A Message from Dr David Szalay, Head of the Division of Vascular Surgery

Welcome to the new quarterly Division of Vascular Surgery research update newsletter. This newsletter will highlight research activity in the Division including researcher spotlights, ongoing clinical trials, publications and resident highlights.

The past three months have been eventful with ongoing clinical trials, several residents travelling to various parts of the world for Masters programs and fellowships, and the Canadian Society of Vascular Surgery annual meeting which was well attended by the McMaster Vascular Surgery group who gave several presentations.

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The division is looking forward to a busy fall with several conferences and ongoing and potential new projects.

We would also like to welcome our newest resident Dr Brandon McGuinness who will be beginning both clinical and research work with us.

I hope that you take some time to enjoy the newsletter and keep a look out for upcoming editions.

Dr David Szalay
RESIDENT SPOTLIGHT

Dr Kathryn Howe, MD, PhD, is a PGY4 resident in the Division of Vascular Surgery currently performing a clinical and research fellowship at Stanford University. Dr Howe’s research is focused in basic science, specifically examining two areas of vascular wall biology in relation to atherosclerotic plaque development and aneurysmal disease.

Dr Howe began her research career during her Biology undergrad with a fourth year undergraduate thesis on the effect of bacterial superantigens on intestinal epithelial function. Following her undergrad, Dr Howe completed a PhD in the Medical Sciences Graduate program with a research focus on intestinal disease under Dr Derek McKay, with a thesis examining the modulation of intestinal epithelial physiology and signal transduction by transforming growth factor-beta.

After completion of her PhD, Dr Howe completed her Doctor of Medicine at the University of Toronto and began clinical training in Neurosurgery at the University of Toronto, General Surgery at McMaster, and currently Vascular Surgery at McMaster. During her residency Dr Howe also completed a post-doctoral research fellowship with Dr Phil Sherman at the Hospital for Sick Children examining gut ischemia-reperfusion.

Through her research career Dr Howe has received a large number of awards, including CIHR Doctoral and Post-Doctoral awards, NSERC scholarships and was awarded the Resident Prize by Physicians’ Services Incorporated.

Over her career, Dr Howe has had a wide variety of publications featured in journals such as Shock, American Journal of Physiology, American Journal of Pathology, Experimental Cell Research and World Journal of Neurosurgery. The focus of these papers cover a range of topics including vascular, intestinal, neuroscience, immunology, ethics in global health and surgical education.

Currently Dr Howe is conducting a study in collaboration with the Thrombosis and Atherosclerosis Research Institute titled “Role of endothelial permeability on activation of vascular inflammation: Is endothelial barrier dysfunction a critical event?” being supervised by Dr Theodore Rapanos and Dr John Harlock. The project has been funded by an award from the Beamish Chair in Vascular Surgery. In addition, she is undertaking a clinical fellowship in vascular surgery at the Stanford Vascular Surgery group and a research fellowship with Dr Nicholas Leeper at Stanford.
ONGOING STUDIES

VOYAGER

The Voyager trial is an ongoing international, multicentre, randomized controlled trial examining the efficacy and safety of Rivoroxaban in addition to standard of care treatment for the prevention of clinical events such as cardiovascular death, heart attack and stroke following lower limb revascularization procedures.

The study is being led at the Hamilton General Hospital site by Dr David Szalay, and to date there has been over 2,000 patients recruited worldwide. In September of 2016, the Hamilton General Hospital tied for the highest recruiting centre in Canada.

AAA THROMBUS

The AAA Thrombus study is a prospective, comparative study looking to determine the differences in cytokine environment between patients with an abdominal aortic aneurysm thrombus and patients with cardiac thrombi. The study involves removing the thrombus from an open vascular or cardiac procedure, and then examining the cytokine environment in the thrombus.

The principal investigator of the AAA Thrombus study is Dr John Harlock, and the study is currently 75% collected.

SMARTVIEW

SMaRTVIEW is a prospective, randomized controlled trial being performed in collaboration with the Population Health Research Institute and the Division of Cardiology. The purpose of the trial is to determine the usability of an eHealth-enabled service delivery intervention which combines remote automated monitoring and virtual recovery support to optimize recovery for patients following major cardiac and vascular surgeries.

Dr Theodore Rapanos and Dr Michael Stacey are involved in the development and implementation of the project for patients who have undergone vascular procedures.
RESIDENT CORNER

**Drs Fadi Elias** and **Faysal Naji** are enrolled in Masters programs at the Harvard T.H. School of Public Health in Boston, Massachusetts from July to August.

**Dr Naji** began and is currently working to complete the Master of Public Health program through the Harvard T Chan School of Public Health, a course based Masters with a concentration in quantitative methods. Dr Naji is directing his focus towards the use of health informatics in conducting large-scale database research and as a vehicle to drive quality improvement in surgical care. Through this experience Dr Naji is connecting with peers, physicians, and professors from the Harvard School of Public Health as well as medical institutions around the world.

Dr Naji is actively applying his experiences and skillset toward his academic work in vascular surgery. At home, Dr Naji is actively involved in NSQIP (National Surgical Quality Improvement Program), an initiative to identify and implement quality improvement initiatives in surgery at Hamilton Health Sciences, Dr Naji is also collaborating with the SMArTVIEW team to implement an e-Health enabled patient monitoring service for post-operative cardiac and vascular patients. As part of his Masters, Dr Naji will complete a practicum exploring a clinical research question in-depth using his senior year of residency under the Division of Vascular Surgery.

