example, vessels with an anomalous origin or course. Often patients with CAAs suffer from angina, dyspnea, and syncope, and are at risk of myocardial ischemia or sudden cardiac death. Investigation of CAAs may include various invasive and non-invasive procedures, indicating a lack of standardized testing. Through the FACTS Registry, we hope to demonstrate that FFRCT is a powerful diagnostic and prognostic tool that will improve treatment of CAA patients.
labANATOMY: Development of the Novel, Successful Curriculum-Based App for UBC Students Learning Anatomy

Emily Michaela Hamel1, Majid Doroudi1

1MD Undergraduate Program, Faculty of Medicine, University of British Columbia, B.C., Canada

SUMMARY

In the curricular feedback report, UBC students requested a true-to-life cadaveric Anatomy App specific to their curriculum, as presently available apps were not meeting student needs. We created a web-based, wifi dependent prototype (view prototype at www.labnatomy.com) of several labs and are growing exponentially, with several thousand users to date. We proposed to meet student need by developing our temporary prototype into a free, downloadable (available without data), high-resolution cadaveric Anatomy App for iOS and Android. The app’s material corresponds to numerous undergraduate courses, guided by our multidisciplinary team of collaborating faculty. This vital app prepares students for their labs, lectures and clinical experiences. It also facilitates healthy study habits as an efficient tool for novel learning and longitudinal review.
Access to Botulinum Toxin for Spasticity Patients: A Cross-Canada Comparison

Kevin E Liang¹, Pham Vivian Ngo¹, Paul Winston¹

¹University of British Columbia, Division of Physical Medicine and Rehabilitation, Faculty of Medicine, B.C., Canada

SUMMARY

Background: Local intramuscular injections of botulinum toxin (BTX) is an established safe and effective treatment in the pharmacological management of focal spasticity. However, national and equitable access to BTX faces regional challenges in Canada. Access to required medication is limited by individual provincial formularies and the available physicians to administer treatment. The purpose of this research is to delineate differences in the provision of BTX treatment across Canada - including whether large variations in costs, drug coverage, and access exists between provinces.

Methods: A cross-sectional retrospective study consisting of a mixed qualitative and quantitative questionnaire was used to survey physicians and other medical professionals involved in the management of spasticity disorder across Canada.

To identify regional differences in spasticity care, the survey measured outcomes regarding cost, wait-time, and funding differences for the toxin.

Results: 32 responses from all ten provinces were recorded. Analysis of survey results identified a wide range of issues with regards to BTX access. Drug coverage was inconsistent between provinces and patients in different income brackets, with Alberta being the only province that provides regular coverage for the toxin.

Conclusion: Provision of best quality care for spasticity patients across Canada varies widely. We believe that the results from this national survey of provincial strengths, weaknesses and omissions will assist in putting patient equity, accessibility, and best practice at national minimum standard. A national standard provides populations in provinces receiving inferior care a platform to ask for equitable BTX spasticity coverage in their region.