**Dr Elias** completed his second year in the Master of Clinical Epidemiology at the Harvard T.H Chan School of Public Health with a specialization in the Program of Clinical Effectiveness. This year allowed Dr Elias to expand his armamentarium to incorporate analytic aspects of clinical epidemiology including multivariable regression models and clinical prediction rules. The focus of Dr Elias’ is on clinical trials and large cohort studies with guidance from world renowned physicians and members of the New England Journal of Medicine review board.

Dr Elias plans to translate the knowledge and skill set to participate in HHS surgical quality improvement as part of NSQUIP. He plans to establish a large, prospective, electronic based cohort study for the treatment of venous disease. Dr Elias’ final year will focus on his thesis in collaboration with professors from both Harvard and McMaster University.

**Dr Kathryn Howe** is currently completing a clinical and research fellowship at Stanford University to be completed in December. Dr Howe’s clinical fellowship with the Stanford Vascular Surgery group is focused on complex endovascular aneurysm treatment and peripheral endovascular treatments. For the research component Dr Howe is working with Dr Nicholas Leeper on a novel model of atherosclerotic plaque development and the fate of smooth muscle cells.

**Dr Asem Saleh** completed a mini-fellowship in Nuremberg, Germany for three months. The fellowship focused on learning fenestrated endovascular aortic repairs (FEVARs). These are advanced endovascular cases to treat aortic aneurysms and dissections. The group in Nuremburg Dr. Saleh worked with performs the most of these procedures in Europe and North America.
"Bath salts" are synthetic designer drugs that have stimulant properties and are a growing medical concern. The chemical compounds in the mixtures have an affinity for receptors in the brain resulting in a stimulant effect similar to that seen with methamphetamines and cocaine. Although illegal in Canada, these drugs are widely available online with over 20 synthetic drugs marketed as "bath salts" and used increasingly among recreational drug users. Much of the medical literature regarding these drugs comes from emergency medicine case reports, which outline the acute, severe medical, and psychiatric effects of "bath salt" toxicity. In this report, we outline severe vascular limb compromise, which occurred in a 24-year-old man who took large doses of bath salts obtained online from China. We detail our experience to re-establish perfusion to the limbs, and the morbidities encountered due to the ischemic insult our patient experienced. The duration and clinical presentation of "bath salt" toxicity are frequently complicated by lack of toxicology screens for the agents on board, and lack of any pharmacokinetic evidence surrounding these synthetic compounds. Although "bath salts" are now illegal in Canada, these drugs are widely available online and have become an increasing public health concern that involves significant morbidity and mortality to users. Creating a base of knowledge and front-line experience are the only current tool in combating the diverse detrimental aftermath of these synthetic agents' abuse.

An aging population and the attendant growth in the need to care for people with serious chronic illnesses has created a demand for online support systems that can assist older adults to self-manage their illnesses. This could play a role in relieving some of the load on the healthcare system. Determining user-centered requirements of older adults for such systems is different from usual requirements analysis because older adults have particular needs, depending upon their chronic illnesses, their ability to manage technology, their access to appropriate technologies, and their cognitive abilities. This paper discusses in detail the use of the persona-scenario approach to elicit these needs from outpatients, informal care givers, and physicians. It proposes several suitable interface designs, depending on outpatient ability to deal with the proposed systems.
CONFERENCE UPDATE

CANADIAN SOCIETY FOR VASCULAR SURGERY

The retrospective study looked to examine differences in primary patency of diseased vessels between open bypass repairs and hybrid open and endovascular technique in femoropopliteal lesions. It was found that hybrid interventions are a viable alternative to completely open surgical repair for TASC C-D lesions.

This is an ongoing project examining the new training paradigm of a 5-year direct entry pathway for vascular surgery trainees. The study includes 6 focus groups from Canadian surgical residents and is set to include a cohort from Stanford, an established 5-year direct entry pathway program.

This study compared aortoiliac aneurysm repair with iliac branch grafts at the Hamilton General Hospital. The study found that IBG placement has excellent short-term outcomes and has the potential to limit buttock claudication.

Gurupatham S, Qadura M, Andrinopoulos T, Szalay D. Single Institution Experience with Hybrid Endovascular and Surgical Repairs Involving the Aortic Arch: A Retrospective Review.
Evaluating the technical success rate and 30-day perioperative event rates for mortality, stroke and cardiac events for hybrid endovascular and surgical repairs of the aortic arch. The study found the hybrid approaches may be a viable alternative to entirely open surgical treatments.

A 31 study meta-analysis evaluating gender differences in 30-day mortality following elective endovascular aortic repair. The study found that women experience significantly increased odds of mortality following EVAR.

INTERNATIONAL CONFERENCE ON RESIDENCY EDUCATION

Pictured below: Dr Faysal Naji presenting at the 2016 ICRE.
UPCOMING EVENTS

CANADIAN ASSOCIATION OF WOUND CARE ANNUAL MEETING

The 2016 Canadian Association of Wound Care Annual Meeting is being held from November 3-6th at the Niagara Fallsview Casino in Niagara, Ontario. The conference is being co-chaired by Dr Michael Stacey, who also acts as the chair of the Research Committee for the Association.